GOVERNOR'S OFFICE OF PLANNING AND BUDGET

Lynne N. Koga, CPA, Director

Brad T. Barber, Deputy Director / State Planning Coordinator

DEMOGRAPHIC AND ECONOMIC ANALYSIS SECTION

Natalie Gochnour, Director

David Abel, Research Analyst

Matt Austin, Research Analyst

Peter Donner, Economist, Fiscal Impact Analysis

Eileen Frisbey, Executive Secretary

Julie Johnsson, Research Analyst, Electronic Information Specialist

Kirin McInnis, Research Analyst, State Data Center Coordinator

Pam Perlich, Economist, Economic and Demographic Research

Ross Reeve, Research Consultant, Demographic Modeling

Lance Rovig, Senior Economist, Economic and Revenue Forecasts

Jennifer Taylor, Research Analyst

Utah State and Local Government Fiscal Impact Model

Working Paper Series: 96-1

Expenditure Estimates in the Regional Models
August 1996

The Fiscal Impact Model Working Paper Series is the product of a continuing research project within the Demographic and Economic Analysis Section of the Utah Governor's Office of Planning and Budget (GOPB). One of GOPB's primary functions is evaluating state budgetary and planning issues. The Utah State and Local Government Fiscal Impact Model is an analytical process used to evaluate many of these issues. The model was originally developed through the collaborative efforts of the GOPB's research staff and university faculty. Although the basic structure of the model is at this point institutionalized, refinements occur at practically each application This working paper series documents the ongoing research associated with the development of the model.

Working Paper 96-1 gives information about the method used to develop expenditure estimates for the various regional fiscal impact models maintained by GOPB.

Other papers in the series currently include: Working Paper 94-1: *The Base Period 1992 Utah Multiregional Input-Output (UMRIO-92) Model: Overview, Data Sources, and Methods*, Working Paper 94-2: *Exports from Utah's Regional Economies*, and Working Paper 94-3: *Analytical Foundations, Research Finidings, and Sensitivity Analysis*.

TABLE OF CONTENTS

I. INTRODUCTION 1

II. ORGANIZING FRAMEWORK FOR EXPENDITURES IN THE UTAH STATE AND LOCAL GOVERNMENT FISCAL IMPACT MODEL 3
- II.1 Adjusting Per Capita Cost Estimates for Inflation 4
  - II.1.1 Changing Composition of Expenditure 4
  - II.1.2 Base Year of 1996 for Per Capita Cost Estimates 5
- II.2 Regions of the State 6
- II.3 Operating Expenditure and Capital Expenditure 7

III. STATE GOVERNMENT PER CAPITA COST ESTIMATES 9
- III.1 Operating Expenditure and Capital Expenditure 9
- III.2 Public Education Funding 10

IV. LOCAL GOVERNMENT PER CAPITA COST ESTIMATES 12
- IV.1 CPPA Data 12
  - IV.1.1 Updating the CPPA Data from 1993 to 1996 13
  - IV.1.2 Expenditure by Object and by Function in the CPPA Data 13
  - IV.1.3 Operating and Capital Expenditure for Counties, Cities and Special Districts 14
- IV.2 School District Expenditure 14
  - IV.2.1 School District Operating Expenditure 15
  - IV.2.2 School District Capital Expenditure 15

V. REGIONAL EXPENDITURE ESTIMATES 16

I. INTRODUCTION

Although government expenditure increases with economic development, the precise nature of the relationship between the two is unclear. The purpose of this working paper is to present estimates of the costs of various Utah state and local government services, discuss how these estimates are used in the Utah State and Local Government Fiscal Impact Model and document the data sources used in developing these estimates. While they proxy for the cost to government imposed by economic development, any given development will probably impose costs which differ from these estimates.

The estimates presented in this paper are used in the fiscal impact model (FIM) because they are the best measure available of the additional government expenditure required by economic development. In the sense that a particular government service is available to the entire population, the total cost of the service divided by the population, or the per capita cost, measures the increase in cost of providing the service as the population increases. In the sense that no two individuals use a given service with the same intensity, the per capita cost of the service does not precisely measure the increased cost of the service. Since measuring the cost imposed by each additional person in the population because of a given economic development is very difficult, the benefit of knowing the precise cost for each person is not worth the effort. The per capita cost of the service, then, while not precisely accurate, is close enough to yield a reasonable estimate of the additional government expenditure required by economic development.

II. ORGANIZING FRAMEWORK FOR EXPENDITURES IN THE UTAH STATE AND LOCAL GOVERNMENT FISCAL IMPACT MODEL

The organizing framework for estimating government expenditure in the fiscal impact model was developed during 1989 and 1990.[1] The approach has been to apply the estimated per capita costs of providing government services for various age groups to estimated population impacts by age group. The categories of expenditure and the relevant population group for each category are as follows:

1) state non-education, applies to entire population;

2) state public education, applies to population aged five to 17;

3) state higher education, applies to population aged 18 to 29;

4) county, applies to entire population;

5) city, applies to entire population;

6) special district, applies to entire population; and

7) school district, applies to population aged five to 17.

In any given analysis, the estimated state non-education expenditure impact, for instance, is the product of the estimated per capita cost of state non-education services and the estimated total population impact. The other categories of expenditure are estimated in similar fashion. For the purposes of documenting per capita cost estimates used in the FIM, population impacts can be taken as given, but in the analysis of any given project, estimated expenditure impacts depend

---

[1]The sources and methods originally used to estimate expenditure impacts in the FIM are documented in Utah Office of Planning and Budget, Utah State and Local Government Fiscal Impact Model (Salt Lake City: Utah Office of Planning and Budget, 1990), pages 22-27 and Appendix E.

crucially on the population impacts. The importance of population cannot be overemphasized: once per capita costs have been incorporated into the FIM, the population impact determines the expenditure impact.[2]

II.1 Adjusting Per Capita Cost Estimates for Inflation

Expenditure impacts, as well as all the monetary impacts, in the FIM are estimated in real (i.e., adjusted to remove the effects of inflation) terms. The normal procedure is to estimate the impacts in terms of the year the analysis is being done. So, if the analysis is being done in 1996, then the inputs to the FIM and the resulting estimated impacts are measured in real 1996 dollars. Since a given analysis typically involves estimating impacts a number of years into the future, the effect of this procedure is to measure the expenditure required to provide services to a given population in some future year, say 2002, in terms of what it costs to provide those services in 1996. An implicit assumption of this procedure is that the composition of services does not change through time. In other words, the share of expenditure going to a given function remains constant relative to the year in which the per capita costs have been estimated and the nature of the service remains constant.

II.1.1 Changing Composition of Expenditure

Since program objectives and the means used to achieve these objectives change through time, the composition of spending changes through time. Analyzing historical trends in law enforcement illustrates how the changing composition of expenditure results in changing real per

[2]The sources and methods used to estimate population impacts are documented in Ibid., pages 20-22. The method involves the Utah Process Economic and Demographic (UPED) model, which is documented in Reeve, T. Ross and Perlich, Pam, State of Utah Demographic and Economic Projection Model System (Salt Lake City: Utah Governor's Office of Planning and Budget, 1995).

capita spending through time. Real per capita state law enforcement expenditures increased from $65 in 1981 to $108 in 1995 (in 1995 dollars). During that same period, the imposition of minimum mandatory sentencing combined with an increasing intolerance of socially destructive behavior resulted in the incarceration rate more than doubling from 0.08 percent to 0.18 percent of the population. Moreover, the share of the state budget devoted to law enforcement increased almost 50 percent from 3.9 percent to 5.8 percent. Because the nature of law enforcement has changed, real per capita law enforcement expenditures have changed.[3] Since examples of this sort abound in government, it is clear that as the composition of government services changes, the real per capita cost of providing those services will change.

II.1.2 Base Year of 1996 for Per Capita Cost Estimates

The assumption of constant real per capita spending produces a baseline analysis of what expenditure would be required to provide the same services to an incremental group of people as were provided to the entire population during the year in which the per capita costs were estimated. In other words, the marginal cost of providing service and the average cost are assumed to be equal. Since per capita costs in the FIM have been estimated for 1996, the effect is to analyze the real cost in future years of providing the level and type of services provided in 1996. Prior to the current revision of the FIM's cost estimates, for the most part, these costs were based on the level and type of services provided in 1989. For analyses done in years after 1989, the procedure was to adjust the costs by the growth in the state and local government price deflator estimated by the U.S. Bureau of Economic Analysis. Thus, for example, if the analysis

[3]The calculations relating to law enforcement are based on data presented in Utah Foundation, "A Look at Utah State Government Growth," (Research Report 585), (Salt Lake City: Utah Foundation, 1995).

was being done in 1993, then the costs would be multiplied by the ratio of the value of this deflator in 1993 to the value of this deflator in 1989, which is 1.230 over 1.086, or 1.113.[4] With the current revision, the procedure will be to adjust the estimates by the growth in the deflator between 1996 and the year of the analysis.

II.2 Regions of the State

When the FIM was originally built, different models were built for each of three regions in Utah: a southwestern region (Beaver, Garfield, Iron, Kane and Washington Counties), a southeastern region (Grand and San Juan Counties), and a northern region (the balance of the state). With the current revision, different models have been built for each of nine regions in the state. During the revision of the FIM's economic component, the number of economic models was increased from three to nine. The revision of the economic component involved retaining the three main regions of the state discussed above, but refining the rather large northern region into seven sub-regions.[5] Currently, there are models for each of the following regions:

1) Bear River (Box Elder, Cache and Rich Counties);

2) Carbon-Emery (Carbon and Emery Counties);

3) Central (Juab, Millard, Piute, Sanpete, Sevier, and Wayne Counties);

4) Southeast (Grand and San Juan Counties);

5) Southwest (Beaver, Garfield, Iron, Kane and Washington Counties);

---

[4]The state and local government price deflator for 1993 may be found in U.S. Bureau of Economic Analysis, Survey of Current Business (July 1995) (Washington, DC: U.S. Government Printing Office, 1995), page 20; and for 1989 in U.S. Bureau of Economic Analysis, Survey of Current Business (August 1993) (Washington, DC: U.S. Government Printing Office, 1993), page 99.

[5]The procedure used in refining the economic component is documented in Governor's Office of Planning and Budget, FIM Working Paper 94-1, The Base Period 1992 Utah Multi-Regional Input-Output Model: Overview, Data Sources, and Methods (Salt Lake City: Utah Governor's Office of Planning and Budget, 1995).

6) Tooele (Tooele County);

7) Uintah Basin (Daggett, Duchesne and Uintah Counties);

8) Wasatch Front (Davis, Morgan, Salt Lake, Utah and Weber Counties);

9) Wasatch-Summit (Summit and Wasatch Counties).

Per capita costs have been estimated for each of these nine regions. Although state non-education and higher education costs are the same between the regions, per capita costs for each of the other expenditure categories vary across the regions.

II.3 Operating Expenditure and Capital Expenditure

Conceptually, the FIM should estimate the incremental state and local government expenditure associated with a given economic development. The most practical way to estimate these expenditures is to use operating expenditure. For relatively small developments, this approach should yield reasonable results. If cities in a given region of the state spend $300 per resident to operate services, then another 100 residents should cost a city in the given region around $30,000. If the city is relatively large, say on the order of 100,000 residents, then it may be able to absorb another 100 residents for less that $30,000. If the city is relatively small, say on the order of 500 residents, then it may need more than $30,000 to provide services for another 100 residents. When the population impact is large, either in absolute or relative terms, then operating expenditure is likely to understate the incremental expenditure required to provide services. If a given development causes the population of a certain region to increase by 10,000, then additional infrastructure, or capital expenditure, will be required. More roads, schools and water and sewer facilities may be needed. In this case, both operating and capital, or total, expenditure should be used.

Until the current revision of the expenditure component, the distinction between operating and capital expenditure in the FIM was somewhat blurred. With this revision, both per capita operating and capital costs have been built into the model. The sources and methods will be discussed in more detail below, but the guiding principal was to classify spending for purposes such as personnel and current expense as operating expenditure and spending for purposes such as equipment, land and buildings as capital expenditure. Interest payments and bond origination fees are counted as capital expenditure, but payments of principal on bonds are not counted. Since bond proceeds are used to purchase equipment, land and buildings, or other types of infrastructure, and this spending is already counted as capital expenditure, counting principal payments would be double-counting that component of capital expenditure.

III. STATE GOVERNMENT PER CAPITA COST ESTIMATES

State government per capita cost estimates are based on the 1996 budget approved by the Legislature during its 1995 general session.[6] Table 1 presents the appropriated 1996 budget by state agency, with a subtotal for non-education services. As discussed above, the three categories of state expenditure analyzed in the FIM are public education, higher education, and the remaining expenditure for non-education functions of state government. As Table 1 suggests, the non-education function includes human services, health, transportation, corrections and a host of other activities. Public education is the only one of the three categories that can be estimated on a regional basis. Data simply cannot be readily tabulated to estimate state expenditure for higher education and non-education on a regional basis. Thus, per capita cost estimates of higher education and non-education are constant across the nine regions, while those for public education vary.

III.1 Operating Expenditure and Capital Expenditure

The budget for the State of Utah clearly distinguishes between operating and capital expenditure. The state develops separate operating and capital budgets for the expenditure of current revenue. For the most part, operating expenditure is funded from current revenue while capital expenditure is funded from both current revenue and bond proceeds. Operating expenditure as presented in Table 1 is simply the operations budget appropriated by the legislature for the various functions of state government. In addition to current revenue and bond proceeds, capital expenditure as presented in Table 1 includes interest payments the state budgeted during

[6]The source for this data is Governor's Office of Planning and Budget, State of Utah Budget Summary: Fiscal Year 1996 (Salt Lake City: Utah Governor's Office of Planning and Budget, 1995).

1996 on its various outstanding bond issues.

III.2 Public Education Funding

The FIM incorporates a somewhat artificial distinction between state public education expenditures and school district expenditures. Public education in Utah is largely a local government activity. The Utah State Office of Education (SOE) sets standards, disburses funding, and administers a few programs, but the construction, operation and maintenance of public schools is the function of local school districts. While school districts operate the schools, the state currently funds over 80 percent of these operations.[7] Though the distinction between the state and the school districts is somewhat artificial, this distinction is maintained because economic growth requires the state to spend more money on education. So school districts provide the service, but the state's budget is directly impacted. When economic growth occurs in a given area, the school district will spend a certain amount of money to educate the additional children attending school, but about 75 percent of this money will come from the state while the remainder comes from other sources, primarily the property tax and the federal government.

The expenditure estimates presented in Table 2 are derived from data reported by SOE.[8] These data are for the 1993-94 school year, but have been adjusted to match state expenditure on public education during 1996. In an effort to insure reasonably equal educational opportunity, the

[7]By reducing the property tax rate levied by school districts, the 1995 General Session of the Legislature reduced the local share of public education funding. Before the Legislature acted, the local share was about 25 percent of operating expenditures.

[8]Data on state public education operating expenditure is reported in Utah State Office of Education, Summary of Statistical and Financial Data of the Utah State Superintendent of Public Instruction 1993-94 (Salt Lake City: Utah State Office of Education, 1995), page 161.

Utah Legislature established the minimum school program, which is overseen by SOE.[9] State public education operating expenditure by region has been estimated based on the regional distribution of spending under the minimum school program. Since the minimum school program is about 85 percent of total state spending on public education, the regional distribution of this program is a good basis to distribute total spending. Per capita costs are computed based on the estimated population aged five to 17.[10]

---

[9]The details of the minimum school program are documented in Utah State Office of Education, Utah School Finance Reference Manual 1994-95 (Salt Lake City: Utah State Office of Education, 1995).

[10]Estimates of the population aged five to 17 have been obtained from Governor's Office of Planning and Budget, State of Utah Economic and Demographic Projections 1994 (Salt Lake City: Utah Governor's Office of Planning and Budget, 1994).

IV. LOCAL GOVERNMENT PER CAPITA COST ESTIMATES

Local government per capita cost estimates for counties, cities and special districts are based on data collected by the Utah State Auditor and tabulated and published by the Center for Public Policy and Administration (CPPA) at the University of Utah.[11] Per capita cost estimates for school districts are based on data from SOE and are discussed in more detail below.

IV.1 CPPA Data

CPPA tabulates fairly detailed data concerning local government finances on an annual basis. These data are the most accurate, comprehensive and standardized accounting of Utah local government finances. During its 1994 survey, CPPA reported data for:

1) all 29 counties;

2) 204 of some 230 cities and towns; and

3) 257 of about 400 special districts.

The data contained in the 1994 survey are for the particular government's 1993 fiscal year. The Office of the State Auditor, which is statutorily charged with ensuring local governments meet a certain standard of financial accounting, requires local governments to complete the CPPA survey. According to the Auditor, some local governments do not complete the survey because they do not have permanent staff. In the sense that a government does not function without permanent staff, an unbiased estimate of expenditure can be developed without considering the finances of governments which do not complete the CPPA survey. While an exact determination has not been made, it appears that over 95 percent of local government expenditure is reported on

[11]The tabulated data are contained in Center for Public Policy and Administration, 1994 Survey of Local Government Finances (Salt Lake City: University of Utah, 1995).

the CPPA survey. In any given year, then, the CPPA data provides an essentially complete picture of local government expenditure.

IV.1.1 Updating the CPPA Data from 1993 to 1996

Because the CPPA data are for 1993, but this revision is intended to put expenditures in terms of 1996, the CPPA data need to be updated from 1993 to 1996. This updating is accomplished with the state and local government price deflator discussed in section I.1.2 above. The procedure is to multiply the 1993 per capita cost estimates by the ratio of the value of this deflator in 1996 to the value of this deflator in 1993, which is 1.333 over 1.230, or 1.084.[12]

IV.1.2 Expenditure by Object and by Function in the CPPA Data

Data are reported for both expenditure by object and expenditure by function. Expenditure by object includes:

1) personnel;

2) other current expense;

3) construction;

4) equipment, land, and buildings; and

5) interest on debt.

Expenditure by function for a given governmental entity is the budget for the entity's various departments. In the case of Murray City, for instance, this covers police, streets, parks and recreation, health and various other functions, as well as the city's various enterprise funds. Functional expenditures for municipal power systems and for county hospitals were excluded on

[12]The 1996 value of the deflator has been projected by WEFA Group, Fourth Quarter 1995 U.S. Long-Term Economic Outlook: Trend/Moderate Growth Scenario (Bala Cynwyd, Pennsylvania: WEFA Group, Inc., 1995), page 5.4, while the 1993 deflator is from Survey of Current Business (July 1995), page 20.

the grounds that these services are predominantly provided by the private sector for the state as whole.

IV.1.3 Operating and Capital Expenditure for Counties, Cities and Special Districts

Operating expenditure for counties, cities and special districts includes expenditures for personnel and other current expense as detailed in the CPPA data. Estimating operating expenditure by region requires that each local government entity be identified with a particular region of the state. Once this identification is complete, operating expenditure in a given region for a given type of government (i.e., county, city, or special district), is estimated as the total for personnel and other current expense expenditures of entities in the region and of the governmental type.

Capital expenditure includes expenditures for construction; equipment, land and buildings; and interest payments. Estimating capital expenditure by region and type of government is accomplished in the same fashion as operating expenditure.

IV.2 School District Expenditure

As discussed above in section II.2, the term school district expenditure can be confusing because as used in discussing the FIM, the term means expenditure financed from the districts' own sources, principally the property tax. This amounts to about 20 percent of the districts' operating costs and essentially all of their capital costs. Estimates of school district expenditure are based on data reported to SOE for the 1993-94 school year which have been adjusted from 1994 to 1996. As with the other units of local government, to develop regional expenditure estimates, each school district is identified with a region in the state and the expenditures are totaled for the region. Per capita costs are estimated by dividing the expenditure estimate by the

regional population aged five to 17.

IV.2.1 School District Operating Expenditure

Operating expenditures for each school district during 1994 are adjusted so that the share of expenditure financed from the property tax, which was $312.8 million of $363.9, or 86.0 percent, remains constant between 1994 and 1996. For 1996, the Legislature appropriated $263.2 million for school district operating expenditure, which, given the preceding discussion, is estimated to be 86.0 percent of the school districts' total operating expenditure. This implies estimated operating expenditures for 1996 are 306.1 million.[13]

IV.2.2 School District Capital Expenditure

The procedure for estimating capital expenditure is similar to that for operating expenditure, except the adjustment from 1994 to 1996 involves the state and local government price deflator discussed in section I.1.2 above. The procedure to update expenditures is to multiply the 1994 per capita cost estimates by the ratio of the value of this deflator in 1996 to the value of this deflator in 1994, which is 1.333 over 1.261, or 1.057. Capital expenditure includes expenditures from the capital projects fund, interest, and miscellaneous bond charges.[14]

---

[13]Data on the property tax revenue used by school districts to fund 1994 operating expenditures are from Utah State Office of Education, Summary of Statistical and Financial Data, page 160; the 1996 property tax appropriation is from Governor's Office of Planning and Budget, State of Utah Budget Summary: Fiscal Year 1996, page 71.

[14]The 1996 value of the deflator has been projected by WEFA Group, Fourth Quarter 1995 U.S. Long-Term Economic Outlook, page 5.4, while the 1994 deflator is from Survey of Current Business (July 1995), page 20. School district capital projects fund expenditures are from Utah State Office of Education, Summary of Statistical and Financial Data, page 217, while interest and miscellaneous bond charges are from Ibid., page 210.

V. REGIONAL EXPENDITURE ESTIMATES

Figure 1 and Tables 3 through 11 present estimates of both the level of expenditure and per capita expenditure for each of the nine regions presented in section I.2 above. Not surprisingly, with over 75 percent of the state's population, the Wasatch Front region, presented in Table 10, has the highest level of expenditure in every category. On a per capita basis, however, the Wasatch Front has none of the highest expenditure estimates, but, at $525, does have the lowest school district capital expenditure. In general, considering all the expenditure categories, the range between the lowest estimate and the highest tends to be fairly broad, with the highest typically four or five times as great as the lowest.