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ABSTRACT

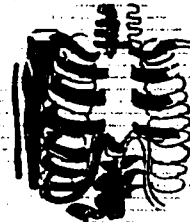
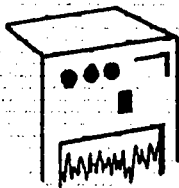
This study was conducted to supply information for vocational education planners concerning the employment needs of the health services industry in Colorado. It should also provide some indication of the demand for trained workers in the occupations surveyed by coordinating expected company expansion and replacement needs with the number to be company-trained and with the output of ongoing and/or new vocational training programs. Some general findings from the survey of health institutions were: (1) There is a need for retraining technical workers, and this training should take place annually, (2) Training programs for registered and licensed practical nurses should reflect the expanding roles of occupations, and (3) Physician's assistant, paramedic bio-medical equipment technician, and medication technician were seen as emerging occupations. Tables reflecting current and projected manpower needs by region and analyses of 42 selected health occupations are included in the report. The survey questionnaire and other study materials are appended. (SB)

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COLORADO HEALTH OCCUPATIONS MANPOWER SURVEY



1972

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STATE BOARD FOR COMMUNITY COLLEGES & OCCUPATIONAL EDUCATION

COLORADO STATE EMPLOYMENT SERVICE

FOREWORD

The purpose of the report is to provide accurate up-to-date information on existing and expected job openings in Health Occupations for the planning and development of training programs.

The report has been prepared by the State Board for Community Colleges and Occupational Education (SBCCOE) in cooperation with the Research and Analysis Section of the Division of Employment to summarize the results of a comprehensive study of Manpower Needs in the Health Occupations in Colorado.

This study and a previous one in the area of Electronics and Machine Trades represent the beginning of the development of a Comprehensive Job Demand Information system by SBCCOE staff in cooperation with the Division of Employment. When the system is fully operational, information similar to that in this report will be available in all occupational areas for which vocational training programs are offered.

The SBCCOE and Division of Employment wish to take this opportunity to thank all Health agencies, institutions, and personnel who provided information for this project. A special "thank you" is also extended to members of the Advisory Committee for their invaluable input to the study.

Additional copies of this report may be obtained from either:

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Denver, Colorado 80203

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Employment

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Office of Comprehensive Health Planning

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Colorado-Wyoming Regional Medical Program

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Rocky Mountain Dental Products

Colorado Medical Society

Colorado Society of Radiologic Technologists

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Particular acknowledgment should be made to John E. Conger, who, as Project Coordinator, helped initiate this study and who did much work on it in its beginning.

Kenneth M. Slyziuk
Project Coordinator

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Needs and the Estimated Number to Be Company Trained
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SUMMARY OF THE STUDY

This study was conducted to supply information for vocational education planners concerning the employment needs of the health services industry in the State of Colorado. It should provide some indication of the demand for trained workers in the occupations surveyed by coordinating expected company expansion and replacement needs with the number to be company-trained and with the output of ongoing and/or new vocational training programs. This project was coordinated by an advisory committee composed of representatives of industries surveyed and from interested governmental agencies. As a result, there was excellent coordination, cooperation, and exchange of information between industry, labor, State Board of Education, State Board for Community Colleges and Occupational Education, and the Colorado Division of Employment.

Manpower Needs Projected for Each Industry

Tables 1, 2 and 3 are a summary of the data obtained from the mail questionnaires grouped by type of industry. The three largest types of employers of the occupations analyzed in this study are "Hospitals" with an estimated 28,985 employed, "Health and Allied Services Not Elsewhere Classified" with 10,620 employees, (composed primarily of Nursing and extended care facilities), and "Offices of Physicians and Surgeons," with 2,735 employees.

Manpower Needs Projected By Vocational Planning Region

The State of Colorado is divided into four Vocational Planning

1/2/3

TABLE 1
CURRENT AND FIVE YEAR OUTLOOK FOR SELECTED HEALTH OCCUPATIONS IN THE STATE OF COLORADO

INDUSTRY	Number Employed in Sample	Estimated Number Employed in State	Estimated Current Vacancies in State	Estimated Total Current Positions	Estimated No. Needed for Expansion by Nov. 1976	Expected Total Positions by Nov. 1976	Estimated No. Needed for Replacement by Nov. 1976	Expected No. to be Co-Trained by Nov. 1976
Medical Electrical Machinery Equip-Sup	4	7	0	7	7	14	4	0
Professional Equipment and Supplies	43	71	7	78	11	89	10	0
Accident and Health Insurance	0	0	0	0	30	30	0	0
Offices of Physicians and Surgeons	1,663	2,735	110	2,845	352	3,197	418	25
Offices of Dentists and Dental Surgeons	225	1,238	77	1,315	94	1,409	633	11
Offices of Osteopathic Physicians	10	16	1	17	16	33	0	0
Offices of Chiropractors	2	3	0	3	0	3	0	0
Hospitals	17,628	28,985	1,575	30,560	4,757	35,317	15,255	5,615
Medical and Dental Laboratories	137	225	11	236	120	356	48	18
Health and Allied Services, N.E.C.	6,459	10,620	1,023	11,643	812	12,455	4,517	1,010
Elementary and Secondary Schools	95	156	4	160	13	173	19	7
Colleges, Univ. Prof. Schls. and Jr. Col.	9	15	0	15	0	15	0	0
Correspondence and Vocational Schools	19	31	18	49	37	86	37	97
Schools and Educational Services, N.E.C.	31	50	1	51	67	118	30	0
Professional Membership Organizations	45	74						0
Public Health Departments	425	696	71	769	278	1,047	235	19

✓ Detail may not add to total due to rounding

TABLE 2

ESTIMATED OUTLOOK BY INDUSTRY AND BY YEAR FROM NOVEMBER 1972 THROUGH NOVEMBER 1976
FOR EXPANSION AND REPLACEMENT IN THE STATE OF COLORADO

	Estimated Number Needed for Expansion by Year (Nov. 1972 thru Nov. 1976)					Total Expansion in 5 years	Estimated Number Needed for Replacement by Year (Nov. 1972 thru Nov. 1976)					1/ Total Replacement in 5 years
	1972	1973	1974	1975	1976		1972	1973	1974	1975	1976	
INDUSTRY												
Medical Electrical Machinery Equip-Sup.	1	0	3	0	1	7	1	0	1	0	1	4
Professional Equipment and Supplies	3	7	0	0	1	11	3	3	0	1	1	10
Accident and Health Insurance	7	13	10	0	0	30	0	0	0	0	0	0
Offices of Physicians and Surgeons	60	115	82	11	82	352	110	92	69	49	97	418
Offices of Dentists and Dental Surgeons	17	55	6	6	11	94	341	105	39	77	66	633
On Offices of Osteopathic Physicians	3	3	4	4	0	16	0	0	0	0	0	0
Offices of Chiropractors	0	0	0	0	0	0	0	0	0	0	0	0
Hospitals	857	973	896	1,034	906	4,757	3,741	2,965	2,528	2,938	3,085	15,255
Medical and Dental Laboratories	28	26	15	21	30	120	10	7	8	15	8	48
Health and Allied Services, N.E.C.	344	161	69	56	181	812	1,210	940	721	868	840	4,517
Elementary and Secondary Schools	7	1	3	1	0	13	1	4	3	4	3	14
Colleges, Univ. Prof. Schls. and Jr. Col.	0	0	0	0	0	0	0	0	0	0	0	0
Correspondence and Vocational Schools	1	3	3	13	16	37	3	3	3	15	13	37
Schools and Educational Services, N.E.C.	31	16	16	1	1	67	0	0	0	15	15	30
Professional Membership Organizations	16	18	0	15	16	67	15	13	0	15	16	60
Public Health Departments	44	82	41	56	51	278	31	56	58	41	49	235

1/ Detail may not add to total due to rounding

TABLE 3

ESTIMATED CURRENT VACANCIES BY EXPANSION AND REPLACEMENT NEEDS AND THE ESTIMATED NUMBER TO BE COMPANY TRAINED BY YEAR FROM NOVEMBER 1972 THROUGH NOVEMBER 1976, IN EACH INDUSTRY IN THE STATE OF COLORADO

INDUSTRY	Estimated Number of Vacancies by November 1976		Estimated Number to be Company Trained by Year (Nov. 1972 thru Nov. 1976)				1/ Total Number Expected to be Company Trained by November 1976		
	Total	Expansion	Replacement	1972	1973	1974		1975	1976
				0	0	0		0	0
Medical Electrical Machinery Equip-Sup.	11	7	4	0	0	0	0	0	0
Professional Equipment and Supplies	21	11	10	0	0	0	0	0	0
Accident and Health Insurance	30	30	0	0	0	0	0	0	0
Offices of Physicians and Surgeons	769	352	418	4	10	4	3	0	25
Offices of Dentists and Dental Surgeons	726	94	633	6	0	0	0	6	11
Offices of Osteopathic Physicians	16	16	0	0	0	0	0	0	0
Offices of Chiropractors	0	0	0	0	0	0	0	0	0
Hospitals	20,013	4,757	15,255	1,399	1,105	95	1,095	1,085	5,615
Medical and Dental Laboratories	167	120	48	1	1	0	7	8	18
Health and Allied Services, N.E.C.	5,329	812	4,517	289	174	125	197	233	1,010
Elementary and Secondary Schools	32	13	19	1	1	0	1	1	7
Colleges, Univ. Prof. Schols. and Jr. Col.	0	0	0	0	0	0	0	0	0
Correspondence and Vocational Schools	75	37	37	7	16	21	26	26	97
Schools and Educational Services, N.E.C.	97	67	30	0	0	0	0	0	0
Professional Membership Organizations	130	67	60	0	0	0	0	0	0
Public Health Departments	513	278	235	11	3	4	0	0	19

1/ Detail may not add to total due to rounding

Regions. The planning regions are used by various state agencies for regional analysis and planning. The counties that compose these regions are presented in the Map, "Planning Regions."

The following information is an analysis of the manpower requirements for each planning region. The occupations cited have been specifically identified for their very evident need in the regions. A close analysis of these summaries and the related tables is necessary to obtain a complete picture of the overall manpower requirements of the Health Occupations in Colorado.

Region I - Central

The Central Vocational Planning Region is comprised of the Denver Metropolitan area. It has the largest number of health workers of any region. The needs of this urban area differ from the rural planning regions in the type of training to be presented and personnel to be trained.

Most of the demand for technicians such as in Bio-Medical occupations, Dental Laboratories, etc., are located in Region I.

The data indicated that a smaller proportion of workers are company-trained in the Central Region compared to those company trained in the other Vocational Planning Regions. This generalization can be made for all occupations analyzed in this study for Region I.

In Region I, employers emphasized the fact that they had a great amount of difficulty in filling the positions of Registered Nurses, Licensed Practical Nurses, Medical Secretaries, Dietary Aides and Nurses Aides.

The fact that the manpower needs are large and centralized lends itself readily to the establishment of training programs.

The information presented for the Central Region is in Tables 6, 11 and 16 (pages 44, 49 and 54).

Region II - Northeastern

For Region II, one of the three rural regions, Registered Nurses and Licensed Practical Nurses will be in great demand for both replacement and expansion needs over the next five years. No employing institutions plan to have any training programs to prepare persons for employment in these two occupations. The estimated need for Nurse Aides, to meet both the expansion and replacement requirements up to November 1976, is high. An expected 1,484 persons will be needed for this period, with only 311 to be company trained. There is an unquestionable need to supply trained Nurse Aides in this region. A total of 33 Medical Record Clerks are needed to meet the estimated expansion and replacement requirements up to November 1976, only one is estimated to be trained by an employing institution.

Housekeepers, Dietary Aides and Orderlies all present moderate manpower needs for this region throughout the five-year period. A close scrutiny of these occupations is necessary to determine the numbers to be trained each year.

For back-up and additional information for the Northeastern Planning Region, see Tables 7, 12, and 17, (pages 45, 50 and 55).

Region III - Southeastern

The professions of Registered Nurse and Licensed Practical Nurse show a very evident replacement and expansion need in the Southeastern Region.

Nurse Aide, Dietary Aide, and Inhalation Therapist have a high manpower requirement over the five-year study period. These observations are based on those expected to be needed for expansion and replacement in relation to those estimated to be company trained.

Food Service Supervisor, Housekeeper, and Psychiatric Technician have a relatively high manpower need, while the occupations of Medical Records Clerk, Orderlies and Ward Clerks have a moderate need for the establishment of training programs over the five-year study period.

All occupations are grouped into categories of manpower needed for Planning Region III. (See Table 14, page 52)

Region IV - Western

This vocational planning region is the smallest in the total number of health employees studied. Numbers, by no means, reflect the degree of importance in meeting these needs.

There is a large need for the establishment of R.N. training programs to meet their estimated manpower requirements. The profession of Housekeeper has a relatively high need, while Licensed Practical Nurses, Dietary Aides and Medical Office Assistants show a moderate need for new programs and/or expansion of existing programs.

This planning region appears to be the most self-sufficient in regard to meeting their own manpower needs through company training programs. However, as in the other regions, many institutions providing "clinical" experience for Community College training programs were prone to report these as "their" (institution) training programs, giving a somewhat inflated estimate of the number to be company trained.

SUMMARY OF STATE NEEDS

The health institutions interviewed, both within the Denver Metropolitan area and outside it, all emphasized the need for re-training technical workers. Specific technical occupations were not mentioned individually, but rather, the entire category, which, in this study, includes Dental Laboratory Technician, E.C.G. Technician, E.E.G. Technician, Histological Technician, Medical Emergency Technician, Medical Laboratory Technician, Medical Records Technician, Mental Retardation Technician, Nuclear Medicine Technician, Optic Technician, Psychiatric Technician, Radiation Therapy Technician, Radiologic Technician, and Surgical Technician. The majority of those interviewed throughout the state felt that retraining should take place on an annual basis, and the next largest group felt every two years.

It should be mentioned once again that the occupations given the title of Professional Nurse R.N. and Technical Nurse R.N. should be combined under one profession "Registered Nurse." This was determined after it became apparent that most respondents who employed Registered Nurses did not distinguish between the two, but generally just put their R.N.s in the Professional Nurses category.

A very significant factor to be considered closely is the expanding roles of these occupations. Roles are defined as "duties, responsibilities, and functions of that position." As the role of the Registered Nurse is expanding, there appears to be a corresponding role expansion in the occupations of Licensed Practical Nurse and Nurse Aide. This is particularly important in considering the training that new personnel should receive for each of these occupations. The roles of the three occupations have changed and the training programs for new people to

fill these positions should adjust accordingly. Data collected also indicates a critical need for increased emphasis on retraining and upgrading programs to serve Registered Nurse, Licensed Practical Nurses and Nurse Aides presently employed.

Doctor's Assistant, Paramedic Bio-Medical Equipment Technician and Medication Technician were new occupations foreseen by those institutional representatives interviewed. They are presently listed in the order most frequently cited. The occupation of Doctor's Assistant was mentioned by approximately 80% of all those interviewed. With the exception of the occupation of Bio-Medical Equipment Technician, these other new occupations fill the similar and significant role of relieving the health professional such as Medical Doctor and Registered Nurse of some of their more routine tasks. This is an important area of definite need and should be analyzed carefully by those establishing health manpower training programs.

Throughout the report, recommendations to establish training programs are by occupational area. These recommendations were based solely on the statistical and personal information gathered in the data collection phase of this study. There was no knowledge of what was ongoing in the training area of these occupations. This information must be considered in conjunction with the recommendations that are listed.

Rural vs Big City Needs

In some of the more rural, less populated areas of Colorado, there is a critical shortage of certain medical personnel in some of the occupations analyzed in this study. For both economic and social reasons, the only solution appears to lie in the recruitment and

training of local people to meet these needs. This can be initiated most readily by the State Board for Community Colleges and Occupational Education. For the health institutions to provide efficient and adequate care to their patients, they must be adequately staffed by both the quality and quantity of personnel needed to do so.

In attempting to fill the health manpower needs of a particular health institution within the State, a listing of various types of public and private training schools from the State Board for Community Colleges and Occupational Education should be used from which to draw. Institutions in the rural areas should also maintain close contact with the Job Development Specialists in Community Colleges in their area. Various occupations that have licensure boards and associations provide program lists of this type by location to show the manpower resources located in particular communities.

General Comments From Those Interviewed

The health institutions interviewed made very positive comments about the training of these occupations. The majority felt that the retraining of all of the occupations in the study should take place. The time period was as follows: 40% felt it should be done annually, 20% every two years or more, 23% stated continuously, with no time mentioned, 7% monthly, and 1% every six months.

Of those interviewed, the position of Doctor's Assistant was ranked first as a new or emerging health occupation. This position was described as one which would relieve the doctor of many of his routine duties. Registered Nurses with special training, and Armed Forces Medics with additional training, were both mentioned to fill this position. The occupation of Medical Computer Programmer was mentioned as second in this category.

The response to the question "What health occupation should vocational education planners be aware of to develop training programs?" was based on anticipated health institutions needs. The health institutions outside the Denver area responded that they should be more aware of the rural area and their needs. More Registered Nurses and Practical Nurses are needed for the rural areas. They felt strongly that there was a need to inform people of the great needs in all of the allied health occupations.

The Denver area health institutions responded to this same question by the following: Make students aware of jobs in the health field. Medical terminology should be stressed in all training. Training programs are needed in areas of technicians, Medical Assistants, Dental Hygienists, Maintenance and Dieticians.

EMPLOYER REFERRAL PREFERENCE RATING

Employers prefer to stay within their own institutions when attempting to fill vacancies in their firms. The category "from other sources" which is primarily newspaper advertising was listed second as a source in filling vacancies in their institutions. Referrals from the institution's own health workers for new employees was the third largest source.

Outside industry sources of manpower to fill vacancies within firms in the health industry were ranked in employer preference, most to least as follows:

- From other institutions
- From the State Employment Division
- From Private Employment Agencies
- From Vocational Schools
- From the Particular Health Occupational Organization

TABLE 4

EMPLOYER REFERRAL PREFERENCE RATING PERCENTAGES IN THE STATE OF COLORADO

CHOICE	FROM WITHIN YOUR INSTITUTION	FROM OTHER INSTITUTIONS	REFERRALS FROM YOUR INSTITUTIONS HEALTH WORKERS	FROM VOCATIONAL SCHOOLS	FROM THE STATE EMPLOYMENT DIVISION	FROM PRIVATE EMPLOYMENT AGENCIES	FROM THE PARTICULAR HEALTH OCCUPATIONAL ORGANIZATION	FROM OTHER SOURCES	TOTALS
FIRST	32%	10%	12%	6%	9%	8%	6%	18%	100%
SECOND	7%	16%	18%	15%	15%	9%	6%	14%	100%
THIRD	10%	17%	12%	17%	12%	10%	12%	11%	100%
RANK PREFERENCE	1	4	3	6	5	6	2		

ANALYSIS OF SELECTED OCCUPATIONS

Activities Director

The estimated number of Activities Directors needed for expansion and replacement will be minimal within the next five years. This small demand would best be met by either employing those with an applicable background for this position or by institutional training where the need is apparent.

Bio Medical Equipment Technician

There is presently an estimated 99 current positions of Bio Medical Equipment Technicians within the State. By 1976 there will be an estimated need of nearly twice that number. To meet this need, employing health institutions plan on training nearly all the necessary personnel to meet these manpower requirements. The importance placed on this position is reflected by the response of the health institutions outside the Denver Metropolitan area who were interviewed. They listed this position third among the professions they felt would show the greatest personnel need within five years.

Cytotechnician

This is a stable occupation with little expansion or replacement needs estimated for the next five years. The small number that will be needed could conceivably be provided from the outside sources. Therefore, the future expected needs are not great enough to warrant the establishment of training programs.

Dental Assistant

There are currently an estimated 66 vacancies within the State for

Dental Assistants. The present dental field will be expanding modestly within the next five years. By the end of this period, an estimated 96 new Dental Assistants will be required to meet the expansion needs. The replacement needs for this same period are quite high, reflecting a large turnover in this occupation. Five hundred sixty-four is the estimated replacement necessary through November 1976. The estimated number of Dental Assistants to be company-trained is quite small and does little in meeting these manpower requirements. There is a great need for programs that will annually turn out a minimum of 75 trained Dental Assistants. These programs should be an integral part of a Dental Occupations Cluster program offered through the community colleges.

Dental Hygienist

The occupational picture for this position is similar to that of the Dental Assistant. The only difference is that the Hygienist occupation has a smaller proportionate turnover rate, indicating that it is a more stable occupation than the Dental Assistant. No Dental Hygienists are expected to be trained by the employing institutions. Some may come from the Dental Assistant occupation. This indicates a great need for up-grading and in-service adult programs tied closely to the above-mentioned Dental Occupation Cluster program.

Dental Laboratory Technician

The occupation of the Dental Laboratory Technician is characterized by its stability. It is estimated that it will incur a relatively moderate expansion over the projected five year period (92 positions). The replacement number (33) is small, which signifies little turnover in the past

and small expectation of turnover in the future. Eighteen Dental Laboratory Technicians are expected to be company-trained within the next five years, far short of those that will be needed to meet industry needs.

Dietary Aide

Of the occupations studied, Dietary Aide ranks fourth in number of employees. They are employed on a part-time basis extensively within the State.

Health institutions throughout the State have expressed a difficulty in filling this position. The reasons given by the institutional representatives interviewed were: low pay, low job status and the inadequate training pertaining to their related duties. Two solutions were expressed by most of those interviewed -- raise the pay and train local people. Both of these ideas would seem to ease the difficulty in filling the Dietary Aide occupation.

The health institutions interviewed within the Denver Metropolitan area expressed the high number of necessary replacements, reflecting a large turnover rate in this geographic location for Dietary Aides. It appears that training programs for this position should be an integral segment of a Food Supervisor training program.

E.C.G. Technician

Of the 333 estimated total current positions, 46 more will be needed for expansion and 122 for replacement by November 1976. An expected total of 33 E.C.G. Technicians will be trained through employing institutions by November 1976; this number is considerably short of the E.C.G. Technicians actually needed by this period. Therefore, outside training sources will

be necessary to meet the demand. Compiling the results of the health institutions interviewed outside the Denver Metropolitan area, this occupation was ranked third as most critical to the operation of their organization. It appears that one good training program, probably in the Metro area, could meet this need.

E.E.G. Technician

The Electroencephalograph Technician occupation has an estimated 75 positions in the State. This technician occupation differs from the E.C.G. Technician, in that it operates equipment that measures impulse frequencies and differences in electrical potential between various areas of the brain while the E.C.G. Technician operates equipment that records action of the heart used in the diagnosis of heart ailments.

There will be an estimated 33 additional E.E.G. Technicians needed for expansion by November 1976, raising the expected total positions to 108 by November 1976. The number needed for replacement by the end of the five years is 49, an increase of almost 66% of the present estimated total current positions. Only 15 of these 49 E.E.G. Technicians will be trained by employing institutions. Again, no more than one such community college program in the state can be justified.

Food Service Supervisor

This occupation has a steady increase in the numbers annually required for both expansion and replacement requirements. From the health institutions interview outside the Denver Metropolitan area, it was concluded that this occupation along with another were jointly listed as the professions in greatest need of establishing training programs.

The expected number of Food Service Supervisors to be company-trained within the five year study period is just a small portion of the 147 needed. Vocational educational planners should view this profession carefully for the establishment of training programs.

Histological Technician

This profession is a stable one, much like that of the Food Service Supervisor. In considering the estimated number of total positions, it is a small occupation. The estimated number needed for expansion is approximately five new Histological Technicians per year until 1976. A total of 69 will be needed to meet the estimated replacement requirements through 1976.

It is evident that industry training programs will meet the number of Histological Technicians needed for the next five years.

Home Health Aide

Home Health Aide is one of the smaller employing occupations. There are only 54 estimated current positions in this occupation. Although the estimated expansion rate is approximately 17 percent per year, the actual number involved is very small. The estimated number of Home Health Aides to meet the replacement need is also quite small.

Occupational education planners will still need to view this occupation in consideration for training programs. The need is there even though the total numbers are small.

Housekeeper

There is presently a strong demand for this occupation, and indications show it will increase. There is an estimated 2,036 total current

positions with 260 needed for expansion and 598 for replacement throughout the period to November 1976. Only 137 are estimated to be company-trained over this same time period.

The data that were compiled from the personal interviews showed that in health institutions outside the Denver area, the Housekeeper occupation was listed as the fourth most difficult position to fill, and attributed the reason to low pay. From this same geographic area, it was computed that Housekeeper was ranked second in need to establish a training program in this position. The need to produce a better qualified and trained person for this occupation was cited. Serious consideration must be given to training these persons through existing Institutional Housekeeping programs with a strong cooperative component in Health Institutions.

Inhalation Therapist

The estimated number of Inhalation Therapists needed for expansion by November 1976 is estimated at only 64; averaging less than 13 per year. Yet, data supplied by health institutions outside the Denver Metropolitan area showed that this profession was third in what these institutions felt was going to be an emerging occupation in the health field. This apparent contradiction is explained by the fact that, though they believed it to be an emerging occupation, they were not sure exactly when, or how many persons would be needed.

Occupational education planners will need to watch the demand for this profession closely, especially in the more rural areas. It was also brought out that health institutions throughout the State were well satisfied with the training the Inhalation Therapists brought with them from existing community college programs.

Medical Computer Programmer

This occupation is characterized by the increase in the numbers needed each year till late 1976. By November 1976 there will be an estimated 36 new Medical Computer Programmers needed for expansion. Health institutions can relate readily to the type of services an automated, computerized, information gathering system can provide. As more health institutions begin utilizing these systems, the demand for this occupation will increase.

From all the health institution representatives interviewed throughout the State, Medical Computer Programmer was listed first by those in the Denver Metro area and second by those outside it, as a new or emerging health occupation that will be developing. Findings show that 36 new Medical Computer Programmers will be needed by 1976, plus 10 more were estimated to be needed for replacement, and yet only three are expected to be company-trained within the next five years. This fact, coupled with the information gathered in the interviewing process, should warrant a careful analysis of this occupation by vocational planners.

These job needs should be met through existing Computer Programmer programs, if program supervisors and teachers are will to add components required by this occupation.

Medical Emergency Technician

This is another occupation that presents a very strong need for training programs. With an estimated present total of 99 current positions, there will be -- by November 1976 -- 84 estimated new positions bringing the total to 183. Additionally, an estimated 60 will be needed for replacement by November 1976. It has also been estimated that only three are expected to be institutionally trained over this same period. These factors

viewed together present a strong need for an annual output of trained Medical Emergency Technicians.

Although there is a need to develop training programs for this occupation, it should be offered in no more than two locations.

Medical Insurance Clerk

The health institutions interviewed in the Denver Metro area commented very positively on this profession. It was their feeling that with the new health insurance programs and the greater utilization of them that there will be a very marked increase in demand for these Medical Insurance Clerks.

Of the Medical Insurance Clerks presently working, it was felt that additional training was necessary for them to perform their tasks more efficiently. It was also ranked first by these health institutions in the need for retraining to adjust to the changing health care system. It was ranked third in what was going to be the greatest need in the occupations studied within five years. They also stated explicitly that there was a definite need to establish programs for the training of new personnel immediately for this occupation.

Little mention was made by the health institutions interviewed outside the Denver Metropolitan area about this occupation.

One hundred and seven is the estimated number needed for expansion, 220 estimated for replacement and only 18 will be trained by the employing institutions. These estimates which are for the five year analysis period, strongly show the need for additional Medical Insurance Clerks. These employment needs should be met through existing Business and Office programs if special segments in Medical Insurance and cooperative components are added.

Medical Laboratory Technician

This occupation has a strong continuing need throughout the five year analysis period, for both expansion and replacement requirements. A total of 248 Medical Laboratory Technicians are estimated for expansion by November 1976, distributed evenly throughout the five years. Four hundred thirty-nine are estimated to be the replacement needs for this same period. From the data collected, it appears that the employing institutions will be training close to the estimated number of Laboratory Technicians they will need. Four hundred thirty-seven are expected to be company-trained over the next five years.

The Medical Laboratory Technician occupation was cited by the health institutions interviewed throughout the State as being within the top five occupations that they considered most critical to the operation of their organization. It was ranked fourth within all the occupations studied by the health institutions outside the Denver Metropolitan area as the most difficult occupation to fill. The reasons that were given for this were the geographic location of the institutions, low pay, and the statewide demand for this profession, hence its inherent mobility.

Institutions within the Denver Metropolitan area do employ Laboratory Technicians extensively on a part-time basis.

Medical Laboratory Assistant

This occupation shows a moderate growth throughout the next five years. Seventy-two new Medical Laboratory Assistants are estimated to be needed by November 1976 for expansion, with the greatest need in the second and fifth years. One hundred seventy-one is the estimated replacement number through November 1976. Only 16 are expected to be company-trained for this period.

Medical Librarian

There are an estimated 142 current positions in this occupation. It will be expanding to an expected 161 by November 1976. Thirty are expected needs for replacement over the same period. Only four are estimated to be trained by the employing institutions.

Medical Office Assistant

There are an estimated 40 current vacancies in the State; 149 more is the expected expansion requirements by November 1976.

The health institutions interviewed in the Denver area ranked Medical Office Assistant second in having difficulty in filling the position. The reason mentioned most was the problem in finding an adequately trained person to perform the required tasks.

The occupation of Medical Office Assistant was listed by the interviewed health institutions as being one of those least critical to their operation. Another significant point was the need to train these medical Office Assistants in medical terminology, an area that needs emphasizing by vocational planners.

Medical Records Clerk

There are presently an estimated 36 current vacancies in the State for Medical Records Clerks. Eighty-four more are expected to be needed for expansion purposes and 207 for replacement until November 1976.

This position was cited by the interviewed health institutions outside the Denver area as difficult to fill. The most common reason cited was the lack of adequately trained Records Clerks in their areas. All the health institutions interviewed within the State expressed the need to establish

training programs for this occupation.

Eighty-one Medical Records Clerks are expected to be trained by the employing institutions through November 1976. Yet, the institutions expressly stated that an outside agency should do the training for this profession, perhaps reflecting the desire for more uniformity and comprehensiveness than what they can achieve.

To meet the personnel needs for this occupation and those of Medical Records Technician, it appears that a program at the community college level should be developed. Such a program must be a combination program developed through cooperative efforts of Health Occupations and Business and Office staff members. It appears that such programs should be offered in no more than three locations in the state.

Medical Records Technician

There are an estimated ten current vacancies in the State. Forty-nine is the estimated number needed for expansion, and 35 is estimated for replacement, both by November 1976. Thirty-three are expected to be company-trained within this same time period.

The Medical Records Technician was stated as being difficult to fill like that of the Medical Records Clerk. The ten current vacancies are evidence of this. The individuals interviewed throughout the State also stated that training programs should be started in this occupation. With this positive statement made about these two occupations, the establishment of a training program is a necessity.

Medical Stenographer

The information obtained from the mail questionnaires reveals nothing

unusual or problematic about this occupation. Six hundred thirty-one estimated total current positions, 70 estimated for expansion and 163 estimated for replacement by November 1976 and 33 to be company-trained over this same period.

However, in reviewing the information derived from the personal interviews, this occupation would have to be listed in the top five for total comments.

Representatives of health institutions from the Denver Metropolitan area listed Medical Stenographer as the second most difficult position to fill. The explanation for this was the lack of well-trained personnel. These same representatives listed Medical Stenographers fourth in occupations that needed retraining to adjust to the changing health care system.

The representatives of health institutions interviewed outside the Denver area were even more dissatisfied with this occupation. They listed it first in the need for additional training to perform their tasks more efficiently. It was listed second in the need for new training.

The primary cause for this dissatisfaction is attributed to medical terminology. It was felt that these Medical Stenographers could not perform their tasks adequately due to a lack of understanding in this field. Concrete statements made by those interviewed such as "Medical terminology should be stressed to a much greater degree by vocational planners," and "Training programs should be set up for retraining medical personnel in medical terminology," strongly indicate the need in this area.

It can be deducted from this that medical terminology should be emphasized more in the training of Medical Stenographers. Also, courses on medical terminology should be provided for retraining of Medical Stenographers and also many of the other occupations studied.

Mental Health Worker

The health institutions outside the Denver area responded to the question of what was going to be the greatest need in the health occupations within five years, by listing Mental Health Worker as fourth.

There are 16 estimated present vacancies for Mental Health Workers. By November 1976, 63 more will be needed through expansion. There will be an estimated replacement of 41 within the next five years, and only three will be institutionally trained.

The needs for this occupation for the next five years merit careful analysis by the vocational education planners. It appears there may be a need for training programs in two locations in the state.

Mental Retardation Technician

The occupation of Mental Retardation Technician is most significantly characterized by the estimated number for replacement; 271 by November 1976. Only 11 will be needed for expansion over this same time period. A total of 354 positions is the expected figure by November 1976.

This occupation has a high turnover, low expansion needs, and the institutions themselves appear to be meeting their own needs for this profession.

Nuclear Medicine Technician

The personnel needs for Nuclear Medicine Technician are immediate. There are an estimated 10 current vacancies, out of 91 present total positions in the State, a vacancy rate of 10 percent.

Thirty more are estimated to fill the expansion needs through November 1976, and 60 will be needed to meet the expected replacement needs over the

same period. With only 19 expected to be trained by the employing institutions, the need to establish a training program for more Nuclear Medicine Technicians is clear. The estimated need of Nuclear Medicine Technicians should be appraised by year for the period till November 1976. It appears that they should be spaced out every other year rather than each year.

Nurse Aide

This occupation has the largest number of employees of all the occupations studied. There are an estimated 11,464 employed in the State, 878 estimated current vacancies, for a total of 12,343 positions. The replacement rate is approximately 10% per year, with 1,214 needed for expansion through November 1976. A total of 2,094 is the expected number to be trained by employing institutions for the same period.

A large quantity of information was obtained through the interviewing process about the Nurse Aide occupation.

They are employed extensively throughout the State on a part-time basis. They were ranked third by both geographic groups in this category. The Denver area health institutions had difficulty in filling the Nurse Aide position and ranked it third. It was ranked seventh in this category by those health institutions outside the Metro Denver area. The reasons given by the Denver area institutions were the lack of well-trained Nurse Aides, and the other health institutions attributed it to their geographical location.

Nurse Aides were listed by those interviewed in the Denver area as the second least critical occupation to their operation and had an annual turnover of 30%. Those health institutions outside the Denver area listed it as third as the least critical occupation to their operation

and recorded a 31% annual turnover rate. The reason for this high turnover rate, compiled by the institutions interviewed in the Denver area was said to be the low wage, low status, and the relatively young and mobile groups which most commonly filled this position. They mentioned only one solution; raising their respective salaries. The institutions outside the Denver area listed the same reasons for the high turnover as the Denver area institutions while their solution was to train more local people and to select from a more mature labor force in employing Nurse Aides.

All the institutions interviewed felt that additional training was needed to perform their tasks more efficiently. Nurse Aides were first in this category by both geographic groups. The response to the question of which sub-professional occupations they felt retraining should take place to adjust to the changing health care systems. Nurse Aide was listed as second by those outside the Denver area and first by those inside the Denver Metropolitan area. Both groups interviewed felt that there was a definite need to establish training programs for Nurse Aides.

Therefore, the Nurse Aide occupation can be characterized by a high turnover attributed to its low pay and low status. Generally it was felt the job should be elevated both in terms of duties and higher pay. Thus, training programs should be set up to retrain those presently in the position and to train new Nurse Aides. This would reduce the turnover through a higher job status and greater payment for hours worked.

Occupational Therapy Aide

There is an estimated 13 current vacancies in the State. Fifty-two

is the estimated number needed for expansion by November 1976. Only 16 are expected to be company-trained by the end of this same period, and 48 is the estimated number for replacement by November 1976.

Occupational planners will have to view this occupation in greater depth to determine how many will be needed each year. The overall need is clearly evident.

It appears that two good programs could meet this occupational need. These programs should be located outside the Metro area to meet needs in rural areas.

Optic Mechanic

This position, Optic Mechanic, shows no indication for the establishing of training programs, due to the extremely small numbers involved. Three are estimated for expansion and four are estimated for replacement by November 1976.

Optic Technician

No action by vocational planners is warranted by this position. Also, there are no recorded vacancies, none for expansion and none for replacement through November 1976.

Orderly

In the Denver area, the health institutions interviewed experienced a high turnover in this occupation. They attributed this to several factors; the low wage, boredom with job, lack of training and no promotional opportunities. To curb this high turnover, several steps were mentioned: More in-service training, increased salary, the development of a career ladder for promotions, and to create more personal fulfillment within the job.

Orderlies were ranked third by the persons interviewed in the need for additional training, and second for the need to retrain those in this occupation. It was also mentioned as one of the several occupations that were listed as being least critical to the operation of the organization.

The health institutions interviewed outside the Denver area, also have difficulty in filling this position, and through combining all responses, it was ranked sixth in this area. The reasons given for this were geographical location of the institutions; and the low pay. Some said they primarily filled this position with students, and because of their inherent mobility had a high turnover. Poor hours, low pay and job dissatisfaction were other reasons given for the high turnover. To help solve this turnover problem, factors such as increased pay, better hours, and the creation of opportunity for advancement were mentioned.

The occupation of Orderly was ranked second by those interviewed for the need of additional training.

Each of the above factors should be studied carefully in the establishment of training programs. The need for this occupation is clear. There are 167 estimated current vacancies in the State for orderlies. Four hundred and one is the estimated number needed for expansion by November 1976, and 756 is the estimated number required for replacement within five years. One hundred ninety-six will be trained within employing institutions by November 1976.

Patient Benefit Analyst

The utilization of this occupation does not appear to have been realized as of now. There is only an estimated number of 13 employed within the State, with four being estimated as current vacancies. The greater utilization of this occupation by institutions will be increasing.

An estimated 30 more will be needed for expansion by November 1976. Fifteen are estimated for replacement by November 1976. Sixteen is the expected number to be company trained by November 1976.

Pharmacy Helper

Briefly analyzing this occupation, it appears that the employing institutions will be meeting the expansion and replacement personnel needs by training a sufficient number of Pharmacy Helpers within the next five years.

There are an estimated 138 total current positions, and eight of these are estimated as being vacant. Forty-nine is the estimated number needed for expansion; 49 is also the estimated number for replacement through November 1976. Sixty is the expected number to be company trained over this same time period.

Physical Therapy Aide

Again, with just briefly analyzing this profession, the probable anticipated personnel needs appear to justify the establishment and/or continuation of training programs for this occupation.

There are 13 estimated current vacancies, 74 new Physical Therapy Aides are the expected expansion needs by November 1976, and 75 are the estimated replacement needs up to November 1976. Forty-eight is the expected number to be company trained during this same period.

Practical Nursing LPN (Vocational)

In those health institutions interviewed outside the Denver Metro area it was plainly evident of the great need for Practical Nurses. The general comments made by nearly all those interviewed could be best summed up as,

"Nurses are very much needed in rural areas." Again, nearly all the health institutions that were interviewed felt that vocational planners should be more aware of the personnel needs of the rural areas and that specifically more Registered Nurses and Licensed Practical Nurses were needed for these areas.

The response towards specific questions were as follows; more LPN's were employed on a part-time basis than any other occupation studied. The greatest difficulty in filling any of the occupations studied was that of the LPN. The reasons they gave for this difficulty were the geographic location of the health institutions and the shortage of training facilities in rural areas.

Licensed Practical Nurses were listed, and compiled to be the third most critical occupation to the operation of their institutions. This occupation was recorded and compiled to have the fifth highest turnover in the most critical category. The reason most generally given for this was the mobility of the LPN and the corresponding solution was to train more local people.

Practical Nurses, along with Registered Nurses, were jointly listed as number one in the need to retrain those presently employed to adjust to the changing health care systems. These two occupations were also listed jointly as number one for what occupation those interviewed felt would be their greatest need, of all those studied, in five years.

Again, the institutional representatives that were interviewed listed Licensed Practical Nurse as fifth in response to the question of "...Which occupations do you feel there is a need to establish training programs?"

The Licensed Practical Nurse plays just as significant a part in the

Denver area Health Institutions as in those outside the Denver Metro area. The LPN occupation is listed as the position with the greatest difficulty in filling. The reasons that were given were the low wages, and not many were adequately trained for the duties that were required to perform.

The Practical Nurse was listed by the Denver Metro area institutional representatives interviewed as the second most critical profession to the operation of their institution. It has the fourth highest turnover in the Denver Metro area, and reasons cited were low wages and long hours. To reduce this turnover rate they suggested improved working conditions, higher pay and better organization within. More LPN's are used on a part-time basis than any other occupation of those studied.

The training needs of LPN's listed by the Denver Metro Area health representatives were equally as strong as those in the more rural areas. Licensed Practical Nurses were listed as second in the need for additional training to perform their tasks more efficiently. They were listed third in the need for retraining to adjust to the changing health care systems.

Nurses, both RN's and LPN's, were jointly listed first in the occupation that would be of greatest need in five years.

Having 4,537 as the appraised total current position of LPN's, it ranks third highest in total employees of those occupations studied. There are 368 estimated vacancies in the State. Six hundred forty-eight is the expected number needed for expansion by November 1976, and 2,009 are estimated to be needed for replacement for this same time period. The expected number to be company-trained is 1,121 for this same period.

A careful analysis of this occupation will be required by vocational planners in setting up educational programs for this occupation. Factors

which are not readily evident need to be considered in estimating the needed supply of LPN's for the next five years. The importance of this occupation by all employing health institutions was made to be quite evident. Equally evident is the need for additional training and retraining of those currently employed.

Registered Nurse

The occupations of Professional Nurse R.N. (B.A. degree or higher) and Technical Nurse R.N. (Associate degree and Diploma), will be combined for general purposes of analysis. After interviewing was completed and all mail questionnaires returned, it was determined that most respondents who employed Registered Nurses of either type did not distinguish between the two, but generally just put their RN's in the Professional Nurse category. Therefore, in viewing professional nurse and technical nurse in the tables, consider both occupations under one profession -- "Registered Nurse."

The critical part that Registered Nurses assume in the operation of various health institutions is clearly apparent. Both geographic groups of health institutions interviewed listed Registered Nurse as the most critical occupation in the operation of their organization.

Those institutions interviewed outside the Denver area listed RN's as the second most difficult occupation to fill. The reasons given were geographic location of the health institutions and the shortage of training in rural areas, advancement limitations, low pay, and primarily, the young, mobile work force. Some of the solutions mentioned were creation of interest in small communities, greater recognition of work and higher pay. (Also, RN was the second largest group being employed on a part-time basis within these health institutions outside the Denver Metro area.)

The Registered Nurse occupation was listed jointly with Licensed Practical Nurse as first in the need for retraining to adjust to the changing health care systems. They were listed jointly again, in response to the question of which of the studied occupations would have the greatest need in five years.

The health institutions interviewed in both the Denver Metro and outlying area had similar conclusions concerning the Registered Nurses. The main differences in their responses were that the Denver Area health institutions experience a higher turnover in this occupation than did rural areas in the State. With younger nurses more recently trained, they did not mention the need to retrain their employed RN's. Some of the listed reasons for the turnover were moving and marriage, and the only solution mentioned was an increase in pay.

The Denver Metropolitan health institutions interviewed stated the greatest need over the next five years in the occupations studied would be nurses.

There are 565 estimated current vacancies for Registered Nurses. It was estimated that 1,210 will be needed for expansion by November 1976, and 5,627 for replacement for this same time period. The responding health institutions expected to train 1,052 by November 1976. The estimated expected total number of positions by the end of this period is 11,503.

It should be emphasized that, in several cases, the institutions interviewed were providing "clinical" experience for a RN program in a nearby school. This tended to inflate the number trained by health institutions, since they were not the primary training agency. The above data indicate a need for continuing and expanding RN training programs as well as for increased emphasis by all training agencies on in-service, and upgrading programs for Registered Nurses.

Psychiatric Technician

This occupation is relatively stable. There are an estimated 1,501 employed in the State with 28 current vacancies. Both the expansion and replacement needs through November 1976 are moderate. Forty new Psychiatric Technicians are the estimated needs for the five year period and 63 will be needed for replacement. Four are expected to be trained by the employing institutions.

Public Health Nurse

It is definite that a number of well-qualified Public Health Nurses be available each year to meet the personnel requirements for this position.

With an estimated 407 total current positions, 166 is the calculated number needed for expansion by November 1976. One hundred sixty-one are the anticipated replacements needed for this time period. Public Health Nurses will not be institutionally trained, therefore, all the trained Public Health Nurses must come from outside training institutions.

A careful evaluation by occupational education planners is needed to determine the training and background necessary to fill the positions of Public Health Nurse. It appears that with a minimum of additional course work, persons for this occupation could be trained as a part of existing RN training programs.

Radiation Therapy Technician

With just a preliminary analysis of this occupation, it appears that training programs should be formulated to produce a limited number of Radiation Therapy Technicians annually.

Four is the anticipated number to be company-trained within five years. Twenty-one is the estimated number needed for expansion, and 21

is the expected replacement need through November 1976.

Radiologic Technician

The representatives of the health institutions interviewed within the Denver Metropolitan area listed the occupation of Radiologic Technician as third most critical to the operation of their organizations. With this explicit significance, the personnel needs of this occupation must be viewed carefully.

With an estimated 731 employed in the State, there are 33 estimated current vacancies. Two-hundred are the probable expansion needs through the November 1976. Approximately two-fifths (225) of those needed are expected to be company-trained through the next five years.

Surgical Technician

This occupation appears to have its personnel needs partially met by company training programs much like that of the Radiologic Technician.

The anticipated number needed for expansion is 114, for replacement, 179, and those to be company trained, 138. These estimates are all over the projected period of the next five years.

Technical Nurse R.N.

(See Registered Nurse. The occupations of Professional Nurse R.N. and Technical Nurse R.N. were combined into the Registered Nurse Occupation.)

Ward Clerk

Ward Clerk was listed sixth by representatives of health institutions outside the Denver Metropolitan area as one of those occupations least critical to the operation of their institution. This occupation was also listed by health institutions outside the Denver Metro area as experiencing

a large turnover. They attributed this to the mobility of the individuals in the occupation and the low pay. Only one solution was presented -- to train local people.

This occupation should be analyzed to determine the type and amount of training necessary for the position. Two hundred forty is the estimated number needed for expansion by November 1976, 710 the estimated need for replacement over the same period, and 208 expected to be company-trained over the next five years.

Limitations of the Findings

When analyzing the data, the reader should keep in mind that the estimates represent only the expectations of employers at one particular point in time. As such, the survey was affected by the economic and industrial pressures at that time. Also, the estimates and resultant projections would be more accurate and definite trends in the industries could be more firmly established, if studies of this nature were conducted on a regular periodic basis. The projections the employers made were on their specific institutions, and no consideration was taken for new health institutions entering the field.

Care must be taken in interpreting the cells which contain very small numbers due to the sampling error inherent. For example, an information cell containing "3" may best be interpreted as a range: "1-5". Even so, these data represent the best estimates available to planners from any one or any combination of sources.

TABLE 5

CURRENT AND FIVE YEAR OUTLOOK FOR SELECTED HEALTH OCCUPATIONS IN THE STATE OF COLORADO

OCCUPATION	Number Employed in Sample	Estimated Number Employed in State	Estimated Current Vacancies in State	Estimated Total Current Positions	Estimated No. Needed for Expansion by Nov. 1976	Expected Total Positions by Nov. 1976	Estimated No. Needed for Replacement by Nov. 1976	1/Expected No. to be Co. Trained by Nov. 1976
Activities Director (Senior Citizen)	111	182	10	192	25	217	30	3
Bio-Medical Equipment Technician	52	86	13	99	66	165	30	84
Cytotechnician	150	246	3	249	30	279	14	0
Dental Assistant	169	1,014	66	1,080	96	1,176	566	18
Dental Hygienist	57	341	24	365	36	401	115	0
Dental Laboratory Technician	123	202	7	209	92	301	33	18
Dietary Aide	1,420	2,335	125	2,460	312	2,772	853	285
E.C.G. Technician	198	326	7	333	46	379	122	33
E.E.G. Technician	43	71	4	75	33	108	49	15
Food Service Supervisor	282	464	18	482	36	518	111	19
Histological Technician	68	111	0	111	26	137	69	41
Home Health Aide	25	41	13	54	46	100	41	19
Housekeeper	1,191	1,958	79	2,036	260	2,296	596	137
Inhalation Therapist	293	490	31	521	64	585	217	58
Medical Computer Programmer	8	13	3	16	36	52	10	3
Medical Emergency Technician	58	96	3	99	84	183	60	3
Medical Insurance Clerk	436	729	31	760	107	867	220	18
Medical Laboratory Technician	824	1,355	66	1,421	248	1,669	439	437
Medical Laboratory Assistant	249	409	25	434	72	506	171	16
Medical Office Assistant	429	705	40	745	149	894	125	31
Medical Librarian	80	131	11	142	19	161	30	4
Medical Records Clerk	398	654	36	690	84	774	207	81
Medical Records Technician	123	202	10	212	49	261	85	33
Medical Stenographer	366	601	30	631	70	701	163	33
Mental Health Worker	134	220	16	236	63	299	41	3
Mental Retardation Technician	202	332	11	343	11	354	271	202
Nuclear Medicine Technician	49	81	10	91	30	121	60	19
Nurse Aide	6,972	11,464	878	12,342	1,214	13,556	6,452	2,094
Occupational Therapy Aide	12	123	13	136	52	188	48	16
Optic Mechanic	6	19	0	19	3	22	4	0
Optic Technician	814	1,339	167	1,506	410	1,907	756	196
Orderly	8	13	4	17	30	47	15	16
Patient Benefit Analyst	79	130	8	138	49	187	49	60
Pharmacy Helper	113	165	13	198	74	272	75	48
Physical Therapy Aide	2,536	4,169	368	4,537	648	5,185	2,009	1,121
Practical Nursing LPN (Vocational)	5,042	8,291	449	8,740	1,121	9,861	4,584	1,009
Professional Nurse RI (BA Deg or higher)	913	1,501	28	1,529	40	1,569	63	4
Psychiatric Technician	227	373	34	407	166	573	161	0
Public Health Nurse	26	43	0	43	21	64	21	4
Radiation Therapy Technician	445	731	33	764	203	967	367	225
Radiologic Technician	674	317	21	338	114	452	179	134
Surgical Technician	574	1,437	116	1,553	89	1,642	1,043	43
Technical Nurse RN (Assoc. Deg + Diploma)	794	1,306	70	1,376	240	1,616	710	208
Ward Clerk	126	207	15	222	36	256	40	4
Other								

1/ Detail may not add to total due to rounding

TABLE 6

CURRENT AND FIVE-YEAR OUTLOOK FOR SELECTED HEALTH OCCUPATIONS IN REGION 1 - CENTRAL

OCCUPATION	Number Employed in Sample	Estimated Number Employed in Region	Estimated Current Vacancies in Region	Estimated Total Current Positions	Estimated No. Needed for Expansion by Nov. 1976	Expected Total Positions by Nov. 1976	Estimated No. Needed for Replacement by Nov. 1976	1/Expected No. to be Co. Trained by Nov. 1976
Activities Director (Senior Citizen)	60	99	1	100	8	108	7	0
Bio-Medical Equipment Technician	16	26	10	36	46	82	16	0
Cytotechnician	52	86	1	87	13	100	4	0
Dental Assistant	123	738	54	792	84	876	510	12
Dental Hygienist	48	288	12	300	30	330	108	0
Dental Laboratory Technician	114	188	7	195	86	281	32	18
Dietary Aide	529	869	31	900	72	972	219	71
E.C.G. Technician	101	166	1	167	32	199	78	21
E.E.G. Technician	20	32	1	33	16	49	21	7
Food Service Supervisor	108	178	4	182	8	190	30	0
Histological Technician	44	72	0	72	15	87	25	8
Home Health Aide	22	36	3	39	19	58	26	13
Housekeeper	535	880	34	914	69	983	207	54
Inhalation Therapist	223	367	16	383	41	424	152	43
Medical Computer Programmer	6	10	0	10	25	35	1	0
Medical Emergency Technician	31	50	1	51	64	115	34	1
Medical Insurance Clerk	237	390	11	401	56	456	111	0
Medical Laboratory Technician	531	873	10	883	125	1,008	263	164
Medical Laboratory Assistant	141	231	13	244	40	284	77	1
Medical Librarian	43	71	3	74	7	81	15	1
Medical Records Clerk	200	329	10	339	41	380	100	16
Medical Records Technician	50	82	1	83	28	111	19	1
Medical Stenographer	230	378	13	391	36	427	74	8
Mental Health Worker	86	141	11	152	18	170	19	0
Mental Retardation Technician	32	51	1	52	7	59	8	0
Nuclear Medicine Technician	39	64	3	67	10	77	23	13
Nurse Aide	3,374	5,548	311	5,859	567	6,426	3,080	1,034
Occupational Therapy Aide	15	25	4	29	19	48	19	3
Optic Mechanic	10	16	0	16	3	19	1	0
Optic Technician	3	4	0	4	0	4	0	0
Orderly	542	891	59	950	294	1,244	464	49
Patient Benefit Analyst	7	11	1	12	15	27	1	0
Pharmacy Helper	44	72	1	73	21	94	25	8
Physical Therapy Aide	63	104	4	108	21	129	40	25
Practical Nursing LPN (Vocational)	1,341	2,205	133	2,338	256	2,594	1,100	656
Professional Nurse RN (BA Deg or Higher)	3,603	5,924	215	6,139	736	6,875	3,585	571
Psychiatric Technician	148	253	7	260	16	276	31	1
Public Health Nurse	160	263	21	284	120	404	114	0
Radiation Therapy Technician	13	21	0	21	10	31	7	4
Radiologic Technician	256	420	13	433	92	525	214	54
Surgical Technician	97	160	4	164	31	195	90	25
Technical Nurse RN (Assoc. Deg + Diploma)	198	326	19	345	43	388	106	3
Ward Clerk	560	921	40	961	169	1,130	511	136
Other	75	123	8	131	30	161	32	1

1/ Detail may not add to total due to rounding



TABLE 7
CURRENT AND FIVE-YEAR OUTLOOK FOR SELECTED OCCUPATIONS IN REGION 2 - NORTHEASTERN

OCCUPATION	Number Employed in Sample	Estimated Number Employed in Region	Estimated Current Vacancies in Region	Estimated Total Current Positions	Estimated No. Needed for Expansion by Nov. 1976	Expected Total Positions by Nov. 1976	Estimated No. Needed for Replacement by Nov. 1976	1/Expected No. to be Co. Trained by Nov. 1976
Activities Director (Senior Citizen)	25	41	0	41	4	45	6	0
Bio-Medical Equipment Technician	0	0	0	0	0	0	0	0
Cytotechnician	2	3	0	3	4	7	4	0
Dental Assistant	3	18	0	18	0	18	0	0
Dental Hygienist	1	6	0	6	0	6	0	0
Dental Laboratory Technician	1	1	0	1	0	1	0	0
Dietary Aide	167	275	7	282	4	286	114	15
E.C.G. Technician	20	32	0	32	1	33	8	8
E.E.G. Technician	3	4	0	4	1	5	3	0
Food Service Supervisor	64	105	10	115	4	119	44	8
Histological Technician	4	7	0	7	1	8	8	16
Home Health Aide	2	3	7	10	3	13	1	0
Housekeeper	136	223	7	230	4	234	82	21
Inhalation Therapist	11	18	0	18	3	21	16	11
Medical Computer Programmer	0	0	0	0	1	1	0	0
Medical Emergency Technician	0	0	0	0	0	0	0	0
Medical Insurance Clerk	50	82	0	82	4	86	19	3
Medical Laboratory Technician	52	86	15	101	3	104	26	82
Medical Laboratory Assistant	14	23	3	26	0	26	19	0
Medical Office Assistant	43	71	3	74	11	85	11	0
Medical Librarian	6	10	0	10	1	11	0	0
Medical Records Clerk	44	72	4	76	7	83	26	1
Medical Records Technician	16	26	2	27	4	31	13	0
Medical Stenographer	30	49	7	56	10	66	28	3
Mental Health Worker	1	1	1	2	3	5	1	0
Mental Retardation Technician	3	4	0	4	0	4	1	0
Nuclear Medicine Technician	3	4	0	4	3	7	1	0
Nurse Aide	1,087	1,787	275	2,062	118	2,180	1,376	311
Occupational Therapy Aide	9	15	0	15	3	18	1	1
Optic Mechanic	0	0	0	0	0	0	0	0
Optic Technician	0	0	0	0	0	0	0	0
Orderly	47	77	10	87	3	90	74	28
Patient Benefit Analyst	0	0	0	0	0	0	0	0
Pharmacy Helper	6	10	0	10	0	10	0	0
Physical Therapy Aide	7	11	3	14	23	37	8	0
Practical Nursing LPN (Vocational)	262	431	69	500	56	556	220	15
Professional Nurse RN (BA Deg or Higher)	289	475	46	521	26	547	294	1
Psychiatric Technician	0	0	0	0	3	3	0	0
Public Health Nurse	10	16	0	16	4	20	1	0
Radiation Therapy Technician	2	3	0	3	0	3	3	0
Radiologic Technician	46	75	7	82	28	110	44	71
Surgical Technician	12	19	0	19	3	22	11	0
Technical Nurse RN (Assoc. Deg + Diploma)	164	270	19	289	15	304	577	7
Ward Clerk	37	60	0	60	0	60	54	1
Other	6	10	1	11	1	12	3	1

1/ Detail may not add to total due to rounding

TABLE 8

CURRENT AND FIVE-YEAR OUTLOOK FOR SELECTED OCCUPATIONS IN REGION 3 - SOUTHEASTERN

OCCUPATION	Number Employed in Sample	Estimated Number Employed in Region	Estimated Current Vacancies in Region	Estimated Total Current Positions	Estimated No. Needed for Expansion by Nov. 1976	Expected Total Positions by Nov. 1976	Estimated No. Needed for Replacement by Nov. 1976	Expected No. to be Co. Trained by Nov. 1976
Activities Director (Senior Citizen)	19	31	7	38	11	49	15	1
Bio-Medical Equipment Technician	36	59	3	62	19	81	13	82
Cyrotechnician	85	140	1	141	8	149	7	0
Dental Assistant	36	216	12	228	12	240	42	6
Dental Hygienist	6	60	6	66	0	66	0	0
Dental Laboratory Technician	6	10	0	10	7	17	0	0
Dietary Aide	492	909	30	939	84	923	260	78
E.C.G. Technician	55	90	4	94	10	104	32	4
E.E.G. Technician	7	11	3	14	11	25	23	8
Food Service Supervisor	83	176	1	137	8	139	29	1
Histological Technician	12	19	0	19	1	27	29	16
Home Health Aide	1	1	0	1	18	19	10	7
Housekeeper	348	577	16	598	28	616	111	28
Inhalation Therapist	58	63	8	71	7	78	36	0
Medical Computer Programmer	1	1	3	4	10	14	8	4
Medical Emergency Technician	22	36	1	37	11	48	21	4
Medical Insurance Clerk	83	136	11	147	19	166	50	4
Medical Laboratory Technician	150	246	21	267	13	280	67	67
Medical Laboratory Assistant	62	101	7	108	7	115	40	7
Medical Office Assistant	77	126	10	136	23	159	21	30
Medical Librarian	17	28	7	35	8	43	10	0
Medical Records Clerk	113	186	11	197	16	213	51	19
Medical Records Technician	35	56	4	62	0	62	28	1
Medical Stenographer	67	110	3	113	7	120	32	3
Mental Health Worker	40	66	3	69	30	99	19	0
Mental Retardation Technician	6	10	0	10	4	14	4	4
Nuclear Medicine Technician	7	11	7	18	15	33	34	4
Nurse Aide	1,774	2,917	141	3,056	160	3,218	1,154	246
Occupational Therapy Aide	47	77	3	80	28	108	19	7
Optic Mechanic	2	3	0	3	0	3	3	0
Optic Technician	3	4	0	4	0	4	0	0
Orderly	160	263	86	349	40	389	141	32
Patient Benefit Analyst	1	1	1	2	11	13	11	13
Pharmacy Helper	21	34	0	34	1	35	3	0
Physical Therapy Aide	31	50	3	53	25	78	21	23
Practical Nursing LPN (Vocational)	642	1,055	59	1,114	100	1,214	334	81
Professional Nurse RN (BA Deg or higher)	754	1,240	101	1,341	86	1,427	352	93
Psychiatric Technician		1,258	21	1,279	14	1,293	31	0
Public Health Nurse	40	66	11	77	37	114	46	0
Radiation Therapy Technician	8	13	11	13	11	24	11	0
Radiologic Technician	69	114	3	117	3	120	31	26
Surgical Technician	49	81	7	88	31	119	37	26
Technical Nurse RN (Assoc Deg + Diploma)	339	556	30	586	18	604	192	28
Ward Clerk	135	222	10	232	19	251	50	13
Other	15	25	3	28	0	28	3	1

✓ Detail may not add to total due to rounding

TABLE 9

CURRENT AND FIVE YEAR OUTLOOK FOR SELECTED OCCUPATIONS IN REGION 4 - WESTERN

OCCUPATION	Number Employed in Sample	Estimated Number Employed in Region	Estimated Current Vacancies in Region	Estimated Total Current Positions	Estimated No. Needed for Expansion by Nov. 1976	Expected Total Positions by Nov. 1976	Estimated No. Needed for Replacement by Nov. 1976	1/Expected No. to be Co. Trained by Nov. 1976
Activities Director (Senior Citizen)	7	11	1	12	0	12	0	1
Bio-Medical Equipment Technician	0	0	0	0	1	1	0	1
Cytotechnician	11	18	0	18	0	19	0	0
Dental Assistant	7	42	0	42	0	42	12	0
Dental Hygienist	2	12	6	18	6	24	6	0
Dental Laboratory Technician	2	3	0	3	0	3	0	0
Dietary Aide	232	382	58	440	149	589	261	120
E.C.G. Technician	22	36	0	36	1	37	1	0
E.E.G. Technician	13	21	0	21	3	24	0	0
Food Service Supervisor	27	44	0	44	21	65	10	10
Histological Technician	8	13	0	13	1	14	8	0
Home Health Aide	0	0	0	0	4	4	3	0
Housekeeper	172	282	19	301	159	459	196	34
Inhalation Therapist	26	43	7	50	4	54	13	3
Medical Computer Programmer	1	1	0	1	0	1	0	0
Medical Emergency Technician	5	3	0	3	7	10	4	1
Medical Insurance Clerk	68	111	8	119	25	144	37	11
Medical Laboratory Technician	91	149	19	168	106	274	82	123
Medical Laboratory Assistant	32	51	1	52	28	80	36	8
Medical Office Assistant	48	78	1	79	4	83	23	0
Medical Librarian	14	23	1	24	3	27	4	3
Medical Records Clerk	41	67	10	77	18	95	28	41
Medical Records Technician	22	36	1	37	16	53	23	30
Medical Stenographer	39	64	7	71	18	89	26	18
Mental Health Worker	7	11	0	11	11	22	0	3
Mental Retardation Technician	161	264	10	274	0	274	256	197
Nuclear Medicine Technician	0	0	0	0	1	1	1	1
Nurse Aide	737	1,211	149	1,360	370	1,730	842	505
Occupational Therapy Aide	3	4	4	8	1	9	7	3
Optic Mechanic	0	0	0	0	0	0	0	0
Optic Technician	0	0	0	0	0	0	0	0
Orderly	65	106	15	121	53	194	77	86
Patient Benefit Analyst	0	0	1	1	3	4	1	3
Pharmacy Helper	8	13	7	20	26	46	11	51
Physical Therapy Aide	12	19	1	20	4	24	7	0
Practical Nursing LPN (Vocational)	291	479	106	585	231	816	356	371
Professional Nurse RN (BA Deg or higher)	396	651	84	735	271	1,006	353	344
Psychiatric Technician	0	0	0	0	7	7	0	3
Public Health Nurse	17	28	1	29	3	32	0	0
Radiation Therapy Technician	3	4	0	4	0	4	0	0
Radiologic Technician	74	122	9	130	77	207	75	72
Surgical Technician	35	58	10	68	48	116	40	57
Technical Nurse RN (Assoc. Deg + Diploma)	173	285	45	330	13	344	166	4
Ward Clerk	62	101	19	120	50	170	84	50
Other	30	49	1	50	3	53	0	0

1/ Detail may not add to total due to rounding

TABLE 10

ESTIMATED OUTLOOK BY OCCUPATION AND BY YEAR FROM NOVEMBER 1972 THROUGH NOVEMBER 1976 FOR EXPANSION AND REPLACEMENT NEEDS IN THE STATE OF COLORADO

OCCUPATION	Estimated Number Needed for Expansion by Year (Nov. 1972 thru Nov. 1976)					Total Expansion in 5 Years	Estimated Number Needed for Replacement by Year (Nov. 1972 thru Nov. 1976)					1/Total Replacement in 5 Years
	1972	1973	1974	1975	1976		1972	1973	1974	1975	1976	
Activities Director (Senior Citizen)	7	8	1	0	8	25	7	8	1	7	8	30
Bio-Medical Equipment Technician	15	15	16	4	15	66	7	7	4	4	7	30
Cytotechnician	0	8	7	1	13	30	1	1	3	3	7	16
Dental Assistant	12	54	18	6	12	96	354	72	36	54	54	564
Dental Hygienist	18	6	6	6	6	36	12	42	18	24	18	114
Dental Laboratory Technician	15	21	10	19	26	92	13	8	1	8	4	33
Dietary Aide	66	66	52	67	59	312	12	171	122	152	149	853
E.C.G. Technician	7	11	4	8	15	46	10	21	19	23	28	122
E.E.G. Technician	1	4	3	4	18	33	260	8	7	15	19	49
Food Service Supervisor	10	10	3	7	7	36	31	26	16	18	26	111
Histological Technician	3	3	8	3	8	26	1	13	15	13	16	69
Home Health Aide	11	13	7	3	11	46	25	10	8	4	11	41
Housekeeper	52	51	55	49	51	260	13	120	93	114	130	598
Inhalation Therapist	11	10	23	3	16	64	7	40	36	40	48	217
Medical Computer Programmer	3	8	10	4	10	36	146	1	1	3	3	10
Medical Emergency Technician	7	7	18	15	36	84	52	15	11	13	18	60
Medical Insurance Clerk	30	18	19	19	18	107	46	44	37	44	48	220
Medical Laboratory Technician	40	48	34	51	77	248	121	111	72	67	71	439
Medical Laboratory Assistant	8	23	11	11	18	72	36	40	34	28	33	171
Medical Office Assistant	25	40	67	8	10	149	26	31	31	13	23	125
Medical Librarian	7	4	1	1	4	19	4	7	4	4	7	30
Medical Records Clerk	19	26	4	19	13	84	58	37	34	34	36	207
Medical Records Technician	13	7	3	11	13	49	14	19	13	18	19	86
Medical Stenographer	16	11	11	10	21	71	40	36	25	26	34	162
Mental Health Worker	16	15	16	8	7	63	7	7	3	13	15	41
Mental Retardation Technician	3	1	0	1	4	11	63	67	0	70	71	271
Nuclear Medicine Technician	1	3	10	8	7	30	7	8	19	11	16	60
Nurse Aide	309	261	207	169	266	1,214	1,574	1,306	1,066	1,233	1,273	6,452
Occupational Therapy Aide	18	15	8	4	7	52	4	10	7	10	16	48
Optic Mechanic	1	1	0	0	0	3	0	0	0	0	0	4
Optic Technician	0	0	0	0	0	0	0	0	0	0	0	0
Orderly	105	63	67	81	84	401	179	118	137	155	166	756
Patient Benefit Analyst	4	10	4	3	7	30	1	3	1	3	4	15
Pharmacy Helper	7	8	11	4	16	49	7	10	10	10	11	49
Physical Therapy Aide	10	34	13	4	11	74	18	16	11	11	18	75
Practical Nursing LPN (Vocational)	140	146	105	140	116	648	597	376	322	356	356	2,009
Professional Nurse RN (BA Deg or higher)	245	245	171	268	190	1,121	1,164	896	791	855	886	4,584
Psychiatric Technician	10	4	7	10	8	40	15	10	11	13	15	63
Public Health Nurse	21	33	33	36	41	166	25	30	23	37	46	161
Radiation Therapy Technician	1	4	3	4	7	21	4	3	3	4	4	21
Radiologic Technician	40	51	34	36	41	201	72	75	63	69	86	367
Surgical Technician	19	21	18	31	23	114	34	40	26	36	36	179
Technical Nurse RN (Assoc. Deg + Diploma)	31	25	7	16	10	89	276	197	181	194	194	1,043
Ward Clerk	40	46	40	54	60	240	160	134	114	151	149	710
Other	8	10	7	4	7	36	10	11	4	4	4	40

1/ Detail May not add to total due to rounding

TABLE 11

ESTIMATED OUTLOOK BY OCCUPATION AND BY YEAR FROM NOVEMBER 1972 THROUGH NOVEMBER 1976
FOR EXPANSION AND FOR REPLACEMENT NEEDS IN REGION 1 - CENTRAL

OCCUPATION	Estimated Number Needed for Expansion by Year (Nov. 1972 thru Nov. 1976)					Total Expansion in 5 Years	Estimated Number Needed for Replacement by Year (Nov. 1972 thru Nov. 1976)					1/ Total Replacement in 5 Years
	1972	1973	1974	1975	1976		1972	1973	1974	1975	1976	
Activities Director (Senior Citizen)	1	3	0	0	3	8	1	3	0	0	0	7
Bio-Medical Equipment Technician	11	11	15	0	8	46	4	3	3	1	3	16
Cytotechnician	0	0	3	0	10	13	0	1	0	1	1	4
Dental Assistant	12	48	12	0	12	84	348	54	24	42	42	510
Dental Hygienist	18	0	6	6	6	30	12	30	18	24	18	108
Dental Laboratory Technician	15	19	8	19	23	86	10	8	1	8	4	32
Dietary Aide	10	15	11	23	15	72	78	46	19	32	41	219
E.C.G. Technician	4	10	4	4	4	32	18	15	13	13	18	78
E.E.G. Technician	1	3	1	0	10	16	1	1	1	4	11	21
Food Service Supervisor	1	1	0	0	3	8	8	3	4	3	8	30
Histological Technician	1	0	4	1	7	15	4	3	4	3	8	25
Home Health Aide	1	1	4	1	10	19	3	7	7	3	7	26
Housekeeper	10	13	15	16	15	69	48	36	30	40	51	207
Inhalation Therapist	4	7	21	3	13	48	41	30	23	30	31	152
Medical Computer Programmer	3	4	8	1	7	25	0	1	0	0	0	1
Medical Emergency Technician	7	4	16	11	25	64	3	7	7	8	10	34
Medical Insurance Clerk	13	11	13	13	7	56	28	25	13	26	18	111
Medical Laboratory Technician	15	19	13	26	50	125	67	58	49	43	46	263
Medical Laboratory Assistant	1	16	7	7	10	40	11	15	21	11	18	77
Medical Office Assistant	10	28	60	7	3	110	16	15	13	10	13	69
Medical Librarian	3	1	0	0	1	7	3	1	3	3	1	15
Medical Records Clerk	8	16	3	8	4	41	25	19	18	19	18	100
Medical Records Technician	4	4	4	3	7	28	1	3	3	7	4	19
Medical Stenographer	7	7	10	3	10	36	18	16	11	15	15	74
Mental Health Worker	4	3	4	1	3	18	4	4	1	4	7	19
Mental Retardation Technician	3	1	0	0	1	7	1	1	0	3	1	8
Nuclear Medicine Technician	0	1	4	1	1	10	4	0	10	1	7	23
Nurse Aide	174	90	86	111	104	567	739	585	520	601	633	3,080
Occupational Therapy Aide	7	4	1	1	4	19	1	4	4	1	7	19
Optic Mechanic	1	1	0	0	0	3	0	0	0	0	1	1
Optic Technician	0	0	0	0	0	0	0	0	0	0	0	0
Orderly	67	44	50	67	64	294	93	69	90	104	106	464
Patient Benefit Analyst	1	7	3	0	2	15	0	0	0	0	1	1
Pharmacy Helper	1	4	7	0	8	21	3	4	4	4	7	25
Physical Therapy Aide	1	10	4	0	4	21	4	15	4	7	8	40
Practical Nursing LPN (Vocational)	59	40	44	64	50	256	305	210	173	205	204	1,100
Professional Nurse RN (BA Deg or higher)	167	138	110	194	126	736	840	702	621	704	715	3,585
Psychiatric Technician	3	1	3	3	4	16	11	4	3	7	7	31
Public Health Nurse	7	18	28	30	37	120	15	18	23	25	32	114
Radiation Therapy Technician	1	1	1	1	3	10	1	1	1	0	1	7
Radiologic Technician	15	19	16	18	23	92	37	43	32	44	54	214
Surgical Technician	4	11	1	10	3	31	16	23	15	18	18	90
Technical Nurse RN (Assoc. Deg + Diploma)	13	16	0	13	0	43	25	26	18	19	13	106
Ward Clerk	30	26	30	41	43	169	110	99	84	115	105	511
Other	7	10	7	4	3	30	7	10	4	4	4	32

1/ Detail may not add to total due to rounding

TABLE 12

ESTIMATED OUTLOOK BY OCCUPATION AND BY YEAR FROM NOVEMBER 1972 THROUGH NOVEMBER 1976
FOR EXPANSION AND FOR REPLACEMENT NEEDS IN REGION 2 - NORTHEASTERN

OCCUPATION	Estimated Number Needed for Expansion by Year (Nov. 1972 thru Nov. 1976)					Total Expansion in 5 Years	Estimated Number Needed for Replacement by Year (Nov. 1972 thru Nov. 1976)					1/Total Replacement in 5 Years
	1972	1973	1974	1975	1976		1972	1973	1974	1975	1976	
Activities Director (Senior Citizen)	1	0	0	0	0	1	1	1	0	0	1	8
Bio-Medical Equipment Technician	0	0	0	0	0	0	0	0	0	0	0	0
Cytotechnical	0	4	0	0	0	0	1	0	1	0	1	4
Dental Assistant	0	0	0	0	0	0	0	0	0	0	0	0
Dental Hygienist	0	0	0	0	0	0	0	0	0	0	0	0
Dental Laboratory Technician	0	0	0	0	0	0	0	0	0	0	0	0
Dietary Aide	1	1	0	0	1	4	44	25	16	15	16	114
E.C.G. Technician	1	0	0	0	0	1	1	1	1	1	1	8
E.E.G. Technician	0	1	0	0	0	1	0	1	0	1	0	3
Food Service Supervisor	3	1	0	0	0	4	8	13	3	8	10	44
Histological Technician	0	0	1	0	0	1	1	1	1	1	1	8
Home Health Aide	1	1	0	0	0	3	1	0	0	0	0	1
Housekeeper	1	1	0	0	0	4	30	15	13	15	11	82
Inhalation Therapist	3	0	0	0	0	3	3	3	3	3	3	16
Medical Computer Programmer	0	1	0	0	0	1	0	0	0	0	0	0
Medical Emergency Technician	0	0	0	0	0	0	0	0	0	0	0	0
Medical Insurance Clerk	0	0	1	3	0	4	4	3	4	1	4	19
Medical Laboratory Technician	1	1	0	0	0	3	10	4	4	4	3	26
Medical Laboratory Assistant	0	0	0	0	0	0	4	4	3	3	3	19
Medical Librarian	0	0	0	0	0	1	0	0	0	0	0	0
Medical Office Assistant	3	4	1	0	1	11	1	4	4	0	0	11
Medical Records Clerk	0	1	0	1	1	7	10	3	3	3	4	26
Medical Records Technician	1	1	0	1	0	4	3	3	1	3	1	13
Medical Stenographer	4	0	1	0	3	10	7	7	8	3	3	28
Mental Health Worker	0	1	1	0	0	3	1	0	0	0	0	1
Mental Retardation Technician	0	0	0	0	0	0	1	0	0	0	0	1
Nuclear Medicine Technician	1	1	0	0	0	3	0	1	0	0	0	1
Nurse Aide	4	19	0	0	0	93	356	286	255	243	235	1,376
Occupational Therapy Aide	1	1	0	0	0	3	1	0	0	0	0	1
Optic Mechanic	0	0	0	0	0	0	0	0	0	0	0	0
Optic Technician	0	0	0	0	0	0	0	0	0	0	0	0
Orderly	1	1	0	0	0	3	21	13	13	13	13	74
Patient Benefit Analyst	0	0	0	0	0	0	0	0	0	0	0	0
Pharmacy Helper	0	0	0	0	0	0	1	1	3	1	1	10
Physical Therapy Aide	3	18	1	0	0	23	4	0	1	0	1	8
Practical Nursing LPN (Vocational)	10	32	4	3	4	56	59	58	43	31	28	220
Professional Nurse (BA Deg or higher)	7	11	1	1	1	26	78	66	58	41	49	294
Psychiatric Technician	1	1	0	0	0	3	0	0	0	0	0	0
Public Health Nurse	1	3	0	0	0	4	1	0	0	0	0	1
Radiation Therapy Technician	0	0	0	0	0	0	1	0	0	1	0	3
Radiologic Technician	7	13	3	3	1	28	8	10	11	7	10	44
Surgical Technician	3	3	0	0	0	3	3	3	1	1	1	11
Technical Nurse RN (Assoc. Deg + Diploma)	8	3	1	0	0	15	125	116	111	111	115	577
Ward Clerk	0	0	0	0	0	0	15	7	10	10	10	54
Other	1	0	0	0	0	1	0	1	0	1	0	3

1/ Detail may not add to total due to rounding

TABLE 13

ESTIMATED OUTLOOK BY OCCUPATION AND BY YEAR FROM NOVEMBER 1972 THROUGH NOVEMBER 1976
FOR EXPANSION AND FOR REPLACEMENT NEEDS IN REGION 3 - SOUTHEASTERN

OCCUPATION	Estimated Number Needed for Expansion by Year (Nov. 1972 thru Nov. 1976)					Total Expansion in 5 years	Estimated Number Needed for Replacement by Year (Nov. 1972 thru Nov. 1976)					1/ Total Replacement in 5 years
	1972	1973	1974	1975	1976		1972	1973	1974	1975	1976	
Activities Director (Senior Citizen)	3	3	0	0	3	11	1	3	0	3	4	15
Bio-Medical Equipment Technician	1	3	1	4	7	18	1	3	1	3	3	13
Cytotechnician	0	0	3	1	3	8	0	0	1	1	3	7
Dental Assistant	0	6	6	0	0	12	6	6	12	6	12	42
Dental Hygienist	0	0	0	0	0	0	0	0	0	0	0	0
Dental Laboratory Technician	0	1	1	0	3	7	0	0	0	0	0	0
Dietary Aide	23	15	13	16	16	84	81	48	37	54	40	260
E.C.G. Technician	0	1	0	3	3	10	8	4	4	8	8	32
E.E.G. Technician	0	0	1	4	4	11	0	4	4	8	8	23
Food Service Supervisor	0	1	0	0	0	1	4	7	7	4	7	28
Histological Technician	0	3	1	1	1	8	4	4	7	7	7	28
Home Health Aide	8	4	1	1	1	18	0	1	1	1	4	10
Housekeeper	7	4	7	4	4	28	25	19	21	19	25	111
Inhalation Therapist	3	3	0	0	0	7	7	4	8	8	11	36
Medical Computer Programmer	0	1	1	3	3	10	0	0	1	3	3	8
Medical Emergency Technician	1	0	3	3	3	11	1	4	4	4	7	21
Medical Insurance Clerk	7	3	1	1	4	19	7	11	10	10	13	50
Medical Laboratory Technician	3	3	1	1	1	13	19	28	7	7	7	67
Medical Laboratory Assistant	0	3	1	0	0	7	10	13	7	7	4	40
Medical Office Assistant	10	7	3	1	3	23	7	7	7	1	1	21
Medical Librarian	1	1	1	1	1	8	1	1	1	1	1	10
Medical Records Clerk	3	7	1	1	1	16	15	10	10	8	10	51
Medical Records Technician	0	0	0	0	0	0	1	8	8	4	8	28
Medical Stenographer	0	3	0	1	0	7	7	8	4	4	8	32
Mental Health Worker	8	8	7	3	3	30	0	1	1	8	8	19
Mental Retardation Technician	0	0	0	1	3	4	0	0	0	1	3	4
Nuclear Medicine Technician	0	0	4	4	4	15	1	7	10	10	10	34
Nurse Aide	37	48	23	25	26	160	326	229	155	202	241	1,154
Occupational Therapy Aide	10	8	7	1	1	28	0	3	1	7	8	19
Optic Mechanic	0	0	0	0	0	0	0	0	0	0	0	0
Optic Technician	0	0	0	0	0	0	0	0	0	0	0	0
Orderly	18	8	4	7	3	40	51	21	16	23	28	141
Patient Benefit Analyst	1	1	1	3	3	11	1	1	1	3	3	11
Pharmacy Helper	0	0	0	0	0	1	0	0	0	0	1	3
Physical Therapy Aide	3	4	4	4	7	25	4	1	4	3	7	21
Practical Nursing LPN (Vocational)	21	31	18	21	8	100	163	44	43	43	37	334
Professional Nurse RN (BA Deg. or higher)	21	28	11	13	11	86	181	43	37	41	48	352
Psychiatric Technician	1	1	3	3	3	13	3	7	8	8	8	31
Public Health Nurse	13	10	7	4	4	37	8	11	0	13	13	46
Radiation Therapy Technician	0	3	1	3	3	11	1	1	1	3	3	11
Radiologic Technician	1	0	0	0	0	3	11	7	4	4	4	31
Surgical Technician	4	3	4	10	8	31	4	7	4	8	11	37
Technical Nurse RN (Assoc. Deg. + Diploma)	3	4	3	3	3	18	93	21	23	25	30	162
Ward Clerk	19	11	10	8	13	60	19	11	10	8	13	60
Other	0	0	0	0	0	0	3	0	0	0	0	3

1/ Detail may not add to total due to rounding

TABLE 14

ESTIMATED OUTLOOK BY OCCUPATION AND BY YEAR FROM NOVEMBER 1972 THROUGH NOVEMBER 1976
FOR EXPANSION AND FOR REPLACEMENT NEEDS IN REGION 4 - WESTERN

OCCUPATION	Estimated Number Needed for Expansion by Year (Nov. 1972 thru Nov. 1976)					Total Expansion in 5 Years	Estimated Number Needed for Replacement by Year (Nov. 1972 thru Nov. 1976)					1/ Total Replacement in 5 Years
	1972	1973	1974	1975	1976		1972	1973	1974	1975	1976	
Activities Director (Senior Citizen)	0	0	0	0	0	0	0	0	0	0	0	0
Bio-Medical Equipment Technician	1	0	0	0	0	1	0	0	0	0	0	0
Cytotechnician	0	1	0	0	0	1	0	0	0	0	0	0
Dental Assistant	0	0	0	0	0	0	0	0	0	0	0	0
Dental Hygienist	0	6	0	0	0	6	0	6	0	0	0	12
Dental Laboratory Assistant	0	0	0	0	0	0	0	0	0	0	0	0
Dietary Aide	31	34	28	26	26	149	56	51	48	51	54	261
E.C.G. Technician	0	0	0	0	1	1	1	0	0	0	0	1
E.E.G. Technician	0	0	0	0	3	3	0	0	0	0	0	0
Food Service Supervisor	4	3	3	4	3	23	1	1	1	1	1	10
Histological Technician	1	0	0	0	0	1	1	1	1	1	1	8
Home Health Aide	0	4	0	0	0	4	1	1	0	0	0	3
Housekeeper	34	31	32	30	31	158	44	46	26	40	40	196
Inhalation Therapist	0	0	1	0	3	4	3	3	3	3	3	13
Medical Computer Programmer	0	0	0	0	0	0	0	0	0	0	0	0
Medical Emergency Technician	0	0	0	0	7	7	0	3	1	0	1	4
Medical Insurance Clerk	10	0	3	4	4	25	7	4	8	4	10	37
Medical Laboratory Technician	19	23	21	21	2	106	18	21	11	15	15	82
Medical Laboratory Assistant	7	3	3	4	8	28	10	7	3	8	8	36
Medical Office Assistant	1	0	1	0	0	4	1	4	7	1	8	23
Medical Librarian	1	1	0	0	0	3	0	3	0	0	1	4
Medical Records Clerk	7	0	0	7	3	18	8	3	3	3	7	28
Medical Records Technician	7	0	0	3	4	16	7	4	1	3	7	23
Medical Stenographer	3	1	0	4	7	18	8	4	1	4	8	26
Mental Health Worker	3	1	3	3	0	11	5	6	0	0	0	0
Mental Retardation Technician	0	0	0	0	0	0	59	66	0	66	66	256
Nuclear Medicine Technician	0	0	0	1	0	1	149	205	136	186	161	842
Nurse Aide	92	104	99	32	43	370	1	1	1	1	1	7
Occupational Therapy Aide	0	0	0	1	0	1	0	0	0	0	0	0
Optic Mechanic	0	0	0	0	0	0	0	0	0	0	0	0
Optic Technician	0	0	0	0	0	0	0	0	0	0	0	0
Orderly	16	10	13	7	1	63	11	15	16	15	19	77
Patient Benefit Analyst	1	1	0	0	0	3	0	1	0	0	0	1
Pharmacy Helper	4	3	4	4	7	26	1	1	1	3	1	11
Physical Therapy Aide	1	1	1	0	0	4	3	0	0	1	1	7
Practical Nursing LPN (Vocational)	43	40	49	51	49	231	67	63	64	77	87	356
Professional Nurse RN (BA Deg or higher)	49	67	48	59	49	271	64	74	74	69	74	353
Psychiatric Technician	3	0	0	3	0	7	0	0	0	0	0	0
Public Health Nurse	0	1	0	1	0	3	0	0	0	0	0	0
Radiation Therapy Technician	0	1	0	0	0	3	0	0	0	0	0	0
Radiologic Technician	16	18	15	15	15	77	15	16	13	13	16	75
Surgical Technician	7	7	11	11	11	48	10	7	4	8	10	40
Technical Nurse RN (Assoc. Deg + Diploma)	7	0	1	0	4	13	32	32	28	37	34	166
Ward Clerk	8	10	7	10	15	50	13	16	11	19	23	84
Other	0	0	0	0	3	3	0	0	0	0	0	0

1/ Detail may not add to total due to rounding

TABLE 15

ESTIMATED CURRENT VACANCIES BY EXPANSION AND REPLACEMENT NEEDS AND THE ESTIMATED NUMBER TO BE COMPANY TRAINED BY YEAR FROM NOVEMBER 1972 THROUGH NOVEMBER 1976, IN EACH OCCUPATION IN THE STATE OF COLORADO

OCCUPATION	Estimated Number of Vacancies					Estimated Number to be Company Trained by Year					1/ Total Number Expected to be Company Trained by November 1976	
	by November 1976		Replacement			(Nov. 1972 thru Nov. 1976)						
	Total	Expansion	1972	1973	1974	1975	1976					
Activities Director (Senior Citizen)	54	25	30	0	1	0	0	0	0	0	0	1
Bio-Medical Equipment Technician	97	66	30	8	16	19	19	0	0	0	0	84
Cytotechnician	46	30	16	0	0	0	0	0	0	0	0	0
Dental Assistant	660	96	564	6	6	0	6	0	0	0	0	18
Dental Hygienist	150	36	114	0	0	0	0	0	0	0	0	0
Dental Laboratory Technician	125	92	33	1	1	0	0	0	0	0	0	18
Dietary Aide	1,166	312	853	84	49	44	52	56	56	56	56	285
E-C.G. Technician	167	46	122	8	4	4	7	7	7	7	7	33
E.E.G. Technician	82	33	49	1	0	3	4	4	4	4	4	15
Food Service Supervisor	149	36	111	4	3	1	3	4	4	4	4	19
Histological Technician	95	26	69	8	8	8	8	10	10	10	10	36
Home Health Aide	87	46	36	11	3	4	4	0	0	0	0	19
Housekeeper	858	260	598	25	28	13	30	36	36	36	36	137
Inhalation Therapist	281	64	217	10	15	10	11	11	11	11	11	58
Medical Computer Programmer	46	34	10	0	0	0	0	1	1	1	1	3
Medical Emergency Technician	145	84	60	0	1	0	1	1	1	1	1	3
Medical Insurance Clerk	327	107	220	7	3	1	1	1	1	1	1	18
Medical Laboratory Technician	687	248	439	90	90	82	87	87	87	87	87	437
Medical Laboratory Assistant	245	72	171	4	3	3	3	1	1	1	1	16
Medical Office Assistant	275	149	125	7	7	8	8	1	1	1	1	31
Medical Librarian	49	19	30	4	0	0	0	0	0	0	0	4
Medical Records Clerk	289	84	207	16	16	13	18	15	15	15	15	81
Medical Records Technician	134	49	86	10	7	3	4	7	7	7	7	33
Medical Stenographer	235	71	163	4	7	10	7	4	4	4	4	33
Mental Health Worker	104	63	41	3	0	0	0	0	0	0	0	3
Mental Retardation Technician	282	11	271	49	49	0	0	0	0	0	0	202
Nuclear Medicine Technician	90	30	60	1	1	4	4	7	7	7	7	19
Nurse Aide	7,667	1,214	6,452	583	375	314	406	414	414	414	414	2,094
Occupational Therapy Aide	100	52	48	4	1	1	1	1	1	1	1	6
Optic Mechanic	8	3	4	0	0	0	0	0	0	0	0	0
Optic Technician	0	0	0	0	0	0	0	0	0	0	0	0
Orderly	1,156	401	756	34	34	36	44	46	46	46	46	196
Patient Benefit Analyst	44	15	15	3	3	3	3	3	3	3	3	16
Pharmacy Helper	98	49	49	11	11	13	15	13	13	13	13	60
Physical Therapy Aide	151	74	75	8	10	7	10	13	13	13	13	48
Practical Nursing LPN (Vocational)	2,655	648	2,009	317	226	173	208	196	196	196	196	1,121
Professional Nurse RN (BA Deg. or higher)	5,704	1,121	4,584	240	201	187	194	186	186	186	186	1,010
Psychiatric Technician	101	40	63	3	0	0	0	1	1	1	1	4
Public Health Nurse	327	166	161	0	0	0	0	0	0	0	0	0
Radiation Therapy Technician	36	21	21	0	0	1	1	1	1	1	1	4
Radiologic Technician	567	201	367	56	59	36	37	36	36	36	36	225
Surgical Technician	293	114	179	30	21	25	30	33	33	33	33	138
Technical Nurse RN (Assoc. Deg + Diploma)	1,131	89	1,043	11	3	8	3	15	15	15	15	43
Ward Clerk	950	240	710	44	36	36	37	37	37	37	37	201
Other	74	36	40	0	1	1	0	0	0	0	0	3

1/ Detail may not add to total due to rounding



TABLE 16

ESTIMATED CURRENT VACANCIES BY EXPANSION AND REPLACEMENT NEEDS AND THE ESTIMATED NUMBER TO BE COMPANY TRAINED BY YEAR FROM NOVEMBER 1972 THROUGH NOVEMBER 1976, IN EACH OCCUPATION OF REGION 1 - CENTRAL

OCCUPATION	Estimated Number of Vacancies by November 1976		Estimated Number to be Company Trained by Year (Nov. 1972 thru Nov. 1976)					1/Total Number Expected to be Company Trained by November 1976
	Total	Expansion	1972	1973	1974	1975	1976	
Activities Director (Senior Citizen)	15	8	7	0	0	0	0	0
Bio-Medical Equipment Technician	63	46	16	0	0	0	0	0
Cytotechnician	19	13	4	0	0	0	0	0
Dental Assistant	594	84	510	0	0	0	6	12
Dental Hygienist	138	30	510	0	0	0	0	0
Dental Laboratory Technician	118	86	32	1	0	7	8	18
Dietary Aide	291	72	219	46	10	4	10	71
E.C.G. Technician	111	32	78	7	3	3	3	21
E.E.G. Technician	37	16	21	1	0	1	1	7
Food Service Supervisor	37	8	30	0	0	0	0	0
Histological Technician	37	15	25	1	1	1	1	8
Home Health Aide	46	19	26	4	3	4	0	13
Housekeeper	276	69	207	10	6	1	13	54
Inhalation Therapist	201	48	152	10	7	8	10	43
Medical Computer Programmer	26	25	1	0	0	0	0	0
Medical Emergency Technician	99	64	34	0	0	0	1	1
Medical Insurance Clerk	167	56	111	0	0	0	0	0
Medical Laboratory Technician	388	125	263	32	32	32	32	164
Medical Laboratory Assistant	116	40	77	1	0	0	0	1
Medical Office Assistant	179	110	69	1	0	0	0	1
Medical Librarian	21	7	15	0	0	0	0	1
Medical Records Clerk	141	41	100	4	4	4	1	16
Medical Records Technician	48	28	19	0	0	0	1	1
Medical Stenographer	111	36	74	1	1	1	1	8
Mental Health Worker	36	18	19	0	0	0	0	0
Mental Retardation Technician	15	7	6	0	0	0	0	0
Nuclear Medicine Technician	31	10	23	1	1	3	3	13
Nurse Aide	3,647	567	3,080	344	169	160	178	1,034
Occupational Therapy Aide	40	19	19	1	0	0	0	3
Optic Mechanic	4	3	1	0	0	0	0	0
Optic Technician	0	0	0	0	0	0	0	0
Orderly	760	294	464	7	8	11	16	49
Patient Benefit Analyst	16	15	1	0	0	0	0	0
Pharmacy Helper	46	21	25	1	1	1	1	8
Physical Therapy Aide	60	21	40	4	7	1	4	25
Practical Nursing LPN (Vocational)	1,356	256	1,100	222	138	92	100	656
Professional Nurse RN (BA Deg. or higher)	4,320	736	3,585	149	104	108	100	571
Psychiatric Technician	48	16	31	0	0	0	0	1
Public Health Nurse	234	120	114	0	0	0	0	0
Radiation Therapy Technician	15	10	7	0	0	1	1	4
Radiologic Technician	305	92	214	11	11	10	10	54
Surgical Technician	122	31	90	11	3	1	4	25
Technical Nurse RN (Assoc. Deg. + Diploma)	151	43	106	1	0	0	0	3
Ward Clerk	680	169	511	30	26	26	26	136
Other	63	30	32	0	0	1	0	1

1/ Detail may not add to total due to rounding

TABLE 17

ESTIMATED CURRENT VACANCIES BY EXPANSION AND REPLACEMENT NEEDS AND THE ESTIMATED NUMBER TO BE COMPANY TRAINED BY YEAR FROM NOVEMBER 1972 THROUGH NOVEMBER 1976, IN EACH OCCUPATION OF REGION 2 - NORTHEASTERN

OCCUPATION	Estimated Number of Vacancies by November 1976		Estimated Number to be Company Trained by Year (Nov. 1972 thru Nov. 1976)					1/Total Number Expected to be Company Trained by November 1976
	Total	Expansion	1972	1973	1974	1975	1976	
Activities Director (Senior Citizen)	13	4	0	0	0	0	0	0
Bio-Medical Equipment Technician	0	0	0	0	0	0	0	0
Cytotechnician	10	4	0	0	0	0	0	0
Dental Assistant	0	0	0	0	0	0	0	0
Dental Hygienist	0	0	0	0	0	0	0	0
Dental Laboratory Technician	0	0	0	0	0	0	0	0
Dietary Aide	118	4	4	3	3	3	1	15
E.C.G. Technician	10	1	1	1	1	1	1	8
E.E.G. Technician	4	1	0	0	0	0	0	0
Food Service Supervisor	49	4	1	1	0	1	1	8
Histological Technician	10	1	3	3	3	3	3	16
Home Health Aide	4	3	0	0	0	0	0	0
Housekeeper	87	4	4	4	4	3	3	21
Inhalation Therapist	19	3	16	0	0	0	0	11
Medical Computer Programmer	1	1	0	0	0	0	0	0
Medical Emergency Technician	0	0	0	0	0	0	0	0
Medical Insurance Clerk	26	4	1	0	0	0	1	3
Medical Laboratory Technician	30	3	16	16	16	16	16	82
Medical Laboratory Assistant	19	0	0	0	0	0	0	0
Medical Office Assistant	23	11	0	0	0	0	0	0
Medical Librarian	1	1	0	0	0	0	0	0
Medical Records Clerk	32	7	0	0	0	0	0	1
Medical Records Technician	18	4	0	0	0	0	0	0
Medical Stenographer	40	10	0	0	3	0	0	3
Mental Health Worker	4	3	1	0	0	0	0	0
Mental Retardation Technician	1	0	0	0	0	0	0	0
Nuclear Medicine Technician	4	3	0	0	0	0	0	0
Nurse Aide	1,495	118	75	66	46	64	59	311
Occupational Therapy Aide	4	3	1	0	0	0	0	1
Optic Mechanic	0	0	0	0	0	0	0	0
Optic Technician	0	0	0	0	0	0	0	0
Orderly	77	3	4	7	4	7	4	28
Patient Benefit Analyst	0	0	0	0	0	0	0	0
Pharmacy Helper	10	0	0	0	0	0	0	0
Physical Therapy Aide	31	23	0	0	0	0	0	0
Practical Nursing LPN (Vocational)	276	56	4	3	1	3	1	15
Professional Nurse RN (BA Deg. or higher)	320	26	0	0	0	0	0	1
Psychiatric Technician	3	3	0	0	0	0	0	0
Public Health Nurse	7	4	1	0	0	0	0	0
Radiation Therapy Technician	3	0	0	0	0	0	0	0
Radiologic Technician	72	28	15	16	13	11	13	71
Surgical Technician	15	3	0	0	0	0	0	0
Technical Nurse RN (Assoc. Deg. + Diploma)	591	15	3	0	3	0	0	7
Ward Clerk	54	0	1	0	0	0	0	1
Other	4	1	0	0	0	0	0	1

1/ Detail may not add to total due to rounding

TABLE 18

ESTIMATED CURRENT VACANCIES BY EXPANSION AND REPLACEMENT NEEDS AND THE ESTIMATED NUMBER TO BE COMPANY TRAINED BY YEAR FROM NOVEMBER 1972 THROUGH NOVEMBER 1976, IN EACH OCCUPATION OF REGION 3 - SOUTHEASTERN

OCCUPATION	Estimated Number of Vacancies by November 1976		Estimated Number to be Company Trained by Year (Nov. 1972 thru Nov. 1976)					1/Total Number Expected to be Company Trained by November 1976	
	Total	Expansion	Replacement	1972	1973	1974	1975		1976
				0	0	0	0		0
Activities Director (Senior Citizen)	26	11	15	0	0	0	0	0	1
Bio-Medical Equipment Technician	31	16	13	7	16	19	19	19	82
Cytotechnician	15	8	7	0	0	0	0	0	0
Dental Assistant	54	12	42	0	6	0	0	0	6
Dental Hygienist	0	0	0	0	0	0	0	0	0
Dental Laboratory Technician	7	7	0	0	0	0	0	0	0
Dietary Aide	344	84	260	15	16	13	18	16	78
E.C.G. Technician	41	10	32	0	0	0	1	1	4
E.E.G. Technician	34	11	23	0	0	1	3	3	8
Food Service Supervisor	30	1	28	0	0	0	0	0	1
Histological Technician	36	8	28	3	3	3	3	3	16
Home Health Aide	26	18	10	7	0	0	0	0	7
Housekeeper	140	26	111	3	4	3	4	8	28
Inhalation Therapist	43	7	36	0	0	0	0	0	0
Medical Computer Programmer	18	10	6	0	0	0	1	1	3
Medical Emergency Technician	32	11	21	0	0	0	0	0	0
Medical Insurance Clerk	71	19	50	3	0	0	0	0	3
Medical Laboratory Technician	78	13	67	15	13	13	13	13	67
Medical Laboratory Assistant	44	7	40	1	1	1	0	0	7
Medical Office Assistant	44	23	21	4	7	8	6	1	30
Medical Librarian	16	8	10	0	0	0	0	0	0
Medical Records Clerk	69	16	51	3	4	3	3	3	19
Medical Records Technician	30	0	28	0	0	0	0	0	1
Medical Sphenographer	40	7	32	0	0	0	0	1	3
Mental Health Worker	49	30	19	0	0	0	0	0	0
Mental Retardation Technician	10	4	4	0	0	0	0	0	4
Nuclear Medicine Technician	49	15	34	0	0	1	1	1	4
Nurse Aide	1,314	160	1,154	63	44	37	46	54	246
Occupational Therapy Aide	45	28	19	0	1	1	1	1	7
Optic Mechanic	3	0	3	0	0	0	0	0	0
Optic Technician	0	0	0	0	0	0	0	0	0
Orderly	161	40	141	8	3	7	3	11	32
Patient Benefit Analyst	23	11	11	1	1	3	3	3	13
Pharmacy Helper	4	1	3	0	0	0	0	0	0
Physical Therapy Aide	48	25	21	3	3	4	4	7	23
Practical Nursing LPN (Vocational)	434	100	334	16	16	15	21	10	81
Professional Nurse RN (BA Deg. or higher)	437	86	352	19	21	16	18	18	93
Psychiatric Technician	44	31	13	0	0	0	0	0	0
Public Health Nurse	84	37	46	0	0	0	0	0	0
Radiation Therapy Technician	23	11	11	0	0	0	0	0	0
Radiologic Technician	34	3	31	13	13	0	0	0	0
Surgical Technician	69	31	37	3	3	4	7	6	26
Technical Nurse RN (Assoc. Deg. + Diploma)	210	15	192	7	3	4	3	8	28
Ward Clerk	81	19	60	1	3	3	1	1	13
Other	3	0	3	0	1	0	0	0	1

1/ Detail may not add to total due to rounding

TABLE 19

ESTIMATED CURRENT VACANCIES BY EXPANSION AND REPLACEMENT NEEDS AND THE ESTIMATED NUMBER TO BE COMPANY TRAINED BY YEAR FROM NOVEMBER 1972 THROUGH NOVEMBER 1976, IN EACH OCCUPATION OF REGION 4 - WESTERN

OCCUPATION	Estimated Number of Vacancies by November 1976		Estimated Number to be Company Trained by Year (Nov. 1972 thru Nov. 1976)					1/Total Number Expected to be Company Trained by November 1976	
	Total	Expansion	Replacement	1972	1973	1974	1975		1976
Activities Director (Senior Citizen)	0	0	0	1	0	0	0	0	1
Bio-Medical Equipment Technician	1	1	0	0	0	0	0	0	1
Cytotechnician	1	1	0	0	0	0	0	0	0
Dental Assistant	12	0	12	0	0	0	0	0	0
Dental Hygienist	12	6	6	0	0	0	0	0	0
Dental Laboratory Technician	0	0	0	0	0	0	0	0	0
Dietary Aide	411	149	261	18	19	28	26	26	120
E.C.G. Technician	4	1	1	0	0	0	0	0	0
E.E.G. Technician	3	3	0	0	0	0	0	0	0
Food Service Supervisor	31	21	10	3	1	1	1	1	10
Histological Technician	10	1	8	0	0	0	0	0	0
Home Health Aide	8	4	3	0	0	0	0	0	0
Housekeeper	353	158	196	4	10	3	8	8	34
Inhalation Therapist	18	4	13	0	0	1	0	1	3
Medical Computer Programmer	0	0	0	0	0	0	0	0	0
Medical Emergency Technician	13	7	4	0	1	0	1	0	1
Medical Insurance Clerk	63	25	37	1	3	1	1	1	11
Medical Laboratory Technician	189	106	82	25	28	19	25	25	123
Medical Laboratory Assistant	64	28	36	1	1	1	1	1	8
Medical Office Assistant	28	4	23	0	0	0	0	0	0
Medical Librarian	8	3	4	3	0	0	0	0	3
Medical Records Clerk	46	18	28	8	7	8	10	10	41
Medical Records Technician	40	16	23	8	7	3	4	4	30
Medical Stenographer	44	18	26	3	3	4	3	1	18
Mental Health Worker	13	11	0	3	0	0	0	0	3
Mental Retardation Technician	256	0	256	49	49	0	49	49	197
Nuclear Medicine Technician	3	1	1	0	0	0	1	0	1
Nurse Aide	1,211	370	842	100	95	71	120	116	504
Occupational Therapy Aide	8	1	7	1	0	0	0	1	3
Optic Mechanic	0	0	0	0	0	0	0	0	0
Optic Technician	0	0	0	0	0	0	0	0	0
Orderly	140	63	77	15	15	15	18	25	86
Patient Benefit Analyst	4	3	1	1	1	0	0	0	3
Pharmacy Helper	37	26	11	10	10	11	13	11	51
Physical Therapy Aide	11	4	7	0	0	0	0	0	0
Practical Nursing LPN (Vocational)	590	231	356	75	67	60	84	82	371
Professional Nurse RN (BA Deg. or higher)	627	271	353	71	77	60	75	58	344
Psychiatric Technician	7	7	0	3	0	0	0	0	3
Public Health Nurse	3	3	0	0	0	0	0	0	0
Radiation Therapy Technician	0	0	0	0	0	0	0	0	0
Radiologic Technician	152	77	75	15	18	13	16	13	72
Surgical Technician	87	48	40	15	15	18	18	21	87
Technical Nurse RN (Assoc. Deg. + Diploma)	179	13	166	0	0	0	0	0	4
Ward Clerk	134	50	84	11	11	11	10	10	50
Other	3	3	0	0	0	0	0	0	0

1/Detail may not add to total due to rounding

Appendix A - Methodology

The study was conducted in two parts, one being mail questionnaires, the other personal interviews. Both parts were conducted completely independently, yet the information obtained from each was complementary to the other. The results from the mail questionnaires provided us with detailed statistical information, such as total number currently employed, number of vacancies, their expected expansion and replacement needs, and other similar information. The personal interviews that were conducted furnished us with an indepth picture of each of the selected occupations from the standpoint of health institutions that employ these types of personnel.

Personal Interviews

Health institutions throughout the State were randomly selected to be interviewed. These institutions were divided into two geographic groups, those within the Denver Metropolitan area and those in the remaining outlying areas of the State. The data obtained was presented in this form in the section, "Analysis of Selected Occupations." (See Table of Contents.)

A letter of introduction was sent to each administrator, or institutional head, explaining the study and identifying the interviewer. The actual interview generally lasted 45 to 60 minutes, yet many were much longer. The information that we received furnished us with an insight into many aspects of the occupations being studied. It also provided us a personal understanding from the demand side of this health manpower analysis.



JOHN A. LOVE, GOVERNOR

STATE BOARD FOR COMMUNITY COLLEGES AND OCCUPATIONAL EDUCATION

207 STATE SERVICES BUILDING • 1525 SHERMAN STREET • DENVER, COLORADO 80203

JAMES W. WILSON
ASSOCIATE DIRECTOR FOR
OCCUPATIONAL EDUCATION

MARVIN G. LINSON, DIRECTOR

F. DEAN LILLIE
ASSOCIATE DIRECTOR FOR
COMMUNITY COLLEGES

August 12, 1971

Gentlemen:

This letter is to introduce Ralph M. Hunter who has been employed by the State Board for Community Colleges and Occupational Education in cooperation with the Division of Employment to secure information concerning health services occupations in Colorado. Your institution was selected at random among all the health facilities in the State. All data furnished will be held in strict confidence.

For a study of this magnitude to be a success, it is important that we have your cooperation and assistance. Results of the survey should prove to be beneficial to your industry, and to the future manpower requirements of your institution. If you have any further questions concerning the project, contact me at 222-1551, ext. 444.

Very truly yours,

Kenneth M. Slyziuk
Project Coordinator
Colorado Division of Employment
1210 Sherman, Room 225
Denver, Colorado 80203

KMS/dm

CONFIDENTIAL EMPLOYER REPORT OF MANPOWER NEEDS
IN SELECTED OCCUPATIONS OF HEALTH

Form H-B

The State Board for Community Colleges and Occupational Education and the Division of Employment is currently conducting a statewide analysis of the status of health services occupations in Colorado. Your organization's assistance is requested in supplying needed information to make this project a success to form as concise a picture as possible of the current and future status of health industry labor needs in the State. This project is not just another survey among the many, but this promises to be most beneficial to your institution in better utilizing our manpower resources.

All data furnished will, of course, be held in strict confidence and the data published will be by occupation with no individual institution identified. You may be sure that the information you furnish will aid the health industry, educational institutions, and the general public. For a study of this magnitude to be a success, it is imperative that we have your cooperation in this matter.

All technical, auxiliary, sub-professional, paraprofessional, support and allied health personnel holding positions that require less than a four year college degree will be referred to in this survey as sub-professionals. Also, the terms institution and organization will be considered synonymous in this survey.

1. What is your organization's average daily patient census:
in-patients _____ out-patients _____
2. How many employees are currently working in this health organization? (Please specify part-time employees using the equivalent of a 40-hour work week. For example, an organization may have 3 X-ray technicians but only 1 works 40 hours a week, while the remaining 2 work 20 hours a week each. Therefore, instead of recording 3 for X-ray technicians record 2).
 - A. Physicians (Dentists, if applicable)
 1. Resident Practitioners _____
 2. Interns _____
 3. Registered Nurses _____
 4. Predominate specialties and number of specialists in each _____
 - B. In which of the following categories does your organization employ sub-professionals and how many are employed by your organization in each category? The occupations given in each category are to serve only as examples of occupations the categories could include.
 1. Diagnostic (i.e. X-ray Technician) _____
 2. Treatment (i.e. Nuclear Medicine Technician) _____
 3. Nurturing (i.e. Licensed Practical Nurse or Dietary Aids, etc.) _____
 4. Rehabilitation (i.e. Mental Health Worker) _____
 5. Recordkeeping (i.e. Medical Insurance Clerk) _____
 6. Maintenance (i.e. Bio-Medical Equipment Technician) _____
3. Specifically, in which technical health occupations does your institution employ part-time (those working less than 40 hours a week) health workers?

4. A. In which of the sub-professional occupations does your organization have difficulty in filling positions? _____

B. Why do you think this difficulty exists? _____

5. A. In which sub-professional health occupations has your institution experienced a high turn-over rate among employees (list approximate per cent in each occupation per year, also check the occupations that are least and most critical to the operation of your organization)?

<u>Per Cent</u>		<u>Least</u>	<u>Most</u>
_____	Activities Director (Senior Citizen)	_____	_____
_____	Bio-Medical Equipment Technician	_____	_____
_____	Cytotechnician	_____	_____
_____	Dental Assistant	_____	_____
_____	Dental Hygienist	_____	_____
_____	Dental Laboratory Technician	_____	_____
_____	Dietary Aide	_____	_____
_____	E.C.G. Technician	_____	_____
_____	E.E.G. Technician	_____	_____
_____	Food Service Supervisor	_____	_____
_____	Histological Technician	_____	_____
_____	Home Health Aide	_____	_____
_____	Housekeeper	_____	_____
_____	Inhalation Therapist	_____	_____
_____	Medical Computer Programmer	_____	_____
_____	Medical Emergency Technician	_____	_____
_____	Medical Insurance Clerk	_____	_____
_____	Medical Laboratory Technician	_____	_____
_____	Medical Laboratory Assistant	_____	_____
_____	Medical Office Assistant	_____	_____
_____	Medical Librarian	_____	_____
_____	Medical Records Clerk	_____	_____
_____	Medical Records Technician	_____	_____
_____	Medical Stenographer	_____	_____
_____	Mental Health Worker	_____	_____
_____	Mental Retardation Technician	_____	_____
_____	Nuclear Medicine Technician	_____	_____
_____	Nurse Aide	_____	_____
_____	Occupational Therapy Aide	_____	_____
_____	Optic Mechanic	_____	_____
_____	Optic Technician	_____	_____
_____	Orderly	_____	_____
_____	Patient Benefit Analyst	_____	_____
_____	Pharmacy Helper	_____	_____
_____	Physical Therapy Aide	_____	_____
_____	Practical Nursing	_____	_____
_____	Professional Nurse	_____	_____
_____	Psychiatric Technician	_____	_____
_____	Public Health Nurse	_____	_____
_____	Radiation Therapy Technician	_____	_____
_____	Radiologic Technician	_____	_____
_____	Surgical Technician	_____	_____
_____	Technical Nurse	_____	_____
_____	Ward Clerk	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

B. Of the occupations listed in question 5A, why do you think this is the case? _____

C. What could be done to keep the needed sub-professional occupations working in your institution? _____

6. A. Of the technical personnel employed currently in your organization which sub-professional occupations do you feel additional training is needed to perform their tasks more efficiently?

B. Is the training they receive sufficient for the duties they now are expected to perform as opposed to their duties in the past?

C. In which sub-professional occupations do you feel retraining (or refreshing) should take place to adjust to the changing health care systems? _____

D. How often do you think continuing education in the sub-professional occupations you have just listed, be repeated? _____

7. What new or emerging sub-professional health occupation do you see developing at the present time (i.e. Medical Computer Programmer)?

A. In the future, say 5 years, what sub-professional occupation do you think will develop? _____

B. A. What is going to be the greatest need in the sub-professional health occupations in 5 years? _____

B. What should health occupation vocational education planners at community college level and high school vocational level be aware of so that they can develop training programs in anticipation of your perceived needs? _____

9. It is recognized by almost every official in health organizations throughout the State that they feel they are under-staffed. Based on past budget considerations, your observations, your experience, and the knowledge you possess concerning the expected economic conditions of your institution, please answer the following questions concerning your organization's current employment, current positions, replacement needs, expansion needs and your organization's training of workers in fields of - (See Questionnaire)

10. Aside from the sub-professional occupations just mentioned, in which occupations do you feel there is a need to establish training programs? _____

11. Comments _____

Notes for Interviewers

1. When interviewing a respondent you should convey the thought that he is responding to you based on his institution's past budgets, his observations, his experience, and the knowledge he possesses concerning future economic conditions of his institution.
2. At a hospital or clinic ask to see the personnel administrator or whoever could provide the information we need to have supplied.
3. You might mention, if necessary, that their institution was selected completely at random to be included on a 25 percent sample of all health facilities in the State. Also, that they will receive by mail (if they haven't already) another questionnaire from us that has gone to all health facilities in the State.
4. When conducting the interview, read the questionnaire word for word without influencing the respondent in any way by emphasizing what you may think is important -- remain neutral.
5. Realize that most of the health facilities will not employ each and every occupation listed.
6. Be aware that many health facilities employ part-time help; equate the part-time health personnel into full-time: 8 hours a day, 40 hours a week per job. (See question number 2 on questionnaire form H-B)
7. Note in question number 2, part A, we are interested in the professionals only; in part B we are interested in primarily vocationally trained occupations.
8. In question number 5, we are interested in finding out what the percentage of turn-over rate is in each occupation listed per year and whether or not the respondent considers some of the occupations more critical to their operation than other occupations. Concerning the percentage of turnover, the following example should clarify the information we are seeking: a health facility X has 4 medical laboratory technicians and 2 of them have filled positions occupied by former employees of the institution within the past year. Consequently, you would write 50 under the column headed Percent next to Medical Laboratory Technician.
9. Totally disregard question number 9.
10. In question number 10, the reference "Aside from the sub-professional occupations just mentioned" is the occupations listed in question number 5, part A and any other occupations the respondent had mentioned up to that point in the interview.

Appendix B -- Mail Questionnaires

A sample of employers was selected from the health field, and other industries which included 31 different four digit industries as defined by the Standard Industrial Classification Manual. (See list of coded industries beginning on page

An attempt was made to sample 100 percent of the above employers subject to the Colorado Employment Security Act throughout the State of Colorado. There were 1376 employers which were known to employ or could reasonably be expected to employ persons in the prelisted occupations on the questionnaire. The entire universe was narrowed down to 844 active employers. These employers were ones who actually did employ those occupations being studied, and who were presently engaged in business activities.

It was possible to select this large sample through the use of electronic data processing. A program was used (ADP 9FOO) which would select all employers in the areas of interest from a library tape and bring the addresses onto adhesive labels that were affixed on the back of the questionnaire form and mailed. The mailed envelope contained a cover letter, definitions of terms, instructions, the questionnaire, and a franked pre-addressed return envelope. It was found that this method was fast enough that all employers in any and all industries could be mailed the forms if desired, with little additional work.

Results of the Administration of the Mail Questionnaire

From the initial mailing, 233 responses were received which makes this a 27% initial return. A second mailing to 614 employers gave us a 38% response, or 237 respondents. It was necessary to send out a

third mailing from which we received 96 responses for a 34% return. Four hundred thirty-four employers were contacted personally both by phone and personal visits. From this, we received a 47% return rate, which indicates that personal contact is the best method possible.

There were 844 employers with 27,219 employees are covered by State unemployment insurance in the industries surveyed.

May 25, 1971

Gentlemen:

The State Board for Community Colleges and Occupational Education and the Division of Employment are conducting a statewide analysis of selected health occupations in Colorado. Health agencies throughout the State are cooperating in this study to assure that the data collected will complement the information gathered in other studies. The purpose of this study is to provide statistical projections in each health occupation surveyed so that the State Board can plan and develop programs to more accurately meet your training needs.

A list of occupational definitions is enclosed. They have been developed by the Division of Employment and we feel they are applicable to most institutions being covered by the survey. A comments section is provided for you to record any information you think pertinent. All data furnished will be held in strict confidence.

For a study of this magnitude to be a success, it is important that we have your cooperation and assistance. Results of the survey should prove to be beneficial to your industry, and to the future manpower requirements of your institution.

Please return the completed form by June 15, 1971. To insure a high survey return rate, your institution will be contacted again to verify your response after that date. If you have any further questions concerning the project, contact: John E. Conger, Project Coordinator, 222-1551, ext. 444.

The State Board for Community Colleges and Occupational Education and the Division of Employment are most grateful for your assistance in this matter.

Very truly yours,

Randall A. Ruff, Chief
Research and Analysis

Health Occupations Study Advisory Committee Includes Representatives from:

Colorado Careers Council
Colorado Medical Society
Colorado-Wyoming Regional Medical Programs
Comprehensive Health Planning
Department of Institutions
St. Luke's Hospital

September 9, 1971

C
O
P
Y

Gentlemen:

On at least one occasion the State Board for Community Colleges and Occupational Education and the Division of Employment sent your firm a request for assistance in analyzing selected health occupations in Colorado. To date, we have not received your Confidential Employer's Report. In the event the material that was sent to your institution initially has been misplaced, I am including another report for your convenience. If your institution does not employ anyone in the occupations listed, please return the report with a notation to that effect.

Let me stress again that all data furnished will be held in strict confidence and the data published will be by occupation and industry with no individual firm identified.

It is of utmost importance that we have your firm's response to our request for assistance in this vital matter. Your participation is essential in providing us with information that will enable us to make statistical projections in each health occupation surveyed so that the State Board can plan and develop programs to more accurately meet your training needs. Your response does count and we thank you for your cooperation.

Very truly yours,

Randall A. Ruff, Chief
Research and Analysis

Enclosure

July 29, 1971

Gentlemen:

We appreciate the fact that you have responded to our Health Services Study by completing the questionnaire. However, due to a coding error on some responses, it was impossible to distinguish what county the response originated, and what type of industry it was, in the Health Services field. This information is essential for the successful completion of the study.

We apologize for the mishap, and for the request for additional assistance. Yet each reply is essential to form a more accurate picture of the Health Services industry in the State of Colorado. Therefore, if you have a duplicate of the original, and returned to our office as quickly as possible.

Your response does count, and we thank you for your cooperation.

Sincerely,

Randall A. Ruff, Chief
Research and Analysis

Enclosure

CONFIDENTIAL EMPLOYER REPORT OF MANPOWER NEEDS IN SELECTED OCCUPATIONS OF HEALTH

Occupational Title	Current Employment In Occupation		Number of Workers Needed for REPLACEMENT In Occupation		Number of Workers Needed for EXPANSION In Occupation		Number of Workers Needed for TRAINING PROGRAM In Occupation		Office Use (VIII)
	(III) 15-18 19-21 22-24 25-27 28-30 31-33 34-36 37-39 40-42 43-45 46-48 49-51 52-54	(IV) 1 Yr. 2 Yrs. 3 Yrs. 4 Yrs. 5 Yrs.	(V) 1 Yr. 2 Yrs. 3 Yrs. 4 Yrs. 5 Yrs.	(VI) 1 Yr. 2 Yrs. 3 Yrs. 4 Yrs. 5 Yrs.	(VII) 1 Yr. 2 Yrs. 3 Yrs. 4 Yrs. 5 Yrs.	(VIII) 1 Yr. 2 Yrs. 3 Yrs. 4 Yrs. 5 Yrs.	(IX) 1 Yr. 2 Yrs. 3 Yrs. 4 Yrs. 5 Yrs.	(X) 1 Yr. 2 Yrs. 3 Yrs. 4 Yrs. 5 Yrs.	
Column (1)	TOTAL	9-14	7-8	5-6					S. I. C.
01. Activities Director (Nurse-Clinic)	355,878								07-4600
02. Bio-Medical Equipment Technician	223,887								07-0905
03. Cytotechnician	078,281								07-0201
04. Dental Assistant	079,378								07-0101
05. Dental Hygienist	078,308								07-0102
06. Dental Laboratory Technician	712,381								07-0103
07. Dietary Aide	079,586								07-0904
08. F.C.G. Technician	078,384								07-0902
09. F.E.G. Technician	078,368								07-0901
10. Food Service Supervisor	319,138								07-0904
11. Histological Technician	078,381								07-0202
12. Home Health Aide	354,878								07-0307
13. Housekeeper	321,138								09-0205
14. Inhalation Therapist	079,388								07-0903
15. Medical Computer Programmer	213,382								1-0202



Form H-A

CONFIDENTIAL EMPLOYER REPORT OF MANPOWER NEEDS IN SELECTED OCCUPATIONS OF HEALTH

Occupational Title	ID	1-4	CC	5-6	Total Employment		REPLACEMENT		Number of Workers		EXPANSION		Number of Workers		TRAINING PROGRAM		S. I. C.		
					(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)	(XI)	(XII)					
					15-18	19-23	24-28	29-30	31-33	34-36	37-39	40-42	43-48	49-51	52-54	55-57	58-60	61-66	70-75
					(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)	(XI)	(XII)	(XIII)	(XIV)	(XV)
16. Medical Emergency Technician		9-14																	07-0301
17. Medical Insurance Clerk																			14-0303
18. Medical Laboratory Technician																			07-0251
19. Medical Laboratory Assistant																			07-0203
20. Medical Office Assistant																			07-0001
21. Medical Librarian																			14-0303
22. Medical Records Clerk																			14-0303
23. Medical Records Technician																			14-0301
24. Medical Stenographer																			14-0703
25. Mental Health Worker																			07-0401
26. Mental Retardation Technician																			07-0402
27. Nuclear Medicine Technician																			07-0501
28. Nurse Aide																			07-0304
29. Occupational Therapy Aide																			07-0401
30. Optic Mechanic																			07-0401



CONFIDENTIAL EMPLOYER REPORT OF MANPOWER NEEDS IN SELECTED OCCUPATIONS OF HEALTH

Occupational Title	ID	CC	5-6	Current Employment In Occupation					Needed for EXPANSION In Occupation					Training Programs Operating In Occupation					Office Use VIII		
				15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89		90-94	
Column (1)	7-8	9-11	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94		
31. Optic Technician		007.061																		07.0001	
32. Orderly		355.878																			07.0003
33. Patient Benefit Analyst		219.489																			14.0303
34. Pharmacy Helper		074.367																			07.0203
35. Physical Therapy Aide		355.878																			07.0402
36. Practical Nursing LPN (Vocational)		354.878																			07.0302
37. Professional Nurse RN (Bachelor's degree or higher)		075.378																			07.0301
38. Psychiatric Technician		355.878																			07.0304
39. Public Health Nurse		354.878																			07.0307
40. Radiation Therapy Technician		078.368																			07.0404
41. Radiologic Technician		078.368																			07.0404
42. Surgical Technician		079.378																			07.0305
43. Technical Nurse RN (Associate degree & diploma)		075.378																			07.0309
44. Ward Clerk		219.368																			14.0303
45.																					



CONFIDENTIAL EMPLOYER REPORT ON MANPOWER NEEDS IN SELECTED OCCUPATIONS

ID 1-4 CC 5-6

7-B

46. In relation to the health workers employed by your institution for one year or less, how did your institution recruit those workers if your institution did not employ any new workers how would your institution fill new openings? (In this question would you please circle your preferences in all columns A - H in rank order. For example, possibly your institutions first choice would be A - FROM WITHIN YOUR INSTITUTION, then your response would be to circle one under column A - 2, 3, 4, 5, 6, 7, 8; Your institutions second choice might be D - FROM VOCATIONAL SCHOOLS - 1, 2, 3, 4, 5, 6, 7, 8; That might be F - FROM PRIVATE EMPLOYMENT AGENCIES - 1, 2, 3, 4, 5, 6, 7, 8; etc.) In other words you should circle one number according to your institutions preference or employment policy under every lettered alternative.

<input type="text"/> 9 A	<input type="text"/> 10 H	<input type="text"/> 11 C	<input type="text"/> 12 D	<input type="text"/> 13 E	<input type="text"/> 14 F	<input type="text"/> 15 G	<input type="text"/> 16 H
FROM WITHIN YOUR INSTITUTION 1 2 3 4 5 6 7 8	FROM OTHER INSTITUTIONS 1 2 3 4 5 6 7 8	REFERRALS FROM YOUR INSTITUTIONS HEALTH WORKERS 1 2 3 4 5 6 7 8	FROM VOCATIONAL SCHOOLS 1 2 3 4 5 6 7 8	FROM THE STATE EMPLOYMENT DIVISIONS 1 2 3 4 5 6 7 8	FROM PRIVATE EMPLOYMENT AGENCIES 1 2 3 4 5 6 7 8	FROM THE PARTICULAR HEALTH Occupation Organization representing the occupation where your vacancy exists 1 2 3 4 5 6 7 8	FROM OTHER SOURCES (i.e., newspapers) 1 2 3 4 5 6 7 8
<input type="text"/> 17-18	<input type="text"/> 19-22						

47. Your institutions total employment in Colorado of workers in all health occupations, including occupations not covered in this report. _____

48. Your comments directed to occupational needs in the health services industry in Colorado. _____

Name of Person filling out this Report. _____

Title _____

Date _____

Do Not Use S.I.C.

INSTRUCTIONS ON FILLING OUT THE REPORT

You will note that the report is basically divided into eight columns.

Column (I) - Occupational Title - Specific Occupations are stated (01-44) and these occupations are defined in the enclosed "Definitions of Terms". A particular occupational description may not exactly describe the job an employee might perform perfectly but it may be a reasonable facsimile of the functions performed. If this is the case, include the worker in the appropriate occupational title that most closely resembles the worker's duties. You will also note at the end of the list of occupational titles number forty-four, space is provided for you to add any occupational titles that you feel are in demand in the health services industry or will be in demand in the future. (Disregard the number following each occupational title, they are for purposes of analyzation).

Column (II) - Current Employment by Occupation - Alluding to current number of employees working for your firm in each occupational titles.

Column (III) - Current Vacancies by Occupation for Replacement - Referring to employees who have recently or will shortly quit, assume other jobs through promotion, have been fired, resigned, retired or for any reason have caused a vacancy that needs to be filled immediately.

Column (IV) - Current Vacancies by Occupation for Expansion - To fit your institution's new needs, caused by such things as - addition of new instruments or machines, development or creation of departments, etc.

Column (V) - Through Column (VII) - All of these columns are dealing with what you perceive as employment needs for your organization in the years to come. Perhaps you know exactly what those projected needs will be, possibly not. If per chance you have no idea of what your organization needs will be five years hence, then give an estimate based on what your employee's needs have been five years ago to the present. In doing so, take into consideration your organization's current economic condition, future plans, etc. Your responses in this section will be extremely useful in determining what various institutions should do to meet the demand so that workers with the proper training will be on hand when your institution is in need of such workers.

Column (VIII) - Office Use (Only)

In addition to this information, you are also requested at the end of the report to make any comments that relate to occupational needs in the health services that are significant or unique to your organization or a difference in definition of an occupation or any new occupations that are developing in the industry, etc.

Disregard all boxes with numbers contained within them, they are for office use only.

Thank you again for your time and cooperation, it will be most useful and it is appreciated.

Appendix C

DEFINITIONS OF TERMS

61. **Activities Director (Senior Citizen)**
Under professional guidance, encourages and assists persons in a long-term care facility to exercise their abilities. In a planned, coordinated and structured fashion provides activities that are especially beneficial in overcoming specific problems.
62. **Bio-Medical Equipment Technician**
Assists professionals in tasks related to bio-medical equipment: manufacture, testing, sales, calibration, operation, service, maintenance and modification of bio-medical equipment.
63. **Cytotechnician**
Stains, mounts and studies cells of the human body to determine pathological condition. Performs appropriate laboratory tests to confirm findings. Reports information to Pathologist.
64. **Dental Assistant**
Provides services to patients, under the supervision of the dentist, that include chairside assistance, simple laboratory work, reception and clerical functions.
65. **Dental Hygienist**
Performs complete oral prophylaxis. Provides dental health education for chairside patients and community health programs. Charts conditions of decay and diseases for diagnosis and treatment by Dentist.
66. **Dental Laboratory Technician**
Constructs and repairs dental appliances required for oral health of the patient as authorized by the Dentist.
67. **Dietary Aide**
Under the supervision of a Dietitian or Food Service Supervisor, engages in preparing and serving meals. Is responsible for the cleanliness of equipment and work area. Performs any combination of tasks that includes preparing vegetables, meats, salads, poultry, seafood and breads.
68. **E.C.G. Technician**
Operates electrocardiograph equipment used in recording electrocardiographic variations of the heart muscle to provide data for diagnosis of heart ailments. Refers tracings to cardiologist for interpretation.
69. **E.E.G. Technician**
Operates electroencephalograph equipment that measures impulse frequencies and differences between various portions of the brain. Observation of patient's behavior, made on graph, is sent to referring physician.

10. **Food Service Supervisor**
Trains and supervises employees engaged in serving food in hospital, nursing home and similar institutions. Maintains cleanliness of food service areas and equipment. Instructs, assigns, and coordinates work in the kitchen and dining room. May assist professional dietitian in planning menus. Keeps records concerning amount and cost of meals, hours worked by employees, stock levels, etc.
11. **Histological Technician**
Prepares, sections, stains and studies cellular material to provide data for Pathologist. Has a knowledge of methods of preserving tissue. Maintains paraffin, reagents and other solutions and stains according to standard formulas.
12. **Home Health Aide**
Cares for elderly, convalescent and/or handicapped persons in the patients home. Provides for their activities of daily living which is described by a physician or Public Health Nurse.
13. **Housekeeper**
Insures clean, orderly and attractive condition of establishment. Inspects and evaluates physical condition of establishment and submits to management recommendations for painting, repairs, furnishings, relocation of equipment and reallocation of space. Periodically inventories supplies and equipment and investigates new and improved cleaning instruments.
14. **Inhalation Therapist**
Under the physician's supervision administers oxygen, aerosolized solutions and medications, and lung physical therapy. Operates machines which assist or control respiration. May perform pulmonary laboratory test and other procedures in the case of patients with respiratory illnesses.
15. **Medical Computer Programmer**
Using medical-orientated language, specializes in developing needed formulations. Converts medical formulations to format processable by computer. Observes computer during processing to analyze and correct programming and coding errors.
16. **Medical Emergency Technician**
Responds to medical emergency calls, takes appropriate prompt action to reduce the medical hazards. Transports patients to medical facility and may act as assistant to the emergency room staff of hospital.

17. **Medical Insurance Clerk**
Works in the business office. Confirms insurance benefits of each patient with employer. Administrates commercial and governmental insurance claims, out-patient claims for X-ray and emergency room service, and delinquent payment problems.
18. **Medical Laboratory Technician**
Under supervision of Pathologist, receives from laboratory or from the patient directly, samples of blood, urine, tissue, etc., for quantitative and qualitative, chemical, microscopic and bacteriological tests. With use of microscopes, micrometers and similar instruments, provides data for use in treatment and diagnosis.
19. **Medical Laboratory Assistant**
Works under the direct supervision of medical technologist, Pathologist, or other qualified physician. Performs relatively difficult cleaning tasks as well as washing laboratory glassware and equipment. Mixes cleaning solutions and acids according to specifications, and assists in cutting tissues and staining slides.
20. **Medical Office Assistant**
Helps with examinations and treatments that can be done in a physician's office. May carry out simple related laboratory procedures. Sterilizes instruments and supplies. Records medical histories, maintains medical records, handles telephone calls, correspondence, insurance matters, fees and collections, orders supplies, keeps office accounts and maintains general bookkeeping and housekeeping.
21. **Medical Librarian**
Analyzes reading needs of patients and provides library services for patients and employees in hospital or similar institutions. Reviews requests, and selects books and other library materials for ward trips according to mental state, educational background, and special needs of patients. Assembles book reviews for hospital bulletins or newspaper, and circulates reviews among patients.
22. **Medical Records Clerk**
Under supervision of Medical Record Librarian, classifies medical records of patients and compiles statistics for use in reports and surveys. Keeps daily statistical record information on admissions, deaths, births, and types of treatment rendered.
23. **Medical Records Technician**
Under the direction of the Medical Record Librarian is responsible for departmental organization and management of the medical records, codes diseases and operations.

prepares statistics, assists physician in research. May assume independent duties in small institutions.

24. **Medical Stenographer**
Takes shorthand dictation of correspondence, reports and meetings. Transcribes dictated material using typewriter with knowledge of, and familiarity with, the use and meanings of medical terms and is able to perform stenographic skills and related clerical tasks.
25. **Mental Health Worker**
Under professional supervision, is directly involved with the total treatment plan of the mentally ill and emotionally disturbed patient. Is prepared to recognize symptoms of mental disabilities and has treatment concepts of assigned patients. Possesses skills related to basic interviewing, information gathering, counseling, report writing and analysis.
26. **Mental Retardation Technician**
Attends to the physical needs and well-being of mentally retarded patients. Aids in the educational and recreational processes under the supervision of professional staff.
27. **Nuclear Medicine Technician**
Performs tests using radioactive materials which help physicians diagnose and treat disease. Assists Radiologist and Technologist in operation of sophisticated nuclear radiation detection instruments in clinical use of radio-nuclides.
28. **Nurse Aide**
Performs bedside care of patients. Assists professional members of nursing team in tasks which are important for the patient's comfort and well-being.
29. **Occupational Therapy Aide**
Assists Occupational Therapist in medically-orientated occupational therapy programs to rehabilitate patients in hospitals and similar institutions. Prepares work materials and supplies and assists in maintenance of tools and equipment.
30. **Optic Mechanic**
Grinds eyeglass lenses to prescription specification and assembles lenses in frames. Operates machines, such as generator, polisher, edger and hardner.
31. **Optic Technician**
Assists Optical Engineer in designing mechanical portion of precision-optical instruments. Reviews optical specifications to determine types of mounts, lenses, tools, and fixtures required for construction of optical system.

Assembles optical and mechanical elements to construct instruments.

32. Orderly

Works under direction of professional nurses to perform simple tasks that are important for the patient's comfort and well-being. Generally performs these services for male patients and assumes the heavier work in the nursing unit.

33. Patient Benefit Analyst

Taking into consideration the multi-roles a patient may assume in society, investigates the private, state and/or federal benefits due the patient. Must be knowledgeable of past and current legislature that regulates reimbursement in a wide variety of circumstances. Develops benefit program, according to needs and transmits this information to person or institution rendering service.

34. Pharmacy Helper

Under the supervision of a Pharmacist, stores incoming drugs and chemicals. Prepackages floor stock items and out-patient drugs. Assists in the manufacture of bulk preparations. Maintains orderly and clean work area. Picks up chart orders and delivers medications. Obtains properly labeled drugs for the pharmacist and wraps prescriptions for mailing to outpatients.

35. Physical Therapy Aide

Under supervision of Physical Therapist. Assist those suffering from disabilities to regain physical function through the use of massage, therapeutic exercise and physical agent, such as heat, cold, water, and electricity. Keeps work area clean.

36. Practical Nursing LPN (Vocational)

Licensed to give nursing care under the supervision of the registered nurse or physician. In complex, specialized nursing situations may function as assistant to the registered professional nurse.

37. Professional Nurse RN (Bachelor's degree or higher)

A term applied to persons meeting the educational, legal and training requirements to practice as professional nurse, as required by the State Board of Nursing. Performs acts requiring substantial specialized judgment and skill in observation, care and counsel of ill, injured, or infirm persons and in promotion of health and prevention of illness.

38. Psychiatric Technician

Maintains day by day contact with mental patients in all phases of hospital living, participates with other members of therapeutic team in observing behavioral changes. Supervises hygienic care. Reports observations and assists

professionals in activities and treatments to modify behavior and promote group living.

39. **Public Health Nurse**
Supervises and coordinates activities of and trains nursing personnel in government or private health agency. Serves as liaison between staff and administrative personnel. appraises nursing service efficiency. and provides teaching and guidance to improve service. Recommends appointment and assignment of nursing personnel. Maintains and interprets nursing standards to staff advisory boards, nursing committees, and community groups.
40. **Radiation Therapy Technician**
Uses radiation producing devices to administer therapeutic treatments as prescribed by a radiologist.
41. **Radiologic Technician**
Makes X-ray exposures, aids radiologist in fluoroscopy. Adjust controls and positions patients for therapy. develop X-rays. keep records. make reports, assume responsibility for X-ray equipment and supplies.
42. **Surgical Technician**
Assists surgical team in the operating suite in pre-operative tasks and surgical procedures. Understands and functions under strict aseptic techniques. Cleans operating rooms. Cleans and sterilizes used equipment and supplies.
43. **Technical Nurse RN (Associates degree and diploma)**
Is a registered nurse, capable of planning, supervising and giving direct care to patients. As a general duty nurse, may administer medications and treatments. Assist physician during treatment and examination of patients.
44. **Ward Clerk**
Works in a ward or floor nursing unit acting as a receptionist and doing much of the paper work. Under supervising nurse direction, may chart medical data on patient's chart and issue requisitions for lab, X-ray and dietary or pharmacy services.

Appendix D -- Occupational Projections

The returned forms were edited for consistency of reporting and tabulated on a CDC 6400 computer (after data cards were keypunched and verified) in cross tabulations and bi-variate distributions of: by occupation for all industries, all occupations by industry, by industry and by occupation, by occupation by each industry, geographic distribution of occupations by county and rank employer preference in their practice of hiring employees.

In projecting the results and estimating State totals it was necessary to utilize the data stored at the University of Michigan, under the Labor Market Information System which is the data bank in which the Colorado Division of Employment has their covered employment stored.

By utilizing the retrieval system set-up in Employment's Research and Analysis Section, which is linked to the Labor Market Information System, we were able to obtain complete totals of those employed in each S.I.C. category used in the study (Variable Ep_I below). At this time, each industry in its entirety was broken down into size categories in order to insure that the sample was representative according to size in relation to the rest of the industry.

Since the characteristics of employers (and their employees) were essentially the same on each mailing, it was concluded that the characteristics of those who tended to answer quickly (or at all) were essentially the same as those who did not. Therefore, the sample proportions are unbiased estimators of the population proportions so that the population proportions can be estimated by applying a simple ratio to the sample proportions.

The following is a more technical explanation of the development of our statistics:

E means the number of employees

M means the number of medical employees

The first subscript indicates whether the variable refers to the sample (S) or the population (P).

The second subscript indicates that the variable applies to industry groups (I), and occupation (O), or if left blank, is a total of all occupations (or industries). Thus:

$$EM_{PI} = EM_{PO} = M_p,$$

by definition. This says that in the population, the total of all medical employees M_p equals the sum of all medical employees if added by occupation EM_{PO} , which equals the sum of all medical employees if added by industry EM_{PI} .

To start with, we want to publish each M_{PO} , medical employees in the population for a specific occupation. We have E_{PI} , E_{SI} , and M_{SI} . (We also have M_{SO} but we will not use it yet.) It was assumed that

$$\frac{E_{PI}}{E_{SI}} = \frac{M_{PI}}{M_{SI}}$$

Since our sample was not biased, this yields $M_{SI} = \frac{E_{PI} M_{SI}}{E_{SI}}$

This formula was applied to each industry group yielding figures for medical employees in the population for each industry. These were totaled to give total of medical employers in the population:

$$EM_{PI} = M_p$$

The number of medical employees in the sample for each industry were totaled to give total medical employees in the sample:

Now it was assumed that

$$\frac{M_p}{M_S} = \frac{M_{pO}}{M_{SO}}$$

Which yields

$$M_{pO} = \frac{M_p \cdot M_{SO}}{M_S}$$

As indicated by the formula, the MP/MS ratio was applied to each M_{SO} (Number of medical employees in the sample for each occupation) was also used to obtain universe figures.

Data for E_{pI} was taken from ES-202, but was supplemented for "hospitals" and "health and allied industries not elsewhere classified."

Exceptions were made to the above procedure for two occupational classifications. Details of this procedure are listed below.

The occupations of Dental Hygienist and Dental Assistant presented us with an unusual situation because our universe was selected from the Employment 202 file which lists all employers who have paid Unemployment Insurance. Many smaller health operations were not included in the universe for this study. Consequently, many of the Dental Offices in the State were not directly contacted. In the industry of Dental Institutions it was determined that our sample, which was representative, consisted of one-sixth of the entire universe. Thus, to project our data and make it truly representative, all the statistics for Dental Hygienist and Dental Assistant were multiplied by a factor of six.

All other occupational statistics in the study were projected in the manner previously explained.

Selected Industry Codes

Following is a list of industries included in the survey broken down by
*three-digit code as defined in the Standard Industrial Classification
Manual:

MANUFACTURING

- 369 - Miscellaneous Electrical Machinery, Equipment and Supplies
- 3693 - Radiographic X-ray, Fluoroscopic X-ray, Therapeutic X-ray, and other X-ray apparatus and tubes. Electro-medical and Electrotherapeutic apparatus

WHOLESALE AND RETAIL TRADE

- 5086 - Professional Equipment and Supplies
Establishments primarily engaged in the wholesale distribution of mechanical devices and other equipment used by architects, dentists, engineers, physicians, surgeons, veterinarians, optometrists, osteopaths, and other professional groups.

FINANCE, INSURANCE AND REAL ESTATE

- 632 - Accident and Health Insurance
- 6324 - Hospital and Medical Service Plans
Organizations which provide hospital, medical and other health services to subscribers or members in return for the most part through
tals and physicians. Establishments providing these services through their own facilities or employed physicians are classified in Industry 8099.

SERVICES

- 801 - Offices of Physicians and Surgeons
- 8011 - Offices of Physicians and Surgeons
Establishments of licensed practitioners having the degree of M.D. and engaged in the practice of general or specialized medicine and surgery. Establishments such as group clinics, in which a group of physicians are associated for the purpose of carrying on their profession, are included in this industry.
- 802 - Offices of Dentists and Dental Surgeons
- 8021 - Offices of Dentists and Dental Surgeons

Establishments of licensed practitioners engaged in the practice of general or specialized dentistry.

803 - Offices of Osteopathic Physicians

8031 - Offices of Osteopathic Physicians

Establishments of licensed practitioners engaged in the practice of general or specialized osteopathy.

804 - Offices of Chiropractors

8041 - Offices of Chiropractors

Establishments of licensed practitioners engaged in the practice of chiropraxis.

806 - Hospitals

8061 - Hospitals

Establishments primarily engaged in providing hospital facilities, and clinics and dispensaries. Institutions such as sanatoria, rest homes, convalescent homes and curative baths or spas in which medical or surgical services are not a main function of the institution are classified in Industry 8092.

807 - Medical and Dental Laboratories

8071 - Medical Laboratories

Medical laboratories providing professional analysis, diagnosis, or treatment services to the medical profession, or to the patient on prescription of the physician.

8072 - Dental Laboratories

Establishments primarily engaged in making dentures and artificial teeth to order for the dental profession. The manufacture of artificial teeth other than to order is classified in Industry 3843.

809 - Health and Allied Services, Not Elsewhere Classified

8092 - Sanatoria, and Convalescent and Rest Homes

Institutions such as sanatoria, convalescent homes, and rest homes, in which medical or surgical services are not a main function of the institution.

8099 - Health and Allied Services, Not Elsewhere Classified

Establishments engaged in rendering health and allied services, not elsewhere classified. Establishments of registered nurses engaged in the independent practice of their profession are included here, but nurses' registries are classified in Industry 7361. Associations or groups formed primarily to provide medical or other health services to their members, in which themselves provide these facilities, are included in

this industry. Establishments such as Blue Cross and Blue Shield plans, whose members are supplied these services by independent physicians or hospitals under contract are classified in Industry 6324.