OCCUPATIONAL HEALTH NURSES:

AN INITIAL SURVEY

Mary Lou Bauer

and

Mary Louise Brown

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Division of Occupational Health
Washington, D. C. 20201
May 1966

Public Health Service Publication No. 1470

PREFACE

This is the complete report of the basic data collected in the Occupational Health Nurses Census of 1964. Because this is the first time that such a body of information has been available on occupational health nurses from the Nation as a whole, the findings are presented in considerable detail.

It is hoped that the report, in addition to providing descriptive data on the characteristics of occupational health nurses as an occupational group, will assist persons responsible for program planning in official agencies, schools, and professional organizations.

The Census was an ambitious undertaking and many people have assisted in its completion. Initially, the American Nurses' Association provided the names and addresses of the nurses who were to become the respondents. The Occupational Health Nursing Section of the American Nurses' Association and the American Association of Industrial Nurses encouraged participation of their members. Nurse consultants in a number of States helped us eliminate duplicates and locate nurses whom we would otherwise have missed.

Stanley K. Bigman, Chief of the Social Studies Section, Division of Occupational Health, designed the questionnaire and was responsible for contract negotiations and initial data processing.

Finally, we are grateful to the occupational health nurses throughout the country who answered the questionnaire, particularly those who shared with us their comments and suggestions about the field of occupational health nursing. Analysis of these comments, which is now under way, will provide further insight into the practice of occupational health nursing in the United States today.

CONTENTS

LIST OF TABLES

List of Tables

The occupational health nurses were mature women, largely hospital trained 15 to 25 years ago, who had had nursing experience in fields other than occupational health. Nearly half of the nurses had previously worked as occupational health nurses, and a third of them reported 15 or more years experience in this field. Few had entered the field in the last 5 years. The median salary for all occupational health nurses was just over $5,500.

The occupational health nurses varied in the above characteristics according to the positions which they held. Supervisors were oldest, had the most years of experience in occupational health, and received the highest salaries. Staff nurses were youngest. Only nurses were least well paid. Consultants had the most varied background in nursing, including more frequent occupational health and public health nursing experience. They also most often had college education.

The majority of the nurses worked in the Northeast and North Central regions of the United States, in manufacturing industries, and in workplaces with 500 or more employees. Almost all worked in health units, three-fourths of them in the only health unit in their workplace.

The nurses were relatively isolated from other medical personnel. Forty percent of the nurses worked alone. Only one-fourth had full-time medical direction.

Size of workplace proved to be a major factor influencing extent of health services. Larger workplaces more often had multiple health units, large nursing staffs, nursing supervision and medical direction, highly experienced nurses, and high salaries.

Within the same sized workplaces government more often than manufacturing or nonmanufacturing industries had the characteristics of the larger workplaces, with the exception of experience of the nurse. Manufacturing industries more often had nurses with long experience; they were least likely, however, to have nursing supervision.

As the size of workplace increased, differences among the three industry groups were reduced. Within each industry group, least variation between large and small workplaces was observed in government.

CHAPTER 1

INTRODUCTION

Purposes and Background of the Survey

This report presents the data from the 1964 Occupational Health Nurses Census which was conducted by the Division of Occupational Health of the U. S. Public Health Service. The Census attempted to survey all nurses who had been identified as industrial nurses by the American Nurses' Association during its 1962 Inventory of Professional Registered Nurses.[1] By collecting data about these nurses and the circumstances under which they worked, the Division hoped to provide a basis for (1) assessing the present supply of nurses, (2) projecting the future need for nurses to staff programs and the demand for training, and (3) measuring change in the field of occupational health nursing in the years ahead. More specifically, the Division planned that once basic information about the distribution of occupational health nurses was available, a study would be made of the factors which influence the on-the-job activities of the occupational health nurse.

Determining the number of persons in any occupational group is difficult and any attempt to specify the number of persons currently working in a field is at best an approximation. Even with a central reporting system, records cannot reflect recent mobility into and out of an occupation and, of course, any reporting process involves errors in reporting, classification, and recording. Determining the number of occupational health nurses is perhaps even more difficult for no up-to-date registry of occupational health nurses is maintained. Over the years information on the number of practicing occupational health nurses has come from two main sources: the Public Health Nurse Censuses of the U. S. Public Health Service and the Inventories of Professional Registered Nurses conducted by the American Nurses' Association.

The first attempt to enumerate occupational health nurses was made in 1937 when the Public Health Service conducted the first census of public health nurses in the United States and its territories.[2] At this time the State directors of public health nursing collected data

---

[1]Hereafter referred to as the "1962 Inventory."

[2]These censuses were continued annually from 1937 to 1953. Two more were taken in 1955 and 1957. Beginning in 1960 they have been conducted biennially.

from the official and voluntary agencies which employed public health nurses. Information on industrial nurses was obtained by the State directors from a knowledgeable nurse in the State, from the State industrial nursing association, or from the records of the occupational health nurse consultant. In some cases, the census form was sent to industries for completion. The data thus collected were aggregate figures. The nurses were not listed individually; only the total number of nurses in each category was reported.

For several reasons this procedure gave an inadequate count of occupational health nurses. First, directors of public health nursing did not have the same contact with the many different employers of industrial nurses as they did with State and local agencies which employed public health nurses. Second, many occupational health nurses did not consider themselves public health nurses and therefore did not participate in the public health censuses. Third, the forms that were used had been developed for recording information about public health nurses and did not have an answer category labeled specifically "occupational health nurse." Consequently, even when the State directors were successful in gathering data about occupational health nurses, there was no certain place to classify them. This undoubtedly led to errors in classification or failure to report.[3]

Another source of information about occupational health nurses has been the records of the State boards of nurse examiners. Since each State and the District of Columbia require periodic renewal of licenses to practice nursing, records of such registrations provide information on all professional nurses according to nursing specialty. In 1949, 1951, 1956-1958, and again in 1962, the American Nurses' Association compiled inventories of professional registered nurses by collecting from each State board of nurse examiners information given by the nurses when they paid the State professional nurse registration fee.

This should be one of the more complete sources of information, though it, too, is subject to various reporting and mechanical errors. Because of State variations in registration periods,[4] a 3-year period is required for all States to complete registration. Therefore, the nurses represented in the 1962 Inventory were registered between September 1, 1961, and January 31, 1963. These are the nurses who

---

[3]Beginning in 1966 a new form is being used which will list every nurse in the agency by name. Unfortunately, the form still does not provide a separate category for reporting occupational health nurses. They will be reported as "other" public health nurses. It is hoped that if the system of reporting individual nurses is continued the form will be revised to include this additional information.

[4]For example, New York has a biennial registration period starting in September of the odd numbered years; California and New Mexico have biennial registrations tied to the birthday of the registrant.

were surveyed by the Division of Occupational Health in 1964 and who are the subject of this report. The Occupational Health Nurses Census was the first data-gathering effort designed for the sole purpose of surveying occupational health nurses.

Research Procedure

Study Design

The study was designed as a mail survey using a self-administered questionnaire to gather demographic data on occupational health nurses and descriptive data about the industries and health units in which they worked.

The nurses surveyed were the 17,018 nurses who had been identified by the 1962 Inventory as occupational health nurses. These were nurses who had indicated when they paid their State professional nurse registration that they worked in industry. The Division of Occupational Health, in return for its contribution to the funding of the 1962 Inventory, had received from the American Nurses' Association a duplicate deck of IBM cards containing the names and home addresses of these nurses.

A questionnaire was sent to each of these nurses by the Division of Occupational Health on April 3, 1964. There were two follow-up mailings: the first on April 30, 1964, and the second on May 25, 1964. The completed questionnaires were returned to National Analysts, Inc., in Philadelphia, with whom the Division of Occupational Health had contracted for data collection and processing. Data collection was completed on June 22, 1964.

The Questionnaire

The final form of the self-administered questionnaire[5] contained 35 pre-coded questions on characteristics of the nurse's workplace--the size of workplace and type of industry in which the nurse worked, the type of health unit and size of nursing staff, the extent of nursing supervision and medical direction--as well as questions on the demographic characteristics of the nurses, their education, and their work experience.

Three final items were open-ended questions inviting the nurse to comment on how she happened to enter the field of occupational health nursing, what she thought were the best things about the field, and what she thought were the worst.

---

[5]A copy of the questionnaire is included in Appendix I. The questionnaire was pretested on nurses in large and small industries in the District of Columbia, Maryland, and Virginia.

This report presents the analysis of the pre-coded questions. Answers to the open-ended questions will be the subject of a separate report.

The Respondents

Of the 17,018 nurses to whom questionnaires were sent, 13,705 returned usable questionnaires. Of the respondents, 10,025 indicated that they were presently working as full-time occupational health nurses, 3,563 reported that they were not working (or were working as relief, part-time, or substitute nurses), and 117 said that they had never worked as occupational health nurses. The last figure represents 0.9 percent of the respondents and may reflect errors in State reporting to the American Nurses' Association. This report is based on the 10,025 nurses who said that they were employed as full-time occupational health nurses.

Data Analysis

All data were cast in contingency tables. Since the variables in the study were categorical in nature, they permitted only nominal measurement. Therefore, the existence of relationships has been established through chi square analysis; the degree of association has been measured by the corrected contingency coefficient, $\bar{C}$. Where appropriate the Friedman two-way analysis of variance by ranks has been used.[6]

Format of Tables

All tables in the body of the report present the percent distribution of all nurses who responded to the question or questions being considered. Because of rounding, any column of percents may actually total 99.9 or 100.1. In each case the total is reported as 100.0 percent.

The total numbers on which percentages are based will vary somewhat from table to table depending upon the number of nurses who failed to answer the particular question or questions involved. The number of nurses who did not answer is indicated on each table. Tables which report on crosstabulations of two variables will show a larger "no answer" category than tables reporting the variables separately, because failure to answer on either variable excludes the case from analysis on that particular crosstabulation.

Each table reports the statistics used and the significance level.

The chapters which follow present the analysis of the data. Chapter 2 reports the characteristics of the nurses as a group, Chapter 3

---

[6]For further discussion of the analysis and presentation of the data and of the statistics used, the reader is referred to Appendix II.

permits study of their distribution among the four census regions in the United States. Chapter 4 presents the influence of size of workplace on the study variables, while Chapter 5 discusses the differences among major industry groups with size of workplace held constant. In Chapter 6 the variations among nurses according to current position are presented. Finally, Chapter 7 summarizes the findings and discusses the implications of the data.

CHAPTER 2

NATIONAL PROFILE OF OCCUPATIONAL HEALTH NURSES

Ten thousand twenty-five nurses returned a questionnaire indicating that they worked in occupational health. Their responses are presented in this chapter to establish a profile of their characteristics as an occupational group: who they are, where they work, what they do, and how they are supervised. Where appropriate information is available, the occupational health nurses are compared with all nurses or with all working women.

Who They Are

Sex and Race

Professional nursing has long been considered primarily a female occupation and occupational health nurses are similar to all nurses in this respect. Of the occupational health nurses, 98.2 percent are female, as were 98.9 percent of professional nurses reporting by sex to the American Nurses' Association in 1962.[1]

By race, 99.5 percent of the occupational health nurses are white. Although no fully comparable data are available for all nurses, there appears to be a higher proportion of nonwhite women in nursing as a whole. Information from the 1960 Census[2] indicates that 6.5 percent of all professional nurses were nonwhite. Part of this variation may be attributed to different reporting criteria. First, the Census figure is based on females only. Second, it may include persons who report themselves as professional nurses, but who would not be so classified by the American Nurses' Association and are therefore not included in the Professional Nurse Inventory.

Age

Occupational health nurses as a group are mature women. Almost two-thirds of the occupational health nurses are 45 or older (Table 2-1). The median age is 48. As a group the occupational health nurses are older than other nurses. Just over one-third of all professional registered

---

[1] Facts About Nursing: A Statistical Summary. (1965 edition) New York: American Nurses' Association, 1965. Computed from Table 9, p. 18.

[2] U. S. Bureau of the Census. Statistical Abstract of the United States: 1965. (86th edition) Washington: U. S. Government Printing Office, 1965. Table No. 316, p. 233.

nurses in 1962 were in the 45-or-over age group and the median age was 40.[3]

TABLE 2-1

AGE OF OCCUPATIONAL HEALTH NURSES COMPARED WITH ALL PROFESSIONAL REGISTERED NURSES

Age in Years	Percent of Occupational Health Nurses*	Percent of All Professional Registered Nurses, 1962+
Under 30	4.0	25.6
30-39	16.7	25.3
40-44	16,8	12.0
45-49	18.4	11.6
50-59	37.1	18.2
60 and over	7.0	7.3
Total Percent	100.0	100.0
Number	9996	516,224
No Answer	29	
Grand Total	10025	

*Registration period covered in survey was September 1, 1961, to January 31, 1963.

+Source: American Nurses' Association, Facts About Nursing: A Statistical Summary. (1965 edition) New York: American Nurses' Association, 1965. Computed from Table 7, p. 16.

[3]American Nurses' Association, Facts. Computed from Table 7, p. 16.

Marital Status

Over three-fourths of the nurses have been married (Table 2-2). At the time of the survey 56 percent were still married, 10 percent were widowed, and another 10 percent were divorced or separated.

TABLE 2-2

MARITAL STATUS OF OCCUPATIONAL HEALTH NURSES COMPARED WITH ALL PROFESSIONAL REGISTERED NURSES

Marital Status	Percent of Occupational Health Nurses	Percent of All Professional Registered Nurses*
Married	56.1	62.5
Never married	23.3	26.2
Widowed	10.4	6.0
Divorced or separated	10.2	5.3
Total Percent	100.0	100.0
Number	9999	502,551
No Answer	26	
Grand Total	10025	

*Source: American Nurses' Association. The Nation's Nurses: The 1962 Inventory of Professional Registered Nurses. New York: American Nurses' Association, 1965. Computed from Table 3A, p. 25.

Compared with all professional registered nurses in 1962, fewer occupational health nurses were married. More were widowed or divorced. Part of the difference in marital status may be accounted for by the higher proportion of older women among occupational health nurses.

College Education

The occupational health nurses have had little formal education beyond their basic nursing preparation. The great majority hold only diplomas from hospital schools of nursing (Table 2-3). Few of the occupational health nurses are college graduates; less than a tenth (6.7 percent) have college degrees.

TABLE 2-3

EDUCATION OF OCCUPATIONAL HEALTH NURSES

Education	Percent of Nurses
Diploma only	93.3
Associate degree	1.5
Bachelor's degree	4.3
Master's or doctor's degree	0.6
Other degree, type not reported	0.3
Total Percent	100.0
Number	9862
No Answer	163
Grand Total	10025

Of the occupational health nurses with degrees, two-thirds have a bachelor's degree, one-fourth an associate degree (Table 2-4). Just under 10 percent have graduate degrees, virtually all of which are master's.

TABLE 2-4

HIGHEST DEGREE HELD BY OCCUPATIONAL HEALTH NURSES
WHO ARE COLLEGE GRADUATES

Highest Degree	Percent of Nurses
Associate	23.8
Bachelor's	66.6
Master's	9.2
Doctoral	0.3*
Total Percent	100.0
Number	638
No Answer	26
Grand Total	664

*Represents two nurses: one a chiropodist, the other a podiatrist.

Nursing Education

Only a fourth of the nurses who now hold college degrees received their basic nursing education in a collegiate program (Table 2-5). Two-thirds of them were trained in hospital diploma programs, the remaining 6 percent in a junior college or associate degree program.

TABLE 2-5

BASIC NURSING EDUCATION PROGRAM OF OCCUPATIONAL HEALTH NURSES WHO ARE COLLEGE GRADUATES

Program	Percent of Nurses
3-year hospital diploma program	69.8
4- or 5-year college bachelor's or master's degree program	24.4
2-year junior college or other associate degree program	5.8
Total Percent	100.0
Number	620
No Answer	44
Grand Total	664

One explanation for the low proportion of nurses trained in collegiate programs is the age distribution of the occupational health nurses. They are older nurses who were trained before the collegiate nursing programs were well established.

The majority of the nurses (88 percent) were graduated from basic nursing education programs before 1950; over half completed their training before 1940 (Table 2-6). Less than 1 percent of the nurses were graduated after 1960.[4]

[4]Nurses covered by the survey had been registered between September 1, 1961, and January 31, 1963.

TABLE 2-6

YEAR IN WHICH OCCUPATIONAL HEALTH NURSES WERE GRADUATED FROM BASIC NURSING EDUCATION PROGRAM

Year of Graduation	Percent of Nurses
Before 1930	15.6
1930-1939	40.2
1940-1949	32.3
1950-1959	11.1
1960 or later	0.8
Total Percent	100.0
Number	9892
No Answer	133
Grand Total	10025

Most of the occupational health nurses have had no formal instruction in their specialty. Less than a fifth reported that they had taken a course in occupational health nursing for which college credit was given.

Furthermore, few have had formal preparation in the closely related field of public health nursing. Only 11 percent of the nurses report a Public Health Nursing Certificate or the equivalent number of college credits in public health nursing and related subjects.

Previous Professional Positions

The majority of occupational health nurses have had experience in both hospital and private duty nursing, but less than half of them (42 percent) have previously worked in occupational health, and few (14 percent) have had public health experience (Table 2-7).

Since hospital nursing is the usual first job for nurses, it is not surprising that so many nurses report hospital experience, either as staff or head nurses. However, it was not expected that so few would have public health background, for in content and practice public health nursing is closely related to occupational health nursing.

TABLE 2-7

PREVIOUS PROFESSIONAL WORK EXPERIENCE OF OCCUPATIONAL HEALTH NURSES

Previous Positions Held	Percent of Nurses*
Staff nurse in hospital or clinic	77.4
Private duty nurse	61.7
Head nurse in hospital or clinic	50.0
Occupational health nurse	42.1
Doctor's office nurse	31.1
Staff nurse in public health	11.6
Senior or supervisory nurse in public health	2.5
None, this is first job	0.5
Other positions, type not specified	13.3
Total Number	9996
No Answer	29
Grand Total	10025

*Since respondents reported all previous positions, the total exceeds 100.0 percent.

Although over half of the occupational health nurses have held no previous position in occupational health, a number of them have worked in the field for a long time. A third report having been occupational health nurses for 15 years or more, over half of them for at least 10 (Table 2-8). Only 16 percent have had less than 5 years experience in occupational health.

TABLE 2-8

TOTAL YEARS WORKED AS AN OCCUPATIONAL HEALTH NURSE

Total Years Worked	Percent of Nurses
Less than 1	0.2
1-2	4.9
3-4	11.0
5-9	26.2
10-14	24.4
15 or more	33.4
Total Percent	100.0
Number	9959
No Answer	66
Grand Total	10025

The above data raise the question of occupational mobility. Additional data not presented here indicate that occupational health nurses not only tend to remain in the field for a number of years, but also remain for considerable time in the same job. About half of those with previous occupational health experience have had only one previous occupational health position, whereas only a fifth have had as many as three. Of course, it is not known how many nurses who at one time were in the field have left, but it does appear that those who are still working are a fairly stable group.

As a further measure of mobility, comparison was made of the percent of nurses who by year of first position in occupational health could theoretically have had at least 15 years experience and the percent reporting this much time in the field. Three-fourths of the eligible nurses reported 15 or more years of experience. Therefore, roughly a fourth of those still working in occupational health had left the field for some period of time and later returned.

Data on the last position of the occupational health nurse indicate that it was most often a position as staff nurse in a hospital or clinic or another industrial position. Next most often the previous position was either as supervisory nurse in a hospital or clinic, or as a private duty nurse.

Where They Work

Region and Geographic Division

The nurses are heavily concentrated in the Northeast and North Central regions of the United States.[5] A third of them work in the nine Northeastern States from Maine to Pennsylvania; another third in the 12 North Central States from Ohio to the Dakotas (Table 2-9). The remaining third are employed throughout the 16 States of the South and the District of Columbia (20 percent) and the 13 Western States (12 percent).

By geographic divisions, half of the nurses work in the three Middle Atlantic and the five East North Central States: 25 percent in New York, New Jersey, and Pennsylvania; 29 percent in Ohio, Michigan, Illinois, Indiana, and Wisconsin. Around 10 percent are employed in each of the South Atlantic, Pacific, and New England divisions, with smaller proportions in the other geographic divisions.

[5] A map of the regions and geographic divisions is found on page 30.

TABLE 2-9

PLACE OF EMPLOYMENT OF OCCUPATIONAL HEALTH NURSES CLASSIFIED BY REGION AND GEOGRAPHIC DIVISION AND SHOWING COMPARISON WITH TOTAL NONAGRICULTURAL LABOR FORCE

Region and Geographic Division	Percent of Nurses	Percent of 1962 Labor Force*
Northeast	33.3	28.6
New England	8.5	6.8
Middle Atlantic	24.8	21.8
North Central	34.2	28.7
East North Central	28.9	21.0
West North Central	5.3	7.7
South	20.4	26.7
South Atlantic	11.7	13.6
East South Central	4.6	5.1
West South Central	4.1	8.0
West	12.1	15.9
Mountain	2.1	3.6
Pacific	10.0	12.3
Total Percent	100.0	100.0
Number	9692	55,376,000
No Answer	333	
Grand Total	10025	

*Source: U. S. Bureau of the Census. Statistical Abstract of the United States: 1963. (Eighty-fourth edition) Washington: U. S. Government Printing Office, 1963, Table No. 297, p. 227. The data presented here are computed from the State figures. Therefore, the percentage base, being the sum of the State figures, differs from the National total given in Table 297 because of State variations in reporting and computation.

Comparison of the regional distribution of occupational health nurses with the distribution of all employees in nonagricultural establishments, shows that there is a slightly higher proportion of nurses in the Northeast, in both New England and the Middle Atlantic divisions, and in the North Central region, particularly in the East North Central division. All other regions and geographic divisions show a slightly lower proportion of nurses than of total employees.

The distribution of occupational health nurses by State conforms closely to the distribution of the nonagricultural labor force. Ninety-five percent of the nurses work in the 32 States where 90 percent of the nonagricultural labor force is employed. The remaining 5 percent are in those 19 States having slightly less than 10 percent of the nonagricultural labor force.

What They Do

Major Role of Nurse

Almost all of the nurses give direct health services to employees: 96 percent of them work in a health unit, another 1.4 percent are visiting nurses (Table 2-10). The nurses who do not give direct health services are almost all consultants, in either a commercial organization (1.7 percent) or a governmental agency (0.4 percent).

TABLE 2-10

MAJOR ROLE OF OCCUPATIONAL HEALTH NURSES

Role	Percent of Nurses
Gives direct services:	
Nurse in health unit	96.2
Visiting nurse	1.4
Does not give direct services:	
Consultant in official (governmental) agency	0.1
Consultant in unofficial (commercial or other) organization	1.7
Other	0.3
Total Percent	100.0
Number	9981
No Answer	44
Grand Total	10025

Type of Industry

Three-fourths of the nurses work in manufacturing industries, almost a fifth in nonmanufacturing, and 6 percent in government (Table 2-11). Almost twice as many work in durable goods manufacturing industries (47 percent) as in nondurable (25 percent).

TABLE 2-11

TYPE OF INDUSTRY IN WHICH OCCUPATIONAL HEALTH NURSES ARE EMPLOYED

Type of Industry	Percent of Nurses
Durable goods manufacturing	46.8
Automobiles, aircraft, railroad equipment, shipbuilding and related products	15.1
Electrical machinery, equipment and supplies	8.9
Machinery except electrical	3.4
All other metal manufacturing (including the smelting, manufacture or fabricating of iron and steel, aluminum, copper or other metals or products made from them)	16.3
Furniture and fixtures	0.5
Logging, sawmills and wood products except furniture	0.5
Stone, clay and glass products	2.1
Nondurable goods manufacturing	24.8
Petroleum refining	1.7
Rubber and plastics products	3.0
Chemicals and related products (including synthetic fibers, drugs, paints, etc.)	5.9
Food and related products	4.6
Textile mill products (yarn, cloth, etc.)	2.9
Apparel and other fabricated textile products	0.9
Printing, publishing and related industries	1.7
Paper and related products	4.1
Any other manufacturing	4.7
Nonmanufacturing	17.5
Government	6.2
Total Percent	100.0
Number	9813
No Answer	212
Grand Total	10025

Comparison of the distribution of nurses and of the total nonagricultural labor force indicates that the bulk of the nurses work in the type of industry which employs a small proportion of the labor force (Table 2-12). Three-fourths of the nurses are working in manufacturing industries, although such industries employ less than one-third of the workers. On the other hand, over half of the labor force is employed in nonmanufacturing industries, contrasted with less than a fifth of the nurses.

TABLE 2-12

COMPARISON OF OCCUPATIONAL HEALTH NURSES AND NONAGRICULTURAL LABOR FORCE BY INDUSTRY GROUP IN WHICH EMPLOYED

Industry Group	Percent Distribution	
	Nurses	Labor Force*
Manufacturing	76.3	30.3
Nonmanufacturing	17.5	53.1
Government	6.2	16.6
Total Percent	100.0	100.0
Number	9813	55,325,000
No Answer	212	
Grand Total	10025	

*U. S. Bureau of the Census. Statistical Abstract of the United States: 1963. (Eighty-fourth edition) Washington, U. S. Government Printing Office, 1963. Table No. 296, p. 224.

Size of Workplace

Most occupational health nurses work in places which have large numbers of employees, over half of them in workplaces with a thousand or more employees, 80 percent in workplaces with 500 or more (Table 2-13).[6]

[6]The reader will note that Table 2-13 and some of the following tables are based on the number of nurses who work in health units (n = 9600).

By size of workplace, as by type of industry, nurses and workers are differentially distributed. Eighty percent of the nurses work in establishments with 500 or more employees, but only a third of the labor force is employed in this size workplace. On the other hand, only 1 percent of the nurses work in establishments of less than a hundred employees although almost half of the labor force is employed in workplaces of this size.

TABLE 2-13

COMPARISON OF OCCUPATIONAL HEALTH NURSES WHO WORK IN HEALTH UNITS AND OF EMPLOYEES AND WORKPLACES UNDER THE SOCIAL SECURITY PROGRAM BY SIZE OF WORKPLACE

Number of Employees in Workplace	Nurses	Percent Distribution Employees*	Workplaces*
Less than 100	1.0	45.0	98.3
100-249	4.8	12.0	1.1
250-499	14.5	9.0	0.4
500 or more	79.7	34.0	0.2
Total Percent	100.0	100.0	100.0
Number	9204	43,512,000	3,347,647
No Answer	396		
Grand Total	9600		

*Excludes agricultural workers, employees of Federal, State, and local governments and of railroads, as well as persons who are self-employed. The percent distribution according to size of workplace was estimated by the Division of Occupational Health using data from the following source: U. S. Bureau of the Census, County Business Patterns, First Quarter 1962, Part 1, United States Summary. Washington: U. S. Government Printing Office, 1963. Table 1A, p. 8.

As will be shown in Chapters 4 and 5, size of workplace and type of industry group are related. Also, both size of workplace and type of industry group are independently related to size of nursing staff, although size of workplace has much the higher correlation. So, Table 2-13 is not reflecting simply the influence of size of workplace but the interrelation of size of workplace, type of industry, and size of nursing staff, with size of workplace being the underlying variable.

Type of Health Unit

The health units were classified according to whether they were single or multiple units and, if multiple, by relationship with the chief unit. Using the following classification, the nurse indicated in which type of health unit she worked:

a) The only health unit in your workplace (plant, shop, store, etc.)

b) The chief health unit in your workplace, with one or more satellite or substation units staffed by at least one nurse elsewhere in the workplace

c) A satellite or substation unit, with the chief health unit elsewhere in the workplace

d) One of two or more health units in your workplace, neither (or none) of which is the chief unit. (These are referred to below as independent units.)

e) None of the above

A small number of nurses, less than 1 percent, indicated that they rotated between the chief and satellite units. These nurses, together with those choosing the (e) answer option, constitute the other category in Table 2-14.

TABLE 2-14

TYPE OF HEALTH UNIT IN WHICH NURSE IS EMPLOYED

Type of Health Unit	Percent of Nurses
Only	73.6
Chief	15.4
Satellite	5.6
Independent	3.2
Other*	2.2
Total Percent	100.0
Number	9336
No Answer	264
Grand Total	9600

*Includes nurses who rotate between chief and satellite units (0.6 percent).

Few workplaces have more than one health unit. Three-fourths of the nurses who work in health units are employed in the only health unit in their workplace. Only a fifth of them work in either a chief health unit or a satellite unit.

The health units tend to have small staffs. Two-thirds of the nurses work with no more than two other nurses; 40 percent of them work alone (Table 2-15). Although a few of the health units have 13 or more nurses including nurse supervisors, directors or charge nurses, the median number of nurses per health unit is 1.3.

TABLE 2-15

SIZE OF TOTAL NURSING STAFF IN HEALTH UNIT

Total Number of Nurses on Staff*	Percent of Nurses
1	39.9
2-3	25.6
4-5	14.9
6-7	7.2
8-12	7.0
13 or more	5.3
Total Percent	100.0
Number	9147
No Answer	453
Grand Total	9600

*Including respondent

Salary

The median salary for occupational health nurses in the survey was $5,531 per year. Only 10 percent earned as much as $7,000, and 7 percent earned less than $4,000 (Table 2-16).

TABLE 2-16

ANNUAL SALARY OF OCCUPATIONAL HEALTH NURSES

Annual Salary	Percent of Nurses
Under $4,000	7.2
$4,000-$4,499	8.1
$4,500-$4,999	12.2
$5,000-$5,499	21.6
$5,500-$5,999	14.8
$6,000-$6,499	17.2
$6,500-$6,999	9.0
$7,000 and over	9.9
Total Percent	100.0
Number	9814
No Answer	211
Grand Total	10025

Compared with all professional nurses, the occupational health nurse is considerably better paid. Data from the 1960 Census[7] indicate that the median earnings of all professional nurses in 1959 were $3,186. By 1964, when our data were collected, these earnings would probably have increased somewhat but would still not be comparable to the salary of the occupational health nurses.

[7]U. S. Bureau of the Census. Statistical Abstract, 1965. Table No. 316, p. 233.

Supervision of Those Who Work in Health Units

Nursing Supervision

Forty percent of nurses who work in health units work alone. These nurses seldom have any nursing supervision. Only 12 percent of them report that their work is supervised or directed by a nurse outside the health unit.

Of the nurses who work with at least one other nurse, almost three-fourths (72 percent) report having a supervisory nurse in the health unit. In these units with supervisory nurses, one-third of the nurses are supervisors.

With the ratio of supervisory to staff nurses being 1:2, it is apparent that the supervisors in many cases have few nurses under their direction. One-third of them supervise only one nurse each, another 50 percent oversee from two to five nurses. Only a fifth supervise as many as six nurses.

Medical Direction

The occupational health nurses in general have little medical direction. Only one-fourth of them work with a full-time physician--one who is regularly present at their workplace 35 or more hours per week (Table 2-17). A third of them have no regular physician at all. However, almost all of the nurses (95 percent) report that when a physician is not present in the health unit a physician is available on call.

TABLE 2-17

NUMBER OF HOURS WHILE NURSE IS ON DUTY THAT PHYSICIAN IS REGULARLY PRESENT IN HEALTH UNIT

Hours Per Week	Percent of Nurses
35 or more	23.8
20-34	4.6
10-19	7.9
5-9	12.5
Less than 5 but some time	18.3
None	33.0
Total Percent	100.0
Number	9471
No Answer	129
Grand Total	9600

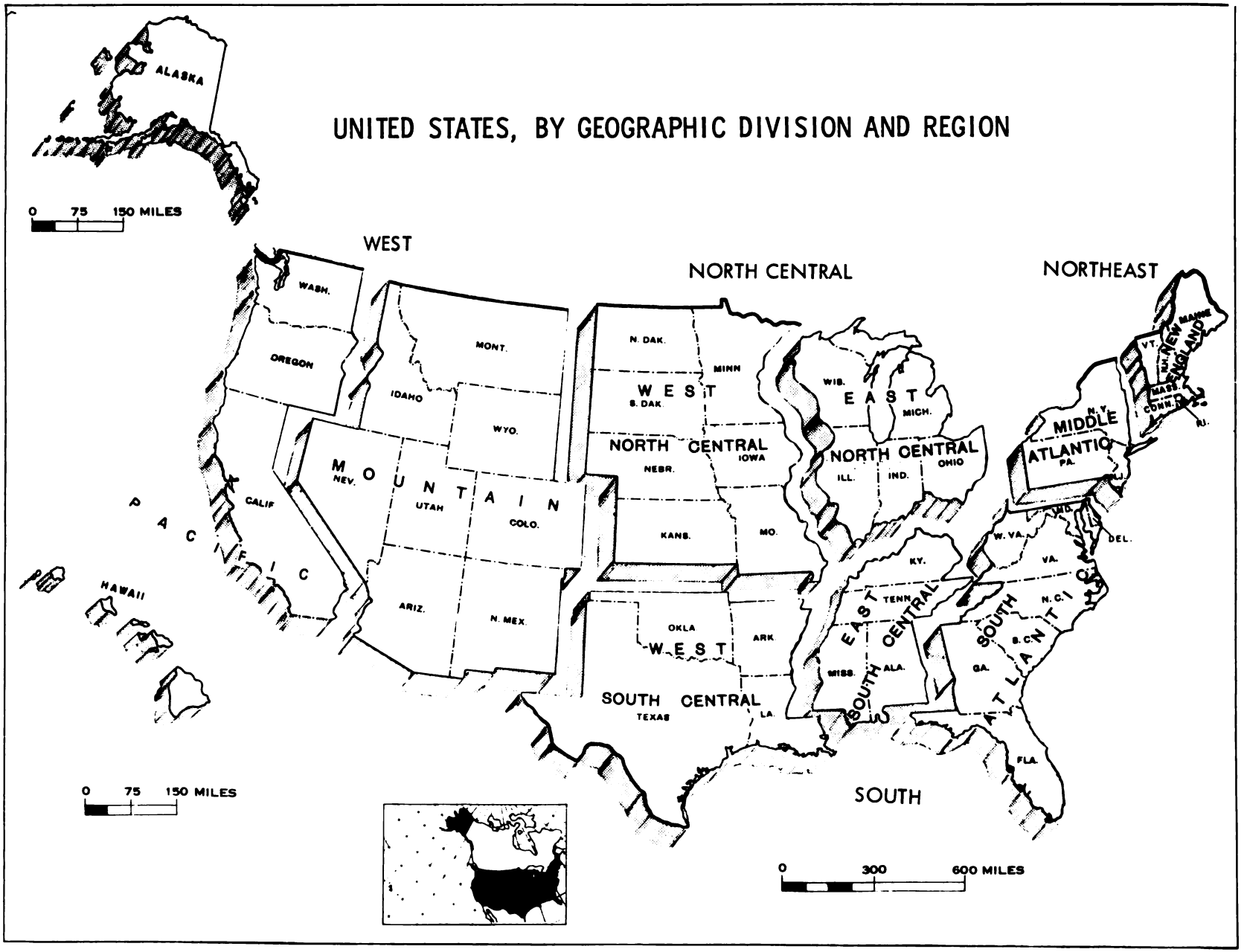
The majority of the nurses have some kind of written instructions. Three-fourths of them have written standing orders, which in over 90 percent of the cases are signed by a physician, and three-fourths also have nursing policy and procedure manuals.

Nonmedical Administration

Administration of the health unit so far as nonmedical matters are concerned seems to be largely the responsibility of the personnel department or its equivalent. Four-fifths of the nurses report that their health unit is administratively responsible to a member of the personnel, employee relations, or industrial relations department. In the majority of cases the nonmedical administrator is a member of top management at the policy-making level.

Profile

If one attempted to describe a "typical" occupational health nurse, she would be a white female in her late 40's who had at some time been married. She would have completed her nursing education between 1940 and 1950, but not in a collegiate program, and would not have a college degree. Her annual salary would be around $5,500. She would most likely be working in the only health unit in a manufacturing industry where there were a large number of employees but few nurses. In fact, she might be the only nurse. If she worked with other nurses, there would probably be a supervisory nurse in the health unit. It would be quite unlikely, however, that there would be a full-time physician, though perhaps one would be available part-time for a few hours a week. Almost certainly there would be a physician on call. In nonmedical matters she would be responsible to a member of the personnel, employee relations, or industrial relations department.



CHAPTER 3

REGIONAL DISTRIBUTION OF OCCUPATIONAL HEALTH NURSES

The preceding chapter presented the data on characteristics of the nurses as a national group. Now the characteristics of different subgroups of nurses will be considered. This chapter discusses the nurses according to the geographical region in which they are employed: the Northeast, the South, the North Central region, and the West. The nurses in the four regions will be compared with respect to (1) the size of workplace and type of industry in which the nurses are employed, and their annual salary, (2) the medical direction and nonmedical administration of the health unit, and (3) the nurses' educational background. Regional differences were statistically significant for all variables tested except written standing orders. Reference tables showing the distribution of nurses by State are provided in Appendix III.

The Nurse's Workplace

Size of Workplace

The West more often than the other regions has nurses working in large workplaces. As shown in Table 3-1, the major variation is the higher proportion of nurses in the West who work in establishments of 2,500 or more employees, 41 percent compared with about one-third in the other three regions.

TABLE 3-1

REGION IN WHICH NURSE IS EMPLOYED BY NUMBER OF EMPLOYEES IN WORKPLACE: PERCENT DISTRIBUTION OF NURSES

Number of Employees	Region				U. S.
	Northeast	South	North Central	West	
Under 500	21.6	19.9	19.0	21.0	20.2
500-999	22.1	22.6	20.0	16.8	20.8
1000-2499	25.3	25.5	25.5	21.2	24.9
Over 2500	31.0	32.0	35.6	40.9	33.9
Total Percent	100.0	100.0	100.0	100.0	100.0
Number	3198	1950	3272	1154	9574
No Answer					451
Grand Total					10025

$\chi^2 = 57.16$; df = 9; $p < .001$; $\bar{C} = .09$

Type of Industry Group

The North Central region has the highest proportion of nurses working in manufacturing industries. Whereas no more than three-fourths of the nurses in any other region work in manufacturing, in the North Central region 84 percent of the nurses do (Table 3-2). In the West, on the other hand, there is an overrepresentation of nurses who work in nonmanufacturing, while the South has the highest proportion of nurses employed by government. The government nurses, however, are concentrated largely in the District of Columbia, which has three times as high a proportion of nurses working in government as any State.

TABLE 3-2

REGION IN WHICH NURSE IS EMPLOYED BY TYPE OF INDUSTRY GROUP IN WHICH SHE WORKS: PERCENT DISTRIBUTION OF NURSES

Type of Industry Group	Region				U. S.
	Northeast	South	North Central	West	
Manufacturing	75.7	72.4	84.0	65.2	76.6
Nonmanufacturing	20.0	15.3	12.8	25.8	17.2
Government	4.3	12.3	3.2	9.0	6.1
Total Percent	100.0	100.0	100.0	100.0	100.0
Number	3169	1940	3246	1141	9496
No Answer					529
Grand Total					10025

$\chi^2 = 349.17$; df = 6; $p < .001$; $\bar{C} = .24$

Annual Salary

Nurses in the West earn higher salaries. The West accounts for the highest proportion of nurses earning over $6,500 per year, 27 percent compared to less than 20 percent in the other regions (Table 3-3). This is no doubt related to the fact that more Western nurses work in large workplaces which pay higher salaries. The highest proportion of nurses with low salaries is found in the South, where almost one-fourth earn less than $4,500.

TABLE 3-3

REGION IN WHICH NURSE IS EMPLOYED BY ANNUAL SALARY: PERCENT DISTRIBUTION OF NURSES

Annual Salary	Region				U. S.
	Northeast	South	North Central	West	
Under $4,500	16.0	22.6	12.1	9.4	15.2
$4,500-$5,499	38.0	31.3	35.1	23.0	33.8
$5,500-$6,500	28.5	29.0	34.3	40.5	32.0
Over $6,500	17.5	17.1	18.5	27.2	19.0
Total Percent	100.0	100.0	100.0	100.0	100.0
Number	3170	1915	3255	1152	9492
No Answer					533
Grand Total					10025

$\chi^2 = 274.98$; df = 9; $p < .001$; $\bar{C} = .20$

Formal Structure of the Health Unit

Medical Direction

Full-time Physician. While only one-fourth of the occupational health nurses in the survey work with a full-time physician (one who is on duty for 35 or more hours per week), a higher proportion of nurses in the West than in the other regions have such supervision (Table 3-4). On the other hand, all regions except the Northeast have over a third of nurses working with no regular physician. The Northeast has the highest proportion of nurses working with part-time medical direction.

TABLE 3-4

REGION IN WHICH NURSE IS EMPLOYED BY NUMBER OF HOURS A PHYSICIAN IS REGULARLY PRESENT AT WORKPLACE: PERCENT DISTRIBUTION OF NURSES WHO WORK IN HEALTH UNITS

Number of Hours	Region				U. S.
	Northeast	South	North Central	West	
35 or more	23.5	26.3	21.0	29.5	23.9
5-34	29.4	21.8	24.0	20.8	25.0
Less than 5 but some time	21.3	16.2	18.0	14.3	18.3
None	25.8	35.6	37.0	35.4	32.8
Total Percent	100.0	100.0	100.0	100.0	100.0
Number	3055	1859	3159	1099	9172
No Answer					428
Grand Total					9600

$\chi^2 = 169.95$; df = 9; $p < .001$; $\bar{C} = .16$

Physician on Call. In all regions, 95 percent of nurses report that a physician is available on call. Differences among regions, although statistically significant, are quite small, the percentages ranging from 97 percent in the South to 94 percent in the Northeast (Table 3-5).

TABLE 3-5

REGION IN WHICH NURSE IS EMPLOYED BY AVAILABILITY OF A PHYSICIAN ON CALL DURING HOURS WHEN A PHYSICIAN IS NOT PRESENT: PERCENT DISTRIBUTION OF NURSES WHO WORK IN HEALTH UNITS

Physician on Call	Region				U. S.
	Northeast	South	North Central	West	
Yes	94.2	96.8	96.0	94.9	95.4
No	5.8	3.2	4.0	5.1	4.6
Total Percent	100.0	100.0	100.0	100.0	100.0
Number	2952	1815	3102	1049	8918
No Answer					682
Grand Total					9600

$\chi^2 = 21.67$; df = 3; $p < .001$; $\bar{C} = .07$

Written Orders and Procedures

Over three-fourths of the nurses report having written standing orders[1] (Table 3-6) and policy and procedure manuals (Table 3-7). The differences among regions with respect to these variables are small, but the West and Northeast consistently outrank the other two regions in the proportion of nurses reporting written directives.

[1]Over 90 percent of the nurses in each region report that the standing orders are signed by a physician.

TABLE 3-6

REGION IN WHICH NURSE IS EMPLOYED BY EXISTENCE OF WRITTEN STANDING ORDERS: PERCENT DISTRIBUTION OF NURSES WHO WORK IN HEALTH UNITS

Written Standing Orders	Region				U. S.
	Northeast	South	North Central	West	
Yes	78.4	76.3	77.8	80.3	78.0
No	21.6	23.7	22.2	19.7	22.0
Total Percent	100.0	100.0	100.0	100.0	100.0
Number	3019	1844	3140	1096	9099
No Answer					501
Grand Total					9600

$\chi^2 = 6.64$; df = 3; $.10 > p > .05$; $\bar{C} = .04$

TABLE 3-7

REGION IN WHICH NURSE IS EMPLOYED BY EXISTENCE OF A NURSING POLICY AND PROCEDURE MANUAL: PERCENT DISTRIBUTION OF NURSES WHO WORK IN HEALTH UNITS

Nursing Policy and Procedure Manual	Region				U. S.
	Northeast	South	North Central	West	
Yes	76.8	75.1	76.6	79.7	76.7
No	23.2	24.9	23.4	20.3	23.3
Total Percent	100.0	100.0	100.0	100.0	100.0
Number	2984	1810	3107	1098	8999
No Answer					601
Grand Total					9600

$\chi^2 = 7.91$; df = 3; $.05 > p > .02$; $\bar{C} = .04$

Nonmedical Administration

The regions differed very little in type of nonmedical administration. For over 80 percent of the nurses, the nonmedical administrator of the health unit was a member of the personnel, employee relations, or industrial relations department (Table 3-8). Data not presented here indicate that 90 percent of the time the administrator was a member of top management at the policy-making level. In about 5 percent of the cases, more than one person shared in administering the health unit.

TABLE 3-8

REGION IN WHICH NURSE IS EMPLOYED BY NONMEDICAL ADMINISTRATION OF HEALTH UNIT: PERCENT DISTRIBUTION OF NURSES WHO WORK IN HEALTH UNITS

Nonmedical Administrator	Region				U. S.
	Northeast	South	North Central	West	
Member of Personnel, Employees Relations or Industrial Relations Department	81.8	80.4	83.2	80.2	81.8
Member of Safety Department	10.8	11.7	13.1	11.4	11.8
Some other person	12.1	13.1	8.8	13.3	11.3
Total Number	2997	1836	3101	1080	9014
No Answer					586
Grand Total					9600

Note: Because some health units are administered by more than one person, percents exceed 100 percent.

Education

College Training

As shown in Table 3-9, the West exceeds other regions in proportion of nurses who are college graduates, having about one-third more than the Northeast and North Central regions and twice that of the South.

TABLE 3-9

REGION IN WHICH NURSE IS EMPLOYED BY POSSESSION OF COLLEGE DEGREE: PERCENT DISTRIBUTION OF NURSES

College Degree	Region				U. S.
	Northeast	South	North Central	West	
Yes	6.4	5.3	6.5	10.2	6.7
No	93.6	94.7	93.5	89.8	93.3
Total Percent	100.0	100.0	100.0	100.0	100.0
Number	3178	1944	3263	1152	9537
No Answer					488
Grand Total					10025

$\chi^2 = 28.80$; df = 3; $p < .001$; $\bar{C} = .08$

Basic Nursing Preparation

Few of the nurses with college degrees received their basic nursing education in a collegiate program. Those who did were somewhat more likely to be found in the North Central region (Table 3-10). Nurses in the West were more often trained in a junior college program, whereas the Northeast exceeds all other regions in proportion of nurses who were trained in hospital diploma programs.

TABLE 3-10

REGION IN WHICH NURSE IS EMPLOYED BY TYPE OF BASIC NURSING EDUCATION: PERCENT DISTRIBUTION OF NURSES WITH COLLEGE DEGREES

Basic Nursing Education	Region				U. S.
	Northeast	South	North Central	West	
2-year junior college or other associate degree program	4.2	6.5	3.0	11.9	5.6
3-year hospital diploma program	75.0	67.7	68.7	62.4	69.4
4- or 5-year college bachelor's or master's degree program	20.8	25.8	28.3	25.7	25.0
Total Percent	100.0	100.0	100.0	100.0	100.0
Number	192	93	198	109	592
No Answer					72
Grand Total					664

$\chi^2 = 14.91$; df = 6; $.05 > p > .02$; $\bar{C} = .20$

In all regions, the majority of nurses, with and without college degrees, completed their basic nursing education program before 1950 (Table 3-11). The South, however, has a higher proportion of recent graduates than do the other regions.

TABLE 3-11

REGION IN WHICH NURSE IS EMPLOYED BY YEAR OF GRADUATION FROM BASIC NURSING PROGRAM: PERCENT DISTRIBUTION OF NURSES

Year of Graduation	Region				U. S.
	Northeast	South	North Central	West	
Before 1930	16.9	11.0	16.2	16.1	15.4
1930-1939	41.3	37.3	40.3	40.4	40.1
1940-1949	30.4	35.5	32.5	33.2	32.5
1950 or later	11.3	16.1	10.9	10.2	12.0
Total Percent	100.0	100.0	100.0	100.0	100.0
Number	3187	1953	3270	1158	9568
No Answer					457
Grand Total					10025

$\chi^2 = 81.23$; df = 9; $p < .001$; $\bar{C} = .11$

Occupational Health Courses

From time to time colleges in the West, in the Northeast, and in the North Central region have offered courses in occupational health nursing, but there has been no continuous program. This is reflected in the low incidence of specific training in occupational health among our respondents (Table 3-12). Only 17 percent of the nurses in the survey indicated that they had attended for college credit a course in occupational health nursing. The West has the highest proportion of nurses with college courses in occupational health nursing (25 percent) and the Northeast also is above average (20 percent). In the South, however, only 9 percent of the nurses had taken such courses.

TABLE 3-12

REGION IN WHICH NURSE IS EMPLOYED BY COLLEGE COURSE IN OCCUPATIONAL HEALTH NURSING: PERCENT DISTRIBUTION OF NURSES

College Course in Occupational Health Nursing	Region				U. S.
	Northeast	South	North Central	West	
Yes	19.7	8.8	15.6	25.5	16.8
No	80.3	91.2	84.4	74.5	83.2
Total Percent	100.0	100.0	100.0	100.0	100.0
Number	3141	1923	3213	1148	9425
No Answer					600
Grand Total					10025

$\chi^2 = 173.80$; df = 3; p < .001; $\bar{C} = .18$

Summary

The highest proportion of nurses who work in manufacturing industries is found in the North Central region, whereas the South has the most nurses working in government. The West has more nurses working in nonmanufacturing industries as well as more nurses working in large plants and earning high salaries.

The West has more medical direction than any other region. A higher proportion of nurses work with full-time physicians and have standing orders and policy and procedure manuals in their health units.

With respect to educational background, the West ranks first in proportion of college graduates and in proportion of nurses with college courses in occupational health nursing. The South ranks last on these variables. The West also has a higher proportion of nurses with associate degrees and a higher proportion who have received their

basic nursing education in a junior college program. The Northeast has a higher proportion of nurses who were trained in hospital programs and more nurses with graduate degrees than the other regions.

From these few indices that are available, the West presents a somewhat more progressive picture of occupational health nursing in terms of more academic preparation for the field, more structured medical direction, and higher salaries.

CHAPTER 4

THE INFLUENCE OF SIZE OF WORKPLACE

This chapter will discuss the relationship between the size of the nurse's workplace, as measured by the number of employees, and (1) the organization of the health unit in which the nurse works, (2) the amount of nursing supervision and medical direction which she receives, and (3) her education, experience, and salary.

As one would expect, the larger workplaces[1] generally make greater provision for health services than do those with fewer employees. The larger workplaces tend to have more health units as well as more nurses on the health unit staff. They also have a greater amount of nursing supervision and more extensive medical direction.

Organization of Health Unit

Type of Health Unit

The majority of nurses in all but the largest workplaces work in the only health unit in the workplace: over 90 percent of the nurses in workplaces of less than 1,000 employees, 64 percent of those in workplaces with between 2,500 and 4,999 employees (Table 4-1). In fact, only in the largest workplaces, those with 5,000 or more employees, do many of the nurses work in anything other than the only unit. In these workplaces, 45 percent of the nurses are employed in the chief unit, 17 percent in a satellite unit.

---

[1]The workplaces referred to in this chapter are, of course, only those which employ the occupational health nurses who responded to our survey. Small workplaces are particularly underrepresented, for few of them have occupational health nurses.

TABLE 4-1

SIZE OF WORKPLACE BY TYPE OF HEALTH UNIT IN WHICH NURSE IS EMPLOYED: PERCENT DISTRIBUTION OF NURSES

Type of Health Unit	Number of Employees in Workplace						Total
	Under 250+	250-499	500-999	1000-2499	2500-4999	5000 & over	
Only unit	93.3	94.6	92.0	81.3	64.4	28.0	73.7
Chief unit	1.8	1.3	2.9	10.9	23.0	44.7	15.4
Satellite unit with chief unit elsewhere in workplace	1.6	1.3	1.8	3.3	6.2	17.1	5.6
One of two or more independent units	1.6	1.4	1.9	3.0	5.0	5.5	3.2
Other*	1.8	1.3	1.4	1.5	1.4	4.8	2.1
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	505	1344	1945	2323	1431	1700	9248
No Answer							352
Grand Total							9600

χ^2 = 2823.39; df = 15; p < .001; $\bar{C}$ = .56 ("Other" omitted from computation).

*Includes nurses who reported that they work in none of the health units named above (1.5 percent of number responding) and those who specified that they rotated between chief and satellite units (0.6 percent). Since rotation was not one of the answer options on the questionnaire, it is possible that some of the respondents checking "none" might also rotate between units.

+It is unlikely that workplaces of this size would have more than one health unit, and respondents so indicating may have misinterpreted one or both of the questions included in this crosstabulation.

Size of Nursing Staff

Nursing staffs tend to be small in all but the largest workplaces. In workplaces with less than 1,000 employees, most nurses work alone (Table 4-2). However, as the size of the workplace increases, so does

TABLE 4-2

SIZE OF WORKPLACE BY NUMBER OF NURSES IN HEALTH UNIT: PERCENT DISTRIBUTION OF NURSES

Number of Nurses in Health Unit*	Number of Employees in Workplace						Total
	Under 250+	250-499	500-999	1000-2499	2500-4999	5000 & over	
One	88.4	83.2	61.6	26.8	9.4	9.8	40.0
Two-three	8.0	13.4	31.0	42.8	27.8	8.8	25.6
Four-seven	1.6	3.2	6.7	26.9	52.2	29.1	22.2
Eight or more	2.0	0.2	0.6	3.5	10.6	52.3	12.3
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	499	1324	1902	2282	1412	1645	9064
No Answer							536
Grand Total							9600

$\chi^2 = 6389.58$; df = 15; $p < .001$; $\bar{C} = .73$

*Number includes respondent.

+It is unlikely that this size workplace would have more than one nurse. Nurses in this size workplace who report a staff of two or more nurses, as well as those in the next two sized workplaces who report eight or more nurses, may have misinterpreted one or both of the questions.

the number of nurses in the health unit. Nurses in the 1,000- to 2,499-employee workplace most often (43 percent) work on staffs of two or three nurses, whereas nurses in workplaces with 2,500 to 4,999 employees most often (52 percent) work on staffs of four to seven

nurses. Only in the largest workplaces, those with 5,000 or more employees, do the majority of nurses (52 percent) work on a staff of eight or more nurses.

Employees Served by Health Unit

The larger the workplace, the smaller the proportion of nurses who report that their health unit serves the total employee population. As Table 4-3 shows, in each successive size category the nurse is somewhat less likely to work with all employees, although even in workplaces with over 2,500 employees, 82 percent of the nurses do. This relationship between size of workplace and number of employees to whom services of the health unit are available reflects, in part, the existence of more than one health unit in the larger establishments.

TABLE 4-3

SIZE OF WORKPLACE BY NUMBER OF EMPLOYEES TO WHOM SERVICES OF HEALTH UNIT ARE AVAILABLE: PERCENT DISTRIBUTION OF NURSES

Number of Employees to Whom Services of Health Unit Are Available	Number of Employees in Workplace					Total
	Under 250	250-499	500-999	1000-2499	2500 & over	
Under 250	100.0	4.0	1.2	0.7	1.1	6.7
250-499		96.0	4.9	2.3	3.0	16.5
500-999			93.9	6.6	4.3	22.9
1000-2499				90.4	9.6	26.0
2500 & over					82.0	27.9
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0
Number	485	1320	1932	2302	3118	9157
No Answer						443
Grand Total						9600

$\chi^2 = 27949.73$; df = 16; $p < .001$; $\bar{C} = .98$

Nursing Supervision

As the size of workplace increases, there is greater supervision of nurses in the health unit. Size is significantly related to all variables of nursing supervision displayed in Table 4-4.

TABLE 4-4

SUMMARY TABLE: PERCENT OF NURSES IN EACH SIZE WORKPLACE WHO REPORT SELECTED ASPECTS OF NURSING SUPERVISION

Nursing Supervision	Number of Employees in Workplace						Total	C*
	Under 250	250-499	500-999	1000-2499	2500-4900	5000 & over		
Health unit has supervisory nurse	+	60.3	62.9	67.6	72.4	83.1	72.2	.22
Health unit has no supervisory nurse but is supervised by nurse outside the unit	**	7.1	6.1	6.7	11.7	28.6	11.5	.32
Supervision of only nurse by nurse outside the unit	10.6	7.1	8.4	10.7	24.2	55.8	11.3	.40
Number of nurses supervised by supervisory nurse								.64
One	+	+	59.3	35.5	16.5	9.0	28.8	
Two to five	+	+	38.8	60.8	65.8	34.4	51.4	
Six or more	+	+	1.9	3.6	17.6	56.5	19.7	

*All correlations are based on the full crosstabulation and are statistically significant, $p < .001$.

+Excluded from analysis because of small number of cases and likelihood of error in answering question.

**Too few cases appeared in this category to treat separately; they are included in the next column which represents, in this instance, workplaces with up to 499 employees.

The questions regarding nursing supervision were asked of less than the total number of nurses who reported working in health units, since logically irrelevant groups were excluded. Therefore, the respondents will be specified in the discussion of each variable. Table 1 in Appendix IV gives by size of workplace the total respondents for each of the questions about nursing supervision, the numbers being the bases from which percents in Table 4-4 were computed.

Supervisory Nurse in Health Unit

The larger the workplace the more likely that the health unit has a supervisory nurse. The proportion of nurses reporting the presence of a supervisory nurse in the health unit increases steadily from approximately two-thirds in workplaces with less than 2,500 employees to four-fifths in workplaces of 5,000 or more.

These data are based on those nurses who reported more than one nurse in the health unit.

Supervision of Health Unit Which Has No Supervisory Nurse

The nurses who reported that there was no supervisory nurse in the health unit were asked whether the work of the nurses was supervised or directed by a nurse outside the unit. The same trend of increased supervision of nurses in larger workplaces appears here. About 7 percent of nurses in workplaces of less than 2,500 report outside supervision of the health unit, contrasted with 12 percent in the 2,500 to 4,999 employee workplace and 29 percent in workplaces of 5,000 or more.

Supervision of Only Nurse

Each nurse who reported being the only nurse in the health unit was asked whether she was supervised by a nurse outside the unit. Supervision of the only nurse also increases with size of workplace, the percent who are supervised roughly doubling in each size group above 1,000. Whereas 11 percent of only nurses in workplaces of 1,000 to 2,499 employees are supervised, 24 percent of those in workplaces of 2,500-4,999 employees and 56 percent of those in workplaces with 5,000 or more employees report outside supervision.

The relatively high proportion of only nurses in workplaces of less than 250 who report outside supervision may reflect the small independent subdivisions of large corporations which have well-developed occupational health programs. In such cases, the nurse would be the only nurse in her workplace, but would be supervised by a nurse consultant from the corporate medical director's office.

Number of Nurses Supervised

Respondents describing themselves as supervisory nurses were asked how many nurses were responsible to them. The majority of supervisory

nurses in all workplaces up to 5,000 employees supervise no more than five nurses. About 60 percent of supervisory nurses in workplaces of less than 1,000 employees supervise only one nurse, and about the same percent of nurses in workplaces of between 1,000 and 5,000 employees supervise two to five nurses. Only in the largest workplaces are nurses supervising fairly large staffs. The proportion of supervisory nurses who oversee six or more nurses increases from 5 percent or less in the workplaces with under 2,500 employees to almost 20 percent at the 2,500-4,999 level. In the largest workplaces, 5,000 and over, 57 percent of the supervisory nurses have as many as six nurses in their charge. The number of nurses supervised by the supervisory nurse reflects both the increased supervision in larger workplaces and the larger nursing staffs found there.

Medical Direction

In addition to the increased nursing services and greater nursing supervision which are associated with increasing size, there is also more medical direction in the larger workplaces. Table 4-5 displays variables of medical direction which will be discussed below.

TABLE 4-5

SUMMARY TABLE: PERCENT OF NURSES* IN EACH SIZE WORKPLACE WHO REPORT SELECTED ASPECTS OF MEDICAL DIRECTION

Medical Direction	Number of Employees in Workplace						Total	$\bar{C}$
	Under 250	250-499	500-999	1000-2499	2500-4999	5000 & over		
Physician is regularly present								.59+
Full time (35 or more hours/week)	6.0	2.6	5.8	15.0	38.4	66.3	23.7	
Not at all	60.6	55.7	46.3	28.7	17.2	10.7	33.0	
Physician is available on call	94.9	95.2	95.4	96.2	94.7	95.2	95.4	.03
Nurse has written standing orders	71.6	75.6	76.8	80.4	79.3	79.2	78.1	.07+

*See Table 2, Appendix IV, for total numbers of respondents from which the percentages are computed.

+$p < .001$, Correlations are based on the full distributions.

Regular Physician in Health Unit

The larger the workplace, the more often a physician is regularly present. Two-thirds of the nurses in workplaces with 5,000 or more employees have a full-time physician available, almost twice the percent found in the 2,500-4,999 employee workplace (38 percent), which in turn is more than double the percent (15 percent) found in workplaces of 1,000-2,499. Conversely, the smaller the workplace the more often the nurse reports having no regular physician. In this instance, the percentage variation among size of categories is much more gradual, decreasing from 61 percent of nurses in workplaces of less than 250 employees to 11 percent of nurses in workplaces of 5,000 and over. The greatest change occurs between workplaces of less than 1,000 employees and those with 1,000 or more.

Physician on Call

Size of workplace is unrelated to the availability of a physician on call. In each size workplace, 95 percent of nurses report that when a physician is not present they have access to a physician on call.

Written Standing Orders

However, size is associated with whether the nurse works under standing orders. A high percentage of all nurses (78 percent) have standing orders, but this is less often true for nurses working in small workplaces of under 250 employees and more often the case for nurses in workplaces of 1,000 or more employees.

Education, Experience, and Salary

The final set of variables has to do with the nurse's preparation for her job--her academic preparation, her specific experience as an occupational health nurse--and the salary she receives.

College Education

The distribution of nurses by college degree does not differ significantly among the various sized workplaces. As shown in Table 4-6, less than 10 percent of nurses in any size workplace have a college degree. Neither is the type of degree significantly related

TABLE 4-6

SIZE OF WORKPLACE BY COLLEGE DEGREE: PERCENT DISTRIBUTION OF NURSES

College Degree	Number of Employees in Workplace						Total
	Under 250	250-499	500-999	1000-2499	2500-4999	5000 & over	
Yes	6.8	6.0	5.8	6.0	7.6	7.8	6.6
No	93.2	94.0	94.2	94.0	92.4	92.2	93.4
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	557	1341	1945	2344	1324	2219	9730
No Answer							295
Grand Total							10025

$\chi^2 = 10.90$; df = 5; $.10 > p > .05$; $\bar{C} = .04$

to size of workplace. The nurses holding associate, baccalaureate, and graduate degrees are distributed among the workplaces in no consistent pattern.

Previous Experience as an Occupational Health Nurse

Highly experienced nurses, those who have worked for 15 or more years in occupational health, are found more often in larger workplaces. Over a third of all nurses in workplaces of 1,000 or more employees have had 15 or more years' experience (Table 4-7). On the other hand, the least experienced nurses, those with less than 5 years' experience, are fairly equally distributed among the workplaces, with the exception of an overrepresentation in workplaces of less than 250 employees. A fourth of the nurses in the smallest workplaces have spent less than 5 years as occupational health nurses, contrasted with 14 to 17 percent of those employed in the larger establishments.

TABLE 4-7

SIZE OF WORKPLACE BY YEARS OF EXPERIENCE AS AN OCCUPATIONAL HEALTH NURSE: PERCENT DISTRIBUTION OF NURSES

Years of Experience as an Occupational Health Nurse	Number of Employees in Workplace						Total
	Under 250	250-499	500-999	1000-2499	2500-4999	5000 & over	
Less than 5	24.4	16.8	16.7	15.1	16.5	14.1	16.1
5-9	28.1	29.7	27.2	25.5	23.9	24.9	26.2
10-14	22.4	23.9	24.7	24.0	23.3	25.8	24.4
15 or more	25.1	29.7	31.4	35.4	36.2	35.2	33.3
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	558	1359	1969	2373	1345	2223	9827
No Answer							198
Grand Total							10025

$\chi^2 = 75.08$; df = 15; $p < .001$; $\bar{C} = .10$

Annual Salary

Size of workplace shows a consistent relationship to salary of the occupational health nurse. The larger the workplace, the larger the proportion of nurses receiving high salaries (Table 4-8).

TABLE 4-8

SIZE OF WORKPLACE BY ANNUAL SALARY: PERCENT DISTRIBUTION OF NURSES

Annual Salary	Number of Employees in Workplace						Total
	Under 250	250-499	500-999	1000-2499	2500-4999	5000 & over	
Under $4,500	32.0	25.8	18.9	13.5	9.3	7.0	15.3
$4,500-$5,499	39.3	42.9	40.9	34.4	26.3	24.2	33.8
$5,500-$6,499	22.4	22.9	27.2	33.2	38.2	39.7	32.1
$6,500 and over	6.3	8.3	13.0	18.8	26.2	29.1	18.8
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	557	1351	1960	2337	1316	2171	9692
No Answer							333
Grand Total							10025

$\chi^2 = 942.26$; df = 15; $p < .001$; $\bar{C} = .34$

The extremes of the salary range show that nurses five times as often earn over $6,500 in the largest as in the smallest workplaces, and, at the other end of the scale, that they four times as often earn less than $4,500 in the smallest as in the largest workplaces.

These salary differentials are not, of course, related merely to size, but are reflecting also the greater age and experience of the nurse and the more responsible positions available in the larger workplaces.

Summary

Size of workplace is positively associated at the .001 level of significance with all study variables except those dealing with college education and the availability of a physician on call.

The variables showing the highest degree of association with size of workplace are the number of employees to whom health services are available ($\bar{C}$ = .98), the number of nurses in the health unit (.73), the number of nurses supervised by the supervisory nurse (.64), and the number of hours a physician is regularly present in the health unit (.59).

Lower correlations are found between size of workplace and outside supervision of the only nurse (.40), outside supervision of the health unit (.32), and annual salary (.34).

CHAPTER 5

DIFFERENCES AMONG MAJOR INDUSTRY GROUPS

This chapter presents data on the variations among three major groups of industries--manufacturing, nonmanufacturing, and government--in the distribution of nurses according to the characteristics of the health unit in which they work, the extent of nursing supervision and medical direction which they receive, and their professional background and salary. First a statistical summary will be presented; then the qualitative differences will be discussed in detail beginning on page 60.

The preceding chapter has shown that size of workplace is related to virtually all study variables, including the type of industry group in which the nurse worked.[1] Therefore, in order to find out whether type of industry group is independently related to the study variables, size of workplace will be controlled. This is accomplished in the following analysis by comparing for each of the study variables the distribution of nurses among the three types of industry groups in workplaces of the same size. By holding size constant, whatever relationship size has with the study variable is ruled out, thereby permitting investigation of the relationship between type of industry group and the study variable, independent of the association of size with both the study variable and type of industry group.[2]

---

[1]Size shows a very low, but significant, association with type of industry group ($\bar{C} = .16$), the main variation being that nurses working for government are somewhat more likely to be in large workplaces and less likely to be in small ones than nurses in the other two industry groups.

[2]For example, if we were considering the type of health unit in which the nurse worked, the question would be whether nurses who worked in the same sized workplaces but in different industry groups were similarly distributed among the various types of health units. If, for a given size of workplace, the proportions of nurses who worked in the chief, the satellite, and the only health unit were approximately the same in each of the three industry groups, we would say that the type of industry in which the nurse worked did not affect the likelihood of her working in any particular kind of health unit. If, on the other hand, a larger proportion of nurses in one industry group worked in a certain kind of health unit, we would say that the type of industry in which the nurse worked did have some effect on the kind of health unit in which she was likely to be employed. If these differences were statistically significant (indicated by superscripts in Table 5-1), we would conclude that the two variables, type of industry group and type of health unit, were related. The extent of the association would be indicated by the magnitude of the correlations: the higher the correlation, the larger the degree of association between the variables. A similar comparison would be made within each of the other size categories. For further discussion, see Appendix II.

TABLE 5-1

CORRELATIONS (C) OF SIZE OF WORKPLACE AND TYPE OF INDUSTRY GROUP WITH STUDY VARIABLES

Study Variables	Size of Workplace	Type of Industry Group All Sized Workplaces	Type of Industry Group — Number of Employees in Workplace				
			Under 500	500-999	1000-2499	2500-4999	5000 & over
The Health Unit							
Type of health unit	.56**	.11**	.13+	.13+	.12+	.09	.26**
Number of nurses in health unit	.73**	.12**	.20**	.19**	.25**	.35**	.18**
Number of employees with access to health unit	.98**	.17**	.13**	.13**	.09	.07	.21**
Nursing Supervision							
Supervisory nurse in health unit	.22**	.17**	a	.26**	.15**	.08	.17**
Number of nurses supervised by supervisory nurse	.64**	.14*	b	a	.22**	.27*	.20*
Outside supervision of health unit	.32**	.08	a	a	.15*	.15	.29*
Outside supervision of only nurse	.40**	.22**	.25**	.19**	.26**	.23	.18
Medical Direction							
Number of hours physician is regularly present in health unit	.59**	.21**	.30**	.33**	.23**	.23**	.12*
Physician available on call	.03	.24**	.17**	.28**	.22**	.30**	.29**
Written standing orders in health unit	.07**	.08**	.09*	.08*	.09+	.11*	.12+
Professional Background and Salary							
College degree	.04	.11**	.13**	.13**	.09*	.09	.11+
Number of years experience as occupational health nurse	.10**	.07**	.08	.08	.11+	.10	.10*
Annual salary	.34**	.20**	.23**	.28**	.17**	.17**	.17**

*p < .05
+p < .01
**p < .001

[a]Too few cases to analyze separately; cases are included in next size category.
[b]Excluded from analysis because of likelihood of error in answering question.

Table 5-1 shows in the first column the correlation of each variable with size of workplace. The second column shows the correlation of type of industry group and the study variables when workplaces of all sizes are considered as a group. The remaining columns show the correlations of industry group and the study variables with size of workplace controlled, that is, the association between type of industry group and the study variables based on workplaces of a given size.[3] It is this section of the table that is of primary interest.

This final section of Table 5-1 provides several kinds of information. First, it shows in which sized workplaces the industry groups differ significantly with respect to the study variables (as indicated by the superscripts). It is apparent that there are significant differences among industry groups with respect to most variables in the majority of workplaces.

Second, it permits comparison of the relative association between type of industry group and the study variables within each size workplace and across workplaces of different sizes. In some cases there is greater variation among industry groups in small workplaces; in others, the industry groups in the larger workplaces vary more with respect to a given variable. The specific variations are discussed in detail in the sections which follow.

Third, it is possible to compare the relative association of size and of type of industry group with the study variables. In most cases, there is a considerable difference in the magnitude of the correlations. Size, in general, shows a higher correlation with the study variables than industry group; this is true for all variables except the availability of a physician on call, the existence of written standing orders, and the possession of a college degree. Though most of the industry correlations are statistically significant, the associations are of a low order.

The remaining tables in this chapter permit consideration of two additional questions:

1. Looking at each table separately, how consistently does an industry group rank in a given position with respect to a study variable, regardless of size of workplace?

2. Considering all tables, do any patterns emerge which permit a general characterization of the three industry groups?

---

[3]Questions which were asked of subgroups rather than of the whole sample sometimes did not provide sufficient cases to permit comparisons within the size groups. These questions will have no entries in the control section of Table 5-1. Also because there were few nurses from small government workplaces, it was sometimes necessary to combine size categories.

The first question is dealt with in the discussion of each table. Briefly, the relative positions of the industry groups as tested by the Friedman two-way analysis of variance by ranks were statistically significant for only five variables: the type of health unit in which the nurse worked, the availability of a physician on call, the nurse's annual salary, college degree, and length of experience as an occupational health nurse. Nevertheless, despite lack of statistical significance for all variables, the data do show some fairly consistent variations among the industry groups. These are summarized at the end of the chapter by way of answering the second question.

The reader should keep in mind that all the data in this report refer to the occupational health nurses who responded to the survey. In this chapter the nurses have been grouped according to the type of industry and the size of the establishment in which they work. Since, in discussing the findings, it is cumbersome to refer repeatedly to "nurses who work in manufacturing industries," "nurses who work in nonmanufacturing industries," and "nurses who work in government," only the terms "manufacturing," "nonmanufacturing," and "government" will be used. Of course, no attempt is being made to characterize all such establishments but only those represented in the survey.

Organization of Health Unit

Type of Health Unit

Although the majority of nurses in all three industry groups work in the only health unit in the workplace, government nurses are least likely to be found there. As shown in Table 5-2, government is consistently lowest in proportion of nurses working in the only health unit except in the workplace with more than 5,000 employees. Note that this is the only size workplace in which at least two-thirds of the nurses in all industry groups do not work in the only health unit.

TABLE 5-2 .

PERCENT OF NURSES FROM EACH TYPE INDUSTRY GROUP OF A GIVEN SIZE WHO WORK IN THE ONLY HEALTH UNIT IN THE WORKPLACE

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	95.4	90.4	82.5
500-999	92.5	92.9	79.4
1000-2499	82.3	82.6	68.8
2500-4999	65.0	64.9	62.9
5000 & over	22.9	43.3	38.4

$\chi^2_r = 5.20$; $p = .093$

Notes: 1) Each cell entry in this and succeeding tables in Chapter 5 is read in the following manner: ____ percent of nurses in ____ industries of ____ employees have whatever characteristic is specified in the table title. For example, using the first cell entry, 95.4 percent of nurses in manufacturing industries of under 500 employees work in the only health unit in the workplace.

2) For all tables in this chapter, there are corresponding tables in Appendix V which show for each cell the number of cases on which the percent is based. The number of government nurses in workplaces of under 500 employees is, in each table, less than 50.

As shown in Table 5-3, in all but the largest workplaces, nurses in government are more often employed in one of multiple units: a chief health unit, a satellite unit, or an independent unit. In the largest workplaces, manufacturing industries have the highest proportion of nurses working in one of multiple units, almost 75 percent compared with around 55 percent of nurses in government and in nonmanufacturing.

TABLE 5-3

PERCENT OF NURSES FROM EACH TYPE INDUSTRY GROUP OF A GIVEN SIZE WHO WORK IN A CHIEF, SATELLITE, OR INDEPENDENT HEALTH UNIT

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	3.7	6.4	7.5
500-999	6.3	5.7	14.7
1000-2499	16.6	15.6	26.1
2500-4999	33.7	33.6	35.3
5000 & over	72.3	51.8	56.8

$\chi^2_r = 6.40$; $p = .039$

Size of Nursing Staff

In small workplaces, government nurses more often work on large staffs. About 16 percent of government nurses in workplaces of less than a thousand employees work on staffs of four or more nurses, contrasted with less than 10 percent of nurses in manufacturing and nonmanufacturing industries (Table 5-4).

However, in workplaces with more than 1,000 employees, manufacturing industries consistently have a higher proportion of nurses working on large staffs than do either nonmanufacturing or government. In each successive size group of 1,000 or more employees, nurses in manufacturing show the following percentages working on staffs of four or more nurses: 34 percent, 70 percent, and 83 percent. The other two industry groups show roughly 20 percent, 40 percent, and 80 percent in their respective size categories. Although there are sizable differences between manufacturing and the other two industry groups in the first two size categories, in the last, the disparity is less great.

TABLE 5-4

PERCENT OF NURSES FROM EACH TYPE INDUSTRY GROUP OF A GIVEN SIZE WHO WORK IN HEALTH UNITS OF FOUR OR MORE NURSES

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	2.6	5.7	15.4
500-999	7.8	3.8	16.7
1000-2499	33.9	18.0	23.1
2500-4999	70.4	39.2	37.7
5000 & over	83.0	77.5	76.8

$\chi^2_r = 1.60$; $p = .522$

As the size of workplace increases, all industries show an increase in proportion of nurses working on large staffs (four or more nurses), but there is relatively greater change among nurses in manufacturing than in nonmanufacturing and least among those in government. That is, the differences between large and small government workplaces in size of nursing staff are less than in other industry groups.

Nursing Supervision

Supervisory Nurse in Health Unit

In all sized workplaces, nurses in manufacturing industries least often work with a supervisory nurse (Table 5-5). However, the differences among industry groups are statistically significant only in the largest workplaces, those with over 2,500 employees.

TABLE 5-5

PERCENT OF NURSES FROM EACH TYPE INDUSTRY GROUP OF A GIVEN SIZE WHO HAVE A SUPERVISORY NURSE IN THE HEALTH UNIT

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 1000	58.1	75.9	93.5
1000-2499	65.5	79.9	69.0
2500-4999	70.9	77.7	75.8
5000 & over	80.1	88.6	91.7

$\chi^2_r = 6.00$; $p = .069$

The likelihood of there being a supervisory nurse in the health unit tends to increase in all industry groups with increased size of workplace. The trend is most regular among the manufacturing workplaces where the proportion of nurses reporting a supervisory nurse increases from 58 percent in workplaces of less than 1,000 employees to 80 percent in workplaces with 5,000 or more workers. Government workplaces show the same general tendency excluding the under-1,000-employee category which may be misleadingly high because of the small number of cases represented. Size seems to make the least difference in nonmanufacturing workplaces. Between 75 and 80 percent of the nurses in all size workplaces of less than 5,000 employees have a supervisory nurse, compared with about 90 percent of nurses in the largest workplaces.

Staffing Patterns in Units With Supervisory Nurses

Nurses working in health units which had supervisory nurses were asked whether they themselves were supervisors or staff nurses. Assuming there is no response bias, that is, if the staff and supervisory nurses have responded in about the same proportions as they exist in the population represented in our study, then the proportion of staff nurses should give some indication of the staffing patterns in health units with supervisory nurses.

TABLE 5-6

PERCENT OF NURSES FROM EACH TYPE INDUSTRY GROUP OF A GIVEN SIZE WHO ARE STAFF NURSES IN HEALTH UNITS WHICH HAVE A SUPERVISORY NURSE

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 1000	49.5	47.5	55.2*
1000-2499	60.9	53.3	51.0*
2500-4999	72.5	59.2	60.0
5000 & over	77.0	66.4	69.4

$\chi^2_r = 4.50$; $p = .125$

*Based on less than 50 cases

As can be seen from Table 5-6, in all workplaces with 1,000 or more employees, a higher proportion of nurses in manufacturing than in the other industries report being staff nurses. The difference among industry groups is least in the largest sized category.

The proportion who are staff nurses increases with size of workplace in all industry groups, although the increase is greater for manufacturing than for the other industry groups.

Supervision of Only Nurses

Except in the largest workplaces (5,000 and over), government nurses report outside supervision two to four times as often as nurses in other industry groups (Table 5-7). The differences among industry groups are greatest in the small workplaces.

TABLE 5-7

PERCENT OF ONLY NURSES FROM EACH TYPE INDUSTRY GROUP OF A GIVEN SIZE WHO HAVE OUTSIDE SUPERVISION

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	6.7	15.5	32.0
500-999	7.2	10.1	26.2
1000-2499	9.0	7.4	26.8
2500-4999	21.1	18.5	38.9
5000 & over	60.0	48.1	45.0

$\chi^2_r = 2.80$; $p = .367$

At the 5,000-employee level, all industries show a substantial increase in proportion of only nurses reporting outside supervision, but the greatest change occurs in manufacturing. Manufacturing now exceeds the other industry groups in proportion of only nurses who are supervised.

Medical Direction

Full-Time Physician

As one would expect, nurses in all industry groups are more likely to work with a full-time physician in the larger workplaces (Table 5-8). But in all sized workplaces, government nurses more often than those in other industry groups have a physician available full time.

TABLE 5-8

PERCENT OF NURSES FROM EACH TYPE INDUSTRY GROUP OF A GIVEN SIZE WHO WORK WITH A FULL-TIME PHYSICIAN (35 OR MORE HOURS WEEKLY)

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	1.6	11.3	17.5
500-999	3.0	13.8	27.9
1000-2499	12.3	20.7	31.6
2500-4999	39.1	31.1	47.9
5000 & over	64.5	70.9	70.5

$\chi^2_r = 5.20$; $p = .093$

With increased size of workplace, relative differences among industries are reduced. Whereas in workplaces of 500-1,000 employees, government nurses nine times as often as manufacturing nurses and twice as often as nonmanufacturing nurses report a full-time physician, in workplaces with 5,000 or more employees, government and nonmanufacturing are identical and manufacturing is only somewhat lower.

TABLE 5-9

PERCENT OF NURSES FROM EACH TYPE INDUSTRY GROUP OF A GIVEN SIZE WHO HAVE NO REGULAR PHYSICIAN AVAILABLE IN HEALTH UNIT

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	58.5	51.8	42.5
500-999	47.7	39.6	41.2
1000-2499	27.3	32.3	39.0
2500-4999	15.4	19.3	31.6
5000 & over	10.9	8.3	14.2

$\chi_r^2 = 1.60$; $p = .522$

Physician Not Regularly Present

In the smaller workplaces (under 1,000 employees) nurses in manufacturing most often have no physician regularly available in the health unit, but in the larger workplaces government nurses most often work with no regular medical direction (Table 5-9).

Part-Time Physicians

Some nurses, of course, worked with a physician who was regularly present for a specified number of hours less than 35. Since Tables 5-8 and 5-9 together account for the greater part of government nurses, relatively fewer of them than of nurses in private industry work with only part-time medical direction.

On-Call Physicians

Regardless of size of workplace the great majority of nurses in all industries who have no regular physician do have a physician available on call. Nurses who work in manufacturing establishments of all sizes are more likely than those in nonmanufacturing or government to have a physician on call. This is probably related to the fact that, as shown in Table 5-8, nurses in manufacturing industries least often have a full-time physician available, Thus, they are more often limited to the on-call physician who is available for emergencies.

TABLE 5-10

PERCENT OF NURSES FROM EACH TYPE INDUSTRY GROUP OF A GIVEN SIZE WHO HAVE A PHYSICIAN ON CALL

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	96.2	90.7	84.6
500-999	97.6	89.4	81.8
1000-2499	97.2	95.1	84.4
2400-4999	96.9	89.4	80.8
5000 & over	97.1	93.6	82.8

$\chi^2_r = 10.00$; $p < .001$

Standing Orders

In workplaces of most sizes, government nurses are somewhat more likely to have written standing orders in their health units (Table 5-11). Nurses in manufacturing more often have standing orders than do those in nonmanufacturing. In about 90 percent of the cases, the standing orders are signed by a physician. Neither size nor type of industry is consistently related to whether the orders are signed.

TABLE 5-11

PERCENT OF NURSES FROM EACH TYPE INDUSTRY GROUP OF A GIVEN SIZE WHO HAVE WRITTEN STANDING ORDERS

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	75.7	68.4	77.5
500-999	77.7	71.6	80.3
1000-2499	81.5	77.9	71.4
2500-4999	80.8	72.1	80.9
5000 & over	79.5	73.5	86.2

$\chi^2_r = 5.20$; $p = .093$

Education, Experience, and Salary

College Degree

In all but the smallest workplaces, nonmanufacturing has a higher proportion of nurses with college degrees, roughly 10 percent of nurses in nonmanufacturing compared with no more than 7 percent in any size workplace in manufacturing (Table 5-12). Government is most variable, ranging from 5 percent to 14 percent.

TABLE 5-12

PERCENT OF NURSES FROM EACH TYPE INDUSTRY GROUP OF A GIVEN SIZE WHO HAVE COLLEGE DEGREES

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	5.1	10.0	14.0
500-999	4.7	9.8	8.6
1000-2499	5.2	8.8	8.1
2500-4999	7.2	10.7	5.0
5000 & over	6.7	11.6	11.5

$\chi^2_r = 6.40$; $p = .039$

Experience in Occupational Health

One-third of the nurses in the survey reported 15 or more years of experience in occupational health nursing and over half had had 10 or more years' experience. Table 5-13 shows the distribution of nurses with 15 years' experience. The relative positions of the industry groups are essentially the same using either 10 or 15 years as the measure of experience.

In every size workplace nurses in manufacturing more often report long-term experience, although, in some cases, the variation among industry groups is small. The greatest differences occur in workplaces with less than 500 employees, where 29 percent of nurses in manufacturing but only 16 percent of those in government have long experience. This contrasts with roughly a third of the nurses in all other sized workplaces.

TABLE 5-13

PERCENT OF NURSES FROM EACH TYPE INDUSTRY GROUP OF A GIVEN SIZE WHO HAVE AT LEAST 15 YEARS EXPERIENCE

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	29.4	26.3	15.9
500-999	31.8	29.5	31.4
1000-2499	36.8	32.0	28.4
2500-4999	37.9	29.7	31.5
5000 & over	36.2	31.3	30.0

$\chi^2_r = 7.60$; $p = .024$

Salary

Government nurses most often earn high salaries (Table 5-14). About one-third or more of the government nurses in each size workplace report annual salaries of at least $6,500, contrasted with less than 20 percent of other nurses in workplaces of less than 2,500, and between 23 and 30 percent in workplaces of 2,500 or more.

The salary differential is greatest in the smaller workplaces. In workplaces of less than 1,000 employees, government nurses at least three times as often as other nurses make $6,500 or more. In the larger workplaces the differential is reduced to about 10 percent.

TABLE 5-14

PERCENT OF NURSES FROM EACH TYPE INDUSTRY GROUP OF A GIVEN SIZE WHO HAVE AN ANNUAL SALARY OF $6,500 OR MORE

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	6.6	10.2	28.9
500-999	11.5	13.2	49.3
1000-2499	19.1	13.6	32.2
2500-4999	26.1	22.5	32.3
5000 & over	27.7	30.4	36.7

$\chi^2_r = 7.60$; $p = .024$

The larger the workplace the higher the proportion of nurses earning high salaries. Both manufacturing and nonmanufacturing industries show a consistent increase in proportion of nurses earning $6,500 or more, from roughly 10 percent in small workplaces to about 30 percent in the largest. The trend is less consistent for government and there is much less variation among the different sized workplaces.

On the other hand, relatively more nurses in nonmanufacturing than in other industries have low salaries (Table 5-15). In each sized workplace except the largest, nonmanufacturing exceeds manufacturing which in turn is higher than government in the proportion of nurses earning less than $4,500 per year.

TABLE 5-15

PERCENT OF NURSES FROM EACH TYPE INDUSTRY GROUP OF A GIVEN SIZE WHO HAVE AN ANNUAL SALARY OF LESS THAN $4,500

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	26.7	35.2	4.4
500-999	18.3	23.7	1.4
1000-2499	13.2	17.7	5.5
2500-4999	8.8	13.7	5.6
5000 & over	7.9	6.7	1.0

$\chi^2_r = 8.40$; $p < .01$

Few government nurses in any size workplace report earning less than $4,500 annually. There is little variation among the different sized workplaces in the proportion of nurses earning low salaries, and there is no consistent decline in this proportion as the size of workplace increases. Size of workplace could, of course, be expected to have less effect in government because of standard salary schedules.

Summary

Government nurses in this survey tended to have a more highly structured work environment. They were more likely than other nurses to work where there was more than one health unit and to be members of large nursing staffs. They tended to have more nursing supervision as well as more full-time medical direction. They also more often earned high salaries.

Nurses who worked in manufacturing industries tended to have least nursing supervision. They were least likely to have a supervisory nurse in the health unit, but when there was a supervisory nurse, the ratio of staff to supervisory nurses was higher than in other industry groups. These nurses tended to be more experienced.

In general, the industry groups tended to be more similar in the larger workplaces; that is, as the size of workplace increased, the differences among industry groups with respect to the study variables decreased.

Within each industry group, there was often considerable variation by size of workplace. Least difference between large and small workplaces was found in government.

Although there are significant differences among industry groups of the same size in the characteristics of the health units and the background of the nurses working in them, the industry groups do not show consistent patterns in all sized workplaces, except with respect to the type of health unit in which the nurse worked, the availability of a physician on call, and the nurse's education, experience in occupational health nursing, and salary.

CHAPTER 6

PRESENT POSITION OF THE NURSE

The occupational health nurses hold various positions, most of them in health units but some in other work situations. These positions will be described below. Then the nurses who occupy the different positions, or statuses,[1] will be compared with respect to their personal characteristics such as age and education, their previous work experience, and their present working conditions.

Classification of Positions

On the basis of their answers to a series of questions, the nurses were classified by present position as only nurse, unsupervised staff nurse, supervised staff nurse, supervisor, consultant, and visiting nurse. First, nurses who themselves gave direct health services to employees or who supervised nurses who gave direct services were separated from those who did not give direct services. Those who gave direct services then identified themselves as working in health units or working as visiting nurses. The visiting nurses were excluded from the status analysis.

The nurses who worked in health units were further classified in the following way. The nurse working in a health unit having only one nurse was labeled the only nurse. The nurse who was working in a health unit with one or more other nurses but no nurse supervisor was considered an unsupervised staff nurse. A nurse who reported having a supervisory nurse in the health unit was asked to identify herself as either 1) a staff nurse or 2) a nurse supervisor, director or charge nurse. A nurse in the second group was called a supervisor. Finally, a nurse who did not give direct health services and who reported her present position as either consultant in an official (government) agency or consultant in an unofficial (commercial or other) agency was classified as consultant.

In the sections which follow, it will be seen that the nurses differed significantly by position on all but one variable, the highest degree held.

---

[1] "Status" used in this sense refers to a position in a group, and the two terms "status" and "position" are used interchangeably.

Age

As a group occupational health nurses are older than other nurses, the median age of 48 being 8 years higher than the median age for all professional registered nurses. By position, the older nurses tend to be those with greater responsibility. The supervisors are oldest, the staff nurses youngest, with the only nurses and consultants falling between supervisors and staff nurses in age. As Table 6-1 shows, half the supervisors are 50 or over, compared with about 45 percent of consultants and only nurses, and somewhat over a third of staff nurses. The unsupervised staff nurses are slightly older than the supervised.

TABLE 6-1

PRESENT POSITION BY AGE:
PERCENT DISTRIBUTION OF NURSES

Age in Years	Present Position					Total
				Staff Nurse		
	Consultant	Only Nurse	Supervisor	Supervised	Unsupervised	
Under 40	20.3	19.5	14.0	27.6	23.9	21.6
40-49	37.3	34.6	35.6	37.8	37.0	36.0
50 or over	42.5	46.0	50.4	34.7	39.2	42.4
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0
Number	212	3639	1304	2417	1453	9025
No Answer						18
Grand Total						9043

$\chi^2 = 175.36$; $df = 16$; $p < .001$; $\bar{C} = .16$. (Only 4.1 percent of nurses were under 30; 6.2 percent were 60 and over. The full age distribution was used in computing χ^2.)

College Education

Consultants tend to be better educated than occupational health nurses in other positions; 20 percent of them hold college degrees. This is twice the proportion found among supervisors, and three times that of the other statuses (Table 6-2).

TABLE 6-2

PRESENT POSITION BY COLLEGE DEGREE:
PERCENT DISTRIBUTION OF NURSES

College Degree	Present Position					Total
				Staff Nurse		
	Consultant	Only Nurse	Supervisor	Supervised	Unsupervised	
Yes	20.2	6.0	9.3	6.5	5.5	6.9
No	79.8	94.0	90.7	93.5	94.5	93.1
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0
Number	213	3582	1289	2392	1442	8918
No Answer						125
Grand Total						9043

$\chi^2 = 80.17$; df = 4; $p < .001$; $\bar{C} = .13$

Among occupational health nurses holding <u>any</u> college degree, there is by position the same relative order for those with graduate degrees as obtained at the baccalaureate level: about 20 percent of consultants, 12 percent of supervisors, and less than 10 percent of the other statuses. On the other hand, the proportion with associate degrees was highest among supervised staff nurses. A third of supervised staff nurses reported an associate degree, contrasted with less than a fourth of those in other positions (Table 6-3).

TABLE 6-3

PRESENT POSITION BY HIGHEST DEGREE:
PERCENT DISTRIBUTION OF NURSES WITH COLLEGE DEGREES

Highest Degree	Present Position					Total
				Staff Nurse		
	Consultant	Only Nurse	Supervisor	Supervised	Unsupervised	
Associate	23.3	24.0	20.2	32.4	19.5	24.6
Bachelor	58.1	66.8	68.0	60.6	74.0	65.9
Graduate	18.6	9.2	11.8	7.0	6.5	9.5
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0
Number	43	208	119	142	77	589
No Answer						23
Grand Total						612

$\chi^2 = 13.27$; df = 8; .20 > p > .10; $\bar{C} = .18$

Annual Salary

In general, the salary data follow the usual principle in a status hierarchy that greater responsibility is accompanied by greater reward. The supervisors earn more than the staff nurses; the unsupervised staff nurses more than the supervised. The median salary for supervisors is $6,343, over $600 more per year than the median salaries for staff nurses. Almost half of the supervisors report an annual salary of at least $6,500 contrasted with 20 percent of the unsupervised staff nurses and 16 percent of the supervised (Table 6-4).

TABLE 6-4

PRESENT POSITION BY ANNUAL SALARY:
PERCENT DISTRIBUTION OF NURSES

Annual Salary	Present Position					Total
				Staff Nurse		
	Consultant	Only Nurse	Supervisor	Supervised	Unsupervised	
Under $4,500	18.5	20.8	4.8	13.6	12.1	15.1
$4,500-$5,499	27.0	41.3	20.2	32.3	30.6	33.8
$5,500-$6,499	28.4	27.5	29.8	37.7	37.4	32.2
$6,500 or more	26.1	10.3	45.3	16.4	19.9	18.9
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0
Number	211	3608	1284	2375	1413	8891
No Answer						152
Grand Total						9043
Median Salary	$5,658	$5,206	$6,343	$5,610	$5,694	$5,531

$\chi^2 = 1012.60$; df = 12; $p < .001$; $\bar{C} = .37$

In two respects, however, the data run counter to this trend. First, the only nurses, who work alone with no nursing supervision and often no medical direction, are least well paid of all statuses. The median salary is $5,206. Only 10 percent earn $6,500 a year. Twice as many make less than $4,500. However, nurses working alone are more likely to work in small industries which pay low salaries. Secondly, the consultants who could be expected to have greater responsibility than the supervisors are considerably less well paid, their median salary being less than staff nurses. A fourth of them earn $6,500, a fifth less than $4,500. In proportion receiving low salaries they are thus comparable to only nurses. Although the data permit no certain explanation, there is some evidence that not all nurses who report themselves as consultants are actually engaged in consulting with physicians and nurses about the development of occupational health programs. Without such responsibility, salaries could be expected to be lower.

Previous Experience

Previous Professional Positions

Nurses in all positions have had broad professional work experience. Three-fourths or more of those in each status have worked as hospital staff nurses, almost two-thirds have been private duty nurses, about half of them have been supervisory nurses in a hospital or clinic, and well over a third have previously worked as occupational health nurses (Table 6-5).

Despite underlying similarities, however, each status emerges with a particular configuration of past experience. Comparison of all statuses shows the following rank order in terms of over-all experience: consultants, only nurses, supervisors, unsupervised staff nurses, and, last, supervised staff nurses.

TABLE 6-5

PRESENT POSITION BY ALL PREVIOUS PROFESSIONAL POSITIONS: PERCENT DISTRIBUTION OF NURSES

Previous Professional Positions	Present Position					Total
				Staff Nurse		
	Consultant	Only Nurse	Supervisor	Supervised	Unsupervised	
Hospital or Clinic:						
Staff Nurse	79.0	75.8	72.7	82.7	81.0	78.1
Head or Supervisory Nurse	55.6	52.7	54.0	44.5	46.8	49.8
Public Health:						
Staff Nurse	17.3	12.5	11.4	10.5	9.8	11.5
Senior or Supervisory Nurse	7.5	2.9	2.8	1.9	1.1	2.5
Occupational Health Nurse	48.6	46.0	41.9	38.1	38.1	42.1
Private Duty Nurse	56.1	64.9	60.1	58.0	60.3	61.4
Doctor's Office Nurse	24.8	36.2	27.7	29.3	28.7	31.6
Other	18.7	14.5	14.6	13.3	13.3	14.1
Total Number	214	3640	1302	2414	1454	9024
No Answer						19
Grand Total						9043

$\chi_r^2 = 6.70$; $p < .05$

Consultants tend to have had the most varied background in nursing. They outrank all other positions in proportions who have held public health and occupational health positions. They have also most often worked as supervisory nurses in a hospital or clinic. Of all nurses they are least

likely to have worked as a private duty or doctor's office nurse. Thus, the consultants more often than other nurses have had previous experience in those types of positions which best prepare them for consultation in occupational health.

The staff nurses, whether supervised or unsupervised, have had the least diversified experience, the supervised and unsupervised being virtually identical in proportions reporting each type of previous position. Compared with other statuses, the staff nurses least often have had public health or occupational health positions and have least often held supervisory positions in a hospital or clinic. However, they outrank all other statuses in proportions who have worked as staff nurses in hospitals or clinics and are second to the only nurse in proportions reporting private duty and doctor's office nursing.

Supervisors have had more experience than staff nurses, but less than consultants in all types of positions except private duty and doctor's office nursing. Their experience in these last two positions parallels that of the staff nurses.

Only nurses are similar to supervisors in hospital and in public health experience, although the only nurses have more often worked in occupational health. They exceed all other positions in proportions who have worked as private duty and doctor's office nurses, indicating perhaps some preference for working alone.

Length of Experience

Supervisors have worked longer in occupational health than nurses in other statuses. Half of them have worked in the field for 15 or more years, three-fourths for at least 10 years (Table 6-6).

TABLE 6-6

PRESENT POSITION BY TOTAL NUMBER OF YEARS NURSE HAS WORKED AS AN OCCUPATIONAL HEALTH NURSE: PERCENT DISTRIBUTION OF NURSES

Total Number of Years Worked As Occupational Health Nurse	Present Position					Total
				Staff Nurse		
	Consultant	Only Nurse	Supervisor	Supervised	Unsupervised	
2 or less	7.5	5.1	1.5	6.9	5.5	5.2
3-4	11.8	12.1	5.1	13.4	11.5	11.3
5-9	25.9	26.8	18.3	30.9	26.9	26.7
10-14	24.5	24.1	22.0	25.5	25.9	24.5
15 or more	30.2	31.9	53.2	23.3	30.1	32.3
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0
Number	212	3623	1302	2408	1451	8996
No Answer						47
Grand Total						9043

$\chi^2 = 403.92$; df = 16; $p < .001$; $\bar{C} = .23$

Staff nurses least often have worked as long as 15 years in the field. A fifth of them have less than 5 years experience.

The remaining statuses--only nurse, unsupervised staff nurse, and consultant--are similar in proportions with long service, though consultants rank first in proportion of nurses who have been in the field for less than 5 years. In this respect they are similar to the staff nurses.

Number of Previous Occupational Health Positions

In all occupations there tends to be greater turnover in the lower-ranking positions. In the survey data, staff nurses have more often held several previous occupational health positions than have supervisors.

The only nurse is even higher in this respect. Since she was least well paid, this mobility might reflect, among other things, an attempt to improve her economic position.

Consultants seem to contradict the above principle, since, though in most occupations they normally occupy the highest status, they here show the greatest mobility. The mobility in this case may well be related to the same considerations mentioned earlier with respect to salary, i.e., that some of the consultants may be in positions which have minimal nursing responsibilities and are poorly paid.

TABLE 6-7

PRESENT POSITION OF NURSES WHO HAVE PREVIOUSLY WORKED AS OCCUPATIONAL HEALTH NURSES BY NUMBER OF SUCH PREVIOUS POSITIONS: PERCENT DISTRIBUTION OF NURSES

Number of Previous Positions As Occupational Health Nurse	Present Position					Total
				Staff Nurse		
	Consultant	Only Nurse	Supervisor	Supervised	Unsupervised	
One	47.8	52.0	61.2	57.7	57.6	55.4
Two	25.0	26.2	23.1	24.3	23.4	24.9
Three or more	27.2	21.8	15.7	18.0	19.0	19.8
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0
Number	92	1495	467	784	479	3317
No Answer						478
Grand Total						3795

$\chi^2 = 21.20$; df = 8; .01 > p > .001; $\bar{C} = .10$

Previous Work Unit

In an attempt to see whether there was continuity in the nurses' selection of type of working environment, each nurse who had come directly from another position in occupational health nursing was asked

about the type of health unit in which she had previously worked: was it a health unit in which she was the only nurse or a unit in which she worked with other nurses?

TABLE 6-8

PRESENT POSITION BY TYPE OF PREVIOUS WORK UNIT: PERCENT DISTRIBUTION OF NURSES WHOSE LAST PREVIOUS POSITION WAS AS AN OCCUPATIONAL HEALTH NURSE

Type of Previous Work Unit	Present Position					Total
				Staff Nurse		
	Consultant	Only Nurse	Supervisor	Supervised	Unsupervised	
Health unit in which respondent was the only nurse	46.9	47.9	28.6	32.5	37.7	39.8
Health unit in which respondent worked with one or more other nurses	46.9	49.8	69.6	64.9	59.8	57.8
Other	6.2	2.3	1.8	2.6	2.5	2.4
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0
Number	49	937	336	493	281	2096
No Answer						88
Grand Total						2184

$\chi^2 = 61.41$; df = 8; $p < .001$; $\bar{C} = .21$

As shown in Table 6-8, supervisors and staff nurses were more likely to have come from a health unit with several nurses. On the other hand, only nurses and consultants came as often from single-

as from multi-nurse units. Consultants, however, had a slightly higher proportion of nurses coming from some "other" type of work unit.

Summary of Occupational Health Experience

Consultants are most likely to have had previous occupational health experience and to have held more different jobs than those in other statuses.

Only nurses are next most likely to have had previous occupational health experience and to have held numerous jobs, though the length of service is average.

Although supervisors are less likely than consultants or only nurses to have previously held occupational health positions, those who have, have worked longer in the field and at fewer jobs than have those in other positions.

Staff nurses are least likely to have had previous occupational health experience. Those who have, have held more different occupational health positions than the supervisors but not so many as consultants and only nurses. Of all statuses the supervised staff nurse least often has long service.

Present Working Conditions

Type of Industry

Although three-fourths of all nurses in the survey work in manufacturing industries, the positions are not equally represented in all industry groups (Table 6-9).

TABLE 6-9

PRESENT POSITION BY INDUSTRY GROUP IN WHICH EMPLOYED: PERCENT DISTRIBUTION OF NURSES

Industry Group	Present Position					Total
				Staff Nurse		
	Consultant	Only Nurse	Supervisor	Supervised	Unsupervised	
Manufacturing	46.7	76.9	70.0	76.5	85.0	76.4
Nonmanufacturing	36.7	18.2	21.3	15.6	10.8	17.2
Government	16.6	4.9	8.7	7.9	4.2	6.4
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0
Number	199	3584	1280	2369	1438	8870
No Answer						173
Grand Total						9043

$\chi^2 = 217.23$; df = 8; $p < .001$; $\bar{C} = .19$

A much larger proportion of unsupervised staff nurses are found in manufacturing industries, 85 percent contrasted with three-fourths or less of other statuses. Consultants are conspicuously underrepresented, with less than 50 percent working in manufacturing. On the other hand, consultants almost twice as often as other statuses are found in government and in nonmanufacturing industries, 17 percent and 37 percent, respectively.

Medical Direction

Nurses who have the most nursing supervision are also most likely to have medical supervision. Of all the statuses, the supervised staff nurse most often works with a full-time physician. The only nurse, who has no nursing supervision in the health unit and is seldom supervised by a nurse outside the unit, not only is least likely to work with a full-time physician but twice as often as other statuses has no physician available at all (Table 6-10).

TABLE 6-10

PRESENT POSITION BY NUMBER OF HOURS PHYSICIAN IS REGULARLY PRESENT IN WORKPLACE: PERCENT DISTRIBUTION OF NURSES

Number of Hours Physician is Regularly Present	Present Position				Total
			Staff Nurse		
	Only Nurse	Supervisor	Supervised	Unsupervised	
35 or more	6.1	33.0	43.0	28.3	23.9
20-34	2.1	6.9	6.6	6.4	4.7
10-19	4.7	11.5	9.0	10.2	7.8
5-9	11.2	16.7	10.8	13.4	12.3
Less than 5	24.2	12.7	12.4	17.8	18.2
None	51.7	19.2	18.1	24.0	33.1
Total Percent	100.0	100.0	100.0	100.0	100.0
Number	3613	1298	2393	1435	8739
No Answer					89
Grand Total					8828

$\chi^2 = 1892.95$; df = 15; $p < .001$; $\bar{C} = .48$

Summary

The nurses differed significantly by present position on all variables except highest college degree. The variables which had the highest correlations with position were the number of hours a physician was regularly present in the health unit ($\bar{C} = .48$) and the nurses' annual salary ($\bar{C} = .37$). The other correlations, though still significant, were of a much lower order.

In terms of selected personal characteristics and experience, supervisors were oldest, had the most years of experience as occupational health nurses and made the highest salaries. The only nurses, who were second to supervisors in age and years of experience, were

least well paid. Consultants, who were intermediate in age and ranked with the supervisors and only nurses in experience, were found at the extremes of the salary scale. However, they tended to be better educated than nurses in other positions. More of them had college degrees, and those with college degrees more often had graduate degrees.

The staff nurses in general had less professional experience, other than in hospital staff nursing. Of all statuses, the supervised staff nurse was youngest, had least experience in occupational health, and, with the exception of the only nurse, least often had a high salary.

Consultants were much more likely to be employed in government and in nonmanufacturing than were nurses in other statuses; the unsupervised staff nurses were much more often employed in manufacturing. The extent of medical direction, roughly measured by the number of hours a physician was regularly present in the health unit, varied considerably by status. The supervised staff nurses most often worked with a full-time physician, whereas the only nurse most often had no regular physician available at all.

CHAPTER 7

SUMMARY AND CONCLUSIONS

Major Findings

The occupational health nurses were mature women, largely hospital trained 15 to 25 years ago, who had had nursing experience in fields other than occupational health. Nearly half of the nurses had previously worked as occupational health nurses, and a third of them reported 15 or more years experience in this field. Few had entered the field in the last 5 years. The median salary for all occupational health nurses was just over $5,500.

The occupational health nurses varied in the above characteristics according to the positions which they held. Supervisors were oldest, had the most years of experience in occupational health, and received the highest salaries. Staff nurses were youngest. Only nurses were least well paid. Consultants had the most varied background in nursing, including more frequent occupational health and public health nursing experience. They also most often had college education.

The majority of the nurses worked in the Northeast and North Central regions of the United States, in manufacturing industries, and in workplaces with 500 or more employees. Almost all worked in health units, three-fourths of them in the only health unit in their workplace.

The nurses were relatively isolated from other medical personnel. Forty percent of the nurses worked alone. Only one-fourth had full-time medical direction.

Size of workplace proved to be a major factor influencing extent of health services. Larger workplaces more often had multiple health units, large nursing staffs, nursing supervision and medical direction, highly experienced nurses, and high salaries.

Within the same sized workplaces government more often than manufacturing or nonmanufacturing industries had the characteristics of the larger workplaces, with the exception of experience of the nurse. Manufacturing industries more often had nurses with long experience; they were least likely, however, to have nursing supervision.

As the size of workplace increased, differences among the three industry groups were reduced. Within each industry group, least variation between large and small workplaces was observed in government.

Major Problems

One of the continuing problems in occupational health is the lack of occupational health nursing services in the small workplaces where it is economically least feasible to provide health facilities. Unfortunately, it is in this size workplace that a large proportion of the labor force is employed.

Another serious concern is the large number of occupational health nurses who work in relative isolation: the nurses in the only nurse positions, the nurses on small staffs, and the many nurses who work without medical direction. These nurses seldom have orientation, nursing supervision, or in-service training.

With respect to nurse manpower, there are a large number of nurses presently in occupational health who have had many years of experience and who will be retiring. These nurses will need to be replaced. The manpower picture is further complicated by the fact that few nurses have entered occupational health nursing in recent years.

One of the most serious problems is the absence of special preparation for occupational health nursing. Occupational health nursing is the one area of nursing that does not have special preparation. At the present time, there are no courses being offered in occupational health nursing at either the baccalaureate or graduate levels. A nurse can enroll in many courses relevant to occupational health nursing but not in one that considers specifically the dynamics of nursing practice in occupational health. Such a course is very much needed, not at the graduate level since the majority of practicing occupational health nurses would not be eligible for it, but as part of pre-service or in-service education so that the occupational health nurse would be spared learning the intricacies of her field through trial and error.

These problems are interrelated and resolution of them will require efforts in several directions at once. Nurses will be better prepared when employers demand that they be. More training will be provided as the demand for prepared nurses increases. Higher salaries will go to those who are better qualified and who are filling the more challenging positions. As competition for better positions increases, more nurses will seek additional qualifications. Finally, as rewards (both monetary and professional) increase, more skilled nurses will be attracted to the field.

Long-Term Trends

In the future more nurses in all specialties will be graduates of baccalaureate programs in nursing and some of these nurses will eventually enter occupational health. Whether more will have had special courses in occupational health nursing is questionable since no speciality program is now being offered. However, more will have completed

introductory courses in sociology, psychology, and other related fields, which will assist them in coping with the complexities of their unique working environment.

So long as preparation for occupational health nurses remains primarily a matter of experience in other fields of nursing, there is little likelihood of any substantial lowering of the median age. Although nursing students currently enrolled in baccalaureate programs now spend part of their affiliation in public health and in psychiatric facilities, very few have any introduction to occupational health as a career possibility.

The fact that many of the occupational health nurses are married will limit the extent of their involvement in further educational programs. Few of them, and for that matter few of the unmarried nurses, could be expected to interrupt their work for full-time education. Short-term intensive presentations of delimited scope seem most appropriate. Hopefully these will be made widely available in areas not too far distant from where occupational health nurses live and work. To be most effective, these programs should be organized to permit the nurses, in the shortest possible time, to acquire the skills and understanding basic to occupational health nursing practice and then to continue to keep up to date. Master's programs in occupational health seem to be premature until there is a broader base of undergraduate education.

In-service training should increase as management and physicians become more aware of the contributions a well-prepared occupational health nurse can make, and not only demand such initial preparation but encourage further on-the-job participation in conferences and workshops.

Research Plans

The survey of occupational health nurses was planned as the first phase of an extensive study of the field of occupational health nursing. The Division will soon begin an investigation of the factors which influence nursing practice and other aspects of the role of the occupational health nurse supervisor. This will be followed by a similar study of the role of the only nurse.

Once the roles of nurses in these two major positions have been documented, it will be possible to develop an instrument for evaluating nursing services in industry and to establish realistic standards for staffing health units.

APPENDIX I

QUESTIONNAIRE

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
WASHINGTON, D.C. 20201

Bureau of State Services

ENVIRONMENTAL HEALTH

REFER TO:

March 1964

If there is a mistake in your name or address, please correct it here:

Dear Occupational Health Nurse:

As one of the 17000 professional nurses working in the field of occupational health nursing, you are asked to participate in a nationwide census conducted by the Division of Occupational Health, U. S. Public Health Service.

Despite the importance of industrial nursing, only a scanty body of information is presently available. A complete and reliable body of data on occupational health nursing in the United States is needed as a basis for further recognition and advancement of this vital field. For the first time, a questionnaire is being sent to all nurses registered in this activity. Your cooperation is essential to the development of valid statistics.

You will need only a few minutes to answer the questions. If you are not presently engaged in occupational health nursing, please answer only questions 1 and 33 through 35.

The individual replies will be treated with complete confidentiality and will be used only for statistical compilation. The resultant statistics will be made available to individuals and organizations concerned with occupational health nursing through the publication of a special report. The census will be reported in professional journals.

Please return the completed questionnaire to me within two weeks. A postage-paid, self-addressed envelope is enclosed for your convenience.

Your cooperation in this project will be greatly appreciated.

Sincerely yours,

Mary Louise Brown

Mary Louise Brown, Chief
Occupational Health Nursing Section
Division of Occupational Health

CONFIDENTIAL—All information which would permit identification of the individual will be held strictly confidential, will be used only by persons engaged in and for the purposes of the study, and will not be disclosed or released to others for any purposes. (42 CFR 1.101–1.108.)

OCCUPATIONAL HEALTH (INDUSTRIAL) NURSES CENSUS

INSTRUCTIONS: PLEASE READ BEFORE ANSWERING

1. Answer each question that applies to you by placing an "X" in the box preceding the answer that best describes you.

2. If there is an * after the box, please follow the instruction just below it.

3. If the question asks for a number (for example: "How many years.....?") and your answer is "NONE," please write "NONE" or "0" in the answer space.

CARD COLUMN

1. DO YOU WORK AS AN OCCUPATIONAL HEALTH NURSE?

6

1 ☐ YES

2 ☐ * NO

*** If "NO," please skip to question 33, page 5.**

Questions 2–5 are about the kind of industry in which you work and the position which you now occupy.

2. IN WHAT STATE DO YOU WORK?

7-8 _____

3. IN THE WORKPLACE (PLANT, SHOP, STORE, ETC.) WHERE YOU ARE EMPLOYED, WHAT IS THE TOTAL NUMBER OF EMPLOYEES?

1 ☐ UNDER 100

2 ☐ 100–249

3 ☐ 250–499

9 4 ☐ 500–999

5 ☐ 1,000–2,499

6 ☐ 2,500–4,999

7 ☐ 5,000 OR OVER

CARD COLUMN

4. OF THE INDUSTRY-GROUPS LISTED BELOW, WHICH ONE BEST DESCRIBES YOUR COMPANY, FIRM, AGENCY, OR ORGANIZATION?

MANUFACTURING, PROCESSING AND REFINING INDUSTRIES

10-11

01 ☐ Automobiles, aircraft, railroad equipment, shipbuilding and related products

02 ☐ Electrical machinery, equipment and supplies

03 ☐ Machinery except electrical

04 ☐ All other metal manufacturing (including the smelting, manufacture or fabricating of iron and steel, aluminum, copper or other metals or products made from them)

05 ☐ Petroleum refining

06 ☐ Rubber and plastics products

07 ☐ Chemicals and related products (including synthetic fibers, drugs, paints, etc.)

08 ☐ Furniture and fixtures

09 ☐ Logging, sawmills and wood products except furniture

10 ☐ Stone, clay and glass products

11 ☐ Food and related products

12 ☐ Textile mill products (yarn, cloth, etc.)

13 ☐ Apparel and other fabricated textile products

14 ☐ Printing, publishing and related industries

15 ☐ Paper and related products

16 ☐ Any other manufacturing

NON-MANUFACTURING INDUSTRIES

21 ☐ *Construction* of buildings and highways

22 ☐ *Transportation* by land, air or water, and warehousing

23 ☐ *Communication* by telephone, telegraph, radio and television

24 ☐ Electric, gas, steam, water-supply, sanitary and other *utilities*

25 ☐ *Wholesale* trade

26 ☐ *Retail* trade, including department stores and restaurants

27 ☐ Banking, investment, insurance and real estate

28 ☐ Hospitals

29 ☐ Hotels and other lodging places

30 ☐ Motion picture production, theaters and other entertainment and recreation services

31 ☐ Government agencies, Federal, State or local

32 ☐ An industry not listed above: *(Please specify)*

_____

BUDGET BUREAU NO. 68-6401
APPROVAL EXPIRES: 10-31-64

CARD COLUMN

5. DO YOU GIVE, OR ARE YOU IN CHARGE OF NURSES WHO GIVE, DIRECT HEALTH SERVICES TO EMPLOYEES?

1 ☐ * YES

a. * If "YES," do you work:

2 ☐ AT A HEALTH UNIT (OR AT MORE THAN ONE HEALTH UNIT) ALL OR SOME OF YOUR WORK WEEK?

3 ☐ * *ONLY AS A VISITING NURSE?

** If only as a visiting nurse please skip to question 18, page 3.

5 ☐ * NO

12

b. * If "NO," which of the following best describes your present position?

6 ☐ CONSULTANT IN AN OFFICIAL (GOVERNMENTAL) AGENCY

7 ☐ CONSULTANT IN AN UNOFFICIAL (COMMERCIAL OR OTHER) ORGANIZATION

8 ☐ OTHER *(Describe)*

If "consultant" or "other" please skip to question 18, page 3.

Questions 6 through 17 are about the health unit in which you work.

6. IS THE HEALTH UNIT IN WHICH YOU ARE EMPLOYED:

1 ☐ THE ONLY HEALTH UNIT IN YOUR WORKPLACE *(Plant, shop, store, etc.)?*

2 ☐ THE CHIEF HEALTH UNIT IN YOUR WORKPLACE, WITH ONE OR MORE SATELLITE OR SUBSTATION UNITS STAFFED BY AT LEAST ONE NURSE ELSEWHERE IN THE WORKPLACE?

13

3 ☐ A SATELLITE OR SUBSTATION UNIT, WITH THE CHIEF HEALTH UNIT ELSEWHERE IN THE WORKPLACE?

4 ☐ ONE OF TWO OR MORE HEALTH UNITS IN YOUR WORKPLACE, NEITHER *(or none)* OF WHICH IS THE CHIEF UNIT?

5 ☐ NONE OF THE ABOVE *(Please explain)*

_____

_____

_____

_____

_____

CARD COLUMN

7. IN THE HEALTH UNIT IN WHICH YOU ARE EMPLOYED, HOW MANY NURSES ARE THERE ALL TOGETHER, COUNTING YOURSELF, AND INCLUDING NURSE SUPERVISORS, DIRECTORS, AND CHARGE NURSES?

14-15 _____

a. If you are the only nurse, is your work supervised or directed by a nurse outside of your health unit?

16

1 ☐ YES

2 ☐ NO

If you are the only nurse in your health unit—skip to question 10.

8. IS THERE A NURSE SUPERVISOR, DIRECTOR, OR CHARGE NURSE IN YOUR HEALTH UNIT?

1 ☐ YES

17

2 ☐ * NO

a. * If "NO," is the work of the nurses in the unit supervised or directed by a nurse outside the unit?

1 ☐ YES

18

2 ☐ NO

If there is no nurse supervisor, director, or charge nurse in the unit—skip to question 10.

9. WHICH ONE OF THE FOLLOWING BEST DESCRIBES YOUR POSITION?

1 ☐ STAFF NURSE

19

2 ☐ * NURSE SUPERVISOR, DIRECTOR, OR CHARGE NURSE

a. * If supervisor, director or charge nurse, of how many nurses are you directly or indirectly in charge?

1 ☐ ONE

2 ☐ TWO-FIVE

20

3 ☐ SIX-TEN

4 ☐ MORE THAN TEN

10. TO HOW MANY EMPLOYEES ARE HEALTH SERVICES AVAILABLE FROM THE HEALTH UNIT IN WHICH YOU ARE EMPLOYED? (THIS MAY BE LESS THAN THE TOTAL IN THE WORKPLACE.)

1 ☐ UNDER 100

2 ☐ 100–249

3 ☐ 250–499

21

4 ☐ 500–999

5 ☐ 1,000–2,499

6 ☐ 2,500–4,999

7 ☐ 5,000 OR OVER

CARD COLUMN

22

11. HOW MANY HOURS IS YOUR REGULAR WORK WEEK IN YOUR PRESENT POSITION?

1 ☐ 41 OR MORE
2 ☐ 35–40
3 ☐ 20–34
4 ☐ LESS THAN 20

23

12. DURING HOW MANY HOURS OF THE WEEK WHILE YOU ARE ON DUTY IS A PHYSICIAN REGULARLY PRESENT AT YOUR WORKPLACE?

1 ☐ 35 OR MORE
2 ☐ 20–34
3 ☐ 10–19
4 ☐ 5–9
5 ☐ LESS THAN 5 BUT SOME TIME
6 ☐ NOT AT ALL

24

13. DURING ALL THE HOURS WHEN A PHYSICIAN IS NOT PRESENT, IS THERE A PHYSICIAN AVAILABLE TO YOU "ON CALL"?

1 ☐ YES
2 ☐ NO

25

14. DO YOU HAVE WRITTEN STANDING ORDERS (MEDICAL DIRECTIVES)?

1 ☐ NO
2 ☐ * YES

a. * If "YES," are they signed by a physician?

26

1 ☐ YES
2 ☐ NO

27

15. DOES YOUR HEALTH UNIT HAVE A NURSING POLICY AND PROCEDURES MANUAL?

1 ☐ YES
2 ☐ NO

CARD COLUMN

28

16. TO WHOM IS YOUR HEALTH UNIT RESPONSIBLE FOR NON-MEDICAL ADMINISTRATIVE MATTERS?

1 ☐ A MEMBER OF THE PERSONNEL, OR EMPLOYEE RELATIONS, OR INDUSTRIAL RELATIONS DEPARTMENT
2 ☐ A MEMBER OF THE SAFETY DEPARTMENT
3 ☐ SOME OTHER PERSON: WHAT IS HIS POSITION?

_____

29

17. IS THAT PERSON A MEMBER OF TOP MANAGEMENT (AT THE POLICY-MAKING LEVEL)?

1 ☐ YES
2 ☐ NO

Questions 18 through 23 are about your education and training.

30

18. DO YOU HOLD A DEGREE FROM A COLLEGE OR UNIVERSITY?

1 ☐ YES
2 ☐ * NO

* If "NO," skip to question 21.

31

19. WHAT IS THE HIGHEST DEGREE YOU HOLD?

1 ☐ ASSOCIATE
2 ☐ BACHELOR'S
3 ☐ MASTER'S
4 ☐ DOCTOR'S

32

20. WAS YOUR BASIC NURSING EDUCATION OBTAINED IN:

1 ☐ A 2-YEAR JUNIOR COLLEGE OR OTHER ASSOCIATE DEGREE PROGRAM?
2 ☐ A 3-YEAR HOSPITAL DIPLOMA PROGRAM?
3 ☐ A 4- OR 5-YEAR COLLEGE BACHELOR'S OR MASTER'S DEGREE PROGRAM?

CARD COLUMN

21. IN WHAT YEAR WERE YOU GRADUATED FROM YOUR BASIC NURSING EDUCATION PROGRAM?

33
- 1 ☐ BEFORE 1930
- 2 ☐ 1930–1939
- 3 ☐ 1940–1949
- 4 ☐ 1950–1959
- 5 ☐ 1960 OR SINCE

22. HAVE YOU A PUBLIC HEALTH NURSING CERTIFICATE OR THE EQUIVALENT?

34
- 1 ☐ YES
- 2 ☐ NO

23. HAVE YOU EVER ATTENDED, FOR CREDIT, A COLLEGE COURSE IN OCCUPATIONAL HEALTH NURSING OR INDUSTRIAL NURSING?

35
- 1 ☐ YES
- 2 ☐ NO

Questions 24 through 27 are about your professional work experience.

24. BEFORE YOUR PRESENT POSITION, WHICH OF THE FOLLOWING PROFESSIONAL POSITIONS HAD YOU EVER HELD? *(CHECK ALL THAT APPLY TO YOU.)*

36
- 1 ☐ STAFF NURSE IN A HOSPITAL OR CLINIC
- 2 ☐ HEAD OR SUPERVISORY NURSE IN A HOSPITAL OR CLINIC
- 3 ☐ STAFF NURSE IN PUBLIC HEALTH } HEALTH DEPT., SCHOOL, VNA, ETC.
- 4 ☐ SENIOR OR SUPERVISORY NURSE IN PUBLIC HEALTH } HEALTH DEPT., SCHOOL, VNA, ETC.
- 5 ☐ PRIVATE DUTY NURSE
- 6 ☐ DOCTOR'S OFFICE NURSE
- 7 ☐ * OCCUPATIONAL HEALTH (INDUSTRIAL) NURSE
- 8 ☐ NONE: THIS IS MY FIRST POSITION IN NURSING
- 9 ☐ OTHER *(Specify)* _____

* If you checked box 7, please be sure to complete question 24a.

CARD COLUMN

24a. If ever "Occupational Health (industrial) Nurse," how many positions as an occupational health nurse, before your present one, have you held?

37
- 0 ☐ NONE
- 1 ☐ ONE
- 2 ☐ TWO
- 3 ☐ THREE
- 4 ☐ FOUR OR MORE

25. AS TO THE LAST POSITION YOU HELD IN NURSING, BEFORE YOUR PRESENT ONE, WHICH ONE OF THE FOLLOWING WAS IT?

38
- 1 ☐ STAFF NURSE IN A HOSPITAL OR CLINIC
- 2 ☐ HEAD OR SUPERVISORY NURSE IN A HOSPITAL OR CLINIC
- 3 ☐ STAFF NURSE IN PUBLIC HEALTH } HEALTH DEPT., SCHOOL, VNA, ETC.
- 4 ☐ SENIOR OR SUPERVISORY NURSE IN PUBLIC HEALTH } HEALTH DEPT., SCHOOL, VNA, ETC.
- 5 ☐ PRIVATE DUTY NURSE
- 6 ☐ DOCTOR'S OFFICE NURSE
- 7 ☐ * OCCUPATIONAL HEALTH (INDUSTRIAL) NURSE
- 8 ☐ NONE: THIS IS MY FIRST POSITION IN NURSING
- 9 ☐ OTHER *(Specify)* _____

a. * If you checked "Occupational Health (industrial) Nurse," which of the following describes best your last position before the present one?

39
- 1 ☐ I WORKED IN A HEALTH UNIT WITH ONE OR MORE OTHER NURSES
- 2 ☐ I WORKED IN A HEALTH UNIT IN WHICH I WAS THE ONLY NURSE
- 3 ☐ OTHER *(Describe)*

26. IN WHAT YEAR DID YOU FIRST TAKE A POSITION IN OCCUPATIONAL HEALTH (INDUSTRIAL) NURSING?

40
- 1 ☐ BEFORE 1930
- 2 ☐ 1930–1939
- 3 ☐ 1940–1949
- 4 ☐ 1950–1959
- 5 ☐ 1960 OR SINCE

27. HOW MANY YEARS ALTOGETHER HAVE YOU WORKED AS AN OCCUPATIONAL HEALTH NURSE? (DO NOT COUNT THE YEARS BETWEEN JOBS IN THIS FIELD, WHEN YOU WORKED IN OTHER FIELDS OR DID NOT WORK.)

41
- 1 ☐ LESS THAN ONE YEAR
- 2 ☐ 1–2 YEARS
- 3 ☐ 3–4 YEARS
- 4 ☐ 5–9 YEARS
- 5 ☐ 10–14 YEARS
- 6 ☐ 15 YEARS OR MORE

CARD COLUMN

Questions 28 through 32 are about personal-history data.

28. SEX

42
- 1 ☐ MALE
- 2 ☐ FEMALE

29. RACE

43
- 1 ☐ WHITE
- 2 ☐ NEGRO
- 3 ☐ OTHER

30. AGE AT LAST BIRTHDAY

44
- 1 ☐ UNDER 20
- 2 ☐ 20–24
- 3 ☐ 25–29
- 4 ☐ 30–34
- 5 ☐ 35–39
- 6 ☐ 40–44
- 7 ☐ 45–49
- 8 ☐ 50–54
- 9 ☐ 55–59
- 0 ☐ 60–64
- X ☐ 65 OR MORE

31. PRESENT MARITAL STATUS

45
- 1 ☐ MARRIED
- 2 ☐ WIDOWED
- 3 ☐ DIVORCED OR SEPARATED
- 4 ☐ NEVER MARRIED

32. IN WHICH ONE OF THESE GROUPS DOES YOUR ANNUAL SALARY FALL?

46
- 1 ☐ UNDER $3,500
- 2 ☐ $3,500–$3,999
- 3 ☐ $4,000–$4,499
- 4 ☐ $4,500–$4,999
- 5 ☐ $5,000–$5,499
- 6 ☐ $5,500–$5,999
- 7 ☐ $6,000–$6,499
- 8 ☐ $6,500–$6,999
- 9 ☐ $7,000 OR OVER

CARD COLUMN

If you are not now working as an occupational health (industrial) nurse, please answer questions 33 through 35.

33. WHICH OF THE FOLLOWING BEST DESCRIBES YOUR PRESENT SITUATION?

47
- 1 ☐ EMPLOYED IN NURSING BUT NOT IN OCCUPATIONAL HEALTH
- 2 ☐ EMPLOYED BUT NOT IN NURSING
- 3 ☐ NOT EMPLOYED BUT LOOKING FOR WORK IN NURSING
- 4 ☐ NOT EMPLOYED BUT LOOKING FOR WORK IN A FIELD OTHER THAN NURSING
- 5 ☐ NOT EMPLOYED BUT FULL-TIME STUDENT
- 6 ☐ NOT EMPLOYED BUT FULL-TIME HOUSEWIFE
- 7 ☐ NOT EMPLOYED BUT RETIRED
- 8 ☐ OTHER *(Specify)* _____

34. HOW MANY YEARS IS IT SINCE YOU LAST WORKED AS AN OCCUPATIONAL HEALTH NURSE?

48
- 1 ☐ LESS THAN ONE
- 2 ☐ ONE
- 3 ☐ TWO–FIVE
- 4 ☐ SIX–TEN
- 5 ☐ MORE THAN TEN

35. DO YOU EXPECT TO RETURN TO WORK AS AN OCCUPATIONAL HEALTH NURSE?

49
- 1 ☐ YES DEFINITELY
- 2 ☐ YES PROBABLY
- 3 ☐ UNCERTAIN
- 4 ☐ NO PROBABLY NOT
- 5 ☐ NO DEFINITELY NOT

IF YOU WISH TO EXPRESS YOUR VIEWS ON THE FOLLOWING QUESTIONS, WE SHALL WELCOME THEM.

a. How did you happen to become an occupational health (industrial) nurse?

b. What do you feel are the best things about occupational health (industrial) nursing?

c. What do you feel are the worst things about occupational health (industrial) nursing?

(If more space is needed, use reverse side.)

Thank you very much for your help. Please be sure to return this form in the enclosed envelope to:

Miss Mary Louise Brown
Division of Occupational Health, PHS
P.O. Box 928
Philadelphia, Pennsylvania 19105

APPENDIX II

INTERPRETATION OF REPORT

APPENDIX II

INTERPRETATION OF THE REPORT

This section will describe in more detail the way in which the data were handled, what the statistics mean, and how to read the tables in the report.

The Variables

To understand how the data were handled, the reader should look first at the questionnaire reproduced in Appendix I. There are 35 numbered questions. Each of these questions constitutes a variable. For example, look at question 3, "In the workplace where you are employed, what is the total number of employees?" The total number of employees in the nurse's workplace is one variable in the study. Beneath this third question are seven possible answers referring to seven different sized workplaces. Each of these seven items may be considered a category or subgroup of the variable, size of workplace. By sorting the nurses according to their answers to this question, they can be divided into seven different groups: the first group would be those who are employed in workplaces of under 100 employees, the last group, those who are in workplaces of 5,000 or more employees. Chapter 3 considers nurses according to these groupings.

Crosstabulations

After the nurses are similarly classified on each variable, they can be clasified on more than one variable at a time. This process is called crosstabulation. For example, the table presented below shows the crosstabulation of size of workplace and type of industry group in which the nurse worked. For each of the size groupings, the table presents the percent of nurses who work in a given industry group.

SIZE OF WORKPLACE BY TYPE OF INDUSTRY GROUP:
PERCENT DISTRIBUTION OF NURSES

Type of Industry Group	Number of Employees in Workplace						Total
	Under 250	250-499	500-999	1000-2499	2500-4999	5000 & over	
Manufacturing	71.9	83.1	77.0	75.9	73.2	76.3	76.6
Nonmanufacturing	25.0	14.8	19.3	17.7	17.3	14.5	17.3
Government	3.1	2.1	3.6	6.4	9.5	9.1	6.1
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	549	1349	1952	2339	1320	2201	9710
No Answer							315
Grand Total							10025

$\chi^2 = 170.60$; df = 10; $p < .001$

Contingency Tables

A table such as the one above which presents multiple classification is called a contingency table. In this particular table the nurses are classified by two criteria: the size of workplace and the type of industry group in which they work. This is a 3 x 6 contingency table, type of industry having three mutually exclusive categories and size of workplace six.[1] This size table yields 18 distinct classifications called "cells." Tables showing classifications by two variables appear in Chapters 3, 4, and 6.

A contingency table permits investigation of possible relationships between variables, that is, whether one variable is contingent upon another. If there is a relationship between the variables, the cases as classified on one variable will be differentially distributed among the categories of the other variable. If on the other hand, there is no relationship between the variables, that is, if they are independent of each other, the cases in each category of one variable will be distributed in approximately the same proportions on the other variable.

[1] The first two size categories in the questionnaire were combined because of small numbers of cases.

By examining the percentaged contingency table one can make these comparisons. For example, the "Total" column of the above table indicates that 77 percent of nurses work in manufacturing, 17 percent in nonmanufacturing, and 6 percent in government. Compare the percents in each row. If there is no association between the variables, about 77 percent of nurses in each size workplace will work in manufacturing, 17 percent in nonmanufacturing, and 6 percent in government. It is apparent that there are some variations; for example, not 17 percent but 25 percent of nurses in workplaces with under 250 employees work in nonmanufacturing industries, and only 3 percent of government nurses work in small workplaces whereas 9 percent are employed in workplaces with 2,500 or more employees. Whether these are more than chance variations is determined by a statistical test called chi square, which will be discussed in a later section.

A three-way contingency table is obtained when the nurses are further classified according to a third criterion. This is the kind of table which appears in Chapter 5 where the nurses are classified according to size of workplace, type of industry group, and then in each successive table are further classified by one of the other study variables. For example, the table reproduced below gives the percent of nurses from each type of industry group of a given size who are employed in the only health unit in their workplace.

PERCENT OF NURSES FROM EACH TYPE INDUSTRY GROUP OF A GIVEN SIZE WHO WORK IN THE ONLY HEALTH UNIT IN THE WORKPLACE

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	95.4	90.4	82.5
500-999	92.5	92.9	79.4
1000-2499	82.3	82.6	68.8
2500-4999	65.0	64.9	62.9
5000 & over	22.9	43.3	38.4

$\chi^2_r = 5.20$; $p = .093$

Each cell entry in this and succeeding tables in Chapter 5 is read in the following manner: ____ percent of nurses in ____ industries of ____ employees have whatever characteristic is specified in the table

title. For example, using the first cell entry, 95.4 percent of nurses in manufacturing industries of under 500 employees work in the only health unit in the workplace.

Statistics Used[2]

Chi Square

Chi square (χ^2) is used to test whether a significant difference exists between the observed distribution of cases in a contingency table and the distribution one would expect to get by chance if there were no association between the variables. Chi square indicates only that a difference exists; it does not indicate the direction of the difference or the extent of association between variables. When there is a significant difference, the variables are said to be related. The significance of a given chi square depends upon the number of degrees of freedom (df) in the data from which it was computed. In this report the differences are considered statistically significant if the significance level reported on the table is .05 or less.

Contingency Coefficient

The contingency coefficient (C), which is computed from chi square, is a measure of the extent of association between two variables. The greater the association between variables, the higher the value of C. When there is no association between variables, the coefficient equals zero. However, even when the variables are completely dependent upon each other, the coefficient cannot attain unity, or 1. For this reason, it is not directly comparable to any other measure of correlation. The upper limit of the coefficient depends upon the number of cells in the table on which it is based, and the coefficients are therefore comparable only when based on tables of the same size. The statistic used in this report is the corrected contingency coefficient ($\tilde{C}$), so named because it employs a correction factor for the number of cells, thereby making the coefficients comparable when based on different sized tables.

Friedman Two-Way Analysis of Variance by Ranks

The Friedman two-way analysis of variance by ranks (χ_r^2) tests whether groups differ significantly in relative position as indicated by their ranking on a given variable. If there were no difference among the groups, the distribution of ranks would be a matter of chance and the total rank for each group would be approximately the same. If the groups differed, then the total ranks of the groups would vary. The greater the variation, the higher the value of χ_r^2. The variation is considered statistically significant if the probability is .05 or less.

---

[2]For a more complete discussion, see Sidney Siegel, Nonparametric Statistics for the Behavioral Sciences, New York: McGraw-Hill, 1956.

Significance Level

The significance level indicates the probability that any reported phenomenon (for example, the distribution of nurses in a crosstabulation) is a chance occurrence. The probability is reported as the number of times in a hundred or a thousand that one could expect a given event to occur by chance alone. Sometimes the probability is expressed as an exact probability: for example, $p = .02$, which would mean that the event could be expected to occur by chance two times in a hundred. Sometimes a range is given: $p < .05$, meaning that the event could be expected to occur by chance less than five times in a hundred; or $.01 > p > .001$, indicating that the event could be expected by chance less than once in a hundred times but more than once in a thousand. Whatever the number happens to be, it is interpreted in the same way, with "p" standing for probability, the symbol $<$ read "less than" and $>$ "greater than." In this report any result which has a probability of .05 or less is considered to be statistically significant.

APPENDIX III

DISTRIBUTION OF NURSES BY REGION, GEOGRAPHIC DIVISION, AND STATE

APPENDIX III

TABLE 1. PERCENT OF NURSES IN EACH REGION, GEOGRAPHIC DIVISION, AND STATE BY CHARACTERISTICS OF WORKPLACE AND SALARY

Region, Geographic Division, and State	Type of Industry Group			Number of Employees in Workplace		Annual Salary	
	Mfg.	Nonmfg.	Govt.	Less Than 500	2500 or more	Under $4500	Over $6500
NORTHEAST	75.7	20.0	4.3	21.6	31.0	16.0	17.5
New England	82.3	14.8	2.8	26.8	22.8	24.4	9.1
Connecticut	79.9	16.7	3.4	24.0	29.5	14.3	14.0
Maine	100.0	-	-	32.7	22.4	50.0	3.4
Massachusetts	78.7	17.6	3.6	25.6	23.7	24.9	7.3
Rhode Island	84.9	15.1	-	28.3	1.9	26.4	5.7
Other	100.0	-	-	42.3	-	48.1	3.8
New Hampshire	(34)*	-	-	(15)	-	(19)	-
Vermont	(16)	-	-	(7)	-	(6)	(2)
Middle Atlantic	73.4	21.8	4.8	19.8	33.8	13.1	20.4
New Jersey	79.2	16.2	4.6	26.3	25.5	9.9	19.7
New York	64.1	31.4	4.6	15.9	38.0	10.8	26.4
Pennsylvania	81.9	12.7	5.3	20.8	33.6	18.2	13.1
SOUTH	72.4	15.3	12.3	19.9	32.0	22.6	17.1
South Atlantic	71.2	16.3	12.5	17.2	35.1	25.1	14.9
Dist. of Columbia	10.1	29.2	60.7	5.6	58.5	7.8	42.2
Florida	46.2	38.7	15.1	19.4	37.6	16.8	12.6
Georgia	75.9	16.1	8.0	21.9	27.8	23.0	8.9
Maryland	62.0	19.3	18.7	17.0	40.9	15.1	20.5
North Carolina	90.1	9.2	0.7	17.8	32.2	42.0	0.7
South Carolina	87.9	4.8	7.3	17.7	17.8	57.1	8.9
Virginia	74.2	15.8	10.0	17.8	35.6	27.8	11.2
West Virginia	94.4	4.8	0.8	15.2	40.0	10.7	22.3
Other							
Delaware	(34)	(10)	-	(9)	(13)	(5)	(9)
East South Central	78.1	8.1	13.7	23.2	28.5	22.7	15.5
Alabama	78.4	11.2	10.3	23.3	28.5	23.0	14.2
Kentucky	78.9	5.5	15.6	17.3	30.0	20.7	18.7
Tennessee	74.7	9.0	16.3	23.3	29.2	18.7	17.5
Other							
Mississippi	(35)	(1)	(3)	(16)	(9)	(18)	(1)
West South Central	69.6	20.2	10.2	24.1	27.1	15.3	25.2
Louisiana	71.6	22.1	6.3	25.7	19.6	17.9	21.1
Texas	68.0	23.2	8.8	23.7	28.1	13.9	28.7
Other	72.1	7.4	20.6	22.9	34.3	16.4	19.4
Arkansas	(22)	(1)	(2)	(7)	(4)	(5)	(4)
Oklahoma	(27)	(4)	(12)	(9)	(20)	(6)	(9)

*Numbers rather than percentages are given whenever the total number of respondents for the State was less than 50.

TABLE 1. PERCENT OF NURSES IN EACH REGION, GEOGRAPHIC DIVISION, AND STATE BY CHARACTERISTICS OF WORKPLACE AND SALARY--Continued

Region, Geographic Division, and State	Type of Industry Group			Number of Employees in Workplace		Annual Salary	
	Mfg.	Nonmfg.	Govt.	Less Than 500	2500 or more	Under $4500	Over $6500
NORTH CENTRAL	84.0	12.8	3.2	19.0	35.6	12.1	18.5
East North Central	85.9	11.4	2.7	19.0	36.5	11.7	19.2
Illinois	76.5	19.4	4.1	20.1	32.7	11.9	19.9
Indiana	90.9	6.8	2.3	18.4	39.1	10.3	19.4
Michigan	89.8	8.5	1.7	14.4	53.2	7.3	27.4
Ohio	87.2	9.3	3.5	20.8	29.6	11.9	16.4
Wisconsin	88.8	10.6	0.6	20.8	29.5	19.1	11.0
West North Central	74.0	20.1	6.0	19.0	30.4	14.5	14.9
Iowa	88.0	5.3	6.7	10.3	29.4	10.5	10.5
Kansas	90.0	10.0	-	9.8	41.2	9.8	23.5
Minnesota	69.4	26.1	4.5	21.1	25.8	14.6	10.2
Missouri	70.6	20.9	8.5	21.1	33.3	17.7	17.7
Other	(26)	(15)	(2)	(13)	(9)	(5)	(6)
Nebraska	(25)	(14)	(2)	(12)	(9)	(4)	(6)
North Dakota	-	-	-	-	-	-	-
South Dakota	(1)	(1)	-	(1)	-	(1)	-
WEST	65.2	25.8	9.0	21.0	40.9	9.4	27.2
Mountain	54.0	27.3	18.7	20.7	47.0	11.6	16.7
Colorado	51.9	32.9	15.2	17.8	49.4	13.9	13.9
Other	55.5	23.5	21.0	22.7	45.3	10.1	18.5
Arizona	(20)	(7)	(2)	(7)	(11)	(1)	(5)
Idaho	(5)	(7)	(4)	(3)	(6)	(2)	(3)
Montana	(2)	(1)	-	(1)	-	(1)	(1)
Nevada	(3)	(1)	(1)	(3)	(1)	(1)	(2)
New Mexico	(6)	(2)	(11)	(1)	(13)	(2)	(6)
Wyoming	(7)	(3)	-	(7)	(1)	(2)	-
Utah	(23)	(7)	(7)	(5)	(22)	(3)	(5)
Pacific	67.6	25.5	7.0	21.1	39.6	8.9	29.4
California	68.0	25.3	6.7	21.1	38.8	7.0	31.2
Washington	71.2	18.3	10.6	13.8	56.9	14.0	26.2
Other	58.8	36.3	5.0	30.9	24.7	20.0	16.3
Alaska	(1)	(2)	-	(2)	-	(1)	(1)
Hawaii	(18)	(17)	(1)	(14)	(10)	(7)	(7)
Oregon	(28)	(10)	(3)	(9)	(10)	(8)	(5)
TOTAL U.S.	76.6	17.2	6.1	20.2	33.9	15.2	19.0
No Answer	69.1	24.0	6.9	21.2	30.4	18.3	17.1

APPENDIX III

TABLE 2. PERCENT OF NURSES IN EACH REGION, GEOGRAPHIC DIVISION, AND STATE BY STRUCTURE OF HEALTH UNIT IN WHICH NURSE IS EMPLOYED

Region, Geographic Division, and State	Hours Physician is Present		Physician on Call	Written Standing Orders	Policy & Procedure Manual
	None	35 or more			
NORTHEAST	25.8	23.5	94.2	78.4	76.8
New England	28.5	18.0	96.8	83.5	77.0
Connecticut	29.2	23.4	97.9	89.7	78.7
Maine	37.0	5.6	94.4	69.8	69.8
Massachusetts	22.9	20.3	96.1	80.6	78.6
Rhode Island	(20)*	-	96.1	92.2	76.0
Other	42.0	2.0	98.0	74.0	(32)
New Hampshire	(17)	-	(35)	(27)	(24)
Vermont	(4)	(1)	(14)	(10)	(8)
Middle Atlantic	24.8	25.4	93.3	76.6	76.7
New Jersey	29.1	25.5	96.8	72.4	74.5
New York	20.6	28.2	89.6	81.5	80.9
Pennsylvania	27.7	21.8	95.7	72.6	72.5
SOUTH	35.6	26.3	96.8	76.3	75.1
South Atlantic	32.5	25.6	96.2	74.2	73.8
Dist. of Columbia	32.2	34.4	86.3	70.5	70.8
Florida	42.5	24.1	98.8	77.9	78.8
Georgia	36.8	12.8	97.0	83.2	77.6
Maryland	23.5	30.1	93.8	84.9	82.1
North Carolina	42.0	24.0	97.3	68.2	72.2
South Carolina	44.8	18.1	98.3	66.9	70.1
Virginia	30.8	26.2	97.7	65.3	66.3
West Virginia	16.0	31.9	95.8	83.5	77.5
Other					
Delaware	(7)	(17)	(37)	(24)	(25)
East South Central	43.8	26.1	98.5	83.7	80.2
Alabama	47.8	22.1	98.2	75.9	78.9
Kentucky	40.0	30.5	99.0	82.8	69.0
Tennessee	35.5	31.9	98.1	88.5	88.8
Other					
Mississippi	(31)	(1)	(41)	(35)	(31)
West South Central	35.1	28.4	96.7	74.1	73.1
Louisiana	36.3	20.9	94.5	70.1	67.8
Texas	33.8	29.1	97.6	74.4	76.6
Other	37.7	36.2	96.9	78.3	69.7
Arkansas	(12)	(3)	(22)	(20)	(15)
Oklahoma	(14)	(22)	(41)	(34)	(31)

*Numbers rather than percentages are given whenever the total number of respondents for the State was less than 50.

TABLE 2. PERCENT OF NURSES IN EACH REGION, GEOGRAPHIC DIVISION, AND STATE BY STRUCTURE OF HEALTH UNIT IN WHICH NURSE IS EMPLOYED--Continued

Region, Geographic Division, and State	Hours Physician is Present		Physician on Call	Written Standing Orders	Policy & Procedure Manual
	None	35 or more			
NORTH CENTRAL	37.0	21.0	96.0	77.8	76.6
East North Central	37.0	21.4	96.0	78.4	76.9
Illinois	42.1	19.0	97.9	80.0	78.1
Indiana	36.8	23.9	98.8	71.1	74.0
Michigan	33.2	37.0	95.7	78.5	78.5
Ohio	29.0	16.4	96.4	77.5	72.2
Wisconsin	52.2	9.6	89.3	84.9	85.5
West North Central	37.2	18.7	96.3	74.5	75.0
Iowa	43.8	19.2	97.2	70.8	64.8
Kansas	23.5	27.5	100.0	70.0	76.0
Minnesota	41.5	12.3	94.6	72.3	79.1
Missouri	38.5	20.5	95.2	82.8	78.6
Other	(10)	(8)	(41)	(23)	(26)
Nebraska	(8)	(8)	(39)	(23)	(24)
North Dakota	-	-	-	-	-
South Dakota	(2)	-	(2)	-	(2)
WEST	35.4	29.5	94.9	80.3	79.7
Mountain	32.0	31.4	95.2	75.1	73.6
Colorado	27.3	39.0	96.1	75.3	77.9
Other	35.0	26.5	94.6	75.0	70.7
Arizona	(19)	-	(28)	(23)	(22)
Idaho	(6)	(2)	(15)	(13)	(12)
Montana	(1)	(1)	(3)	-	-
Nevada	(1)	(1)	(3)	(3)	(3)
New Mexico	(4)	(11)	(15)	(14)	(11)
Wyoming	(3)	-	(8)	(5)	(5)
Utah	(7)	(16)	(33)	(29)	(29)
Pacific	36.1	29.1	94.9	81.4	81.0
California	37.6	29.3	96.4	81.4	81.0
Washington	16.2	37.1	85.6	92.4	91.5
Other	50.0	15.3	93.0	65.3	64.8
Alaska	(1)	(2)	(3)	(1)	-
Hawaii	(8)	(5)	(31)	(23)	(24)
Oregon	(27)	(4)	(32)	(23)	(22)
TOTAL U.S.	32.8	23.9	95.4	78.0	76.7
No Answer	38.5	19.4	94.8	80.5	79.3

TABLE 3. PERCENT OF NURSES IN EACH REGION, GEOGRAPHIC DIVISION, AND STATE BY EDUCATIONAL BACKGROUND

Region, Geographic Division, and State	College Degree	College Course in Occupational Health Nursing	Year of Graduation from Basic Nursing	
			Before 1930	1950 or later
NORTHEAST	6.4	19.7	16.9	11.3
New England	5.0	20.7	18.6	7.0
Connecticut	6.1	15.2	22.0	7.5
Maine	1.8	9.3	20.7	5.2
Massachusetts	5.3	22.1	17.8	7.5
Rhode Island	5.8	37.0	13.2	3.8
Other	-	36.5	7.8	5.9
New Hampshire	-	(18)*	(3)	(3)
Vermont	-	(1)	(1)	-
Middle Atlantic	6.9	19.4	16.3	12.8
New Jersey	8.4	23.9	8.8	12.4
New York	7.9	21.1	19.5	11.6
Pennsylvania	4.6	14.4	16.8	14.7
SOUTH	5.3	8.8	11.0	16.1
South Atlantic	5.3	8.2	11.8	18.8
Dist. of Columbia	4.4	19.6	23.7	7.5
Florida	5.3	7.6	9.5	14.7
Georgia	3.0	6.7	13.9	13.1
Maryland	8.5	14.1	11.4	18.1
North Carolina	4.0	5.9	11.0	28.6
South Carolina	5.7	3.3	8.2	23.0
Virginia	5.8	3.7	8.4	16.8
West Virginia	4.9	6.6	10.7	25.6
Other				
Delaware	(2)	(6)	(8)	(8)
East South Central	3.5	9.8	10.9	12.2
Alabama	1.8	8.0	13.3	6.2
Kentucky	1.9	5.5	11.0	13.8
Tennessee	5.8	16.6	8.3	14.2
Other				
Mississippi	(1)	-	(6)	(7)
West South Central	7.3	9.3	8.9	12.7
Louisiana	5.2	6.5	6.3	17.7
Texas	7.9	11.8	8.7	11.3
Other	8.7	4.5	13.0	10.1
Arkansas	(2)	-	-	(3)
Oklahoma	(4)	(3)	(9)	(4)

*Numbers rather than percentages are given whenever the total number of respondents for the State was less than 50.

TABLE 3. PERCENT OF NURSES IN EACH REGION, GEOGRAPHIC DIVISION, AND STATE BY EDUCATIONAL BACKGROUND--Continued

Region, Geographic Division, and State	College Degree	College Course in Occupational Health Nursing	Year of Graduation from Basic Nursing	
			Before 1930	1950 or later
NORTH CENTRAL	6.5	15.6	16.2	10.9
East North Central	6.2	16.0	16.1	9.9
Illinois	6.6	24.7	15.6	8.3
Indiana	5.4	11.1	13.2	12.1
Michigan	8.0	10.8	15.9	10.5
Ohio	5.2	9.9	16.4	9.7
Wisconsin	5.3	26.3	19.8	10.3
West North Central	8.1	13.3	16.8	16.2
Iowa	5.3	7.7	22.1	13.0
Kansas	7.8	(3)	(7)	(6)
Minnesota	10.4	28.9	16.9	19.1
Missouri	7.5	8.5	16.8	13.9
Other	(4)	(2)	(4)	(12)
Nebraska	(4)	(1)	(4)	(11)
North Dakota	-	-	-	-
South Dakota	-	(1)	-	(1)
WEST	10.2	25.5	16.1	10.2
Mountain	10.6	8.5	9.1	12.1
Colorado	15.4	13.9	10.3	11.5
Other	7.4	5.0	8.3	12.5
Arizona	(1)	(2)	(4)	(3)
Idaho	-	(2)	-	(2)
Montana	-	-	-	(1)
Nevada	(1)	(1)	-	(2)
New Mexico	(1)	(1)	(3)	-
Wyoming	(3)	-	(1)	(1)
Utah	(3)	-	(2)	(6)
Pacific	10.1	29.1	17.6	9.8
California	9.9	32.3	16.6	10.1
Washington	12.1	17.1	18.3	9.2
Other	8.5	14.8	25.6	7.3
Alaska	(1)	-	-	-
Hawaii	(3)	(7)	(8)	(4)
Oregon	(3)	(5)	(13)	(2)
TOTAL U.S.	6.7	16.8	15.4	12.0
No Answer	8.9	19.1	22.8	7.1

APPENDIX III

TABLE 4. BASE NUMBER OF NURSES IN EACH REGION, GEOGRAPHIC DIVISION, AND STATE

Region, Geographic Division, and State	Industry Group	Size of Workplace	Annual Salary	Hrs.Phys. Present	Phys. on Call	Standing Orders	Policy & Proc.Man.	College Degree	Course O.H.Nurs.	Yr. Grad. Bas.Nurs.
NORTHEAST	3169	3198	3170	3055	2952	3019	2984	3178	3141	3187
New England	810	817	810	789	772	784	765	813	796	816
Connecticut	293	295	293	291	287	290	286	295	283	295
Maine	57	58	58	54	54	53	53	57	54	58
Massachusetts	357	359	354	345	330	340	327	358	353	359
Rhode Island	53	53	53	49	51	51	50	52	54	53
Other	50	52	52	50	50	50	49	51	52	51
New Hampshire	34	35	35	35	35	35	35	34	35	34
Vermont	16	17	17	15	15	15	14	17	17	17
Middle Atlantic	2359	2381	2360	2266	2180	2235	2219	2365	2345	2371
New Jersey	499	505	503	475	470	467	463	502	498	499
New York	1052	1067	1055	1011	951	1002	992	1060	1054	1061
Pennsylvania	808	809	802	780	759	766	764	803	793	811
SOUTH	1940	1950	1915	1859	1815	1844	1810	1944	1923	1953
South Atlantic	1119	1120	1098	1061	1040	1061	1039	1115	1107	1125
Dist. of Columbia	89	89	90	90	80	88	89	91	92	93
Florida	93	93	95	87	86	86	85	95	92	95
Georgia	137	137	135	133	134	131	125	133	134	137
Maryland	166	164	166	153	145	152	151	165	163	166
North Carolina	152	152	150	150	147	148	144	151	152	154
South Carolina	124	124	112	116	118	118	117	122	121	122
Virginia	190	191	187	172	175	176	169	189	188	191
West Virginia	124	125	121	119	118	121	120	123	122	121
Other										
Delaware	44	45	42	41	37	41	39	46	43	46
East South Central	430	435	432	425	412	416	410	434	427	433
Alabama	116	116	113	113	109	112	109	113	113	113
Kentucky	109	110	107	105	101	99	100	108	109	109
Tennessee	166	168	171	166	161	165	161	171	163	169
Other										
Mississippi	39	41	41	41	41	40	40	42	42	42
West South Central	391	395	385	373	363	367	361	395	389	395
Louisiana	95	97	95	91	91	87	90	97	93	96
Texas	228	228	223	213	207	211	205	229	229	230
Other	68	70	67	69	65	69	66	69	67	69
Arkansas	25	25	25	24	24	24	24	25	24	25
Oklahoma	43	45	42	45	41	45	42	44	43	44

APPENDIX III

TABLE 4. BASE NUMBER OF NURSES IN EACH REGION, GEOGRAPHIC DIVISION, AND STATE--Continued

Region, Geographic Division, and State	Industry Group	Size of Workplace	Annual Salary	Hrs. Phys. Present	Phys. on Call	Standing Orders	Policy & Proc. Man.	College Degree	Course O.H. Nurs.	Yr. Grad. Bas. Nurs.
NORTH CENTRAL	3246	3272	3255	3159	3102	3140	3107	3263	3213	3270
East North Central	2743	2762	2744	2667	2622	2654	2623	2757	2711	2763
Illinois	660	669	672	636	614	635	625	667	657	666
Indiana	351	353	350	348	344	342	335	352	342	356
Michigan	578	579	565	552	537	549	548	577	564	580
Ohio	805	806	801	786	782	783	771	803	791	803
Wisconsin	349	355	356	345	345	345	344	358	357	358
West North Central	503	510	511	492	480	486	484	506	502	507
Iowa	75	78	76	73	71	72	71	75	78	77
Kansas	50	51	51	51	51	50	50	51	47	49
Minnesota	134	133	137	130	129	130	129	135	135	136
Missouri	201	204	203	195	188	192	192	201	199	202
Other	43	44	44	43	41	42	42	44	43	43
Nebraska	41	42	42	41	39	40	40	42	41	41
North Dakota	-	-	-	-	-	-	-	-	-	-
South Dakota	2	2	2	2	2	2	2	2	2	2
WEST	1141	1154	1152	1099	1049	1096	1098	1152	1148	1158
Mountain	198	198	198	194	187	193	193	199	200	198
Colorado	79	79	79	77	76	77	77	78	79	78
Other	119	119	119	117	111	116	116	121	121	120
Arizona	29	29	29	29	29	29	29	29	30	30
Idaho	16	16	16	16	16	16	16	16	16	16
Montana	3	3	3	3	3	3	3	3	3	3
Nevada	5	5	4	4	3	4	4	5	5	5
New Mexico	19	19	20	19	16	19	18	20	19	19
Wyoming	10	10	10	9	9	9	9	10	10	10
Utah	37	37	37	37	35	36	37	38	38	37
Pacific	943	956	954	905	862	903	905	953	948	960
California	759	766	767	728	694	726	728	764	762	769
Washington	104	109	107	105	97	105	106	107	105	109
Other	80	81	80	72	71	72	71	82	81	82
Alaska	3	3	3	3	3	3	3	3	3	3
Hawaii	36	37	37	32	32	32	31	37	37	37
Oregon	41	41	40	37	36	37	37	42	41	42
TOTAL U.S.	9496	9574	9492	9172	8918	9099	8999	9537	9425	9568
No Answer	529	451	533	428	682	501	601	488	600	457
GRAND TOTAL	10025	10025	10025	9600	9600	9600	9600	10025	10025	10025

APPENDIX IV

BASE NUMBERS FOR CROSSTABULATIONS OF SIZE OF WORKPLACE WITH STUDY VARIABLES

APPENDIX IV

TABLE 1. BASE NUMBERS FOR TABLE 4-4

Nursing Supervision	Number of Employees in Workplace						Total		
	Under 250	250-499	500-999	1000-2499	2500-4999	5000 & Over	Number	No Answer	Grand Total
Supervisory nurse in health unit	49	199	679	1570	1248	1442	5187	310	5497
Supervision of health unit by nurse outside unit	*	85	229	450	300	217	1281	174	1455
Supervision of only nurse	425	1071	1133	582	124	156	3491	159	3650
Number of nurses supervised by supervisory nurse	*	61	214	411	272	299	1257	48	1305

*Too few cases appeared in this category to treat separately; they are included in the next column which represents, in this instance, workplaces with up to 499 employees.

APPENDIX IV

TABLE 2. BASE NUMBERS FOR TABLE 4-5

Medical Direction	Number of Employees in Workplace						Total		
	Under 250	250-499	500-999	1000-2499	2500-4999	5000 & Over	Number	No Answer	Grand Total
Physician regularly present	520	1362	1979	2355	1439	1717	9372	228	9600
Physician on call	514	1365	1959	2321	1401	1549	9109	491	9600
Written standing orders	514	1354	1956	2345	1442	1693	9304	296	9600

APPENDIX V

BASE NUMBERS FOR CROSSTABULATIONS OF SIZE OF WORKPLACE AND TYPE OF INDUSTRY GROUP WITH STUDY VARIABLES

APPENDIX V

TABLE 1. BASE NUMBERS FOR TABLES 5-2 AND 5-3

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	1503	280	40
500 - 999	1497	352	68
1000 - 2499	1764	384	138
2500 - 4999	1076	211	116
5000 & over	1197	284	185

APPENDIX V

TABLE 2. BASE NUMBERS FOR TABLE 5-4

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	1479	281	39
500 - 999	1469	340	66
1000 - 2499	1736	377	134
2500 - 4999	1060	209	114
5000 & over	1155	276	181

APPENDIX V

TABLE 3. BASE NUMBERS FOR TABLE 5-5

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 1000	724	166	31
1000 - 2499	1263	214	71
2500 - 4999	953	175	95
5000 & over	1011	245	157

APPENDIX V

TABLE 4. BASE NUMBERS FOR TABLE 5-6

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 1000	404	122	29
1000 - 2499	811	167	49
2500 - 4999	672	130	70
5000 & over	805	217	144

APPENDIX V

TABLE 5. BASE NUMBERS FOR TABLE 5-7

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	1248	200	28
500 - 999	851	218	42
1000 - 2499	368	148	56
2500 - 4999	76	27	18
5000 & over	105	27	20

APPENDIX V

TABLE 6. BASE NUMBERS FOR TABLES 5-8 AND 5-9

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	1531	282	40
500 - 999	1525	356	68
1000 - 2499	1794	387	136
2500 - 4999	1081	212	117
5000 & over	1204	289	190

APPENDIX V

TABLE 7. BASE NUMBERS FOR TABLE 5-10

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	1532	279	39
500 - 999	1522	341	66
1000 - 2499	1790	364	128
2500 - 4999	1070	198	104
5000 & over	1144	218	157

APPENDIX V

TABLE 8. BASE NUMBERS FOR TABLE 5-11

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	1513	285	40
500 - 999	1511	349	66
1000 - 2499	1788	384	133
2500 - 4999	1090	208	115
5000 & over	1188	283	188

APPENDIX V

TABLE 9. BASE NUMBERS FOR TABLE 5-12

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	1491	331	43
500 - 999	1476	369	70
1000 - 2499	1746	408	148
2500 - 4999	948	225	121
5000 & over	1662	319	200

APPENDIX V

TABLE 10. BASE NUMBERS FOR TABLE 5-13

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	1508	331	44
500 - 999	1492	376	70
1000 - 2499	1771	413	148
2500 - 4999	962	229	124
5000 & over	1667	319	200

APPENDIX V

TABLE 11. BASE NUMBERS FOR TABLES 5-14 AND 5-15

Number of Employees in Workplace	Type of Industry Group		
	Manufacturing	Nonmanufacturing	Government
Under 500	1498	332	45
500 - 999	1488	372	69
1000 - 2499	1736	413	146
2500 - 4999	936	227	124
5000 & over	1627	312	196

APPENDIX VI

FORMER OCCUPATIONAL HEALTH NURSES

FORMER OCCUPATIONAL HEALTH NURSES

Of the 17,018 nurses surveyed, 3,563 reported that they were not currently working as full-time occupational health nurses. These nurses were asked to answer three questions:

(1) What is your present situation?

(2) How many years has it been since you worked as an occupational health nurse?

(3) Do you expect to return to work as an occupational health nurse?

The answers to these three questions are tabled below.

APPENDIX VI

TABLE 1. PRESENT SITUATION OF NURSES NOT CURRENTLY WORKING AS OCCUPATIONAL HEALTH NURSES

Situation	Percent of Nurses	
Employed	36.6	
In nursing but not in occupational health		32.7
Not in nursing		4.0
Not Employed	40.7	
Full-time housewife		22.8
Retired		11.9
Looking for work		5.0
Full-time student		1.1
Other (includes part-time, relief, and substitute)	22.6	22.6
Total Percent	100.0	100.0
Number	3245	
No Answer	318	
Grand Total	3563	

APPENDIX VI

TABLE 2. NUMBER OF YEARS SINCE RESPONDENT LAST WORKED AS AN OCCUPATIONAL HEALTH NURSE

Number of Years	Percent of Nurses
Less than 1	41.4
1	23.4
2-5	29.5
6-10	1.8
More than 10	3.8
Total Percent	100.0
Number	2548
No Answer	1015
Grand Total	3563

APPENDIX VI

TABLE 3. PLANS TO RETURN TO WORK AS AN OCCUPATIONAL HEALTH NURSE

Plans to Return	Percent of Nurses	
Yes	28.2	
Definitely		10.7
Probably		17.5
No	37.7	
Probably		27.1
Definitely		10.6
Uncertain	34.1	34.1
Total Percent	100.0	100.0
Number	2575	
No Answer	988	
Grand Total	3563	

* U.S. GOVERNMENT PRINTING OFFICE : 1966 O—217-477