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COMPUTERS AND SMALL LOCAL GOVERNMENTS:
A SURVEY OF COMPUTING IN THE PLAINS AND MOUNTAIN STATES

by
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Acknowledgements

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COMPUTERS AND SMALL LOCAL GOVERNMENTS:
A SURVEY OF COMPUTING IN THE PLAINS AND MOUNTAIN STATES

Introduction

In July, 1982 the Center for Applied Urban Research (CAUR) of the University of Nebraska at Omaha was awarded a grant from the W. K. Kellogg Foundation to develop and test a training and technical assistance program to help small and rural local governments acquire and use microcomputer technology. This effort contains two major parts: 1) demonstrations of prototype methods in one or more Nebraska local governments that they can use to acquire microcomputer systems, and 2) development of training programs, training materials, and a film on microcomputers for local government officials.

In order to ensure that the methods being demonstrated and the materials being developed are consistent with the needs of small and rural local governments, a committee was established consisting of representatives of national level local government organizations and local officials in Nebraska. The committee will provide advice and guidance throughout the project. In addition, a survey of computer use was conducted for a sample of local governments in the mountain and plains states.

The purpose of the survey was to produce current information on computer use and computing plans and needs of local governments in Nebraska and surrounding states. For

purposes of this survey, the local governments examined were defined as cities having populations under 50,000 and counties under 100,000.

A number of analyses of computers and local governments have been published in the last decade. These studies have dealt with such things as: factors affecting computer adoption by local governments, typically computerized governmental functions, issues surrounding computer acquisition, internal effects of computing on local governments, federal policies and activities affecting computing and local government, and others.[1] Almost all of these studies have focused on larger governmental jurisdictions--cities having populations over 50,000 and counties over 100,000.[2] Few, if any, of them have exclusively or primarily addressed computer use by smaller governments. None has had a sole or primary focus on local government use of small computers, particularly personal or microcomputers.[3]

In order to fill this gap in the literature and also to provide needed information for the demonstration projects and the training program and materials, CAUR undertook a survey of computers and data processing in 165 small local governments in the seven plains and mountain states of Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, and Wyoming.[4]

Methodology

Small cities and counties in the seven state area
were selected for inclusion in the study using a random-
stratified sampling procedure. Cities with populations of
2,500 to 50,000 were randomly selected in numbers propor-
tional to the total number of cities of that population
range in each state. Counties were selected similarly with
random selection from those counties with populations of
under 100,000. Thus, the sample of jurisdictions included
75 cities and 75 counties in numbers proportional to the
total number of places in each state.

In order to gain information on automation in small
pre-urban settlements, 15 additional cities were randomly
selected from all Nebraska municipalities with populations
of 800 to 2,500.[5] (See Table 1.)

The resulting sample included 90 cities and 75 counties
from the seven-state study area for a total of 165 govern-
mental units. A sample of this size is considered reliable
at the 90 percent confidence interval, with maximum
resulting error estimated at 10 percent (when yes/no
responses split evenly at 50/50 percent).

The questionnaire developed for the survey was designed
from a series of hypotheses formulated by the study team
in view of existing research on the topic area. (See
Appendix A for a copy of the questionnaire.)

The questionnaire was administered through telephone interviews conducted by trained CAUR personnel. Interviews lasted 15 minutes on the average and were conducted between February 14 and 25, 1983. Survey respondents included city managers or administrators in cities having those officers, and city clerks or their equivalent in others. In county governments, county clerks or their equivalent were identified as survey respondents. However, interviewers were instructed to speak to selected secondary respondents, e.g., data processing managers, finance directors, treasurers, or other officials in the event the initially selected respondent either was unavailable or directed the interviewer to the other official as a more knowledgeable respondent.

Responses to the survey questions were recorded, coded, and keypunched for computer analysis. Data analysis focused primarly on frequencies and cross-tabulations using the Statistical Package for the Social Sciences (SPSS) routines.

Analysis

Studies by Kenneth Kraemer and his associates in the mid-1970's indicated that over 90 percent of cities over 50,000 and counties over 100,000 used computers in their operations. Only 37 percent of cities with populations of

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10,000 to 50,000 and counties with 10,000 to 100,000 did so.[6]   These studies also found that as population declined so did the use of computers by local governments.

Computer Ownership

In an effort to determine the frequency of computer ownership and use among smaller local governments, survey respondents were asked whether their governments used computers in their activities.   Over half (53.3 percent or 88) of the communities said they did use computers. Conversely, 46.7 percent or 77 did not.   (See Table 2.) Although a majority of these governments reported using computers, clearly smaller local governments, especially those in the relatively sparsely populated mountain and plains states, still lagged behind their larger counterparts.   As population decreased so did the frequency of computer use.   Table 2 shows, for example, that 75.6 percent of governments with populations of 10,000 and over used computers while only 17.4 percent of those with populations under 2,500 did so.

These data showed some interesting changes from earlier studies in usage of computers in small governments.   In a nationwide survey conducted in 1975 by the ICMA, Kenneth Kraemer found that 37 percent of cities from 10,000 to 50,000 had computers.   This contrasted dramatically with findings here that showed 75.6 percent of governments of

the same size and 46.0 percent of those under 10,000 used computers. The passage of time and the introduction of new technology, especially minicomputers and desktop and microcomputers, have had a definite impact on the use of computers by small governments.

Computer ownership was also examined by various characteristics of the governments surveyed. The following statistically significant relationships are worth noting. More cities (67.7 percent) used computers than did counties (36.0 percent). More council/manager (91.4 percent) than mayor/council (52.7 percent) forms of city government used computers in their operations, and more metropolitan (68.6 percent) than nonmetropolitan (46.5 percent) governments use computers.[7] Though a few more governments in the three-state mountain region used computers than in the plains states, the differences between the two regions were not statistically significant. (See Table 2.)

Of the 88 communities that used computer systems, 86.3 percent or 76 had in-house computer systems, 10.2 percent or nine used service bureaus, and 3.4 percent or three had joint computer operations with other governmental units. (See Table 2.)

The 76 governments with in-house systems owned a total of 86 computers. Almost nine out of ten (89.5 percent or 68) owned one computer, 9.2 percent (seven) owned two, and one government owned four systems, all micros. (See Table 3.)

Of the 86 computer systems used by the 76 communities, the majority (59.3 percent or 51) were minicomputers. An additional 22.1 percent (19) were desktop or micro-computers, and 18.6 percent (16) were bookkeeping or accounting machines. None were mainframe computers. Almost one out of five of these systems--the 18.6 percent that were bookkeeping machines--represent a generation of computing technology that is considered antiquated. (See Table 4.) Conversely, a greater percentage, or 22.1 percent, were using current desktop or microcomputer technology.

These 86 systems were also evaluated according to whether they represented a manufacturer's current commer-cial computer system at the time of the survey. Here a slightly different picture emerged of the age of the tech-nology owned by the cities. Over half (54.7 percent or 47) were considered current models, 20.9 percent (18) were the immediately previous models, and 24.4 percent (21) were two or more models removed from what was the most current model on the market at the time of the survey. Thus, almost one in four of these models was either dated or represented antiquated technology.[8] (See Table 4.)

The vast majority 74.4 percent or 64) of the computers used by the sample governments had been owned for less than five years. Only 20.9 percent (18) had been owned for five

years or longer. A small number of governments (4.7 percent or four) did not know how long they had owned their computers. (See Table 4.)

When systems were categorized by computer manufacturer, the governments with in-house systems had acquired their systems primarily from the three largest computer manufacturers: IBM (26.7 percent or 23 systems), NCR (25.6 percent, 22 systems), and Burroughs (18.6 percent, 16 systems). These "big three" brands constituted 70.9 percent of the in-house systems owned. The remaining systems (29.1 percent or 25 computers) indicated rather varied computer purchasing habits by the surveyed communities, probably not unlike the purchasing habits of the broader society. Included in this group were systems from several manufacturers including Altos, Apple, Cado, Data General, DEC, Olivetti, Phillips, Radio Shack, Televideo, Texas Instruments, Wang, and others. (See Table 5.)

Summary

The data from these questions showed that a majority of small local governments in the plains and mountain states used computer technology. This finding represented a sizeable increase in reported use of computers by small governments over previous studies. The data also showed a decrease in computer use with decreases in population, a finding that is also consistent with earlier studies.

More local governments owned minicomputers than any other type, and almost as many owned antiquated bookkeeping machines as owned desktop or microcomputers. Most of the governments with in-house systems had owned a computer for four or fewer years.

Finally, these communities preferred to buy their computers from the larger, more well-known system vendors (IBM, NCR, and Burroughs), not unlike other organizations in American society such as businesses, public schools, and larger governments, but nearly three out of ten of the systems were made by other manufacturers.

Paying for Computer Systems

In addition to questions about type of computer ownership, the survey attempted to identify the primary methods of and funding sources for system acquisition. As Table 6 reveals, the vast majority (81.4 percent or 70) of the 76 governments with in-house computers owned their systems, and only 17.4 percent (15) leased or rented. Two of these 15 governments reported the ownership of one and the lease of a second system.

A majority of the communities (58.8 percent or 40 of the 68 responding to this question) acquired their computers using operating revenues, and 39.7 percent (27) used revenue sharing funds. Most governments (91.2 percent or 62) relied on one source of funding to acquire their com-

puters, and the remainder (8.8 percent or six) used two funding sources. (See Table 7.)

All 88 computer users (those with in-house systems and those using service bureaus or jointly owned systems) were asked what sources of funds were used to pay for day-to-day computer operations. The vast majority, (92.0 percent or 81) reported using their operating budgets while 5.7 percent (five) used revenue sharing funds, 1.1 percent (one) used grant funds, and 6.8 percent (six) used "other" funding sources. (See Table 7.) These figures are not additive as a government could cite as many sources of funding as were applicable.

Administration of Computers

Previously reported data have indicated that local government computer operations were most often administered within local finance departments. Separate data processing departments were the second most frequent location.[9] Among the 76 governments with in-house systems, the city or county clerk most frequently administered the system (43.4 percent or 33 cases) followed by a separate data processing department (21.1 percent or 16) of the communities). Administration of the computer systems occurred through the finance department in only 9.2 percent (seven) of the governments. (See Table 8.) In small governments, city and county clerks substantially perform financial manage-

ment related duties. Hence, administration of the computer
through their offices is not inconsistent with earlier
findings among larger governments.

Functional Areas Automated

When analyzed in terms of functions performed on both
in-house and other computer systems in these governments,
financial management activities clearly ranked first. (See
Table 9.) For example, 85.2 percent (75) of the 88 cities
and counties using computers of all kinds performed payroll
functions on their computer systems. This was followed, in
descending order, by accounting (80.7 percent or 71),
budgeting (72.7 percent or 64) , and utility billing (69.3
percent or 61). Thereafter, frequency of use in specific
functional areas fell below half the reporting governments
(e.g., tax assessment--40.2 percent or 35) and dropped to
only 16.1 percent (14 communities) listing voter registra-
tion.

Here again, these findings are consistent with earlier
studies of larger governments, suggesting that functional
uses of computers in local governments do not vary with
governmental size. However, both the likelihood of use of
computers and the extent of computerization appear to be
important areas of difference in computer use between large
and small local governments. Proportionately fewer small
and rural local governments use computers, and those that

do are not extensively computerized, but the patterns of computer administration and functional areas computerized do not appear to be substantially different from those of larger local governments.

Programming and Programmers

Acquisition of programming to perform various functions can often be a problem for local governments. This is partly because of the uniqueness of some local government functions and also because of the specialized nature of certain required programming, e.g., "fund" accounting.

In general, local governments have two options in acquiring computer programming: buy it from another party or create it in-house. Over three-fifths (60.5 percent or 46) of the governments with in-house computers acquired their programming from computer software or hardware organizations while 11.8 percent (nine) had programming written by in-house staff. (Contrast this with the 29 governments with staff programmers, and it suggests that programmers may do less original programming than system support and maintenance.)

Only a small number (6.6 percent or five) acquired their software from a business or industry, and only 2.6 percent (two) acquired programming from another governmental unit or agency. Another source was listed by 3.9 percent (three) of the governments, and 13.2 percent (10) cited more than one software source. (See Table 10.)

Computer systems are increasingly marketed to local governments as turn-key systems or those that are fully programmed. Contemporary computer technology is also sold as "user friendly"; that is, the equipment is said to be operated easily by existing governmental staff who have no specialized computer training. Of course, many (especially older) systems, either still on the market or actually installed in local governments, require programmers.

Of the 76 cities with in-house computers 38.2 percent (29) reported that they had computer programmers on their staffs. This means that nearly two out of five of these governments employed programmers. This appears to be a fairly high percentage considering the size of the surveyed governments and the fact that nearly three-quarters of the systems had been purchased within the past four years. Seventeen of these 29 governments had a single programmer, and 12 had two or more programmers. (See Table 10.)

Cost, Efficiency, and Accuracy

The 88 local governments that used computers were asked to respond to questions concerning the effects of their systems on the cost, efficiency, and accuracy of their operations. Taken together, the responses to these questions showed a highly favorable evaluation of the bene-fits of computer technology in local government. By large majorities, respondents felt that their computer systems

had reduced costs and improved efficiency and accuracy. (See Table 11.)

Seventy-seven governments responded to the question of whether their computer systems had affected cost. Over 70 percent (54) said their systems had proved to be money savers, 20.8 percent (16) said their systems had no significant influence on costs, and 9.1 percent (seven) said their computer systems had actually cost them more than previous methods of operation.

When asked how their computer systems had affected the efficiency of local government operations, 80 governments responded. Seven out of 10 (71.3 percent or 57 respondents) said their systems had enabled them to perform more work than with previous methods. Over 23 percent (19 of the local governments) said their computers had no noticeable effect on efficiency. Five percent (four respondents) felt that their systems had actually increased their workloads.

Eighty-one of the governments responded to a question regarding the effect of their computers on accuracy. Over 86 percent (70 of the governments) said improved accuracy had resulted from their computer systems while 11.1 percent (nine respondents) saw no effect on record keeping accuracy, and 2.5 percent (two governments) actually felt their computer systems decreased record keeping accuracy.

Satisfaction

In a related question, the respondents were asked to indicate their satisfaction or dissatisfaction with several elements of their computer systems. (See Table 12.) A substantial majority of respondents (over 70 percent) in all cases expressed satisfaction with their systems. The greatest levels of satisfaction were: 96.3 percent (78)--staff response to the system, 96.3 percent (78)--ease of use, 92.5 percent (74)--equipment/hardware, and 88.8 percent (71)--training of staff to use the system.

In fact, for only four system elements did as many as 10 percent of respondents indicate dissatisfaction. These were, in order of frequency, vendor service/support (18.2 percent dissatisfied), programming/software (16.5 percent), programmers (15.8 percent), and training of users (11.3 percent). These results are significant in that all these elements relate to the operation of systems, rather than the physical technology or attitudes of the users.

Respondents were also asked to describe their overall satisfaction with their computer systems. Of the 85 governments responding, 92.9 percent (79) were satisfied while only 7.1 percent (six) were dissatisfied. These data further confirmed the observation that the sample governments were highly positive toward their computer systems. (See Table 12.)

Problems with Computers

Persons close to the world of computers and local government often hear reports that "problems" with computer systems, including complete system failures, occur with relatively high frequency. In fact, so many "horror stories" exist about computing in local government that an observer sometimes wonders why a rational government official would contemplate acquiring a computer system. The study, therefore, sought to determine whether computer users had encountered problems with their data processing systems. If problems had been encountered, the local governments were asked to identify the nature of the problems and to indicate whether they had been solved. The data are presented in Table 13.

The principal problem identified by the 88 respondents was equipment/hardware failures. Nearly one-third (31.8 percent or 28) of the system users said they had encountered problems in this area. Of those 28, most (67.9 percent or 19) said the problems had been solved, and only 7.1 percent (two) said the problems were recurring.

The second most commonly identified problem area was programming/software failures. More than one-fourth (27.3 percent or 24) of the local governments said they had experienced problems in this area. Of these 24 governments 58.3 percent (14) said the problems had been solved, and 29.2 percent (seven) said the problems were recurring.

The third most commonly cited problem area was vendor service or support with 21.6 percent (19) of the local governments citing this problem. Interestingly, nearly half of these communities (47.4 percent or nine) said that this problem had not been resolved, and only 21 percent (four) said the problem had been solved.

Another complaint was that training to use the system was inadequate (13.6 percent or 12), and over half of this number (58.3 percent or seven) said that the problem had not been solved.

Two other problem areas were identified. Staff resistance was cited as a problem by 9.1 percent (eight), and half of these local governments felt that this was a recurring problem. The other problem identified was system complexity with 4.5 percent (four local governments) that felt their computer systems were too complex. Two of these four said that this problem had not been solved.

By and large, a significant minority of the governments experienced problems with their computer systems. Hardware, software, and vendor support problems in that order, were the three most frequently cited difficulties. This finding is highly consistent with the impression received when working with local government computer users in a technical assistance or consulting capacity: problems do occur in the world of local government computer use, and they occur frequently enough to cause notice to be taken.

Factors Affecting Acquisition and Non-Acquisition Decisions

A number of reasons were cited by local governments that affected their decisions to acquire computer systems. The 88 communities using computers were asked how important several such factors were in their decisions to computerize. (See Table 14.)

The greatest proportion of respondents (96.6 percent or 84) cited improved performance as the most important factor in their decisions to computerize. The next most frequently mentioned was cost savings, cited by 90.8 percent (79) of the respondents.

The other factors mentioned as important in decisions to computerize (in descending order of frequency) were: keeping up with modern technology (82.6 percent or 71), no other way to keep up with work (73.8 percent or 62), and reducing or avoiding hiring more personnel (64.3 percent or 54). The fact that a key management or elected official wanted a computer was not an important factor in these governments' decisions to automate. Here, 56.6 percent or 47 respondents said this was an unimportant factor, and in only 43.4 percent or 36 cases was it viewed as important.

Respondents were asked in a separate open-ended question to identify the most important reason they acquired computers. Several respondents provided more than one answer, suggesting that solitary factors seldom are

sufficient to move local governments in the direction of computer acquisition.

The responses to this question were coded according to whether they fit into one of several categories. By far the most frequently cited reason for acquiring computers was related to efficiency improvements (35.4 percent or 40 of the 113 responses). Other reasons cited (in descending order of frequency mentioned) were: cost (12.4 percent or 14), convenience (12.4 percent or 14), growth (11.5 percent or 13), technology (8.8 percent or 10), specific functional areas requiring automation (8.8 percent or 10), politics (7.1 percent or eight), and other (3.5 percent or four). (See Table 14.)

Governments that did not use computers in their operations were asked the importance of selected factors in their decisions not to use a system. (See Table 14.) The proportion of respondents who viewed any single consideration as important ranged from 37.3 to 86.7 percent. Five of the factors were considered important by the majority of non-users. Cost (86.7 percent) and satisfaction with current methods of operation (76.3 percent) were the two most frequently cited reasons for non-use. The other factors cited by a majority of respondents were that systems would require more personnel (56.9 percent), that the respondent had inadequate information to buy a system (53.3

percent), and that the government was too small to justify purchase (51.4 percent). Least frequently cited were difficulty of use (37.3 percent), too light a workload to justify use (39.7 percent), and the opposition of key people in the organization (40.0 percent).

Information Sources

Numerous sources of information about computers are available to local governments. These include computer vendors, consultants, professional organizations and publications, the popular news media, and many others. All survey respondents, including those with and without computer systems, were asked to identify the sources from which they received information about computers and also to rate the importance of these sources.

Computer vendors were cited most frequently as information sources by nearly two-thirds (63 percent or 104) of these governments. This was nearly twice the frequency of the next most frequently cited information source, the popular media. (See Table 15.)

Such a heavy reliance on vendor-provided information may have significant implications for these communities, particularly since vendors are also cited as the most important information source by the greatest number of communities (33.9 percent or 43). Vendors are in a highly competitive business. Their reward structure is based on

the sales of their hardware and software. As such, vendors can hardly be expected to provide unbiased information to prospective buyers. Consequently, communities that rely heavily on vendors for information about computers and automation are not likely to receive a complete and unbiased picture of available alternatives for local government automation.

After vendors, the next most frequently cited sources of information about computers, in descending order, were the popular media (32.1 percent or 53), staff people (30.3 percent or 50), consulting firms (23.6 percent or 39), and state municipal leagues and county associations (20.6 percent or 34). Other sources were relied upon less heavily. These included professional journals (14.5 percent or 24), professional associations (12.7 percent or 21), national local government organizations (10.3 percent or 17), universities and colleges (9.1 percent or 15), and extension agents (3.6 percent or six).

A substantially similar picture emerged when the respondents' ratings of the importance of various information sources were examined. The most frequently cited sources were also considered the most important. For example, computer vendors were viewed as the most important source of information by 33.9 percent (43) of the cities. This was followed, in order, by staff persons (14.2

percent or 18), consulting firms (9.4 percent or 12), the popular media (8.7 percent or 11), and other communities (7.9 percent or 10). All other choices were selected by fewer than 6 percent (10) of the respondents. Extension agents were selected by none of the respondents. (See Table 15.)

Vendor Contact

Whatever the future holds for local governments in terms of computer automation, vendors will play a considerable role. As shown earlier (Table 15), computer vendors were the most frequently cited and were also seen as the most important source of information about computers. This can be explained partially by the frequency with which vendors contacted these governments. (See Table 16.) More than two-thirds (67.3 percent or 111) of the governments surveyed had been contacted by computer vendors during the past year, and more than one-third (34.5 percent or 57) had been contacted four or more times. The average was 2.2 times. These results suggest a concerted marketing effort by computer vendors in the region.

Three vendors had contacted these local governments far more than the others. They were IBM, Burroughs, and NCR. (See Table 16.) This finding is especially interesting for, as shown in Table 5, IBM, Burroughs, and NCR were also the three vendors with the most installations in the seven states.

Information Search by System Users

The 88 governments with automated systems were asked whether they had sought information from specific sources during their search for a computer. (See Table 17.) Over half (52.3 percent or 46) had relied upon staff people, and 42.0 percent (37) sought help from data processing consultants. Staff people and data processing consultants were also the two sources considered most helpful by the governments responding to that question (41.7 percent and 38.3 percent, respectively).

The governments were also asked whether they called upon other local governments for assistance in their decisions to automate. A majority (58.5 percent or 48) of the 82 respondents to this question sought assistance from other local governments. However, a sizeable minority (41.5 percent or 34) did not. (See Table 18.) Most types of assistance provided by other local governments consisted of verbally transferred information and advice, and only a very few of the respondents reported more tangible assistance such as sharing software/hardware. (See Table 18.)

Length of Time for Information Search

The governments were asked to estimate the length of time that passed between the initiation of their information searches and their final decisions to purchase a

specific system. (See Table 19.) One year or less was spent on the process by 86.3 percent. Nearly two-thirds (61.6 percent) devoted nine months or less, and nearly half (49.3 percent) made their decisions in six months or less. Thus, most governments seemed to move rather rapidly through their active information searches toward decisions to acquire systems.

Future Plans

An important part of this survey sought to determine the respondents' plans for future computer use. Here, all 165 of the respondent local governments were asked about plans to acquire data processing equipment during the next two years.

Only 25.5 percent (42) of the total sample reported plans to acquire data processing equipment within the next two years. Conversely, 74.5 percent said they had no such plans. A total of 38 of the 42 governments that indicated plans to acquire computers responded to a follow-up question regarding the type of equipment they intended to buy. Slightly over one-third (36.8 percent or 14) said they planned to buy microcomputers, 10.5 percent (four) said both micros and other computer equipment, and 52.6 percent (20) said other computer equipment. (See Table 20.)

These figures do not suggest a rush to buy computers, either micros or other types of equipment. For example, only 10.9 percent of the total sample said they planned to buy either micros alone or micros and other computer equipment, and only 12.1 percent planned to buy other types of computer equipment.

These figures, however, compare favorably with a recent report in Infoworld quoting the president of Apple Corporation, John Sulley, who said, "Only 3 percent of homes [in the United States] have personal computers, and another 3 percent of the population use them in offices, and another 1 percent uses them in offices and homes--that's a total of 7 percent of the population of this country actually using personal computers in some form or another."[10] Although 7 percent of the population, according to this report, is directly acquainted with personal computers, only 4 percent uses them in offices. The figure of 10.9 percent of the small local governments in the mountain and plains states using personal computers, therefore, suggests that local governments do not necessarily lag behind other sectors of the economy in their use of personal computers.

The reported future rate of microcomputer adoption by 10.9 percent or 18 local governments in this survey, however, is significantly lower than the rate reported in a

recent survey by the International City Management Association. In that survey, 35.2 percent of the cities under 50,000 said they intended to acquire microcomputers within the next two years. However, the ICMA survey sampling technique was different from the technique used in this survey and may have resulted in a disproportionate number of respondents in that survey being favorable toward microcomputers.[11]

All respondent governments were also asked whether they thought local governments would make more use of computers and data processing in the next three to five years. Nearly all of them (94.5 percent or 154) felt there would be more use, and over half (54.0 percent) strongly agreed that this would be the case. Only 5.5 percent (nine governments) disagreed with this statement. (See Table 21.)

Respondents were also asked whether they felt that local governments would make more use of microcomputers in the next three to five years. Here again, the vast majority of surveyed governments agreed (85.8 percent or 133). Nearly one-third (29.7 percent or 46) strongly agreed, and only 14.1 percent (22 governments) disagreed. (See Table 21.)

Finally, respondents were asked (regardless of their current plans concerning computer acquisition) whether they

thought acquiring a microcomputer to assist in performing their local government functions would be a good idea. (See Table 21.) Not quite a majority (43.6 percent or 72) of the governments said yes, slightly over one fourth (29.7 percent or 49) said no, and an additional one-quarter (26.7 percent or 44) were unsure.

A follow-up question was asked the 18 local governments that said they intended to acquire microcomputers to determine which functions they planned to automate. (See Table 22.)

Budgeting was the most frequently mentioned function (61.1 percent or 11), followed by accounting, payroll, and police functions (50 percent or nine each). Other functions cited (in order of frequency) were inventory (44.4 percent or eight), utility billing (38.9 percent or seven), personnel (22.2 percent or four), tax assessment (22.2 percent or four), tax billing (22.2 percent or four), word processing (16.7 percent or three), voter registration (16.7 percent or three), and other (5.6 percent or one). Although the absolute numbers of responses were small, they provide a feel for functional areas planned for future automation on microcomputers.

To find that these governments plan to automate basic financial management functions such as accounting, budgeting, and payroll is not too surprising. This is

entirely consistent with previous research and with earlier findings in this study.[12] The fact that police functions are mentioned prominently for automation on microcomputers is not entirely surprising either. In this case, not only is the proposed automation consistent with findings from other studies, but it is also consistent with the notion that personal computer technology can provide an automated answer for departments of small local governments that suffer under heavy paperwork loads.

Summary of Findings

The following findings appear especially relevant to the broader project of which this survey was a part. These include:

1. A large market potential exists in the mid-plains for local government computer installation. Only about half the surveyed governments (53.3 percent) had computer systems, and one in four of these (24.4 percent) were dated or antiquated technology. However, this finding must be tempered by the fact that only one in four (25.5 percent) of the governments said they had plans to acquire computer technology within the next two years, and only 10.9 percent said they planned to acquire microcomputers.

2. The vast majority of computerized functions were and will continue to be typical governmental "housekeeping" activities, e.g., budgeting, payroll, and accounting.

3. Systems most frequently were located in city or county clerks' offices (43.4 percent) which is consistent with their use in financial management activities.

4. Three of the largest U.S. computer vendors (IBM, Burroughs, and NCR) accounted for a majority of the installed systems (70.9 percent), but the remaining systems suggest rather varied purchasing habits by local governments.

5. Most in-house systems were minicomputers (59.3 percent), and less than one in four were desktop or microcomputers (22.1 percent). Almost one in five (18.6 percent) were antiquated bookkeeping machines.

6. Local governments relied primarily on operating revenues for purchase of systems (58.8 percent) and for system operation (92.0 percent).

7. Even though a substantial minority of the governments reported problems with computer hardware (31.8 percent), software (27.3 percent), and vendor service and support (21.6 percent), their ratings

of the systems in terms of overall satisfaction (92.9 percent) and impacts on governmental cost (70.1 percent), accuracy (86.4 percent), and efficiency (71.3 percent) were highly positive.

8. Most governments cited two factors as extremely important in their decisions to acquire computers. These were improved performance (96.6 percent) and cost savings (90.8 percent). Other factors were also cited as important but not nearly as much so as these two.

9. Most of the governments (63 percent) relied on computer vendors as their principal sources of information about computers. They also felt that vendors were their most important sources of information. Others were the popular media (32.1 percent) and government staff (30.3). Universities and colleges (9.1 percent) and extension agents (3.6 percent) faired especially poorly as sources of information about computers.

10. The average government in the sample was contacted 2.2 times by computer vendors during the past year. More than a third had been contacted four or more times. This suggests a concerted marketing effort by computer vendors in this region.

11. Only two factors were listed by the non-owner
    governments in the sample as especially important
    to their decisions not to acquire computers. These
    were cost (86.7 percent) and satisfaction with
    current methods of operations (76.3 percent). Two
    factors were seen as unimportant to the decision
    not to acquire a system. These were difficulty
    using computers (62.7 percent) and light workload
    (60.3 percent).

12. Slightly over one-third of computer owners had
    programmers in their employ (38.2 percent) but only
    a small minority (11.8 percent) reported actually
    writing programs in-house. This suggests that
    "packaged" or "turn-key" systems should be of great
    interest to governments in this region.

FOOTNOTES

1. Among the many studies on this subject, the following
   are especially noteworthy: Kenneth L. Kraemer and John
   Leslie King (eds.), Computers in Local Government (New
   York: Praeger, 1977); Kenneth L. Kraemer and James L.
   Perry, Technological Innovation in American Local
   Governments: The Case of Computing (New York:
   Pergamon, 1979); and Kenneth L. Kraemer and James L.
   Perry, "The Federal Push to Bring Computer Applications
   to Local Governments," Public Administration Review
   (May/June, 1979). These are but three of numerous
   studies written by Kraemer and associates that are
   based partly or wholly on the EPRIS study in 1974-1975
   at the University of California, Irvine.
        Additional valuable sources include: Kent W.
   Colton (ed.), Police Computer Technology (Lexington,
   MA: Lexington Books, 1978); Ruth M. Davis, "Federal
   Interest in Computer Utilization by State and Local
   Governments," Bureaucrat (Fall, 1978); and Donald F.
   Norris and Vincent J. Webb, Urban Data Service Report:
   Microcomputers and City Governments," (Washington:
   International City Management Association, July 1983).

2. For example, the EPRIS study dealt with cities over
   50,000 and counties over 100,000.

3. The EPRIS study focused on mainframe computers.
   Indeed, at the time of that study, microcomputers
   were not available in the commercial marketplace. Two
   more recent studies have dealt with micros. They are
   the Norris and Webb, Urban Data Service Report, and
   Marcus D. Ingle, Noel Berge, and Marcia Teisan,
   Acquiring and Using Microcomputers in Agricultural
   Development: A Manager's Guide (Washington, D.C.:
   U.S.D.A., Office of International Cooperation and
   Development, April 1983).

4. Initially, local governments in Nebraska were to be
   surveyed. However, a sample of local governments in
   Nebraska and surrounding states that would provide a
   more representative picture of current computing and
   future computing needs than an analysis of local
   governments in one state was chosen.

5. The 800 population figure was selected because this is
   the lowest population for incorporation of a city in
   Nebraska.

6. According to Kraemer et al., 37 percent of cities from
   10,000 to 50,000 used computers in 1975.

7. Governments were considered metropolitan if they were located within a county classified as part of a Standard Metropolitan Statistical Area (SMSA) by the Census Bureau <u>or</u> if they were located in counties adjacent to SM<u>SA</u> counties. In this way, all cities and counties falling within the primary market area (or tributary area) of major urban centers were classified metropolitan. All other cities and counties were labeled nonmetropolitan.

8. Current technology was defined as a manufacturer's most recent commercially available system(s) at the time of the survey. As examples, these included: IBM System/34, Burroughs B90 and B900, and comparable minicomputers; and Apple II Plus and IBM Personal Computer, and comparable microcomputers. Dated systems included IBM System/32, Burroughs B80 and B800, and comparable systems. Antiquated systems included Burroughs L series equipment and comparable equipment.

9. Kraemer and King, <u>Computers and Local Government</u>, Vol. I, p. 34 and Vol. II, p. 35.

10. <u>Infoworld</u>. Interview with John Scully, July 18, 1983, p. 31.

11. Donald F. Norris and Vincent J. Webb, "Microcomputers and City Governments," <u>Urban Data Service Report</u> (Washington, DC: International City Management Association, July 1983). The authors believe that because this was an ICMA survey and a survey on micros, more city managers and more respondents with favorable attitudes toward computers completed and returned questionnaires. Note, too, that the ICMA survey dealt with city governments, and the survey reported in these pages included both cities and counties.

12. Previous research referred to includes that by Kraemer and his associates, Norris and Webb, and findings reported in Table 9 of this study.

APPENDICES

MID-CONTINENT LOCAL GOVERNMENT
COMPUTER AND DATA PROCESSING SURVEY
Center for Applied Urban Research
University of Nebraska at Omaha

INTRODUCTION: Good _____ , I am _____ of the Center for Applied Urban Research of the University of Nebraska at Omaha. I hope that you received our letter of February ____ telling you to expect my call.

As the letter indicated, we are conducting a survey of local government use of computers and data processing. Would you have a few minutes to answer some questions about computers and local governments. Your answers will be most helpful to our project.

1. Does your city/county currently use a computer or other form of automated data processing?
   ☐ No   **IF NO, go to Question 22**
   ☐ Yes   IF YES, Do you

   Check all that apply ⎰ ☐ have an in-house computer—**Go to Question 2**
   ⎱ ☐ jointly own a computer with another organization   ⎰ **Go to Question 7**
   ⎰ ☐ use a service bureau or other outside data processing organization   ⎱

QUESTIONS 2 THROUGH 6 ONLY IF AN IN-HOUSE COMPUTER.

2. Please describe your current in-house computer equipment or data processing equipment:

Make/ Model	Year Acquired	Does this system have a disk drive, a tape drive?	Does this system have any CRTs or video monitors? (how many?) Printers? (how many?)	Is this system owned, leased, or rented?
a. _____ _____	_____	disk _____ tape _____ _____	monitors (no.) _____ printers (no.) _____ _____	owned _____ leased _____ rented _____
b. _____ _____	_____	disk _____ tape _____ _____	monitors (no.) _____ printers (no.) _____ _____	owned _____ leased _____ rented _____
c. _____ _____	_____	disk _____ tape _____ _____	monitors (no.) _____ printers (no.) _____ _____	owned _____ leased _____ rented _____

(Continue on back, if necessary.)

3. If your current computer is owned, what source of funds did your city or county use to purchase it? (Do Not Read) (Check all that apply.)
   ☐ Operating budget
   ☐ Revenue sharing funds
   ☐ Grant funds (which grant—Federal or state and name: _____)
   ☐ Other (specify) _____

4. Who is administratively responsible for your in-house computer system? (Do Not Read)
   ☐ City or county manager or administrator
   ☐ City or county clerk
   ☐ Finance department
   ☐ Utility department
   ☐ Data processing department
   ☐ Other (specify) _____

5. Where did your city/county acquire the software or programming used on its in-house computer equipment? Was it... (Read All)

☐ Written for your city or county by programmers on your staff
☐ Acquired from a computer software or hardware organization
☐ Acquired from another governmental unit or agency
☐ Acquired from a business or industry
☐ Other (specify) _____

6. Does your city employ computer programmers for its computer system?

☐ Yes   How many? _____
☐ No

QUESTIONS 7 TO 31 IF AN IN-HOUSE COMPUTER, JOINTLY OWNED SYSTEM OR SERVICE BUREAU OR OTHER OUTSIDE AGENCY

7. Now I'm going to read you a list of governmental functions. Please tell me if they are automated on your system and whether they are fully or partially automated.

Fully	Partially	Function
☐	☐	Accounting
☐	☐	Budgeting
☐	☐	Payroll
☐	☐	Personnel
☐	☐	Utility billing
☐	☐	Tax assessment
☐	☐	Tax billing
☐	☐	Police
☐	☐	Other _____
☐	☐	Other _____
☐	☐	Other _____

7A. Do you have an automated word processing system?

☐ Yes
☐ No

7B. If yes to 7A, is it part of your computer system or a separate word processing system?

☐ Part of computer system
☐ Separate word processing system

8. How does your city/county pay for its day-to-day computer activities? (Do Not Read) (Check all that apply.)

☐ Operating budget
☐ Revenue sharing funds
☐ Grant funds (which grant _____)
☐ Other (specify) _____

9. Which of the following best describes the effect of your computer system on the costs of your local government operations?

☐ It has proven to be a money saver
☐ It has had no significant influence on cost
☐ It has actually cost more than previous operation
☐ Don't know/no answer

10. Which of the following best describes the effect or your computer system on the <u>efficiency</u> of your local government operations?
☐ It has enabled us to perform more work than with previous methods
☐ It has had no noticeable effect
☐ It has increased our workload
☐ Don't know/no answer

11. Which of the following best describes the effect of your computer system on the <u>accuracy</u> of record keeping in your local government operation?
☐ It has improved accuracy
☐ It has had no effect on accuracy
☐ It has caused a decrease in accuracy
☐ Don't know/no answer

12. Has your city/county encountered any of the following problems with your computer system?

	Yes	No	Has problem been solved?		
			Yes	No	Re-occurring
Equipment or hardware failures	☐	☐	☐	☐	☐
Programming or software failures	☐	☐	☐	☐	☐
Vendor service or support	☐	☐	☐	☐	☐
System is too complex	☐	☐	☐	☐	☐
Training to use the system not adequate	☐	☐	☐	☐	☐
Staff resistance to computerization	☐	☐	☐	☐	☐

13. I'm going to read a list of several elements of your computer system. Please indicate whether you are very satisfied, satisfied, dissatisfied or very dissatisfied with each.

	Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied
Equipment or hardware	☐	☐	☐	☐
Programming or software	☐	☐	☐	☐
Programmers	☐	☐	☐	☐
Vendor service and support	☐	☐	☐	☐
Ease of use	☐	☐	☐	☐
Training of staff to use the system	☐	☐	☐	☐
The way our staff has responded to the system	☐	☐	☐	☐

14. Overall, how satisfied are you with your computer system? Are you. . .
☐ Very satisfied
☐ Satisfied
☐ Dissatisfied
☐ Very dissatisfied

15. How important were the following factors to your city or county in deciding to use a computer system? Were they very important, somewhat important, not very important or unimportant?

	Very Important	Somewhat Important	Not Very Important	Unimportant
Cost savings	☐	☐	☐	☐
Improve performance	☐	☐	☐	☐
Reduce or avoid hiring more personnel	☐	☐	☐	☐
Keep up with modern technology	☐	☐	☐	☐
No other way to keep up with the work	☐	☐	☐	☐
Key management or elected official(s) wanted to get a computer	☐	☐	☐	☐

16. What was the most important reason that your city or county acquired its computer?

_____

_____

17. As far as you know, did your city or county acquire its computer system because it was (Read Both)
   ☐ required to do so by state government or state law
   ☐ required to do so by the federal government or federal law

17A. If yes to either in 17, probe. . .which law, agency or program required you to do so? Why?

_____

_____

_____

18. From the time your city or county began seriously to consider acquiring a computer system, how long did it take before a formal decision was made to acquire a system?   months

19. Which of the following persons or organizations did your city/county request assistance from in its search for a computer system? (Read All)
   ☐ Data processing consultant
   ☐ Other type of consultant
   ☐ Staff persons
   ☐ Local citizen "experts"
   ☐ Professional association or local government organization
   ☐ University or college
   ☐ Extension agent

20. Which of these persons or organizations used were most helpful? How?

_____

_____

_____

21. Did you call upon any other local governments for assistance or information in your decision to acquire a computer system?
   ☐ No
   ☐ Yes   IF YES, how were these other governments helpful? _____

   _____

   _____

22. Does your city/county plan to buy any data processing equipment during the next two (2) years?
   ☐ Yes   **IF YES, go to Question 23**
   ☐ No   **IF NO, go to Question 25**
   ☐ Don't know/unsure   **IF DON'T KNOW, go to Question 25**

23. If your city/county plans to acquire data processing equipment during the next two years, will this equipment include (check all that apply):

☐ personal or microcomputer (like an Apple, Radio-Shack or IBM Personal Computer)
   IF MICRO, go to Question 24

☐ other computer/automated data processing equipment (specify) _____
   IF OTHER, go to Question 25

_____

_____

☐ Don't know   **IF DON'T KNOW go to Question 25**

24. Which functions does your city/county plan to automate on the personal or microcomputer that it plans to acquire?

☐ Accounting
☐ Budgeting
☐ Payroll
☐ Personnel
☐ Utility billing
☐ Tax assessment
☐ Tax billing
☐ Police
☐ Word processing
☐ Other _____
☐ Other _____
☐ Other _____

25. Regardless of current plans, do you think it would be a good idea for your city/county to acquire one or more personal or microcomputers to assist in performing local governmental functions?

☐ Yes
☐ No
☐ Don't know/unsure

26. Do you agree or disagree with the following statement: "In the next three to five years, local governments like mine will make more use of computers and data processing, in general." Do you. . .

☐ Agree strongly
☐ Agree
☐ Disagree
☐ Disagree strongly

27. Do you agree or disagree with the following statement: "In the next three to five years, local governments like mine will begin to make more use of personal or microcomputers" (like an Apple, Radio-Shack, or IBM Personal Computer). Do you. . .

☐ Agree strongly
☐ Agree
☐ Disagree
☐ Disagree strongly

28. Where do you get your information about computers and data processing? Do you get it from. . .
    (Check all that apply.)

☐ People on your staff
☐ Computer vendors or salespersons
☐ State Municipal League or Association of Counties
☐ National local government organizations, e.g., ICMA, NLC, NACo, etc. (which ones _____)
☐ Professional associations (which ones _____)
☐ Professional journals or publications (which ones _____)
☐ Consulting firms
☐ University or college
☐ Extension agent
☐ Popular news media (radio, TV, newspapers, magazines)

29. Which of these sources is most important to you? _____

30. How many times have you been contacted by computer or data processing vendors or salespersons during the past
    12 months?   (Do Not Read)
    ☐ None
    ☐ Once
    ☐ Twice
    ☐ Three times
    ☐ More than three times

31. Which companies contacted you in the past year:
    Name   Number of contacts

    1. _____   _____

    2. _____   _____

    3. _____   _____

GO TO QUESTION 33 IF USES COMPUTER

QUESTION 32 ONLY IF CITY OR COUNTY DOES NOT USE A COMPUTER

32. **Your city/county does not use a computer in its operation.** Now I'm going to read you a list of factors.
    Please tell me whether they are very important, somewhat important, not very important, or unimportant in
    your city's/county's decision not to use a computer.

	Very Important	Somewhat Important	Not Very Important	Unimportant	NA
Computers are too costly	☐	☐	☐	☐	☐
Computers are too technical	☐	☐	☐	☐	☐
Computers are too difficult to use	☐	☐	☐	☐	☐
Computers require additional personnel to program and operate them	☐	☐	☐	☐	☐
One or more key people in city or county government is against computers and data processing	☐	☐	☐	☐	☐
We're too small to justify a computer	☐	☐	☐	☐	☐
We don't have enough work to justify a computer	☐	☐	☐	☐	☐
Current methods work well for us	☐	☐	☐	☐	☐
We don't know enough about computers to buy one	☐	☐	☐	☐	☐

QUESTIONS 33-37--ALL RESPONDENTS

33. How many full-time employees does your city/county employ? _____

34. What is your city's/county's operating budget for the current fiscal year? $ _____

35. How would you characterize your city's/county's finances? Are they. . .
    ☐ Very tight/have had severe program and personnel cuts
    ☐ Tight/have had to be careful but have had only a few program or personnel cuts
    ☐ Reasonably good/have had no program or personnel cuts
    ☐ Very good/have been able to expand certain programs and/or add personnel

36. How long have you been employed by your city/county? _____

37. Title _____

APPENDIX B

Tables

ERRATA

Errors have been discovered in the displays of data by population group in Table 1B "Characteristics of Respondent by State" and Table 1C "Characteristics of Respondent Governments, General" of *Computers and Small Local Governments: A Survey of Computing in the Plains and Mountain States.*

Please remove the Tables that appear in the original monograph and replace them with Tables that are attached hereto.

THE CORRECTIONS REFERENCED ON THIS ERRATA SHEET HAVE BEEN MADE TO THIS COPY OF THIS REPORT.

TABLE 1

SAMPLE CHARACTERISTICS

A. Sample as Proportion of Population for Each State

| | Cities (2,500 to 50,000 Population) | | | | | | Counties (< 100,000 Population) | | | |
| | Total in State | | Sub- sample* | | Total Sample* | | Total in State | | Total Sample | |
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Colorado	55	19.1	14	18.7	14	15.6	54	12.2	9	12.0
Kansas	95	33.0	25	33.3	25	27.8	101	22.7	17	22.7
Montana	27	9.4	7	9.3	7	7.8	55	12.4	9	12.0
Nebraska	49	17.0	13	17.3	28	31.1	93	20.9	16	21.3
North Dakota	16	5.6	4	5.3	4	4.4	53	11.9	9	12.0
South Dakota	23	8.0	6	8.0	6	6.7	65	14.6	11	14.7
Wyoming	23	8.0	6	8.0	6	6.7	23	5.2	4	5.3
	288	100.1	75	99.9	90	100.1	444	99.9	75	100.0

*Sub-sample does not include 15 Nebraska cities with populations of 800 to 2,499 while total sample includes these 15 cities.

TABLE 1 (Continued)

SAMPLE CHARACTERISTICS

B. Characteristics of Respondent Governments by State

	Total		Cities		Counties		Population Size 0 to 2,499		2,500 to 4,999		5,000 to 9,999		10,000+		Metro Reach Metro		Non-metro		Form of Government City Mayor		Manager		County	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Colorado	23	13.9	14	60.9	9	39.1	2	8.7	10	43.5	7	30.4	4	17.4	5	21.7	18	78.3	2	8.7	12	52.2	9	39.1
Kansas	42	25.5	25	59.5	17	40.5	0	0.0	17	40.5	12	28.6	13	31.0	14	33.3	28	66.7	11	26.2	14	33.3	17	40.5
Montana	16	9.7	7	43.8	9	56.3	1	6.3	6	37.5	5	31.3	4	25.0	5	31.3	11	68.8	6	37.5	1	6.3	9	56.3
Nebraska	44	26.7	28	63.6	16	36.4	17	38.6	7	15.9	12	27.3	8	18.2	16	36.4	28	63.6	21	47.7	7	15.9	16	36.4
North Dakota	13	7.9	4	30.8	9	69.2	1	7.7	7	53.9	2	14.3	3	23.1	3	23.1	10	76.9	4	30.8	0	0.0	9	69.2
South Dakota	17	10.3	6	35.3	11	64.7	2	11.8	7	41.2	4	25.0	4	23.5	2	11.8	15	88.2	6	35.3	0	0.0	11	64.7
Wyoming	10	6.1	6	60.0	4	40.0	0	0.0	3	30.0	2	20.0	5	50.0	6	60.0	4	40.0	5	50.0	1	10.0	4	40.0
	165	100.1	90	54.5	75	45.5	23	13.9	57	34.5	44	26.7	41	24.8	51	30.9	114	69.1	55	33.3	35	21.2	75	45.5
Plains	116	70.3	63	54.3	53	45.7	20	17.2	38	32.8	30	25.9	28	24.1	35	30.2	81	69.8	42	36.2	21	18.1	53	45.7
Mountain	49	29.7	27	55.1	22	44.9	3	6.1	19	38.8	14	28.6	13	26.5	16	32.7	33	67.3	13	26.5	14	28.6	22	44.9
	165	100.0	90	—	75	—	23	—	57	—	44	—	41	—	51	—	114	—	55	—	35	—	75	—

ERRATA: Due to errors in the original Table 1B, this replacement Table is provided and should be included as page 44 of the monograph *Computers and Small Local Governments: A Survey of Computing in the Plains and Mountain States.*

TABLE 1 (Continued)

SAMPLE CHARACTERISTICS

C. Characteristics of Respondent Governments, General

	Number	Percent
City or County		
City	90	54.5
County	75	45.5
	165	100.0
Population		
Under 2,500	23	13.9
2,500-4,999	57	34.5
5,000-9,999	44	26.7
10,000 and over	41	24.8
	165	100.0
Metropolitan or Non-metropolitan		
Metropolitan	51	30.9
Non-metropolitan	114	69.1
	165	100.0
Form of Government		
Mayor-Council	55	33.3
Council-Manager	35	21.2
County	75	45.5
	165	100.0
Geographic Region		
Plains	116	70.3
Mountain	49	29.7
	165	100.0

ERRATA: Due to errors in the original Table 1C, this replacement Table is provided and should be included as page 45 of the monograph *Computers and Small Local Governments: A Survey of Computing in the Plains and Mountain States.*

TABLE 2

USE OF COMPUTERS

A. Computer Use of All Respondents

	Number	Percent
Yes	88	53.3
No	77	46.7
Total	165	100.0

B. Computer User Characteristics

	(N)	Number	Percent of N
City-County:			
City	(90)	61	67.7
County	(75)	27	36.0
Population:			
Under 2,500	(23)	4	17.4
2,500-4,999	(57)	29	50.9
5,000-9,999	(44)	24	54.5
10,000 and over	(41)	31	75.6
Metropolitan or Non-metropolitan:			
Metropolitan	(51)	35	68.6
Non-metropolitan	(114)	53	46.5
Form of Government:			
Mayor-Council	(55)	29	52.7
Council-Manager	(35)	32	91.4
County	(75)	27	36.0
Geographic Region:			
Plains	(116)	58	50.0
Mountain	(49)	30	61.2

C. Type of Computer Used

	Number	Percent
In-house computer	76	86.3
Joint use	3	3.4
Service bureau	9	10.2
Total	88	100.0

TABLE 3

NUMBER OF COMPUTER SYSTEMS PER GOVERNMENT

Number of In-house Computers	Number of Governments	Percent of Governments
1	68	89.5
2	7	9.2
3	0	0.0
4	1	1.3

TABLE 4

TYPE OF IN-HOUSE COMPUTERS

A. Type of Computer Used

	Number	Percent
Minicomputer	51	59.3
Desktop or microcomputer	19	22.1
Bookkeeping machine	16	18.6
Total	86	100.0

B. Model in Use

	Number	Percent
Current model	47	54.7
Previous model	18	20.9
Dated or antiquated model	21	24.4
Total	86	100.0

C. Years System Owned

	Number	Percent
2 years and under	34	39.5
3-4 years	30	34.9
5 years and over	18	20.9
Don't know	4	4.7
Total	86	100.0

TABLE 5

BRAND OF COMPUTER OWNED

Manufacturer	Number	Percent	
IBM	23	26.7	⎫
NCR	22	25.6	⎬ 70.9
Burroughs	16	18.6	⎭
Others	25	29.1	
Total	86	100.0	

TABLE 6

OWN, LEASE, OR RENT IN-HOUSE SYSTEM

	Number	Percent
Owned	70	81.4
Leased or rented	15	17.4
Don't know	1	1.2
Total	86	100.0

TABLE 7

FUNDING FOR SYSTEMS

A. Source of Funds to Acquire In-house Computer (N=68)

	Number	Percent*
Operating budget	40	58.8
Revenue sharing funds	27	39.7
Grant funds	1	1.5
Other	6	8.8

*Responses are not additive as each potential respondent (N=68) could answer in all applicable categories.

B. Number of Funding Sources Used to Purchase In-house Computer

Number of Sources Used	Governments
No Answer	8
1	62
2	6

C. Source of Funds for Computer Systems Operation (N=88)

	Number	Percent*
Operating budget	81	92.0
Revenue sharing funds	5	5.7
Grant funds	1	1.1
Other	6	6.8

*Responses are not additive as each potential respondent (N=88) could answer all applicable categories.

TABLE 8

ADMINISTRATION OF COMPUTER SYSTEM

Administrator in Charge	Number	Percent
City or county clerk	33	43.4
Data processing department	16	21.1
Finance department	7	9.2
City manager	5	6.6
Utility department	4	5.3
More than one	1	1.3
Other	9	11.8
No answer	1	1.3
Total	76	100.0

TABLE 9

FUNCTIONS CURRENTLY AUTOMATED
(N=88)

Functions	Number	Percent*
Accounting	71	80.7
Payroll	75	85.2
Budgeting	64	72.7
Utility billing	61	69.3
Tax assessment	35	40.2
Tax billing	32	36.8
Personnel	31	35.6
Police	21	24.1
Inventory	15	17.2
Voter registration	14	16.1
Other	3	3.4

*Responses are not additive as each potential respondent (N=88) could check each applicable category.

TABLE 10

PROGRAMS AND PROGRAMMERS
FOR IN-HOUSE COMPUTERS
(N=76)

A. Source of Programs

	Number	Percent*
Computer hardware or software organization	46	60.5
Written in-house	9	11.8
Business or industry	5	6.6
Another government	2	2.6
Other	3	3.9
More than one	10	13.2
No answer	1	1.3

*Responses are not additive as each potential respondent (N=76) could
select each applicable category.

B. Employ Computer Programmers

	Number	Percent
Yes	29	38.2
No	47	61.8
Total	76	100.0

C. Number of Programmers Employed

	Number	Percent (of 29)
One programmer	17	58.6
2, 3, or 4 programmers	12	41.4
Total	29	100.0

TABLE 11

PERCEPTIONS OF EFFECTS OF COMPUTERS

	Number	Percent
Effect on Costs		
Money saver	54	70.1
No influence	16	20.8
Cost more money	7	9.1
Total	77	100.0
Effect on Efficiency		
Perform more work	57	71.3
No effect	19	23.8
Increased workload	4	5.0
Total	80	100.1
Effect on Accuracy		
Improved accuracy	70	86.4
No effect	9	11.1
Decrease in accuracy	2	2.5
Total	81	100.0

TABLE 12

SATISFACTION WITH SYSTEM

A. Satisfaction with Elements of Computer System

| Elements | (N) | Satisfied | | Dissatisfied | | Rank by |
		Number	Percent	Number	Percent	Satisfaction
Ease of use	81	78	96.3	3	3.7	1
Staff response to system	81	78	96.3	3	3.7	1
Equipment/hardware	80	74	92.5	6	7.5	2
Training of users	80	71	88.8	9	11.3	3
Programmers	76	64	84.2	12	15.8	4
Programming/software	79	66	83.5	13	16.5	5
Vendor service/support	77	63	81.8	14	18.2	6

B. Overall Satisfaction

	Number	Percent*
Satisfied	79	92.9
Dissatisfied	6	7.1
Total	85	100.0

*Three respondents who used computer systems did not answer this question.

TABLE 13

PROBLEMS ENCOUNTERED BY COMPUTER USERS

| Problem Areas | Problems Encountered? (N=88) | | Problem Solved? | | | | Problem Recurring? | |
	Number	Percent*	Yes	Percent	No	Percent	Number	Percent
Equipment or hardware	28	31.8	19	67.9	2	7.1	9	32.1
Programming or software	24	27.3	14	58.3	7	29.2	8	33.3
Vendor service or support	19	21.6	4	21.1	9	47.4	11	57.8
Training to use system	12	13.6	4	33.3	7	58.3	6	50.0
System complexity	4	4.5	2	50.0	2	50.0	1	25.0
Staff resistance	8	9.1	2	25.0	4	50.0	5	62.5

*Responses are not additive as each potential respondent (N=88) could check each applicable category.

TABLE 14

FACTORS AFFECTING DECISIONS TO ACQUIRE OR NOT TO ACQUIRE
COMPUTER SYSTEM

A. Factors Affecting Decision to Acquire a Computer

Factors	(N)	Important		Unimportant	
		Number	Percent	Number	Percent
Improve performance	(87)	84	96.6	3	3.5
Cost savings	(87)	79	90.8	8	9.2
Keep up with modern technology	(86)	71	82.6	15	17.4
No other way to keep up with work	(84)	62	73.8	22	26.2
Reduce or avoid hiring more personnel	(84)	54	64.3	30	35.7
Key management or elected official wanted a computer	(83)	36	43.4	47	56.6

B. Reasons Cited as Most Important to Acquisition

Reasons	Number*	Percent
Efficiency	40	35.4
Convenience	14	12.4
Cost	14	12.4
Growth	13	11.5
Technology	10	8.8
Functional area	10	8.8
Politics	8	7.1
Other	4	3.5
Total	113	99.9

*The N of 113 is the total number of responses offered by the 88 governments that
used computer systems.

C. Factors Affecting Decision Not to Acquire a Computer

Factors	(N)	Important		Not Important	
		Number	Percent	Number	Percent
Too costly	(75)	65	86.7	10	13.3
Too technical	(74)	34	45.9	40	54.1
Too difficult to use	(75)	28	37.3	47	62.7
Require more personnel	(72)	41	56.9	31	43.1
Key person against use	(60)	24	40.0	36	60.0
Too small to justify	(74)	38	51.4	36	48.6
Not enough work to justify	(73)	29	39.7	44	60.3
Current methods work well	(76)	58	76.3	18	23.7
Don't know enough to buy	(75)	40	53.3	35	46.7

TABLE 15

SOURCES OF INFORMATION ABOUT COMPUTERS

A. Sources of Information (N=165).

	Number	Percent*
Vendors	104	63.0
Popular media	53	32.1
Staff	50	30.3
Consultant firms	39	23.6
State municipal leagues/associations of counties	34	20.6
Professional journals	24	14.5
Professional organizations	21	12.7
National local government organizations	17	10.3
Universities/colleges	15	9.1
Extension agents	6	3.6

*Each respondent could cite as many sources as were applicable. Hence, total responses equal more than 165, and percentages are calculated for each column as a percent of 165.

B. Most Important Source (N=127)

	Number	Percent*
Vendors	43	33.9
Staff	18	14.2
Consultant firms	12	9.4
Popular media	11	8.7
Other communities	10	7.9
Universities/colleges	7	5.5
State municipal leagues/associations of counties	5	3.9
Professional journals	3	2.4
Professional organizations	3	2.4
National local government organizations	2	1.6
Extension agent	0	0.0
More than one source	9	7.1
Other	4	3.1
Total	127	100.0

*Each respondent could cite only one most important source. Only 127 of the 165 respondents gave an answer to this question.

TABLE 16

VENDOR CONTACTS WITH GOVERNMENTS

A. Frequency of Vendor Contacts in Past Year (N=165)

	Number	Percent
Zero	54	32.7
Once	15 ⎫	9.1 ⎫
Twice	26 ⎬ 111	15.8 ⎬ 67.3
Three times	13 ⎭	7.9 ⎭
Four or more times	57	34.5
	165	100.0

B. Vendor Companies Making Contact in Past Year

	Number	Percent of Vendors Named (N=156)	Percent of Total Responses (N=243)
IBM	47	30.1	19.3
Burroughs	33	21.2	13.6
NCR	21	13.5	8.6
Apple	6	3.8	2.5
Monroe	4	2.6	1.6
Hewlett Packard	3	1.9	1.2
Wang	3	1.9	1.2
Computer Store	2	1.3	0.8
Datapoint	2	1.3	0.8
OEM	2	1.3	0.8
Olivetti	2	1.3	0.8
Victor	2	1.3	0.8
Xerox	2	1.3	0.8
A. B. Dick	1	0.6	0.4
Basic IV	1	0.6	0.4
Cado	1	0.6	0.4
Data General	1	0.6	0.4
Engineering firm	1	0.6	0.4
Radio Shack	1	0.6	0.4
Software	1	0.6	0.4
Sperry	1	0.6	0.4
Texas Instruments	1	0.6	0.4
Other	18	11.5	7.4
	156	99.7	63.8
Don't recall name	87	—	35.8
	243		99.6

[Average Number of Vendor Contacts Per Governments Contacted = 2.2]

TABLE 17

INFORMATION SOUGHT BY SYSTEM USERS

Source	From whom was information requested? N=88*			Who was most helpful? N=60		
	Number	Percent	Rank	Number	Percent	Rank
Staff person	46	52.3	1	25	41.7	1
DP consultant	37	42.0	2	23	38.3	2
Local citizen "expert"	14	15.9	3	3	5.0	4
Other consultant	9	10.2	4	4	6.7	3
University	4	4.5	4	2	3.3	5
Professional oraganization	3	3.4	6	0	—	—
Extension agent	0	0.0	7	0	—	—
More than one	N.A.	N.A.	N.A.	3	5.0	4

*Respondents could cite each of the information sources, so the number column totals to more than 88 cases.

TABLE 18

ASSISTANCE FROM OTHER GOVERNMENTS

A. Assistance Sought From Other Governments

	Number	Percent
Yes	48	58.5
No	34	41.5
Total	82	100.0

B. Type of Assistance Provided by Other Governments

	Number	Percent	Rank
Shared information, experience, advice	15	31.3	1
Shared vendor/equipment information	7	14.6	2
Observed computers in action	6	12.5	3
Bought/shared/copied software/hardware	5	10.4	4
Comparisons made with similar users	3	6.3	5
Other	3	6.3	5
No help provided	4	8.3	—
No answer	5	10.4	—
	48	100.1	

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TABLE 19

TIME LAG BETWEEN START
OF SEARCH AND FORMAL DECISION
TO ACQUIRE A SYSTEM
(N=73)

Months	Number	Percent			
1-3	16	21.9	49.3	61.6	86.3
4-6	20	27.4			
7-9	9	12.3			
10-12	18	24.7			
> 12	10	13.7			
Total	73	100.0			

TABLE 20

PLANS TO PURCHASE EQUIPMENT DURING NEXT TWO YEARS

	Plan to Purchase		Type of Equipment				
Response	Number	Percent	Type	Number	Percent Answering		Percent of Sample
Yes	42	25.5	Micro	14	36.8 } 47.3		8.5 } 10.9
No	88	53.3	Micro and other	4	10.5		2.4
Don't know	35	21.2	Not a micro	20	52.6		12.1
Total	165	100.0		38	100.0		23.0
			No answer	4	—		
			Total	42			

TABLE 21

ATTITUDES TOWARD FUTURE USE OF COMPUTERS

A. Increasing local government use of computers in next 3 to 5 years.			B. Increasing local government use of microcomputers in next 3 to 5 years.		
	Number	Percent		Number	Percent
Agree strongly	88 ⎱ 154	54.0 ⎱ 94.5		46 ⎱ 133	29.7 ⎱ 85.8
Agree	66 ⎰	40.5 ⎰		87 ⎰	56.1 ⎰
Disagree	6	3.7		21	13.5
Strongly disagree	3	1.8		1	0.6
	163	100.0		155	99.9
No answer	2	—		10	—
Total	165			165	

C. Favor Purchase of microcomputer

	For All Responses		For Yes/No Responses Only	
	Number	Percent	Number	Percent
Yes	72	43.6	72	59.5
No	49	29.7	49	40.5
Unsure	44	26.7	—	—
Total	165	100.0	121	100.0

TABLE 22

FUTURE FUNCTIONS TO BE PERFORMED ON MICROS
(N=18)

Functions	Number	Percent[*]
Budgeting	11	61.1
Accounting	9	50.0
Payroll	9	50.0
Police	9	50.0
Inventory	8	44.4
Utility billing	7	38.9
Tax assessment	4	22.2
Tax billing	4	22.2
Personnel	4	22.2
Word processing	3	16.7
Voter registration	3	16.7
Other	1	5.6

*Responses are not additive as each potential respondent (N=18) could check each applicable category.