A STRATEGIC MANAGEMENT INFORMATION SYSTEM INVOLVING STATISTICAL CENSUS PROFILES

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CHAPTER I

INTRODUCTION

The use of public funds imposes a fundamental requirement for accountability upon educational institutions including those of a vocational education nature. But as general education needs expand, so do vocational education's needs enlarge, as do the funding requirements of other worthy social programs. Since all such programs are financed essentially from the same sources, the competition among different programs for the same dollar is likely to increase markedly. In such an environment of constrained resources, choices will have to be made on some rational basis. If vocational education is to command the support it needs in these circumstances, it must continue to demonstrate its case clearly and objectively. Justification of budget requests, therefore, will have to focus not only on the growing numbers of vocational students being served but, more importantly, on the increased quality of effectiveness of vocational educational programs.

To be truly effective, vocational administrators must have at their disposal solid and relevant information. The need for a management information system (MIS) for administrative decisions and planning purposes in vocational education is continually receiving greater recognition. It is needed not only at the level of individual training centers, but by state planning agencies, state supervisory boards, and

legislatures, for analysis of current status and past performance and for the forecasting and planning of future needs.

A management information system can be defined[1] as that combination of men, machines, and methods which supports management in the collection, classification, storage, and retrieval of data needed for managing. It serves as the link between the planning and controlling functions of management and the day to day operating procedures.

In this study a component management information system will be developed that will serve as a tool in the administrative planning and controlling function for vocational education in the state of Oklahoma. Since the 1968 Vocational Education Amendments, there have been many national institutes and workshops held to assist State Departments of Vocational and Technical Education in helping plan programs at the local and state levels. But local planning is perhaps one of the most difficult problems facing vocational planners and administrators. Regardless of the planning model, there are basically two needs. The first need is related to manpower and the second need is related to population characteristics. Obtaining and defining population characteristics data for the state, region, or the nation is not a difficult process, but tabulating student characteristics according to individual school districts presents a very complex problem. It has been found that computation of manpower needs is difficult regardless of area. Therefore, if vocational and technical education planning is to be effective and if local institutions are to satisfactorily implement programs in cooperation with the State Department of Vocational and

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[1]Stanford Optner, A Systems Analysis for Business and Industrial Problem Solving (New York, 1965), p. 28.

Technical Education, then it is necessary to have a system which provides meaningful management information to the local institutions as well as the higher echelons.

Statement of the Problem

Planning is generally done with respect to a problem or a set of problems sometimes in response to the problem, other times in the hopes of identifying a specified situation before it reaches unmanageable levels. The problem at this time is that a management information system has not categorized the data in a usable form for planning at the local level. Presently, the Oklahoma State Department of Vocational and Technical Education does not have the means to provide assistance and valid data to local educational institutions in assisting them to plan programs.

Objectives of the Study

In order to accomplish the primary purpose of this study the following objectives were formulated:

1. To develop a management information system featuring school district characteristics for educational planning purposes.
2. To develop a process for the computing of individual school district profiles for every school district in the state of Oklahoma.
3. To project census enumeration districts data into local school district boundries.
4. To develop formulas projecting census enumeration data to school districts.

Purpose of the Study

The purpose of this study is to develop a management information system that will provide data for planning within local school districts. Geographic units comprising school districts will be defined in terms of prorated census enumeration districts which will give the Oklahoma State Department of Vocational and Technical Education the capability of providing to local institutions and the public aggregated data relative to individual school districts.

Need for the Study

Simply stated, the intention of the proposed management information system is to supply the different levels of state education administration with information that is needed to make program decisions. The Vocational and Technical Education Amendments of 1968 indicate that there should be more planning at the local as well as the state level. If the Oklahoma state education agencies are to assist local schools, they must provide data on an individual school district basis relative to the characteristics of the population of that school district. With a management information system that conveys the characteristics of the individual school district, the Oklahoma State Department of Vocational and Technical Education can provide the training, the guidelines, and the assistance to local education agencies in order that they might better plan their own programs of vocational and technical education.

Although OTIS (Occupational Training Information System) is recognized nationally as a very efficient system supplying training information, more data is needed for strategic planning. At the state level, there is a lack of information for effective communication with

vocational education administrators at the local level. Planning, prediction, and coordination at the state level relative to individual school districts depend considerably upon observation and sounding boards. It appears in this case that a management information system is required that will remove doubt about population data and present information which is so reliable that vocational administrators at all levels will depend upon it for planning purposes. If the State Department of Vocational and Technical Education is to charge local education agencies with planning programs, then it must provide these institutions with the necessary information needed to do effective planning.

Limitations of the Study

The limitation of this study lies in the 1970 census which was conducted through self enumeration. A census questionnaire was delivered by United States postal carriers to every household in the state of Oklahoma several days before Census Day, April 1, 1970. Incomplete and nonresponse cases were followed up by enumerators. Three types of questionnaires were used throughout Oklahoma. Eighty percent of the households answered a form containing a limited number of population and housing questions and the remainder, split into fifteen percent and five percent samples, answered forms which contained these questions as well as a number of additional questions. A random procedure was used to determine which of the three different forms any particular household answered. Therefore, the reliability of the data base used in the proposed management information system will depend entirely upon the census data collected and compiled by the United States Census Bureau.

Also, there is a slight possibility of error occurring when the enumeration districts are interfaced with the school districts. Proration will be according to population per square mile and conducted mainly in rural areas.

Consideration must also be given to the chance for human error, although precision tools will be used where possible.

Assumptions of the Study

The assumptions of this study are as follows:

1. It is assumed that the 1970 census count is a reliable data base and that classification of characteristics according to enumeration districts is correct.
2. It is assumed that the State Department of Transportation has correct and reliable information relative to individual school districts.
3. It is assumed that coordinates of census enumeration districts and school districts are representative.

Definitions of the Terms

These definitions are according to the United States Census Bureau, the Oklahoma State Department of Transportation, and Management Glossary by Johannsen, Robertson, and Breck.

Census Data. Population characteristics within enumeration districts.

Census Tape. Readable summary tape illustrating various population characteristics.

Computer Graphics. A combination of graphic art and computer methods.

Coordinates. Any of the magnitudes which define the position of a point by reference to a fixed figure.

Counts. Readable summary tapes containing various qualities of data from various geographic areas.

Enumeration Districts. Represent community areas which have been defined in recent decades by the Census Bureau. Enumeration districts have relatively permanent boundaries which follow physical features or the limits of incorporated places.

Independent School Districts. The transportation area for the movement of secondary students to separate and distinct high schools stipulated by county law.

Interfacing. A surface regarded as the common boundary of two bodies or spaces.

Management Information System. That combination of men, machines, and methods which supports administrators in the collection, classification, storage, and retrieval of data needed for decision making.

Summary Tapes. Readable computer tapes containing geographic census data.

CHAPTER II

LITERATURE REVIEW

Introduction

During the past five to ten years a good deal of attention has been given to the elements of the management process, that is, planning, organizing, delegating, coordinating, and communicating, with emphasis on the importance of developing well thought out organizational objectives and goals. It appears that the business world is now convinced of the need for planning, both in the short and long run, and is attempting to answer the question of "What is the most effective approach to planning?" To date, the topic of planning, especially long-range planning, has not been as popular in education circles, but it has still managed to surface and educational administrators are also seeking a design for effective planning.

One fact is evident: that is, for education or business to do an effective and efficient job of planning, they must have available to them a vast amount of information. Information, which is both internal and external, controls the activity of any organization and is the primary basis for decision making. Information is a major resource of the organization. The cost of developing and maintaining information is great; however, when costs are compared to potential value, the importance of the proper management of this resource becomes apparent To collect, store, update, delete, and distribute the available mass

of information is indeed one of administration's toughest jobs. To accomplish this task, many business organizations and a few educational institutions have developed computerized management information systems (MIS). Presently, the majority of organizations are generating great volumes of internal data ranging from general management policy, through research and development processes, to day-to-day operating functions. However, in reviewing recent business publications and educational research journals, it is found that both education and business are experimenting with the ability of management information systems to undertake the vitally important task of predicting or forecasting based on external sources. Several management information models have been developed which can fairly accurately take into account the external forces of government, technology, economics, competition, and social aspects, although few have been developed and implemented in education.

The following is a review of management information systems--how they have developed, categories of management information, and the assembling of information for packaging.

The nature of the subject dictates that the review be broad and general. No two organizations have identical management information systems. Historically, each function of a business or educational institution has built its own management information system in response to its particular needs and limited objectives. Therefore, this review will present a general synthesis of management information systems.

The Systems Approach

During World War II, the organization of technological efforts in a coordinated fashion to accomplish specific results was recognized as a new approach. The system concept had really developed over a period of many years, but was pinpointed as an efficient management tool before computers began to come into their own. The introduction of the computer as a management tool is relatively new. Vannevor Bush marked the starting point for the development of mechanized information storage and retrieval systems with his article, "As We May Think," published in the Atlantic Monthly in the later forties.[1] The real business application of the computer and the systems technique occurred in the mid-1950's, as it became obvious that computers could produce substantial cost savings in areas where large volumes of repetitive paperwork were required. The first computer jobs were generally justified purely on the economic grounds of reducing clerical work which included such functions as payroll processing, shipping documents, and many other high volume operations. But within the last few years, administrators in industry, education, and government have recognized the need for more information and have provided the impetus to combine computer systems with information requirements to result in computer information systems.[2] To examine the concepts and practices of the systems approach, it is first necessary to recognize the different categories of management information.

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[1] Encyclopedia Americana, XV (New York, 1969), p. 161.

[2] Warren Haynes and Joseph Massie, Management (New Jersey, 1969), p. 48.

Management Information Categories

In order to understand the contribution of the management information system to the management process, it is useful to distinguish three distinct categories which are interfaced in the management process. Several categories of management information systems were pioneered by Robert Anthony[3] and John Green[4] and have been further developed by management specialists. These categories are: (1) strategic planning information, (2) tactical planning, and (3) operational control. Although related to one another, they have different purposes.

Operational control is concerned with regulating the day-to-day activities and includes, for instance, such functions as purchase accounting, personnel rosters, equipment inventories, and financial accounting. Operational control is characterized by routine, clearly defined decision alternatives and standards and often, the processing of large volumes of data due to increased efficiency in cutting cost. "In fact, most of the development of data processing and MIS to date has been in the operational control phase."[5]

Planners are concerned with general operational data because the development of a management information system usually forms an integrated part of the organization's day-to-day activities. From the planner's point of view, the existence of a complex operational control

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[3]Robert N. Anthony, Planning and Control Systems: A Framework for Analysis (Boston, 1965), p. 128.

[4]John F. Green, "Management Information Systems and Corporate Planning," Long Range Planning, II (June, 1970), p. 77.

[5]Ibid., p. 76.

system makes it reasonable to seriously consider the possibility of implementing a computerized system.

Tactical planning and control has the function of designing the decision processes in operational control which is a type of planning and control that requires information that is usually internal to the organization. At this level, the design of the tactical phase is not restricted to functional boundaries (e.g. personnel, inventories, finance), but is condensed into a closed loop whereby the information system can control administrative elements and feed out information for other management functions at an overall level of maximum cost effectiveness.

An effective management information system should be able to contribute to the needs of the tactical planner. For instance, John F. Green states,

> It is one of the functions of tactical planning to imply forecasting and change. Although there is still a noticeable element of control (i.e. the measurement and adjustment of previous performance) it is not as pronounced and there is very much more freedom to change objectives.[6]

Strategic planning relates to the administrative functions of deciding on long-range plans and objectives, management control and evaluating progress.[7] This type of planning depends almost entirely upon information external to the organization. For this reason, it is understandable that the contributions of an information system based on operational and tactical data to the strategic planning phase are currently trivial.

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[6]John F. Green, p. 76.

[7]John Dearden, Can Management Information Be Automated? (Homewood, Illinois, 1965), p. 524.

The biggest aid to strategic management information systems is functional models. The models can greatly assist management in evaluating both internal and external information as stated by John Green: "Organizations are developing computer models to test the outcome of alternative strategies in order to evaluate opportunities."[8]

The quotations above are hierarchical in their ranking and contain elements of information which are structured to form the workable base of the information system. The workable base provides information to middle and top administrators. Therefore, secondary level administrators can derive operating and control information; upper level administration can secure information to assist in decision making and policy planning. If a typical organization is viewed as having the three basic functional areas of management, an information grid like that depicted in Figure 1[9] can be formed.

Robert Murdick and Joel Ross view this categorical breakdown of administrative responsibility as:

> ...a continuum of tasks based upon their ability to defy definition. At one extreme are well-defined tasks such as computing a standard deviation or creating a pay check, for which each step in the process can be clearly specified and detailed. Each element of such tasks is capable of being reduced to a series of written instructions. At the other extreme, we find ill-defined tasks such as painting an artistic picture or performing as manager which defy definition. Most administrative tasks fit somewhere between the two extremes. In general, the better the task is defined the more easily it is routinized or automated.[10]

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[8]John F. Green, p. 78.

[9]This grid is similar to the one used by John F. Green, "Management Information Systems and Corporate Planning," Long Range Planning, II (June, 1970), p. 75.

[10]Robert G. Murdick and Joel E. Ross, Information Systems for Modern Management (New Jersey, 1971), p. 112.

PHASE	TYPE OF DECISION	INFORMATION REQUIRED	RISK	PLANNING VERSUS CONTROL	TIME SCALE	PERFORMANCE MEASUREMENT	ADMINISTRATORS' RESPONSE
STRATEGIC PLANNING	Highly Unstructured; No contraints	Environmental; Unpredictable; Often unquantified	High and uncertain	Planning dominant	Leisurely decision cycle; perhaps 5-10 years	Difficult to measure because of long timescale	The board and top administrators
TACTICAL PLANNING (AND CONTROL)	Familiar types of decisions; Wide clearly defined constraints	Highly abstracted; Internal; Sometimes predictable	Can be high; Sometimes quantifiable	Planning and control	Generally 1-5 years	Measurable after careful analysis	Top and middle administrators
OPERATIONAL CONTROL	Highly structured repetitive decisions; Narrow constraints	Detailed and clearly defined	Generally low	Control dominant	Monthly, weekly, even daily	Well established against standards	Middle and junior administrators

Figure 1. Management Information Grid

The information spectrum covered by Murdick and Ross relates directly to Green's and Anthony's information categories. Operational information usually is well defined. Strategic planning information is ill defined; and tactical planning information falls somewhere between the extremes.

Knowing the different information categories, it is now necessary to define the purpose of a management information system.

The Purpose of a Management Information System

The management process may be examined from several perspectives. Whatever the definition of management, it always involves the evaluation and communication of information. Information is necessary to formulate objectives and policy and a guide on which different levels of administration may rely for decision making. However, this is over simplified for the purpose of this review. First of all, what is information? Kast and Rosenzweig define information as

> ...a word which means many things to many people. In the context of planning and decision making, it implies additional knowledge relevant to the particular decision problem in question.[11]

Derman and Johnson relate that operational decisions are communicated by passing information to those with delegated authority and responsibility for performance. According to Derman and Johnson, information

> ...represents data to which the need to satisfy a requirement has been added. In other words, information consists of data combined with direction. In contrast to data, information pertinent to the understanding of a situation or to forming the basis for action is active and has limited useful life expectancy. In the business communications

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[11]Fremount E. Kast and James E. Rosenzweig, Organization and Management (New York, 1970), p. 353.

> hierarchy there is intelligence resulting from the analysis of organized information that provides the decision maker with a preferred course of action after having evaluated available alternatives.[12]

Therefore, to analyze workable base data a responsible tool is needed such as the MIS to convert this data into information. Supposedly this tool (MIS) can furnish relevant data in useful form to the right person, at the right time, for use in administrative decision making.

Simply stated, the functional purpose of a MIS is to supply the different levels of management mentioned previously with the information that they need to make decisions. Administration needs this valuable resource information to make intelligent decisions relating to the operation and the environment of the organization. The large amount of information involved in organizational operations necessitates a well-planned management information system.

Oharson G. Beged-Dov describes the general goals of a well designed MIS as:

1. Provide each level and position of management with all the information that can be used in the conduct of each manager's job.
2. Filter the information so that each level and position of management actually receives only the information it can and must act on.
3. Provide information to the manager only when action is possible and appropriate.
4. Provide information that is up to date in a form that is easily understood and digested by the manager.[13]

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[12]Irwin H. Dermon and Robert L. Johnson, "How Intelligent Is Your MIS?" Business Horizons, XIII (February, 1970), pp. 53-56.

[13]Oharon G. Beged-Dov, "An Overview of Management Science and Information Systems," Management Science, XVII (June, 1971), p. 634.

The previously stated goals should constitute the basic foundation of any management information system that is to be responsive to management's information needs.

Management information systems can now make available a level of information never before dreamed of. This means not just more information faster, but pre-selected information from which meaningless data have been culled.

There is a growing realization that MIS can contribute to the functions of planning, including long-range planning, especially in the field of education. The present use of MIS in education has been generally restricted to short-range statistical forecasting. However, there appears to be an increasing interest by education planning departments, especially on the state level, in using the attributes of the MIS for technical long-range planning. Many budgeting, planning, and management information systems concepts have been introduced to administrators and planners in recent years through publications sponsored by the Educational Resources Information Center.

Information Storage and Usage

As has been emphasized, data are transformed into information when an administrator is fully conscious of meaning associated with that data. To put the above statement in an administrative or a planning perspective, it may be said that information is "data in use." This concept is important to remember in the design of a MIS because data must be delivered to decision makers as information to be acted on. The problem with most so-called information systems is that they are treated as data systems rather than information systems.

To perform the task of providing useful data, there needs to be established some type of data base to store information. Each information system requires some type of data bank for collection of information. The data bank must be structured upon the type of information which it is to carry, as well as the output which is desired. The data bank may contain a capability to edit, sort, or perform computations including statistics based upon the data which it extracts from its storage or file. The system designed to input the data, as well as to utilize it for administrative purposes, will shape the data bank. The data base is the heart of the system.[14] From this statement one may deduct that the success of a management information system depends on the approach taken to structuring the data base. There are various viewpoints as to how this should be done. A few approaches will be outlined here.

The information elements in the data base must be structured into a workable information base. This structuring is the key to system operation.

The data base can be contained in either sequential or random access storage devices.[15] Management information systems based on sequential storage devices are limited by physical storage area. If it is necessary to retrieve a record at the end of a magnetic tape, the complete tape must be read, thereby requiring considerable time to retrieve information. Also, systems employing magnetic tape files are limited in speed of data base updating by the physical form of the

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[14]Norman L. Enger, Putting MIS to Work (New York, 1969), p. 40.

[15]Ibid., p. 43.

magnetic tape. A random structured data base does not require sequential searching for information retrieval. Requested information can be directly accessed without reading forward information. Magnetic drum, magnetic disk, and magnetic strip devices are employed for random access equipment.

List structures differ from sequential and random structures in that pointers are used to separate physical relationships of records. A pointer relates the location of the next logical record. A data base organization in which the records contain pointers to other records with logical relationships is termed a "simple list structure."[16]

The form of the structure chosen for the data base depends on the objectives of the system. When a system is constructed, the designer must select a data base structure which will permit ease of file maintenance, speed of file searching, and efficiency of information retrieval.

Once the data base is structured there is a need to classify available data. There have been numerous attempts to classify information in a data base, but no set theory of classification is accepted. One approach is to classify all available data into strategical, tactical or operational information. This type of classification would be according to data usage, that is whether it is intended for day-to-day operational usage, for control, or for planning.

Operating data such as personnel records, inventory and financial records are essentially used by lower level management. Control data such as summaries and recaps are generally functionally for middle

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[16]Norman L. Enger, p. 43.

management and the same would be true for strategies planning information which is available for long-range planning by the upper hierarchy.

Another approach is to view the data base in terms of information which is historical in nature and that which pertains to the future. Most data produced by today's system has to do with describing events and activities that took place in the past, and sometimes comparing present circumstances with these past occurrences.[17]

In reviewing the management needs of education, it is found that there is another type of information of more value and interest than comparisons. For long-range planning, education has an invested interest in this type of data. It is information that is predictive in nature and augments the school administrator's judgment about future developments.

A systems designer would certainly find a high correlation between information needed to aid administration in making strategic decisions and predictive information.

When a designer reaches the realm of using predictive information for strategic decision making, the complexness of the system is certainly extended as Robert Head states,

> Here one becomes involved in a wide array of techniques and methodologies for exploiting the information in the data base, ranging from simple extrapolation to the employment of complex models with the capability of manipulating numerous variables.[18]

Certain analyses of the future can be made by using information generated internally. But to make accurate and meaningful predictions

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[17]Robert V. Head, "Structuring the Data Base," Journal of Systems Management, XXII (April, 1970), pp. 9-15.

[18]Ibid.

and projections, it is usually necessary to secure some environmental information.

It should be pointed out that for predictive purposes and strategic planning, the data base can be composed completely of environmental data or captured and stored in the data base on a continually recurring basis. For example, census data and other descriptive information might be procured to assist in making administrative determinations.

It should be pointed out that the common data base does not constitute a total information system. A common data base includes information which is used by functioning systems and that can be stored and maintained centrally. Certainly there is a need for more information by administrators and planners, particularly strategic planners.

Strategic planning and management is much different than the other levels (operational and tactical) in that it is not concerned with the detailed present operation of the organization.

There are those in administrative positions who view strategic planning as "forecasting." This is a false assumption as the future is impossible to mastermind. Peter F. Drucker states that human beings can neither correctly predict nor control the future. Drucker continues to emphasize his point by stating:

> If anyone still suffers from the delusion that the ability to forecast beyond the shortest time span is given to us, let him look at the headlines in yesterday's paper and then ask himself which of them he could have possibly have predicted ten years ago.[19]

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[19]Peter F. Drucker, "Long Range Planning: Challenge to Management Science," Management Science, V (April, 1959), p. 307.

Therefore, the trend in long-range planning today tends toward the making of plans based on an attempt to find the most probable course of events or range of possibilities.

Viewing the course of action as a goal, strategic planning may be defined as a creative, imaginative, casting out environmentally-oriented procedure recognizing only the widest constraints.[20]

A strategic planning system deals with future projection, both in education and business, and must be based on compiled information which indicates a probable course. Long-range planning systems are recent endeavors of management to develop an insight into possible future occurrences. Many organizations now have formal systems for strategic planning.

Strategic planning systems do not lessen the importance and role of administrative ability, courage, experience and intuition. On the contrary, the systematic organization of the planning job and the supply of knowledge to it should make for more effective administrators.

Models

Simple and complex problems of the practical world can be solved if key features are concentrated on instead of every detail. This approximation or abstraction of reality, which may be constructed in various forms, is called a model.[21]

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[20]John F. Green, p. 77.

[21]Robert G. Murdick and Joel E. Ross, p. 378.

Many forms of models have been developed in recent years. Generally, models may be used to define or describe something such as a MIS; to assist with analysis of a system; to specify relationships and processes; or to present a situation in symbolic terms that may be manipulated to derive predictions within a range of possibilities. This last purpose, to provide a prediction system that can be manipulated to aid administrators in decision making, is perhaps the most important attribute of models.

Simulation models together with modern day computers provide the best balance of operating characteristics to achieve many different kinds of objectives. Two very important benefits that are closely related but distinctly listed in Robert Murdick's and Joel Ross' book are:

1. Models present economy in representation and inquiry. It is cheaper to represent a factory layout or an MIS visually in a diagram than to construct either one.

2. Models permit us to analyze and experiment with complex situations to a degree that would be impossible by constructing the actual system.[22]

But the final test of the value of a model according to George Steiner, is "whether it can yield predictions with sufficient precision to answer the problems raised."[23]

Model building, though still much in its formative state, especially in education management information systems, has been developed to the point where relatively reliable predictions can be made. One of

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[22]Robert G. Murdick and Joel E. Ross, p. 378.

[23]George A. Steiner, Top Management Planning (London, 1971), p. 487.

the key steps in developing usable information is the fabrication of models which enable successful prediction. A tremendous amount of imagination and insight is needed for the creation of new models and the mere creation of a model is not enough; the model must survive exacting tests; it must meet the pragmatic criterion, and it must work. It is important to keep in mind that models can neither create plans nor make decisions. Models merely provide information to aid in these processes.

Progress toward predictive conclusions is based on a constant interplay between model and data. Sometimes there is a tremendous amount of observational data available but no satisfactory model. At other times there are elaborate models but little adequate data.

Model building in education more or less centers around administrative management information systems which entail collection and maintenance of data for all facets of school activities. Coleman and Karweit describe the functions of the education model considered necessary to accomplish the administrator's objectives as:

> The models and data bases maintained by the various districts today are pupil centered and are very similar. There are six major areas included in pupil personnel data systems which include scheduling, attendance, grading, testing, career and college counseling, and master file maintenance. Maintenance procedures differ according to the availability of types of data processing equipment.[24]

The framework offered by Coleman and Karweit corresponds directly with the description given by Fox when he related the state of models in Florida schools in a paper for the Florida Educational Research and

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[24]James C. Coleman and Nancy L. Karweit, Information Systems and Performance Measures in Schools (New Jersey, 1972), p. 11.

Development Council. Fox described the function of models in education as a tool for:

> ...assessing, controlling, and tabulating grade reports, students records, scheduling, testing services, attendance reporting, and miscellaneous services and administrative application which include personnel records, payroll, and financial reporting.[25]

In reviewing the Educational Information System Design, by Blackwell and Rosenthal, it was found that a similar view was taken toward the use of a data base and models in education. Blackwell and Rosenthal describe the application as:

> A multiplicity of alternative confronts the administrator who considers combining a model and data base. The complexity of such a system can range from simple manual records, (grading, testing, attendance, etc.) to sophisticated automated systems for complex decision and planning functions.[26]

Generally, the literature assesses functional educational models in terms of various task dimensions rather than for decision making. For example, the Florida Information System is viewed in terms of automating state records, general reports, and enrollment projections; the Iowa Educational Informational Center in terms of services offered school districts; and the California Educational Information System in terms of decentralizing and coordinating service functions offered by regional agencies. Some authors such as L. H. Evans perceive educational information needs to center around educational institutions for:

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[25]James H. Fox, Review and Synthesis of Research on Management Systems for Vocational and Technical Education (Columbus, Ohio, 1971), p. 155.

[26]F. W. Blackwell and A. H. Rosenthal, Educational Information System Design (Santa Monica, California, 1971), p. 81.

> ...policy management as it relates to strategic planning decision sets and data needs for information that relate to first order decision processes.[27]

Regardless of the use of the management information system in business or education, some form of conceptualization in terms of a model and model development must occur. Management information system models are conditional abstractions of designated functions. They are conditional in the sense that they are functionally related to their real world utility. Whether the model is dealing with operational, tactical, or strategic information, it should define a systems boundary of reality and through its representation of that reality supply information related to the model builder's needs.

The impetus for a model may originate in a variety of ways. Management objectives or priorities may indicate the need for improved formal systems. Long range organizational goals or competitive influences may establish the need. Regardless of how the idea of the model originated, a great deal of effort and variety of skills must be deployed in a coordinated manner before a usable model is produced. O'Brien specifies the nature of models by stating:

> The development of the model is a very powerful instrument in problem definition. Although this stage is fairly pragmatic it demands decisions, because without decision on content, the flow chart or model cannot be developed.[28]

The model is the key method for representing a system so that it can be analyzed and evaluated. O'Brien continues to describe the application of models by stating that there are:

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[27]L. H. Evans, "The Challenge of Automation of Education," American Behavioral Scientist, VI (July, 1962) p. 59.

[28]James J. O'Brien, Management Information Systems (New York, 1970), p. 71.

> ...two basic methods of portraying the systems model: block diagrams and mathematical models. Block diagrams are iconographic models which are pictorial representations describing the system and its functional relationships. The other type, the mathematical model is often utilized subsequent to development of the block diagram or flow chart.[29]

As models become broader they also generally become more sophisticated in that more decision processes are included within the system. These added complexities, size and sophistication, cause development programs that are difficult to manage. Therefore, the first step in developing a model for a management information system is recognition of the various steps involved in the total cycle. With an understanding of the model building process, each activity within the construction phase can be given proper consideration.

Summary

The systems required by various types of organizations will certainly differ in form and content; the specific capabilities of an educational system will be different in most cases from a manufacturing system. Even within a single institution, comparable organizations will devise different systems to meet their unique management philosophies and objectives.

As noted previously, a basic principle underlying the concept of a management information system in all organizations is the treatment of information as a basic resource of the organization. A given element of data will be summarized and transformed into many types of measures and statistics which can be employed for many purposes at various times. A

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[29]James J. O'Brien, p. 71.

management information system strives to collect every fact of interest related to a particular need in an accurate, efficient manner. The system may then be used to provide comprehensive and meaningful information for day-to-day operational decisions or for long-range strategic planning.

The design of the management system must be concerned with functions that are advantageous to the organization and must preclude protentially dangerous effects such as rigidity, imperfect models, and incomplete comprehensive computer programs. One of the major functions of the system, especially in education, is to promote rather than to discourage the human capabilities of judgment and decision making. A management information system, whether in education or business, should facilitate the recognition, evaluation, and implementation of new policies and procedures.

In conclusion, the author has attempted to give the reader a general overview of the past, present, and future applications of management information systems to strategic management. Presently, it is the responsibility of strategic management or state level administrators to make decisions concerning the long-range goals of the organization. While in the past administrators at all levels have used informal systems of evaluating important information, educational and business administrators are now advising the use of computerized management information systems to aid in the decision-making task. The idea of using predictive models to forecast dozens of years into the future is just now having an effect on strategic management. There appears to be no question that the stated subject is certainly one which is relevant to future administrators in both education and business management.

CHAPTER III

METHODOLOGY

Introduction

A solid management information system program must be predicated on knowing the dimensions of the system as early as possible. It is unacceptable to permit the system's key characteristics to emerge as more and more work is done on putting the system together.

Therefore, it is a definite benefit to those involved in constructing a management information system not to begin the foundation until a step-by-step procedure has been outlined. This serves two purposes. First, it helps to relate a clear expression of concepts. Second, ideas committed on paper can be understood, evaluated, and reviewed by administrative personnel.

In an effort to describe the development style of management systems, five steps have been isolated.[1] These steps are in general terms so that they may fit a variety of situations encountered but are specific enough to allow effective planning and control. Hopefully, within each step the activities may occur in several sequences but must be completed during that step in the development of any management information system. The five steps that will be used in the development

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[1]Don Q. Matthews, The Design of the Management Information System, (New York, 1971), p. 193.

of the stated MIS are synthesis, analysis, design and documentation, implementation, and maintenance.

Synthesis

In reviewing the objectives of this study, it is seen that the purpose of the proposed paper is to develop a management information system which features a profile of the 456 independent school districts in the state of Oklahoma. At present, the Oklahoma State Department of Vocational and Technical Education is involved in educational supervision, coordination, research, and planning without a sufficient information base to document many of their decisions at the local level. The Oklahoma State Department of Vocational and Technical Education has relied on general observation and trends in decision making relative to individual school districts.

Therefore, the resources for the development of a solid individual school district data base are within the grasp of the Oklahoma State Department of Vocational and Technical Education, but to date have not been synchronized into a functional system. The resources involve the 456 independent school district maps which are on file at the State Department of Transportation, Capitol Building, Oklahoma City. The 1970 Census Summary tapes are composed of the 616 enumeration districts. The Bureau of Census releases the census tabulation in counts. There are six census counts which include detailed characteristics of Oklahoma population. The 1970 census tapes are on file at the Computer Center, Oklahoma State University.

The above stated resources are the major elements upon which the foundation of the proposed management information system will be

constructed. The data needed for developing a school district profile are present in six summary tape counts consisting of seventy-two population characteristics. Specifications will be developed to interface the 616 enumeration districts which contain population characteristics with the 456 independent school districts.

Analysis

Consideration has been given to feasibility and accuracy in the development of this management information system. After reviewing techniques such as manual computation, the use of a plyometer, and interfacing by computer, it was decided that the latter would accomplish the objectives defined in the synthesis with a higher degree of economy and efficiency.

Therefore, the problem involved in constructing a school district profile by use of school districts and enumeration districts is finding a technique that can be used to accurately interface the two: a method to prorate that portion of the enumeration district or districts that does not exactly fit the boundaries of the school district. Preliminary research illustrates that metropolitan areas fall well within the bounds of individual school districts. In most cases there will be proration, but when it is necessary to prorate, it will occur mainly in rural areas which will not statistically affect percentages involved in development of the school profile.

Proration of the 616 enumeration districts will narrate a formula which will depict a particular school district. With this formula it will be possible to segregate an individual school district and calculate

from the 1970 census tapes the characteristics of the school district which may be termed as a school district profile.

Design and Documentation

The framework for the proposed management information system lies in the enumeration district maps and the school district maps. The first step in constructing a foundation requires the implementation of interfacing the two maps. Research has illustrated that it is possible to photograph the maps, which are of different scale, and reduce both to the same size and scale. Recommended scale is one and one-eighth inch equal to nine miles or one and one-eighth inch squared equal to eighty-one square miles.

After the maps are reduced and scaled, computer graphics will be used to introduce the material to the computer. This step involves defining a subject to be drawn as a series of dots, which the computer will connect by straight line segments in the sequence specified. The subject to be drawn in this case will be the school districts and enumeration districts, interfacing the two on a scaled map of the state of Oklahoma. This will be done by locating an origin point for a coordinate system on the school district maps and the enumeration district maps and then developing coordinates for each point. A key-punch operator can then make computer punch cards identifying each point's location from this list.

Programs will be written in standard Fortran so that proration and factor development will be conducted by the computer for districts which do not fall exactly within the bounds of the school district. This stage of the system will be completed by writing three data

processing programs which in turn will create a tape file containing census data by school district. The census modification will be composed of two Fortran programs and one utility sort program.

Implementation

Once the enumeration districts have been interfaced and prorated and a school district formula calculated then the user must determine information needed. The Oklahoma State University Computer Center assumes the responsibility of the 1970 census data dissemination. The counts are released on computer readable summary tapes and provide all or part of major data classifications.

Maintenance

The management of the system during its operating life will be divided into two phases: (1) updating the 456 school districts which should be done every five years, and (2) remaining informed as to changes in classification of census data and obtaining new data which is made available every five years. The enumeration districts are definite and unchanging. Once the basic design of the proposed management information system is developed and implemented, little effort will be required during five year intervals for updating.

CHAPTER IV

THE SCHOOL PROFILE MANAGEMENT SYSTEM

Introduction

A greater alignment can be achieved between education and the changing requirements of students and their environment by having access to information relating to current educational situations. The specific objective of this management information system is to provide state and local education decision makers with a comprehensive analysis of the characteristics of the population within a specified school district. With population information available and identified by school district, decision makers can then (1) identify school districts where a large segment of the population might benefit from programs offered, (2) develop more cost-effective training programs, and (3) assist in the accounting for educational programs offered within a district.

A management information system requires an accurate definition of system requirements. The input, processing, and output requirements of the system must be accurately defined.

The following description of the school district profile management information system supplies explicit definitions of available data, process of transforming data to information, and system design. But prior to spelling out the elements and functions of the system, it should be made clear that the data base for the system does not

have to be compiled. The data base has been developed by the United States Census Bureau and is filed on summary tapes at the Oklahoma State University Computer Center. The problem with the data base is that it does not coincide with Oklahoma school districts. Therefore, the goal of this paper is to develop a means of manipulating and summarizing 1970 census information in terms of school districts. There were several ideas as to how this could be done, but in the final analysis a procedure based on area proration (prorating and interfacing enumeration districts with school districts) was selected as the means to provide reliable planning information.

Data Base

The data base of the school profile system contains elements of information which have been structured by the Bureau of Census and transposed to tapes. Usually, when developing a data base, structuring is the key to system operation, and design of the data base is the most important consideration in implementation of a management information system.

The data base for the school district profile management information system is presently available and in a stage that can be prorated to apply to Oklahoma school districts.

As previously stated in this paper, data for the 1970 census was collected primarily through self-enumeration. A census questionnaire was delivered by postmen to every household. The householder was requested to fill out and return the form to the Bureau of Census with incomplete and non-response cases assigned for follow-up by enumerators.

The census data base was developed by using three types of questionnaires. Eighty percent of the households answered a form containing a limited number of population and housing questions and the remainder, split in fifteen percent and five percent samples, answered forms which contained these questions as well as a number of additional questions. A random procedure was used to determine which of the three forms any particular household answered.

The 1970 census questionnaires were specifically designed to be processed by Film Optical Sensing Device for input to computers.

In accordance with census practice dating back to 1790, each person enumerated in the 1970 census was counted as an inhabitant of his usual place of residence, which is generally construed to mean the place where he lives and sleeps most of the time. This place is not necessarily the same as his legal residence, voting residence, or domicile. The implementation of this practice by the Bureau of the Census has resulted in the establishing of residence rules for certain categories of persons whose usual place of residence is not immediately clear.[1]

For example, members of the Armed Forces living on military installations or near that installation were counted as residents of the area in which the installation was located. College students were counted as residents of the area in which they were living while attending college. Inmates of institutions, who ordinarily live there for considerable periods of time (prison, health, or mental institutions) were counted as residents of the area where the institution was located.

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[1]U.S. Department of Commerce, Number of Inhabitants (Washington, 1971), p. 82.

Citizens of the United States who were overseas for an extended period of time were not included in the census data. Persons temporarily abroad on vacations and business trips were counted.

Population data for Oklahoma are listed in various census tables as urban and rural residences. According to the definition adapted for use in the 1970 census, the urban population comprises all persons living in urbanized areas and in places of 2,500 inhabitants or more. More specifically, the urban population consists of all persons living in places of 2,500 inhabitants or more incorporated as cities, villages, and towns, but excludes those persons living in the rural portions of extended cities or of unincorporated places of 2,500 inhabitants or more.[2]

During the period, 1960 to 1970, there has been an increasing trend toward annexation of land joining urban areas, which often extends city boundaries to include territory essentially rural in character. An example would be the rapid extension of city limits by Oklahoma City.

The classification of all inhabitants of such cities, e.g., Oklahoma city, as urban would include in the urban population persons whose environment is primarily rural in nature.

In order to separate these people from those residing in the closely settled portions of Oklahoma City and cities like Oklahoma City, the Bureau of Census examined patterns of population density and classified a portion of each city as rural. Therefore, cities as in the case of Oklahoma City consist of an urban part and a rural part. Population characteristics for the two parts are separated in census tables.

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[2]U.S. Department of Commerce, p. 82.

The census bureau has used county lines for census purposes for many years. In Oklahoma, data are shown for statistical areas which are county equivalents designated as census divisions (CCD's). Not all states have census information available on a county wide basis, but there are only a few exceptions to this generalization.

Census data in Oklahoma can also be obtained by census county sub-division, or recognized more often as enumeration districts (ED's). Census county sub-divisions or enumeration districts represent community areas which have been defined in recent years by the Census Bureau in cooperation with state officials.

Enumeration districts or census county sub-divisions have relatively permanent boundaries which follow physical features or the limits of incorporated places. It is worth noting that in establishing enumeration districts, consideration was given mainly to the trade or service area of principle settlements. Enumeration districts or county census sub-divisions range in number from five to twenty-four per county.

The Bureau of Census recognizes approximately two hundred fifty standard metropolitan statistical areas (SMSA's) in the 1970 census. Oklahoma has three standard metropolitan statistical areas: Oklahoma City, Tulsa, and Lawton. An SMSA is a county or group of contiguous counties which contains at least one city of 50,000 inhabitants or more. In addition to the county or counties containing such a city or cities, contiguous counties are included in an SMSA if, according to certain criteria, they are socially and economically integrated with the central city.[3] Although this management information system

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[3]U.S. Department of Commerce, p. 82.

will rely entirely on enumeration districts relative to computation of school district populations characteristics, it should be pointed out that population statistics are also available by congressional district.

Technical Conditions Affecting Summary Tapes

There are six summary tapes available each containing different data. Counts differ in both quality of data presented and the geographic area of coverage. The tapes are 10 1/2 inches in diameter with a maximum recording length of 2400 feet. The recording density (BPI) is 556 or 800 for seven channel and 800 for 9 channel. The spacing is 3/4 inch between records on 7 channel and 6 inch on 9 channel. Census data is recorded in Fortran language. The primary division of census data is by state, and all of the data for a given summary will be together in one logical file.

School District Population Data

The following table illustrates the data available for the school district profile. The housing data is considered secondary for the purpose of this profile, but will be included in the information system to illustrate the range of data available in the first count.

Area Analysis

Administrators at the various Oklahoma educational institutions have ready access to the Bureau of Census magnetic tapes, but census data in its present form are of little value when viewing local situations for planning purposes.

TABLE I

POPULATION AND HOUSING

Population

1. Count of All Persons

2. Count of All Housing Units

3. Count of Persons in Rural Areas

4. Count of Persons in Annexed Territories

5. Count of Rural Housing Units

6. Count of Persons in SMSA's

7. Count of Persons in Urban Portion of Central Cities of SMSA's

8. Count of Persons in Rural Places of 1,000-2,499

9. Count of Persons in Rural Places of Less Than 1,000

10. Count of Persons in Urban Portion of Central Cities of Urbanized Areas

11. Count of Persons in Urbanized Areas in Urban Portion of Places of 25,000+ Outside Central Cities

12. Count of Persons in Urbanized Areas in Urban Portion of Places of 2,500-24,999 Outside of Central Cities

13. Count of Persons in Urbanized Areas

14. AGGREGATE $ VALUE (See Item 35)

    Aggregate $ Value for Units for Which Value is Tabulated

    By: Occupancy Status and Race of Head (3)

        Total owner occupied
        Negro owner occupied
        Vacant for sale only

15. AGGREGATE $ MONTHLY CONTRACT RENT (See Item 36)

    Aggregate $ Monthly Contract Rent for Units for Which Rent is Tabulated

TABLE I (CONTINUED)

Population

By: Occupancy Status and Race of Head (3)

Total renter occupied
Negro renter occupied
Vacant for rent

16. AGGREGATE $ VALUE FOR UNITS WITH ALL PLUMBING FACILITIES (See Item 43)

Aggregate $ Value for Units With All Plumbing Facilities for Which Value is Tabulated

By: Occupancy Status and Race of Head (3)

Total owner occupied
Negro owner occupied

Padding

Vacant for sale only

17. AGGREGATE $ MONTHLY CONTRACT RENT FOR UNITS WITH ALL PLUMBING FACILITIES (See Item 44)

Aggregate $ Monthly Contract Rent for Units With all Plumbing Facilities for Which Rent is Tabulated

By: Occupancy Status and Race of Head (3)

Total renter occupied
Negro renter occupied
Vacant for rent

18. AGE AND SEX

Count of Persons

By: Sex (2) By: Age (22)

Male:
Under 5 years
5
6
7-9
10-13
14
15
16

TABLE I (CONTINUED)

Population

17
18
19
20
21
22-24
25-34
35-44
45-54
55-59
60-61
62-64
65-74
75 and over

Female:
Repeat Age (22)

19. NEGRO AND OTHER RACES (EXCEPT WHITE) BY AGE AND SEX

Count of Negro and Other Race Persons (except white)

By: Race (2) By: Sex (2) By: Age (8)

Negro:
Male:
Under 5 years
5-14
15-24
25-34
35-44
45-54
55-64
65 and over

Female:
Repeat Age (8)

Other Races:
Same as Negro (16)

TABLE I (CONTINUED)

Population

20. RACE

Count of Persons

By: Race (5)

White
Negro
Indian
Other specified races
Reported "Other race"

21. POPULATION 14 YEARS OLD AND OVER BY MARITAL STATUS, RACE AND SEX

Count of Persons 14 Years Old and Over

By: Race (2) By: Sex (2) By: Marital Status (5)

Total:
Male:
Now Married (excludes separated)
Widowed
Divorced
Separated
Never Married

Female:
Repeat Marital Status (5)

Negro:
Same as Total (10)

22. RELATIONSHIP AND RACE

Count of Persons

By: Race (2) By: Household Relationship (10)
(includes persons in group quarters)

Total:
Family head of husband-wife household
Family head of household with other male head
Family head of household with female head
Wife of head
Other relative of head
Male primary individual
Female primary individual

TABLE I (CONTINUED)

Population

Nonrelative (includes roomer, boarder, or lodger) of head of household
Inmate of institution
Other in group quarters

Negro:
Repeat Household Relationship (10)

23. POPULATION UNDER 18 YEARS OLD BY RELATIONSHIP AND FAMILY TYPE

Count of Persons Under 18 Years Old

By: Household Relationship and Family Type (10)
(includes persons in group quarters)

Head or wife of head of household
Own (never married) child of head:
In husband-wife family
In other family with male head
In family with female head
Other relative of head:
In husband-wife family
In other family with male head
In family with female head
Nonrelative (includes roomer, boarder, or lodger) of head of household
Inmate of institution
Other in group quarters

24. POPULATION 65 YEARS AND OVER BY RELATIONSHIP

Count of Persons 65 Years Old and Over

By: Household Relationship (8)
(includes persons in group quarters)

Head of family
Wife of head
Other family member
Male primary individual
Female primary individual
Nonrelative (includes roomer, boarder, or lodger) of head of household
Inmate of institution
Other in group quarters

TABLE I (CONTINUED)

Population

25. FAMILIES BY PRESENCE OF FAMILY MEMBERS UNDER 18 and 65 AND OVER AND FAMILY TYPE

Count of Families

By: Family Type (3) By: Presence of Family Members (other than head and wife) Under 18 and 65 and Over (4)

Husband-wife family:
- No members under 18 or 65 and over
- Members under 18, none 65 and over
- Members 65 and over, none under 18
- Members under 18 and 65 and over

Other family with male head:
- Repeat Family Members (4)

Family with female head:
- Repeat Family Members (4)

Housing

26. OCCUPANCY/VACANCY STATUS

A. Count of Housing Units

By: Occupancy/Vacancy Status and Race of Head (9)

Owner occupied:
- Total (includes white, Negro and Other races in this and all following tabulations where race is shown)
- White head of household
- Negro head of household

Renter occupied:
- Total
- White head of household
- Negro head of household

Vacant:
- For rent
- For sale only
- Other vacant year round

TABLE I (CONTINUED)

Housing

B. Count of Vacant Seasonal and Vacant Migratory Units

NOTE: (All tabulations beginning with Item 27 exclude vacant seasonal and vacant migratory units.)

27. TYPE OF STRUCTURE

Count of Occupied and Vacant Year-Round Housing Units

By: Type of Structure (3)

1-unit structure
2-or-more-unit structures
Mobile homes or trailers (occupied only)

28. A. ROOMS IN UNIT

Count of Occupied and Vacant Year-Round Housing Units

By: Number of Rooms in Unit (8)

1 room
2 rooms
3 rooms
4 rooms
5 rooms
6 rooms
7 rooms
8 rooms or more

B. AGGREGATE NUMBER OF ROOMS (See Item 26)

Count of Rooms in Occupied and Vacant Year-Round Housing Units

By: Tenure and Race of Head (9)

Total occupied and vacant year-round units
Total occupied
Owner occupied
Renter occupied
Total Negro occupied
Negro owner occupied
Negro renter occupied
Vacant for rent
Vacant for sale only

TABLE I (CONTINUED)

Housing

29. A. PERSONS IN UNIT

Count of Occupied Units

By: Number of Persons in Unit (8)

1 person
2 persons
3 persons
4 persons
5 persons
6 persons
7 persons
8 persons or more

B. AGGREGATE NUMBER OF PERSONS BY TENURE AND RACE OF HEAD (See Item 26)

Count of Persons in Occupied Units

By: Tenure and Race of Head (6)

Total occupied
Owner occupied
Renter occupied
Total Negro occupied
Negro owner occupied
Negro renter occupied

30. PERSONS PER ROOM, TENURE AND RACE OF HEAD

Count of Occupied Units

By: Tenure and Race of Head (6) By: Number of Persons Per Room (3)

Total occupied:
1.00 or less
1.01 - 1.50
1.51 or more

Owner occupied:
Repeat Persons Per Room (3)

Renter occupied:
Repeat Persons Per Room (3)

TABLE I (CONTINUED)

Housing

Total Negro occupied:
Repeat Persons Per Room (3)

Negro owner occupied:
Repeat Persons Per Room (3)

Negro renter occupied:
Repeat Persons Per Room (3)

31. NUMBER OF UNITS AT ADDRESS

Count of Occupied and Vacant Year-Round Housing Units in Multi-Unit Structures

By: Number of Units at Address (3)

2-4 units
5-9 units
10 or more units

32. UNITS WITH A BASEMENT

Count of Occupied and Vacant Year-Round Housing Units

By: Basement (2)

Total with basement
Units with basement at addresses with 1, 2, or 3 units

33. ACCESS AND COMPLETE KITCHEN FACILITIES

Count of Occupied and Vacant Year-Round Housing Units

By: Access and Complete Kitchen Facilities (4)

With direct access and complete kitchen facilities for this household only
With direct access, lacking complete kitchen facilities for this household only
Lacking direct access, with complete kitchen facilities for this household only
Lacking both direct access and complete kitchen facilities for this household only

34. TELEPHONE AVAILABLE

Count of Occupied Units With Telephone Available

TABLE I (CONTINUED)

Housing

35. VALUE (See Item 14)

A. Count of Owner-Occupied Units for Which Value is Tabulated

By: Value (8)

Less than $ 5,000
$ 5,000 - $ 9,999
$10,000 - $14,999
$15,000 - $19,999
$20,000 - $24,999
$25,000 - $34,999
$35,000 - $49,999
$50,000 or more

B. Count of Units for Which Value is Tabulated

By: Occupancy Status and Race of Head (3)

Total owner occupied
Negro owner occupied
Vacant for sale only

36. MONTHLY CONTRACT RENT (See Item 15)

A. Count of Renter-Occupied Units for Which Rent is Tabulated

By: Monthly Contract Rent (10)

With cash rent:
Less than $40
$ 40 - $ 59
$ 60 - $ 79
$ 80 - $ 99
$100 - $119
$120 - $149
$150 - $199
$200 - $299
$300 or more

Without payment of cash rent

B. Count of Units for Which Rent is Tabulated
(Does not include "Without payment of cash rent.")

TABLE I (CONTINUED)

Housing

By: Occupancy Status and Race of Head (3)

Total renter occupied
Negro renter occupied
Vacant for rent

37. UNITS FOR RENT THAT HAVE BEEN VACANT LESS THAN 2 MONTHS

Count of Year-Round Vacant-for-Rent Units Vacant Less Than 2 Months

38. UNITS FOR SALE ONLY THAT HAVE BEEN VACANT LESS THAN 6 MONTHS

Count of Year-Round Vacant-for-Sale-Only Units Vacant Less Than 6 MONTHS

39. VACANT YEAR-ROUND UNITS THAT HAVE BEEN VACANT 6 MONTHS OR MORE

Count of Vacant Year-Round Units Vacant 6 Months or More

40. UNITS WITH ROOMERS, BOARDERS, OR LODGERS

Count of Occupied Units With Roomers, Boarders, or Lodgers

41. PLUMBING FACILITIES

Count of Occupied and Vacant Year-Round Housing Units

By: Tenure and Race of Head (9) By: Plumbing Facilities (2)

Total occupied and vacant year-round:
With all plumbing facilities
Lacking one or more plumbing facilities

Total occupied:
Repeat Plumbing Facilities (2)

Owner occupied:
Repeat Plumbing Facilities (2)

Renter occupied:
Repeat Plumbing Facilities (2)

Total Negro occupied:
Repeat Plumbing Facilities (2)

Negro owner occupied:
Repeat Plumbing Facilities (2)

TABLE I (CONTINUED)

Housing

Negro renter occupied:
Repeat Plumbing Facilities (2)

Vacant for rent:
Repeat Plumbing Facilities (2)

Vacant for sale only:
Repeat Plumbing Facilities (2)

42. UNITS WITH ALL PLUMBING FACILITIES AND 1.01 OR MORE PERSONS PER ROOM BY TENURE AND RACE OF HEAD

Count of Occupied Units With All Plumbing Facilities and 1.01 or More Persons Per Room

By: Tenure and Race of Head (6)

Total occupied
Owner occupied
Renter occupied
Total Negro occupied
Negro owner occupied
Negro renter occupied

43. VALUE FOR UNITS WITH ALL PLUMBING FACILITIES (See Item 16)

A. Count of Owner-Occupied Units With All Plumbing Facilities for Which Value is Tabulated

By: Value (8)

Less than $ 5,000
$ 5,000 - $ 9,999
$10,000 - $14,999
$15,000 - $19,999
$20,000 - $24,999
$25,000 - $34,999
$35,000 - $49,999
$50,000 or more

B. Count of Units With All Plumbing Facilities for Which Value is Tabulated

By: Occupancy Status and Race of Head (3)

Total owner occupied
Negro owner occupied
Vacant for sale only

TABLE I (CONTINUED)

Housing

44. MONTHLY CONTRACT RENT FOR UNITS WITH ALL PLUMBING FACILITIES (see Item 17)

A. Count of Renter-Occupied Units With All Plumbing Facilities for Which Contract Rent is Tabulated

By: Monthly Contract Rent (10)

With cash rent:
Less than $40
$ 40 - $ 59
$ 60 - $ 79
$ 80 - $ 99
$100 - $119
$120 - $149
$150 - $199
$200 - $299
$300 or more

Without payment of cash rent

B. Count of Units With All Plumbing Facilities for Which Rent is Tabulated
(Does not include "Without payment of cash rent.")

By: Occupancy Status and Race of Head (3)

Total renter occupied
Negro renter occupied
Vacant for rent

45. TOILET FACILITIES

Count of Occupied and Vacant Year-Round Housing Units

By: Toilet Facilities (3)

Flush toilet for this household only
Flush toilet, but also used by another household
No flush toilet

46. UNITS WITH 1.01 OR MORE PERSONS PER ROOM BY HOUSEHOLD TYPE

Count of Occupied Units With 1.01 or More Persons Per Room

By: Household Type (4)

TABLE I (CONTINUED)

Housing

Husband-wife family
Other family with male head
Family with female head
Primary individual

47. UNITS WITH 1.51 OR MORE PERSONS PER ROOM BY HOUSEHOLD TYPE

Count of Occupied Units With 1.51 or More Persons Per Room

By: Household Type (4)

Husband-wife family
Other family with male head
Family with female head
Primary individual

48. POPULATION IN UNITS WITH 1.01 OR MORE PERSONS PER ROOM BY AGE

Count of Persons in Occupied Units With 1.01 or More Persons Per Room

By: Age (3)

Under 18 years
18-64 years
65 years and over

49. POPULATION IN UNITS WITH 1.51 or MORE PERSONS PER ROOM BY AGE

Count of Persons in Occupied Units With 1.51 or More Persons Per Room

By: Age (3)

Under 18 years
18-64 years
65 years and over

50. POPULATION IN UNITS WITH 1.01 OR MORE PERSONS PER ROOM BY TENURE AND RACE OF HEAD

Count of Persons in Occupied Units With 1.01 or More Persons Per Room

By: Tenure and Race of Head

Total occupied
Owner occupied

TABLE I (CONTINUED)

Housing

Renter occupied
Total Negro occupied
Negro owner occupied
Negro renter occupied

51. POPULATION IN UNITS BY PLUMBING FACILITIES

Count of Persons in Occupied Units

By: Plumbing Facilities (2)

With all plumbing facilities
Lacking one or more plumbing facilities

52. POPULATION IN UNITS WITH 1.01 OR MORE PERSONS PER ROOM BY PLUMBING FACILITIES

Count of Persons in Occupied Units With 1.01 or More Persons Per Room

By: Plumbing Facilities (2)

With all plumbing facilities
Lacking one or more plumbing facilities

53. FAMILIES BY PLUMBING FACILITIES

Count of Families

By: Plumbing Facilities (2)

With all plumbing facilities
Lacking one or more plumbing facilities

54. HOUSING ALLOCATIONS

Count of Housing Units With Allocations

By: Occupancy Status (2) By: Housing Allocations (23)

Occupied:
- Telephone available (Occupied only)
- Access to unit
- Complete kitchen facilities
  - Indirect
  - Direct
- Number of rooms

TABLE I (CONTINUED)

Housing

Hot and cold piped water
- Indirect
- Direct

Toilet facilities:
- Indirect
- Direct

Bathing facilities (bathtub or shower)
- Indirect
- Direct

Type of foundation (basement)

Tenure: (Occupied only)
- Indirect
- Direct

Type of Structure
- Indirect
- Direct

Use of property

Value of unit

Contract rent

Vacancy status (Vacant only)

Duration of vacancy (Vacant only)

Units at address:
- Indirect
- Direct

Vacant
- Repeat Housing Allocations (23)

55. POPULATION SUBSTITUTIONS AND ALLOCATIONS

Count of Persons Substituted or With Allocations
(if a person was substituted, he is counted only as substituted and if any of his items were allocated they were not tallied here as allocations.)

By: Population Substitutions and Allocations (10)

- Person substituted because of equipment malfunction
- Person substituted because of nonresponse
- Person with one or more allocations
- Household relationship
- Sex
- Color
- Age
- Age, decade unknown
- Age, decade known
- Marital status (if age is 14+)

It has been pointed out by state vocational and technical education planners that census data correctly interfaced with school district boundaries presents social and economic data that takes a great deal of the "chance factor" out of long-range decision making.

To interface census boundaries and school district boundaries, it was decided that maps of identical scale and size would have to be constructed. County census data maps are on file at the Computer Center at Oklahoma State University and county school district maps are on file at the Department of School Transportation, Capitol Building, Oklahoma City. Although the census maps and school maps are of different scale, an economical method of identical scaling was developed through photography.

The scale of one inch equal eight square miles or one square inch equal sixty-four square miles was selected as the scale for the two maps. The seventy-seven county census and school district maps were photographed with a 35mm camera using 400 ASA black and white film.

The school district map negatives were inserted into a photo enlarger and focused on the boundaries of a GLO county surveyors map. This method guarantees that all school district maps will be identical in size and scale. Photographs were printed for the seventy-seven counties which contain a total of 456 independent school districts.

A simple but very important function of identical scaling follows in the next step. The county school district photographs were used as a guide to align boundaries of the census maps to insure that the county school district maps and the census maps are of the same size

and scale. This process was completed by placing the county census map negatives in the photo enlarger and focusing the negative exactly on the boundaries of the county school district map photographs. After completing the above process, the author had a total of one hundred fifty-four photographs of which seventy-seven were county census maps with 616 identifiable enumeration district boundaries and seventy-seven county school district maps with 456 identifiable independent school districts.

The above process is non-complicated, but a time consuming activity which requires knowledge of the elementary principles of photography.

Overlays of School Districts

At this point in the project, the researcher had available two copies of each of the seventy-seven Oklahoma counties. Both copies were of identical size and scale but contained different data. To compare the data on the census map with that on the school district map, it was decided that the two maps must be interfaced. Several methods were reviewed, but the most economical procedure for interfacing was found in the form of transparencies.

The county census map was selected as the one to be made into a transparency. It was quickly discovered that transparencies cannot be made directly from a photograph. Therefore, it was necessary to make Xerox copies of the county census maps so that transparencies could be made from the Xerox copy. Once the Xerox copy of the county map was completed, then it became a simple process to make transparencies.

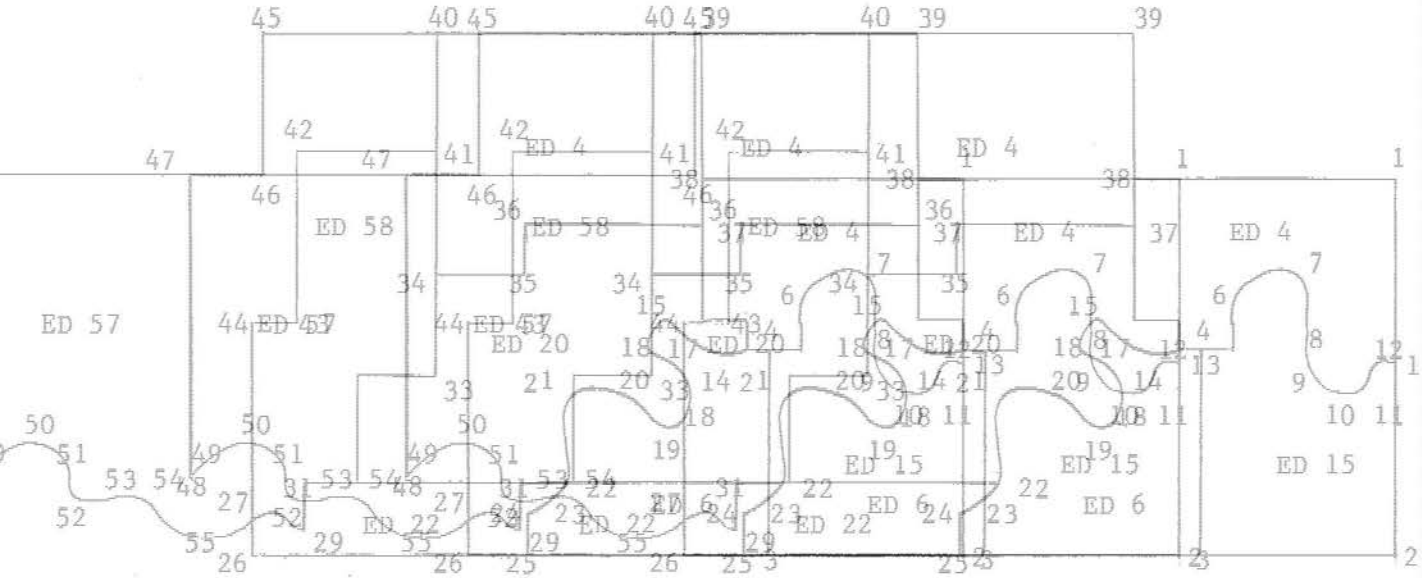
The specific objective of constructing overlays was to compare the boundaries of the enumeration districts on the county census maps with the boundaries of school districts on the county school district maps. This is a very important function of the school profile project, since the scaled boundaries of the enumeration districts and the school districts serve as the foundation for data computation. Figure 2 illustrates an area overlay.

This is an appropriate occasion to point out that the school districts do not match the enumeration districts. One may note while that in some cases one hundred percent of the enumeration district falls in the school district, in other cases only a small portion lies within the school district. This occurrence will be fully explained later in this paper.

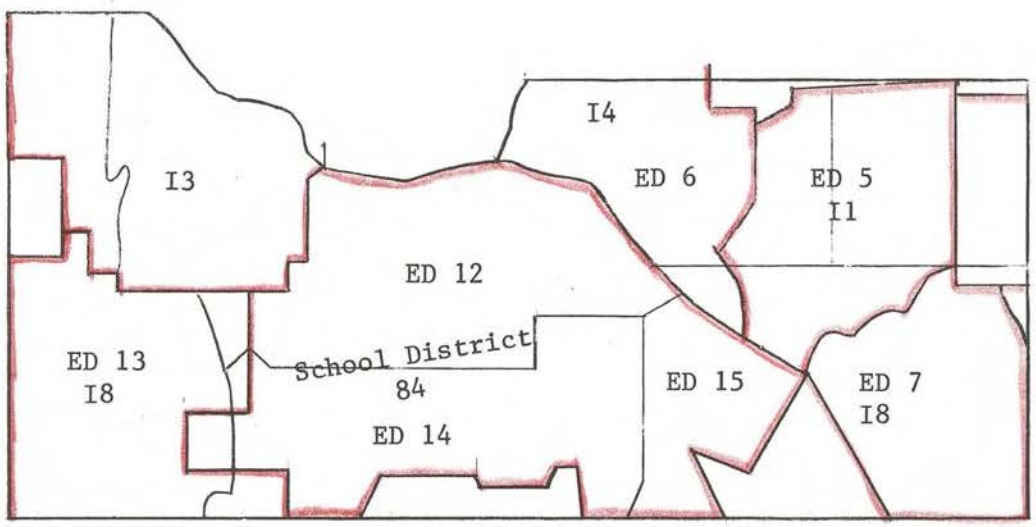
The important point at this stage of system development is that the county enumeration district maps and the county school district maps have both been reduced to a workable form and identically scaled.

Factor Computation

The hub of the school profile management information system surrounds area computation. If the reader will note Figure 3, he will find the school districts in Major county drawn in red and the county enumeration districts drawn in black. To illustrate the connection between an individual school district and the attached enumeration districts, let us refer to independent school district number eighty-four (I-84) located almost in the center of Major county. Independent district eighty-four contains a part of three enumeration districts. The majority of enumeration district fourteen, a large



gure 2. Co[illegible] Payne County



gure 3. Co[illegible] Major County

portion of enumeration district twelve, and the greater part of enumeration district fifteen are located in I-84.

The census summary tapes contain information for a complete enumeration district, not a portion or part. Therefore, that part of the enumeration district that lies within the boundary of a school district must be prorated according to the percent that is in the school district. This process is completed by development of a proration factor. The task in factor computation is to compute the square miles of each enumeration district which is in a specified school district.

This operation is completed by the computer in basically three steps.

1. Using the scale of one inch equal eight miles the total area of the enumeration district is calculated.
2. Applying the above scale, that portion of the enumeration district which lies within the boundaries of school district is calculated.
3. Once the total enumeration district area and that portion inside the school district have been found, a percentage (proration factor) can now be computed by dividing the total number of square miles in the enumeration district into the number of square miles calculated for that part of the enumeration district inside the school district.

Thus, in the case of school district I-84, the school profile is developed from census data available for enumeration district 14, enumeration district 12, and enumeration district 15. Following the above steps, it is found that 93.4 percent of enumeration district 14,

61.2 percent of enumeration district 15, and 63.4 percent of enumeration district 12 lie within the boundary of independent school district 84. The computer manipulates the enumeration district data according to the above factors, combines the three factored enumeration districts and ejects a school district profile.

Calculation of the proration factor or enumeration district percentage is an important function. To give direction to the reader, it should be pointed out that at this juncture the above calculated factor is programmed into the computer to manipulate census summary tape figures. As illustrated in the example, this process will provide census data according to school district with the enumeration districts serving as the data foundation.

Enumeration Districts and Proration Factor

Due to necessary prorating of population within a specified area, there was expressed concern that a concentrated segment of the population would influence the overall population characteristic of the school district. Although small pockets of concentrated population might exist, generally the characteristics based on population per square mile will be correct. Enumeration districts average about 250 housing units with an average of four to the household. Therefore, a school profile with a concentrated population element will not be skewed since the maximum number in an enumeration district is approximately 1,000 persons.

Tool for Area Calculation

The task of calculating area does not appear to be insurmountable as the maps are almost clear enough to manually count the square miles in a designated space. Measurement was first attempted with an instrument known as a plyometer which was borrowed from the local Agriculture Stabilization and Conservation Office. The plyometer is highly accurate and often used by agriculture officials to measure designated acreages on government agriculture maps.

After using the plyometer for a considerable time, it was found that the time element required for area computation was unreasonable. Also, it was discovered that the State Department of Vocational and Technical Education had obtained a General Drafting Graphics System which contained a 1130 IBM computer.

The General Drafting Graphics System or Computer Graphics System is a combination of graphic art and computer methods. The system can convert large quantities of data into pictures or plotted drawings.

The tedious task of transposing a picture or map into true perspective illustrations is reduced to a translation of the points of reference from the picture or map to punched IBM cards which are fed into a computer, along with carefully prepared Computer Graphics Programming. The true perspective views are then drawn by an automatic plotter, and the researcher is provided with any desired view of the drawing.

The automatic plotter performs according to the repetitive use of basic coordinate and plot generating commands. The basic commands are modular in construction and perform many basic operations within the system including computation of area. All command modules interact

with a common data storage area which contains all generated coordinate data stored under associated point numbers. This storage area is known as the "coordinate table" and provides the basic link between coordinate generation and area-plot generation.

The purpose of using the Computer Graphics System in the school district profile project is two fold: (1) once the county census maps and the county school district maps are scaled and coordinated, they can be combined into one map by use of the automatic plotter; (2) once the coordinators are fed into the Computer Graphics System, the 1130 IBM computer can be programmed to compute area in square miles.

Therefore, introduction of the computer-plotter system makes way for a flexible and economical oriented operation. Also, it conducts two very necessary functions of the school profile management information system: interfacing of maps and calculation of area.

COGO Area Computation

The Integrated Civil Engineering System COGO is an information processor for the computer solution of geometric problems in engineering, surveying and mapping. The processor is made up of a language, a set of processing routines, and a set of information files. The COGO (for COordinate GeOmetry) system may be applied to any number of geometric problems in any area which involves points, lines, curves, or polygons. The COGO system operates on geometric objects and variables which can be identified, stored, retrieved, computed, printed, and manipulated by means of various commands.

The COGO language provides a mechanism for communication with the problem solving capabilities of the processing routines. With the COGO

language, it is possible to develop commands which describe the known data for the variables and the problem components, the relationships between the variables and problems components, and the results of the selected function.

The user of this system does not need to be proficient in computer programming or to be aware of the computer per se. Most of the COGO functions are organized sets of programs, sub-programs, and sub-routines and require only knowledge of solution requirements.

The information files are automatically generated by the processing routines when commands which define geometric objects are executed. The information files are contained in the physical storage devices of the computer--namely disk.

COGO School Profile Commands

Commands written by the user serve as the input to the computer and the COGO processing routines. The commands are processed individually, one IBM card at a time, and in the order in which they are received by the computer. Each command may be thought of as a small program which is processed and executed independently of the commands which precede and follow. Since there is no practical restriction on the number of commands which may be used in solving a problem, there is no practical restriction on the size or complexity of problems which can be handled. A problem may involve as few as two or three commands or as many as several thousand or more commands.[4] A command used in the school profile system is shown in Figure 4.

---

[4] Engineer's Guide to ICES COGO I (Boston, 1967), p. 89.

1.	STORE	162				-.340		-5.794
2.	AREA	35	40	39	38	37	36	35
3.	LINE	43	44	45	37	38	39	43

Command 1 is instructing the system to store the coordinates for later reference.

Command 2 is instructing the system to compute the area in square miles contained within these coordinates.

Command 3 is instructing the computer to draw a line or course based on the submitted coordinates.

Figure 4. Commands Used in School Profile System

Data Tables

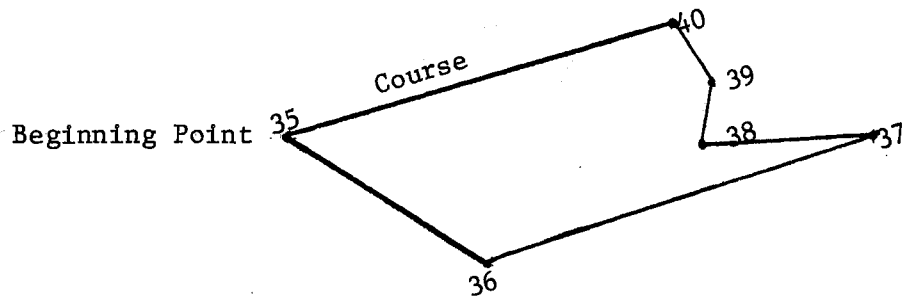
The following school profile data tables are maintained by the COGO system:

Point Table

Each point to be stored is assigned an identification number which can range from 0 to 999. The stored data for each point is defined in terms of X and Y coordinates. A point is an absolute object.

Course Table

A course is defined as the line segments between two stored points. The stored data for each course is the point numbers for the beginning and end points. A course is a relative object which moves with the points which define it. The following diagram illustrates the course function. (See Figure 5)



COMMAND--DRAW/LINE 35 40 39 38 37 36 35

Figure 5. Course Function

Area Development

Area computation functions according to an organized COGO program. The calculation operates on a point and course table and according to a designated scale. The following is illustrative of a simple COGO area command.

```
Area of SD 82

AREA        23 22 21 43 11 5 4 3 47 33
AREA=       88.5892 Square Miles

LINE        23 22 21 43 11 5 5 3 47 33

AREA        23 24 25 26 42 41 40 944
AREA=       21.7587 Square Miles
```

Area of school district eighty-two which includes a part of two different enumeration districts consists of 21.7587 square miles plus 88.5892 square miles for a total area of 110.3479 square miles.

The COGO system will compute the area within an individual enumeration district, but does not have the capability to compute the area in more than one enumeration district and develop a sum.

Coordination

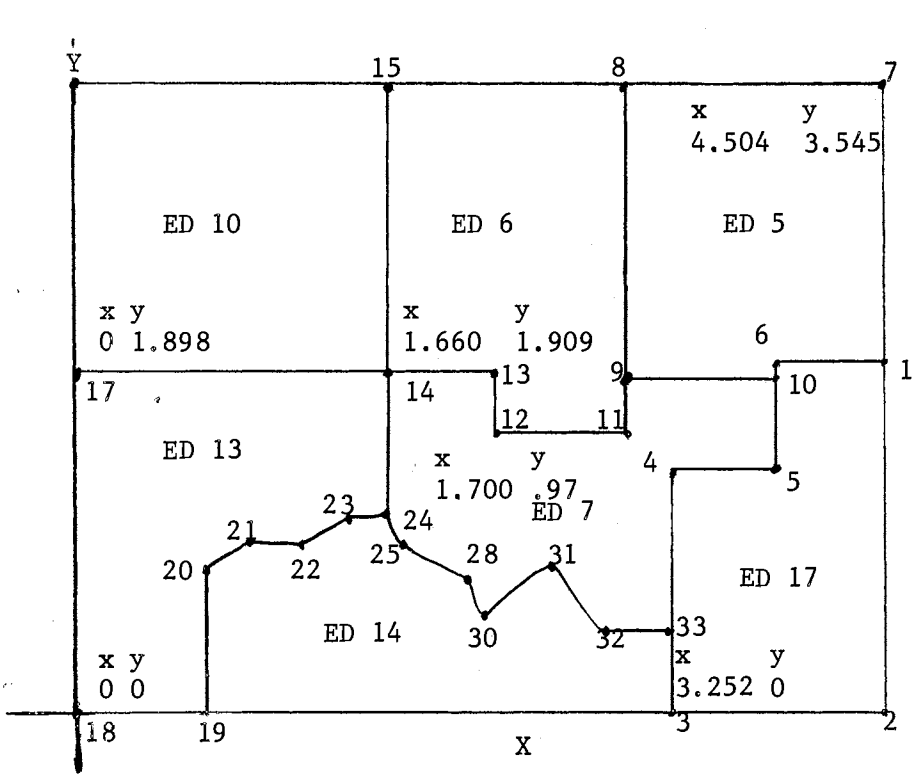
This step involves defining a subject to be drawn as a series of dots, which the 1130 IBM computer will connect by straight-line segments in the sequence specified. The objective of this function is to define the location of each one of these points relative to a X and Y axis and to place these measurements on computer punch cards.

There are two methods for calculating location of coordinates. The first is completed by a manual operation which consists of measuring the distance by obtaining a drawing of the subject, locating an origin point for a coordinate system, and measuring the coordinate of each point. The origin is generally placed on the center line in front of and below symmetrical subjects so that all parts of one side of the subjects are included as positive values in a coordinated system. The measurements can be listed in sequence on sheets of paper.

A second means of coordinating is by way of a coordinate graph. Up-to-date coordinate graph equipment has a digital read and can be operated to measure a series of points and simultaneously produce punch cards. A coordinate graph with a digital read only was used. coordinate the maps used in this paper.

To prepare the drawing for extracting data points, it is mounted on the coordinate graph drawing board. As a constant reference point for all dimensions, an origin point is located. Vertical and horizontal axes are drawn from the origin point and it is critical that the X and Y axes are exactly parallel to the boundaries of the drawing; in this case, map boundaries. A point is then measured and recorded in both X and Y coordinates. A number is placed alongside the second point and coordinates recorded in X and Y terms, and so on. See Figure 6.

Most coordinate graphs have cross hairs which must be positioned vertically and horizontally to intersect each point measured from the origin. As each point is located, the operator reads the dital reader and records in X and Y coordinates.



Pt. No.	x	y
18	0	0
17	0	1.898
7	4.504	3.545
3	3.252	0
14	1.660	1.909
25	1.7	.970

Figure 6. Coordination of Enumeration District in Noble County

Once the coordinates are recorded, then IBM cards must be punched. As these cards are prepared and stacked according to the input instructions, computation results in a disk which directs the plotter to produce drawings according to a specified scale.

Conversion to 80 Column Card

Once the drawings or as in this case, the school district maps and enumeration district maps are coordinated, data such as that illustrated below are available for transfer to IBM cards.

Coordinate Number	Y Coordinate	X Coordinate
162	-.340	-5.794
161	-.338	-5.551
158	-.689	-5.572
159	-.929	-5.572
160	-.931	-5.807
157	-.700	-5.456
156	-.967	-5.456

The coordinate numbers, X and Y coordinates as well as other information must be placed on the computer cards in a specified order. The program requires that the word "store" be placed in columns one through five.

```
                                                        Y Coordinate
1 2 3 4 5 . . . 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

S T O R E       1  6  2     -  .  3  4  0     -  5  .  7  9  4
```

Figure 7. Sample Punch Card Format for Subject Data

Regardless of the number of digits, the coordinate point number must begin in column fifteen. In this project, no coordinate point number filled more than three spaces. After the point number a column is left blank and the Y axis coordinate recorded. A second column is left

blank to divide the Y coordinate from the X coordinate, which is recorded accordingly. Once the coordinates are keypunched, they can then be fed into the computer along with the appropriate program for graphic plotting or area computation.

Census Data Program Modification

It was necessary to develop a data processing system to modify census data according to school districts. This stage of the management information system was completed by writing three data processing programs which in turn created a tape file containing census data by school district. The census modification was composed of two Fortran programs and one utility sort program.

Since the census data is reported by enumeration district, a correspondence between enumeration districts and school districts had to be established in order to report census data in terms of a school profile. As previously mentioned, a computer graphics procedure was introduced to calculate a proration factor to determine the percent of an enumeration district within a school district. Once the proration factor was established, it was found that the designed percentage could be applied to the First Count data of a specified enumeration district to manipulate census data into a school district profile.

The first of the two Fortran programs feeds data to the computer by way of an input card which contains a school district code, an associated enumeration code, and the proration factor of a specified enumeration district within a particular school district. The corresponding enumeration district record is located on the First Count data tape, and the proration factor on the input card is applied

to the First Count data of the enumeration record. A separate data record is created containing the modified census data. These newly created data items on the data record have the same format as the original First Count data items. The utility sort program is then executed in order to sort and combine all the records pertaining to one school district. After the sort is completed, the second Fortran program is executed which sums all the modified enumeration records for each school district into one record. This record has the same format as the original First Count census data records. Therefore, the Fortran program created one record for each school district establishing a school district profile. The records used in this study contain only First Count data, but can be slightly modified to prorate the various census counts.

The only discrepancy between this data tape and the original First Count data census tape is that the First Count datum that was suppressed on the original tape was handled as if it were zero on the created tape. Also the geographic data was blanked out and the school district was put in the first six positions of the geographic data area. The school district has no suppressed data.

Once the school district tape is created, it can be used as an input to a program that is available at the Oklahoma State University Computer Center. The name of this program is DAULLIST. This program has been made available to the public to assist in census data access.

The DAULLIST program reads the First Count summary tapes and "lists" the geographic identification and the aggregate data of population and housing with verbal descriptions taken from the summary tape

documentation. This document contains instructions in implementing the program and in setting up display requests.

The DAULLIST program was written in Fortran IV. The Fortran version uses an assembler language sub-routine to read the 1800 character records on the First Count Summary Tapes. The data records tapes have 55 tables with a total of 409 items.

Illustrated in Tables II and III are modified census enumeration districts tables which have been compiled to represent a school district profile. This school district profile will function as a component of a total management system for educational planning purposes. There are a total of 55 tables in the profile which includes designated population and housing data. The data in Tables II and III were taken directly from the computer print-out.

System Verification and Accuracy

To test the system for accuracy the calculations developed by the modified census program were selected randomly and mathematically checked to verify that the specified substracted proration factor plus the computer computation equaled the original census table total. In the case of Garber and Drummond school districts the system was found to be 99 percent accurate. The one percent error is due to mathematical rounding.

TABLE II

GARBER SCHOOL DISTRICT PROFILE;
GARFIELD COUNTY

2	SUMMARY TYPE	TRACTED AREA
4I	1970 STATE	PLACE DESCRIPTION
085	1970 COUNTY	SPECIFIED CITY WITH RURAL TERRITORY (OVER BOUNDED)
	1960 STATE	ECONOMIC SUBREGION
	CENTRAL COUNTY CODE	1970 COUNTY OF TABULATION
	QUASI-STATE	NEW ENGLAND TOWN SIZE CODE
	MINOR CIVIL DIVISION OR CENSUS COUNTY DIVISION	NEW ENGLAND TOWN CODE
	ANNEXATION CODE	UNIVERSAL AREA CODE-LEVEL
	PLACE	UNIVERSAL AREA CODE
	WARD	PLACE SIZE
	TRACT (BASIC)	PUBLICATION CODE
	TRACT (SUFFIX)	AREA CODE
	DISTRICT OFFICE	BLOCK GROUP
	CONGRESSIONAL DISTRICT	
	CENTRAL BUSINESS DISTRICT	
	ENUMERATION DISTRICT-BASIC	
	ENUMERATION DISTRICT-SUFFIX	
	TYPE OF ED	
	POTENTIAL URBANIZED AREA/ STANDARD CONSOLATED AREA	
	STANDARD METROPOLITAN STATISTICAL AREA	
	URBAN/RURAL	
	ACTUAL URBANIZED AREA	
	STATE ECONOMIC AREA	

1. COUNT OF ALL PERSONS

1 614

2. COUNT OF ALL HOUSING UNITS

1 205

3. COUNT OF PERSONS IN RURAL AREAS
IN ADDITION TO THE SUM OF DATA ITEMS IN 8 AND 9, THIS COUNT INCLUDES PERSONS IN OTHER RURAL TERRITORY (RURAL OUTSIDE PLACES).

1 614

4. COUNT OF PERSONS IN ANNEXED TERRITORIES

1 0

TABLE II (CONTINUED)

5.	COUNT OF RURAL HOUSING UNITS	
1		205
6.	COUNT OF PERSONS IN STANDARD METROPOLITAN STATISTICAL AREAS	
1		0
7.	COUNT OF PERSONS IN URBAN PORTION OF CENTRAL CITIES OF STANDARD METROPOLITAN STATISTICAL AREAS	
1		0
8.	COUNT OF PERSONS IN RURAL PLACES OF 1,000-2,499	
1		0
9.	COUNT OF PERSONS IN RURAL PLACES OF LESS THAN 1,000	
1		0
10.	COUNT OF PERSONS IN URBAN PORTION OF CENTRAL CITIES OF URBANIZED AREAS	
1		0
11.	COUNT OF PERSONS IN URBANIZED AREAS IN URBAN PORTION OF PLACES OF 25,000+ OUTSIDE CENTRAL CITIES	
1		0
12.	COUNT OF PERSONS IN URBANIZED AREAS IN URBAN PORTION OF PLACES OF 2,500-24,999 OUTSIDE CENTRAL CITIES	
1		0
13.	COUNT OF PERSONS IN URBANIZED AREAS IN ADDITION TO THE SUM OF DATA ITEMS IN 10, 11, AND 12, THIS COUNT INCLUDES PERSONS OUTSIDE CENTRAL CITIES WHO ARE IN OTHER URBAN TERRITORY (OUTSIDE PLACES).	
1		0

TABLE II (CONTINUED)

14.	AGGREGATE $ VALUE FOR UNITS FOR WHICH VALUE IS TABULATED BY OCCUPANCY STATUS AND RACE OF HEAD (NOTES 1, 2, AND 3)	
1	TOTAL OWNER OCCUPIED	3100
2	NEGRO OWNER OCCUPIED	0
3	VACANT FOR SALE ONLY	0
15.	AGGREGATE $ MONTHLY CONTRACT RENT FOR UNITS FOR WHICH RENT IS TABULATED BY OCCUPANCY STATUS AND RACE OF HEAD (NOTES 1 AND 4)	
1	TOTAL RENTER OCCUPIED	378
2	NEGRO RENTER OCCUPIED	0
3	VACANT FOR RENT	0
16.	AGGREGATE $ VALUE FOR UNITS WITH ALL PLUMBING FACILITIES FOR WHICH VALUE IS TABULATED (NOTES 1, 2, 3, AND 5) BY OCCUPANCY STATUS AND RACE OF HEAD	
1	TOTAL OWNER OCCUPIED	3012
2	NEGRO OWNER OCCUPIED	0
3	VACANT FOR SALE ONLY	0
17.	AGGREGATE $ MONTHLY CONTRACT RENT FOR UNITS WITH ALL PLUMBING FACILITIES FOR WHICH RENT IS TABULATED. (NOTES 1, 4, AND 5) BY OCCUPANCY STATUS AND RACE OF HEAD	
1	TOTAL RENTER OCCUPIED	378
2	NEGRO RENTER OCCUPIED	0
3	VACANT FOR RENT	0
18.	COUNT OF PERSONS BY SEX BY AGE	
1	MALE UNDER 5 YEARS	17
2	MALE 5	7
3	MALE 6	6
4	MALE 7-9	22
5	MALE 10-13	29
6	MALE 14	8
7	MALE 15	8
8	MALE 16	7
9	MALE 17	11
10	MALE 18	3
11	MALE 19	2
12	MALE 20	2
13	MALE 21	3
14	MALE 22-24	6
15	MALE 25-34	31

TABLE II (CONTINUED)

16	MALE	35-44	36
17	MALE	45-54	42
18	MALE	55-59	18
19	MALE	60-61	6
20	MALE	62-64	10
21	MALE	65-74	24
22	MALE	75 AND OVER	9
23	FEMALE	UNDER 5 YEARS	20
24	FEMALE	5	6
25	FEMALE	6	6
26	FEMALE	7-9	6
27	FEMALE	10-13	19
28	FEMALE	14	5
29	FEMALE	15	8
30	FEMALE	16	6
31	FEMALE	17	7
32	FEMALE	18	5
33	FEMALE	19	2
34	FEMALE	20	2
35	FEMALE	21	4
36	FEMALE	22-24	10
37	FEMALE	25-34	33
38	FEMALE	35-44	40
39	FEMALE	45-54	42
40	FEMALE	55-59	18
41	FEMALE	60-61	6
42	FEMALE	62-64	9
43	FEMALE	65-74	23
44	FEMALE	75 AND OVER	10

19. COUNT OF NEGRO AND OTHER RACE PERSONS (EXCEPT WHITE) BY RACE BY SEX BY AGE

1	NEGRO MALE	UNDER 5 YEARS	0
2	NEGRO MALE	5-14	3
3	NEGRO MALE	15-24	1
4	NEGRO MALE	25-34	0
5	NEGRO MALE	35-44	0
6	NEGRO MALE	45-54	2
7	NEGRO MALE	55-64	1
8	NEGRO MALE	65 AND OVER	2
9	NEGRO FEMALE	UNDER 5 YEARS	1
10	NEGRO FEMALE	5-14	3
11	NEGRO FEMALE	15-24	2
12	NEGRO FEMALE	25-34	1
13	NEGRO FEMALE	35-44	1
14	NEGRO FEMALE	45-54	2
15	NEGRO FEMALE	55-64	0
16	NEGRO FEMALE	65 AND OVER	1

TABLE II (CONTINUED)

17	OTHER RACE MALE UNDER 5 YEARS	0
18	OTHER RACE MALE 5-14	0
19	OTHER RACE MALE 15-24	0
20	OTHER RACE MALE 25-34	0
21	OTHER RACE MALE 35-44	0
22	OTHER RACE MALE 45-54	0
23	OTHER RACE MALE 55-64	0
24	OTHER RACE MALE 65 AND OVER	0
25	OTHER RACE FEMALE UNDER 5 YEARS	0
26	OTHER RACE FEMALE 5-14	0
27	OTHER RACE FEMALE 15-24	0
28	OTHER RACE FEMALE 25-34	0
29	OTHER RACE FEMALE 35-44	0
30	OTHER RACE FEMALE 45-54	0
31	OTHER RACE FEMALE 55-64	0
32	OTHER RACE FEMALE 65 AND OVER	0

20. COUNT OF PERSONS BY RACE

1	WHITE	594
2	NEGRO	17
3	INDIAN	1
4	OTHER SPECIFIED RACES (INCLUDES JAPANESE, CHINESE, FILIPINO, HAWAIIAN AND KOREAN.)	0
5	REPORTED OTHER RACE	0

21. COUNT OF PERSONS 14 YEARS OLD AND OVER BY RACE BY SEX BY MARITAL STATUS

1	TOTAL MALE NOW MARRIED (EXCLUDES SEPARATED)	160
2	TOTAL MALE WIDOWED	7
3	TOTAL MALE DIVORCED	3
4	TOTAL MALE SEPARATED	1
5	TOTAL MALE NEVER MARRIED	55
6	TOTAL FEMALE NOW MARRIED (EXCLUDES SEPARATED)	162
7	TOTAL FEMALE WIDOWED	20
8	TOTAL FEMALE DIVORCED	3
9	TOTAL FEMALE SEPARATED	1
10	TOTAL FEMALE NEVER MARRIED	44
11	NEGRO MALE NOW MARRIED (EXCLUDES SEPARATED)	3
12	NEGRO MALE WIDOWED	1
13	NEGRO MALE DIVORCED	0
14	NEGRO MALE SEPARATED	0
15	NEGRO MALE NEVER MARRIED	1
16	NEGRO FEMALE NOW MARRIED (EXCLUDES SEPARATED)	3
17	NEGRO FEMALE WIDOWED	0
18	NEGRO FEMALE DIVORCED	0
19	NEGRO FEMALE SEPARATED	0
20	NEGRO FEMALE NEVER MARRIED	3

TABLE II (CONTINUED)

22. COUNT OF PERSONS BY RACE BY HOUSEHOLD RELATIONSHIP (INCLUDES PERSONS IN GROUP QUARTERS)

1	TOTAL FAMILY HEAD OF HUSBAND-WIFE HOUSEHOLD	157
2	TOTAL FAMILY HEAD OF HOUSEHOLD WITH OTHER MALE HEAD	2
3	TOTAL FAMILY HEAD OF HOUSEHOLD WITH FEMALE HEAD	8
4	TOTAL WIFE OF HEAD	157
5	TOTAL OTHER RELATIVE OF HEAD	262
6	TOTAL MALE PRIMARY INDIVIDUAL	9
7	TOTAL FEMALE PRIMARY INDIVIDUAL	13
8	TOTAL NONRELATIVE (INCLUDES ROOMER, BOARDER, OR LODGER) OF HEAD OF HOUSEHOLD	2
9	TOTAL INMATE OF INSTITUTION	0
10	TOTAL OTHER IN GROUP QUARTERS	0
11	NEGRO FAMILY HEAD OF HUSBAND-WIFE HOUSEHOLD	3
12	NEGRO FAMILY HEAD OF HOUSEHOLD WITH OTHER MALE HEAD	0
13	NEGRO FAMILY HEAD OF HOUSEHOLD WITH FEMALE HEAD	1
14	NEGRO WIFE OF HEAD	3
15	NEGRO OTHER RELATIVE OF HEAD	10
16	NEGRO MALE PRIMARY INDIVIDUAL	1
17	NEGRO FEMALE PRIMARY INDIVIDUAL	0
18	NEGRO NONRELATIVE (INCLUDES ROOMER, BOARDER, OR LODGER) OF HEAD OF HOUSEHOLD	1
19	NEGRO INMATE OF INSTITUTION	0
20	NEGRO OTHER IN GROUP QUARTERS	0

23. COUNT OF PERSONS UNDER 18 YEARS OLD BY HOUSEHOLD RELATIONSHIP AND FAMILY TYPE (INCLUDES PERSONS IN GROUP QUARTERS)

1	HEAD OR WIFE OF HEAD OF HOUSEHOLD	1
2	OWN (NEVER MARRIED) CHILD OF HEAD IN HUSBAND-WIFE FAMILY	206
3	OWN (NEVER MARRIED) CHILD OF HEAD IN OTHER FAMILY WITH MALE HEAD	0
4	OWN (NEVER MARRIED) CHILD OF HEAD IN FAMILY WITH FEMALE HEAD	5
5	OTHER RELATIVE OF HEAD IN HUSBAND-WIFE FAMILY	8
6	OTHER RELATIVE OF HEAD IN OTHER FAMILY WITH MALE HEAD	0
7	OTHER RELATIVE OF HEAD IN FAMILY WITH FEMALE HEAD	0
8	NONRELATIVE (INCLUDES ROOMER, BOARDER, OR LODGER) OF HEAD OF HOUSEHOLD	1
9	INMATE OF INSTITUTION	0
10	OTHER IN GROUP QUARTERS	0

TABLE II (CONTINUED)

24.	COUNT OF PERSONS 65 YEARS OLD AND OVER BY HOUSEHOLD RELATIONSHIP (INCLUDES PERSONS IN GROUP QUARTERS)	
1	HEAD OF FAMILY	30
2	WIFE OF HEAD	17
3	OTHER FAMILY MEMBER	6
4	MALE PRIMARY INDIVIDUAL	4
5	FEMALE PRIMARY INDIVIDUAL	9
6	NONRELATIVE (INCLUDES ROOMER, BOARDER, LODGER) OF HEAD OF HOUSEHOLD	0
7	INMATE OF INSTITUTION	0
8	OTHER IN GROUP QUARTERS	0
25.	COUNT OF FAMILIES BY FAMILY TYPE BY PRESENCE OF FAMILY MEMBERS (OTHER THAN HEAD AND WIFE) UNDER 18 AND 65 AND OVER	
1	HUSBAND-WIFE FAMILY, NO MEMBERS UNDER 18 OR 65 AND OVER	68
2	HUSBAND-WIFE FAMILY, MEMBERS UNDER 18, NONE 65 AND OVER	86
3	HUSBAND-WIFE FAMILY, MEMBERS 65 AND OVER, NONE UNDER 18	2
4	HUSBAND-WIFE FAMILY, MEMBERS UNDER 18 AND 65 AND OVER	2
5	OTHER FAMILY WITH MALE HEAD, NO MEMBERS UNDER 18 OR 65 AND OVER	1
6	OTHER FAMILY WITH MALE HEAD, MEMBERS UNDER 18, NONE 65 AND OVER	0
7	OTHER FAMILY WITH MALE HEAD, MEMBERS 65 AND OVER, NONE UNDER 18	1
8	OTHER FAMILY WITH MALE HEAD, MEMBERS UNDER 18 AND 65 AND OVER	0
9	FAMILY WITH FEMALE HEAD, NO MEMBERS UNDER 18 OR 65 AND OVER	4
10	FAMILY WITH FEMALE HEAD, MEMBERS UNDER 18, NONE 65 AND OVER	3
11	FAMILY WITH FEMALE HEAD, MEMBERS 65 AND OVER, NONE UNDER 18	1
12	FAMILY WITH FEMALE HEAD, MEMBERS UNDER 18 AND 65 AND OVER	0
26.	COUNT OF HOUSING UNITS BY OCCUPANCY/VACANCY STATUS AND RACE OF HEAD	
1	OWNER OCCUPIED TOTAL (INCLUDES WHITE, NEGRO AND OTHER RACES IN THIS AND ALL FOLLOWING TABULATIONS WHERE RACE IS SHOWN)	141
2	OWNER OCCUPIED WHITE HEAD OF HOUSEHOLD	138

TABLE II (CONTINUED)

3	OWNER OCCUPIED NEGRO HEAD OF HOUSEHOLD	2
4	RENTER OCCUPIED TOTAL	50
5	RENTER OCCUPIED WHITE HEAD OF HOUSEHOLD	47
6	RENTER OCCUPIED NEGRO HEAD OF HOUSEHOLD	2
7	VACANT FOR RENT	3
8	VACANT FOR SALE ONLY	2
9	VACANT OTHER VACANT YEAR ROUND	10
	COUNT OF VACANT SEASONAL AND VACANT MIGRATORY UNITS	
10		0

27. COUNT OF OCCUPIED AND VACANT YEAR-ROUND HOUSING UNITS BY TYPE OF STRUCTURE

1	1-UNIT STRUCTURE	197
2	2-OR-MORE-UNIT STRUCTURES	1
3	MOBILE HOMES OR TRAILERS (OCCUPIED ONLY)	7

28. COUNT OF OCCUPIED AND VACANT YEAR-ROUND HOUSING UNITS BY NUMBER OF ROOMS IN UNIT

1	1 ROOM	1
2	2 ROOMS	0
3	3 ROOMS	7
4	4 ROOMS	31
5	5 ROOMS	65
6	6 ROOMS	53
7	7 ROOMS	27
8	8 ROOMS OR MORE	21
	COUNT OF AGGREGATE NUMBER OF ROOMS IN OCCUPIED AND VACANT YEAR-ROUND HOUSING UNITS BY TENURE AND RACE OF HEAD	
9	TOTAL OCCUPIED AND VACANT YEAR-ROUND UNITS	1157
10	TOTAL OCCUPIED	1079
11	OWNER OCCUPIED	799
12	RENTER OCCUPIED	281
13	TOTAL NEGRO OCCUPIED	17
14	NEGRO OWNER OCCUPIED	0
15	NEGRO RENTER OCCUPIED	0
16	VACANT FOR RENT	8
17	VACANT FOR SALE ONLY	0

29. COUNT OF OCCUPIED UNITS BY NUMBER OF PERSONS IN UNIT

1	1 PERSON	21
2	2 PERSONS	69
3	3 PERSONS	29
4	4 PERSONS	30

TABLE II (CONTINUED)

5	5 PERSONS	22
6	6 PERSONS	13
7	7 PERSONS	3
8	8 PERSONS OR MORE	4
	COUNT OF AGGREGATE NUMBER OF PERSONS IN OCCUPIED UNITS BY TENURE AND RACE OF HEAD	
9	TOTAL OCCUPIED	
10	OWNER OCCUPIED	421
11	RENTER OCCUPIED	193
12	TOTAL NEGRO OCCUPIED	9
13	NEGRO OWNER OCCUPIED	0
14	NEGRO RENTER OCCUPIED	0
30.	COUNT OF OCCUPIED UNITS BY TENURE AND RACE OF HEAD BY NUMBER OF PERSONS PER ROOM	
1	TOTAL OCCUPIED 1.00 OR LESS	177
2	TOTAL OCCUPIED 1.01 - 1.50	10
3	TOTAL OCCUPIED 1.51 OR MORE	4
4	OWNER OCCUPIED 1.00 OR LESS	133
5	OWNER OCCUPIED 1.01 - 1.50	6
6	OWNER OCCUPIED 1.51 OR MORE	2
7	RENTER OCCUPIED 1.00 OR LESS	45
8	RENTER OCCUPIED 1.01 - 1.50	5
9	RENTER OCCUPIED 1.51 OR MORE	1
10	TOTAL NEGRO OCCUPIED 1.00 OR LESS	3
11	TOTAL NEGRO OCCUPIED 1.01 - 1.50	0
12	TOTAL NEGRO OCCUPIED 1.51 OR MORE	0
13	NEGRO OWNER OCCUPIED 1.00 OR LESS	0
14	NEGRO OWNER OCCUPIED 1.01 - 1.50	0
15	NEGRO OWNER OCCUPIED 1.51 OR MORE	0
16	NEGRO RENTER OCCUPIED 1.00 OR LESS	0
17	NEGRO RENTER OCCUPIED 1.01 - 1.50	0
18	NEGRO RENTER OCCUPIED 1.51 OR MORE	0
31.	COUNTS OF OCCUPIED AND VACANT YEAR-ROUND HOUSING UNITS IN MULTI-UNIT STRUCTURES BY NUMBER OF UNITS AT ADDRESS	
1	2-4 UNITS	0
2	5-9 UNITS	0
3	10 UNITS OR MORE	0
32.	COUNT OF OCCUPIED AND VACANT YEAR-ROUND HOUSING UNITS BY BASEMENT	
1	TOTAL WITH BASEMENT	59
2	UNITS WITH BASEMENT AT ADDRESS WITH 1, 2, OR 3 UNITS	59

TABLE II (CONTINUED)

33.	COUNT OF OCCUPIED AND VACANT YEAR-ROUND HOUSING UNITS BY ACCESS AND COMPLETE KITCHEN FACILITIES (NOTES 6 AND 7)	
1	WITH DIRECT ACCESS AND COMPLETE KITCHEN FACILITIES FOR THIS HOUSEHOLD ONLY	191
2	WITH DIRECT ACCESS, LACKING COMPLETE KITCHEN FACILITIES FOR THIS HOUSEHOLD ONLY	13
3	LACKING DIRECT ACCESS, WITH COMPLETE KITCHEN FACILITIES FOR THIS HOUSEHOLD ONLY	0
4	LACKING BOTH DIRECT ACCESS AND COMPLETE KITCHEN FACILITIES FOR THIS HOUSEHOLD ONLY	0
34.	COUNT OF UNITS WITH TELEPHONE AVAILABLE	
1		177
35.	COUNT OF OWNER-OCCUPIED UNITS FOR WHICH VALUE IS TABULATED BY VALUE (NOTE 4)	
1	LESS THAN $5,000	5
2	$ 5,000 - $ 9,999	3
3	$10,000 - $14,999	4
4	$15,000 - $19,999	6
5	$20,000 - $24,999	7
6	$25,000 - $34,999	6
7	$35,000 - $49,999	4
8	$50,000 OR MORE	1
	COUNT OF UNITS FOR WHICH VALUE IS TABULATED BY OCCUPANCY STATUS AND RACE OF HEAD (NOTE 3)	
9	TOTAL OWNER OCCUPIED	36
10	NEGRO OWNER OCCUPIED	0
11	VACANT FOR SALE ONLY	0
36.	COUNT OF RENTER-OCCUPIED UNITS FOR WHICH RENT IS TABULATED BY MONTHLY CONTRACT RENT (NOTE 4)	
1	WITH CASH RENT LESS THAN $40	3
2	WITH CASH RENT $ 50 - $ 59	1
3	WITH CASH RENT $ 60 - $ 79	2
4	WITH CASH RENT $ 80 - $ 99	1
5	WITH CASH RENT $100 - $119	0
6	WITH CASH RENT $120 - $149	0
7	WITH CASH RENT $150 - $199	1
8	WITH CASH RENT $200 - $299	0
9	WITH CASH RENT $300 OR MORE	0
10	WITHOUT PAYMENT OF CASH RENT	3
	COUNT OF UNITS FOR WHICH MONTHLY CONTRACT RENT IS TABULATED (DOES NOT INCLUDE - WITHOUT PAYMENT	

TABLE II (CONTINUED)

11	TOTAL RENTER OCCUPIED	6
12	NEGRO RENTER OCCUPIED	0
13	VACANT FOR RENT	0
37.	COUNT OF YEAR-ROUND VACANT-FOR-RENT UNITS VACANT LESS THAN 2 MONTHS	
1		1
38.	COUNT OF YEAR-ROUND VACANT-FOR-SALE-ONLY UNITS VACANT LESS THAN 6 MONTHS	
1		0
39.	COUNT OF VACANT YEAR-ROUND UNITS VACANT 6 MONTHS OR MORE	
1		8
40.	COUNT OF OCCUPIED UNITS WITH ROOMERS, BOARDERS, OR LODGERS	
1		1
41.	COUNT OF OCCUPIED AND VACANT YEAR-ROUND HOUSING UNITS BY TENURE AND RACE OF HEAD BY PLUMBING FACILITIES (NOTES 5 AND 8)	
1	TOTAL OCCUPIED AND VACANT YEAR-ROUND WITH ALL PLUMBING FACILITIES	183
2	TOTAL OCCUPIED AND VACANT YEAR-ROUND LACKING ONE OR MORE PLUMBING FACILITIES	22
3	TOTAL OCCUPIED WITH ALL PLUMBING FACILITIES	175
4	TOTAL OCCUPIED LACKING ONE OR MORE PLUMBING FACILITIES	16
5	OWNER OCCUPIED WITH ALL PLUMBING FACILITIES	130
6	OWNER OCCUPIED LACKING ONE OR MORE PLUMBING FACILITIES	10
7	RENTER OCCUPIED WITH ALL PLUMBING FACILITIES	45
8	RENTER OCCUPIED LACKING ONE OR MORE PLUMBING FACILITIES	5
9	TOTAL NEGRO OCCUPIED WITH ALL PLUMBING FACILITIES	2
10	TOTAL NEGRO OCCUPIED LACKING ONE OR MORE PLUMBING FACILITIES	1
11	NEGRO OWNER OCCUPIED WITH ALL PLUMBING FACILITIES	0
12	NEGRO OWNER OCCUPIED LACKING ONE OR MORE PLUMBING FACILITIES	0
13	NEGRO RENTER OCCUPIED WITH ALL PLUMBING FACILITIES	0
14	NEGRO RENTER OCCUPIED LACKING ONE OR MORE PLUMBING FACILITIES	0
15	VACANT FOR RENT WITH ALL PLUMBING FACILITIES	1

TABLE II (CONTINUED)

16	VACANT FOR RENT LACKING ONE OR MORE PLUMBING FACILITIES	0
17	VACANT FOR SALE ONLY WITH ALL PLUMBING FACILITIES	0
18	VACANT FOR SALE ONLY LACKING ONE OR MORE PLUMBING FACILITIES	0

42. COUNT OF OCCUPIED UNITS WITH ALL PLUMBING FACILITIES AND 1.01 OR MORE PERSONS PER ROOM BY TENURE AND RACE OF HEAD

1	TOTAL OCCUPIED	12
2	OWNER OCCUPIED	7
3	RENTER OCCUPIED	4
4	TOTAL NEGRO OCCUPIED	0
5	NEGRO OWNER OCCUPIED	0
6	NEGRO RENTER OCCUPIED	0

43. COUNT OF OWNER-OCCUPIED UNITS WITH ALL PLUMBING FACILITIES FOR WHICH VALUE IS TABULATED BY VALUE (NOTES 3 AND 5)

1	LESS THAN $ 5,000	2
2	$ 5,000 - $ 9,999	3
3	$10,000 - $14,999	4
4	$15,000 - $19,999	6
5	$20,000 - $24,999	7
6	$25,000 - $34,999	6
7	$35,000 - $49,999	3
8	$50,000 OR MORE	1
	COUNT OF UNITS WITH ALL PLUMBING FACILITIES FOR WHICH VALUE IS TABULATED BY OCCUPANCY STATUS AND RACE OF HEAD	
9	TOTAL OWNER OCCUPIED	33
10	NEGRO OWNER OCCUPIED	0
11	VACANT FOR SALE ONLY	0

44. COUNT OF RENTER-OCCUPIED UNITS WITH ALL PLUMBING FACILITIES FOR WHICH CONTRACT RENT IS TABULATED BY MONTHLY CONTRACT RENT (NOTES 4 AND 5)

1	WITH CASH RENT LESS THAN $40	3
2	WITH CASH RENT $ 40 - $ 59	1
3	WITH CASH RENT $ 60 - $ 79	2
4	WITH CASH RENT $ 80 - $ 99	1
5	WITH CASH RENT $100 - $119	0
6	WITH CASH RENT $120 - $149	0
7	WITH CASH RENT $150 - $199	1
8	WITH CASH RENT $200 - $299	0
9	WITH CASH RENT $300 OR MORE	0
10	WITHOUT PAYMENT OF CASH RENT	3

TABLE II (CONTINUED)

	COUNT OF UNITS WITH ALL PLUMBING FACILITIES FOR WHICH RENT IS TABULATED (DOES NOT INCLUDE -WITHOUT PAYMENT OF CASH RENT-) BY OCCUPANCY STATUS AND RACE OF HEAD	
11	TOTAL RENTER OCCUPIED	6
12	NEGRO RENTER OCCUPIED	0
13	VACANT FOR RENT	0
45.	COUNT OF OCCUPIED AND VACANT YEAR-ROUND HOUSING UNITS BY TOILET FACILITIES	
1	FLUSH TOILET FOR THIS HOUSEHOLD ONLY	187
2	FLUSH TOILET, BUT ALSO USED BY ANOTHER HOUSEHOLD	0
3	NO FLUSH TOILET	19
46.	COUNT OF OCCUPIED UNITS WITH 1.01 OR MORE PERSONS PER ROOM BY HOUSEHOLD TYPE	
1	HUSBAND-WIFE FAMILY	14
2	OTHER FAMILY WITH MALE HEAD	0
3	FAMILY WITH FEMALE HEAD	0
4	PRIMARY INDIVIDUAL	0
47.	COUNT OF OCCUPIED UNITS WITH 1.51 OR MORE PERSONS PER ROOM BY HOUSEHOLD TYPE	
1	HUSBAND-WIFE FAMILY	4
2	OTHER FAMILY WITH MALE HEAD	0
3	FAMILY WITH FEMALE HEAD	0
4	PRIMARY INDIVIDUAL	0
48.	COUNT OF PERSONS IN OCCUPIED UNITS WITH 1.01 OR MORE PERSONS PER ROOM BY AGE	
1	UNDER 18 YEARS	58
2	18-54 YEARS	33
3	65 YEARS AND OVER	1
49.	COUNT OF PERSONS IN OCCUPIED UNITS WITH 1.51 OR MORE PERSONS PER ROOM BY AGE	
1	UNDER 18 YEARS	16
2	18-64 YEARS	8
3	65 YEARS AND OVER	1

TABLE II (CONTINUED)

50.	COUNT OF PERSONS IN OCCUPIED UNITS WITH 1.01 OR MORE PERSONS PER ROOM BY TENURE AND RACE OF HEAD	
1	TOTAL OCCUPIED	92
2	OWNER OCCUPIED	49
3	RENTER OCCUPIED	43
4	TOTAL NEGRO OCCUPIED	0
5	NEGRO OWNER OCCUPIED	0
6	NEGRO RENTER OCCUPIED	0
51.	COUNT OF PERSONS IN OCCUPIED UNITS BY PLUMBING FACILITIES (NOTES 5 AND 8)	
1	WITH ALL PLUMBING FACILITIES	567
2	LACKING ONE OR MORE PLUMBING FACILITIES	47
52.	COUNT OF PERSONS IN OCCUPIED UNITS WITH 1.01 OR MORE PERSONS PER ROOM BY PLUMBING FACILITIES (NOTES 5 AND 8)	
1	WITH ALL PLUMBING FACILITIES	74
2	LACKING ONE OR MORE PLUMBING FACILITIES	17
53.	COUNT OF FAMILIES BY PLUMBING FACILITIES (NOTES 5 AND 8)	
1	WITH ALL PLUMBING FACILITIES	158
2	LACKING ONE OR MORE PLUMBING FACILITIES	11
54.	COUNT OF HOUSING UNITS WITH ALLOCATIONS BY OCCUPANCY STATUS BY HOUSING ALLOCATIONS	
1	OCCUPIED, TELEPHONE AVAILABLE	3
2	OCCUPIED, ACCESS TO UNIT	0
3	OCCUPIED, COMPLETE KITCHEN FACILITIES, INDIRECT	4
4	OCCUPIED, COMPLETE KITCHEN FACILITIES, DIRECT	2
5	OCCUPIED, NUMBER OF ROOMS	3
6	OCCUPIED, HOT AND COLD PIPED WATER, INDIRECT	5
7	OCCUPIED, HOT AND COLD PIPED WATER, DIRECT	1
8	OCCUPIED, TOILET FACILITIES, INDIRECT	3
9	OCCUPIED, TOILET FACILITIES, DIRECT	1
10	OCCUPIED, BATHING FACILITIES (BATHTUB OR SHOWER) INDIRECT	3
11	OCCUPIED, BATHING FACILITIES (BATHTUB OR SHOWER) DIRECT	0
12	OCCUPIED, TYPE OF FOUNDATION (BASEMENT)	6
13	OCCUPIED, TENURE, INDIRECT	5
14	OCCUPIED, TENURE, DIRECT	1
15	OCCUPIED, TYPE OF STRUCTURE, INDIRECT	2

TABLE II (CONTINUED)

16	OCCUPIED, TYPE OF STRUCTURE, DIRECT	1
17	OCCUPIED, USE OF PROPERTY	6
18	OCCUPIED, VALUE OF UNIT	1
19	OCCUPIED, CONTRACT RENT	2
20	OCCUPIED, VACANCY STATUS	0
21	OCCUPIED, DURATION OF VACANCY	0
22	OCCUPIED, UNITS AT ADDRESS, INDIRECT	2
23	OCCUPIED, UNITS AT ADDRESS, DIRECT	5
24	VACANT, TELEPHONE AVAILABLE	0
25	VACANT, ACCESS TO UNIT	0
26	VACANT, COMPLETE KITCHEN FACILITIES, INDIRECT	2
27	VACANT, COMPLETE KITCHEN FACILITIES, DIRECT	0
28	VACANT, VACANT NUMBER OF ROOMS	0
29	VACANT, HOT AND COLD PIPED WATER, INDIRECT	1
30	VACANT, HOT AND COLD PIPED WATER, DIRECT	0
31	VACANT, TOILET FACILITIES, INDIRECT	1
32	VACANT, TOILET FACILITIES, DIRECT	0
33	VACANT, BATHING FACILITIES (BATHTUB OR SHOWER) INDIRECT	1
34	VACANT, BATHING FACILITIES (BATHTUB OR SHOWER) DIRECT	0
35	VACANT, TYPE OF FOUNDATION (BASEMENT)	3
36	VACANT, TENURE, INDIRECT	0
37	VACANT, TENURE, DIRECT	0
38	VACANT, TYPE OF STRUCTURE, INDIRECT	0
39	VACANT, TYPE OF STRUCTURE, DIRECT	0
40	VACANT, USE OF PROPERTY	1
41	VACANT, VALUE OF UNIT	0
42	VACANT, CONTRACT RENT	0
43	VACANT, VACANCY STATUS	0
44	VACANT, DURATION OF VACANCY	2
45	VACANT, UNITS AT ADDRESS, INDIRECT	0
46	VACANT, UNITS AT ADDRESS, DIRECT	0

55. COUNT OF PERSONS SUBSTITUTED OR WITH ALLOCATIONS BY POPULATION SUBSTITUTIONS AND ALLOCATIONS. IF A PERSON WERE SUBSTITUTED, HE IS COUNTED ONLY AS SUBSTITUTED AND IF ANY OF HIS ITEMS WERE ALLOCATED THEY WERE NOT TALLIED HERE AS ALLOCATIONS.

1	PERSON SUBSTITUTED BECAUSE OF EQUIPMENT MALFUNCTION	5
2	PERSON SUBSTITUTED BECAUSE OF NONRESPONSE	21
3	PERSON WITH ONE OR MORE ALLOCATIONS	65
4	HOUSEHOLD RELATIONSHIP	22
5	SEX	11
6	COLOR	7
7	AGE	27
8	AGE, DECADE UNKNOWN	17
9	AGE, DECADE KNOWN	10
10	MARITAL STATUS (IF AGE IS 14+)	14

TABLE III

DRUMMOND SCHOOL DISTRICT PROFILE;
GARFIELD COUNTY

2	SUMAMRY TYPE	TRACTED AREA
41	1970 STATE	PLACE DESCRIPTION
047	1970 COUNTY	SPECIFIED CITY WITH RURAL TERRITORY (OVER BOUNDED)
	1960 STATE	ECONOMIC SUBREGION
	CENTRAL COUNTY CODE	1970 COUNTY OF TABULATION
	QUASI-STATE	NEW ENGLAND TOWN SIZE CODE
	MINOR CIVIL DIVISION OR CENSUS COUNTY DIVISION	NEW ENGLAND TOWN CODE
	ANNEXATION CODE	UNIVERSAL AREA CODE-LEVEL
	PLACE	UNIVERSAL AREA CODE
	WARD	PLACE SIZE
	TRACT (BASIC)	PUBLICATION CODE
	TRACT (SUFFIX)	AREA CODE
	DISTRICT OFFICE	BLOCK GROUP
	CONGRESSIONAL DISTRICT	
	CENTRAL BUSINESS DISTRICT	
	ENUMERATION DISTRICT-BASIC	
	ENUMERATION DISTRICT-SUFFIX	
	TYPE OF ED	
	POTENTIAL URBANIZED AREA/ STANDARD METROPOLITAN STATISTICAL AREA	STANDARD CONSOLATED AREA
	URBAN/RURAL	
	ACTUAL URBANIZED AREA	
	STATE ECONOMIC AREA	

1. COUNT OF ALL PERSONS

1 810

2. COUNT OF ALL HOUSING UNITS

1 308

3. COUNT OF PERSONS IN RURAL AREAS
IN ADDITION TO THE SUM OF DATA ITEMS IN 8 AND 9, THIS COUNT INCLUDES PERSONS IN OTHER RURAL TERRITORY (RURAL OUTSIDE PLACES).

1 810

4. COUNT OF PERSONS IN ANNEXED TERRITORIES

1 0

TABLE III (CONTINUED)

5.	COUNT OF RURAL HOUSING UNITS	
	1	308
6.	COUNT OF PERSONS IN STANDARD METROPOLITAN STATISTICAL AREAS	
	1	0
7.	COUNT OF PERSONS IN URBAN PORTION OF CENTRAL CITIES OF STANDARD METROPOLITAN STATISTICAL AREAS	
	1	0
8.	COUNT OF PERSONS IN RURAL PLACES OF 1,000-2,499	
	1	0
9.	COUNT OF PERSONS IN RURAL PLACES OF LESS THAN 1,000	
	1	0
10.	COUNT OF PERSONS IN URBAN PORTION OF CENTRAL CITIES OF URBANIZED AREAS	
	1	0
11.	COUNT OF PERSONS IN URBANIZED AREAS IN URBAN PORTION OF PLACES OF 25,000+ OUTSIDE CENTRAL CITIES	
	1	0
12.	COUNT OF PERSONS IN URBANIZED AREAS IN URBAN PORTION OF PLACES OF 2,500-24,999 OUTSIDE CENTRAL CITIES	
	1	0
13.	COUNT OF PERSONS IN URBANIZED AREAS IN ADDITION TO THE SUM OF DATA ITEMS IN 10, 11, AND 12, THIS COUNT INCLUDES PERSONS OUTSIDE CENTRAL CITIES WHO ARE IN PLACES OF LESS THAN 2,500, PLUS PERSONS WHO ARE IN OTHER URBAN TERRITORY (OUTSIDE PLACES).	
	1	0

TABLE II (CONTINUED)

14.	AGGREGATE $ VALUE FOR UNITS FOR WHICH VALUE IS TABULATED BY OCCUPANCY STATUS AND RACE OF HEAD (NOTES 1, 2, AND 3)	
1	TOTAL OWNER OCCUPIED	2947
2	NEGRO OWNER OCCUPIED	0
3	VACANT FOR SALE ONLY	82
15.	AGGREGATE $ MONTHLY CONTRACT RENT FOR UNITS FOR WHICH RENT IS TABULATED BY OCCUPANCY STATUS AND RACE OF HEAD (NOTES 1 AND 4)	
1	TOTAL RENTER OCCUPIED	751
2	NEGRO RENTER OCCUPIED	0
3	VACANT FOR RENT	0
16.	AGGREGATE $ VALUE FOR UNITS WITH ALL PLUMBING FACILITIES FOR WHICH VALUE IS TABULATED (NOTES 1, 2, 3, AND 5) BY OCCUPANCY STATUS AND RACE OF HEAD	
1	TOTAL OWNER OCCUPIED	2889
2	NEGRO OWNER OCCUPIED	0
3	VACANT FOR SALE ONLY	58
17.	AGGREGATE $ MONTHLY CONTRACT RENT FOR UNITS WITH ALL PLUMBING FACILITIES FOR WHICH RENT IS TABULATED. (NOTES 1, 4, AND 5) BY OCCUPANCY STATUS AND RACE OF HEAD	
1	TOTAL RENTER OCCUPIED	748
2	NEGRO RENTER OCCUPIED	0
3	VACANT FOR RENT	0
18.	COUNT OF PERSONS BY SEX AND AGE	
1	MALE UNDER 5 YEARS	19
2	MALE 5	3
3	MALE 6	7
4	MALE 7-9	27
5	MALE 10-13	35
6	MALE 14	6
7	MALE 15	9
8	MALE 16	8
9	MALE 17	7
10	MALE 18	6
11	MALE 19	3
12	MALE 20	1
13	MALE 21	3
14	MALE 22-24	5
15	MALE 25-34	35

TABLE III (CONTINUED)

16	MALE	35-44	46
17	MALE	45-54	52
18	MALE	55-59	27
19	MALE	60-61	14
20	MALE	62-64	18
21	MALE	65-74	41
22	MALE	75 AND OVER	23
23	FEMALE	UNDER 5 YEARS	24
24	FEMALE	5	6
25	FEMALE	6	5
26	FEMALE	7-9	22
27	FEMALE	10-13	36
28	FEMALE	14	9
29	FEMALE	15	9
30	FEMALE	16	9
31	FEMALE	17	10
32	FEMALE	18	3
33	FEMALE	19	6
34	FEMALE	20	2
35	FEMALE	21	3
36	FEMALE	22-24	9
37	FEMALE	25-34	36
38	FEMALE	35-44	45
39	FEMALE	45-54	52
40	FEMALE	55-59	28
41	FEMALE	60-61	13
42	FEMALE	62-64	18
43	FEMALE	65-74	46
44	FEMALE	75 AND OVER	27

19. COUNT OF NEGRO AND OTHER RACE PERSONS (EXCEPT WHITE) BY RACE BY SEX BY AGE

1	NEGRO	MALE UNDER 5 YEARS	0
2	NEGRO	MALE 5-14	0
3	NEGRO	MALE 15-24	0
4	NEGRO	MALE 25-34	0
5	NEGRO	MALE 35-44	0
6	NEGRO	MALE 45-54	0
7	NEGRO	MALE 55-64	0
8	NEGRO	MALE 65 AND OVER	0
9	NEGRO	FEMALE UNDER 5 YEARS	0
10	NEGRO	FEMALE 5-14	0
11	NEGRO	FEMALE 15-24	0
12	NEGRO	FEMALE 25-34	0
13	NEGRO	FEMALE 35-44	0
14	NEGRO	FEMALE 45-54	0
15	NEGRO	FEMALE 55-64	0
16	NEGRO	FEMALE 65 AND OVER	0

TABLE III (CONTINUED)

17	OTHER RACE MALE UNDER 5 YEARS	0
18	OTHER RACE MALE 5-14	0
19	OTHER RACE MALE 15-24	0
20	OTHER RACE MALE 25-34	0
21	OTHER RACE MALE 35-44	0
22	OTHER RACE MALE 45-54	0
23	OTHER RACE MALE 55-64	0
24	OTHER RACE MALE 65 AND OVER	0
25	OTHER RACE FEMALE UNDER 5 YEARS	0
26	OTHER RACE FEMALE 5-14	0
27	OTHER RACE FEMALE 15-24	0
28	OTHER RACE FEMALE 25-34	0
29	OTHER RACE FEMALE 35-44	0
30	OTHER RACE FEMALE 45-54	0
31	OTHER RACE FEMALE 55-64	0
32	OTHER RACE FEMALE 65 AND OVER	1

20. COUNT OF PERSONS BY RACE

1	WHITE	807
2	NEGRO	0
3	INDIAN	1
4	OTHER SPECIFIED RACES (INCLUDES JAPANESE, CHINESE, FILIPINO, HAWAIIAN AND KOREAN.)	1
5	REPORTED OTHER RACE	0

21. COUNT OF PERSONS 14 YEARS OLD AND OVER BY RACE BY SEX BY MARITAL STATUS

1	TOTAL MALE NOW MARRIED (EXCLUDES SEPARATED)	218
2	TOTAL MALE WIDOWED	10
3	TOTAL MALE DIVORCED	6
4	TOTAL MALE SEPARATED	2
5	TOTAL MALE NEVER MARRIED	67
6	TOTAL FEMALE NOW MARRIED (EXCLUDES SEPARATED)	219
7	TOTAL FEMALE WIDOWED	42
8	TOTAL FEMALE DIVORCED	4
9	TOTAL FEMALE SEPARATED	0
10	TOTAL FEMALE NEVER MARRIED	59
11	NEGRO MALE NOW MARRIED (EXCLUDES SEPARATED)	0
12	NEGRO MALE WIDOWED	0
13	NEGRO MALE DIVORCED	0
14	NEGRO MALE SEPARATED	0
15	NEGRO MALE NEVER MARRIED	0
16	NEGRO FEMALE NOW MARRIED (EXCLUDES SEPARATED)	0
17	NEGRO FEMALE WIDOWED	0
18	NEGRO FEMALE DIVORCED	0
19	NEGRO FEMALE SEPARATED	0
20	NEGRO FEMALE NEVER MARRIED	0

TABLE III (CONTINUED)

22. COUNT OF PERSONS BY RACE BY HOUSEHOLD RELATIONSHIP (INCLUDES PERSONS IN GROUP QUARTERS)

1	TOTAL FAMILY HEAD OF HUSBAND-WIFE HOUSEHOLD	212
2	TOTAL FAMILY HEAD OF HOUSEHOLD WITH OTHER MALE HEAD	9
3	TOTAL FAMILY HEAD OF HOUSEHOLD WITH FEMALE HEAD	15
4	TOTAL WIFE OF HEAD	212
5	TOTAL OTHER RELATIVE OF HEAD	314
6	TOTAL MALE PRIMARY INDIVIDUAL	16
7	TOTAL FEMALE PRIMARY INDIVIDUAL	27
8	TOTAL NONRELATIVE (INCLUDES ROOMER, BOARDER, OR LODGER) OF HEAD OF HOUSEHOLD	5
9	TOTAL INMATE OF INSTITUTION	0
10	TOTAL OTHER IN GROUP QUARTERS	0
11	NEGRO FAMILY HEAD OF HUSBAND-WIFE HOUSEHOLD	0
12	NEGRO FAMILY HEAD OF HOUSEHOLD WITH OTHER MALE HEAD	0
13	NEGRO FAMILY HEAD OF HOUSEHOLD WITH FEMALE HEAD	0
14	NEGRO WIFE OF HEAD	0
15	NEGRO OTHER RELATIVE OF HEAD	0
16	NEGRO MALE PRIMARY INDIVIDUAL	0
17	NEGRO FEMALE PRIMARY INDIVIDUAL	0
18	NEGRO NONRELATIVE (INCLUDES ROOMER, BOARDER, OR LODGER) OF HEAD OF HOUSEHOLD	0
19	NEGRO INMATE OF INSTITUTION	0
20	NEGRO OTHER IN GROUP QUARTERS	0

23. COUNT OF PERSONS UNDER 18 YEARS OLD BY HOUSEHOLD RELATIONSHIP AND FAMILY TYPE (INCLUDES PERSONS IN GROUP QUARTERS)

1	HEAD OR WIFE OF HEAD OF HOUSEHOLD	0
2	OWN (NEVER MARRIED) CHILD OF HEAD IN HUSBAND-WIFE FAMILY	224
3	OWN (NEVER MARRIED) CHILD OF HEAD IN OTHER FAMILY WITH MALE HEAD	2
4	OWN (NEVER MARRIED) CHILD OF HEAD IN FAMILY WITH FEMALE HEAD	13
5	OTHER RELATIVE OF HEAD IN HUSBAND-WIFE FAMILY	8
6	OTHER RELATIVE OF HEAD IN OTHER FAMILY WITH MALE HEAD	1
7	OTHER RELATIVE OF HEAD IN FAMILY WITH FEMALE HEAD	0
8	NONRELATIVE (INCLUDES ROOMER, BOARDER, OR LODGER) OF HEAD OF HOUSEHOLD	3
9	INMATE OF INSTITUTION	0
10	OTHER IN GROUP QUARTERS	0

TABLE III (CONTINUED)

24.	COUNT OF PERSONS 65 YEARS OLD AND OVER BY HOUSEHOLD RELATIONSHIP (INCLUDES PERSONS IN GROUP QUARTERS)	
1	HEAD OF FAMILY	59
2	WIFE OF HEAD	32
3	OTHER FAMILY MEMBER	11
4	MALE PRIMARY INDIVIDUAL	9
5	FEMALE PRIMARY INDIVIDUAL	23
6	NONRELATIVE (INCLUDES ROOMER, BOARDER, LODGER) OF HEAD OF HOUSEHOLD	0
7	INMATE OF INSTITUTION	0
8	OTHER IN GROUP QUARTERS	0
25.	COUNT OF FAMILIES BY FAMILY TYPE BY PRESENCE OF FAMILY MEMBERS (OTHER THAN HEAD AND WIFE) UNDER 18 AND 65 AND OVER	
1	HUSBAND-WIFE FAMILY, NO MEMBERS UNDER 18 OR 65 AND OVER	112
2	HUSBAND-WIFE FAMILY, MEMBERS UNDER 18, NONE 65 AND OVER	96
3	HUSBAND-WIFE FAMILY, MEMBERS 65 AND OVER, NONE UNDER 18	0
4	HUSBAND-WIFE FAMILY, MEMBERS UNDER 18 AND 65 AND OVER	2
5	OTHER FAMILY WITH MALE HEAD, NO MEMBERS UNDER 18 OR 65 AND OVER	4
6	OTHER FAMILY WITH MALE HEAD, MEMBERS UNDER 18, NONE 65 AND OVER	1
7	OTHER FAMILY WITH MALE HEAD, MEMBERS 65 AND OVER, NONE UNDER 18	3
8	OTHER FAMILY WITH MALE HEAD, MEMBERS UNDER 18 AND 65 AND OVER	0
9	FAMILY WITH FEMALE HEAD, NO MEMBERS UNDER 18 OR 65 AND OVER	7
10	FAMILY WITH FEMALE HEAD, MEMBERS UNDER 18, NONE 65 AND OVER	5
11	FAMILY WITH FEMALE HEAD, MEMBERS 65 AND OVER, NONE UNDER 18	3
12	FAMILY WITH FEMALE HEAD, MEMBERS UNDER 18 AND 65 AND OVER	0

TABLE III. (CONTINUED)

26.	COUNT OF HOUSING UNITS BY OCCUPANCY/VACANCY STATUS AND RACE OF HEAD	
1	OWNER OCCUPIED TOTAL (INCLUDES WHITE, NEGRO AND OTHER RACES IN THIS AND ALL FOLLOWING TABULATIONS WHERE RACE IS SHOWN)	219
2	OWNER OCCUPIED WHITE HEAD OF HOUSEHOLD	217
3	OWNER OCCUPIED NEGRO HEAD OF HOUSEHOLD	0
4	RENTER OCCUPIED TOTAL	60
5	RENTER OCCUPIED WHITE HEAD OF HOUSEHOLD	58
6	RENTER OCCUPIED NEGRO HEAD OF HOUSEHOLD	0
7	VACANT FOR RENT	2
8	VACANT FOR SALE ONLY	6
9	VACANT OTHER VACANT YEAR ROUND	21
10	COUNT OF VACANT SEASONAL AND VACANT MIGRATORY UNITS	0
27.	COUNT OF OCCUPIED AND VACANT YEAR-ROUND HOUSING UNITS BY TYPE OF STRUCTURE	
1	1-UNIT STRUCTURE	305
2	2-OR-MORE-UNIT STRUCTURES	1
3	MOBILE HOMES OR TRAILERS (OCCUPIED ONLY)	3
28.	COUNT OF OCCUPIED AND VACANT YEAR-ROUND HOUSING UNITS BY NUMBER OF ROOMS IN UNIT	
1	1 ROOM	1
2	2 ROOMS	1
3	3 ROOMS	10
4	4 ROOMS	56
5	5 ROOMS	102
6	6 ROOMS	81
7	7 ROOMS	36
8	8 ROOMS OR MORE	21
	COUNT OF AGGREGATE NUMBER OF ROOMS IN OCCUPIED AND VACANT YEAR-ROUND HOUSING UNITS BY TENURE AND RACE OF HEAD	
9	TOTAL OCCUPIED AND VACANT YEAR-ROUND UNITS	1690
10	TOTAL OCCUPIED	1541
11	OWNER OCCUPIED	1220
12	RENTER OCCUPIED	321
13	TOTAL NEGRO OCCUPIED	0
14	NEGRO OWNER OCCUPIED	0
15	NEGRO RENTER OCCUPIED	0
16	VACANT FOR RENT	0
17	VACANT FOR SALE ONLY	26

TABLE III (CONTINUED)

29.	COUNT OF OCCUPIED UNITS BY NUMBER OF PERSONS IN UNIT	
1	1 PERSON	42
2	2 PERSONS	106
3	3 PERSONS	44
4	4 PERSONS	38
5	5 PERSONS	27
6	6 PERSONS	13
7	7 PERSONS	4
8	8 PERSONS OR MORE	3
	COUNT OF AGGREGATE NUMBER OF PERSONS IN OCCUPIED UNITS BY TENURE AND RACE OF HEAD	
9	TOTAL OCCUPIED	
10	OWNER OCCUPIED	596
11	RENTER OCCUPIED	214
12	TOTAL NEGRO OCCUPIED	0
13	NEGRO OWNER OCCUPIED	0
14	NEGRO RENTER OCCUPIED	0
30.	COUNT OF OCCUPIED UNITS BY TENURE AND RACE OF HEAD BY NUMBER OF PERSONS PER ROOM	
1	TOTAL OCCUPIED 1.00 OR LESS	262
2	TOTAL OCCUPIED 1.01 - 1.50	16
3	TOTAL OCCUPIED 1.51 OR MORE	2
4	OWNER OCCUPIED 1.00 OR LESS	209
5	OWNER OCCUPIED 1.01 - 1.50	10
6	OWNER OCCUPIED 1.51 OR MORE	0
7	RENTER OCCUPIED 1.00 OR LESS	51
8	RENTER OCCUPIED 1.01 - 1.50	7
9	RENTER OCCUPIED 1.51 OR MORE	0
10	TOTAL NEGRO OCCUPIED 1.00 OR LESS	0
11	TOTAL NEGRO OCCUPIED 1.01 - 1.50	0
12	TOTAL NEGRO OCCUPIED 1.51 OR MORE	0
13	NEGRO OWNER OCCUPIED 1.00 OR LESS	0
14	NEGRO OWNER OCCUPIED 1.01 - 1.50	0
15	NEGRO OWNER OCCUPIED 1.51 OR MORE	0
16	NEGRO RENTER OCCUPIED 1.00 OR LESS	0
17	NEGRO RENTER OCCUPIED 1.01 - 1.50	0
18	NEGRO RENTER OCCUPIED 1.51 OR MORE	0
31.	COUNT OF OCCUPIED AND VACANT YEAR-ROUND HOUSING UNITS IN MULTI-UNIT STRUCTURES BY NUMBER OF UNITS AT ADDRESS	
1	2-4 UNITS	0
2	5-9 UNITS	0
3	10 UNITS OR MORE	0

TABLE III (CONTINUED)

32.	COUNT OF OCCUPIED AND VACANT YEAR-ROUND HOUSING UNITS BY BASEMENT	
1	TOTAL WITH BASEMENT	67
2	UNITS WITH BASEMENT AT ADDRESS WITH 1, 2, OR 3 UNITS	67
33.	COUNT OF OCCUPIED AND VACANT YEAR-ROUND HOUSING UNITS BY ACCESS AND COMPLETE KITCHEN FACILITIES (NOTES 6 AND 7)	
1	WITH DIRECT ACCESS AND COMPLETE KITCHEN FACILITIES FOR THIS HOUSEHOLD ONLY	284
2	WITH DIRECT ACCESS, LACKING COMPLETE KITCHEN FACILITIES FOR THIS HOUSEHOLD ONLY	26
3	LACKING DIRECT ACCESS, WITH COMPLETE KITCHEN FACILITIES FOR THIS HOUSEHOLD ONLY	0
4	LACKING BOTH DIRECT ACCESS AND COMPLETE KITCHEN FACILITIES FOR THIS HOUSEHOLD ONLY	0
34.	COUNT OF OCCUPIED UNITS WITH TELEPHONE AVAILABLE	
1		249
35.	COUNT OF OWNER-OCCUPIED UNITS FOR WHICH VALUE IS TABULATED BY VALUE (NOTE 4)	
1	LESS THAN $5,000	37
2	$ 5,000 - $ 9,999	21
3	$10,000 - $14,999	9
4	$15,000 - $19,999	6
5	$20,000 - $24,999	3
6	$25,000 - $34,999	1
7	$35,000 - $49,999	3
8	$50,000 OR MORE	0
	COUNT OF UNITS FOR WHICH VALUE IS TABULATED BY OCCUPANCY STATUS AND RACE OF HEAD (NOTE 3)	
9	TOTAL OWNER OCCUPIED	82
10	NEGRO OWNER OCCUPIED	0
11	VACANT FOR SALE ONLY	5
36.	COUNT OF RENTER-OCCUPIED UNITS FOR WHICH RENT IS TABULATED BY MONTHLY CONTRACT RENT (NOTE 4)	
1	WITH CASH RENT LESS THAN $40	1
2	WITH CASH RENT $ 40 - $ 59	8
3	WITH CASH RENT $ 60 - $ 79	1
4	WITH CASH RENT $ 80 - $ 99	1
5	WITH CASH RENT $100 - $119	0
6	WITH CASH RENT $120 - $149	0

TABLE III (CONTINUED)

7	WITH CASH RENT $150 - $199	0
8	WITH CASH RENT $300 OR MORE	0
10	WITHOUT PAYMENT OF CASH RENT	3
	COUNT OF UNITS FOR WHICH MONTHLY CONTRACT RENT IS TABULATED (DOES NOT INCLUDE - WITHOUT PAYMENT	
11	TOTAL RENTER OCCUPIED	13
12	NEGRO RENTER OCCUPIED	0
13	VACANT FOR RENT	0

37. COUNT OF YEAR-ROUND VACANT-FOR-RENT UNITS VACANT LESS THAN 2 MONTHS

1		0

38. COUNT OF YEAR-ROUND VACANT-FOR-SALE-ONLY UNITS VACANT LESS THAN 6 MONTHS

1		6

39. COUNT OF VACANT YEAR-ROUND UNITS VACANT 6 MONTHS OR MORE

1		17

40. COUNT OF OCCUPIED UNITS WITH ROOMERS, BOARDERS, OR LODGERS

1		2

41. COUNT OF OCCUPIED AND VACANT YEAR-ROUND HOUSING UNITS BY TENURE AND RACE OF HEAD BY PLUMBING FACILITIES (NOTES 5 AND 8)

1	TOTAL OCCUPIED AND VACANT YEAR-ROUND WITH ALL PLUMBING FACILITIES	276
2	TOTAL OCCUPIED AND VACANT YEAR-ROUND LACKING ONE OR MORE PLUMBING FACILITIES	33
3	TOTAL OCCUPIED WITH ALL PLUMBING FACILITIES	258
4	TOTAL OCCUPIED LACKING ONE OR MORE PLUMBING FACILITIES	20
5	OWNER OCCUPIED WITH ALL PLUMBING FACILITIES	206
6	OWNER OCCUPIED LACKING ONE OR MORE PLUMBING FACILITIES	12
7	RENTER OCCUPIED WITH ALL PLUMBING FACILITIES	52
8	RENTER OCCUPIED LACKING ONE OR MORE PLUMBING FACILITIES	7
9	TOTAL NEGRO OCCUPIED WITH ALL PLUMBING FACILITIES	0
10	TOTAL NEGRO OCCUPIED LACKING ONE OR MORE PLUMBING FACILITIES	0
11	NEGRO OWNER OCCUPIED WITH ALL PLUMBING FACILITIES	0
12	NEGRO OWNER OCCUPIED LACKING ONE OR MORE PLUMBING FACILITIES	0

TABLE III (CONTINUED)

13	NEGRO RENTER OCCUPIED WITH ALL PLUMBING FACILITIES	0
14	NEGRO RENTER OCCUPIED LACKING ONE OR MORE PLUMBING FACILITIES	0
15	VACANT FOR RENT WITH ALL PLUMBING FACILITIES	0
16	VACANT FOR RENT LACKING ONE OR MORE PLUMBING FACILITIES	0
17	VACANT FOR SALE ONLY WITH ALL PLUMBING FACILITIES	4
18	VACANT FOR SALE ONLY LACKING ONE OR MORE PLUMBING FACILITIES	2

42. COUNT OF OCCUPIED UNITS WITH ALL PLUMBING FACILITIES AND 1.01 OR MORE PERSONS PER ROOM BY TENURE AND RACE OF HEAD

1	TOTAL OCCUPIED	15
2	OWNER OCCUPIED	9
3	RENTER OCCUPIED	7
4	TOTAL NEGRO OCCUPIED	0
5	NEGRO OWNER OCCUPIED	0
6	NEGRO RENTER OCCUPIED	0

43. COUNT OF OWNER-OCCUPIED UNITS WITH ALL PLUMBING FACILITIES FOR WHICH VALUE IS TABULATED BY VALUE (NOTES 3 AND 5)

1	LESS THAN $ 5,000	36
2	$ 5,000 - $ 9,999	20
3	$10,000 - $14,999	9
4	$15,000 - $19,999	6
5	$20,000 - $24,999	2
6	$25,000 - $34,999	1
7	$35,000 - $49,999	3
8	$50,000 OR MORE	0
	COUNT OF UNITS WITH ALL PLUMBING FACILITIES FOR WHICH VALUE IS TABULATED BY OCCUPANCY STATUS AND RACE OF HEAD	
9	TOTAL OWNER OCCUPIED	79
10	NEGRO OWNER OCCUPIED	0
11	VACANT FOR SALE ONLY	4

44. COUNT OF RENTER-OCCUPIED UNITS WITH ALL PLUMBING FACILITIES FOR WHICH CONTRACT RENT IS TABULATED BY MONTHLY CONTRACT RENT (NOTES 4 AND 5)

1	WITH CASH RENT LESS THAN $40	1
2	WITH CASH RENT $ 40 - $ 59	8
3	WITH CASH RENT $ 60 - $ 79	1
4	WITH CASH RENT $ 80 - $99	1
5	WITH CASH RENT $100 - $119	0
6	WITH CASH RENT $120 - $149	0

TABLE III (CONTINUED)

7	WITH CASH RENT $150 - $199	0
8	WITH CASH RENT $200 - $299	0
9	WITH CASH RENT $300 OR MORE	0
10	WITHOUT PAYMENT OF CASH RENT	2
	COUNT OF UNITS WITH ALL PLUMBING FACILITIES FOR WHICH RENT IS TABULATED (DOES NOT INCLUDE -WITHOUT PAYMENT OF CASH RENT-) BY OCCUPANCY STATUS AND RACE OF HEAD	
11	TOTAL RENTER OCCUPIED	13
12	NEGRO RENTER OCCUPIED	0
13	VACANT FOR RENT	0
45.	COUNT OF OCCUPIED AND VACANT YEAR-ROUND HOUSING UNITS BY TOILET FACILITIES	
1	FLUSH TOILET FOR THIS HOUSEHOLD ONLY	282
2	FLUSH TOILET, BUT ALSO USED BY ANOTHER HOUSEHOLD	0
3	NO FLUSH TOILET	25
46.	COUNT OF OCCUPIED UNITS WITH 1.01 OR MORE PERSONS PER ROOM BY HOUSEHOLD TYPE	
1	HUSBAND-WIFE FAMILY	17
2	OTHER FAMILY WITH MALE HEAD	0
3	FAMILY WITH FEMALE HEAD	1
4	PRIMARY INDIVIDUAL	0
47.	COUNT OF OCCUPIED UNITS WITH 1.51 OR MORE PERSONS PER ROOM BY HOUSEHOLD TYPE	
1	HUSBAND-WIFE FAMILY	1
2	OTHER FAMILY WITH MALE HEAD	0
3	FAMILY WITH FEMALE HEAD	0
4	PRIMARY INDIVIDUAL	0
48.	COUNT OF PERSONS IN OCCUPIED UNITS WITH 1.01 OR MORE PERSONS PER ROOM BY AGE	
1	UNDER 18 YEARS	64
2	18-64 YEARS	37
3	65 YEARS AND OVER	1
49.	COUNT OF PERSONS IN OCCUPIED UNITS WITH 1.51 OR MORE PERSONS PER ROOM BY AGE	
1	UNDER 18 YEARS	9
2	18-64 YEARS	4
3	65 YEARS AND OVER	1

TABLE III (CONTINUED)

50.	COUNT OF PERSONS IN OCCUPIED UNITS WITH 1.01 OR MORE PERSONS PER ROOM BY TENURE AND RACE OF HEAD	
1	TOTAL OCCUPIED	104
2	OWNER OCCUPIED	58
3	RENTER OCCUPIED	47
4	TOTAL NEGRO OCCUPIED	0
5	NEGRO OWNER OCCUPIED	0
6	NEGRO RENTER OCCUPIED	0
51.	COUNT OF PERSONS IN OCCUPIED UNITS BY PLUMBING FACILITIES (NOTES 5 AND 8)	
1	WITH ALL PLUMBING FACILITIES	762
2	LACKING ONE OR MORE PLUMBING FACILITIES	48
52.	COUNT OF PERSONS IN OCCUPIED UNITS WITH 1.01 OR MORE PERSONS PER ROOM BY PLUMBING FACILITIES (NOTES 5 AND 8)	
1	WITH ALL PLUMBING FACILITIES	95
2	LACKING ONE OR MORE PLUMBING FACILITIES	9
53.	COUNT OF FAMILIES BY PLUMBING FACILITIES (NOTES 5 AND 8)	
1	WITH ALL PLUMBING FACILITIES	220
2	LACKING ONE OR MORE PLUMBING FACILITIES	16
54.	COUNT OF HOUSING UNITS WITH ALLOCATIONS BY OCCUPANCY STATUS BY HOUSING ALLOCATIONS	
1	OCCUPIED, TELEPHONE AVAILABLE	14
2	OCCUPIED, ACCESS TO UNIT	0
3	OCCUPIED, COMPLETE KITCHEN FACILITIES, INDIRECT	1
4	OCCUPIED, COMPLETE KITCHEN FACILITIES, DIRECT	0
5	OCCUPIED, NUMBER OF ROOMS	1
6	OCCUPIED, HOT AND COLD PIPED WATER, INDIRECT	5
7	OCCUPIED, HOT AND COLD PIPED WATER, DIRECT	1
8	OCCUPIED, TOILET FACILITIES, INDIRECT	2
9	OCCUPIED, TOILET FACILITIES, DIRECT	1
10	OCCUPIED, BATHING FACILITIES (BATHTUB OR SHOWER) INDIRECT	1
11	OCCUPIED, BATHING FACILITIES (BATHTUB OR SHOWER) DIRECT	0
12	OCCUPIED, TYPE OF FOUNDATION (BASEMENT)	3
13	OCCUPIED, TENURE, INDIRECT	3
14	OCCUPIED, TENURE, DIRECT	3
15	OCCUPIED, TYPE OF STRUCTURE, INDIRECT	2

TABLE III (CONTINUED)

16	OCCUPIED, TYPE OF STRUCTURE, DIRECT	1
17	OCCUPIED, USE OF PROPERTY	12
18	OCCUPIED, VALUE OF UNIT	6
19	OCCUPIED, CONTRACT RENT	1
20	OCCUPIED, VACANCY STATUS	0
21	OCCUPIED, DURATION OF VACANCY	0
22	OCCUPIED, UNITS AT ADDRESS, INDIRECT	1
23	OCCUPIED, UNITS AT ADDRESS, DIRECT	3
24	VACANT, TELEPHONE AVAILABLE	0
25	VACANT, ACCESS TO UNIT	0
26	VACANT, COMPLETE KITCHEN FACILITIES, INDIRECT	0
27	VACANT, COMPLETE KITCHEN FACILITIES, DIRECT	0
28	VACANT, VACANT NUMBER OF ROOMS	0
29	VACANT, HOT AND COLD PIPED WATER, INDIRECT	0
30	VACANT, HOT AND COLD PIPED WATER, DIRECT	0
31	VACANT, TOILET FACILITIES, INDIRECT	0
32	VACANT, TOILET FACILITIES, DIRECT	0
33	VACANT, BATHING FACILITIES (BATHTUB OR SHOWER) INDIRECT	0
34	VACANT, BATHING FACILITIES (BATHTUB OR SHOWER) DIRECT	0
35	VACANT, TYPE OF FOUNDATION (BASEMENT)	0
36	VACANT, TENURE, INDIRECT	0
37	VACANT, TENURE, DIRECT	0
38	VACANT, TYPE OF STRUCTURE, INDIRECT	0
39	VACANT, TYPE OF STRUCTURE, DIRECT	0
40	VACANT, USE OF PROPERTY	2
41	VACANT, VALUE OF UNIT	0
42	VACANT, CONTRACT RENT	1
43	VACANT, VACANCY STATUS	6
44	VACANT, DURATION OF VACANCY	3
45	VACANT, UNITS AT ADDRESS, INDIRECT	0
46	VACANT, UNITS AT ADDRESS, DIRECT	3

55. COUNT OF PERSONS SUBSTITUTED OR WITH ALLOCATIONS BY POPULATION SUBSTITUTIONS AND ALLOCATIONS. IF A PERSON WERE SUBSTITUTED, HE IS COUNTED ONLY AS SUBSTITUTED AND IF ANY OF HIS ITEMS WERE ALLOCATED THEY WERE NOT TALLIED HERE AS ALLOCATIONS.

1	PERSON SUBSTITUTED BECAUSE OF EQUIPMENT MALFUNCTION	381
2	PERSON SUBSTITUTED BECAUSE OF NONRESPONSE	11
3	PERSON WITH ONE OR MORE ALLOCATIONS	17
4	HOUSEHOLD RELATIONSHIP	5
5	SEX	5
6	COLOR	4
7	AGE	8
8	AGE, DECADE UNKNOWN	6
9	AGE, DECADE KNOWN	2
10	MARITAL STATUS (IF AGE IS 14+)	5

CHAPTER V

SUMMARY, FINDINGS AND CONCLUSION

The purpose of this study was to develop a management information system that will provide population data to be used for planning within local school districts. Geographic units comprising school districts were defined in terms of census enumeration districts which gave state vocational and technical education planners the capability of providing to local institutions and the public aggregated data relative to individual school districts.

Procedural objective 1 was to develop a management information system "featuring" school district population characteristics for vocational administrative purposes. Procedural objective 2 was to develop a process for the computing of individual school district profiles for the 456 independent school districts in the State of Oklahoma. Procedural objective 3 was to project census enumeration district data into local school district boundaries. In conclusion, procedural objective 4 was to develop projecting formulas for census enumeration data to school districts.

The stated purpose and the related objectives were developed due to the lack of knowledge of the 456 Oklahoma independent school districts. Presently, there is no systemized method of obtaining information about population characteristics on the local level. Information that is acquired by planners often arrives in various amounts, diversified and

ambiguious. Therefore, the feeling that attempted planning is irrational and the idea that one decision is as good as the other results.

Underlying the planning concept are two simple insights: (1) There is a need for integrated decision structure relative to educational planning and (2) once a major decision has been made, it is likely to have an impact throughout the whole.

Obviously, to make successful long-range decisions with consistency and to be aware of their decision impact, a method to evaluate and analyze plans and decisions must be available. Therefore, the proposed component of a total management information system can offer decision makers and planners in education concrete information on which degree of decision latitude may be developed.

The design of this system is extremely simple compared to recently developed system strategies. The framework for the proposed management information system lies in the enumeration census maps and the school district maps. Primary steps for system development are as follows: (1) identical scaling of enumeration census maps and school district maps, (2) interfacing the two separate and distinct maps, (3) involving computer for area calculation, (4) developing prorating factor, and (5) manipulating census data to form school district profile.

The significant feature of the proposed management information system is the precise formulation of information from specified census data. It is with this formulated information that planners may begin to explore in a rigorous fashion the complex problems of designing and evaluating educational environments.

Major findings of the study illustrate that census data can be prorated to the 456 independent school districts. This task was

accomplished mainly through the use of recent technological developments in computer graphics.

Canned computer programs were introduced to plot according to designated coordinates and to compute enumeration and school districts in square miles.

The Oklahoma State University Computer Center furnished the researcher with computerized programs necessary to obtain census data. As research was conducted, it was found that the census computer programs could be modified to process census data according to a designed prorating factor in order to designate a school district profile.

The significant conclusion of this study is that an individual school profile can be developed using Bureau of Census data. It may also be concluded that state educational planning agencies in cooperation with the 456 local school administrations can use this information system to assess the population on a local school district basis.

Measurement has always been an important factor in providing information to serve as the basis for solving educational problems. Implementation of the school profile system provides a means to compare population changes within a specified school district and specified time. But like other management control techniques, the school profile usefulness is directly dependent upon the validity of the data fed into the system, and this in turn depends upon the efficiency of the U.S. Bureau of Census in tabulating population numbers.

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