LOCAL GOVERNMENT FINANCE AND MANAGEMENT

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Issues concerning local government finance and the judicious management of local resources are being hotly debated across the country. Federal domestic programs have been cut and federal aid to state and local governments has fallen in both real and current dollar terms. These cuts, along with a depressed national economy and continued high interest rates (by historical standards), have severely strained the budgets of most state governments. These events have, in turn, squeezed the budgets of local governments forcing local officials and taxpayers to make difficult decisions.

This workshop was designed to explore ideas, methods, and experiences in conducting educational programs concerned with local government issues and in working with local officials.

COMMUNITY SERVICE MANAGEMENT AND PLANNING PROGRAMS IN OKLAHOMA: WHY, WHAT AND HOW DELIVERED

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The local government program in Oklahoma had its beginning in 1975 when the USDA in cooperation with Oklahoma State University (OSU) initiated the Great Plains Project. At that time the study area consisted of northwest Oklahoma. The objectives of the project were: (1) to assist community leaders and citizens in making their own informed decisions by providing economic research about problems they identified; and (2) to develop analytical techniques that other communities may use themselves or with assistance from extension or other state or substate personnel.

*Critical reviews and comments made by Dr. Marlys Nelson and Margaret Foltz are greatly appreciated.

The Great Plains Project was followed by another USDA project called the Ozarks Project. This project was conducted in northeastern Oklahoma and southwestern Missouri and was completed in cooperation with Oklahoma State University and the University of Missouri. The project had basically the same objectives as its predecessor.

During the course of these two projects, it became clear that budgeting community services was the most frequent problem identified by community leaders. Other questions related to planning community services, such as estimating future needs, determining optimum locations of emergency services, and specifying least cost routes, often surfaced as specified budgets were developed. The OSU extension local government program evolved based on results of the above projects and other related research activities.

The objective of this paper is to review the OSU local government assistance program. Our discussion will cover not only extension, but also will include research. We feel you cannot have a strong extension program without a strong research base.

What's Included in the OSU Programs

The problems identified through the above projects as well as subsequent requests can be classified into three categories. These include:

1. Programs to provide economic evaluation (budgets) of alternative community service delivery systems
2. Programs to estimate the impacts of changes in economic bases on community service needs
3. Programs to meet other local community service needs.

Community Service Budgets

By far the greatest number of requests since the first USDA project was initiated involved community leaders desiring information concerning the costs of community service delivery. For example, leaders in several rural communities have inquired about the feasibility of their community supporting a physician. If the community can support a physician, and if they construct a clinic, what rent should they charge to break even? Behind each community service, a research base is needed if the extension worker is to be able to assist the community.

Summary of Clinic Research Project

To meet the needs of local leaders and prospective physicians, a research project was recently completed by professionals from the Oklahoma Medical Schools, Health System Agency, and Agricultural Experiment Station (20). Three main sources to develop procedures to evaluate physician feasibility were used in this research project: (1) primary care physician utilization data by age and sex; (2) information on capital and operating costs for a clinic; and (3) information on rev-

enues from clinic operations. For primary care physician utilization rates, data from the national ambulatory medical care survey were used (18). Local or state data were not available, and collection of such data would have required a consumer survey.

Capital and operating costs were obtained from an extensive survey of 16 rural Oklahoma physicians. Eight of the physicians had been in practice just over a year; four are doctors of osteopathy (D.O.s) and four are medical doctors (M.D.s). For information on revenue, questions were asked concerning type, number, and charges for various services. For capital information and construction costs, questions were asked concerning building size, lot size, equipment in clinic, and so forth.

The survey also included a comprehensive set of questions concerning all operating costs, categorized into building, office, medical, and personnel. Dealers of medical equipment and construction firms were interviewed to obtain estimates of building and equipment costs.

Current data on physician office visits for Oklahoma are not available. The most recent information is from a 1980 study of the United States (18). The study gives the number of physician office visits annually per person by age and sex (Table 1). For example, in 1980 each male under the age of 15 made an average of 2.3 visits to a physician's office per year. To obtain the number of physician office visits for a service area, the number of people in each category is multiplied by the utilization rate and summed across all age and sex categories. Since some patients go directly to a specialist, their physician visits must be subtracted. From the national study, it was determined that 66.2 percent of all office visits are handled by physicians active in primary patient care (1).

Finally, data from another national study provided information concerning the average annual number of primary care office visits per physician (18). The average for 1981 was 5,456 office visits per year. Dividing this into the number of estimated primary care office visits would yield an estimate of the number of physicians a community could support.

TABLE 1

AVERAGE NUMBER OF PHYSICIAN OFFICE VISITS FOR PERSONS BY AGE AND SEX, UNITED STATES, 1980

	SEX	
AGE COHORT	MALE	FEMALE
Under 15	2.3	2.1
15-24	1.4	2.7
25-44	1.8	3.3
45-64	2.6	3.4
65 and Over	4.0	4.3

Source: [18]

A physician opening a new practice cannot expect the number of patient visits to immediately equal the estimate of visits the community will generate. It takes time to establish a practice. The eight physicians in our survey who had practiced just over a year were asked to indicate the number of office visits per month for the first year. This information is presented in Table 2. The number of office visits generally increased each month during the first year. the range was from 1,670 to 6,619 visits the first year. Of this group, the average was 4,652 first year office visits if the physician joined an existing group practice. Four physicians in the survey had been in practice two years. Their average was 5,616 office visits per year and the range was 4,000 to 8,085 visits per year. Surveyed physicians in practice more than two years had an average of 8,030 yearly office visits, and the range of yearly office visits was 5,400 to 10,290.

In addition to office visits, physicians may also have a number of hospital, emergency, and nursing home visits. Data were collected in the survey on the number of these visits for a physician practicing in a community with a hospital and nursing home. These data are summarized in Table 3. On the average, these physicians had 5,260 office visits, 1,340 hospital visits, 850 emergency room visits, and 216 nursing home visits. For each physician office visit, there occurred an average of 0.25 hospital, 0.16 emergency room and 0.04 nursing home visits.

An estimate of gross revenue can be obtained by multiplying the price charged per service by the physician. From the survey, charges by type of service were obtained. These are summarized in Table 4.

TABLE 2

AVERAGE NUMBER AND RANGE OF MONTHLY PHYSICIAN OFFICE VISITS FIRST YEAR OF PRACTICE, RURAL OKLAHOMA, 1981

	STATISTICS		
		RANGE	
MONTHS IN PRACTICE	AVERAGE	LOW	HIGH
1	190	50	330
2	224	77	400
3	254	102	440
4	268	118	484
5	299	104	660
6	331	103	765
7	333	116	649
8	339	163	550
9	332	184	550
10	337	165	575
11	420	240	616
12	412	248	600
Annual Total	3,739	1,670	6,619

Source: [20]

TABLE 3

AVERAGE NUMBER AND RANGE OF PHYSICIAN VISITS, COMMUNITIES WITH A HOSPITAL, 1981

STATISTICS	OFFICE	HOSPITAL	EMERGENCY ROOM	NURSING HOME*
Average	5,260	1,340	850	216
Range				
Low	2,570	253	269	0
High	8,400	3,840	1,500	720
NUMBER OF HOSPITAL & EMERGENCY ROOM VISITS PER OFFICE VISIT				
Average	--	0.25	0.16	0.04
Range				
Low	--	0.10	0.10	0.0
High	--	0.46	0.18	0.12

*Nursing Home visits include all locations.
Source: [20]

TABLE 4

AVERAGE RATES AND RANGES CHARGED FOR MAJOR CATEGORIES OF PHYSICIAN VISITS, 1981

	AVERAGE	RANGE LOW	RANGE HIGH
		Dollars	
Office Visit (Initial)	21.19	15.00	30.00
Office Visit (Routine)	16.13	12.00	21.00
Charge for Medical and treatment per office visit	10.00 or 15.00[2]		
Hospital Visit[1]	23.31	17.00	30.00
Emergency Room Visit	26.38	20.00	40.00
Nursing Home Visit	20.13	12.00	40.00

Source: [20]

[1]A possible refinement of this procedure to estimate total income would be to segregate hospital visits into admissions and visits. Because of the lack of data on the number of admissions it was not attempted in this study.

[2]$10 if no X-ray machine, $15 if X-Ray machine is available.

National data indicated that 85.1 percent of the calls are routine and survey data indicated the average charge was $16.13, whereas the range was $12.00 to $21.00 (20). The addition, the survey indicates that a charge for additional charge was made on 41 percent of the office visits. The average additional charge was $10 for a practice without X-Ray facilities and $15 for a practice with X-Ray equipment.

Using the information on all projected types of calls and these charge data, an estimate of gross revenue can be obtained. This procedure will be summarized in a later section of this paper.

Procedure to Estimate Total Clinic Costs

Total costs are composed of capital costs and operating costs. Capital costs are the investments in depreciable items that contribute to the delivery of physician health services. Operating costs are those incurred as health services are provided.

The major components of capital costs in a rural medical practice are building, land, and equipment costs. Building costs are the expenditures made in the physical development of the structure which will house the medical practice. Several possible approaches to facility development are: (1) conventional architectural design and competitive bid; (2) design and construction by the same firm; (3) modular construction; (4) mobile home; (5) renovation of an existing structure; or (6) lease.

The most common type of development found in the survey of rural Oklahoma medical practices was that of conventional construction of a permanent structure. Construction costs are usually discussed in terms of costs per square foot, which ranged from $50 to $55 in November, 1982. These estimates exclude the costs of land which averaged $11,750 per clinic. The normal square footage utilized per physician ranged from 1,125 to 1,500. This space included four exam rooms, business office, reception area, laboratory, and conference room.

Each physician in the survey was asked to provide an inventory of equipment found in each office of the practice. The list was then taken to medical equipment dealers to obtain price estimates (20). The cost of equipment in the solo practice, using the average prices obtained from the interviews, was $31,238. An X-Ray machine was not found in the typical solo practice. For the clinics with an X-ray machine, the average cost was $40,000.

For purposes of analysis operating costs were grouped into building, office, medical, and personnel categories. The major components of building operating costs are utilities, maintenance, janitorial services, and taxes. Based on the survey, the average annual expenses for such costs are presented in Table 5. Electricity and gas costs were found to be a function of the size of the clinic and averaged $0.74 and $0.17 per square foot, respectively. Office expenses are summmarized in Table 6. Office supplies are presented as a function of the number of office visits, whereas other expenses are presented on an annual basis.

Medical costs are categorized by medical equipment maintenance, medical supplies and malpractice insurance expenses (Table 7). Medical supplies, like office supplies, are based on the volume of office visits. Personnel were classified into two categories: other medical and support personnel. Personnel by job title and/or qualifications and the average and range of salaries found in the survey are summarized in Table 8. An examination of this table shows, for example, that the annual salary of the registered nurse averaged $13,139, ranging from

$10,314 to $16,800. In some categories, the number of observations was low; therefore, the resulting averages may appear large. For example, there was one receptionist bookkeeper making $11,760 per year. By comparison, this salary is higher than the LPN's. Years of experience, size of practice, and so forth are not reflected in the data in Table 8.

By adding the components of operating costs, a physician can estimate operating costs. For example, if a physician has 4,000 office visits, building costs are estimated at $7,773, office costs at $13,624, medical costs at $6,790, and personnel costs (LPN and receptionist/bookkeeper) at $24,599.50. Estimated total annual operating costs are $52,785.35.

TABLE 5. AVERAGE ANNUAL BUILDING OPERATING COSTS 1981

COST CATEGORY	ANNUAL COST PER UNIT	
	Dollars	
Electricity	0.74 per sq. ft.	
Gas	0.17 per sq. ft.	
Water	131.00 per year per physician	
Sewer	86.00 per year per physician	
Trash	150.00 per year per physician	
Maintenance	799.00 per year per physician	
Janitor	1968.00 per year per physician	
Taxes	1881.00 per year per physician*	
Insurance		
	Cost per $100 Value (Replacement Cost)	
Type of Building	Building	Contents
Concrete-Brick Veneer	1.293	1.076
Frame	1.66	1.45

*If actual millage rate is known, it should be applied to value of structure to determine tax payment per year. Source: [20].

TABLE 6

AVERAGE ANNUAL OFFICE OPERATING COSTS 1981

COST CATEGORY	ANNUAL COST PER PHYSICIAN
	Dollars
Telephone	2,297.00
Office Supplies	0.44 per office visit
Office Equipment	200.00
Billing	941.00
Retainer Fee*	1,086.00
Auto Expenses	4,800.00
Convention	1,825.00
Professional Dues	715.00

*Lawyer, Accountant, CPA, Practice Management Consultant, etc.
Source: [20].

TABLE 7

AVERAGE ANNUAL MEDICAL OPERATING COSTS 1981

COST CATEGORY	ANNUAL COST PER PHYSICIAN
	Dollars
Medical Equipment Maintenance	1,033.00
Medical Supplies	0.71 per office visit
Malpractice Insurance	2,917.00

Source: [20]

TABLE 8

ANNUAL LABOR COSTS PER MEDICAL AND SUPPORT PERSONNEL 1981

TYPE OF EMPLOYEE	AVERAGE ANNUAL SALARY	RANGE	
		LOW	HIGH
		Dollars	
Other Medical Personnel			
Medical Assistant	9,760	7,800	10,680
Licensed Practical Nurse	9,630	7,500	14,400
Registered Nurse	13,139	10,314	16,800
Laboratory Technician	14,493	10,260	19,800
X-Ray Technician	15,743	—	—
Support Personnel			
Receptionist	9,961	7,200	12,300
Bookkeeper	11,164	9,350	15,322
Receptionist/Bookkeeper	11,760	—	—
Medical Secretary	8,407	7,200	8,832
Insurance Clerk	8,160	—	—
	FRINGE BENEFITS		
15% of Total Salary			

Source: [20]

Extension Application of Clinic Budgets

To aid community leaders or physicians in the evaluation procedure, several easy-to-use forms have been developed. These forms allow local decisionmakers or physicians to complete their own analysis. They require users to provide local data and are quite easy to follow. Included in the calculations used on the forms are indexing methods to adjust for changing price levels.

Such forms were used in a study of Garber, a community of 1,200 people located in north central Oklahoma. A local civic organization wanted to explore the feasibility of recruiting another physician for their community because the resident physician was nearing retirement age. At the request of the local committee a study was completed (7).

Using local population estimates, the number of office visits the service area would generate was estimated at 10,807. It was then determined that the service area could generate enough calls to support 1.98 physicians. Considering the current physician's desires to reduce his practice, this indicated the community could support another physician.

The total revenue for the physician based on average, high, and low charge rates was then estimated. Capital equipment items were identified and building and equipment costs summarized. Operating costs were estimated and total annual costs as well as total costs and revenue data were summarized. Gross incomes for low, average, and high charge rates were determined. For an average rate schedule, gross income at 100 percent collections was found to be $113,378. Total annual capital and operating costs were projected at $70,416. Assuming a 100 percent collection rate, an estimate of net income is obtained by subtracting costs from revenue.

Our survey indicated that a 100 percent collection rate was unrealistic. Collection rates vary from community to community and by business practices, thus alternative gross revenue and net income estimates were presented. For example, at a 90 percent collection rate using the average rate schedule, a physician could expect gross revenue of $102,040 and net income of $31,624.

Data on the various forms was aimed primarily at physicians for evaluating a location or at community leaders considering building a clinic and renting it to a physician. For example, we were able to show that if the citizens of Garber built a clinic with 100 square feet on city land, did not equip it, and paid only taxes, insurance, and maintenance, annual costs would be $13,346. If they charged a low rent such as $250 per month as an inducement to attract a physician, they would be able to estimate the annual loss or subsidy to the physician.

Other Budget Studies

In addition to the clinic project discussed above, budget studies have been completed for emergency medical services (2), fire (12), water delivery systems (5), solid waste disposal (6), transportation systems for the elderly (19), wastewater collection and treatment (13), rental apartments (10), and mobile home park developments (11).

Impact Projection Studies

Projections are often made along with a budget analysis. As capital outlays are considered for community services, decisionmakers need projections of future growth such that sufficient capacity can be planned into the services. An excellent example of this would be a water system. Community leaders desire to build enough capacity into the system so that the capacity will not be exceeded before desired. In addition,

if there is a change in the economic base of the community, community leaders desire to measure the impact it will have on community services. Several models are used to address these questions. These range from a simple demographic model to a more sophisticated simulation model. Results of the simulation model will be briefly presented here (21).

The community simulation model has four main accounts: economic, capital, demographic, and governmental. The economic portion is the driving force of the model. It includes a community specific input-output model and gravity model. The gravity model determines the service area of a community. Location quotients are applied to a regional or state input-output model to derive a community specific input-output model. The community model is made dynamic by using equations which predict final demand over time.

A capital account allows for the simulation of capital investment effects on the economy. The demographic portion of the model is a typical birth, death, population projection model with migration as an equalizer to match people with available jobs in the economic sector. The government sector estimates the need for services based on community service usage coefficients.

The community simulation and impact model was applied to the community of Holdenville, Oklahoma. The model simulated values for economic and demographic variables by year from the base year of 1972 to 1991. Projections of employment for selected years were determined and many of the future jobs were expected in the service sectors of wholesale and retail trade, finance and insurance, and educational and professional services. Proprietor employment was projected to increase slightly. Population was projected by age and sex. Population was projected to increase from 8,756 in 1972 to 11,182 in 1990. The 1980 population was projected at 8,939. Preliminary 1980 census data show a population of 9,201.

The government component, which predicts service needs, is probably the most useful section of the model. Projected community service needs for the Holdenville area were determined. Hospital bed days were projected to increase from 16,508 in 1980 to 19,319 in 1990. These projections were based on estimated population by age, sex, and hospital utilization rates for each age and sex category. For each community service, detailed research has been completed to facilitate usage prediction based on local conditions. Annual estimates of general fund revenue available to Holdenville to support additional services and other local government functions were made from 1972 through 1991.

Expected plant or development activity can be simulated. For example, assume a new plant employing 50 workers will locate in Holdenville in 1982. The community simulation and impact model can compare estimates made with base year estimates to project the impact of the plant. The simulation model projects wage and salary employ-

ment to increase by 115 in 1982 and by 210 in 1990 due to the new plant. Likewise, physician visits are projected to increase due to the plant by 774 in 1982 and by 1,233 in 1990.

The community impact model allows decisionmakers to estimate the impact of a change on their community's economy, community services, and revenues. They can then project the useful life span of existing systems and anticipate design features for system constructions or renovations. This is one example of a model used to predict future community service needs. Other models are available. Extension personnel in the 80s will have to select the one which is most appropriate for the problem under consideration.

Other Community Service Extension Programs

Other questions often arise in conjunction with the budgets and projections of community service needs. As these have occurred, research and extension programs have been developed to meet these needs. Four programs discussed in this portion of the paper include:

1. Optimum(s) of emergency equipment
2. Probability of multiple emergency calls
3. Least cost service routes
4. Potential revenue associated with alternative rate structures

Optimum Location of Emergency Equipment

Questions frequently arise as to the best location(s) of emergency medical vehicles and fire stations. The location is critical if the best service is to be provided at least cost. To answer these questions, a transportation model is used (14; 15, pp. 126-133). An application of the model for Murray County Oklahoma is presented (3).

Since the local emergency medical service decisionmakers were interested in establishing a county system, the locations of vehicles were of critical concern. The transportation model was employed to select optimum locations. First, potential locations were selected.

Second, the demand areas had to be delineated. This was accomplished by following township lines within the county. This procedure resulted in 19 demand areas. Data on time from possible vehicle locations to demand areas were not available, thus mileage data were used. Road miles from each supply point to the center of each demand area were computed to determine the mileage matrix. The number of calls in each demand area was also needed. It was obtained from present operator's records.

The objective function considered is the minimization of the average distance an ambulance would have to travel to reach an emergency. The first and second choices for two, and three ambulance locations can then be presented. (Table 14). Associated with each of these locations is an average distance per call. For example, if two locations

are desired, the average response time is 1.74 miles for these locations. If a third location were added, the average response time drops to 1.37 miles. The decisionmakers can see how additional locations affect response time. The budgets then determine the costs. Decisionmakers must weigh the value of a reduction in response time versus increased costs.

Probability of Multiple Emergency Calls

In addition to the location of units, information on the number of units to staff at alternative time periods during the day is useful information. A queueing model was developed to address these questions (4). The model is applied to Murray County. The occurrence of an additional call while the crew(s) is (are) responding to another call is useful information to decisionmakers. Time periods during the day can be ranked according to the probability of multiple call via queueing and probability theory.

If one crew is on duty around the clock, on 42 occasions per year an emergency will come in and the crew will be busy. Probabilities are based on 1982 historical call patterns and do not include probabilities of catastrophies such as a large tornado or airplane crash.

Least Cost Service Routes

Requests have been received to analyze appropriate routes for solid waste trucks and school buses. A routing model has been utilized to help local decisionmakers facing this situation (14). In this paper a school system with 102 bus stops and 219 riders is used as an example. Each bus has a capacity of 48 children with one route per bus. Five buses would be required to transport the children from their homes to school and vice versa.

Stops were numbered and children to be picked up at each stop were indicated. In addition, a mileage matrix was specified which indicated the miles between each stop. The computer routing program selected five routes which would minimize miles traveled within capacity and time limit constraints.

A Utility Rate Structure Model

Revenue estimation is difficult when complex rate structures are involved as is true of water systems. A special computer program was developed to analyze how changes in rate structures affect revenues generated.

The program requires monthly data on the number of users and their consumption. Alternative rate structures can be analyzed. The computer calculates total revenues generated from these users by each rate structure alternative chosen assuming water use is not affected by price (9).

Decisionmakers from Ottawa County Rural Water District Number 2 in Northeastern Oklahoma requested assistance from Cooperative Extension in estimating revenues from various alternative rate structures. The district wanted revenues and costs associated with their system. District records provided the appropriate data for analysis. Computer outputs were generated for several rate structures. The district used this information to set new water rates.

Our Delivery Process

During 1981 and 1982, we have completed more than 200 individual community service studies. In 1983, it appears the number will surpass 125. This does not include the education programs and papers that we present to various groups such as at state conferences on solid waste and emergency medical service. Our delivery process is also critical to the program. Three elements of the process are worth noting.

One reason for success in the delivery of the research to decisionmakers is the team approach which has been adopted. For example, for each Emergency Medical Service (EMS) study, related state agency personnel are involved throughout the project. Working together for the Murray County Study were the area EMS coordinator representing the State Health Department, the State Highway Department EMS representative, the Cooperative Extension Service County Director, the Cooperative Extension Service Area Rural Development Specialist, and a State Extension Economist.

A second component of the delivery system which is important is the group presentation of the study and a written report which is handed out at the meeting. The cover page includes the names and phone numbers of all members of the team. It is very useful to local decisionmakers and if questions arise after the meeting, it serves as a quick reference. The reports also give visibility to Cooperative Extension and other involved agencies. Often, leaders in other communities with a similar problem see a study and call on the team for assistance.

The third component of the delivery system is the fact the budgets are computerized. This enables us to promptly handle the many requests received. In many cases, the team is not approached until there is a serious problem. Since the program is computerized, the goal of the team is to complete the study within four weeks of the request. In some emergency cases, the team has completed the study within a two week turnaround time. In addition to completing the study in a short time period, the computer can be taken to the field to complete additional analysis. Computer programs are interactive and easy to understand. Thus, it is quite easy to calculate alternative budgets.

Concluding Remarks

In a period when rural development is being evaluated by college administrators, state and national legislators, and other policymakers, it is imperative that we provide our constituents with the products for which they have real needs. The degree of support which can be generated by such "real need" oriented programs is evidenced by our receipt of a constituency which will strongly support us when needed. The need for this type of educational information will not cease. A recent ECOP report stated "Assistance in financial planning and budgeting is a serious need likely to remain over a long period." (16)

With more than 53,993 rural local governments (e.g., cities, townships, counties, schools, and special districts), our audience is extremely large (17). In addition there are more than 318,000 elected officials (e.g., mayors, councilors, and supervisors). Of these, 40 percent leave office after one term. Each time we work with a community, those leaders gain from the information and educational materials presented to them. They become more aware of the implications of alternatives and can more effectively use the community's limited resources to serve the residents. With the large number of local entities and paid and elected officials, as well as the turnover, there is a tremendous need to provide information and educational materials and thus serve the rural residents of our respective states and the nation.

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