

THE UNIVERSITY OF CALGARY

TASK ENVIRONMENT AND INTRA-ORGANIZATIONAL
WORK ARRANGEMENTS: FACTORS AFFECTING
THE SIZE OF NURSING ADMINISTRATIONS IN
ALBERTA HOSPITALS.

by



Cheryl L. Bucar

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF MASTER OF ARTS
DEPARTMENT OF SOCIOLOGY
CALGARY, ALBERTA

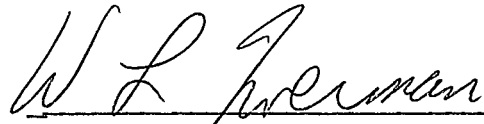
JUNE, 1982

© Cheryl L. Bucar 1982

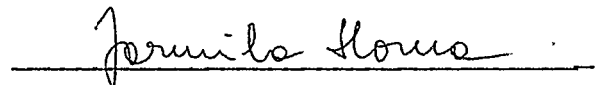
THE UNIVERSITY OF CALGARY

FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled, "Task Environment and Intra-Organizational Work Arrangements: Factors Affecting the Size of Nursing Administrations in Alberta Hospitals," submitted by Cheryl L. Bucar in partial fulfillment of the requirements for the degree of Master of Arts.



Supervisor, W.L. Zwerman (Sociology)



J.L.A. Horna (Sociology)



A. Cahoon (Management)

April 29, 1981

Abstract

The purpose of the present study was to assess the possible determinants of the size of the nursing administration component in hospitals. It was felt that the size of an organizations nursing administration would be affected by the magnitude of environmental factors (i.e. demand, complexity and instability), the number of nursing personnel, and the presence of an alternative authority structure in the form of a diverse medical staff.

Analysis of Hospital Services Commission data on 145 Alberta hospitals revealed substantial differences in the factors affecting the size of nursing administrations in hospitals possessing a larger number of general administrators versus hospitals possessing smaller numbers of general administrators. Hospitals with smaller general administrations possessed nursing administrations that were a function of the professional organization of work performed by registered nurses at the direct component level as well as the average number of patients in the hospital on any given day. Ratio analysis, indicative of service and administrative intensity calculated for the varieties of hospitals with smaller general administrations, were not consistent. For example, standards for nursing administration - direct component personnel staffing ratios appeared to be absent. However, frequency distribution

data indicated that hospitals with smaller general administrations were relatively homogeneous in their composition (i.e. this type of hospital was small in scale of operations). In addition, observations made in hospitals of this type revealed that functions of both the nursing and general administrations were the same across all varieties of hospitals.

In contrast, hospitals with larger general administrations possessed nursing administrations that were a function of the workload created by the number of nursing personnel as well as the increased complexity in internal administration created by the professional organization of work provided by medical staff specialists. In addition, ratio analysis disclosed that there is a greater consistency across all varieties of this type of hospital, in relation to the nursing administrations nursing staff personnel ratio. (Nursing administrative ratio). That is, "typical" and "giant" hospitals of this type displayed similar nursing administrative intensity (i.e. 1 nursing administrator to 9 nursing staff personnel) independent of size and organizational complexity.

The factors affecting the size of nursing administration were established through a quantitative comparison of hospital organizations. Data employed in the quantitative analysis was gathered from the Annual Return for Hospitals, Facilities and Services, HS-1 forms, 1975.

DEDICATION:

To Mom and Dad

ACKNOWLEDGMENTS

Due to the fact that this process happened over a period of four years there have been a variety of "centers of influence" for me.

Most recently I would like to thank Dr. Zwerman for his boost of confidence to see me through to the end; Dr. Stebbins and Dr. Ray for managing the administrative end, and Dr. Horna and Dr. Cahoon for their vote of confidence. In addition, I would like to thank Dr. Reeves for his support and efforts in the initial stages of this research endeavour.

To all my dear friends who, at various times over the past four years, spent many long nights lending support when I needed it the most, I can't thank you all enough. A special thankyou to my sister who "has been there" for me throughout this process.

FIGURES

FIGURE		PAGE
1.1	The Number of Nursing Administrators as a Function of the Number of Nursing Personnel	7
1.2	The Number of Nursing Administrators as a Function of the Number of Nursing Personnel -- "Complexity - Administrative Growth Argument" Versus "Economies of Scale Argument"	8
2.1	Factors in a Hospital Organizations Task Environment and Internal Organizational Arrangements that Effect the Size of Nursing Administration. (Hospitals with Smaller Numbers of General Administrators)	41
2.2	Factors in a Hospital Organizations Task Environment and Internal Organizational Arrangements that Effect the Size of Nursing Administrations. (Hospitals with Smaller Numbers of General Administrators)	42
4.1	Typical Structure of Internal Administration in a Hospital with Smaller Numbers of General Administrators in the Province of Alberta in 1978	66
4.2	Typical Structure of Internal Administration in a Hospital with Larger Numbers of General Administrators in the Province of Alberta in 1978	69
5.1	Factors Associated with the Size of Nursing Administrations in Hospitals with Larger General Administrations	113
5.2	Schematic Presentation of Relationship Amongst Patient Load, Number of Nursing Staff, and Number of Nursing Administrators in Hospitals with Larger General Administrations (N=59)	114
5.3	Schematic Representation of Relationship Amongst Number of Types of Rated Beds, Number of Types of Medical Specialties and Number of Nursing Administrators in Hospitals with Larger General Administrations (N=59)	117

FIGURE

PAGE

5.4	Factors Associated with the Size of Nursing Administrations in Hospitals with Smaller General Administrations (N=86)	129
6.1	Function of Registered Nurses When Size of Nursing Administration and Magnitude of Environmental Demand are Considered -- Hospitals with Smaller General Administrations	159 A

LIST OF TABLES

TABLE		PAGE
5.1	Number of Organizational Members in the General Administration in Hospitals with Larger General Administrations (N=59)	79
5.2	Number of Organizational Members in the General Administration in Hospitals with Smaller General Administrations (N=86)	81
5.3	Number of Organizational Members in the Nursing Administration in Hospitals with Larger General Administrations (N=59)	87
5.4	Number of Organizational Members in the Direct Component in Hospitals with Larger General Administrations (N=59)	88
5.5	Average Number of Patients in the Hospitals on any Given Day (Patient Load) in Hospitals with Larger General Administrations (N=59)	91
5.6	Number of Different Types of Medical Staff Specialties in Hospitals with Larger General Administrations (N=59)	93
5.7	Number of Different Types of Rated Beds (Environmental Complexity) in Hospitals with Larger General Administrations (N=59)	95
5.8	Number of Organizational Members in the Nursing Administration in Hospitals with Smaller General Administrations (N=86)	102
5.9	Number of Organizational Members in the Direct Component in Hospitals with Smaller Numbers of General Administrations (N=86)	103
5.10	Actual Number of Patients in the Hospital on any Given Day (Patient Load) in Smaller General Administrations (N=86)	107
5.11	Comparison of Descriptive Statistics for Hospitals with Five or More General Administrators and Hospitals with Four or Fewer General Administrators in the Province of Alberta in 1975	110

TABLE		PAGE
5.12	Factors Associated with the Size of Nursing Administrations in Hospitals with Larger General Administrations	112
5.13	Factors Associated with the Size of Nursing Administrations in Hospitals with Smaller General Administrations	116

TABLE OF CONTENTS

CHAPTER	PAGE
APPROVAL	ii
ABSTRACT	iii
DEDICATION	v
ACKNOWLEDGMENTS	vi
FIGURES	vii
LIST OF TABLES	ix
 1. ORGANIZATIONAL SIZE AND ADMINISTRATIVE INTENSITY	1
1.1 Statement of the Problem	1
1.2 Organizational Size and Administrative Intensity	2
1.3 Beyond the Size-Administrative Intensity Relationship	9
1.3.1 Internal Factors	10
1.3.1.1 Organizational Complexity	10
1.3.2 External Factors	13
1.3.2.1 The Magnitude of Environmental Demand	13
1.3.2.2 The Magnitude of Environmental Instability	14
1.3.2.3 The Magnitude of Environmental Complexity	15
1.4 Conclusions	18
2. THE HOSPITAL ORGANIZATION	21
2.1 A Model for the Study of Hospital Organizations	21
2.2 The Effect of Task Environment on Administration	26
2.2.1 The Image of Organizational Closure vis-a-vis The Hospitals' Nursing Administration	29
2.2.1.1 Implications for the Study of Factors Affecting the Size of Nursing Administrations	31
2.3 Explanations	33
2.3.1 The Size of the General Administration Contingency Argument	33

CHAPTER	PAGE
2.3.2 The Medical Staff Structure Argument	36
2.4 Conclusions	38
2.4.1 Hospitals with Smaller Numbers of General Administrators	39
2.4.2 Hospitals with Larger Numbers of General Administrators	40
3. METHODOLOGY	44
3.1 Introduction	44
3.2 Research Design	44
3.3 The Hospital and Interview Samples	46
3.3.1 The 1975 Hospital Sample	46
3.3.2 The Interview Sample	47
3.4 Field Procedures	48
3.4.1 Contact	48
3.4.2 Entry	49
3.5 Measurement of Variables	50
3.5.1 Dependent Variables	50
3.5.1.1 The Nursing Administration	50
(i) definition	50
(ii) measurement	51
3.5.2 Independent Variables	52
3.5.2.1 Size	52
(i) definition	52
(ii) measurement	53
3.5.2.2 Organizational Complexity	53
(i) definition	53
(ii) measurement	54
(iii) computation	54
3.5.2.3 Environmental Instability	55
(i) definition	55
(ii) measurement	56
3.5.2.4 Environmental Complexity	57

CHAPTER	PAGE
(i) definition	57
(ii) measurement	58
(iii) computation	58
3.5.2.5 Environmental Demand	59
(i) definition	59
(ii) measurement	59
(iii) computation	59
3.5.2.6 General Administration	60
(i) definition	60
(ii) measurement	60
(iii) computation	61
4. THE NURSING ADMINISTRATION	64
4.1 Introduction	64
4.2 Varieties of Nursing Administrations	65
4.3 An Explanation for Varieties of Nursing Administrations	70
4.3.1 Small Numbers of General Administrators ...	70
4.3.2 Large Numbers of General Administrators ...	71
4.4 Conclusions	73
5. AN ANALYSIS OF THE DATA	77
5.1 Introduction	77
5.2 Two Types of Hospitals	78
5.3 Analysis of Frequency Distribution Data For Hospitals with Larger General Administrations (N=59)	82
5.3.1 Dependent Variable - The Size of the Nursing Administration	85
5.3.2 Independent Variables	86
5.3.2.1 The Number of Nursing Staff (Direct Component)	86
5.3.2.2 Patient Load (Environmental Demand)	90
5.3.2.3 Number of Different Types of Medical Specialties (Organizational Complexity)	92
5.3.2.4 Number of Different Types of Rated Beds (Environmental Complexity)	93

5.4 Analysis of Frequency Distribution Data For Hospitals with Smaller General Administrations (N=86)	95
5.4.1 Dependent Variable - The Size of the Nursing Administration	99
5.4.2 Independent Variable	101
5.4.2.1 The Number of Nursing Staff (Direct Component)	101
5.4.2.2 The Number of Registered Nurses in the Direct Component	103
5.4.2.3 Patient Load (Environmental Demand)	106
5.4.3 Summary of Frequency Distributions for Both Types of Hospitals	108
5.5 Multivariate Model of Hospitals with Larger Numbers of General Administrators (N=59)	111
5.5.1 Results of the Regression Analysis	117
5.5.1.1 The Contingency Argument	119
5.5.1.2 The Medical Staff Structure Argument	122
5.5.2 Conclusion	125
5.6 Multivariate Model of Hospitals with Smaller Numbers of General Administrators (N=86)	126
5.7 Comparison of Multivariate Models	131
5.8 Conclusions	134
6. Discussion	139
6.1 Introduction	139
6.2 Hospitals with Larger General Administrations	141
6.2.1 Implications of Research in Hospitals with Larger General Administrations	146
6.2.2 Hospitals with Larger General Administrations: Possible Consequences for Nursing Administrations	147

CHAPTER	PAGE
6.3 Hospitals with Smaller General Administrations	153
6.3.1 Implications of Research in Hospitals with Smaller General Administrations	158
6.3.2 Hospitals with Smaller General Administrations: Possible Consequences	160
6.4 Alternative Explanations for Variations in the Size of Nursing Administrations	162
6.4.1 Other Explanations	166
6.5 Limitations of the Study of Factors Affecting the Size of Nursing Administrations	171
7. IMPLICATIONS FOR FUTURE RESEARCH AND CONCLUSIONS	175
7.1 Implications for Future Research	175
7.2 Conclusions	176
BIBLIOGRAPHY	179
HOSPITAL SOURCES	188

CHAPTER 1

ORGANIZATIONAL SIZE AND ADMINISTRATIVE INTENSITY

1.1 STATEMENT OF THE PROBLEM

This study addresses itself to the following question: What factors in an organization's task environment and intraorganizational arrangements affect the size of an organization's administration? The purpose of the present study, therefore, is to assess possible determinants of the size of the nursing administrations in hospitals. It is felt that the size of an organization's nursing administration will be affected by:

1. the magnitude of environmental demand, complexity and instability;
2. the number of nursing personnel; and,
3. the presence of an alternative authority structure in the form of a diverse medical staff.

1.2 ORGANIZATIONAL SIZE AND ADMINISTRATIVE INTENSITY

Most of the literature investigating the notion of administrative intensity implicitly accepts the premises of classical organizational theory. The closed system logic employed by classical organization theorists (Taylor, 1911; Fayol, 1949; Mooney, 1947; Gulick and Urwick, 1937; Weber, 1958) is guided by the assumption that the interactions within an organization are of a determinate nature. From this perspective, an organization's internal administration focuses on explicating problems of internal coordination and control given specialization of tasks, and the attendant division of labor among personnel. This determinateness in organizational operations is achieved by the elimination of uncertainty through organizational closure.

Explanations for the variations in intensity or relative size of the internal administrations, have most often been interpreted in terms of variations in the size of the internal organizational operations to be managed -- for example, the total number of employees, the fixed assets of the firm, or the number of position. Generally, the number of personnel producing services or commodities have been presumed to be the sole determinant of the size of the administrative component. Although it may be suggested that this single factor model is far too simplistic, it is

however consistent with classical organization theory (e.g. Fayol's (1949) discussion of span control).

During the mid 50's and early 1960's the relationship between the size of an organization and it's administrative component was the object of consistent examination by sociologists.¹ Most often, researchers have investigated the effect an increase or decrease in an organization's size has on the administrative/production ratio (A/P) (Hendershot and James, 1972; Blau and Schoenherr, 1971; Melman, 1956; Terrien and Mills, 1955; Rushing, 1967). Early studies such as Terrien and Mills (1955) examination of school districts in California, hypothesized that an organization's A/P ratio increased with an organization's size. It was reasoned that as an organization's size increased, a disproportionately greater number of administrators would be required to provide coordination. The explanation proposed by Terrien and Mills (1955) has become what is traditionally known now as the "complexity-administrative growth hypothesis" (Freeman, 1979:119). Few researchers have found the same positive association between size and the A/P ratio relationship. Tsouderos's (1955) examination of 10 voluntary associations and Raphael's (1965) comparative study of the Anderson-Warkov hypothesis, both recorded positive relationships existing between organization size and the A/P ratio.

Freeman (1973:751) acknowledges "most researchers

since 1955 have found that organizational size is inversely related to administrative intensity". Blau (1972) hypothesized that the inverse relationship existing between the size of an organization and the relative size of the administrative component represents an economies of scale notion. The larger an organization is in size, the smaller the administrative apparatus need be in relation to the whole. The essential idea being that larger organizations employ their administrative services more efficiently.

The examination of the relationship between administrative intensity and organization size in a variety of types of organization studies has failed to produce consistent findings: some findings suggest a positive correlation, others have found a negative correlation, and still others suggest from their results that there is no correlation at all. Studies reporting positive correlations are: Terrien and Mills, 1955; Tsouderos, 1955; Raphael, 1965; those studies reporting negative correlations: Bendix, 1956; Haas, Hall and Johnson, 1963; Hawley, Boland and Boland, 1965; Anderson and Warkov, 1961; Tosi and Pratt, 1967; Blau, 1970; Holdaway and Blowers, 1971; Hendershot & James, 1972; Blau and Schoenherr, 1971; Rushing, 1967; those reporting no relationship: Haire, 1959; Draper and Strother, 1963. The existence of inconsistent findings may suggest that size has no systematic effect on administrative intensity

(Rushing, 1967). However, it is possible that the inconsistency in results may be due to spurious interpretations, or contingency effects on other relevant variables such as environmental factors and organizational closure were not taken into account.

In addition, methodological problems in the operationalization of the most common indicator of administrative intensity, the administrative/production ratio (A/P), may account for inconsistencies in results as well. Louis Pondy (1969:47) defines administrative intensity as "the number of managers, professionals, and clerical workers divided by the number of craftsman, operatives and laborers employed by the organization". The definition employed by Pondy (1969) is representative of the manner in which the variable administrative intensity has been operationalized in the past. However, it is felt that the notion of administrative intensity may be addressed in a different fashion. Earlier studies examined the relationships between organizational size, most often measured by a total number of employees ($A + P$) and the A/P ratio. Freeman notes:

"When $A + P$ is the definition of size, the relationship can be either positive and linear or negative and decelerating. The nature of the function as well as the magnitude of the correlation depends on the frequency distributions of A and P, particularly on their relative variances." (Freeman, 1973:751)

In addition, this type of analysis poses problems of specification (Reeves and Bucar, 1978; Rushing, 1976).

In an attempt to avoid problems of specification and interpretation, a non-ratio measure of administrative intensity was employed in this study of factors affecting the size of hospital nursing administrations. The decision not to use a ratio measure of administrative intensity was also based on interview data gathered from six Nursing Administrators in various sized hospitals throughout the Province of Alberta. A/P ratios proved to be neither significant symbols nor enforced standards in any hospitals visited. Through the application of regression analysis, the slope between the number of nursing personnel providing direct services and the number of personnel in the nursing administration provide an estimate that is somewhat analogous to the traditional A/P ratio.

The number in the administration was treated as the dependent variable, and the size of the nursing component was treated as one of the independent variables. In this respect then, the denominator of the slope would represent changes in the number of "production workers" (the nursing component) and the numerator would represent the associated changes in the number of nursing administrators (i.e.:

$$\text{slope} = \frac{(\text{change in the dependent variable} = \text{change in number of nursing administrators})}{(\text{change in the independent variable} = \text{change in number of nursing personnel})}$$

Figure 1.1 graphically depicts the relationship between

number of Nursing Administrators and number of nursing personnel.

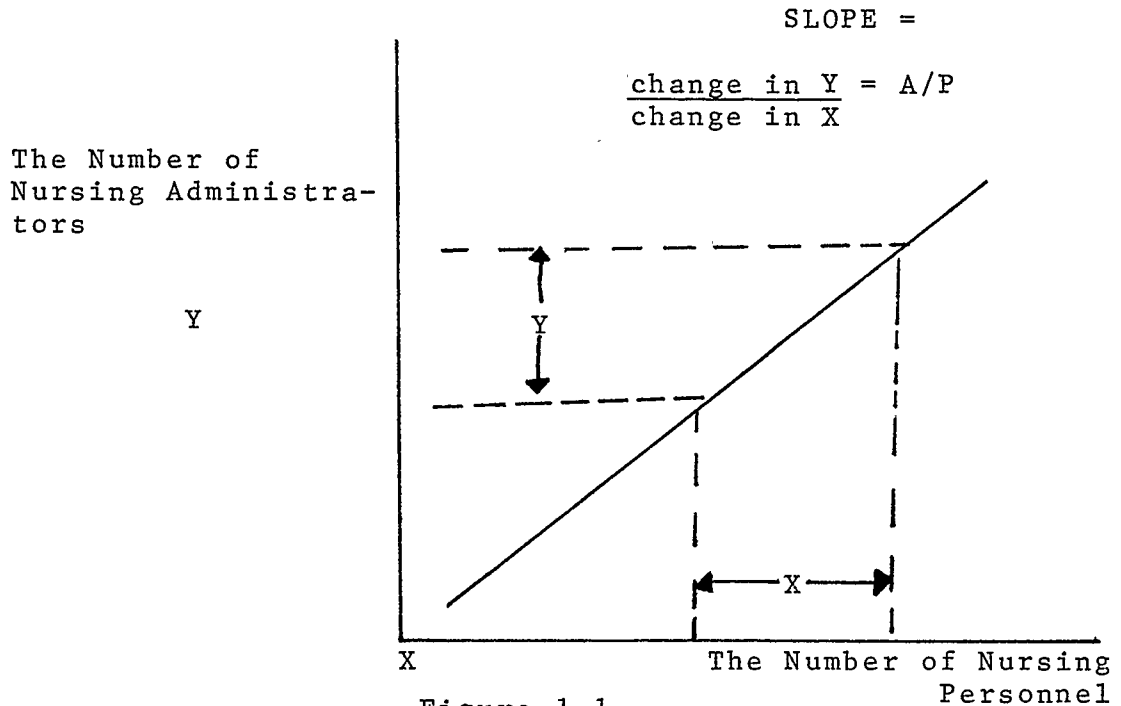


Figure 1.1

The Number of Nursing Administrators as a
Function of the Number of Nursing
Personnel

The economies of scale notion for the study of the size of nursing administrations would suggest that the addition of nursing personnel has a greater impact on administrative functions (i.e. coordination and control of work arrangements) for the first few units added to the hospital's organization than subsequent increments of nursing personnel. It is reasoned that at the outset (i.e. the initial injection of new personnel into the hospital organization), a positive association is found to exist between the number of nursing

personnel and the number of nursing administrators. However, as the administration becomes adjusted to the necessary changes required to organize the nursing services, an economies of scale in the nursing administration is presumed to occur (i.e. the administration is able to efficiently employ their administrative services). Given the form of analysis used in this study, it is suggested that the economies of scale notion and complexity-administrative growth arguments may now imply the presence of curvilinearity or a log transformation of the number of personnel providing nursing services. Figure 1.2 depicts the hypothesized relationship between the number of nursing personnel and the number of nursing administrators.

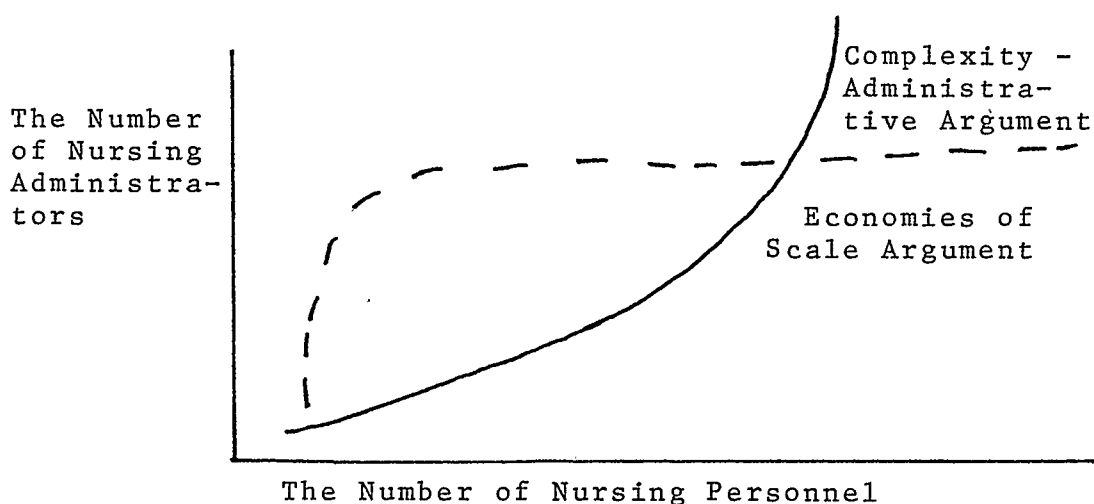


Figure 1.2

The Number of Nursing Administrators as a
Function of the Number of Nursing
Personnel -- "Complexity -
Administrative Growth Argument"
versus "Economies of
Argument"

1.3 BEYOND THE SIZE - ADMINISTRATIVE INTENSITY RELATIONSHIP

The effects of mediating factors such as technology and the heterogeneous composition of the administrative component have been introduced into current research in an attempt to explicate the inconsistent evidence surrounding the effects of size on administrative intensity (Hrebiniak, 1976). However, few researchers have employed more than a single factor model to examine this dimension of organizational structure. It is felt that factors that effect the size of the nursing administration fall into two broad categories: (1) internal factors; and, (2) environmental or external factors. In addition, because a hospitals' administration "manages" environmental factors as well as internal organizational operations, these factors must be examined together.

The form of analysis employed in this study allows for the investigation of the impact of external factors, such as the magnitude of environmental demands, instability, or complexity, and internal factors such as the size of the nursing component, as well as the number of types of medical staff, on the size of the nursing administration. For example, using this type of analysis the effect of environmental variables on the size of the nursing administration will be determined after internal factors are taken into account (i.e. statistically controlled). At the same time, any

direct effect the number of nursing personnel have on the size of the nursing administration will be determined by taking into account all other variables included in the analysis. It is hypothesized that the number of nursing administrators is a function of the number of nursing personnel, the number of different types of medical staff specialties, the number of patients admitted, or the number of services the hospital is characterized to provide.

1.3.1 Internal Factors

1.3.1.1 Organizational Complexity

Variations in administrative intensity have been explained by reference to structural variables such as organizational complexity or structural differentiation. Conventional indicators of complexity or structural differentiation employed most often are the number of divisions present in an organization, the number of distinct goals, the presence of more than one major organizational activity and the degree to which physical facilities are spatially dispersed (Hickson, Pugh, and Pheysey, 1969). Most studies employing the variable complexity have dealt with the examination of diversity in

activities performed by the organization or the level of skill necessary to perform the work (Neuhauser and Anderson, 1972) and the size - A/P ratio.

It is apparent, as was the case with the size - A/P ratio relationship, that inconsistencies exist in the results reported on the complexity - A/P ratio relationship. Heydebrand (1973) employing standardization of procedures and formalization of communication channels as measures for vertical and horizontal differentiation found an inverse relationship to exist between these variables and the A/P ratio. It was reasoned that due to increased vertical and horizontal differentiation, the need for direct supervisors is reduced, thus minimizing the size of the administrative body.

Kasarda's 1973 study and Champion and Betterton's 1974 study of hospital organizations record similar results for the existence of a positive correlation between complexity and the A/P ratio. Both studies note that more complex hospitals were characterized by a higher ratio of administrators. Champion and

Betterton (1974:105) concluded by suggesting "some evidence exists which shows organizational complexity may be a better predictor of the size of the administrative component than the size of the organization".

The number of different types of medical staff specialties is indicative of complexity in a hospital organization. Observations made in six Alberta hospitals confirms that where there is more differentiated "division of labor" vis-a-vis medical staff specialties, there will be a complimentary technology available to assist the medical specialties in their diagnosis and treatment of the patient. To this extent then, there will exist a specialized medical staff to carry out the necessary care that is required. It was found that in hospitals where there exists a variety of types of medical staff, nursing operations will be managed by both the nursing administration and the medical staff. This increased horizontal division of labor at the administrative level results in a reduction in the jurisdiction, and the size of the nursing administration.

The scope of the nursing administration's authority will marginally decrease in hospital organizations where a diverse medical staff is present (Child, 1973; Rushing, 1967). In hospitals where there exists little or no differentiation in the medical staff all together, decision making practices as well as work assignments initiated at the technical level will be organized by the nursing administration. It is hypothesized that the size of the nursing administration will be inversely related to the diversity of the medical staff.

1.3.2 External Factors

A variety of administrative responsibilities arise from the interactions between an organization and its environment (Freeman, 1973:754). In the study of factors affecting the size of the nursing administration in hospitals we examine three main environmental factors that effect administrative functions: magnitude of environmental demand, instability and complexity.

1.3.2.1 The Magnitude of Environmental Demand

The notion of environmental demand is grounded in James D. Thompson's

(1967) discussion of task domain. As defined by Levine and White (1961), domain consists of "claims which an organization stakes out for itself in terms of: (1) disease covered, (2) population served, and (3) service rendered (Thompson, 1967:26). The organization of these inputs and outputs is coordinated by the administration. Presumably, the greater the magnitude of environmental demand, the larger the administrative apparatus need be to coordinate the work arrangements necessary to transform the input. In hospitals, the number of patients in the hospital on an average day (patient load) and the number of patients discharged per year are indicative of environmental demand. They depict the amount of work to be carried out at the technical level as well as the overall demand for a hospital's services.

1.3.2.2 The Magnitude of Environmental Instability

A second factor to be considered is environmental instability. Fluctuations or uncertainty in an organization's environment require that the

administration rely on more active forms of coordination. From an open systems perspective, the anticipation of environmental fluctuations may be achieved by the establishment of specific positions or departments that buffer inputs and outputs. A hospital organization may attempt to buffer their nursing core from patient demands by establishing admitting units, emergency wards, or out-patient services. In hospitals, the average length of stay of patients would be indicative of environmental instability. Hospitals providing care of shorter duration may be more susceptible to fluctuations in patient loads and would, in any event, devote a greater amount of time and energy in the processing of admissions and the setting up of patient records. Hospitals which have to make more adjustments to accommodate fluctuations in patient demand would be expected to have greater numbers of personnel in their administration (Reeves and Bucar, 1978).

1.3.2.3 The Magnitude of Environmental Complexity

A third factor to be considered is

environmental complexity. The more diverse an organization's environment is, the greater the number of factors requiring administrative attention (Freeman, 1973:754). Thompson (1967:70) proposed that "we would expect the complexity of the structure, the number and variety of units, to reflect the complexity of the environment." The number of different types of rated beds is indicative of a hospital's environmental complexity. Observation in six Alberta hospitals confirmed that all hospitals provide a medical-surgical rated bed differentiation. However, some hospitals established specialized rated bed wards such as maternity, pediatric, or psychiatric to mention only a few examples. If nothing else, increased environmental complexity increases the magnitude of the administrative record keeping function. It was found that in hospitals with larger numbers of general administrators maintenance of patient records were kept by ward clerks and receptionists. Each specialized unit or ward possessed an individual that maintained the patient

records. However, in hospitals with smaller numbers of general administrators, patient record keeping was maintained by nursing administration personnel; usually the head nurse or nursing administrator.

All external factors are hypothesized to engender the size of the nursing administration in hospitals that do not achieve organizational closure. Hospitals of this type are characterized by small numbers in their general administration. The management of patient admissions and discharges, liaison and negotiation with provincial government bodies and other hospitals is provided by the nursing administration. In addition, nursing administrators would be responsible for the internal administration of nursing services. Hospitals with larger numbers of general administrators are better able to insulate work conducted within the hospital from influence of environmental factors. The general administration in hospitals of this type not only regulates and stabilizes the demand for services but also mediates complexities that arise in the environment. The nursing

administration would then be a function of the number of nursing personnel.

1.4 CONCLUSIONS

This study is an attempt to progress beyond the notion that the size of an organization's administrative component is a function solely of the overall organization's size. Variables such as the magnitude of environmental demands, instability and complexity will be introduced into the analysis to determine their effect on the size of the nursing administration. Internal structuring of the organization will also be taken into account to determine the effects certain combinations of staff components have on the size of the administration. A contingency effect argument is proposed to explain variations in the size of the nursing administrations in Alberta hospitals. My research will attempt to demonstrate that hospitals possessing larger numbers of general administrators as opposed to hospitals possessing smaller numbers of general administrators exhibit different sets of factors affecting the size of the nursing administration.

The theoretical perspective is developed from James D. Thompson's (1967) discussion of open systems theory as well as Talcott Parson's (1960) distinction between different "levels" of organizing. The inclusion of environmental variables as factors affecting

administrative intensity acknowledges the fact that organizations do not exist in a vacuum. It is proposed that classical organizational theory provides an adequate guide for the explanation of variations in the size of nursing administrations, only for hospitals that have achieved some degree of closure. In the absence of organizational closure provided by the general administration, the size of the nursing administration will be subject to environmental influences.

FOOTNOTES:

1. Please see Kimberly, John R., "Organizational Size and the Structuralist Perspective: A Review, Critique, and Proposal". Administrative Science Quarterly. December 1976, Volume 21, pp 571 - 597., and also Freeman, John, "Going to the Well: School District Administrative Intensity and Environmental Constraint". Administrative Science Quarterly, March 1979, Volume 24, pp 119.

CHAPTER 2

THE HOSPITAL ORGANIZATION

2.1 A MODEL FOR THE STUDY OF HOSPITAL ORGANIZATIONS

The study of hospital organizations has grown from an interest in their anomalous structure. This anomalous structure has been classed as non-conforming to the bureaucratic model. Hospitals mobilize the skills and efforts of a number of widely divergent groups of professional, semi-professional and non-professional personnel around a simultaneous goal of patient care (Georgopoulous and Mann, 1962). The multiple authority structure that is necessary to coordinate and integrate diverse groups of personnel provides the distinguishing characteristic of hospitals. In the hospitals we studied, we were able to investigate two administrative bodies -- the general administration and the nursing administration -- as well as the medical staff. Neither of these administrative components function independently of one another and of the medical component. However, each administrative component may coordinate and control different sectors of the organization and for that reason are analyzed separately. Although all hospitals are assumed to share the same basic goal of patient care, they are also

expected to vary according to their task environments, according to different modes of dividing the work, and according to different modes of coordination (Heydebrand, 1973).

An organization's administrative component provides coordination of internal work arrangements and the regulation of interactions between the internal arrangements and the organization's environment. In a hospital organization these functions are provided by the general administration and/or nursing administration. The administrative components in hospital organizations are hypothesized to perform two major functions. First, the administration intercedes between an organization's external environment and the technical core, creating a predictable and stable environment for the "transformation" processes at the technical level (i.e. care of the patient). The accomplishment of predictability in the technical core operations is provided by the boundary spanning units. These units are designed to forecast, level and/or buffer environment so that predictability and control over transformation processes will be ensured. Thompson (1967) argues that organizations seek to insulate their "core technologies" from uncertainties by adopting a closed system logic. Within this context, the hospitals administrative component provides this insulation or closure by managing the flow of inputs and outputs (i.e. the

processing of admission and discharges of patients, negotiation with other hospitals, etc.).

Secondly, the administrative component also functions to coordinate the internal work flow through the allocation of tasks, the evaluation of goal achievement, the establishment of criteria and standards for goal achievement, as well as internal communication networks. Thompson (1967) suggests:

The managerial level controls or administers, the technical sub-organization (although Parsons notes that its control is not unilateral) by deciding such matters on the broad technical task which is to be performed by the scale of operations, employment and purchasing policy, and so on (Thompson, 1967:11).

The ability of an organization to engage in "successful" interactions with the environment requires that an organization possess capacities for problem-solving and internal self-regulation.

... that a system is open means not simply that it engages in interchanges with the environment, but that this interchange is an essential factor underlying the systems viability, its reproductive ability or continuity, and its ability to change (Walter Buckley, 1967:50).

Put another way, the specification of only input and output variables, ignores the importance of intervening or "transformation" process (Thompson, 1967; Perrow, 1965). As Georgopoulos (1972) comments:

Between inputs and outputs there are the critical processes of resource allocation and control, of coordination of effort, of social and psychological integration, and of organizational strain and its management,

all of which intervene to modify very substantially any zero order relationships that one might find between input variables and outputs. (Georgopoulos, 1972:12)

In hospitals, this transformation process is the focus of internal administration, and is centered around the goal of providing control, care and custody for its patients. Based on observations made in Alberta hospitals, it was found that the management of input and outputs as well as the "transformation" process may be a function of two distinct administrations. In addition, the existence of distinct administrative components was found to be independent of the size of the hospital. Employing the input-transformation-output imagery, two types of hospitals were found to exist in the Province: (1) hospitals with a large number of general administrators, and, (2) hospitals with a small number of general administrators. Hospitals with larger numbers in their general administration possessed distinct boundary spanning units, (i.e. admission departments and business offices) that were able to "buffer" inputs and outputs from the nursing core operations. By insulating nursing core operations from environmental disruptions, nursing administrations in hospitals of this type were responsible for the coordination and control of the "transformation" process. In contrast, hospitals with smaller numbers of general administrators did not

exhibit distinct boundary spanning units. The coordination and control of staff functions, as well as the facilitation of patient care, was found to be provided solely by the nursing administration. For example, the monitoring of patient admission and discharges, record keeping, mediation with provincial government standards agencies, and other hospitals were responsibilities of the nursing administration in hospitals of this type. General administrations participated in bookkeeping and finance tasks.

Based on these distinctions it was hypothesized that the larger the general administration, the greater the likelihood that organizational closure at the technical level will be achieved, the more the nursing administration focuses on internal administration. In hospitals of this type, the size of nursing administration would be a function of the number of nursing personnel. The smaller the general administration, the more the nursing administration is concerned with managing the inputs and outputs, as well as the "transformation" process. In hospitals of this type, the Nursing Administration is perceived to be concerned with conditions that would facilitate organizational closure. It is hypothesized that in the absence of distinct boundary spanning units (i.e. in hospitals with smaller numbers of general administrators) a hospital's nursing administration would be disrupted by environmental

factors (input-outputs). Therefore the size of the nursing administration is a function of environmental disruptions as well as the number of nursing personnel.

2.2 THE EFFECT OF THE TASK ENVIRONMENT ON ADMINISTRATION

Thompson (1967) suggests that all organizations face task environments which may be located along a heterogeneous-homogeneous continuum and a stable dynamic continuum. Dill (1958) and Thompson's (1967) conceptualization of task environment is employed ... to denote those parts of the environment which are relevant or potentially relevant to goal setting and goal attainment ... composed of four major sections: (1) customers; (2) suppliers of materials, labor, capital, equipment, and work space; (3) competitors for both markets and resources; and, (4) regulatory groups including governmental agencies, unions, and inter-firm associations. Regarding the homogeneous-heterogeneous dimension, we may consider a homogeneous environment to be distinguished as one in which groups of competitors, suppliers, customers, and regulatory agencies are relatively uniform in composition.

In Dill's study, the Alpha firm faced a relatively homogeneous one. Most of Alpha's customers ordered all four product lines, twice a year, and at the same time. The firm dealt with a single union, and virtually all the external groups it dealt with were Norwegian (Thompson, 1967:69).

For example, hospital organizations facing relatively

homogeneous task environments may be of the auxilliary hospital type. In these types of hospitals, patients admitted to the hospital are those that require extended or long-term care.¹

In contradistinction, heterogeneous task environments are characterized by a variety in composition, within froups of competitors, suppliers, customers, and regulatory agencies, i.e. subject to a number of different types of customers.

... Beta was active in a variety of quite distinct markets, dealt with three unions, and with suppliers and other groups in various parts of Europe (Thompson, 1967:69).

The large scale general hospital epitomizes this notion of heterogeneity in task environment interactions.²

With respect to the stable-dynamic continuum, a stable task environment may be distinguished as one that is relatively certain and predictable in nature. That is the flow of inputs and outputs (transactions) occurs at a constant rate. For example, a hospital operating at a resort area may experience known peak periods in the demand for services (e.g. increased inputs into the system during the ski season that may be planned for). A dynamic or shifting task environment is indicative of change and uncertainty in operations (i.e. subject to fluctuations in the demand for an organization service). A hospital organization providing emergency care, day-care or a teaching component, would be indicative of a

hospital facing a dynamic or shifting task environment.

The effect that different combinations of task environment conditions have on the administration are as follows:

(1) Homogeneous and stable task environment: organizations whose task environment is relatively uniform and stable are expected to exhibit a relatively simple structure in their boundary spanning components of the administration;

(2) More heterogeneous task environment: organizations that exhibit a variety in composition of their task environment are expected to have a variety of functional divisions, each corresponding to a uniform segment of the task environment;

(3) More unstable task environment: the boundary spanning components of the "management" (administration) need be differentiated or subdivided only if its capacity to monitor the environment is over extended (Thompson, 1967:71).

Organizations which face relatively stable environments depend less on boundary spanning units to act as mediation of environment-organization interactions. On the other hand, organizations which face dynamic or complex environments are hypothesized to play greater emphasis on the mediating functions of the administration. Furthermore, organizations facing complex task environments will possess a greater

division of labor (division of boundary spanning units) than organizations that deal with relatively simple task environments.

2.2.1 The Image of Organizational Closure vis-a-vis the Hospitals Nursing Administration

Adapting the work of Thompson (1967) and Parsons (1960) I proposed that hospitals that were able to insulate the work performed at the direct component level from environment influences would possess nursing administrations that were responsive to the demands of internal administration. To the extent that organizational closure or insulation was not attained, nursing administrations would be responsive to not only the demands of internal administration but also the mediation of environment-hospital interactions (i.e. management of inputs-outputs to the hospital). This conceptualization of factors affecting the size of nursing administrations was based on two underlying assumptions about the behavior of organizations in general. First, that a hospital organization does not exist in a vacuum. That is, a hospital organization "interacts directly and continuously with its surrounding environment" (Bennett, 1978:28). Secondly, to the extent that articulation with the environment becomes problematic, open and closed system characteristics will vary from one part of

the hospital to another.

The accomplishment of organizational closure or insulation around the direct component operations (i.e. the nursing services) is provided by the boundary spanning units or positions in hospital organizations general administration. These boundary spanning units are designed to "forecast", "buffer" and/or "level" the environmental influences so that predictability and control over the nursing services to be provided will be ensured. That is, so that a closed system rational may be imposed at the direct component level.

The contingency argument developed in this study is based on the notion that the presence of a shifting and variable hospital environment engenders organizational closure at the direct component level. In addition, the presence of environmental heterogeneity and variability is manifest in the size of a hospital organizations general administration. That is, I proposed that organizations facing heterogeneous and dynamic task environments will require more specialized boundary spanning units to handle the diverse and variable inputs-outputs of the hospital. These types of hospital organizations would be typified as possessing large general administrations.

2.2.1.1 Implications for the Study of Factors Affecting the Size of Nursing Administrations

The implications for the study of factors affecting the size of nursing administrations in hospital organizations are twofold. First, as the number and variety of transactions between an organizations' technical core and its task environment increase, the authority structure of the organization becomes more complex. As interactions with the relevant task environment increases, coordination of inputs and work arrangements becomes more difficult. As a consequence, internal structural changes such as increasing division of labor and functional specialization, as well as the size and extent of vertical differentiation of administrative functions results (Heydebrand, 1973).

Secondly, the size of management devoted to internal administration is contingent upon the constancy and/or predictability of the flow of inputs and outputs. The more dynamic the task environment the greater the threat to closure of technical level operations.

Thompson comments:

To the extent that environmental fluctuations are unanticipated they interfere with the orderly operation of the core technology and thereby reduce its performance. When such influences are anticipated and considered as constraints for a particular period of time, the technical core can operate as if it enjoyed a closed system (Thompson, 1967:22).

Technical rationality with an organization's technical core are presumed to be primarily accomplished through the efforts of an organization's administration (Freeman, 1973). An organization creates units which insulate the technical core from task environment variations in order to smooth out fluctuations in the environment, providing the technical core with a high degree of certainty in operations. Freeman (1973:758) suggests, that the more organizations seek to provide their core technologies with the stability necessary for a closed system logic, the more administrative intensity they will display.

It is hypothesized that hospitals with larger numbers of general administrators are able to achieve insulation or closure from environmental influences. However, in the absence of organizational

closure (i.e. hospitals with smaller numbers of general administrators) environmental factors will be determinants of the size of the nursing administration.

2.3 EXPLANATIONS

We have considered two possible perspectives that account for variations in the size of nursing administrations in Alberta hospitals. These two perspectives are: (1) Size of the General Administration contingency argument; and, (2) Medical staff structure argument.

2.3.1 The Size of the General Administration Contingency Argument

Hospital organizations facing complex and dynamic task environments require more specialized boundary spanning units to handle the diverse and variable inputs-outputs. The greater the uncertainty present in a hospital's task environment the greater the risk of external disruption of internal operations, and the greater the need for "buffering" and/or "leveling" to provide the closure necessary for rational administration of the technical core. Buffering on the input side, for example, may be accomplished by the stockpiling of materials so that they are available as a steady input into the production process, also the recruitment and training of personnel

(Tauskey, 1970:73). An example of "buffering" in a hospital organization would be the creation and maintenance of waiting lists for patients requiring non-emergency services. On the other hand, leveling or smoothing strategies reduce fluctuations in the environment. An example of this in a hospital organization would be the creation of an outpatient service or day-care service. In the absence of adequate buffering or leveling, the nursing administration would be subjected directly to the uncertainties of the task environment, in addition to the problems of the administration of nursing core (technical core) operations.

A hospital organization's general administration may "manage" (provides coordination and integration of internal arrangements) all functional units within the hospital. The general administration, for example, does not make specific inputs into criteria employed in the actual treatment of patients. Nevertheless, they do procure and control the necessary resources that enable the proper functioning of these units.

Administrations are concerned with coordinating the work flow among medical, para-medical and non-medical participants and increasingly called upon to coordinate work and adjudicate among the conflicting needs and demands of medical specialists (Scott, 1975:3).

An organization's general administration may also

"mediate" relationships between the hospital and its task environment. Hospital organizations that are more heavily engaged in boundary spanning activities such as buffering or leveling of inputs will possess larger general administrations. In hospitals of this type, the general administration intercedes between the task environment and internal operations, increasing the stability of inputs and outputs for operations at the technical level, i.e. the nursing core. Problems of internal administration due to the sheer magnitude in environmental instability, complexity or demands are reduced by this type of intervention by the general administration. In hospitals with larger sized general administrations, the number of nursing administrators is hypothesized to be a function of the number of personnel providing nursing services, i.e. the direct component. However, in hospitals where the number of individuals in the general administration is smaller, the general administration is hypothesized to be less capable of "mediating" relations between environmental influences and the nursing core. As a result of the lack of mediation, it is hypothesized that the nursing administration will be more "open" and more responsive to their task environments. In this respect then, in hospitals that do not

achieve some degree of closure, internal administration will be disrupted by environmental factors. Therefore, the factors in an organization task environment and internal work arrangements that affect the size of the nursing administrations are contingent upon the size of the organization's general administration component.

2.3.2 The Medical Staff Structure Argument

The Presence of a dual authority structure or division of responsibility in a hospital between the general administration, nursing administration and medical staff, implies that there exists differences in training, competencies, and knowledge in hospital personnel. The existence of differing basis of authority and knowledge has an important influence upon the mode of control, which can be used in the hospital. This in turn, affects the extent or method of the coordination of the work performed. During the last decade the trend towards the professionalization of administration and the bureaucratization of medical personnel has led to a shift in the work roles of both components present in the hospital.

In hospitals, for example, most administrators are not medical experts, and most medical experts are not administrators. One line of authority deals with the organization of work and the other deals with the conduct of work (Rosengren and Lefton, 1957:201).

An established authority structure in a hospital organization is that which exists between nursing personnel and the nursing administration. Nursing services, however, are also subject to medical staff authority, as direction for the types of care to be administered to the patient are determined by the medical staff personnel. Perrow (1965) hypothesized, over the long run, an organization will be controlled by those individuals or groups who perform the most difficult initial tasks. In hospitals, the medical staff personnel may be considered to perform the most difficult tasks and in this respect have control over the conduct of work in the technical core (direct component). The presence of medical staff in the hospital has an important influence upon the method of coordination of work at the technical level. The role of the physician in a hospital setting is to determine what therapeutic efforts are to be pursued in the diagnosis and treatment of the patient. This may require that the physician engage in the diagnosis and/or treatment himself/herself or supervise others that will (Freidson, 1970).

The presence of a diverse medical staff presupposes the availability of a complimentary technology that will assist the medical specialties

in their diagnosis and treatment of the patient. To the extent that there exists a specialized medical staff in a hospital, there will exist a complimentary specialized nursing staff to carry out the necessary care that is required. It is reasoned that in hospitals where there exists a variety of types of medical staff, nursing operations will be managed by both the nursing administration and the medical staff. This increased horizontal division of labor at the administrative level results in a reduction in the jurisdiction, and the size of the nursing administration. The scope of the nursing administration's authority will marginally decrease in hospital organizations where a diverse medical staff is present (Child, 1973; Rushing, 1967). In hospitals where there exists little or no differentiation in the medical staff, or the absence of medical staff all together, decision making practices as well as work assignments initiated at the technical level will be organized by the nursing administration. It is hypothesized that the size of the nursing administration will be inversely related to the diversity of the medical staff.

2.4 CONCLUSIONS

The following propositions specify the relationship between the magnitude of environmental instability,

complexity and demand, the number of different types of medical staff, size of the direct component and the size of a hospital organization's nursing administration.

2.4.1 Hospitals with Smaller Numbers of General Administrators

Given hospitals that have a smaller number of individuals in their general administration, the nursing administration will be more "open" and more responsive to environmental disruptions. The following relationships are hypothesized to exist:

- (1) The size of the direct component will be positively related to the size of the nursing administration.
- (2) The number of different types of medical staff will be negatively related to the size of the nursing administration.
- (3) The magnitude of environmental complexity will be positively related to the size of the nursing administration.
- (4) The magnitude of environmental instability will be positively related to the size of the nursing administration.
- (5) The magnitude of environmental demand will be positively related to the size

of the nursing administration.

2.4.2 Hospitals with Larger Numbers of General Administrators

Hospitals possessing larger sized general administrations are also able to succeed in insulating work conducted within the hospital from influence of environmental factors outside the hospital (i.e. provide organizational closure at the technical level). In hospitals of this type the nursing administration will be responsive to "nursing core" demands, and the following relationships are hypothesized to exist:

- (1) The size of the direct component will be positively related to the size of the nursing administration.
- (2) The number of different types of medical staff will be negatively related to the size of the nursing administration.

Figure 2.1 depicts the model hypothesized to exist in hospitals with smaller numbers of general administrators. Figure 2.2 represents the model hypothesized to exist in hospitals with larger numbers of general administrators.

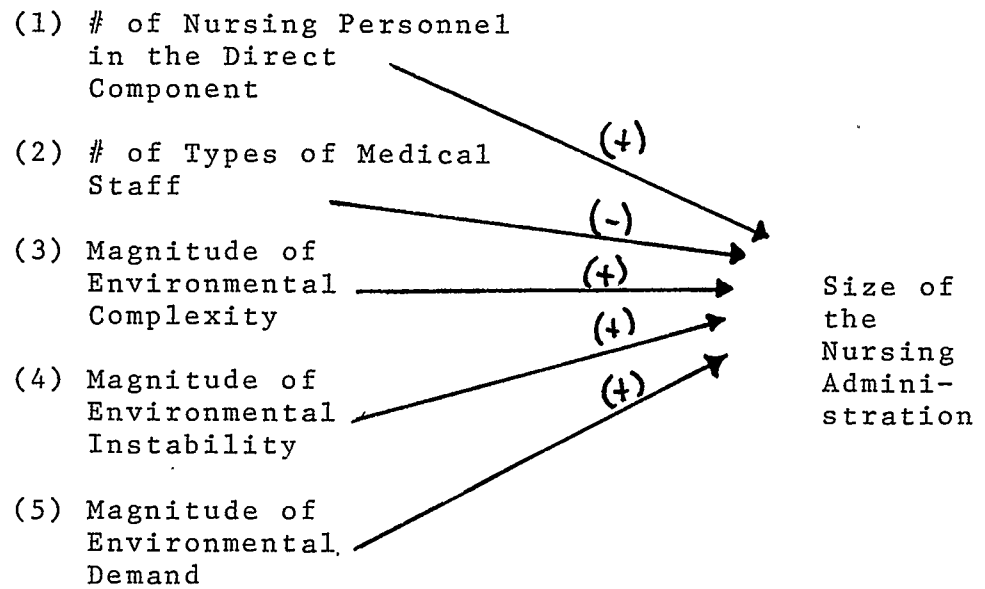


Figure 2.1

Factors in a Hospital Organizations Task
Environment and Internal Organizational
Arrangements That Affect the Size of the
Nursing Administration. (Hospitals with
Smaller Numbers of General
Administrators)

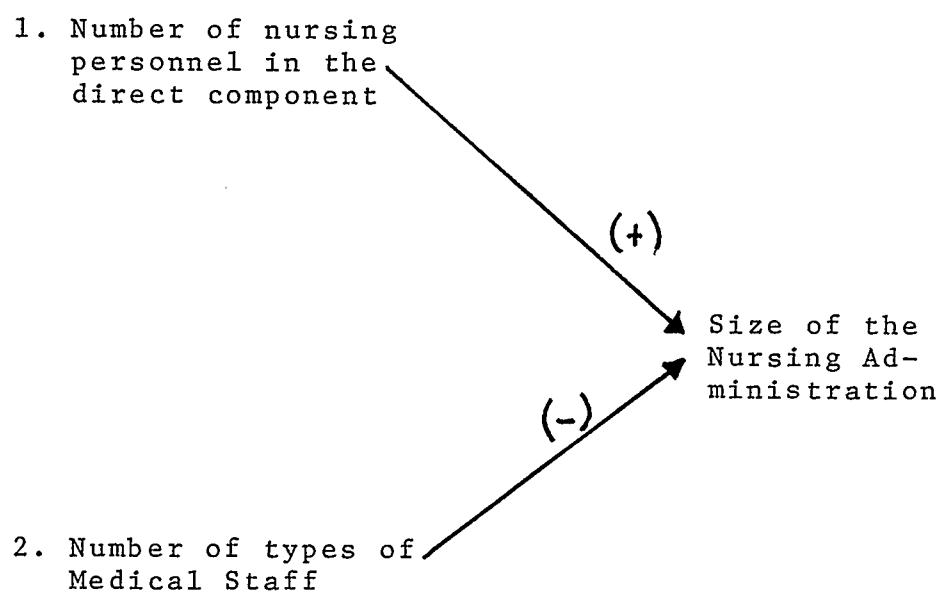


Figure 2.2

Factors in a Hospital Organizations Task Environment and Internal Organization Arrangements that Affect the Size of the Nursing Administration. (Hospitals with Larger Numbers of General Administrators)

FOOTNOTES:

1. Chronic and/or extended care hospitals - applies to a hospital which provides primarily for the prolonged treatment of patients with chronic and long-term conditions. Alberta Return of Hospitals, Form HS-1, Facilities and Services, page 6, 1975.
2. General - applies to a hospital which provides for the treatment and care of all types of diseases or at least a wild range of conditions without restrictions as to age, group or sex. Alberta Return of Hospitals, Form HS-1, Facilities and Services, page 6, 1975.

CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

The examination of internal work arrangements and external environment factors was undertaken in order to explain variation in the size of nursing administrations in 145 Alberta hospitals. In addition, observations made in six Alberta hospitals facilitated the decision to adopt a contingency argument, employing size of the general administration as the pivotal variable. The study focused on how differences in the division of labor between the general administration and nursing administration in hospitals with larger general administrations are opposed to hospitals with smaller general administrations resulted in systematic differences in factors affecting the size of the nursing administration.

3.2 RESEARCH DESIGN

The factors affecting the size of the nursing administration were established through a quantitative comparison of hospital organizations. First, a series of interviews were conducted with various individuals involved in the administration of hospitals in the Province of Alberta.¹ Information obtained revealed that a vast amount of data on hospitals was compiled

annually by the Hospitals Services Commission. Interviews with key individuals in the executive of the Alberta Hospital Services Commission were set up to discuss the release of data on hospitals in the Province. At this point the Commission released the Alberta Hospital Services Commission Form HS-1, Alberta Return of Hospitals, Facilities and Services codebook. An examination of the codebook definition of variables and the actual measures to be employed in the study revealed a close association with popular measures emphasized in the literature.

Next, a series of interviews were conducted with nursing administrators in six Alberta hospitals to establish the validity in our interpretations of the Hospital Services Commission data. In addition, nursing administrators were questioned about the organization of nursing units, supervision, formal regulations, committee participation, hiring and firing policies as well as the meaning of administrative ratios, specifically the A/P ratio, in a hospital setting.² Interview data revealed that the structure of nursing administrations, and internal organizational work arrangements were different in hospitals with larger numbers of general administrators, than in hospitals with smaller numbers of general administrators. Multivariate statistical techniques were applied to organizational data for hospitals having larger general administrations and

hospitals having smaller general administrations. Differences in the number of general administrators in a hospital was used to explain factors affecting the size of nursing administrations in Alberta hospitals.

3.3 THE HOSPITAL AND INTERVIEW SAMPLES

3.3.1 The 1975 Hospital Sample

Data were collected from the Alberta Hospital Services Commission Return of Hospitals, Facilities and Services (AHSC) for the years 1969 - 1975 inclusive. The year 1975 was selected because it was the most current year that data could be retrieved from the Hospital Services Commission. In addition, 1975 was the year prior to a major re-organization in the Health Care system in the Province of Alberta. These 1975 data include information on 155 organizations called hospitals in the Province and are assumed to represent a 100% sample, as all equally defined hospitals in the Province are required to submit a return by December 31st of each year.

Sample selection was based on the following criteria. In order to be included in our sample, a hospital organization must have at least one part-time position in the general and in the nursing administrations. The initial sample selection criteria weeded out any hospital(s) that did not

possess individuals in the two administrations, (nursing and general), at least on a part-time basis. Of the 155 hospitals, 145 (or 94%) met the sample selection criteria. That is to say, they exhibited some presence of both types of administration.

3.3.2 The Interview Sample

The sample of hospitals that participated in the interview stage of the study were selected from 1973 data on Alberta hospitals.³ In order to achieve a broad representation of hospitals in the sample, three calculations were made. They were: (a) the size of the direct component; (b) the ratio of administrators to nursing personnel in the direct component, (administrative ratio); and, (c) the ratio of direct component nursing personnel to patient loads (service ratio). From these calculations a variation of a two by two table was generated. Employing quota sampling procedures, we wished to include not only hospitals that were large in size, had a heavy patient load and a relatively small number of nursing and administrative personnel (Boxes 1 and 2) but also smaller hospitals with a large body of nursing and administrative personnel in comparison to their small patient load (Boxes 7 & 8). Out of the six

hospitals selected for interviews, at least two organizations were selected at each extreme.

	Low Admin. 1*	Low Admin. 2*	High Admin. 1	High Admin. 2
HIGH SERVICE	1	2	3	4
LOW SERVICE	5	6	7	8

* Admin. 1 = was a ratio of general administrators to direct component personnel.

* Admin. 2 = was a ratio of nursing administrators to direct component personnel.

3.4 FIELD PROCEDURES

3.4.1 Contact

Initial contact was made with each hospital in the spring of 1978. A telephone call was made to each hospital's switchboard to establish:

(1) the name of the Director of Nursing; and, (2) if it would be possible to speak with her. I identified myself as a graduate student of Sociology at the University of Calgary. I explained to the Director of Nursing that I was studying hospital organization and that I would like to understand the internal organization of a hospital before continuing any further with my analysis of Hospital Services Commission data. A convenient time to conduct the interview was then arrived at.

All Directors of Nursing contacted were more than willing to donate a considerable amount of their time to the interview with very little knowledge of what was expected of them. This consideration carried forward into the actual interview as five out of six Directors were extremely cooperative and supportive in my request for information.

3.4.2 Entry

The interview process began in April of 1978 and lasted for two weeks. All interviews were completed during this period of time. The initial discussion with the Director of Nursing began with a brief introduction of the purpose of the interview. During this time I explained that I was examining the notion of administrative intensity in hospital organizations. Specifically, I was interested in understanding what administrative intensity might look like in hospital organizations. In addition to an introduction of the intent of the research an explanation for the presence of my accompanying secretary was given. The overall interview took approximately 2 1/2 - 3 hours on average, with the longest interview running five hours. All interviews were completed in the time period allotted.

Data collected and observations made during the interviews provided me with the necessary background information to interpret Hospital Services Commission data. I discovered that all hospitals, independent of their size possess a nursing core, a nursing administration, a general administration and a medical staff component. Analysis of my field notes disclosed that there was considerable comparability between hospitals displaying similar nursing administration structures. As the data on the internal structure of hospitals were sorted and analyzed, it became increasingly apparent that two types of hospitals existed in the Province of Alberta, and for that reason should be analyzed separately. In addition, information collected indicated that the dependent variable to be used in the study, a variant of the classical A/P ratio, was nonmeaningful to all nursing administrators interviewed.

3.5 MEASUREMENT OF VARIABLES

3.5.1 Dependent Variables

3.5.1.1 Nursing Administration

- i) Definition: The internal administration is that component of an organization that is assigned the responsibility for

the general management of a specific unit performing the major function(s) in the organization. In hospitals the nursing administration is that component of the organization that "manages" the nursing services. Depending upon the size and organizational structure of the hospital this may include:

(a) Nursing Director; (b) Assistant or Associate Nursing Directors; (c) Supervisors who assist in the management of the nursing service as a whole; (d) such other nursing, clerical or stenographic staff, as are assigned to the Nursing Administration office. Observations made in Alberta hospitals confirmed that differences exist in the structure of nursing administrations in hospitals with large numbers as opposed to small numbers in their general administration.

ii) Measurement: The size of the nursing administration was measured by counting all nursing personnel in the following categories: Assistant Head Nurse; Head Nurse (Supervisor 1); Supervisor 2; Assistant Director of Nursing, Director of Nursing (Annual Return of Hospitals,

Form HS-1, Facilities and Services,
page 33).

3.5.2 Independent Variables

3.5.2.1 Size

i) Definition: Size as defined by Price (1972:174) is the scale of operations of a social system. Generally the number of personnel producing services or commodities is indicative of the manner in which size has been operationalized in organizational literature. In hospitals, size was defined as the number of personnel involved in work at the direct component level. The direct component included those personnel in the technical core (Thompson, 1967) or technical level organization (Parsons, 1960). Freeman and Hannan (1975) regarded teachers as representatives of the direct component in California school districts. It was argued that teachers, as opposed to other professional staff employed in the school districts, provide services that are directly related to the pupils needs. At the same time the direct component

members were responsive to changes in demand for services. By analogy the "direct component" of a hospital organization would be composed of nursing personnel -- nurses, nursing aides, orderlies and other auxilliary nursing staff.

- ii) Measurement: The number of nursing personnel in the direct component was obtained by counting the number of full and part-time individuals in the following positions: graduate nurses, qualified nursing assistants, orderlies, nurse interns, child care nurses, and others (Annual Return of Hospitals, Form HS-1, Facilities and Services, 1975, page 13).

3.5.2.2 Organizational Complexity

- i) Definition: is the extent of differentiation or "division of labor" in occupational roles (Price, 1972:71). Complex organizations would be characterized by a large number of different types of occupational roles, a differentiated "division of labor". In hospital organizations the number of different types of medical staff

specialties is indicative of the hospital's complexity. The existence of a variety of different types of medical staff specialties presupposes that the hospital possesses a complimentary technology to assist the medical specialists in their diagnosis and treatment (i.e. a specialized direct component and technical staff component).

The nursing administration in hospitals with both larger and smaller numbers of general administrations would be responsive to organizational complexity, vis-a-vis, number of different types of medical staff specialties.

ii) Measurement: Organizational complexity was measured by counting all the full and part-time individuals in the following medical staff positions: Psychiatrists, Pathologists, other Medical Staff in Laborator, Cardiologists, Radiologists, other Medical Staff in Radiology Department, Physiatriests, and other paid Medical Staff. (Annual Return of Hospitals, Form HS-1, Facilities and Services, 1975, page 14).

iii) Computation: A score of "1" was assigned

for each category of medical staff specialists present for part-time and full-time staff, summing to a possible overall score of "8".

3.5.2.3 Environmental Instability

- i) Definition: is the extent to which an organization's external environment is predictable and/or certain. Fluctuations or uncertainty in an organization's environment require that the administration rely on more active forms of coordination to ensure organizational closure at the direct composure level. The average length of stay of patients was employed as the measure of environmental instability in hospital organizations. Associated with each patient's stay in the hospital is a set-up cost. The notion of set-up cost goes beyond a monetary definition to include coordination and control of the care that a patient receives from the moment they enter the hospital. A set-up cost includes a set of activities involving direct patient care (nurse-patient relationship) the maintenance of records,

and coordination of internal communications (i.e. patient-doctor-nurse communications). From an administrative point of view the longer the average length of stay of patients the greater the stability (i.e. certainty and/or predictability in operations at the Direct Component level). Collins and Moore (1970) reported that there is a difference between the direct care given on the first day of stay and the direct care given after the second day. In contrast, the shorter the average length of stay of patients, the greater the turnover of patients the greater the volume of work done by the direct component (i.e. the greater the set-up cost associated with the first day direct nursing care) and the less certainty and/or predictability that is achieved in the Direct Component operations.

- ii) Measurement: Environmental instability was measured by dividing total day's stay (from date of admission) of adults and children separated during the year by total number of separations during the year for adults and children.

Computation: $EIS = \frac{ENVIRONMENTAL}{INSTABILITY} =$

$\frac{\text{Total day's stay}}{\text{Total separations}} * 100$

3.5.2.4 Environmental Complexity

- i) Definition: is the extent of segmentation in an organization's task environment. Thompson (1967:70) comments that:

We would expect the complexity of the structure, the number and variety of units, to reflect the complexity of the environment.

The more diverse or segmented an organization's environment is, the greater the number of factors requiring administrative attention (Freeman, 1973:754).

The heterogeneity or complexity of an organization's environment may also be characterized by a variety in composition, within groups of competitors, suppliers, and regulatory agencies (i.e. subjected to a number of different types of rated beds. The number of different types of rated beds a hospital has is a function of:

- (1) an external negotiation process with

the Provincial Government; and,
(2) the relationships amongst hospitals in the same region. In general, the types of relationships amongst hospitals is based on a "referral" or "feeder" system. For example, many hospitals in Southern Alberta refer patients to the Foothills Hospital in Calgary because of the variety of services they offer. Presumably, hospitals facing complex (heterogeneous) task environments will possess a greater variety of different types of rated beds. In contrast, hospitals facing less complex task environments (homogeneous) possess fewer numbers of rated beds.

- ii) Measurement: Environmental complexity in hospitals was measured by counting the number of different types of rated beds.
- iii) Computation: Environmental complexity was calculated by assigning a score of "1" for each of the following types of rated beds, summing to a possible score of "10":

- 1. medical and surgical
- 2. intensive care
- 3. obstetrical (maternity)

4. pediatric (children)
5. psychiatric
6. T.B.
7. other short-term
8. rehabilitation (including convalescent)
9. extended care (including chronic)
10. and other long-term

(Annual Return of Hospitals, Form HS-1, 1975, page 2; and Reeves and Bucar, 1978, page 44).

3.5.2.5 Environmental Demand

- i) Definition: is the amount of services or commodities processed by the organization (i.e. demand for services). In hospital organizations the number of patient discharges as well as patient load denote environmental demand. The number of discharges measures the amount of work that has been processed, while patient load measures the amount of work done or to be done in the hospital at any one time.
- ii) Measurement: Two variables were used to measure environmental demand: (1) the number of separations (discharges); and, (2) patient load.
- iii) Computation:
 - (1) Number of Separations (discharges).

This variable was calculated by counting the number of individuals separated during the year;

(2) Patient load: Was measured by calculating patient days during the year and dividing it by 365. Patient days during the year is the total volume of in-patient care, expressed in patient-days of the hospital during the year.

(Annual Return of Hospitals, Form HS-1, Facilities and Services, 1975, page 13).

3.5.2.6 General Administration

- i) Definition: The administrative component of an organization refers to the members of a social system who primarily perform the activities that contribute indirectly to the organization's final output (Price, 1972:19). In hospital organizations the general administration is the centre to which are allocated all personnel providing administrative direction and for carrying out business office, fiscal and personnel functions of the hospital.
- ii) Measurement: The size of the administrative component was measured by the size

of the hospital organization's general administration. Included in this measure are all personnel: (1) providing administrative direction and for carrying out business of the hospital. These functions include: Admitting, Employee Health, Finance, Hospital Administration, Hospital Auxiliary, Information, Personnel, Printing and Duplicating, Public Relations, Purchasing, Staff Educational Programs; and, (2) Stores, Switchboard, System Engineering, Volunteer and Patients Library (Annual Return of Hospitals, Form HS-1, Facilities and Services, 1975, page 31).

- iii) Computation: The size of the general administration was pre-calculated by each reporting hospital before the Commission recorded the data. Access to more discreet data on positions in the general administration could not be attained as each hospital in the province would have had to be visited in person or sent a questionnaire.

FOOTNOTES:

1. An initial meeting with the Head of the Department of Sociology, University of Calgary, was held at the outset of the study to familiarize myself with contact people knowledgeable in the area of Alberta hospitals. Two individuals suggested by the Head were contacted for interviews. A meeting with an individual from a local medical and health services organization suggested that data of the type we were looking for should be available through the Hospital Services Commission. In meeting with the President of the University of Calgary yielded information confirming the existence and appropriateness of hospital data.

In a meeting with a senior administrative executive in a local Calgary hospital, problem areas we would face in the study of Alberta hospital data were pinpointed. One such problem area was the frequent opening and closing of hospital units. He suggested that nursing staff may be reduced, but the number of patients admitted and treated may not. Secondly, he felt that there would be a real problem with the study of hospitals because of the vast differences amongst Alberta hospitals. For example, "Mesacordia Hospital in Edmonton staffs all graduate nurses at slightly under capacity".

Discussion with the administrative executive was also insightful with respect to time periods of study. A study he was conducting himself was carried out on data collected during a period of time to use because there were fewer political upheavals (hiccups) occurring within the Commission itself.

The meeting with the executive of the Alberta Hospital Services Commission most clearly emphasized the extreme variability existing amongst hospitals in the Province of Alberta. For example, one member of the Executive commented, "In terms of variability of hospitals, Raymond, Magrath and Carmen hospitals have rated bed capacities of 25, yet they have five specialists on staff. The Jasper hospital is an example of seasonal fluctuation, with an increase in the out-patient load during the winter months. This member also pointed out the importance of the presence or absence of a medical doctor at the hospital facility. He suggested "that the medical doctor changes the view of the hospital".

2. Data collected in Part 3 indicated that the dependent variable originally conceptualized to be a variant of the classic A/P ratio was nonmeaningful to all nursing administrators interviewed. Although we

could quantitatively calculate a number of A/P measures from Hospital Commission data, these ratios had no intrinsic meaning for the nursing administrators.

3. 1973 Hospital Services Commission data was employed in the selection of the hospitals to be interviewed as data analysis was being carried out on it for a paper that Dr. Reeves and myself were preparing for the CSAA meetings in London, Ontario, June 1978.

CHAPTER 4

THE NURSING ADMINISTRATION

4.1 INTRODUCTION

The hospital organization examined in this study have two administrative bodies -- a general administration and a nursing administration -- as well as a medical staff component. Interview data collected in six Alberta hospitals disclosed that systematic differences in organizational structure of nursing administrations existed in hospitals that have larger numbers of general administrators as opposed to hospitals that had smaller numbers of general administrators. Neither of these administrative components function independently of one another and of the medical staff component. However, I found that each administrative component may coordinate and control different sectors of the hospital organization.

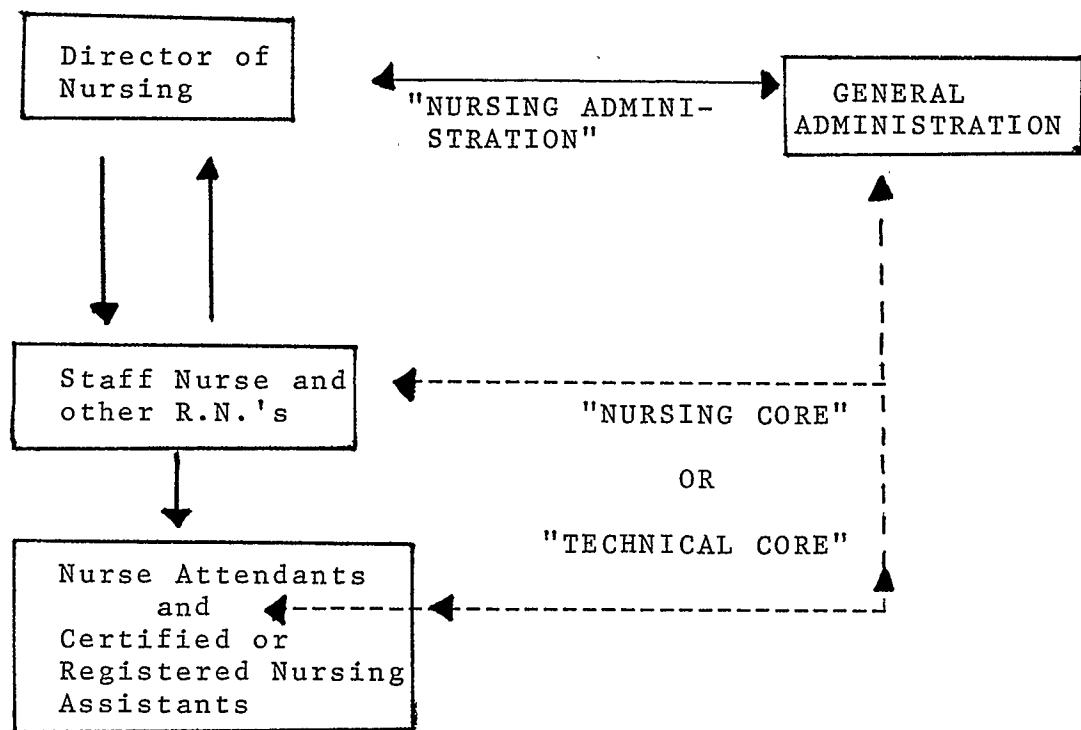
In general, the process of continuous care provided by the nursing core (direct component) is formally controlled and coordinated by the hospital's nursing administration. All nursing administrations participate in a "core" set of responsibilities directed at the scheduling of work assignments, supervision of work performed, and record keeping duties of nursing services.

However, from the interview data obtained from nursing directors in six Alberta hospitals, it was found that the jurisdictional boundaries of the nursing administration are expanded or contracted on the basis of their relationship with the general administration and medical staff component.

4.2 VARIETIES OF NURSING ADMINISTRATIONS

The analysis of interview data revealed that two types of nursing administrations exist in hospitals in the Province of Alberta. I found that the existence of two types of nursing administrations were due in part to their organizational role and structure and not just to differences in hospital size. Nursing administrations in the Province of Alberta ranged in size from hospitals with one nursing administrator to hospitals with 135 nursing administrators. However, in all hospitals visited, nursing administrations were found to have control over the scheduling of work assignments and supervision of work performed by their nursing staff. The predominant nursing administration structure found in each type of hospital is illustrated in Figure 4.1 and 4.2.¹

Figure 4.1 represents nursing administrations that are very centralized with little if any vertical differentiation. Nursing administrators in hospitals of this type were found to put in a regular tour of duty



Legend:

_____ formal lines of communication (policy and procedure)

----- informal

Figure 4.1

Typical Structure of Internal Administration in a
Hospital with Smaller Numbers of General
Administrations in the Province of Alberta
in 1978

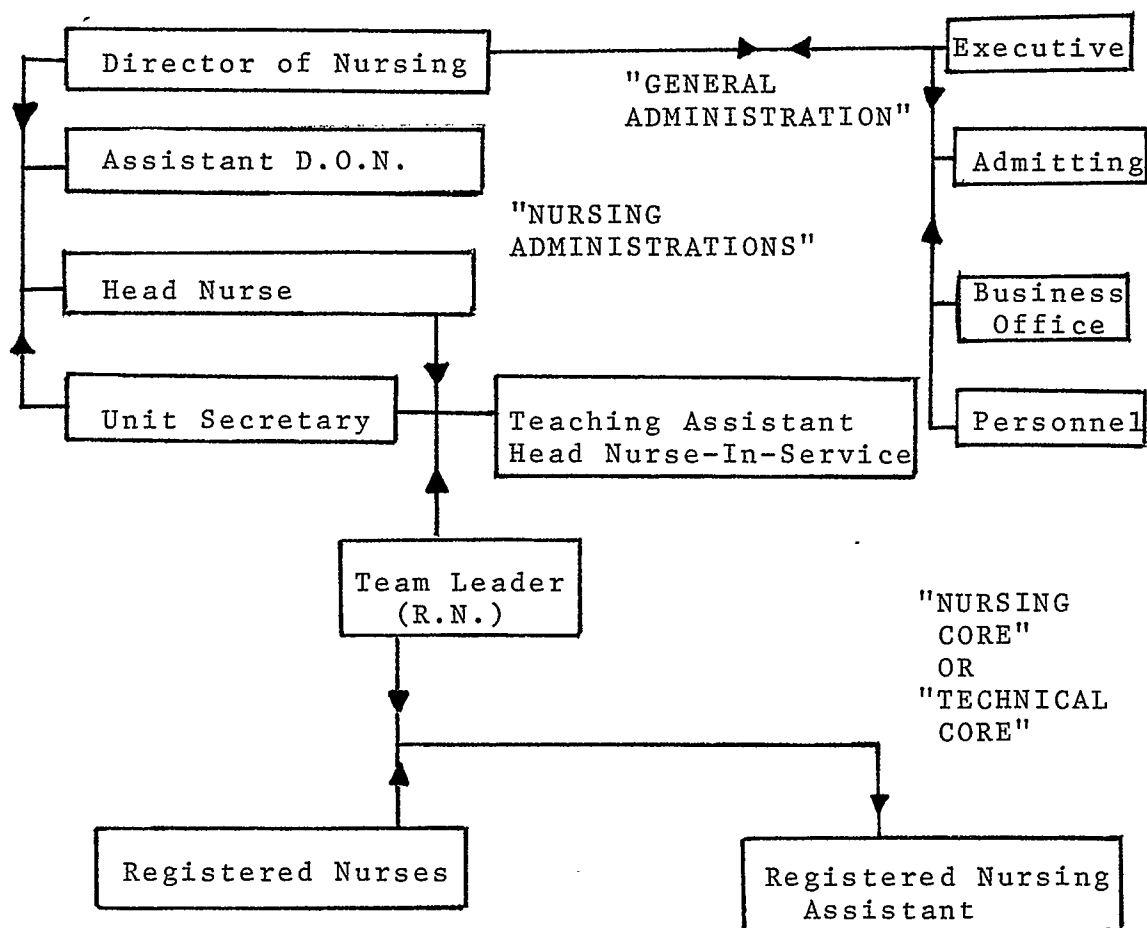
with other registered nurses (R.N.'s). In one hospital visited the Director of Nursing (D.O.N.) was on twenty-four hour call to replace any of her nursing staff. The nursing administration, when not participating directly in care of the patients, performed her administrative functions. The administrative duties ranged from ordering supplies to admitting patients. For example, in one hospital visited, the Director of Nursing asked for a few extra minutes before starting the interview because she had been "wrestling with purchase orders all morning".

The staff nurse, although not formally designated and included in the nursing administration, was found to be, for all intents and purposes, a head nurse. In the absence of the D.O.N. the staff nurse was in charge of the ward(s). The setting up of work assignments of nursing staff was often the responsibility of the staff nurse. In addition, it was found that the D.O.N. often delegated the responsibility for supervision of charting and other record keeping duties at the ward level, to her staff nurse.

In contrast, Figure 4.2 represents a more decentralized and differentiated nursing administration. Both the D.O.N. and head nurse positions in hospitals of this type are, in a very real sense, classed as "true administrators". The D.O.N. was found to have very little if any daily interaction with ward (unit)

personnel. She (D.O.N.) is involved with activities that affect the ongoing operation of the "nursing core". The D.O.N. in hospitals of this type was found to be a liaison officer. She (D.O.N.) not only engaged in a close association with most departments of the hospital's general administration, but also with medical, technical and support groups.

The head nurse is a first line supervisor. She coordinates materials and human resources on a daily basis to meet the needs of her unit(s).² In most nursing care situations she is a quality control supervisor. She attends complex nursing tasks to ensure proper care is taken, at the same time making sure the job was done. The head nurse was also found to be caught up in the bureaucratic maze of the hospital administration. Like her subordinate (D.O.N.) she is required to evaluate her staff and maintain that daily audit sheets (charting sheets) are properly filled out. In addition, the head nurse's time may be consumed by her involvement in committee work. As one D.O.N. suggested, "the head nurse is a member of management, the teaching assistant, head nurse, a teacher, and the assistant head nurse is a staff development officer.



Legend:

————— formal lines of communication (policy and procedure)

Figure 4.2

Typical Structure of Internal Administration in a
Hospital with Larger Numbers of General
Administrations in the Province of
Alberta in 1978

4.3 AN EXPLANATION FOR VARIETIES OF NURSING ADMINISTRATIONS

Observations revealed that systematic differences between type A and type B nursing administrations could partially be explained by examining the division of labor between the general and nursing administrations. The variety in organizational structure within nursing administrations was found to be contingent on the size of the general administrative body present in the hospital organization. In general, the central role of the general administration is to provide coordination and control over inputs - outputs so that predictability and certainty may be achieved at the "transformation" level (i.e. in nursing care operations). In addition to mediating environmental factors that may threaten organizational closure around the "transformation" process, the general administration also participates in the management of internal hospital operations (i.e. business office functions). However, it was observed that not all hospitals possess general administrations that perform these two major functions. The role of the general administration varied in hospitals with a Type A as opposed to a Type B nursing administration structure.

4.3.1 Small Numbers of General Administrators

Hospitals that possessed nursing administration structures represented in Figure 4.1 were observed to have smaller numbers of individuals in

their general administration.

It was observed in hospitals with a small number of general administrators, that part of the duties of the general administration were absorbed by the nursing administration. For example, in one hospital the Director of Nursing (D.O.N.) took care of all the purchasing for the hospital, not just nursing core needs. The expanded domain had effect on the carrying out of her internal administration, often times this particular D.O.N. would have her staff nurse take over nursing administration tasks. At the same time the D.O.N. worked very closely with the general administration on hiring and firing related matters. In all hospitals visited that possessed small numbers in their general administration, the D.O.N. had the jurisdiction over changes in the job description of her nursing personnel.

General administrations of this type were found to be connected with business office duties. Frequently, the management of input - output tasks (i.e. record keeping of patient admission and discharges) were handled by an individual from the nursing administration.

4.3.2 Large Numbers of General Administrators

Hospitals that possessed nursing administration structures represented in Figure 4.2 were

observed to have large numbers of individuals in their administration. The general administration was characterized as having individuals directly responsible for the admitting and discharging of patients and record keeping tasks associated with patients and employees (i.e. record keeping associated with services performed during the patient's stay in hospital, purchasing of materials, and staffing functions). In several hospitals interviewed there existed separate personnel departments. Two hospitals in particular had separate business office departments.

The process of setting job descriptions was discovered to be handled differently in hospitals with a large number of general administrators. In most hospitals of this type a change in nursing job descriptions would involve several levels of the nursing administration, someone or department in the general administration, and possibly someone from the hospital executive. For example, one D.O.N. replied in the following manner when asked: "Who set up or has the right to change job descriptions:

"This is a complex process and depends on the degree of alteration. But most likely we would involve a nursing coordinator, my assistant, myself, and the assistant executive director (personnel department) to determine first if the change is

necessary and then how the change will come about. It would most likely go to a committee, such as an executive task force".

General administrations in this type of hospital were found to be concerned with business office duties, as well as management of inputs - outputs in the hospital. In addition, the role of the nursing administration in hospitals of this type was focused on job assignments and coordination of nursing personnel. Less emphasis was observed to be placed on other factors such as patient admitting, and discharging, purchasing and hiring and firing.

4.4 CONCLUSIONS

Based on observations made in six Alberta hospitals two types of hospitals were characterized to exist in relation to: (1) the structure of the nursing administration; and, (2) the division of labor between the nursing administration (i.e. vis-a-vis the factors affecting the overall size of the nursing administration). Observations disclosed that hospitals with larger numbers of general administrations that were vertically differentiated with their central role focused on internal administration. Specifically, nursing administrations were oriented towards job assignments and coordination of nursing personnel. Environmental stability in large G.A. hospitals is mediated by members of the general

administration. In hospitals of this type, specific positions were present to ensure that any uncertainties would be "managed". For example, the process of admission and setting up patient records was handled by a member of the general administration (i.e. an admission clerk). In addition, large G.A. hospitals facing complex task environments provide mediation of this disruption through sheer administration. All large G.A. hospitals visited possessed General Business Office Departments. The collection and analysis of all hospital data passes through this office. At the same time, environmental disruptions threatening certainty of operations or closure around the direct component would be mediated by the hospital's general administration.

Environmental demand in hospitals with larger general administrations, was also a responsibility of the general administration. For example, upon a visit to a hospital of this type, you will be exposed to a variety of personnel. In most hospitals your first contact will be with a member from the general administration, an admission clerk, as personal documentation will be required before services are performed.

Hospitals with smaller numbers of general administrators possessed nursing administrations that displayed little if any vertical differentiation. In addition, the nursing administrations central role was

expanded beyond a concern for internal administration to the management of environmental disruptions (i.e. environmental complexity, instability or demand).

FOOTNOTES:

1. Figure 4.2 depicts a typical Surgical Unit. A typical Medical Unit would be very similar except there would be no team leader or R.N.A. positions.
2. In some High G.A. hospitals the head nurse supervised more than one unit.
3. Low G.A. hospitals having the head nurse position had recently added this to their nursing administration component. At the time of the interview stage of investigation in April 1978, one low G.A. had just added a Head Nurse position.

CHAPTER 5

AN ANALYSIS OF THE DATA

5.1 INTRODUCTION

Analysis of Hospital Services Commission data on 145 Alberta hospitals revealed substantial differences in the factors affecting the size of nursing administrations in hospitals possessing a larger number of general administrators versus hospitals possessing smaller numbers of general administrators. It was hypothesized that the number of nursing administrators would be a function of the number of personnel providing nursing services only in hospitals that had succeeded in insulating work conducted within the hospital from influence of environmental factors outside the hospital. General administrators would be responsible for insulation by managing and controlling the flow of inputs and outputs to the nursing staff. By processing the admission and discharge of patients, the general administration regulates and stabilizes the demand for hospital services. Through negotiations with the Provincial Government and other hospitals, to set the types of services to be provided by the hospital, the general administration mediates complexities that arise in the environment and ensures some degree of continuity in the system.

With organizational closure, the structure of internal administration (e.g. the ratio of staff size to size of administration) would correspond to expected findings in classical organization theory. However, in hospitals that do not achieve some degree of closure, internal administration would be disrupted by environmental factors. In hospitals of this type, the size of the nursing administration would be a function of the magnitude of environmental demands, instability, or complexity, and would not solely be a function of the size of the nursing staff.

5.2 TWO TYPES OF HOSPITALS

Analysis of the pivotal variable, size of the general administration, revealed the existence of systematic differences in the structure and function between hospitals possessing four or fewer general administrators and hospitals possessing five or more general administrators. (See Tables 5.1 and 5.2). In 1975, 59 (or 41%) Alberta hospitals had five or more organizational members in their general administration. In addition, these types of hospitals had general administrations that ranged in size from five general administrators to one hospital in the Province possessing 214 general administrators.

Hospitals with larger general administrations were found to possess an average of 30 general administrators

($\bar{x}$ = 29.78).

However, as was the case with the majority of variables in this sub-sample, the mean number of general administrators is somewhat inflated because of a few extreme cases. (i.e. large complex hospitals). In addition, data indicates that there are many hospitals of this type that possess five to ten general administrators only (32 or 54.2% of the sub-sample).

Table 5.1

NUMBER OF ORGANIZATIONAL MEMBERS IN THE GENERAL
ADMINISTRATION IN HOSPITALS WITH LARGER GENERAL
ADMINISTRATIONS (N=59)

INTERVAL	FREQUENCY	RELATIVE FREQUENCY	CUMULATIVE FREQUENCY
185-214	1	1.7	1.7
155-189	0	0	1.7
80-154	6	10.2	11.9
35-79	6	10.2	22.1
19-34	6	10.2	32.3
11-18	8	13.5	45.8
5-10	32	54.2	100.0

N = 59 100.0

mean: 29.78	mode: 5	median: 10.00
kurtosis: +5.54	skewness: +236	
standard error: 5.56	standard deviation: 42.708	
range: 202		

The median value of 10.00 general administrators is felt to be more representative of a typical hospital with a larger general administration.¹

At the same time, data presented in Table 5.1

reveals the existence of variations in the number of general administrators within this type of hospital organization. That is, there were hospitals in the Province of Alberta in 1975 who possessed larger general administrations that were both small in size and large in size. Although variation was found to exist in the numbers of general administrators in this type of hospital, their organizational role or function of the general administration tended to be similar in both the larger and smaller hospitals. General administrators in this type of hospital were responsible for admission and discharging functions, inter-hospital relations, and interaction with provincial government agencies. In addition, they were found to be responsible for budget and other financial functions, as well as setting hospital policy and procedures.

The primary function of the general administration in hospitals of this type is to manage the flow of inputs. That is, to provide mediation of complexities that arise in the hospitals' environment as well as coordinate and control inter-hospital operations.

In contrast, there were 86 (or 59%) of hospital organizations in the Province of Alberta in 1975 that possessed four or fewer organizational members in their general administration. These organizations ranged from hospitals possessing four general administrations to those hospitals with only one general administrator, with

the average at 2.62 individuals in the general administration component. There were no extreme cases. In comparison, the typical hospital with smaller general administrations were one-quarter the size of the typical general administration found in hospitals with larger general administrations.

Table 5.2

NUMBER OF ORGANIZATIONAL MEMBERS IN THE GENERAL
ADMINISTRATION IN HOSPITALS WITH SMALLER
GENERAL ADMINISTRATIONS (N=86)

INTERVAL	FREQUENCY	RELATIVE FREQUENCY	CUMULATIVE FREQUENCY
4	21	24.4	24.4
3	27	31.4	55.8
2	22	25.6	81.4
1	16	18.6	100.0
N = 86		100.0	

mean: 2.62	mode: 3.00	median: 2.69
kurtosis: -1.162	skewness: -0.160	
standard error: 0.114	standard deviation: 1.053	
range: 3		

Due to the small numbers of general administrators found in hospitals of this type, the organizational function focused on record keeping and monitoring duties. In most cases, hospitals with smaller general administrations did not possess distinct boundary spanning units/ or positions in their general administration that had specific jurisdiction over environment-hospital

interactions (i.e. input-output management) nor coordination and control over internal work arrangements. Instead the primary function of the general administrator in a hospital of this type was that of a "monitor".

General administrators in hospitals of this type were observed to be assistants to the nursing administration, as well as data assimilators. Their organizational role for all intents and purposes was not as defined or formalized. In one hospital of this type the nursing administrator was responsible for the purchasing of hospital supplies. In a formal sense, however, negotiation of changes in policy and procedures and job description were directed through the general administration, but not always initiated by the general administration. It was observed that in hospitals of this type the process of change of job descriptions were carried out by a member from the nursing administration. Only after the desired change had been designed would the general administrator become involved.

5.3 ANALYSIS OF FREQUENCY DISTRIBUTION DATA FOR HOSPITALS WITH LARGER GENERAL ADMINISTRATIONS (N = 59)

For all variables, a few hospitals appear to be giant organizations in relation to the other hospitals with larger numbers of general administrators. The distributions of this group of variables were peaked, with a few extreme cases -- large complex hospitals such

as the Foothills in Calgary and the University hospital in Edmonton accounting for the extremely high scores. These few extreme cases have many more nursing administrators, larger nursing staff components and process a greater volume of patients annually. In addition, these extreme cases do inflate the average scores for each variable; the median scores are more indicative of the typical hospital of this type. Using this statistic as a guide, we find the typical hospital in this subsample is composed of at least 10 general administrators, 7 nursing administrators, 63 nursing staff personnel, has on any given day a patient load of 56 patients, with two types of rated beds and two types of medical specialties present.

The calculation of ratio data on typical hospitals reveals that there was a ratio of 1.4 general administrators for every one nursing administrator. In addition, for every nine nursing staff personnel there is one nursing administrator and for every one patient in the hospital there is 1.2 nursing staff personnel.

In comparison with the typical hospital, smaller hospitals of this type (i.e. employing the model statistic) were composed of 5 organizational members in the general administration, 1 nursing administrator, 31 nursing staff personnel and 10 patients in the hospital on any given day. In addition, ratio calculation reveals that there were five general administrators for every

one nursing administrator, and one nursing administrator for every 31 nursing staff personnel. At the same time the service ratio yielded a 3 to 1 ratio vis-a-vis the number of nursing staff personnel to patients in the hospital on any given day. Unlike the typical hospital in this sub-sample, these smaller versions suggest a probable economies of scale in internal administration when small size is a factor.

Ratios calculated for the few giant hospitals in this sub-sample indicated close similarity with the typical hospital. For example, there were 1.6 general administrators for every one nursing administrator, and one nursing administrator for every nine nursing staff personnel. (Ratios in the typical hospital were 1.4 to 1 and 1 to 9, respectively). At the same time, the service ratio indicated a 1.3 to 1 ratio between number of nursing personnel to patients in the hospital on any given day. In contrast to the typical hospitals, these "giants" displayed more organizational complexity as well as environmental complexity. These hospitals possessed at least seven different types of medical staff specialties (organizational complexity) in addition to nine different types of rated beds (environmental complexity). Although increased complexity occurs in the internal structuring of these larger hospitals an economies of scale in the internal administration does

not appear to be engendered (i.e. although larger in size and more complex the ratio of nursing administrators to nursing staff personnel remain the same for both "typical" and "giant" hospitals of this type).

5.3.1 Dependent Variable - The Size of the Nursing Administrations

The average hospital with larger general administrations in the Province of Alberta in 1975 employed 16.5 organizational members in their nursing administration. This type of hospital organization ranged from those employing only one nursing administrator to those hospitals employing 135 nursing administrators. (See Table 5.3). Although variability in scale of organization existed in the sub-sample, the nursing administrations function across all hospitals with larger general administrations was the same. Nursing administrations tended to be responsive to problems of internal administration only; with coordination and control of work arrangements for nursing care staff. I hypothesized that this was due to the mediation function provided by the general administration component.

Typical hospitals with larger general administrations possessed nursing administrations with seven organizational members. However, as mentioned earlier, there were many smaller versions

that possessed nursing administrations with only one organizational member in the component.

Observations revealed that nursing administrations in hospitals with larger general administrations exhibited differences in the elaboration of their structure, vis-a-vis the number of nursing administrators. Many such hospitals possessed nursing administrations with one level while other hospitals possessed five levels in their nursing administration. The increased division of labor apparent in larger sized nursing administrations is produced by the attendant increased work load necessary to organize direct component personnel as well as the increased complexity in internal administration created by the presence of a variety of types of medical staff specialties.

5.3.2 Independent Variables

5.3.2.1 The Number of Nursing Staff (Direct Component)

Variations in the size of nursing administrations in hospitals with larger general administrations were hypothesized to be a function of the size of the direct component to be managed.

The average hospital with a larger

general administration in the Province of Alberta in 1975 possessed 187 nursing staff personnel.

Table 5.3

NUMBER OF ORGANIZATIONAL MEMBERS IN THE NURSING
ADMINISTRATION IN HOSPITALS WITH LARGER GENERAL
ADMINISTRATIONS (N=59)

INTERVAL	FREQUENCY	RELATIVE FREQUENCY	CUMULATIVE FREQUENCY
120-139	1	1.7	1.7
100-119	1	1.7	3.4
80-99	1	1.7	6.1
60-79	2	3.4	9.5
40-59	0	0	9.5
20-39	7	12.0	21.5
15-19	7	12.0	33.5
10-14	4	6.5	40.0
5-9	16	27.1	67.1
0-4	20	33.9	100.0
N = 59		100.0	
mean: 16.51			
kurtosis: +9.359		mode: 1.00	median: 7.25
standard error: 3.374		skewness: +2.957	
range: 134		standard deviation: 25.93	

The size of the direct component in this sub-sample of organizations ranged from one hospital with 14 nursing staff personnel to one hospital with 1218 nursing staff personnel (See Table 5.4).

However, due to extreme cases, (i.e. a few hospitals with very large

direct components -- the giants) the median value of 63 nursing staff personnel is felt to be more representative of a typical sized direct component in hospitals with larger general administrations.

Table 5.4

NUMBER OF ORGANIZATIONAL MEMBERS IN THE DIRECT COMPONENT IN HOSPITALS WITH LARGER GENERAL ADMINISTRATIONS (N=59)

INTERVAL	FREQUENCY	RELATIVE FREQUENCY	CUMULATIVE FREQUENCY
1120-1219	2	3.4	3.4
860-1059	2	3.4	6.8
620-779	2	3.4	10.2
500-579	2	3.4	13.6
240-259	2	3.4	17.0
200-239	2	3.4	20.4
160-199	4	6.7	27.1
140-159	2	3.4	30.5
120-139	3	5.0	35.5
100-119	2	3.4	38.9
80-99	3	5.0	43.9
60-79	5	8.5	52.4
50-59	6	10.1	62.5
40-49	7	12.0	74.5
30-39	7	12.0	86.5
20-29	6	10.1	96.6
0-19	2	3.4	100.0
N = 59		100.0	

mean: 187.24 mode: 31.00 median: 63.00
kurtosis: +5.131 skewness: +2.419
standard error: 37.166 standard deviation: 285.48
range: 1204

Examination of the types of data available from the Alberta Hospital Services Commission on nursing staff personnel,

revealed that the delineation of nursing wards could be calculated but there were no data collected on the organization of the nursing staff on these wards. However, from my observations in hospitals of this type it would seem that a typical number of nursing staff per ward, per shift, might be composed of one head nurse or staff nurse, 2 to 3 registered nurses, 2 to 3 registered nursing assistants, and perhaps an orderly. The ratio calculated for the number of nursing administrators to nursing staff personnel in a typical hospital of this type was a 1 to 9 ratio, respectively. However, it must be noted that this ratio is an aggregate indicator of the span of control for the entire nursing administration and nursing staff personnel components of the hospital organization. This ratio cuts across all nursing units in the hospital. Exceptions to this typical number of nursing staff personnel mix per unit would be expected in smaller sized hospitals of this type where it appears that there is an economies of scale principle operating in the nursing administration (i.e. one

nursing administrator for every 31 nursing staff personnel).

Initial correlation data revealed at the zero-order level that the number of nursing staff personnel (size of the direct component) was strongly associated with the number of nursing administrators ($r = + .95$).

5.3.2.2 Patient Load (Environmental Demand)

In hospitals with larger number of general administrators it was hypothesized that the average number of patients in the hospital on any given day would have no direct affect on the number of organizational members in the nursing administration.

The average number of patients in a hospital with a larger general administration on any given day was found to be 157 patients. Hospitals of this type possessed patient loads that ranged from 10 patients to one hospital in the Province of Alberta that carried a patient load of 881. (See Table 5.5). As was the case with the distribution of the direct component variable, the median value of 56 patients

in the hospital on any given day, is felt to be more indicative of a typical hospital with a larger general administration.

Correlation data disclose that environmental demand is strongly associated with the number of nursing administrators in hospitals with larger general administrators ($r = +.92$).

Table 5.5

AVERAGE NUMBER OF PATIENTS IN THE HOSPITAL ON ANY GIVEN DAY (PATIENT LOAD) IN HOSPITALS WITH LARGER GENERAL ADMINISTRATIONS (N=59)

INTERVAL	FREQUENCY	RELATIVE FREQUENCY	CUMULATIVE FREQUENCY
680-919	3	5.0	5.0
550-619	2	3.4	8.4
420-449	2	3.4	11.8
380-419	2	3.4	15.2
280-319	2	3.4	18.6
220-279	2	3.4	22.0
180-219	3	5.0	27.0
120-179	3	5.0	32.0
90-119	4	6.7	38.7
60-89	4	6.7	45.4
50-59	7	12.0	57.4
40-49	10	17.2	74.6
30-39	4	6.7	81.3
20-29	7	12.0	93.3
0-19	4	6.7	100.0
N = 59		100.0	

mean: 156.69 mode: 10.27 median: 2.13
 kurtosis: +3.65 skewness: +2.034
 standard error: 26.36 standard deviation: 202.44
 range: 871

5.3.2.3 Number of Different Types of Medical Specialties (Organizational Complexity)

The number of different types of medical specialties present in hospitals with larger general administrations was hypothesized to have a negative (inverse) relationship with the number of nursing administrators.

In hospitals with larger numbers of general administrators, there was an average of 2 medical staff specialists present, to one hospital having seven different types of medical staff specialties. The mean was felt to be representative of the typical number of medical specialties present in this type of hospital. This finding was not surprising, as most hospitals in the Province were observed to have at the minimum a medical and surgical class rated bed distinction (See Table 5.6).

Typical specialties found in this type of hospital most often include other paid medical staff (i.e. physicians with hospital privileges), psychiatrists, pathologists, cardiologists, and radiologists.

Correlation data revealed that the number of different types of medical staff specialists, was positively associated with the number of nursing administrators in hospitals with larger general administrations ($r = +.61$).

Table 5.6

NUMBER OF DIFFERENT TYPES OF MEDICAL STAFF
SPECIALTIES IN HOSPITALS WITH LARGER
ADMINISTRATIONS (N=59)

INTERVAL	FREQUENCY	RELATIVE FREQUENCY	CUMULATIVE FREQUENCY
7	1	1.7	1.7
6	1	1.7	3.4
5	4	6.8	10.8
4	8	13.6	23.7
3	7	11.9	35.6
2	23	39.0	74.6
1	9	15.2	89.8
0	6	10.2	100.0
N = 59		100.0	
mean: 2.39 mode: 2.00 median: 2.13			
kurtosis: +.420 skewness: +.684			
standard error: .202 standard deviation: .684			
range: 7.0			

5.3.2.4 Number of Different Types of Rated
Beds (Environmental Complexity)

The number of different types of rated beds was hypothesized to have no direct effect on the number of nursing administrators in hospitals with larger number of general administrations.

Hospitals with larger general

administrations possessed an average of 2.5 different types of rated beds. This sub-sample of hospitals ranged from organizations with only one type of rated bed differentiation to a hospital with nine different types of rated beds present. (See Table 5.7). Different types of rated beds in any one hospital is ten. These possible ten types include medical and surgical, intensive care, obstetrical (maternity), pediatric (children), psychiatric, T.B., other short-term rehabilitation (including convalescent), extended care (including chronic) and other long-term. Examination of data presented in Table 5.7 reveals that 48 (or 81.3%) hospitals of this type possess 3 or fewer different types of rated beds with the typical hospital possessing at least 2 different types.

Correlation data disclosed that the number of different types of rated beds was positively associated with the number of nursing administrators ($r = + .63$).

Table 5.7

NUMBER OF DIFFERENT TYPES OF RATED BEDS
(ENVIRONMENTAL COMPLEXITY) IN
HOSPITALS WITH LARGER GENERAL
ADMINISTRATIONS (N=59)

INTERVAL	FREQUENCY (N)	RELATIVE FREQUENCY	CUMULATIVE FREQUENCY
9	1	1.7	1.7
5	2	3.4	5.1
4	8	13.6	18.7
3	15	25.4	44.1
2	18	30.5	74.6
1	15	25.4	100.0
N = 59		100.0	
mean: 2.49 mode: 2.00 median: 2.31			
kurtosis: +6.6 skewness: +1.83			
standard error: .183 standard deviation: 1.41			
range: 8.0			

5.4 ANALYSIS OF FREQUENCY DISTRIBUTION DATA FOR HOSPITALS WITH SMALLER NUMBERS OF GENERAL ADMINISTRATIONS (N = 86)

These were eighty-six (86) hospitals in the Province of Alberta in 1975 that had four or fewer individuals in their general administrations. In contrast to the model of hospitals with larger general administrations, hospitals of this type do not correspond with the conventional prospective of hospitals. Such hospitals were not found to be complex urban hospitals, providing a variety of specialized services, and processing a large volume of patients; they were found to be either rural or regional hospitals (i.e. smaller municipal hospitals) that could be

categorized as "referring" organizations. These hospitals were not necessarily auxillary hospitals, as acute and non-acute beds as well as long and short term care were provided in this sub-sample of organizations.

Unlike the somewhat skewed and peaked distribution of variables in the sub-sample of organizations with larger general administrations, the sub-sample of hospitals with smaller general administrations possessed distributions that were relatively "normal". Exceptions to this were found for the distribution of the variable, number of nursing administrations. Examination of the distribution of number of nursing administrations reported that there were 59 (or 69%) hospitals that possessed only one nursing administrator, with 77 or (90%) hospitals in the sub-sample reporting 2 or 1 nursing administrator. The maximum number of nursing administrator to be found in a hospital reported this number).

Examination of the median, modal and extreme scores revealed that there were two varieties of hospitals with smaller general administrations. The typical hospital (i.e. employing the median statistic) was composed of 3 general administrators, 1 nursing administrator, 22 nursing staff personnel with 19 patients in the organization on any give day. In terms of administrative and service ratios there were 3

general administrators for every 1 nursing administrator; 1 nursing administrator for 22 nursing staff personnel and 1.2 nursing staff personnel for every patient in the hospital on any given day. Typical hospitals possessed a total of 26 organizational members in their general administration, nursing administration and direct components, as compared to a total of 80 organizational members in the same components in "typical" hospitals with larger general administrations. In addition, their indicators of environmental demand were smaller with the typical number of yearly separations equal to 792 and number of patients in the hospital on any given day equal to 19, as compared to 2,061 and 63 respectively in typical hospitals with larger general administrations.

Smaller scaled hospitals of this type exhibited the same ratio of general administrators to nursing administrators (i.e. 3 to 1). The span of control in the nursing administration was slightly smaller with 1 nursing administrator for every 15 nursing staff personnel. As was the case with smaller scaled hospitals (midgets) with larger general administrations, smaller hospitals of this type (midgets) suggested the probable existence of underutilization of nursing staff personnel, as well as administrative personnel. The service ratio revealed the presence of 2 nursing staff personnel for every patient in the hospital on any given day. In addition, the average number of patients in the

hospital on any given day were 8 patients. The notion of underutilization is perhaps more evident when we consider the fact that these smaller scaled hospitals possess a total compliment of 19 organizational members in the general administration, nursing administration and direct component personnel with only 8 patients in the hospital on any given day. That is, a ratio of 2.4 hospital personnel for every 1 patient in the hospital. At the same time, these smaller scaled hospitals separate 31 patients annually, that stay in the hospital an average of only six days.

Larger hospitals (giants) display similarity with the typical hospital in this sub-sample only in relation to their service ratios. Larger hospitals report a 1 to 1 ratio between nursing staff personnel to patients in the hospital on any given day; typical hospitals report a 1.2 to 1 ratio, respectively. However, these larger hospitals truly are typical in comparison to all varieties of both types of hospitals existing in the Province of Alberta. These larger hospitals reported a reversal in the ratio of general administrators to nursing administrators. In hospitals of this variety there was 1 general administrator for every three nursing administrators. All other varieties of hospitals, independent of the number of general administrators reported a ratio of more general administrators. It is suggested that this is an artifact of the

organizational role of the nursing administration in hospitals with smaller general administrations. The number of nursing administrators in hospitals of this variety are a function not only of the number of nursing staff personnel but environmental influences. Hospitals of this variety report the most intensive ratio of nursing administrators to patients in the hospitals on any given day (environmental demand) (i.e. one nursing administrator for every 4.9 patients in the hospital on any given day). At the same time, due to the relatively smaller number of general administrators to nursing administrators, their organizational function was that of a monitor of inter-hospital operations.

5.4.1 Dependent Variable - Size of the Nursing Administration

The average hospital with a smaller number of general administrators employed 1.8 organizational members in their nursing administration (See Table 5.8). Hospital organizations of this type ranged in size from 59 (or 69%) hospitals employing one nursing administrator to one (or 1%) hospital employing 12 nursing administrators. Similar to hospitals with larger general administrations, nursing administrations in hospitals with smaller general administrations were found to be both large and small in relation

to "scale of organizational operations". Although variability in size existed, nursing administrations in this type of organization appeared to share the same function. Nursing administrators were concerned with boundary spanning functions (i.e. internal administration). Interview data disclosed that the role of the nursing administration was expanded to include mediation of environmental influences because general administrations were observed to be "monitors" of organizational operations. In addition, the range in size of nursing administrations in hospitals with larger general administrations was 134 as compared to 11 in hospitals with smaller general administrations. In comparison, observations disclosed that hospitals with larger general administrations possessed nursing administrations that were vertically differentiated with their central role focused on internal administration. Specifically, nursing administrators were concerned with the control and coordination of nursing staff personnel. Hospitals with smaller general administrations possessed nursing administrations that displayed little if any vertical differentiation. Most often the nursing administration consisted of only one individual, a Director of Nursing. In

addition, due to the small numbers of general administrators present in this type of hospital, the nursing administrations central role was expanded beyond a concern for internal administration, to the management of environmental disruptions (i.e. environmental complexity, instability and demand). The general administration contingency argument suggests that in the absence of adequate buffering and levelling units, nursing administrations would be responsive to environmental fluctuations and uncertainties. Factors predicted to affect the size of nursing administrations were number of nursing personnel (direct component), average number of patients in the hospitals on a given day (environmental demand) number of types of medical specialists, average length of patient stay (environmental instability) and number of patient separations, (environmental demand).

5.4.2 Independent Variables

5.4.2.1 The Numbers of Nursing Staff (Direct Components)

The number of nursing staff personnel in hospitals with smaller numbers of general administrators was hypothesized to have a direct effect

on the number of nursing administrators.

Table 5.8

NUMBER OF ORGANIZATIONAL MEMBERS IN THE NURSING
ADMINISTRATION IN HOSPITALS WITH SMALLER GENERAL
ADMINISTRATIONS (N=86)

INTERVAL	FREQUENCY	RELATIVE FREQUENCY	CUMULATIVE FREQUENCY
12	1	1.2	1.2
10	3	3.5	4.7
5	1	1.2	5.9
4	1	1.2	7.1
3	3	3.5	10.6
2	18	20.8	31.4
1	59	68.6	100.0
N = 86		100.0	

mean: 1.802 mode: 1.00 median: 1.229
kurtosis: +13.806 skewness: +3.78
standard error: 0.233 standard deviation: 2.062
range: 11.0

Frequency distribution data revealed that the average number of nursing staff personnel in this type of hospital was 23 ($\bar{x} = 23.38$), with a median value of 22 nursing staff personnel present to one hospital possessing 56 staff personnel (See Table 5.9).

The initial zero order correlation data revealed that the number of nursing staff personnel was weakly associated with the number of nursing administrators

($r = +0.11$).

Table 5.9

NUMBER OF ORGANIZATIONAL MEMBERS IN THE DIRECT
COMPONENT IN HOSPITALS WITH SMALLER NUMBERS
OF GENERAL ADMINISTRATIONS (N=86)

INTERVAL	FREQUENCY	RELATIVE FREQUENCY	CUMULATIVE FREQUENCY
41-56	4	4	4
36-40	6	7	11
31-35	13	15	26
26-30	10	12	38
21-25	17	20	58
16-20	13	15	73
10-15	18	21	94
0-9	5	6	100
N = 86		100.0	

mean: 23.38 mode: 15.00 median: 22.17
kurtosis: 0.104 skewness: 0.485
standard error: 1.12 standard deviation: 10.41
range: .54

5.4.2.2 The Number of Registered Nurses in the Direct Component

Due to the surprise finding in the initial correlation data found between number of nursing staff and nursing administrators an alternative explanation was sought to account for the low association. After a re-examination of the interview field notes it was decided that the examination of registered nurses and their impact on the number of nursing

administrators would provide a closer approximation of the actual relationship between these two components. Interview data revealed that hospitals with smaller numbers of general administrators employ their registered nurses (R.N.'s) in a different capacity than in hospitals with larger numbers of general administrators. In an earlier study of Alberta hospitals employing 1973 Hospital Services Commission data, it was discovered that registered nurses in hospitals without head nurses tend to assume some of the supervisory if not decision making duties performed by head nurses (Reeves and Bucar, 1978). This finding was confirmed during interviews in the six Alberta hospitals.

The zero-order correlation data revealed that the number of organizational members in the nursing administration was negatively associated with the log of the total number of registered nurses ($r = -.55$).² What is revealed by these data, and confirmed in interviews with nursing administrators, is that on an informal basis, a senior registered nurse will be designated to administer to all

other nursing personnel while the Director of Nursing attends to other administrative duties. Although this type of R.N. is not formally recognized as a member of the nursing administration, she is assuming the administrative functions of a head nurse, consequently, and increment in R.N.'s will result in a disproportionate increase in the size of the nursing administration. This finding does not suggest that hospitals with smaller general administrations employ their nursing administrations more efficiently. It does, however, suggest that nursing administrations may tend to delegate internal administration duties to professionally trained nursing personnel.

The process then, may appear to be, hospitals having a larger daily patient load require a larger number of nursing personnel to provide continuous patient care. To the extent that the nursing administration must address itself to the mediation of environmental conditions, organizational members in the direct component (i.e. R.N.'s) assume some of the duties of internal administration.

5.4.2.3 Patient Load (Environmental Demand)

The average number of patients in the hospital on any given day was hypothesized to be directly related to the number of nursing administrators.

Hospitals with smaller general administrations exhibited an average patient load of 22 patients in the hospitals on any given day. This type of hospital possessed a range in patient loads from one hospital having zero patient load to one Alberta hospital with a patient load of 56 patients (See Table 5.10). Interestingly, the top score for patient load (i.e. 56 patients in the hospital on any given day) in hospitals with smaller general administrations was equal to the median or typical value in hospitals with larger general administrations. In comparison this type of hospital possessed patient loads one-seventh the size of those existing in hospitals with larger general administrations. On any given day in a typical hospital with a larger general administration, direct component personnel provided services to 63 patients. In

addition, hospitals with larger general administrations had patient loads that ranged from hospitals caring for 10 patients to an Alberta hospital with 881 patients in the hospital on any given day. To the extent that patient load is indicative of work performed at the direct component level, hospitals with smaller general administrations faced a much smaller demand for services and commodities than did direct components in hospitals with larger general administrations.

Table 5.10

ACTUAL NUMBER OF PATIENTS IN THE HOSPITAL ON ANY
GIVEN DAY (PATIENT LOAD) IN SMALLER
GENERAL ADMINISTRATIONS (N=86)

INTERVAL	FREQUENCY	RELATIVE FREQUENCY	CUMULATIVE FREQUENCY
50-59	3	3.5	3.5
40-49	7	8.1	11.6
30-39	10	11.6	23.2
20-29	23	16.7	49.9
10-19	31	36.1	86.0
0-9	12	14.0	100.0
N = 86		100.0	

mean: 21.85	mode: 8.3	median: 18.50
kurtosis: -0.036	skewness: 0.787	
standard error: 1.35	standard deviation: 12.60	
range: 53.78		

The initial zero-order correlation data revealed a positive association to exist between patient load and number of nursing administrators ($r = +.27$).

5.4.3 Summary of Frequency Distribution for Both Types of Hospitals

Hospitals with larger general administrations possessed nursing administrations that are seven times the size, and nursing staff components three times the size than hospitals with smaller general administrations (i.e. median size of nursing administration = 7.13 and 1.23 respectively; and median number of nursing staff personnel = 63 and 22.17 respectively). At the same time, hospitals with larger general administrations process three times as many separations during the year and, have three times as many patients in the hospital on any given day (See Table 5.11). Interestingly, the dichotomy does not disclose differences between the two environmental variables, instability and complexity and organizational complexity; indicating that individual hospitals of both kinds face a similar variety of task environments as well as display similar organizational complexity.

The calculation of ratios revealed that the internal administration is more centralized

in hospitals with larger general administrations. Examination of median values for the size of nursing administrations and number of nursing staff personnel (direct component) indicate a span of control of one nursing administrator to 22 direct component staff in hospitals with smaller general administrations, as compared to one nursing administrator to 9 direct component staff in hospitals with larger general administrations.

Briefly summarized then, hospitals with larger general administrations have larger direct components; process a greater number of separations during the year; have a larger daily patient load, then hospitals with smaller general administrations. In addition, descriptive data revealed that both types of hospitals display similarities in the degree of medical specialty differentiation (organizational complexity) as well as in the average length of patient stay (environmental instability) and number of types of rated beds present (environmental complexity). These data indicate that both types of hospitals typically face a similar variety of task environment as well as level of organizational complexity. However, in conclusion these data do differentiate on the basis that hospitals with larger general

administrations are more active people processing organizations. Interview data collected in both types of Alberta hospitals, lends support to these analytic distinctions.

Table 5.11

COMPARISON OF DESCRIPTIVE STATISTICS FOR HOSPITALS
WITH FIVE OR MORE GENERAL ADMINISTRATORS AND
HOSPITALS WITH FOUR OR FEWER GENERAL
ADMINISTRATORS IN THE PROVINCE OF
ALBERTA IN 1975

	≥ 5 $\bar{x}$	Median	≤ 4 $\bar{x}$	Median
Number of General Administrators	29.78	10.00	2.62	2.69
Number of Nursing Administrators	16.51	7.13	1.80	1.23
Number of Nursing Staff Personnel	187.24	63.00	23.38	22.17
Number of Separations (Environmental Demand)	4,965.44	2,061.00	865.33	791.50
Patient Load (Environmental Demand)	156.70	56.47	21.85	18.48
Average Length of Stay (Environmental Stability)	72.97	7.46	78.45	6.71
Number of Different Types of Rated Beds (Environmental Complexity)	2.49	2.31	2.41	2.59
Number of Different Types of Medical Specialties (Environmental Complexity)	2.39	2.13	1.51	1.72
	N = 59		N = 86	

5.5 MULTIVARIATE MODEL OF HOSPITALS WITH LARGER NUMBERS OF GENERAL ADMINISTRATORS (N = 59)

There were fifty-nine (59) hospitals in the Province of Alberta in 1975 that had five or more organizational members in their general administration. These hospitals were profiled as possessing larger nursing administrations and nursing staff components; processing a large volume of separations per year and offering a variety of specialized services. In only a few extreme cases could the type of hospital described in this sub-sample epitomize the conventional image of a large complex general hospital. However, it must be noted that the typical hospital profiled in this sub-sample are only smaller versions of these extremely large and complex hospitals.

Table 5.12 and Figure 5.1 represent the model of factors found to affect the size of nursing administrations in hospitals possessing larger general administrations.

Examination of initial zero-order correlation revealed that certain variables were strongly correlated. For example, the correlation between number of nursing personnel and patient load was very high ($r = +.97$).

This strong association was expected, as work to be done by the nursing component is directly related to the number of patients in the hospital on a given day. At the same time, general administrators in this type of

Table 5.12

FACTORS ASSOCIATED WITH THE SIZE OF NURSING
ADMINISTRATIONS IN HOSPITALS WITH LARGER
GENERAL ADMINISTRATIONS

<u>Terms</u>	<u>b</u>	<u>Standard Error of b</u>	<u>Signif.</u>	<u>b*</u>	<u>R²</u>
1. Number of nursing staff personnel	0.076	0.015	0.000	0.84	0.918
2. Number of types of Medical Staff Specialties	1.803	0.898	0.050	0.11	
3. Average number of patients (patient load)	0.00009	0.0002	0.665	0.07	
4. Number of different types of rated beds	-0.302	1.072	0.780	-0.02	
(Constant)	-2.644	2.462	0.288		

N = 59, d.f. = 54

Zero-order correlations

	2.	3.	4.	5.	$\bar{x}$	Std. Dev.
1. Number of nursing staff personnel	0.57	+0.97	0.64	0.95	187.24	285.48
2. Number of different types of medical staff specialties		0.52	0.66	0.61	2.39	1.55
3. Average number of patients (patient load)			0.58	0.92	156.70	202.45
4. Number of different types of rated beds				0.63	2.49	1.41
5. Number of individuals in the nursing administration					16.51	25.91

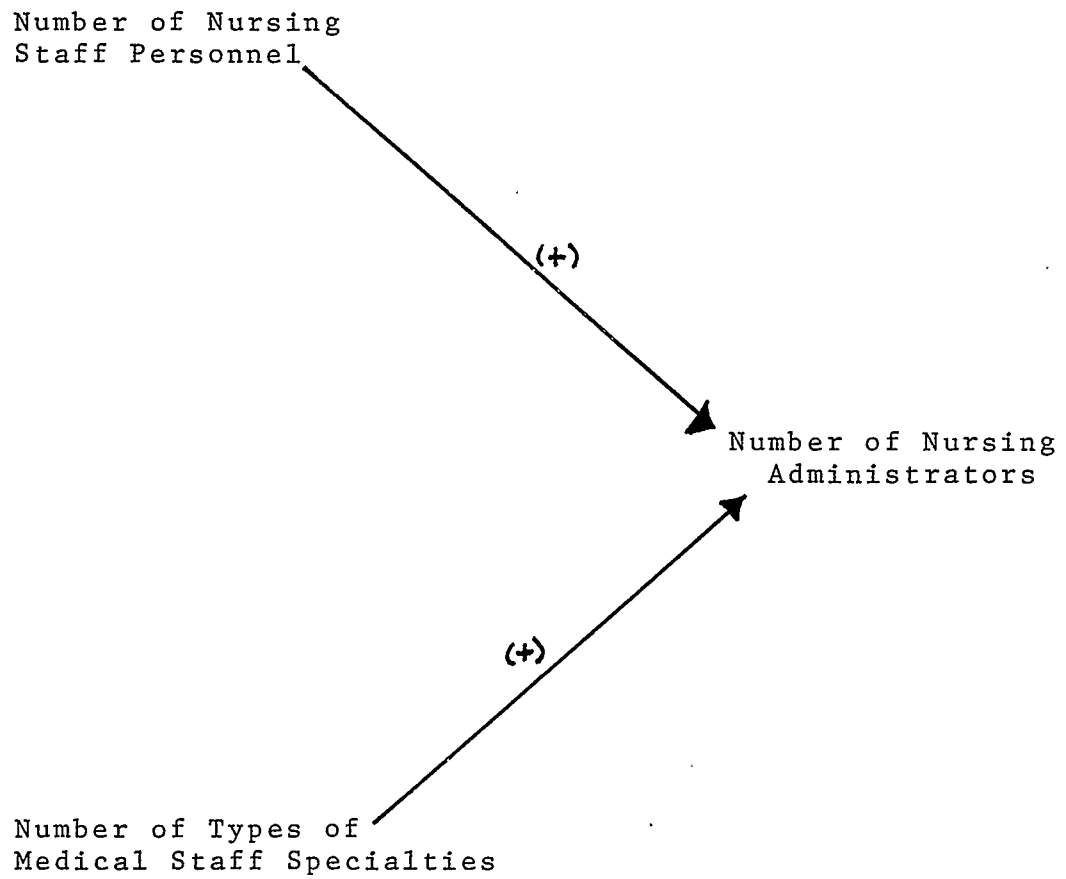


Figure 5.1

Factors Associated with the Size of Nursing
Administrations with Larger
General Administrations

hospital are responsive to environmental demand, instability and complexity therefore mediating any affect patient load might have on the number of nursing administrators. In addition, the calculation of the partial correlation coefficient between patient load and the number of nursing administrators was, ($r = +.02$), controlling for the number of nursing staff personnel. This suggests that the size of the direct component variable could be classed as an intervening variable in keeping with the input - through put-output imagery developed in this thesis.³ The argument for the number of nursing staff personnel as an intervening variable is schematically represented in Figure 5.2.

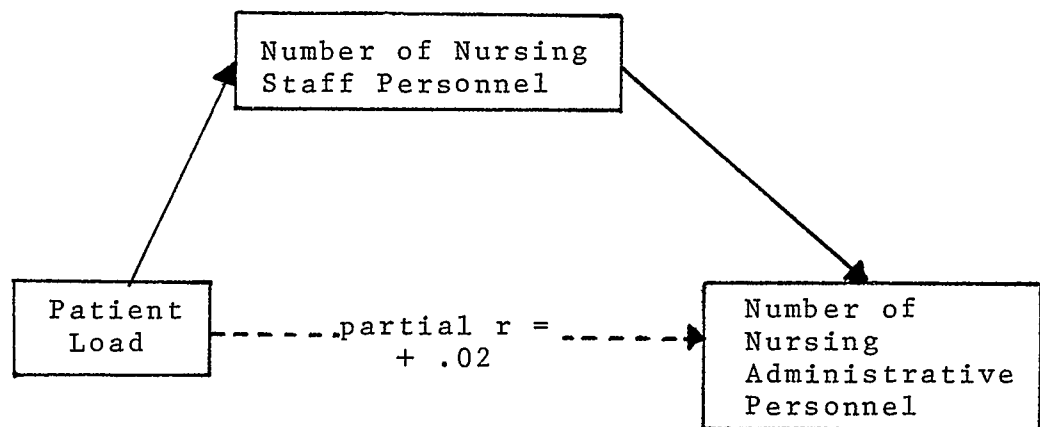


Figure 5.2

Schematic Presentation of Relationship Amongst
Patient Load, Number of Nursing Staff, and
Number of Nursing Administrators in
Hospitals with Larger General
Administrations

In addition, the number of different types of medical staff specialties (organizational complexity) was highly correlated with the number of different types of rated beds (environmental complexity) ($r = +.66$). However, examination of the partial correlation coefficient between environmental complexity and the number of nursing administrators when controlling for organizational complexity suggests a possible spurious interpretation of the relationship (partial $r = r +.38$). This lends support to the notion that in hospitals with larger general administrations, boundary spanning units are present to provide mediation of environmental influences. What appears initially to be a strong direct relationship between environmental complexity and number of nursing administration can be interpreted through the variable, organizational complexity. The types of rated beds present in the hospital presupposes the existence of a medical specialty (ties) to provide services indicative of the rated bed differentiation. For example, it is unlikely that a hospital would appropriate rated beds to a psychiatric classification without having a psychiatrist(s) on staff.

The interpretation of the association amongst these three variables is diagrammatically presented in Figure 5.3.

Table 5.13

FACTORS ASSOCIATED WITH THE SIZE OF NURSING
ADMINISTRATIONS IN HOSPITALS WITH
SMALLER GENERAL ADMINISTRATIONS

	<u>b</u>	<u>Standard Error of b</u>	<u>Signif.</u>	<u>b*</u>	<u>R²</u>
1. Log of the total number of R.N.'s	-2.547	0.260	.000	-0.87	0.594
2. Average Number of patients (patient load)	0.00098	0.99913	.000	0.60	
3. Number of different types of rated beds	0.638	0.228	0.006	0.25	
4. Number of types of medical specialties	0.631	0.266	0.020	0.24	
(Constant)	2.446	0.627	0.000		

N = 86, d.f. = 81

Zero-order correlations

	2.	3.	4.	5.	<u>$\bar{x}$</u>	<u>Std. Dev.</u>
1. Log of total number of R.N.'s	0.23	0.28	0.47	-0.55	2.1	0.71
2. Average Number of patients (patient load)		-0.23	-0.28	0.27	21.85	12.60
3. Number of different types of rated beds			0.59	0.01	2.41	0.80
4. Number of types of medical specialties				-0.18	1.51	0.79
5. Number of Nursing Administrators					1.80	2.07

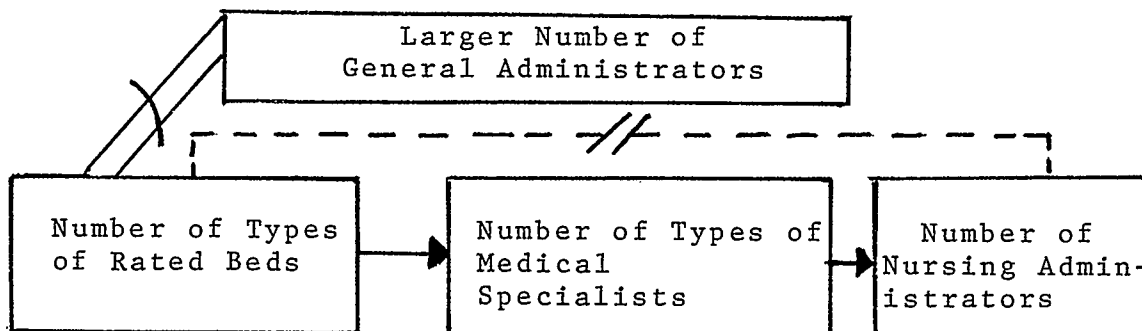


Figure 5.3

Schematic Representations of Relationship
Amongst Number of Types of Rated Beds,
Medical Specialties and Nursing

5.5.1 Results of the Regression Analysis

The regression analysis indicates that the size of the nursing administration is associated with the number of nursing staff personnel as well as the number of different types of medical staff specialties (See Table 5.12 and Figure 5.1). An examination of the slopes reveals that when other factors are held constant, there is a ratio of 12.5 nursing staff personnel to one nursing administrator (i.e. $b = .076 = \frac{1}{12.5}$).

In comparison to the median values and uncontrolled ratios calculated for the typical hospital, this ratio (i.e. slope value of $(b = .076 = \frac{1}{12.5})$) reveals a greater span of control in the nursing administration. That is, the ratio of nursing administration. That is, the ratio of

nursing administrators to nursing staff personnel in a typical hospital was calculated as a 1 to 9 ratio. However, the slope of the number of different types of medical specialties is approximately two and is interpreted as meaning a ratio of two medical staff specialists present for every one nursing administrator ($b = 1.803$). If we take into account the effect the presence a variety of medical staff specialists has on the number of nursing staff personnel present in the typical hospital then the ratio of nursing administrators to nursing staff personnel becomes more aligned with the slope ratio of 1/12.5. In the typical hospital there appears to be a ratio of 1 nursing administrator for every 2 medical specialties present. Of the 7 nursing administrators present in a typical hospital it is suggested that one is present due to the increased work load created by the existence of two medical staff specialties. The adjusted ratio is then, one nursing administrator for every 10.5 nursing staff personnel.

When the number of nursing personnel and number of different types of medical specialties are taken into account, the amount of variation explained by environmental demand (patient load) and complexity (number of different types of

rated beds) is virutally non-existent ($b^* = +.07$, $b = .00009$ and $b^* = -.02$, $b = -.302$ respectively). Examination of the partial correlation coefficient between environmental demand and size of the nursing administration when controlling for the size of the direct component (number of nursing staff personnel) demonstrated that the relationship was extremely attenuated (i.e. $r = +.92$, partial $r = +.02$). In addition, the correlation between size of the nursing administration and the size of the direct component for environmental demand was only slightly attenuated (i.e. $r = +.95$, partial $r = +.67$). As alluded to earlier, the relationship between average daily patient load (environmental demand) and the size of the nursing administration is of an intervening nature.

5.5.1.1 The Contingency Argument

The results presented in this section are consistent with the predicted relationships set out in the general administration contingency argument. The existence of a direct relationship between the number of individuals in the nursing administration and the number of nursing staff personnel (direct component) lends support to the notion that hospitals with

larger general administrations possess general administrations that are responsive to environmental factors (i.e. environmental demand, instability and complexity). In as much as the boundary spanning units or positions are successful in insulating the direct component from environmental uncertainties and fluctuations, hospitals with larger general administrations will exhibit nursing administrations that are affected by concerns of internal administration. This was most evident in interviews conducted in hospitals with larger general administrations. Data from interviews with nursing administrators indicated little if any association to exist between the Nursing Administration members and the organization (processing) of patients (i.e. admitting and discharging). In two larger hospitals of this type, both possessed personnel and business office departments. These departments were responsible for the processing of patient information as well as the entry and discharge procedures of patients. Nursing administrators were responsible for the collection of data

detailing services provided to the patient while in the hospital (i.e. charting records kept on the ward and coordination of nursing staff providing services).

The results reported in Table 5.12 and schematically represented in Figure 5.1 reveal a direct relationship to exist between the number of different types of medical specialties and the size of the nursing administration. The data indicates that hospitals with larger general administrations, with a greater number of different types of medical staff specialties present, will have larger nursing administrations ($b = +1.803$, $b^* = +.11$, signif. = .05). Examination of the slope suggests a ratio of two medical staff specialties for every one organizational member in the nursing administration. The uncontrolled ratio calculated for the typical hospital using median values was one medical staff specialty for every 3.5 nursing administrators. However, it is suggested that this ratio appears to be more dispersed due to the uncontrolled effects that the number of nursing staff personnel have on the

number of nursing administrators.

5.5.1.2 The Medical Staff Structure Argument

The notion underlying the medical staff structure hypothesis was based on the belief that an inverse relationship would exist between these two components. That is to say, where there existed a diverse medical staff there would exist, (1) a complimentary nursing component to assist these specialties in the delivery of continuous care, as well as (2) a shared responsibility for the "management" of these specialized personnel. However, data support the alternative explanation that the presence of a variety of medical staff specialties engenders the size of the nursing administration, vis-a-vis the increased complexity of internal administration. The presence of a variety of medical staff specialties presupposes the presence of a complimentary nursing staff to assist in the delivery of specialized care to patients. Management of these specialized nursing staff is a jurisdictional function of the nursing administration. Thus, the professional

organization of work by physicians increases the size of the nursing administration by increasing the variety of administrative functions to be performed by nursing administrators. For example, smaller sized nursing administrations in hospitals with larger general administrations were observed to display less medical staff differentiations than in hospitals with larger sized nursing administrations. The presence of a variety of medical staff means that there will be an associated variety of specialized nursing care units (i.e. wards). In addition, interview data revealed that there were differences in medical versus surgical ward structures. Surgical ward structures were more vertically differentiated vis-a-vis types of nursing staff, than medical wards. In discussing ward composition with a nursing administrator in a hospital of this type it was disclosed that more active forms of care all carried out in relation to the severity and kind of treatment performed. In her hospital (the D.O.N.) you will find a variety of ward structures. Nursing units such as surgical will use a

team nursing approach while others, such as pediatrics and terminal wards were observed to use a one on one nursing approach. That is, primary continuous care was provided by one nursing staff personnel rather than a variety of nursing staff personnel, as is the case on the team nursing wards.

The regression data indicate the major portion of variation in the size of the nursing administration may be explained by the number of nursing personnel (direct component) ($b^* = +.84$, $R = .911$). In addition, when number of nursing personnel, patient load (environmental demand) and number of types of rated beds (environmental complexity) are held constant a direct relationship between the number of nursing administrators and the number of different types of medical staff specialists (organizational complexity) results ($b^* = .11$, $R^2 = .918$). However, it is suggested that the additional amount of variation explained by number of different types of medical staff specialties is only marginal in impact (i.e. an increase in the amount of variation explained by

organizational complexity of only .007).

5.5.2 Conclusion

In conclusion, these data demonstrate the environmental variables do not engender the size of nursing administration in hospital organizations having five or more organizational members in their general administrations. General administrators in hospitals of this type provide insulation or closure of work conducted within the hospital (i.e. at the direct component level) from environmental factors by mediating the flow of inputs and outputs. By processing the admission and discharge of patients, the general administration regulates and stabilizes the demand for hospital services. Through negotiating with the Provincial Government and other hospitals, to set the types of services to be provided by the hospitals, the general administration mediates complexities that arise in the environment and ensures some degree of continuity in the system. To the extent that organizational closure is achieved the number of nursing administrators was a function of the work load created by the number of nursing staff personnel and the complexity in internal administration created by the professional organization of work, vis-a-vis,

number of different types of medical specialties.

In hospitals with larger general administrations there were present both large and small scaled hospitals. Data indicates that comparisons between the typical hospitals of this type and the larger versions were relatively similar in organizational structure.

However, whether a typical, giant or smaller hospital, the functions of both the general and nursing administration were observed to be the same across all hospitals with larger number of administrators. That is to say, a nursing administration in a small sized hospital of this type would share the same jurisdictional responsibilities as a nursing administrator in a larger sized hospital.

5.6 MULTIVARIATE MODEL OF HOSPITALS WITH SMALLER NUMBERS OF GENERAL ADMINISTRATORS (N = 86)

The contingency argument proposed in this study is based on the notion that "organizations facing heterogeneous and dynamic task environments require more specialized boundary spanning units to handle the diverse and variable input-outputs of the system". The presence of a variable and shifting hospital environment is manifest in the size of an organizations general administration component. To the extent that mediating boundary spanning units are absent, the accomplishment

medical specialties in patient care. One element of this complimentary technology is the specialized nursing component. In addition, the determination of the types of services to be provided at the direct component level are initiated by the medical component in hospitals with larger general administration. This is what has been referred to as the professional organization of work. The increased complexity in the types of services to be provided by the direct component, increases the work load for nursing administrators. That is the variety of types of wards, and operations performed, associated with the variety in types of medical staff specialties, represents for the nursing administration a more active form of administration in that regularization or routinization of duties performed by nursing personnel varies from ward to ward, and (2) hospitals with larger general administrations with a greater number of nursing staff personnel were found to possess larger numbers of nursing administrators.

In contrast, the variation in the size of the nursing administrations in hospitals with smaller general administrations were a function of the log of the total number of registered nurses in the direct component and the hospitals patients load ($b^* = -.87$ and $b^* = +.24$ respectively). Observations in this type of hospital confirmed the notion that nursing administrations were not only responsive to concerns of internal

of organizational closure around direct component operations becomes the object of concern of the nursing administration. Nursing administration in hospitals of this type are a function of not only the number of nursing staff personnel but as well environmental influences (i.e. environmental instability, complexity and demand).

The regression analysis reported in Table 5.13 and schematically represented in Figure 5.4 lend support to the notion that nursing administrations are responsive to not only demands of internal administration but also factors in the hospital environment. Variations in the size of nursing administrations were found to be a function of the log of the total number of registered nurses in the direct component as well as the average number of patients in the hospital on any given day (patient load).

The log of the total number of R.N.'s, average number of patients, number of types of rated beds, and the number of medical specialties were employed in the final regression analysis. When all factors were held constant, the relationship between log of the total number of R.N.'s and the number of nursing administrators is negative and significant ($b^* = -.87$, $b = -2.55$, $\text{sign.} = .000$). The data indicate that smaller increments in the number of R.N.'s have greater impact on the number of individuals in the nursing administration.

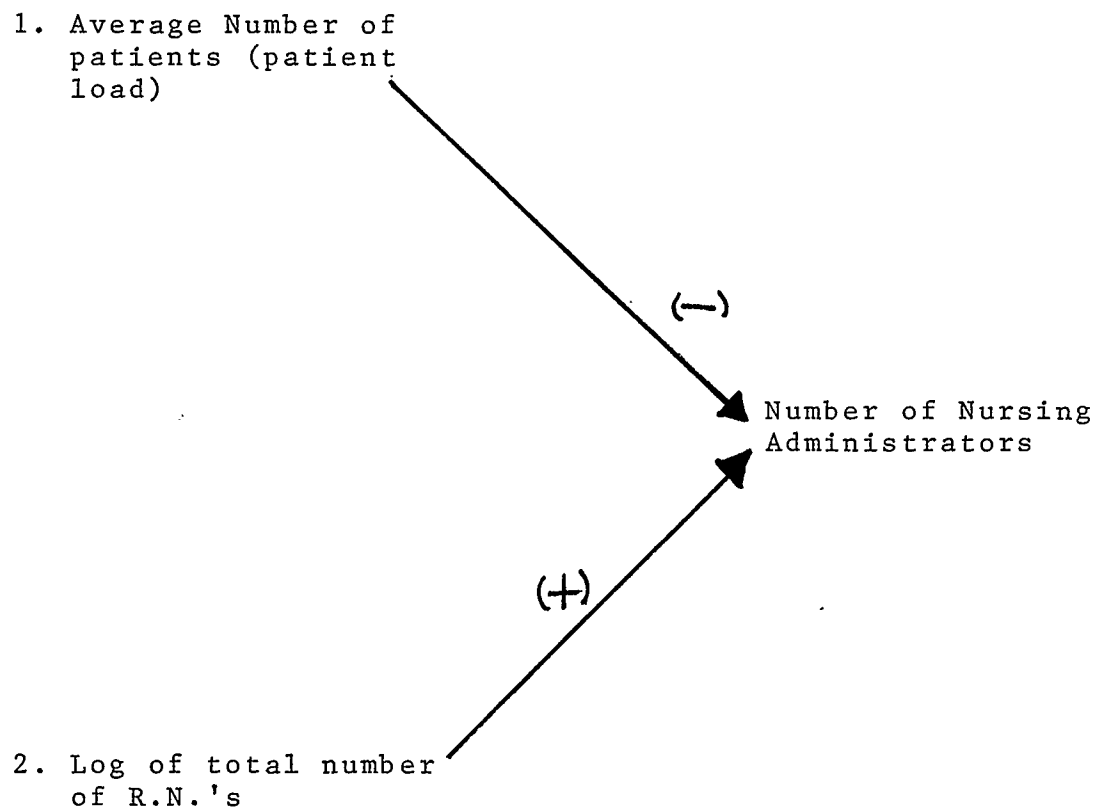


Figure 5.4

Factors Associated with the Size of Nursing
Administrations in Hospitals with
Smaller General Administrations
(N=86)

That is to say, in hospitals with smaller general administrations increments of one and two registered nurses appear to have a greater impact on the size of the nursing administration than do larger increments of let's say four or five registered nurses. The rationale for this finding is provided by the predominant structure and function of nursing administrations in hospitals of this type. From interview data collected in hospitals with smaller general administrations it was revealed that most frequently nursing administrators relied on direct component personnel for administrative assistance (i.e. a registered nurse). Due to the overall smallness in scale of operations in this type of hospital, the professional organization of work to be done at the direct component level is coordinated by a member from that component. This interjection of direct component personnel into the administrative network allows the nursing administrator the freedom to "manage" other hospital operations. Most often this management consisted of general processing of patient entry and discharge, supplies purchasing and materials management, personnel hiring and firing and liaison with provincial government agencies. Increments of larger numbers of R.N.'s into the nursing care structure have less effect on the nursing administration as there is a greater likelihood of formalized head nurse positions added at this point than with increments of one or two

R.N.'s. In one hospital of this type visited, the position of Head Nurse had just recently been added to their nursing administration structure.

Observations revealed that two sub-types of hospitals exist within the ranks of hospitals with smaller general administrations.

One sub-type possessed relatively many nursing administrators with no registered nurses in the nursing staff component (direct component). That is, registered nurses were part of the nursing administration. In addition the position of head nurse may or may not have existed. The second sub-type of hospital possessed few nursing administrators and some registered nurses on staff. Registered nurses in hospitals of this sub-type may or may not be formally recognized as holding an intermediate position of head nurse. Nevertheless, delegation of administrative duties from nursing administration to registered nurse(s) tended to occur.

In addition, when all variables are held constant, average number of patients in the hospital on any given day (patient load) was directly related to the number of nursing administrators ($b^* = .60$, $b = .00098$ and significance = .000).

5.7 COMPARISON OF MULTIVARIATE MODELS:

Multivariate statistical analysis carried out on both sub-samples of Alberta hospitals indicate that

different factors explain the variations in size of nursing administrations in hospitals with smaller general administrations as opposed to hospitals with larger general administrations. The variation in the size of nursing administrations in hospitals with larger general administrations were found to be a function of the number of nursing personnel (direct component) as well as the number of different types of medical specialties (organizational complexity) present. Hospitals of this type possessed general administrations with boundary spanning units providing mediation of environmental influences (i.e. separate personnel or business offices). To the extent that these units provide organizational closure around direct component operations, nursing administrations were responsive to the concern of internal administration. These two variables together explained 92 percent ($R^2 = +.92$) of the variation in the size of the nursing administration component when all other factors were held constant. Two considerations must be addressed; (1) hospitals with larger general administrations with a greater differentiation in medical specialties possess larger direct components and larger nursing administrations. Both effect the size of nursing administrations for different reasons. The presence of a diverse medical staff component (Organizational Complexity), presupposes the presence of a complimentary technology to assist the

medial specialties in patient care. One element of this complimentary technology is the specialized nursing component. In addition, the determination of the types of services to be provided at the direct component level are initiated by the medical component in hospitals with larger general administration. This is what has been referred to as the professional organization of work. The increased complexity in the types of services to be provided by the direct component, increases the work load for nursing administrators. That is the variety of types of wards, and operations performed, associated with the variety in types of medical staff specialties, represents for the nursing administration a more active form of administration in that regularization or routinization of duties performed by nursing personnel varies from ward to ward, and (2) hospitals with larger general administrations with a greater number of nursing staff personnel were found to possess larger numbers of nursing administrators.

In contrast, the variation in the size of the nursing administrations in hospitals with smaller general administrations were a function of the log of the total number of registered nurses in the direct component and the hospitals patients load ($b^* = -.87$ and $b^* = +.24$ respectively). Observations in this type of hospital confirmed the notion that nursing

administrations were not only responsive to concerns of internal administrations (i.e. scheduling of work assignments, monitoring of work performed and charting reports) but also the mediation process involved with patient admission and discharges, as well as, business office functions, (i.e. purchasing and materials management).

5.8 CONCLUSIONS

Clearly, these data lend support to the notion that two types of hospital organizations exist for hospitals in the Province of Alberta. The model of factors affecting the size of nursing administrations in hospitals with larger general administrations corresponds to the classical perspective on organization. That is, with the presence of organizational closure; vis-a-vis general administrators who provide insulation of the direct component operations by mediating the flow of inputs and outputs, factors that affect the structure of nursing administrations are from within the hospital organizations. Variations in the size of nursing administrations were a function of the work load for coordinating and controlling the number of nursing staff personnel as well as the complexity in internal administration created by the professional organization of work of a variety of types of medical staff specialists. Hospitals of this type with smaller

nursing administrations possessed fewer different types of medical staff specialists as well as smaller numbers of nursing staff personnel. In this sense, hospitals of this type were simply smaller versions of their larger more complex counterparts.

In contrast, factors affecting the size of nursing administrations in hospitals with smaller general administrations were environmental demand (patient load) and the log of the total number of registered nurses in the direct component. This model of hospitals depicts that in the absence of some degree of organizational closure around the direct component operations, nursing administrations must expand their jurisdictional role to include management of the hospital-environment interactions. The need for an expanded organizational role is directly related to the smaller number of general administrators found in hospitals of this type. Unlike the formalized boundary spanning units or positions present in hospitals with larger administrations, hospitals of this type were observed to have a less formalized division of labour between the nursing and general administrations. General administrators were observed to play more of a "monitor" or assistant role to the nursing administration.

Variations in the size of nursing administrations were a function of the hospitals patient load (environmental demand) as well as the log of the total

number of registered nurses in the direct component. However, given the strong negative correlation between log of the total number of registered nurses and number of nursing administrators, two sub-types of hospitals were observed to exist within the ranks of hospitals with smaller general administration. Unlike the gradational effect existing between smaller and larger nursing administrations in hospitals with larger general administrations, variations in the size of nursing administrations in hospitals of this type did not take on the same meaning. Hospitals with many nursing administrators employed their registered nurses in the nursing administration (i.e. the strong negative correlation existing between log of R.N.'s and number of nursing administrations). That is, registered nurses were considered part of the nursing administration, independent of whether a head nurse position existed. Hospitals with few nursing administrators possessed some registered nurses on staff. Observations in hospitals of this sub-type revealed that registered nurses were often delegated nursing administrative duties although they were not formally recognized as holding a head nurse position. Nursing administrators were more concerned with problems of internal administration as patient load was smaller. In contrast, hospitals of this type with larger nursing administrations were more concerned with management of

environmental influences as they possessed larger patient loads. An alternative explanation was provided by the examination of the interview data on the internal structuring of hospitals of this type.

A cross-sectional research design was employed to establish factors affecting the size of nursing administrations in Alberta hospitals. In addition, the research design was able to differentiate factors affecting the size of nursing administration in hospitals with larger and smaller general administrations.

Data collected during the interview stage confirmed the existence of two types of Alberta hospitals. Differences in the size of nursing administrations in Alberta hospitals were contingent on the number of general administrators presumed to be involved in boundary spanning functions. Alternative explanations for the variation in number of nursing administrators in the two types of hospitals such as technology and institutional intervention did not adequately account for the differences in size of nursing administrations in hospitals with larger and smaller general administrations. Although, it is acknowledged that these variables may be of interest in research examining formalization or complexity of hospital structures.

FOOTNOTES

1. In the second stage of the analysis the cutpoints for the pivotal variable, size of the general administration were selected. In addition, the variable, size of the direct component was dichotomized. By including a measure of an organizations size (i.e. the number of employees in an organizations direct component) we were controlling for effects of scale factors. A two by two table was created differentiating hospitals as being high or low on each of these two variables. The cutpoints for both distributions were based on the median (50th percentile) as the mean values were distorted by extreme cases in both of these variables. The split was 86 (or 59%) hospitals that were categorized as having larger general administrations and 59 (or 41%) that were categorized as having smaller general administrations. This median split was much more representative than if the split had been based on the mean value in the total sample, $\bar{x} = 13.67$ general administrators. The mean value, had it been used, would have given a 84% to 16% split in cases. That is, 122 (or 84%) have less than or equal to 13.67 in their general administration. 23 (or 16%) have greater than or equal to 14.0 individuals in their general administration. The same logic was employed for the selection of the direct component cutpoints. Those hospitals having less than or equal to 30 direct component staff were classed as hospitals having smaller direct components; those having greater than or equal to 31 direct component staff were classed as hospitals having larger direct components. Interestingly enough, 50 (or 85%) of the hospitals with larger general administrations possessed larger direct components, as compared to only 23 (or 27%) of the hospitals with smaller general administrations with larger direct components.
2. This logarithmic transformation stresses the contrast between having and not having registered nurses on staff and deemphasizes any differences in the number of registered nurses among those hospitals that have registered nurses. This suggests, in fact, that increments of one or two R.N.'s have greater impact on the nursing administration than increments of let's say four or five R.N.'s.
3. The term "intervening variable" will be used to refer to variables such as U, V and W that stand intermediate in a casual sequence between an "initial" or intercedent cause such as X, and the final Z (Blalock, 1961:20).

CHAPTER 6

DISCUSSION

6.1 INTRODUCTION

Factors affecting the size of nursing administrations in Alberta hospitals differed for hospitals with smaller general administrations and hospitals with larger general administrations. Hospitals with smaller general administrations possessed nursing administrations that were a function of the professional organization of work performed by registered nurses at the direct component level as well as the average number of patients in the hospital on any given day (environmental demand). Ratio analysis, indicative of service and administrative intensity calculated for the varieties of hospitals with smaller general administrations, were not consistent. For example, standards for nursing administration - direct component personnel staffing ratios appeared to be absent. However, frequency distribution data indicated that hospitals with smaller general administrations were relatively homogeneous in their composition (i.e. this type of hospital was small in scale of operations). In addition, observations made in hospitals of this type revealed that functions of both the nursing and general administrations were the same across all varieties of hospitals.

In contrast, hospitals with larger general administrations possessed nursing administrations that were a function of the workload created by the number of nursing personnel as well as the increased complexity in internal administration created by the professional organization of work provided by medical staff specialists. In addition, ratio analysis disclosed that there is a greater consistency across all varieties of this type of hospital, in relation to the nursing administration nursing staff personnel ratio (nursing administrative ratio). That is, "typical" and "giant" hospitals of this type displayed similar nursing administrative intensity, (i.e. 1 nursing administrator to 9 nursing staff personnel) independent of size and organizational complexity. For example, "giant" hospitals of this type possessed direct components 19 times larger, an average number of patients in the hospital on any given day (environmental demand) 16 times larger than the "typical" hospital of this type. "Midget" hospitals were somewhat of an anomaly in comparison to the "typical" and "giant" hospitals. For example, "midget" hospitals displayed the largest span of control between nursing administrators and nursing staff personnel as well as the highest service ratio of nursing staff personnel to average number of patients in the hospital on any given day (i.e. these ratios were 1 to 31 and 3.1 to 1, respectively). "Midget" hospitals in an analogous fashion could be

typified as displaying underutilization at the direct component level (transformation level) in addition to an economies of scale in their nursing administration. However, observations made in hospitals with larger general administrations revealed that the organizational functions of both the general and nursing administrations were relatively the same across all varieties of hospitals.

6.2 HOSPITALS WITH LARGER GENERAL ADMINISTRATIONS

Hospital organizations with larger general administrations possessed nursing administrations that were responsive to the demands of internal administration. That is, variations in the size of the nursing administrations were found to be a function of the workload created by the number of nursing staff personnel (direct component). Although variations were noted in the number of nursing administrators present in hospitals of this type, environmental influences accounted for little if any of this variation. This finding does not however preclude the influence of environmental factors on the structure of hospital organizations. In fact, the most complex of hospitals (i.e. organizational complexity as well as environmental complexity) existed within this type of hospital organization. It does however lend support to my perception that hospitals with larger numbers of general administrators possess general administrations that absorb environmental influences to ensure

closure around the activities of the direct component. To the extent that organizational closure is achieved then, the size of the direct component engenders the size of the nursing administrative apparatus required to coordinate and control nursing services. For example, observations revealed that all inpatients and some outpatients required some form of nursing whether it be basic or technical nursing. As Grant (1973) suggests, this usually makes the nursing department the largest department in the hospital organization. Factors affecting the size and structure of nursing administrations in hospitals of this type centered around the core responsibilities of nursing management. For example, one responsibility of the nursing administration observed in hospitals of this type was to ensure that as work and responsibilities are defined appropriately skilled staff are matched up with the task(s) to be performed.

Perhaps of greatest significance in this thesis is the finding that where organizational closure has been attained there is no limit to which an organization can grow in size. Terrien and Mills (1955) demonstrated in their study of school districts that the ratio of administrative employees to all employees (i.e. the A/P ratio) was directly related to the size of the organization. In addition, they speculated that this relationship would severely limit the maximum size to

which an organization could grow. However, the model proposed in this study contends that as long as there are no threats to certainty and predictability in nursing services provided at the direct component level there will be a continued direct relationship between the direct component and the number of nursing administrators. Because the nursing staff component is most frequently the largest component in the hospital it is indicative of the overall size of the organization.

Hospitals with larger general administrations possessed nursing administrations that were directly responsive to organizational complexity (positively related to the number of different types of medical staff specialties). That is, with more types of medical specialties present in the hospital there was an attendant increase in the complexity of the internal administration. For nursing administrations, one overall result of greater professional specialization is the need for more types of nursing staff, as the intensity and type of nursing care is modified. The growth in specialization in medicine within hospitals of this type alters the internal structuring of the hospital organization. Hospitals with larger general administrations displayed the greatest organizational complexity. In addition, these hospitals possessed the largest nursing administrations and direct components. However, hospitals that are considered large in size, as measured

by the number of nursing staff personnel, did not necessarily display greater organizational complexity. There existed hospitals in this subsample that had large nursing components and nursing administrations but had relatively few different types of medical staff specialties.

"Typical" and "midget" hospitals appeared to be relatively simplistic in relation to organizational complexity. Hospitals of these varieties possessed one or two different types of medical staff specialties, with 15 (or 25%) of the "midget" and "typical" hospitals possessing 1 or none medical staff specialties.

Consequently, to the extent that organizational closure or insulation is achieved in hospitals with larger general administrations, the primary system (i.e. the hospital) components affecting the size of nursing administrations appear to be the number of nursing staff personnel to be coordinated and controlled. Organizational complexity will be a factor in hospitals where there are many different types of medical staff specialties. That is, for nursing administrations in hospitals with larger general administrations, the process appears to be, where there exists a large number of nursing staff personnel and many medical staff specialties, there will exist larger nursing administrations; the primary focus being nursing management of nursing staff personnel.

Lastly, my model for hospitals with larger general administrations although quantitative in nature, cannot predict explicitly the cutpoints where organizational complexity becomes a primary factor for nursing administrations. However, observations suggest that the effect of medical staff organization will be less noticeable and necessary in "midget" and "typical" hospital structures than in "giant" hospitals.

In addition, the same rationale holds for the relationship between numbers of nursing staff personnel and the number of nursing administrators. Regression analysis revealed that in hospitals with larger general administrations, we can expect a ratio of 1 nursing administrator for every 10 nursing staff personnel, as well as one nursing administrator for every two medical staff specialties present in the hospital organization. Of great interest and surprise was the overall consistency present in nursing administrative intensity apparent in the uncontrolled ratio analysis (i.e. 1 nursing administrator to 9 nursing staff personnel) and the subsequent regression analysis. This was of great significance because during the interview stage nursing administrators disclosed that to their knowledge, there was no formalized ratios between number of nursing personnel and nursing administrators. That is, there were no known optimal system norms between these two components. This seemed quite acceptable, as nursing

directors (D.O.N.) suggested how could there be institutionalized norms when work performed by nursing or quasi-nursing staff varies considerably from hospital to hospital.

6.2.1 Implications of Research in Hospitals with Larger General Administrations

Research in hospitals with larger general administrations indicated that the internal structures of this type of hospital differed from hospitals with smaller general administrations. Observations revealed that the division of labor between the general and nursing administrations was generally formalized with well defined lines of communication. In addition, the structure of nursing administrations in hospitals of this type were more elaborate. That is, they were more likely to possess more than one level in their nursing administration. In an earlier study of Alberta hospitals that employed 1973 Hospital Services Commission data, a direct relationship was found to exist between number of levels in the nursing administration and the size of the nursing administration. Presumably, for nursing administrations as the hospital organization increases in size, the nursing administration structure becomes more differentiated in order to achieve the benefits of specialization,

(i.e. effective nursing management). However, as Grant (1973) found, the succeeding levels of management below the Director of Nursing are often too thinly spread for them to be as effective as they might be. At the same time, I may only infer the benefits of specialization for nursing administrations vis-a-vis, increased organizational size, increased organization complexity as my examination of nursing administrations did not include measurements of organizational effectiveness.

6.2.2 Hospitals with Larger General Administrations: Possible Consequences for Nursing Administrations

I have attempted to demonstrate that hospital organizations with larger general administrations will have attained some degree of organizational closure around the direct component level activities. In the imagery of James D. Thompson (1967) and Talcot Parsons (1960) this simply means that inputs into the system (i.e. patients, personnel, equipment, supplies, funding, etc.) will be mediated by the managerial level to ensure that the transformation process at the technical level (direct component) will be accomplished with minimal amount of external influence. This external influence can be environmental as well as internal in nature (i.e. from other components

within the system). To this extent, a classical organizational approach to the study of organization is appropriate for the examination of factors affecting the size of nursing administrations.

I have attempted to explicate the critical hospital system components affecting nursing administrations based on a general administration contingency argument. My model perscribes that internal organization work arrangements affect nursing management, when organizational closure is attained. That is, the organizational structure of nursing administrations (i.e. the size of the nursing administration) will be affected by the number of nursing staff personnel (size of Direct Component) and number of medical staff specialties (organizational complexity) in hospitals that have attained organizational closure around direct component operations. Hospital organizations that possess nursing administrations that do not conform to the model (i.e. hospitals that have relatively few different types of medical staff specialties, or small direct components) are seen as small scaled editions of the more elaborate structures within the sub-sample (i.e. "midget" vs "giant" structures). That is, consequences for nursing management are appropriate

or all variations in the sub-sample of hospitals with larger general administrations.

In addition, this model clarifies what areas of responsibility are appropriate for administrative components in the hospital. For example, traditional hospital management states that the Board of a hospital sets the policy within the frame work load down by the government. That is, hospital organizations are not free to act on their own. Presumably, policies formulated at the institutional level would be implemented by the general and nursing administrations as well as medical staff. However, as Grant (1973:53) suggests and somewhat confirmed through interviews, "policies are really made by various professional staff (general and nursing administrators) of the hospital and these policies are then formally adopted by the Board with the Staff again implementing them" (emphasis mine).

Observations revealed in fact that a formalized line of communication existed between nursing and general administrations in relation to policy and procedure setting. However, the process appeared to be confounded by organizational complexity as well as nursing administration complexity (i.e. number of levels of nursing administration to be included in the process). The

process from a nursing administrative viewpoint appeared to be cumbersome but necessary if accurate policies and procedures at the nursing management level were to be depicted.

Nursing administrators in hospitals where there are large numbers of general administrators will be affected by nursing management functions necessary to coordinate and control nursing staff personnel. To the extent that nursing services are technical rather than basic in nature, nursing administrators will be required to use more active forms of coordination and control; such as feedback and mutual adjustment. That is, coordination of nursing tasks may be monitored by a member from the nursing administration in person rather than by review of a patient's chart, post facto.

The presence of a variety of different types of medical staff specialties is indicative of a complimentary nursing service to carry out the medical staff requests. However, observations disclosed that nursing service personnel initiate all the basic nursing care decisions as well as a large portion of the technical care decisions (i.e. checking IV's, scheduling tests, X-rays).

Most nursing care situations however, are not critical (i.e. life and death situations) and can be handled with ordered routine. The typical

types of nursing care on a medical-surgical unit of a general hospital involve "making beds, giving baths, taking temperatures and pulses, testing stools and vomitus for blood, testing urine for sugar and acetones, feeding patients who can't eat, giving Foley Catheter care to patients who have been catheterized, giving wound care to surgery patients, giving out medications, cleaning up when patients vomit, scheduling tests, x-rays, and radiation treatments, giving enemas, prepping patients for surgery, checking IV's, recording every medication given, charting each patient's progress - a thousand technical chores, all done daily" (Anderson; 1978:20). For nursing administrators, decision making patterns may take a hierarchial form, with the first line supervisors (head nurse and/or staff nurse) directing the ward/or staff nurse) directing the wary/unit activities. It is felt that this type of nursing administrator is more sensitive to the actual number of nursing staff personnel in the hospital. My quantitative data does not confirm this suspicion, however, observations and interview data tend to.

The process of control and coordination of nursing staff personnel presented in this study is not meant to take away from the fact that work

performed by nursing or quasi-nursing staff varies considerably from hospital to hospital. However, it does appear that hospitals with larger general administrations will possess nursing administrative structures that are larger in size and hierarchial in the decision making function at the policy and procedure level. Nor was it meant to examine a pre-defined A/P ratio relationship between nursing administrators and nursing personnel, or for that matter any service ratio.

However, my data strongly suggests that consistent A/P ratios exist in hospitals of this type. This has direct consequences for nursing management. The process however arrived at (i.e. that assures a 1 to 9 or a 1 to 10 A/P ratio between nursing administrators and nursing personnel) is not recognized by the Directors of Nursing that I interviewed. In fact, although it was maintained by these individuals that there existed guidelines for costing and budgeting, there are few guidelines to assist the nursing administrator in the remaining nursing activities. (i.e. the number of quasi-nursing staff and nursing staff personnel to nursing administrators). In conclusion, nursing administrators affiliated with hospitals with larger general administrations all share the same concerns for management of

environmental influences; specifically that of environmental demand.

In contrast, hospitals with somewhat smaller patient loads possessed smaller nursing administrations. Nursing administrators were observed to be oriented more towards concerns of internal administration. That is not to exclude the fact that environmental influences were not encountered, however, overall smallness in scale of operations meant that most organizations of this type face environments that are relatively stable. The need for continuous intervention by a pre-designated organizational unit and/or position (i.e. boundary spanning units or positions) of environment-hospital interactions are precluded by the fact that environmental variability is all but non-existent. In an analogous fashion to the context in which commercial banking system operates, hospitals of this type are nothing more than "clearing house". That is, patients are hospitalized until they are referred to a larger hospital that can render the appropriate treatment or service. This is what is truly meant by a "feeder" hospital. For nursing administrators in hospitals of this type their primary responsibilities are directed at nursing management concerns.

The impact that the number of registered nurses has on the size of nursing administrations becomes apparent as the need for environmental mediation arises:

internal administration. The attainment of organizational closure in hospitals of this type prescribes an idealized model of factors affecting the size of nursing administrations. That is, hospitals with larger general administrations will be characterized as possessing nursing administrations, that are responsive to the needs of "managing" an appropriately trained nursing staff component.

6.3 HOSPITALS WITH SMALLER GENERAL ADMINISTRATIONS

Hospital organizations in the Province of Alberta with smaller general administrations possessed nursing administrations that were responsive to environmental demand as well as the professional organization of work performed by registered nurses at the direct component level. That is, variations in the size of the nursing administrations were found to be a function of the average number of patients in the hospital on any give day, as well as the number of registered nurses involved in the organization of work at the direct component level. Further, although the average number of patients in the hospital on any given day affects the workload of nursing staff, it is the actual administration of patients (i.e. entry and discharge procedures) that is of concern to nursing administrations in hospitals with smaller general administrations. As was

the case in hospitals with larger general administrations, variations were noted in the number of nursing administrators present in hospitals with smaller general administration. In general, nursing administrations were characterized as possessing expanded domains of responsibility. That is, not only were they responsible for "nursing care" duties, but also general administrative tasks related specifically to patient admission and discharge. As sighted earlier nursing administrators were even involved in hospital supplies management (i.e. purchasing for the entire hospital).

In addition, the research results revealed that alternative explanations were present to account for the variation in the number of nursing administrators in hospitals with smaller general administrations. The results indicated that there were predominately two forms of nursing administrations in hospitals with smaller general administrations. That is, hospitals with somewhat larger patient load possessed larger nursing administrations. Hospitals of this type were generally larger in overall scale of operations (i.e. "giants"). However, in comparison to their counterpart in hospitals with larger general administrations, they were still relatively small sized organizations. For nursing administrators in hospitals of this type their jurisdictional responsibilities were expanded beyond nursing management function to the mediation of

(i.e. in hospitals with larger patient loads). The participation of registered nurses in the direct component level had it's greatest effect in hospitals where there are fewer nursing administrators and heavier patient loads (Quadrant 1). Because nothing administrators in hospitals of this type are responsive to the concerns of environmental demand (i.e. regulation and control over patient entry and discharge) registered nurses at the direct component level are deligated with the responsibility of control and coordination of nursing services. The process by which the variations in the size of nursing administrations is explained by the professional organization of work as well as the magnitude of environmental demand. This simply means that hospitals with fewer nursing administrators facing heavier patient loads will utilize their registered nurses in a different fashion than those hospitals with heavier patient loads and somewhat larger nursing administrations. Registered nurses in hospitals of the former type are more likely to wear two hats: one distinguishing a member of the direct component providing continuous care and the other depicting a member of the administrative structure (i.e. a first line supervisor). In hospitals of the latter variety there is a greater probability that registered nurses are one of two types; either a member of the direct component or a head nurse, a member of the nursing administration.

Consequently, the existence of an inverse relationship between the number of registered nurses and the size of the nursing administration can be interpreted. It is proposed that the economies of scale notion depicted by this relationship may in fact be an artifact of the ability of nursing administrators to substitute direct component personnel into administrative positions when the need arises. Perhaps what may very well exist in an organization that is able to adjust readily to a variety of organizational arrangements to meet the overall goal(s) of the hospital. I suggest that the likelihood of this occurrence is a function of the size of the organization. It has been my experience that in hospitals of this type, the overall system size is small enough that interchange of positions (i.e. direct component personnel to nursing administrative personnel and nursing administrative to general administrative) is a viable way of assuring continued organizational existence. Furthermore, it must be mentioned that only a small percentage of organizational situations fit either of the extremes described. However, the model depicting hospitals with smaller general administrations strongly suggests that the environmental demand and the number of registered nurses involved in the professional organization of work has an impact on the structure of nursing administrations. Therefore, unlike the uniform orientation of nursing administrative structures found in hospitals

with larger general administrations, the orientation of nursing administrations in hospitals with smaller general administrations is dependent on the magnitude of environmental demand and the need for registered nurses at the direct component level to assume administrative duties.

6.3.1 Implications of Research in Hospitals with Smaller General Administrations

The implications of the research results in hospitals with smaller general administrations are clear. Hospitals of this type are generally simplistic in structure and small in size. For nursing administrations the primary functions appear to be oriented towards the maintenance of the total organizational system. This involves either management of nursing services, mediation of environmental influences or a mixture of both functions. Variations in the overall administrative structure were not apparent. For example, the largest nursing administration possessed only 12 organizational members, with the "typical" type of hospital possessing 1.2 organizational members in the nursing administration. However, variations in the types of work arrangements amongst hospitals of this type were apparent. It was my experience that nursing administrators in larger sized hospitals (i.e. "giants") of this

type were exposed to a more diverse spectrum of administrative functions than nursing administrators in smaller sized hospitals (i.e. "midgets"). However, both shared the possibility of dealing with environmental influences. For example, the results indicated that smaller sized hospitals were less likely to require environmental intervention by their nursing administrators than larger sized hospitals. That is not to exclude that another component of the hospital was mediating external influences, but that the environment had less impact on nursing administrative structures.

The model of hospital organizations with smaller general administrations clearly reveals that in the absence of organizational closure, organizational size has a prescribed effect on the hospital organizations structure and organizational work arrangements. Unlike hospitals with larger general administrations, there appears to be constraints on how large the hospital system grows. To the extent that system size is limited then, environmental factors and the knowledge of organizational work arrangements account for the variation in the size of nursing administrations in hospitals of this type.

		HEAVIER PATIENT LOADS (LARGER)	LIGHTER PATIENT LOADS (SMALLER)
SMALLER NURSING ADMINI- STRATIONS		- greater registered nurse involvement in administrative roles but legitimized (i.e. formalized position in the nursing administration) QUADRANT 1	- orientation towards internal administration - may infrequently act in an administrative role QUADRANT 2
	LARGER NURSING ADMINI- STRATIONS	- larger nursing administrations and more direction toward internal administration and environmental intervention - R.N. function will be split (i.e. HEAD NURSE position may be present) QUADRANT 3	- underutilization of nursing staff personnel generally - greater likelihood that nursing administration is directed at concerns of internal administration and overall hospital management QUADRANT 4

HOSPITALS WITH SMALLER GENERAL ADMINISTRATIONS N=86

Figure 6.1

Function of Registered Nurses When Size of
Nursing Administration and Magnitude of
Environmental Demand are Considered

6.3.2 Hospitals with Smaller General Administrations: Possible Consequences

I have attempted to demonstrate that hospitals with smaller general administrations will possess nursing administrations that are responsive not only to the demands of internal administration, but environmental influences as well. My model proposed that in the absence of boundary spanning units or positions in the hospital structure, (i.e. manifest in the size of the general administration) the notion of organizational closure adapted from the works of Thompson (1967) and Parsons (1960) is less likely to occur. In addition to the extent that organizational closure has not been attained, arguments presented by classical organizational theorists would lend little insight into explaining nursing administrative intensity. Data presented in Chapter Five lends support to the affirmation of this notion. Although I have concluded that there are limits to how large a hospital organization of this type may grow, I am not pre-supposing that hospital size solely affects the size of nursing administrations. If nothing else, I have presented a valid argument for the continuance of multi-model examinations of factors affecting the size of administrations. For nursing administrators

in hospitals of this type then, the size of the direct component to be managed is not there only domain of responsibility. As I have attempted to illustrate through my field notes, nursing administrators in hospitals of this type are called upon to carry out duties that are not directly related to nursing management. In many instances they are required to work closely with general administrators or in place of the general administrator. Earlier discussions of the division of labor between the nursing and general administrations revealed that in most cases the lines of communication between them are loosely structured. That is, the need for formalized lines of communication between the two components is not necessary as there may only be a total of two organizational members in both components.

Data and observations disclose that the nursing administrators in hospitals of this type coordinate and control a body of nursing staff personnel that for the most part provide basic nursing services. This is perhaps most apparent when one takes into account the fact that there is an absence of a variety of different types of medical staff specialties (organizational complexity) in hospitals of this type. Unlike the technological complexities faced by nursing

administrators in hospitals with larger general administrations, vis-a-vis the greater number of types of medical staff specialties present, nursing administrators in this type of hospital manage a relatively homogeneous group of nursing staff personnel.

6.4 ALTERNATIVE EXPLANATIONS FOR VARIATIONS IN THE SIZE OF NURSING ADMINISTRATIONS

Three main variables require consideration in the study of any organizational system (Mintzberg, 1979); these variables are organizational size, technology and environment. The contingency argument presented in this thesis has demonstrated how organizational size and environmental influences interact together to explain the variations in the size of nursing administrations in Alberta hospitals. Consequently my thesis has taken the one variable model that has dominated the literature of administrative intensity research, beyond, to delineate how environmental influences are to be considered. Although my research in hospitals with smaller and larger general administrations focused on the notion of organizational closure as the linking pin amongst these variables, I was also aware of the possible influences of technology on the size of the nursing administration component. Literature on technology suggests that an organization's structure is guided by the demands of technology. Most researchers agree that

technology has a great influence on the design of the organizational structure (Mintzberg, 1979:249). In addition, Woodward (1965) and Thompson (1967) both concluded that technology affects structure through its control and coordination demands. Thompson argued that structural shape of the organization will be determined by its "core technology"; that is, the process that an organization employs to change or adapt materials. For example, the technical core of a hospital organization is represented by the nursing staff personnel of the direct component. These individuals provide services that mirror the hospitals primary function; that of providing continuous care, custody and control over its patients. In addition, Thompson suggests that the nature of an organizations technology will influence the types of strategies employed in reducing uncertainty in the transformation process. Thompson (1967) distinguished three major classes of technological processes; long-linked technologies, mediating technologies and intensive technology. Intensive technology is the form employed in hospitals, research and development organizations and consulting organizations. "Intensive technology" in "a hospital" emergency room contains a variety of skills and in what order depends on the unique need of each patient "In the case of the emergency room, this means that a considerable number of skills and apparatus must be available even if some of them are rarely used." (Ullrich

& Wieland; 1980:81). The nature of the technology employed is therefore determined by the services to be provided.

Research examining the influence of technology on the administrative structure have yielded inconsistent findings. Child (1974:14) notes "The term technology is employed in almost as many different senses as there are writers on the subject". The inconsistencies are very much like the problems that have plagued the size A/P ratio literature. However research by Hall (1972), Khandwally (1974), Udy (1959), R.G. Hunt (1970) and Hickson, Pugh and Pheysey (1969) have produced plausible conclusions in their research that suggest that as the technology of an organization becomes more complex, the span of control narrows, the number of hierarchial levels increases and professionals gain influence in decisional power. For hospital administrations, I would expect that as the technology employed becomes more sophisticated, the administrative structure(s) would become more elaborate (i.e. a greater number of hierarchial levels or narrower span of control in the administrations).

Typical hospitals with larger and smaller general administrations differed in the span of control of nursing administrators to direct component personnel. My data indicated that typical hospitals with larger general administrations possessed a span of control that

was 2.4 times smaller than typical hospitals with smaller general administrations. However, literature on the influence of technology does not differentiate the impact on selected administrative components within an organization. If one examines the absolute sizes of the administrative components in both types of Alberta hospitals, I would have to conclude that hospitals with larger general administrations exhibit greater technological complexity than hospitals with smaller general administrations. In addition, I would suggest that the variable technology would have a similar effect on the size of the nursing administration in both types of Alberta Hospitals as organizational complexity, (i.e. the number of different types of medical staff specialties). The greater the technological sophistication present in the hospital system, the greater the demand on nursing administrative structures to coordinate and control the nursing staff personnel providing the more sophisticated services. This argument is based on the rationale that the presence of a diverse medical staff presupposes the existence of a complimentary technology to assist the medical staff in diagnosis and treatment. In other words, I would expect a direct relationship between technology, as measured by the number of services provided in the hospital, and the size of the nursing administration in both types of hospitals.

6.4.1 Other Explanations

My data suggested that there clearly existed differences in the factors affecting the size of nursing administrations in both types of Alberta Hospitals. These differences were attributed to the notion of organizational closure. That is, hospitals with larger general administrations presumably possessed units or positions that mediated environmental factors from influencing processes occurring at the direct component level. To the extent that organizational closure was attained factors affecting the size of nursing administrations were of a nursing management nature. Data presented in Chapter Five lend support to this notion. In addition, the model of factors affecting the size of nursing administrations in hospitals with smaller general administrations found that the nursing administration was not only affected by the concerns of "nursing management" but environmental influences as well. This was attributed to the absence of organizational closure around the direct component level operations provided by general administrators.

However, as the discussion of the results revealed limitations to the overall size of the organization were encountered in hospitals with smaller general administrations but not in

hospitals with larger administrations. In addition, hospitals with smaller general administrations were generally more simplistic in overall organizational structure. That is, they had smaller sized nursing administrations and direct components, possessed less formalized mechanisms for handling changes in policies and procedures, displayed greater spans of control in their nursing administration, and exhibited fewer types of medical staff specialties present. The argument presented was that in the absence of the attainment of some degree of organizational closure, limits to the size the organization may grow appear to be present. However traditional hospital management theory states that the government (i.e. province or government) prescribes policies and procedures laid down by the Board of Directors of a hospital organization. That is matters of social, political and financial importance are ultimately dealt with at the governmental level. For example, if the communities positions on abortion changes, then the hospital has to adapt to this or suffer an opportunity cost of not providing the service (i.e. the patient will go elsewhere to receive the desired service). Presumably the direct intervention by Provincial Government agencies as well as Board of Directors has direct affect on

what services will be provided by the hospitals. This was perhaps most evident in discussions with executive members from the Hospital Services Commission. Due to budgetary cutbacks and constraints, certain hospitals in the Province were either refused additional services or cut-back on the existing ones provided. Smaller feeder hospitals were often the ones to suffer the most at budget time. Therefore, it is suggested that limitations to the size of organization may not be a function totally of the absence of organizational closure but Provincial Government intervention. To take the discussions one step further, would be to suggest that hospitals with smaller general administrations may possess nursing administrations that are a function of the executive planning policies and procedures directed by Provincial Government agencies (i.e. the Hospitals Services Commission, Alberta Hospital Association). To this extent, then, the fact that nursing administrators in hospitals with smaller general administrations possess expanded jurisdictions that mediate environmental factors may not be due to reactive response at the organizational level, but imposed at the institutional level of organization. This would suggest as Perrow (1979) has that

"Organizations are not shaped by their environments (or at least environment as we understood it) to any greater extent, that environments are shaped by organizations; furthermore, the environment of organizations is almost always other organizations, so organizations are shaped by organizations". For hospitals with larger general administrations, the notion of imposed government intervention has different implications. I would suggest that intervention comes in a package of regulation rather than limitations to system size of hospitals of this type. My data revealed that generally hospitals with larger general administrations were larger in size and displayed greater organizational complexity than did hospitals with smaller general administrations. Based on discussions with hospital executives as well as Provincial Government executives, intervention is in the form of regulation and monitoring of services rather than management of the services provided. For example, the newest technological marvel introduced to the list of hospital services is the CAT SCANNER (computerized aximal tomographic body scanner). The machine improves diagnostic techniques tremendously, however each Cat Scanner costs between \$850,000 to buy and \$400,000 annually to operate (Lilley,

1980:18). The decision of whether or not to provide Cat Scanning services in the hospitals ultimately rests in the hands of the board members.

There is no doubt of the governmental intervention that Alberta hospitals must abide by, especially with respect to the impact continued budgetary cuts have on the services provided as well as the quality of services provided. However, as Lilley (1980) points out, most hospital executives date the beginning of their budget pinches back to the decision in 1975 when the Federal Government served notice that by 1980 it would terminate it's 50-50 cost sharing arrangement with the Provinces, leaving them to finance their own health services from tax - dollars and medicare.

In conclusion, I have attempted to introduce two alternative explanations that are very much a part of the hospital industry in Alberta. Both the technical system or technology employed and the institutional intervention have an effect most certainly on the design of hospital organizations. I have employed armchair theorizing to extend the notion developed within the text of this thesis to absorb the effects these two variables might have on the size of

nursing administrations. As suggested earlier, technology will have a direct effect on the size of nursing administrations in both types of Alberta hospitals. However, I would suspect that institutional level intervention by Provincial Government agencies would have a greater effect in hospitals with smaller general administrations than in hospitals with larger general administrations. In addition, the effect would focus on a different sector of the hospital in both types of hospital organizations.

6.5 LIMITATIONS OF THE STUDY OF FACTORS AFFECTING THE SIZE OF NURSING ADMINISTRATIONS

The general administration contingency argument presented in this thesis is based on the notion that boundary spanning units/positions that mediate environment-hospitals influences, assuring some degree of certainty in direct component operations, are located in the general administration. Adapting the imagery depicted in Thompson's (1967) theory on organization, I proposed that hospitals with larger numbers of general administrators possessed positions and/or units that buffered, leveled and/or forecasted the inputs into the hospital organization. It was assumed that the absolute number of general administrators was indicative of the presence or absence of boundary spanning units, although my interview data revealed that hospitals with larger

general administrations possessed more differentiated general administrations the fact remained that environmental factors predicted to affect nursing administrations were not directly examined as to their overall affect, on the general administration. The decision not to undertake this type of analysis was based on the knowledge gained through a detailed examination of Hospital Services Commission data on the general administration component. The manner in which the variable was operationalized did not lend itself to discrete analysis. The general administration component was reported in the Annual Return for Hospitals, Facilities and Services, HS-1, 1975 as one figure. Differentiation of the types of general administrators was not collected. Furthermore, it was felt that analysis that included the examination of environmental affects on the size of the general administration might be misleading. For example, observations in Alberta hospitals revealed that positions and/or units in the hospitals general administration directly responsible for environment-hospital mediation, were found in the admitting or business office departments. Although my observations acknowledged the existence of different functions and positions within the general administration component the quantitative data did not.

Consideration must be given to the fact that initially three indicators of environmental factors

were employed in the data analysis, only one indicator was significant (statistically) to be included in the multivariate analysis. Although the absence of environmental influence was expected for hospitals with larger general administrations, the weak correlations between environmental complexity and stability and the size of the nursing administrations were not expected for hospitals with smaller general administrations. One plausible explanation for this absence is that the environments faced by hospitals with smaller general administrations are relatively stable and homogeneous. Observations in hospitals of this type lend support to this explanation. That is, hospitals of this type were found to provide care to a less diverse group of patients, in addition to providing a limited number of services (i.e. indicated by the absence of variability in number of different types of rated beds).

Limitations to the study of factors affecting the size of nursing administrations in Alberta hospitals centre around methodological concerns; specifically the manner in which environmental indicators have been operationalized. Although the manner in which environmental stability and complexity were measured, found support in literature on organizations (i.e. hospital and other larger scaled organizations) the indicators were not thoroughly grounded in the perceptions of individuals in a position to be effected by the

environmental indicators. Perhaps the initial interview instrument could have been designed in a format that provided checks for the validity of the indicators, with key individuals in the nursing administrations.

At the same time, it should be noted that the environmental indicators used, were documented in studies of large scale organizations. Whether or not different indicators for the same underlying environmental concepts are necessary for hospitals with larger vs smaller general administrations is a limitation for future research employing the models developed within the text of this thesis.

CHAPTER 7

IMPLICATIONS FOR FUTURE RESEARCH AND CONCLUSIONS

7.1 IMPLICATIONS FOR FUTURE RESEARCH

Research in hospitals with larger and smaller general administrations has indicated that the notion of organizational closure influences the factors that will affect the size of nursing administrations.

Numerous hypotheses have been posited in attempting to determine the effects of size and environment on organizational structure, vis-a-vis administrative intensity. The thorough review of the size-administrative intensity literature clearly indicates that there are inconsistencies in the effect size has on the administrative component of organizations. Similarly, literature on environmental impact on organizational structure is even less clearly formulated. This perhaps is a function of the newness of the subject area, as well as the perceived importance for organizational theory. As Perrow (1979) so articulately put it, "The study of organization-environment relations is the hottest topic in theory today and rests on faulty assumption". The faulty assumption being that organizations are shaped by their environments.

The contingency theory presented in this thesis

contends that the environment in which hospital organizations operate in must be dealt with. However, I found no support in my thesis for the notion that environmental factors are the sole determinants for the size or structure for nursing administration. I may go so far as to say that the environmental conditions faced by hospitals themselves are the same for all. It is the effect that environment has on particular components of the hospital that were not originally designed to manage the environment, that is of greater interest.

My thesis delineated the factors that affected the size of nursing administrations in Alberta hospitals. I have discussed the processes that are presumed to exist through the application of Hospital Services Commission data, supplemented by my field notes. For nursing administrators as well as theorists the next step is to move to a more microscopic level of examination to test these propositions under folk methods of inquiry. I believe that the relationships that I have documented do exist. However, the process of folk method of inquiry into organizational reality as suggested by Perrow would help in the demystification of organization theory as we know it.

7.2 CONCLUSIONS

Adapting the work of Thompson (1967) and Parsons (1960) I have hypothesized that hospital organizations

with larger general administrations will have attained some degree of organizational closure around direct component level operations. Further, these hospitals will possess nursing administrations that are responsive to factors in the internal organizations work arrangements. Specifically, I found the size of the direct component to be managed had a direct and significant effect on the number of nursing administrators. In addition, my data revealed that hospitals of this type with a greater number of different medical staff specialists present, also possessed larger numbers of nursing administrators. Variations in the size of nursing administrations in hospitals of this type were not attributed to scale factors alone.

In contrast, I hypothesized that hospital organizations with smaller general administrations were less likely to have attained some degree of organizational closure around the direct component operations. In the absence of organizational closure nursing administrations in hospitals of this type were hypothesized to be responsive to the management of nursing services as well as environmental influences. Nursing administrations in hospitals of this type were responsive to the number of registered nurses participating in the professional organization of work at the direct component level as well as the average number of patients in the hospital on any given day.

Originally the hypothesized model of factors affecting nursing administrations in hospitals with smaller general administrations proposed a direct relationship to exist between the size of the direct component and the number of nursing administrators. However, multivariate analysis revealed an inverse association to exist between the two variables.

BIBLIOGRAPHY

- Annual Return of Hospitals, Form HS-1, Facilities and Services Booklet. Alberta Hospitals Services Commission. 1975.
- Anderson, Peggy. 1978. Nurse. New York: Berkley Publishing Corporation.
- Anderson, Theodore R., and Warkov, Seymour. 1961. "Organization Size and Functional Complexity: A Study of Administration in Hospitals" American Sociological Review 226 (February):23-8.
- Bendix, Reinhard. 1956. "Work and Authority in Industry", New York, Wiley and Sons, Inc.
- Bennett, Addison C. 1978. "A Picture of the Hospital System" in A General Systems Approach to Hospital Management and Organization published by the United Hospital Fund of New York.
- Blalock, Hubert M. Jr. 1961. Causal Inferences in Non-Experimental Research. University of North Carolina Press: Chapech Hill
- Blalock, Hubert M. Jr. 1969. Theory Construction From Verbal to Mathematical Formulations. Prentice Hall Fox, Englewood Cliffs, New Jersey.
- Blalock, Hubert M. Jr. 1972. 2nd edition. Social Statistics. New York: McGraw-Hill Book Company.
- Blau, Peter M. 1970. "A Formal Theory of Differentiation in Organizwtions". American Sociological Review, Vol. 35, pp. 201-218.
- Blau, Peter M., 1972. "Interdependence and Heirarchy in Organizations" Social Science Research, Vol. 1, April, pp. 1-24.
- Blau, Peter M., and Schoenherr, Richard. 1971. The Structure of Organizations. New York: Basic Books.
- Brinkerhoff, Merline and Kunz, Phillip R. 1972. Complex Organizations and Their Environments. Dubuque, Iowa: William C. Brown Company Publishers.
- Brown, Ray E. 1961. "Evaluating Hospital Administrations". Hospitals, Vol. 35, pg. 43.

- Buckley, Walter. 1967. Sociology and Modern Systems Theory. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.
- Buckley, Walter. 1968. Modern Systems Research for the Behavioral Scientist, Chicago: Aldine Publishing Company.
- Champion, Dean J., and Betterton, H. 1974. "On Organizational Size and Administration Ratios: A Critical Examination of General and Specialized Hospitals." Pacific Sociological Review. Volume 17, No. 1, pp. 98-107.
- Child, John. 1974. "What Determines Organization?" Organizational Dynamics, Summer, pp. 2-18.
- Collins, O., and Moore, D.G. 1970. The Organization Makers. Appleton-Century-Crofts.
- Davis, James A. 1971. Elementary Survey Analysis. New Jersey: Prentice-Hall, Inc., Englewood Cliffs.
- Dill, William R. 1958. "Environment as an Influence on Managerial Autonomy". Administrative Science Quarterly 2 (March):409-43.
- Dowling, John and Pfeffer, Jeffrey. 1975. "Organizational Legitimacy: Social Values and Organizational Behavior". Pacific Sociological Review 18 (January):pp. 122-36.
- Draper, Jean and Strother, George B. 1963. "Testing a Model for Organizational Growth". Human Organization, Vol. 22, Fall, pp. 180-194.
- Edwards, Aitken L. 1976. An Introduction to Linear Regression and Correlation. W.A. Freeman and Company: San Francisco.
- Fayol, Henri. 1949. General and Industrial Management. Sir Isaac Pitman and Sons Ltd.: London.
- Freeman, John H. 1973. "Environment, Technology and the Administrative Intensity of Manufacturing Organizations: American Sociological Review 38:750-63.
- Freeman, John. 1979. "Going to the Well: School District Administrative Intensity and Environmental Constraint" Administrative Science Quarterly, 24(March) pp. 119.
- Freeman, John H., and Kronenfeld, Jerrold. 1973. "Problems of Definitional Dependency: The Case of Administrative Intensity". Social Forces 52 (September):108-21.

- Freeman, John H., and Hannan, Michael T. 1975. "Growth and Decline Processes in Organizations". American Sociological Review 40 (April):215-28.
- Freidson, Eliot. 1963. The Hospital in Modern Society. The Free Press Inc.: New York.
- Freidson, Eliot. 1970. Professional Dominance: The Social Structure of Medical Care. New York: Dodd-Mead & Company.
- Freidson, Eliot. 1971. Profession of Medicine: A Study of the Sociology of Applied Knowledge. New York: Dodd-Mead & Company.
- Gailbraith, John Kenneth. 1967. The New Industrial State. Houghton Mifflin.
- Georgopoulos, Basil S. (ed.). 1972. Organization Research on Health Institutions. Institute for Social Research, The University of Michigan.
- Georgopoulos, Basil S. (ed.). 1975. Hospital Organization Research: Review and Source Book. W.B. Saunders Company. Philadelphia, London, Toronto.
- Georgopoulos, B.S., and Mann, F.C. 1962. The Community General Hospital. New York: MacMillan.
- Goss, Mary E.W. 1961. "Influence and Authority Among Physicians in an Out-Patient Clinic: American Sociological Review, Vol. 26, pp. 39-50.
- Grant, Colin. 1973. Hospital Management. Churchill Livingstone: Edinburgh and London.
- Green, Stephen. 1974. The Hospital: An Organizational Analysis. Blackie: Glasgow and London.
- Gulick, Luther, and Urwick, L. (eds.). 1937. Papers on the Science of Administration, New York: Columbia University Press.
- Haas, J. Eugene, Hall, Richard H., and Johnson, Norman. 1963. "The Size of Supportive Component in Organizations: A Multi-Organizational Analysis". Social Forces 42 (October):9-17.
- Haas, J. Eugene, and Drabek, Thomas E. 1973. Complex Organizations: A Sociological Perspective. The MacMillan Company.

- Haire, Mason. 1959. "Biological Models and Empirical Histories of the Growth of Organizations", in Mason Haine (ed.) Modern Organization Theory, New York: John Wiley & Sons, Inc.
- Hall, R.H. 1972. Organizations: Structure and Process. Englewood Cliffs, N.J. Prentice-Hall.
- Hall, Richard H. 1977. Organizations Structure and Process, 2nd Edition, Prentice-Hall, Inc. Englewood Cliffs, New Jersey.
- Hannigan, John A., and Kueneman, Rodney M. "Legitimacy and Public Organizations: A Case Study". Canadian Journal of Sociology and Anthropology. 1976.
- Hawley, A., Boland, Walter and Boland, Margaret. 1965. "Population Size and Administrators in Institutions of Higher Learning". American Sociological Review. Vol. 30, April, pp. 252-255.
- Hendershot, Gerry E., and James, Thomas F. 1972. "Size and Growth as Determinants of Administration-Production Ratio in Organizations". American Sociological Review 37 (April):278:86.
- Heydebrand, Wolf V. 1973. Comparative Organizations: The Results of Empirical Research. Englewood Cliffs, New Jersey. Prentice-Hall, Inc.
- Heydebrand, Wolf V. 1973. Hospital Bureaucracy. New York: Dunnellen.
- Hickson, David J., Pugh, D.S., and Pheysey, Diana C. 1969. "Operations Technology and Organization Structure: An Empirical Reappraisal". Administrative Science Quarterly, Vol. 14, September, pp. 378-397.
- Holdaway, E.A., and Blowers, T.A. 1971. "Administrative Ratios and Organization Size: A Longitudinal Examination." American Sociological Review, Vol. 36, April, pp. 278-286.
- Hrebiniak, Lawrence G., and Alutto, Joseph A. 1973. "A Comparative Organizational Study of Performance and Size Correlates in Inpatient Psychiatric Departments". Administrative Science Quarterly, Vol. 18, pp. 365-382.
- Hrebiniak, Lawrence G. 1976. "Size and Staff Professionalization". Academy of Management Journal, Vol. 19, No. 4, June.
- Hunt, R.G. 1970. "Technology and Organization." Academy of Management Journal. pp. 235-252.

- Jaco, E.Gartley (ed.). 1972. Patients, Physicians, and Illness: A Sourcebook in Behavioral Science and Health. The Free Press, New York: Collier-MacMillan Publishers, London.
- Kasarda, John D. 1973. "Effects of Personnel Turnover, Employee Qualifications and Professional Staff Ratios on Administrative Intensity and Overhead" Sociological Quarterly. Vol. 14, 3, Summer, pp. 350-58.
- Katz, D., and Kahn, R. L. 1966. The Social Psychology of Organizations. New York: Wiley.
- Khandwally, Pradip M. 1974. "Mass Onput Orientation of Operations Psychology and Organizational Structure" Administrative Science Quarterly, 19, pp. 74-97.
- Kimberly, John R. 1976. "Organizational Size and the Structuralist Perspective: A Review, Critique and Proposal: Administrative Science Quarterly, December, Vol. 21, pp. 571-597.
- Lawrence, Paul R., and Lorsch, Jay W. 1967. Organization and Environment Managing Differentiation and Integration. Cambridge: Division of Research, Graduate School of Business Administration, Harvard University.
- Levine, Sol, and White, Paul E. 1961. "Exchange as a Conceptual Framework for the Study of Interorganizational relationships". Administrative Science Quarterly, Vol. 5, pp. 583-601.
- Lilley, Wayne. 1980. "Healing is the Biggest Business". The Financial Post Magazine, Nov. 29, 1980, pp. 14-27.
- Loether, Herman J. and McTavish, Donald G. 1974. Descriptive Statistics for Sociologists: An Introduction. Boston. Allyn & Bacon, Inc.
- Melman, Seymour. 1951. "The Rise of Administrative Overhead in the Manufacturing Industries of the United States: Oxford Economic Papers. 3:62-112.
- Melman, Seymour. 1956. Dynamic Factors in Industrial Productivity. Oxford, England, Basil Blackwell.
- Meyer, Marshall W., and Associates. 1978. Environments and Organizations. Jossey-Bass Publishers, San Francisco, Washington, London.

- Mintzberg, Henry. 1979. The Structuring of Organizations. Prentice-Hall Englewood Cliffs, New Jersey.
- Mooney, J. 1947. The Principles of Management. New York. Harper & Rowe.
- Neuhauser, D. 1971. "The Relationship Between Administrative Activities and Hospital Performance", Research Series No. 28, Chicago Centre for Health Administrative Studies.
- Neuhauser, D., and Andersen, R. 1972. "Structural-Comparative Studies of Hospitals" in Organization Research on Health Institutions. Basil S. Georgopoulos (ed.) Institute for Social Research, The University of Michigan.
- Parsons, Talcott. 1960. Structure and Process in Modern Societies. New York: The Free Press of Glencoe.
- Perrow, Charles. 1965. "Hospitals: Technology, Structure and Goals". in James G. March (ed.), Handbook of Organizations. Chicago: Rand McNally and Company.
- Perrow, Charles. 1972. Complex Organizations: A Critical Essay. Glenview, Illinois, Scott, Foresman and Company.
- Perrow, Charles. 1979. Complex Organizations: A Critical Essay, 2nd Edition. Scott, Foresman and Company, Glenview, Illinois.
- Perrow, Charles. 1979. "Organizational Theory in a Society of Organizations". Unpublished paper. Department of Sociology. State University of New York at Stony Brook.
- Phelps, Tracy and Azumi, Koya. 1976. "Determinants of Administrative Control: A Test of A Theory with Japanese Factors". American Sociological Review, Vol. 41, No. 1, Feb., pp. 80-94.
- Pondy, Louis R. 1969. Effects of Size, Complexity and Ownership on Administrative Intensity". Administrative Science Quarterly 14, 1 March:47-60.
- Price, James L. 1972. Handbook of Organizational Measurement. D.C. Heath and Company. Lexington, Massachusetts.
- Raphael, Edna. 1965. "The Anderson-Warkov Hypothesis on Local Unions: A Comparative Study". American Sociological Review. 32(October) pp. 768-776.

- Reeves, William J., and Bucar, Cheryl L. "Administrative Intensity in Hospital Organizations". Paper presented for the Annual Meetings of the Canadian Sociology and Anthropology Association. London, Ontario May 29 - June 1. 1978.
- Rosenberg, Morris. 1968. The Logic of Survey Analysis. New York: Basic Books, Inc., Publishers.
- Rosengren, W.R., and Lefton, Mark. 1957. "Hospitals and Patients". American Sociological Review, Vol. 22, April, pp. 200-204.
- Rowbottom, Ralph. 1973. Hospital Organizations. London: Heinemann Educational Books Ltd.
- Rushing, William A. 1967. "The Effect of Industry Size and Division of Labor on Administration". Administrative Science Quarterly 12:273-95.
- Rushing, William A. 1976. "Profit and Non-Profit Orientations and the Differentiation - Coordination Hypothesis for Organizations: A Study of Small General Hospitals". American Sociological Review 41(August):676-691.
- Rushing, William A., and Zald, N. Mayer (eds.). 1976. Organizations and Beyond. Lexington Books, D.C. Heath and Company. Lexington, Mass.
- Siegel, Sidney. 1956. Nonparametric Statistics for Behavioral Sciences. McGraw-Hill Book Company
- Simon, Herbert A. 1976. Administrative Behavior: A Study of Decision-Making Processes in Administrative Organizations. 3rd Edition. London: The Free Press. Collier-MacMillan Publishers.
- Scott, W. Richard, and Volkant, Edmund H. (eds.). 1969. Introduction to Medical Care Readings in Sociology of Medical Institutions. New York:Dunnellen.
- Scott, W. Richard. 1975. "Organizational Structure" pp. 1-20 in Annual Review of Sociology, Vol. 1, edited by Alex Inkeles. Palo Alto, California:Annual Reviews.
- Sofer, Cyril. 1973. Organizations in Theory and Practice. Heinmann Educational Books, London.
- Strauss, George, Miles, Raymond E., Snow, Charles C., and Tannenbaum, Arnold S. 1976. Organizational Behaviour: Research and Issues. Wadsworth Publishing Company Inc. Belmont, California.

- Tauskey, Curt. 1970. Complex Work Organizations. New York: McGraw-Hill Publishers.
- Taylor, Carol. 1970. In Horizontal Orbit: Hospitals and the Cult of Efficiency. New York: Holt, Rhinehart and Winston, Inc.
- Taylor, Frederick W. 1911. Scientific Management, New York, Harper and Row, Publishers, Incorporated.
- Terreberry, Shirley. 1968. "The Evolution of Organizational Environments". Administrative Science Quarterly, Vol. 12, March, pp. 590-613.
- Terrien, Fredrick L., and Mills, Donald L. 1955. "The Effect of Changing Size Upon the Internal Structure of Organizations: American Sociological Review 20 (February):11-13.
- Thompson, James D., and Bates, Frederick L. 1957. "Technology, Organization and Administration", Administrative Science Quarterly, Vol. 2, No. 3, Dec., pp. 325-343.
- Thompson, James D., Hammond, Peter B., Hawkes, Robert W., Junker, Buford H., and Tuden, Arthur (eds.). 1959. Comparative Studies in Administration. Pittsburgh: University of Pittsburgh Press.
- Thompson, James D. 1967. Organization in Action. New York: McGraw-Hill Publishers.
- Tosi, H., and Pratt, J. 1967. "Administrative Ratios and Organizational Size". Academy of Management Journal, Vol. 10, June, pp. 161-168.
- Tsouderos, John E. 1955. "Organizational Change in Terms of a Series of Selected Variables". American Sociological Review, Vol. 20, 2, April, pp. 206-10.
- Weber, Max. 1947. The Theory of Social and Economic Organization. Glencoe Free Press.
- Weber, Max. 1958. From Max Weber: Essays in Sociology (trans. Gerth & Mills) New York: Oxford.
- Woodward, Joan. 1965. Industrial Organization: Theory and Practice. London: Oxford University Press.
- Udy, S.H. Jr. 1959. "'Bureaucracy' and 'Rationality' in Weber's Organization Theory" American Sociological Review, 24, 791-795.

Ullrich, Robert and Wieland, George F. 1980. Organization Theory and Design, revised edition. Richard D. Irwin Inc. Homewood, Illinois.

Zaltman, Gerald, Duncan, Robert, and Holbek, Jonny. 1973. Innovations and Organization. John Wiley and Sons, New York.

HOSPITAL SOURCES

- Backrach, Lena L. 1975. "Psychiatric Bed Needs: An Analytical Review" (DHEW Pub. No. (ADM) 75-205). WASH. U.S.A. Government Printing Office, IV, 16 pages.
- Barton, G.M. 1974. "A Hospital Political Environment and its effect on the Patients Admission" Hospital Comm. Psychiatry, 25, March, pp. 156-9
- Bella, D.A. 1976. "Relationship of Institution Size to Quality of Care: A Review of the Literature". American Journal of Mental Deficiency, Vol. 81, 1, September, pp. 117-24.
- Boissoneau, R. 1976. "Effectiveness of Hospital Administrators: A Study" Hospital Progress, Vol. 57, 10, October, pp. 74-77.
- Du Four, R.G. 1974. "Three Case Studies in Planning: Predicting Hospital Bed Needs", Health Ser. Res., Vol. 9, Spring, pp. 62-68.
- Frybil, L.D. 1977. "Hospital Boards Face Increasing Demands". Hospitals Vol. 51, 7, April, pp. 103-106.
- Ghei, P.N. 1975, 1976. "Hospital Staffing Standards: 500 Bed General Hospital". Hospital Administration, Vols. 12, 13, Nov. and March, pp. 191-198 and pp. 59-62.
- Hancock, W.M. 1976. "Dynamics of Hospital Operational Control Systems". Hospital and Health Serv. Admin. Vol. 21, 3, pp. 23-42.
- Harris, D. M. 1975. "An Elaboration of the Relationship Between General Hospital Bed Supply and General Hospital Utilization". Journal of Health and Social Beh., Vol. 16, 2, June, pp. 163-172.
- Johnson, E., and Neuhauser, D. 1975. "Hospital Staffing Ratios in the U.S. and Sweden". Inquiry. Vol. 12, 2, June, pp. 128-137.
- Kennedy, J.W. 1977. "Controlling the Supply of Hospitals Beds (editorial)". Arizona Medical, Vol. 34, 2, Feb. pp. 104-105.
- Levine, H.D. and Phillip, P.J. 1975. "Factors Affecting Staffing Levels and Patterns of Nursing Personnel". (DHEW Publications, No. (HRA) 75-6) Washington USA Government Printing Office, pp. 110.

- Liu, B.C. 1976. "Regional Hospital Needs Projection: An Input-Output Approach". Socio-Eco. Planning Service, Vol. 10, 1, pp. 37-42.
- Michela, W.A. 1976. "A Look at Hospital Size and Expense". Hospitals, Vol. 50, 5, March, pp. 41-43.
- Moos, R. 1972. "Size, Staffing and Psychiatric Ward Treatment Environments". Arch. Gen. Psychiatry, Vol. 26, May, pp. 414-18.
- McClain, J.O. 1976. "Bed Planning Using Queing Theory Models of Hospital Occupancy: A Sensitivity Analysis". Inquiry, Vol. 13, 2, June, pp. 167-76.
- McCoy, W.T. 1974. "Medical Manpower Assessment". National Hospital, Vol. 18, 12, Dec. pp. 11-18.
- Pulley, J.L. and Fulmer, J.G. 1975. "The Optimal Size Hospital". Hospital Administration, Vol. 20, 2,
- Russell, S. 1976. "New Tools for Budgeting and Cost Analysis" Dimensions in Health Services, Vol. 53, 11, Nov. pp. 33-35.
- Salkever, D.S. 1975. "Hospital Wage Inflation: Supply Push or Demand Pull". Quarterly Review of Economy and Business, Vol. 15, 3, Aug., pp. 33-48.
- Sibole, W.R. 1976. "The Impact of Bed Planning Standards" Hospital Administration In Canada, Vol. 18, 5, May, pp. 34-36.
- Smith, E.P. 1977. "A Weberian Management Model" Hospital Progress, Vol. 58, 3, March, pp. 64-68.
- Starkweather, D.B. 1973. "Hospital Organizational Performance and Size" Inquiry, Vol. 10, Sept., pp. 10-18.
- Stevens, B.J. 1976. "What is the Role of Budgeting for Her Dept.?" Hospitals, Vol. 50, 22, Nov. pp. 83-86.
- Tyson, T.R. 1976. "Hospitals Must Develop Creative Marketing Programs or Lose Business" Modern Health Care, Vol. 6, 5, Nov. pp. 56.
- Valentino, H.N. 1975. "How to Manage a Financially Successful Hospital" Hospital Topics, Vol. 53, 6, Nov./Dec. pp. 37-39.

- Wandel, S.E. and Hershey, J.C. 1975. "A Conceptual Framework for Nurse Staffing Management" Omega, Vol. 3, 5, Oct. pp. 541-550.
- Wild, D. "Hospital Administration - The New Order: The Medical Administrators Point of View" Review of Soc. Health Journal, Vol. 96, 5, pp. 226-229.