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EMPLOYEES' SATISFACTION WITH PROVIDED HEALTH CARE SERVICES

A Dissertation

Presented for the

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

Carl O. Morgan

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DEDICATION

This dissertation is dedicated in memory of my father Russell Oscar Morgan, to my mother Kate Lucille Fritts Morgan, and to my wife Shelia J. Morgan, without whose love, support, and encouragement I could not have accomplished my educational goals.

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ABSTRACT

The purpose of this descriptive study was to assess employees' satisfaction with health care services provided at the Oak Ridge National Laboratory, Oak Ridge, Tennessee. The study determined what employees' attitudes were about corporate health care services as compared by gender, race, length of employment, payroll status, age, usage, reason for visit, and benefit. The study population consisted of employees (N=390) at the Oak Ridge National Laboratory who utilized medical services provided by the Health Division during the first two weeks of October 1996.

A health care services satisfaction Likert-type scale was constructed and validated before being administered to the employees. The data provided by the scale were combined into two sets of categorical variables: the structure (health care services provided) and process (personal treatment extended) by the Health Division. The first seven questions elicited data related to the satisfaction of health care services provided by the Health Division. Questions #8 through 17 elicited data related to the personal treatment extended by Health Division personnel. Questions #18 through 21 elicited data that could be used to determine what relationship existed between employees' attitudes about the health care services identified in the first 17 questions when compared by gender, race, length of employment, payroll status, age groups, usage, reason for visit, and benefit. Question #22 allowed employees to express an overall satisfaction level with Health

Division services.

All participants were administered the same scale and the results were analyzed by using descriptive statistics. The following major conclusions were reached as a result of the research:

1. All employee subgroups (gender, length of employment, payroll status, age, usage, reason for visit) showed overall satisfaction with provided health care services, with the exception of race and fringe benefit groups which differed significantly.
2. The number of times employees visited the Health Division during the past year did not bring about a significant difference in the levels of satisfaction among the groups in the category usage.
3. The majority (94 percent) of employees in the study viewed Health Division services as a fringe benefit. It is apparent that employees who did not view the services as a fringe benefit had differing views from the majority of employees, and those views were significantly different only with respect to overall satisfaction.
4. Employees did not exhibit a significant difference among the reasons for visiting the Health Division (physical, allergy shots, return to work, work-related injury, illness, off-the-job injury, and other).

Recommendations made:

1. Because this study was a sample of convenience and appeared to mimic the general population of the Laboratory, it should be replicated to allow all

employees who utilize Health Division services an opportunity to participate. This could be accomplished by mailing the Health Care Satisfaction Scale to all employees at their home addresses.

2. A separate study should be conducted to determine why Caucasians and minorities differed significantly on the levels of satisfaction for structure and overall satisfaction.

3. This study has provided a brief insight into employees' attitudes toward provided health care services and should be continued at the Laboratory at least on an annual basis.

4. A small percent (5 percent) of the employees commented in some form that they did not know what services were available or the extent to which they could utilize services offered by the Health Division. Based on this, albeit a small percent, a more effective means of communication between the Health Division and employees could be established.

TABLE OF CONTENTS

CHAPTER		PAGE
1.	INTRODUCTION	1
	Statement of the Problem	6
	Purpose of the Study	6
	Research Questions	6
	Need for the Study	8
	Basic Assumptions	9
	Delimitations	10
	Limitations	11
	Definitions of Terms	11
	Collection of Data	13
	Demographic Data	14
	Organization of the Study	15
2.	REVIEW OF RELATED LITERATURE	16
	Satisfaction Measures	16
	Studies Related in Content	23
	Studies Related in Methodology	24
	Determinants of Satisfaction Measures	25
	Advantages of Studying Employees' Attitudes	27
	Health Care Program Elements	29
	Summary	32

CHAPTER PAGE

3. METHODS AND PROCEDURES 33

Study Population and Sample Selection 33

Instrumentation 34

Data Tabulation and Statistical Analysis 38

Summary 39

4. ANALYSIS OF THE DATA 41

Introduction 41

Demographics 42

Assessment of Satisfaction Scores 50

Overall Satisfaction Scores 50

Scores for Structure 52

Scores for Process 53

Total Satisfaction Score 56

Independent Variables 58

Analysis of Variance 58

Gender 59

Race 60

Length of Employment 64

Payroll Status 67

Age Groups 69

Usage 72

Reason for Visit 72

CHAPTER PAGE

Fringe Benefit 76

Correlation of Satisfaction Measures 80

Summary of Data Analysis 81

5. SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS 82

Summary 82

Findings 82

Conclusions 90

Recommendations 91

6. THE STUDY IN RETROSPECT 93

Final Note 100

REFERENCES 103

APPENDICES 109

A. University of Tennessee Office of Research Letter of Approval 110

B. Oak Ridge National Laboratory Committee on Human Studies Letter of Approval 112

C. Health Care Satisfaction Scale Cover Letter 114

D. Health Care Satisfaction Scale Instructions 116

E. Health Care Satisfaction Scale 118

F. Oak Ridge National Laboratory Health Division Mission, Staff, and Programs 121

G. NCG Research Letter of Approval 128

VITA 130

LIST OF FIGURES

FIGURE		PAGE
1.	Responses Used to Infer Attitudes	20
2.	Determinants of Satisfaction Measures	27
3.	Sample by Gender	43
4.	Sample by Race	44
5.	Sample by Age Group	45
6.	Respondents by Individual Years of Employment	46
7.	Respondents by Grouped Years of Employment	47
8.	Payroll Status of Study	48
9.	Payroll Status of Sample	49
10.	Overall Satisfaction Scores for Services Provided by the ORNL Health Division	51
11.	Scores for Structure	54
12.	Scores for Process	55
13.	Total Satisfaction Score	57

LIST OF TABLES

TABLE		PAGE
1.	Summary of Satisfaction Scores by Gender	59
2.	Comparison of Satisfaction scores by Gender	61
3.	Summary of Satisfaction Scores by Race	62
4.	Comparison of Satisfaction Scores by Race	63
5.	Summary of Satisfaction Scores by Grouped Length of Employment	65
6.	Comparison of Satisfaction Scores by Grouped Length of Employment	66
7.	Summary of Satisfaction Scores by Payroll Status	67
8.	Comparison of Satisfaction Scores by Payroll Status	68
9.	Summary of Satisfaction Scores by Age Groups	70
10.	Comparison of Satisfaction Scores by Age Groups	71
11.	Summary of Satisfaction Scores by Usage	73
12.	Comparison of Satisfaction Scores by Usage	74
13.	Summary of Satisfaction Scores by Reason for Visit	75
14.	Comparison of Satisfaction Scores by Reason for Visit	77
15.	Summary of Satisfaction Scores by Benefit	78
16.	Comparison of Satisfaction Scores by Benefit	79
17.	Correlation of Satisfaction Measures	80

CHAPTER 1

INTRODUCTION

The provision of medical facilities at the workplace is an important factor that can contribute to the health of our population. More than 85 percent of the American workforce (approximately 110 million people) spend much of the day in their work environments (Healthy People 2000). Despite the overall health improvements achieved as a result of preventive interventions, the nation continues to be burdened by preventable illness, injury, and disability. In 1960, the share of the Gross National Product going to medical services was 5 percent; in 1990, it surpassed 12 percent. In 1994, approximately 6.8 million nonfatal injuries and illnesses were reported in private industry and they were found in every major industry (Bureau of Labor Statistics). Lockheed Martin Corporation accumulates about 40,000 days away from work every year due to occupational injuries and illness, resulting in an estimated $40 million in annual workers' compensation costs (Lockheed Martin). Thus, employee satisfaction toward medical care delivered in an occupational health clinic can be an important factor in determining the success of provided health care programs.

While the Occupational Safety and Health Act of 1970 required that medical surveillance be provided where relevant (Public Law 91-596), certain essential elements and characteristics in occupational settings were necessary to have an

effective workplace health care program (Donabedian, 1973; Felton, 1990). Corporate health care programs offering services of physicians and nurses do much more than simply care for emergency treatment of work-related injuries. Some employers support smoking cessation, stress management, nutrition and exercise, screening for high blood pressure and high blood cholesterol, and other health care-related programs. Various studies have shown that worksite health promotions improve employees health, reduce insurance claims, improve morale, and reduce absenteeism (Dawson, Hendershot, and Bloom, 1987). Disease prevention and health promotion are financially important for employers since occupational health care issues are often of a relatively obscure and ambiguous nature.

Benefits a corporation derives from an effective occupational health care program can be a result of the quality of the services it provides because satisfied employees are more likely to commit to and comply with recommended treatment. However, dissatisfied employees are more likely to exhibit delays in seeking health care. In addition, the latter also have a greater likelihood to seek care from various private health care professionals, thus potentiating fragmented health care. From this, it appears dissatisfied employees could contribute to increasing the health care cost burden for the employer (Rogers, Winslow, and Higgins, 1993).

Quality is a property that health care can have in varying degrees and can be perceived by employees in many different ways. Thus, the relatively vague and imprecise nature of issues related to occupational health care presents a problem

in approach in identifying and specifying problem areas of concern which would be most useful to an employer providing occupational health care. Among the reasons contributing to this problem is a lack of available statistics about employees' satisfaction with provided health care.

How employees perceive provided health care is heavily influenced by what health care they think should be provided for them. Employees' satisfaction with care delivered is an important factor in determining the success of health care programs. Employees could become dissatisfied with health care services over issues ranging from the efficiency of administrative services to impersonal attitudes of health care providers. Systematically collecting, analyzing, interpreting, and using health care data are essential to understanding the health care status of employees and to effective planning. For health care programs to be more effective, employers should consider employees' attitudes toward provided health care when planning programs (McKennell, 1974). Surveys are the major means used to assess attitudes, beliefs, and values of the general public (Shaw and Wright, 1971). Although occupational medical programs that are not legally required may be difficult to economically justify, such programs can provide documentation that can prove invaluable in health care-related workers' compensation cases. As with other safety and health care programs, benefits could go unnoticed until claims are made years later. Also, it is possible as a result of occupational medical programs to detect, diagnose, and cure illnesses not related

to the occupation. In these cases, debilitating diseases which might seriously affect the well-being and productivity of an employee might have gone undetected without the program in place (Rogers, Winslow, and Higgins, 1993).

Employers have multiple opportunities to improve the health status of their employees. Some employees voluntarily participate in occupational health screening and surveillance programs provided by their employers while others do so only as a condition of employment. If employers provide health care services (testing, surveillance, etc.) when they are not required, some employees may not take the initiative to obtain them because of some previous dissatisfaction with services. Employers as occupational health care providers may assume employees are satisfied with services rendered, but no empirical evidence could be found to support this assumption.

Site-specific components of an occupational health care service will vary according to the function of the workplace and associated hazards present. One objective of an occupational health care program should be to optimize the health of the worker through preventive and curative services within a caring framework. An effective occupational health care service is reflected in the value the organization places on its employees' health. The benefits of employer-provided health care services are many and varied. Some are intangible. For example, from the employees' viewpoint, there is the psychological security of knowing that medical attention would be prompt in the event of an emergency, and this security

itself is of value quite apart from the benefit of prompt medical attention. From the organization's viewpoint, such security may mean a friendlier environment and higher employee morale, a value not necessarily identical with greater worker efficiency. So while a healthful work environment might not always lead to greater productivity, it could produce an increase in the quality of life of some employees.

While various approaches can be used to determine the effectiveness of occupational health care services, employee satisfaction is one important indicator of quality of care; it also can be used as a measure for service improvement (Donabedian, 1980b). According to a nationwide survey of 151 employers conducted by consultant William M. Mercer, Inc., 69 percent of respondents believed that the quality of employer-provided health care would be more significant in reducing health care costs in 1996 than it was in 1993 (Authors, anonymous, 1993). The same survey questioned how employers determined the quality of care, and 53 percent of the respondents said employee satisfaction was the most important measure. If this was to be determined industry wide, it would appear to be a motivating factor to determine if existing programs were yielding effective results for both employer and employee. Anticipated results of an effective occupational health care service include decreased employee disability; improvement in worker health through accessible on-site managed care and screening; reduction in work-related accidents through hazard evaluation and

worker safety training; improvement in the quality of life of the worker; and an increase in worker productivity, morale, and job satisfaction.

STATEMENT OF THE PROBLEM

Value judgments put upon any system providing human services are derived from a complex interaction between perception of the need for the service and the organizational response to that need. The problem associated with the purpose of this study was to measure employees' satisfaction with provided health care services.

PURPOSE OF THE STUDY

The primary purpose of this study was to assess employees' level of satisfaction with provided health care services at the Oak Ridge National Laboratory, Oak Ridge, Tennessee.

RESEARCH QUESTIONS

In order to address the purpose of the study, the following research questions were formulated.

1. What were employees' overall satisfaction levels toward health care services provided during the past 12 months when compared by groupings of gender, race, length of employment, payroll status, age, usage, reason for visit, and benefit?
2. What was the relationship between employees' level of satisfaction toward health care services (structure) provided during the past 12 months when compared by groupings of gender, race, length of employment, payroll status, age, usage, reason for visit, and benefit?
3. What was the relationship between employees' level of satisfaction toward personal treatment (process) received during the past 12 months when compared by groupings of gender, race, length of employment, payroll status, age, usage, reason for visit, and benefit?
4. What was the relationship between employees' overall level of satisfaction toward provided health care services and the primary reason for their visit (physical, allergy shots, return to work, work-related injury, illness, off-the-job injury, or other) to the Health Division on the day they completed the satisfaction scale?
5. What was the relationship between employees' overall level of satisfaction toward provided health care services and their opinion of provided health care services as a fringe benefit?

NEED FOR THE STUDY

The value of measuring perception of satisfaction as a quality of care indicator in occupational health settings is not clear. While measuring satisfaction is currently being used in several areas of health care as part of a quality assurance program, very little research could be found that discussed employees' perceptions of satisfaction with, or attitudes toward, provided occupational health care. A review of patient satisfaction with ambulatory care services gives an initial framework for such an evaluation (Freeborn and Greenlick, 1973). Much of what has been learned is that satisfaction with health care services is tied to structure and process measures such as a caring staff, efficiency of service methods, and usefulness of care delivery (Rogers, Winslow, and Higgins, 1993).

With the investment that an employer makes in its occupational health care service, inclusion of satisfaction as a quality indicator in service evaluation and program planning is warranted and should be considered essential. In this study, selected structures and process measures were examined as an evaluation of employee satisfaction in the occupational health setting. The results can be used to guide changes in service delivery and help to establish a body of knowledge about employee evaluation of occupational health care. With the cost for workers' compensation and health care benefits being one of the greatest concerns of

management, employers have to be creative in their efforts to contain health care costs (Rogers, Winslow, and Higgins, 1993).

Health promotion and protection programs ideally will improve workers' health through strategies to identify and reduce health risk factors, thus preventing or delaying illness and injury and saving the employer health care dollars. However, benefits can only be achieved if the service is used. Satisfaction with services rendered is an important variable associated with utilization.

Patient or client satisfaction is a measure that has gained increased recognition and is reported to be pivotal in the assessment of quality of care. Strictly defined, satisfaction is an outcome measure, but it can serve to reflect the structure and process of care simultaneously (Williams, 1988). It is a perspective on health care that traditional measures ignore. Satisfaction with health care refers to the degree to which the quality of care received matches the expectation or need of the individual receiving the care. Assessment of employee satisfaction with health care through such means as satisfaction surveys can provide the feedback needed to improve services according to employee preferences and thus facilitate better care and utilization.

BASIC ASSUMPTIONS

Basic assumptions made before this research began were:

1. Employees who were asked to complete a survey for the study would be willing to do so.
2. Employees completing the survey would answer all questions honestly and accurately.
3. The survey forms would be provided only to employees obtaining health service from the clinic during the survey time period.
4. The satisfaction scale used would validly assess employees' satisfaction toward health care services provided at the Laboratory's Health Division.

DELIMITATIONS

Major delimitations of this study were:

1. Only those employees utilizing health care services at the Laboratory were asked to participate.
2. The research was delimited to employees' level of satisfaction toward provided occupational health care services.
3. The research was delimited to a population utilizing one corporate medical clinic (Oak Ridge National Laboratory).

LIMITATIONS

Major limitations of this study were:

1. Only responses to questions on the survey were used in the statistical analysis. Additional comments provided by the employees were not included.
2. Because employee participation in the study was voluntary, there was no guarantee employees would provide the requested information.
3. Some employees might not complete the entire satisfaction scale, which could limit the results.
4. There was no control over why the employees were at the Health Division. Some employees were there as a condition of employment (physical, tests, etc.) while others were there voluntarily.
5. Since this was a sample of convenience, results may not be generalizable to all Laboratory employees who have utilized provided health care services in the past.

DEFINITIONS OF TERMS

Definitions of terms of significance for this research as related to health care services provided at the Oak Ridge National Laboratory:

Attitude. Employees' evaluation: extent of liking or disliking, positive or negative feelings, and valuing or disvaluing of Laboratory-provided health care services.

Employee satisfaction. For the purpose of this study, employees satisfaction with provided health care services was measured by utilizing the Health Care Satisfaction Scale. A copy of this instrument is provided in Appendix E.

Health care professionals. Licensed nurses, licensed physicians, certified physician assistants, and other professional staff members who support all of the Laboratory Health Division clinical activities. The Health Division's mission, staff, and programs are provided in Appendix F.

Occupational health care. The prevention and control of disease, injury, or any condition that impairs the health and fitness of Laboratory employees to cause them to lose time from work or to work at less than full capacity.

Occupational health care programs. Programs of health care services and activities that assist in achieving and maintaining the highest physical and emotional health of employees in their work and personal lives.

Oak Ridge National Laboratory Health Division. An organization providing diagnosis, management, and surveillance of occupational illness or injury, emergency health care treatment, health promotion and protection services, and employee counseling and assistance.

COLLECTION OF DATA

In order to learn how many employees would be eligible to participate in the survey, the population of the potential study group (4,364 employees) was obtained from the Laboratory's Human Resources Division. From this, the number of forms necessary to have the specified probability of participation was ascertained. It was determined that random sampling which would be representative of the population under study would require between 350 and 400 participants. After the survey instrument (satisfaction scale) had been validated, 500 copies were personally delivered to the Health Division medical director for distribution. Samples were drawn using the convenience sampling approach (Rubinson and Neutens, 1987). This was accomplished by providing all employees registering at the Health Division during the first two weeks of October 1996 a copy of the satisfaction scale that had been developed for this study. A 5-point scale was used to measure employees' satisfaction for the 17 questions on the first page of the form. These questions provided an assessment of the management of the interpersonal structure and process of the Laboratory Health Division. "Structure" in this case means the characteristics of the providers of care (doctors, nurses, etc.) and the resources needed to provide that care. The next 10 questions allowed employees to provide an assessment of the process between the staff and employees. Page 2 of the survey instrument provided employees an opportunity to answer other questions

in more detail which provided data for comparative factors. Employees who agreed to participate in the study were assured that anonymity would be preserved throughout the study and that they could not be identified in any way. A letter included with the survey instrument informed employees that the return of the completed satisfaction scale constituted their informed consent (as required by the University of Tennessee Human Subjects Committee). Distribution of the forms to the employees was administered by the receptionist staffing the reception area. A clipboard and pencil were provided with each form. The entire survey instrument consisted of a cover letter, instructions, and two pages of questions. The final statement on the instrument instructed the employee to return the completed form to the reception area after ensuring all items had been answered. Employees were asked to place the completed form in a secured box to which only the principal investigator had access.

DEMOGRAPHIC DATA

In the section of the satisfaction scale that collected demographic data, employees were asked to provide their length (years) of employment at the Laboratory, their age, gender, and race. In addition, they were asked their payroll status (hourly, weekly, or monthly).

ORGANIZATION OF THE STUDY

The remainder of this study is organized as follows: Chapter 2 provides a review of studies related in content and methodology and a review of the determinants of satisfaction measures which can be applied to the occupational health setting. Chapter 3 explains the approach that was taken for the selection of the research design and explains the techniques that were employed in conducting this study. Chapter 4 provides an analysis of the research questions and an evaluation of the satisfaction scale used. Chapter 5 provides a summary, the findings, conclusions, and recommendations. Chapter 6 concludes with a summary of the study in retrospect. The reference section lists all material that was consulted for use in this study. The appendices include all related material used.

CHAPTER 2

REVIEW OF RELATED LITERATURE

A literature review was conducted by computer search for existing germane information regarding employees' attitudes toward the use of and satisfaction with health care at employer-sponsored medical clinics. Areas included in the search were occupational health care, health care services, perception, attitudes, satisfaction, wellness values, and health promotion activities. This literature review focused on specific determinants of satisfaction measures for ambulatory care as well as studies related in content, methodology, and content and methodology combined.

SATISFACTION MEASURES

Many different meanings have been assigned to "evaluation," and a wide gap exists in the terminology applied to the goals of a program, its end results, its effectiveness, and so on (Kerr and Trantow, 1969). Because of the complexities of evaluating methods of health care services, there has been some confusion in even deciding what should be evaluated, let alone how to go about doing it (B'tesch, 1966).

Researchers interested in studying employees' satisfaction with occupational health care are hindered by the scarcity of sound measures for assessing work environment attitudes. A telephone survey of 305 hospital executives conducted by Cooper Research revealed that almost 95 percent of hospitals used some type of patient-satisfaction survey. The poll revealed that 61 percent of hospitals have used such surveys for five years or more, while 84 percent used a survey custom-designed for their facility, and 24 percent used a standardized survey (Burns, 1993). Since no standardized scale could be found that would measure the construct in this study, one was constructed and validated before being used. Because the construction of a Thurstone attitude scale (Thurstone, 1959) requires rather elaborate procedures and the conditions of a Guttman scale (Guttman, 1944) are difficult to meet in practice, it was decided to develop a Likert-type scale. Likert (1932) developed a type of scale with a clear empirical approach to the measurement of attitude. His method was to generate statements about the target issue without any necessary restriction that the statements were on their face related to the issue. The items could then be administered to groups of pretest subjects with instructions to indicate the degree of agreement or disagreement with each one. This type of scale is easier to construct while yielding satisfactory reliability. Likert scales call for a graded response to each statement, and the response is usually expressed in similar terms of the following five categories: (1) strongly agree, (2) agree, (3) undecided, (4) disagree, and (5) strongly disagree.

To score the scale, the response options are credited +2, +1, 0, -1, or -2 from the favorable to the unfavorable end. The sum of the item credits represents the individual's total score, which must be interpreted in terms of empirically established norms.

An attitude can be defined as a tendency to react favorably or unfavorably toward a designated class of stimuli, such as a national or ethnic group, a custom, or an institution (Allport, 1935). It can also be defined as subjective judgments of value stated on a continuum that reflects the favorableness or unfavorableness a person feels towards an object of interest (Glanz and others, 1990). It is evident that when so defined, attitudes cannot be directly observed, but must be inferred.

Opinion is sometimes differentiated from attitude, but the proposed distinctions are neither consistent nor logically defensible. With regard to assessment methodology, however, opinion surveys are traditionally distinguished from attitude scales. Opinions (manifestations of an attitude) are obtained, and from those opinions an inference is made about attitudes. Opinion surveys are characteristically concerned with replies to specific questions, which need not be related. Replies to each question are separately tabulated in an effort to identify sources of employee satisfaction and dissatisfaction.

Attitude scales, on the other hand, typically yield a total score indicating the direction and intensity of the individual's attitude toward some stimulus category. In the construction of an attitude scale, the different questions are designed to

measure a single attitude or uni-dimension variable, and some objective procedures are usually followed in the effort to approach this goal. An employee attitude scale, for example, yields a single score showing the individual's degree of satisfaction or overall attitude toward the company.

The relationship between attitude and opinion is an analogous one where there are no clear guidelines on which distinctions can be based. Hovland, Janis, and Kelley (1953), for example, defined attitude as a more global concept than opinion, advocating that attitude be used to characterize a general orientation and opinion a more specific predisposition. A related conception is apparent in Thurstone's (1931) view that opinion is simply a manifestation of an attitude and that opinions can therefore be used to diagnose the underlying attitude disposition. While most theorists regard opinion as Thurstone did, there are some who would wish to distinguish the two concepts on the grounds that opinion is rather more tentative than attitude (e.g., Cooper and McGaugh, 1963) or that opinion deals with matters of fact or with normative material. Many authors have reduced the phenomena of perception, judgment, memory, learning, and thought largely to the operation of attitude (Bartlett, 1932; Katz and Stotland, 1959). Attitudes determine for each individual what he will see and hear, what he will think, and what he will do. Because attitudes are individual mental processes which determine both the actual and potential responses of each person, the concept of attitude is indispensable.

Based on Hovland and Rosenberg's (1960) analysis, Figure 1 shows the different types of responses from which attitudes can thus be inferred.

	Response Category		
Response Mode:	Cognition (thought)	Affectual (feeling)	Conation (action)
Verbal:	Expressions of beliefs about attitude objects	Expressions of feelings toward attitudes object	Expressions of behavioral intention

Figure 1. Responses used to infer attitudes (Hovland and Rosenberg, 1960)

Procedures for the development of attitude measurement all involve the selection of some behavior from the whole range of behavior which attitude is held to characterize and use this as an index of the underlying predisposition (Scott, 1968; Maiman et al., 1977). The adequacy of attitude measures can thus be gauged in terms of two general criteria. The first, which is commonly emphasized in books on measurement and methodology, refers to what could be called its technical efficiency (Lemon, 1973; Fishbein and Ajzen, 1975). This would include its usefulness in a field setting, the range of respondents for which it is suitable, and certain measures of reliability and validity. Another criterion is the nature of the underlying conception of attitude which is guiding the investigation and is the reason for the enterprise. Thus, it is imperative a given measure is representative of the

subjects' attitudes. In attitude measurement, the crucial question must always be whether a given technique constitutes an adequate operational definition of the underlying theoretical assumptions. If it does, substantive conclusions can be drawn from it.

A number of different scaling models have been developed which have been used in attitude measurement to convert a series of behavioral observations into indices which purport to give an index of underlying attitude. In all attitude scales, respondents indicate their agreement with a series of statements about the object of the attitude. Special procedures have been devised in an effort to achieve homogeneity of items, equality of distance between scale units, and comparability of scores from scale to scale. The technical problems involved in constructing attitude scales have received extensive attention, and the methodology has made theoretical and statistical advances (Edwards, 1957).

Lazarsfeld and Barton (1951) have described the process of measurement in social science in terms of four progressive stages. The first stage they describe is one in which the investigator forms an initial image of the nature of the concept he wishes to measure. The next stage is one in which the investigator tries to specify the relevant dimensions of the concept to serve as a basis for measurement. The third stage is one in which the researcher tries to translate these theoretical ideas into practice and searches for indicators which represent the theoretical concepts guiding his research. The final stage postulated by Lazarsfeld and Barton

is the combination of scores from these indicators into indices to represent the underlying attitude.

Opinion as to the appropriate role for measurement models is divided. Some theorists (e.g., Torgerson, 1958) imply that the measurement theorist has no alternative but to impose a system of measurement upon his data that will determine the properties it will have. The other alternative, advocated for example by Combs (1953), is that the investigator should allow the properties of the data to emerge during the course of the analysis, and that he should not impose on the data scaling assumptions which they will not bear.

Social psychology is a rich source of information on attitude measurement. Practically every textbook on social psychology contains sections on attitudes and their measurements. Literally tens of thousands of attitude scales have been constructed and used throughout the history of social research. An extensive collection of psychological scales (a compendium of 176) constructed for a variety of purposes was assembled in a book by Shaw and Wright (1967). Most qualify as attitude scales using the narrow definition of "attitude" as defined by Mueller (1986): "Attitude is (1) affect for or against, (2) evaluation of, (3) like or dislike of, or (4) positiveness or negativeness toward a psychological object." Most of the scales were recommended for experimental use only and were not recommended for individual assessment. After none were found that could be used, one was developed that could be used for this research.

STUDIES RELATED IN CONTENT

In surveys the consumer is often asked what he or she thinks of the quality and the price of an industry's product. By the same process, employers can determine employees' attitudes and help establish a better health care relationship with the worker. It may be that employees already assume that the company's medical department has qualified personnel and up-to-date equipment. In the event of a health care encounter, the employee's primary expectation is to receive reassurance, to perceive a caring attitude, and to be listened to by the health care provider. Good communication skills, empathy, and caring appear to be the strongest predictors of how an employee will evaluate the care received (Maiman and others, 1977).

Recent trends in health care have enhanced the importance of client satisfaction. Clients as consumers are better educated about health care issues, know their rights, and expect high-quality care (Lynne, 1993). With the increasing shift to ambulatory health care services, a tactic intended to control resource utilization and health care costs, some health care managers are seeking to improve health care services with the assistance of satisfaction assessments.

Data on current levels of employee satisfaction in the occupational health care settings are unavailable; however, a number of studies in related settings provide service satisfaction data. Various researchers have surveyed clients in

primary care clinics located in private hospitals, family practice settings, and health maintenance organizations and have reported satisfaction levels as high as 85 percent (Williams, 1971). While this showed most clients were generally satisfied with their service experience, it does not mean they were uniformly satisfied with all aspects of care they received. Thus, any employee's involvement in company-provided health care programs has the potential to influence other employees toward the use of available programs.

STUDIES RELATED IN METHODOLOGY

While employee satisfaction measures in the occupational health care settings could not be found in the literature, it would seem imperative to consider satisfaction indicators as essential quality management tools in view of industries' need and desire for quality services. Since the workplace has seen the recent introduction of many stress-management and stress-reduction interventions in addition to the already existing programs, it seems there should be a strong concern about employee satisfaction of services provided. By adding the assessment of employee satisfaction to traditional quality indicators in the occupational health care setting, greater efficiency in service and a moderation or reduction in cost increases may be achieved.

Satisfaction with health care services can be considered one outcome measure of how employees view service effectiveness and can contribute to an evaluation of the structure, process, and outcome of health care services. This literature review indicates that benefits of an effective occupational health care service may result in increased worker productivity and morale; heightened job satisfaction; and reduction in injuries, disabilities, and absenteeism.

The concept of quality of care can be measured in structure, process, and outcome dimensions (Donabedian, 1980a). Structure is represented by the policies, organization, and administration of the organization and the process is the care provided. While satisfaction with services may be considered an outcome measure, structure and process indicators such as methods of delivery, types of health care offered, and personal attitudes are major foci of satisfaction determinants.

DETERMINANTS OF SATISFACTION MEASURES

Williams (1988) identified specific determinants of client satisfaction for the ambulatory care setting which can be applied to occupational health care settings (Figure 2). While all the indicators listed in Figure 2 are important satisfaction determinants, it has generally been found that consumers are acutely aware of provider and system attitudes and behaviors (Williams, 1971).

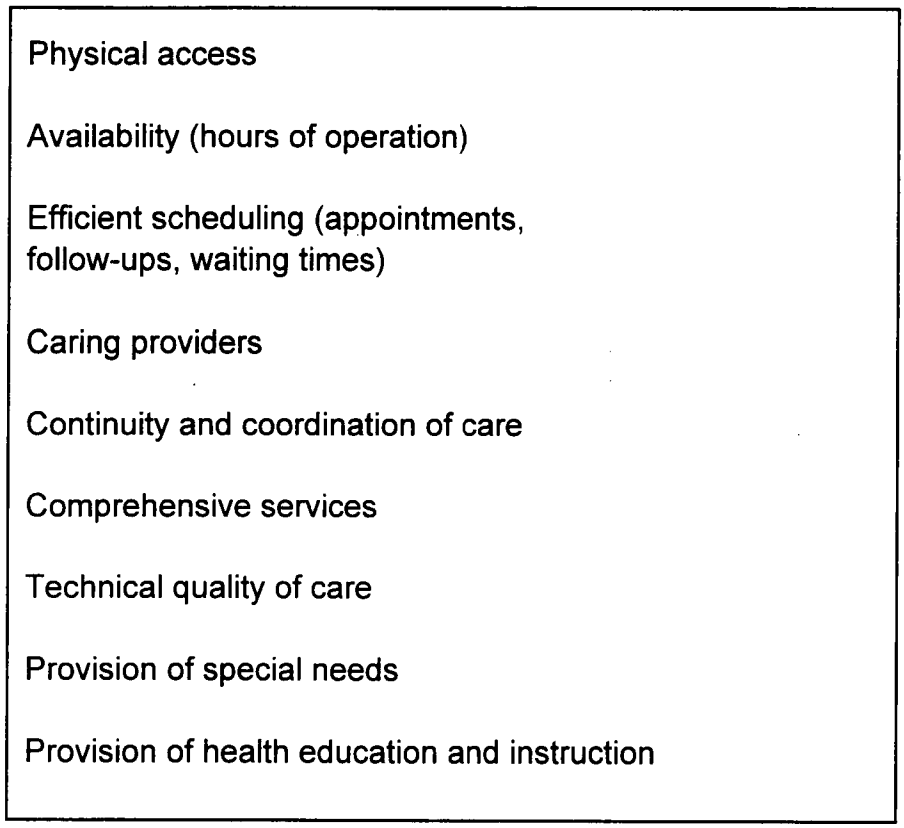


Figure 2. Determinants of satisfaction measures (Williams, 1988)

Research has found that clients were most satisfied with the quality of physician care and least satisfied with structure- and process-oriented factors such as speed of service, waiting time, inattention by receptionists, inconsistency of assigned physicians, and effective client teaching (Sussman and others, 1967; Cartwright, 1967; Cozer, 1962). In addition, one researcher (Feldman, 1966) reported that clients were dissatisfied with the usefulness of information and advice given.

Consumer evaluation of nursing care is more commonly reported in studies of inpatient nursing services. In settings where patients interact more often and sometimes only with nurses, the overall quality of the institution is judged by the quality of nursing services they receive (Riedel, R.L., and Riedel, D.C., 1979; and Coser, 1956).

ADVANTAGES OF STUDYING EMPLOYEES' ATTITUDES

Various methods have been devised to provide management with an adequate communications channel with employees for the transmission of worker attitudes and opinions. Irwin (1946) listed the following six major benefits of such studies.

1. They can provide measurements of the trends of employee thoughts and knowledge about the company. Thus, they indicate the strengths and weaknesses in the company's programs.
2. They can increase the pride and confidence of employees in their company when the company takes quick action in remedying unsatisfactory conditions discovered during the study.
3. They can stimulate employee suggestions for improvements.
4. They can create better relations with management and workers.

5. They can strengthen programs in which the studies are done.

6. They can produce better working conditions which in turn will create greater efficiency.

After conducting an employee attitude study, Kornhauser (1944) wrote that attitude studies do the following:

1. They give a measure or rating of management's efficiency in personnel matters.

2. Attention is called to specific problems that need attention. Often the employees have specific constructive suggestions to offer.

3. Employees are given an opportunity to feel that the company is really interested in them and their problems.

4. Specific cases can be used to develop better methods of dealing with problems.

Kornhauser also points out that management can derive pertinent information from attitude surveys that pertain to:

1. The general level of employee satisfaction.

2. Comparisons within the organization.

3. Differences in satisfaction among individuals.

4. Attitudes regarding particular matters: the direction of satisfaction or dissatisfaction.

Kolstad (1938) has set up three requirements for an attitude study so that it may be of value to management. The study should provide for:

1. A measure of overall general satisfaction.
2. The opportunity on the part of the employees to express their attitude on a large number of specific points concerning their job or understanding of managerial policies.
3. An evaluation of the specific attitudes and beliefs in terms of correlation with general satisfaction.

HEALTH CARE PROGRAM ELEMENTS

During a conference on occupational safety and health administration in 1982, the elements of a general health care program calculated to be effective in any environment and valid in a multiplicity of actual specific conditions and substances were established (OSHA Conference, 1982). The conference was composed of representatives of labor, management, the medical profession, and federal and state government agencies -- each highly qualified in the area of occupational health. Objectives of the conference were to:

(1) identify through a consensus the essential elements and characteristics which must be present in any effective workplace health care program, and

(2) develop suggested courses of action which amplify these essential elements and characteristics as they apply to various industrial settings.

Members of the conference identified elements and characteristics of an effective occupational health care program that were considered essential. Since, as for any group of this size and varied composition, the relative importance of each item is a subjective evaluation, these elements were presented in decreasing order of the consensus of the various committees of the conference regarding relative importance, though all were considered appropriate and relevant.

It was determined at the conference in 1982 that to be effective an occupational health care program should:

- Have top management and labor commitment to the program: management would endorse and actively support the program, providing the necessary resources. Labor should actively participate in and support the program.
- Contain a hazard anticipation, recognition, evaluation, and abatement plan concerning internal inspections, inventory, complaints, etc.
- Include an active employee training and education plan.
- Be carried out by qualified and competent professionals.
- Contain an active data collection and retrieval system necessary for proper monitoring and assessment of occupational health hazards.
- Provide for access and use of industrial hygiene monitoring.

- Provide for access to and use of medical surveillance data.
- Prescribe emergency procedures that include emergency health care treatment, health promotion, and preventive services. An example would be an employer-sponsored program that addresses positively the health of employees in their work and establishes a relationship between the medical staff and employee.
- Require communications of information about hazards.
- Prescribe specific work practice procedures.
- Require the application of feasible engineering controls.
- Require appropriate facilities and equipment in adequate numbers and of adequate quality.
- Have properly maintained facilities.
- Have all instruments properly calibrated.
- Require the availability of medical care. This would include diagnosis, management, and surveillance of occupational illness or injury. These services can spot early signs of disease and identify conditions that predispose employees to disease.
- Require compliance with existing health standards.

SUMMARY

A review of relevant literature has provided a framework for the research questions posed by providing information on methodologies and procedures of some previous research on employee satisfaction with health care services delivered in areas other than occupational settings. The ratings in the surveys mentioned can mirror the value the corporation places on health and may be considered an indicator of the employees' views of quality of care and service.

CHAPTER 3

METHODS AND PROCEDURES

The primary purpose of this study was to determine employees' level of satisfaction with provided health care services at the Oak Ridge National Laboratory, Oak Ridge, Tennessee. The writer constructed the Health Care Satisfaction Scale which was used to measure employees' level of satisfaction.

Attitude studies must be designed to properly evaluate each individual setting (Remmers, 1954). Such an assessment can identify the scope and magnitude of employees' attitudes with corporate health care. This initial assessment can serve as a baseline measurement to statistically validate the impact, if any, of employees' satisfaction of provided services. The assessment in this study was accomplished by surveying employees on 17 different health care issues. For comparative purposes, employees were asked to supply their age, race, gender, and years of employment at the Laboratory.

STUDY POPULATION AND SAMPLE SELECTION

The population defined for this study included employees visiting the Health Division medical clinic at the Oak Ridge National Laboratory, Oak Ridge,

Tennessee, during the first two weeks of October 1996. After meeting with a Laboratory statistician and reviewing the number of employees at the Laboratory, it was determined that between 350 and 400 employees would be needed for the specified probability to be obtained. The Laboratory Human Resources Division provided data showing a total of 4,364 employees that could potentially be involved in the study. The Laboratory population was comprised of scientists, researchers, engineers, crafts people, secretaries, etc., and were identified as either Caucasian or minority. Of the total, 3,915 were Caucasians (90.29 percent of the total population) and 449 were minorities (9.71 percent of the total population). This number included 3,047 males (69.8 percent of the total population) and 1,317 females (30.2 percent of the total population).

INSTRUMENTATION

Like personality traits, attitudes are hypothetical constructs that, being inaccessible to direct observation, must be inferred from measurable responses. There is virtually no limitation on the kinds of responses that can be considered. Thus, items to measure the construct (employees' satisfaction) were formulated from current theory to ascertain employee satisfaction with provided health care services. The development of the satisfaction scale used to measure employees' attitudes with provided health care began with a literature search based on quality

indicators, satisfaction, and attitudes. When the literature search provided no attitude or satisfaction scale that could be modified for use, input from experts in the field of education and occupational health was obtained to begin the formulation of the one that was used. This input was critical for the validity and reliability of the satisfaction scale that was developed. Because validity refers to the extent to which the instrument (satisfaction scale) would fulfill the purpose for which it was designed, it was imperative for the instrument to be a valid measure. Since the major purpose of the instrument was in its application to empirical data, predictive, content, and construct validity were taken as the major methods of validation. To measure the whole domain in which the principal investigator was interested, the instrument required content validity; it would produce a reasonable sample of responses and attitudes. Another important aspect of the development of the satisfaction scale was construct validity. Since a Likert-type scale was going to be used for 17 of the questions, construct validity was a very important consideration during development of the satisfaction scale. This refers to the extent to which scores on a proposed instrument permits inferences about underlying traits and attitudes. Construct validity established the strength of the relationship between the different observations. To achieve reliability, the scale had suitable wording and was administered in a consistent manner to all employees participating in the study.

The satisfaction scale was developed integrating quality indicators as identified in the literature (Donabedian, 1980a) and input from the Laboratory Health

Division medical director. From the educational field, two professors at the University of Tennessee, Knoxville, who were unbiased, impartial, and void of conflict also provided guidance on the satisfaction scale to be used. The scale consisted of 17 questions that measured employees' satisfaction with provided health care services on a 5-point range. The responses were scored on a scale ranging from 0 (not applicable) and -2 (very dissatisfied) to +2 (very satisfied). Other questions were asked that could have been answered yes or no, fill in the blank, or were open-ended.

To help develop the questions, survey forms dealing with patient or employee satisfaction were obtained from the following organizations: University of Tennessee Medical Center at Knoxville (University...), Baptist Health Systems (NCG Research), Martin Marietta Energy Systems Safety and Health Organization (Martin Marietta...), and DuPont Corporation (DuPont ...).

NCG Research uses a copyrighted questionnaire at Baptist Health Systems and gave permission to use any part of its form for the purpose of student research by citing NCG Research for any references to the survey (Appendix G). All other organizations contacted granted permission to use any or all of their survey questions with no conditions imposed.

After the questions were formulated and the form developed, the completed instrument was reviewed by the Laboratory medical director, the other five physicians employed in the Health Division, and the two professors previously

mentioned at the University of Tennessee. Modifications were made as appropriate and then pilot tested on five randomly selected employees. An explanation of the purpose of the pilot study was given to each of the five participating employees. Those employees were asked to complete the satisfaction scale as if they were completing it for actual use. The cover letter (Appendix C) and instructions for completing the scale (Appendix D) that were to be used during data collection were included in the pilot study. Employees were also asked to enter their starting and ending time at the top of the satisfaction scale. From this, it was determined completion of the scale should take no more than ten minutes of the employees' time. After completing the scale, the five employees were asked to evaluate it for the following:

(1) design,

(2) clarity, and

(3) readability.

First, they were asked to comment on the way the survey form was designed. For clarity, they were asked if they understood all of the questions, and for readability they were asked how easy the form was to read.

The five employees' comments were reviewed and some changes were made. The survey was then given to fifteen additional randomly selected employees who were asked to evaluate it the same way as the first five employees. These employees made very few comments and all agreed the scale should take

no more than ten to fifteen minutes to complete. After minor changes were made, the instrument was returned to the medical director for his review. Upon completion of the review by the medical director, he gave consent to forward the instrument to the University of Tennessee Office of Research for approval. After approval from the University (Appendix A), the instrument was forwarded to the Oak Ridge Associated Universities for approval to use it at the Laboratory. After the Oak Ridge National Laboratory Committee on Human Studies in conjunction with the Oak Ridge Associated Universities reviewed the cover letter, instructions, and the satisfaction scale, the committee provided a letter saying the instrument had been approved (Appendix B).

DATA TABULATION AND STATISTICAL ANALYSIS

After employees had completed and returned the satisfaction scales, tabulation of the data was completed using the statistical programs Microsoft Excel ® (Microsoft Excel User's Guide, 1992) and SAS ® (SAS Reference Guide, 1990). The data obtained by the research questions were analyzed using descriptive statistics (mean, median, mode, standard deviation, and percentages) (Guilford, 1978).

In addition to descriptive statistics, informational data questions were analyzed using the Pearson product-moment correlation coefficient, analysis of

variance (ANOVA) and a t-test. The Pearson product-moment correlation coefficient is a dimensionless index that ranges from -1.0 to 1.0 inclusive and reflects the extent of a linear relationship between two data sets (variables). It was used to assess the statistical significance of the relationship between the independent variables in relation to the dependent variable (attitude score). A significance level of .05 was used to reveal the employees' satisfaction of health care services or their attitudes of specific factors involved in organizational health care. ANOVA is a statistical procedure used for assessing the statistical significance of the relationship between categorical independent variables and a continuous dependent variable. This technique expands on the test for two means, such as the t-test which was also used. A two-sample t-test assuming equal variances was used to determine whether the two samples' means were equal. The subjects were matched on one or more characteristic to determine if there was a difference between the mean of the two groups.

Since data for the study were collected using a sample of convenience, the resulting findings may not be generalizable to all Oak Ridge National Laboratory employees. Rather, the findings may be the catalysis for future research into employee satisfaction with provided health care services.

SUMMARY

A discussion of the steps required to implement this study has been presented in this chapter. The population for the study was defined after the total number of employees that had a potential for being in the study was identified. After presenting how the participants were identified, the following steps were discussed: (1) procedure for obtaining information, (2) scale development, (3) satisfaction scale (pilot study and revision), (4) data collection, (5) data organization, and (6) data tabulation and statistical analysis.

CHAPTER 4

ANALYSIS OF THE DATA

INTRODUCTION

This chapter provides the results of the analysis of data collected in this study. The problem associated with this study was to determine what relationship existed between employees' attitudes about corporate health care services when compared by gender, race, length of employment, payroll status, age, usage, reason for visit, and benefit. The primary purpose of this study was to assess employees' level of satisfaction with provided health care services at the Oak Ridge National Laboratory, Oak Ridge, Tennessee. Following established guidelines, a satisfaction scale was constructed to ascertain employee satisfaction with provided health care services. Input from medical and educational fields was sought before a pilot study was initiated. The initial scale was pilot-tested on five employees for design, clarity, and readability. Following an analysis of the comments provided by these employees, a second pilot-test was administered to 15 additional Laboratory employees.

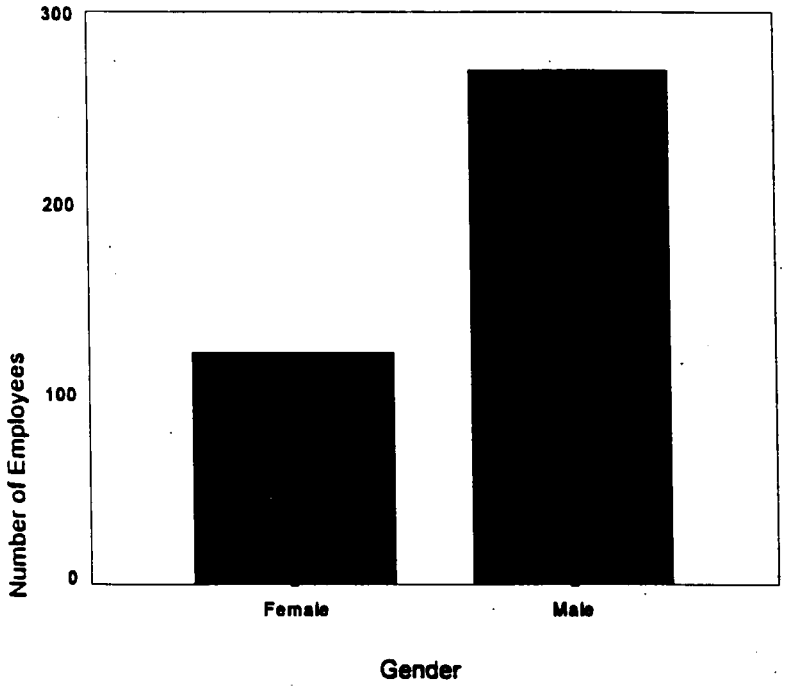
The finalized satisfaction scale was distributed to 500 employees using health care services offered by the Health Division during the first two weeks of October 1996. Of the 500 scales distributed, 405, or 81 percent, were returned. Fifteen of the 405 scales were unusable due to incomplete data and were discarded, leaving 390 usable scales.

With the use of a computer, tabulation of the data began after all the completed satisfaction scales were returned by entering the data into an Excel® spreadsheet. Statistics were used to address the research questions by analyzing the collected data using the SAS® statistical program.

DEMOGRAPHICS

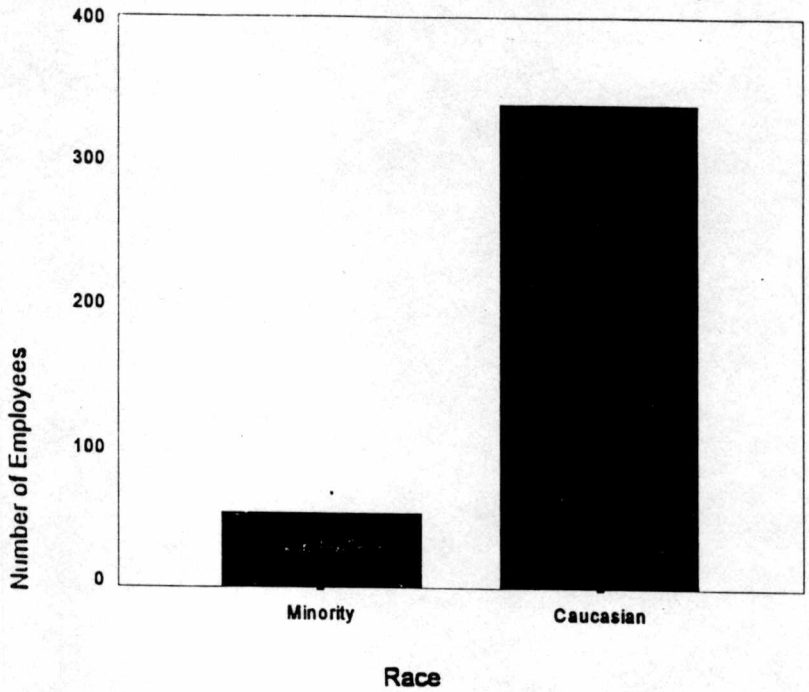
The population for this study was comprised of 4,364 employees (scientists, researchers, engineers, crafts people, secretaries, etc.) who could potentially be involved. This number included 3,047 males (69.8 percent of the total population) and 1,317 females (30.2 percent of the total population); of this total, 449 were minorities (9.71 percent of the total population). The payroll status was categorized into three groups of employees: 822 hourly (19 percent), 977 weekly (22 percent), and 2,565 monthly (59 percent).

The following three figures display demographic data. Figure 3 shows the distribution of the sample according to gender. There were 121 females (31 percent) in the sample and 269 males (69 percent), a ratio of 2.22:1, males to females. This was consistent with the Laboratory male-to-female ratio (.8 percent difference). Figure 4 shows that the number of minority participants in the survey was 52 (13.3 percent), while 338 Caucasians (86.7 percent) participated. There were 3.9 percent more minorities in the sample population than the ratio represented in the overall Laboratory racial mix. Figure 5 shows the breakdown by age group. There were 23 people in the 20-30 year age group, 74 in the 31-40 year age group, 179 in the 41-50 year age group, and 115 in the over-50 age group. Thus, there were more participants middle age and older who participated in the survey than younger people.



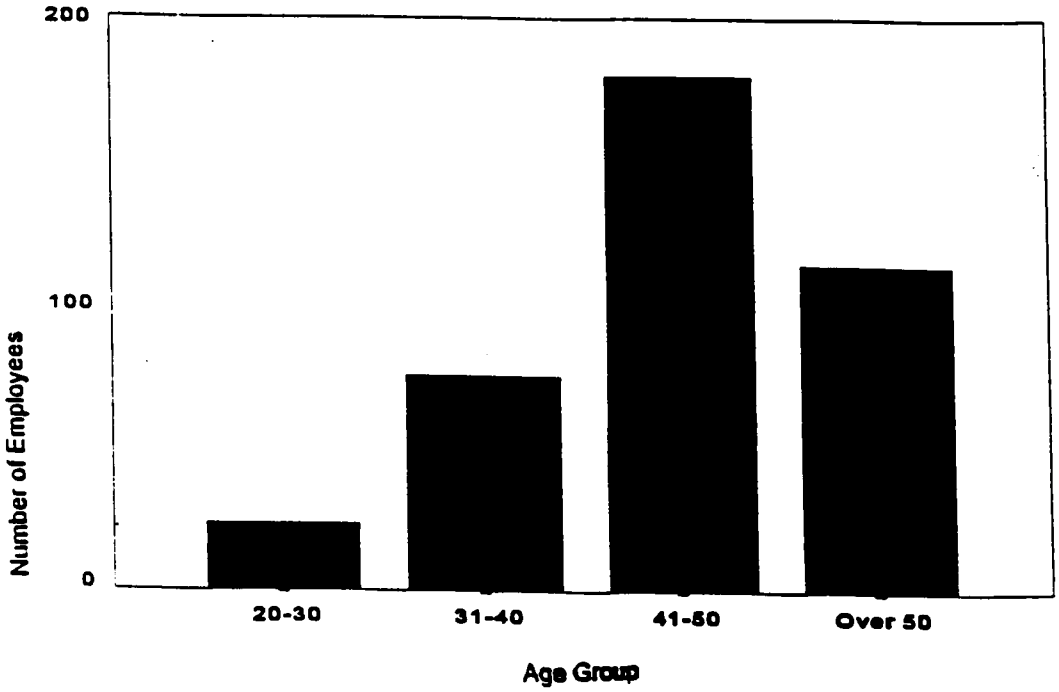
Note: Females = N = 121 (31 percent)
Males = N = 269 (69 percent)

Figure 3. Sample by Gender



Note: Minority = N = 52 (13.3 percent)
Caucasian = N = 338 (86.7 percent)

Figure 4. Sample by Race



Note: 20-30 year age group = N = 23 (6 percent)
31-40 year age group = N = 74 (18 percent)
41-50 year age group = N = 179 (46 percent)
Over 50 year age group = N = 115 (30 percent)

Figure 5. Sample by Age Group

Figure 6 shows that the range of respondents by individual years of employment was from 1 to 38 years. Figure 7 shows the number of respondents in three categories of length of employment, namely 1-5 years (64 participants), 6-15 years (119 participants), and greater than 15 years (207 participants). These three categories were chosen to represent short-, middle-, and long-term employees. The age groups comprised of older employees correspond to the study population by years of employment. Seventy-six percent of the population are over age 40 and 53 percent have been employed at ORNL over 15 years.

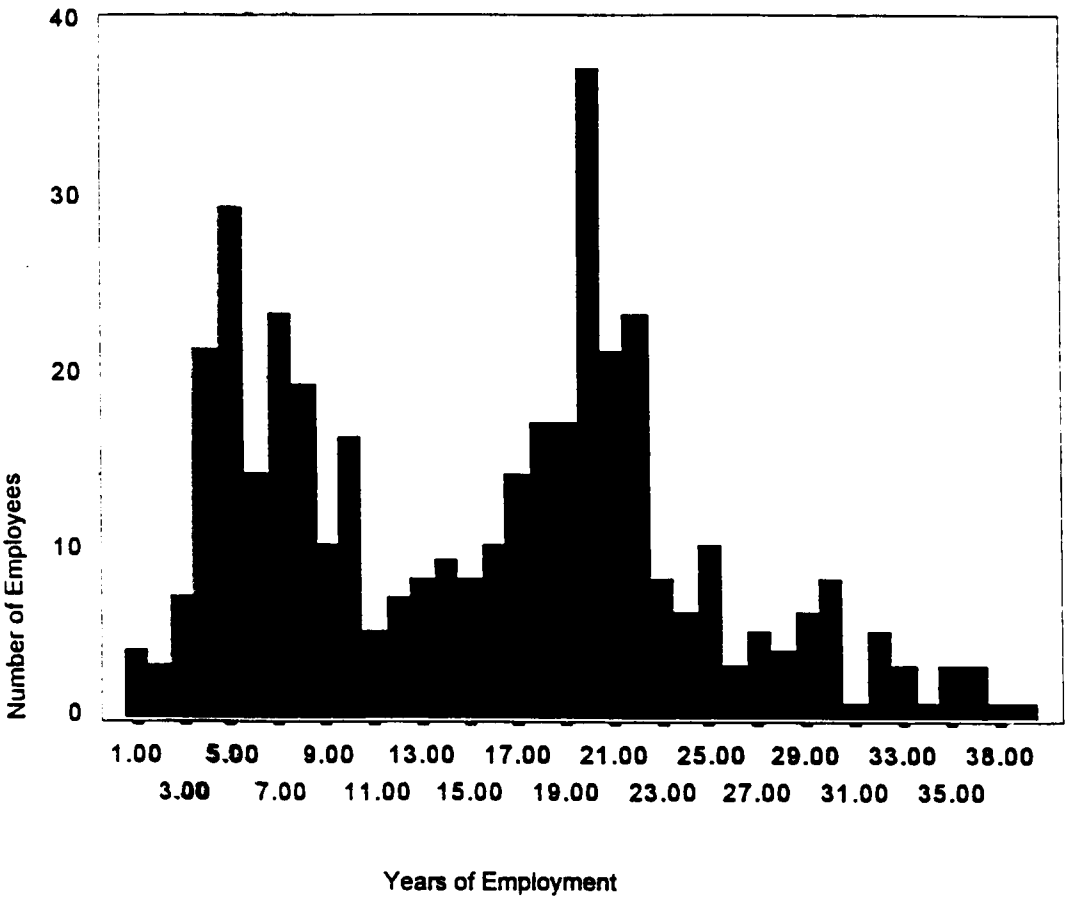
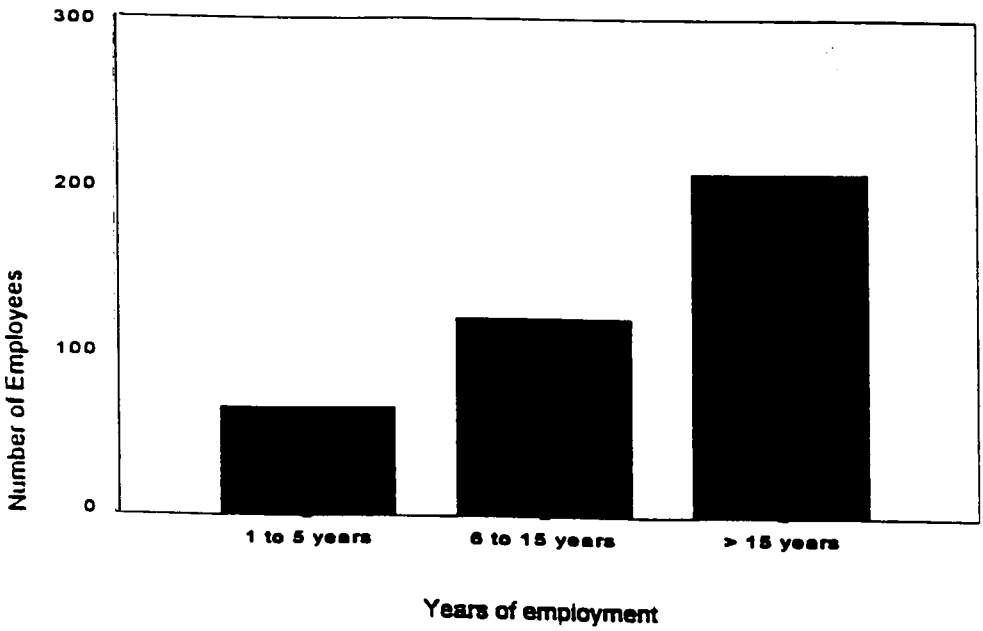


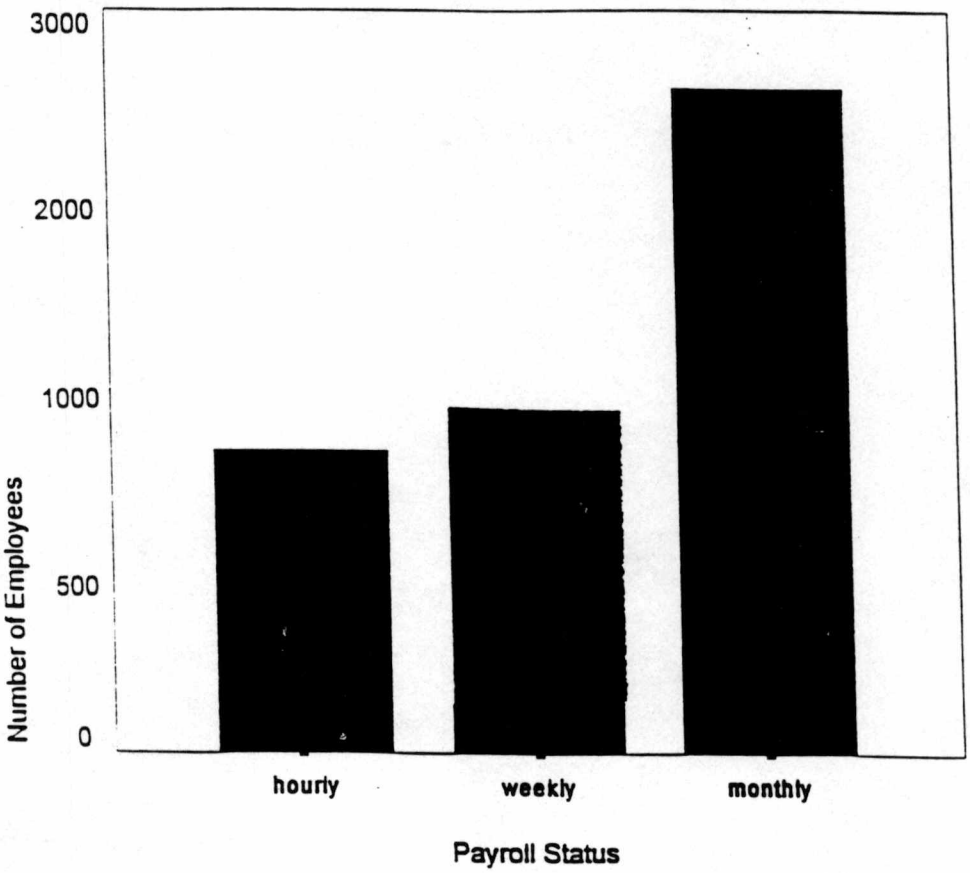
Figure 6. Respondents by Individual Years of Employment



Note: 1-5 years age group = N = 64 (16 percent)
6-15 years age group = N = 119 (31 percent)
>15 years age group = N = 207 (53 percent)

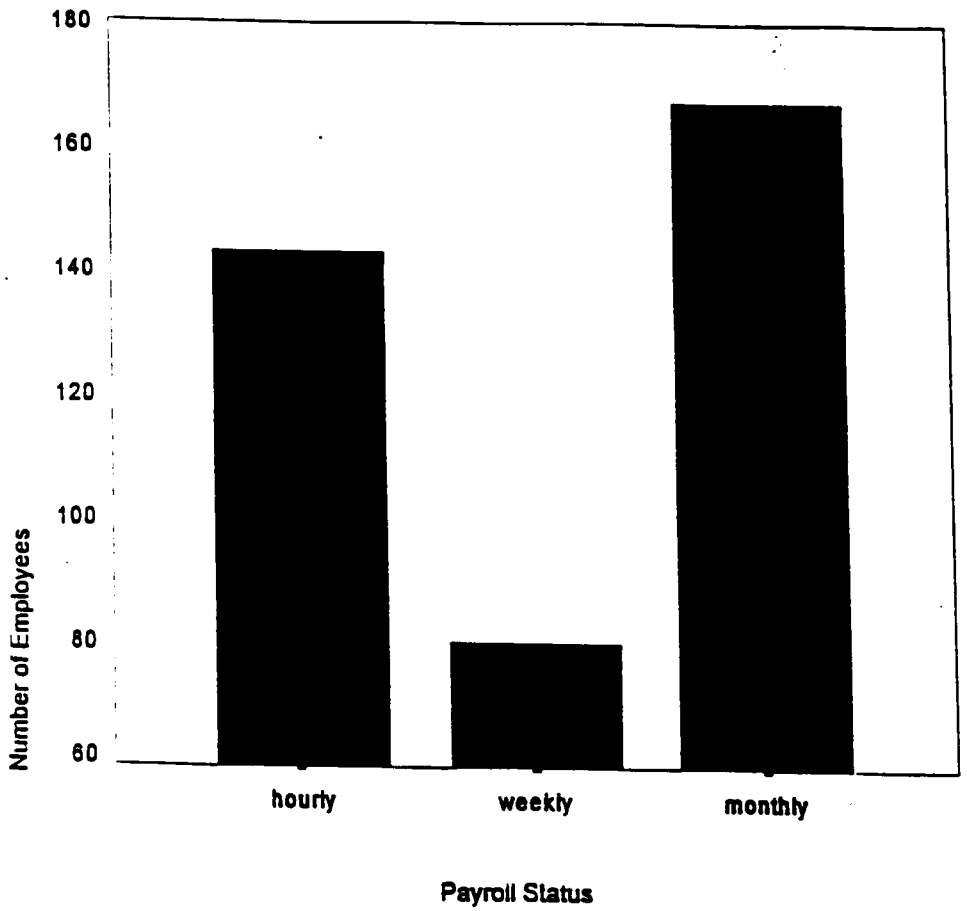
Figure 7. Respondents by Grouped Years of Employment

The final demographic shown in Figures 8 and 9 is the payroll status of the Laboratory and sample population. Payroll (employment) status of respondents consisted of 143 hourly (37 percent), 80 weekly (20 percent), and 167 monthly (43 percent). This does not correspond with the proportions found at the Laboratory as the hourly employees constituted 19 percent of the Laboratory population, while 37 percent of those who visited Health Services were hourly. Thus, the survey was completed mostly by male Caucasians, generally those with at least 16 years of company service who were middle age or older, with the majority divided between hourly and monthly payroll.



Note: Hourly = N = 822 (19 percent)
Weekly = N = 977 (22 percent)
Monthly = N = 2,565 = (59 percent)

Figure 8. Payroll Status of Study



Note: Hourly = N = 143 (37 percent)
Weekly = N = 80 (20 percent)
Monthly = N = 167 (43 percent)

Figure 9. Payroll Status of Sample

ASSESSMENT OF SATISFACTION SCORES

The data provided by the Likert-type scale were combined into two sets of categorical variables; (1) the Health Division structure (health care services provided) and (2) the process (personal treatment extended) by the Health Division. The first seven questions elicited data related to the satisfaction of health care services provided by the Health Division. Questions #8 through #17 elicited data related to the personal treatment extended by Health Division personnel. Questions #18 through #21 elicited data that could be used to determine what relationship existed between employees' attitudes about health care services identified in the first 17 questions when compared by gender, race, length of employment, payroll status, age groups, usage, reason for visit, and benefit. Question #22 allowed employees to express an overall satisfaction level with Health Division services.

OVERALL SATISFACTION SCORES

The following three figures show the distribution of satisfaction scores obtained from the survey forms. Figure 10 shows the overall satisfaction score that came directly from question #24 which asked the respondent how satisfied he or she was with the overall service provided by the Health Division. This question asked the respondents to rate their overall satisfaction on a scale from 1 (least) to 10 (most). Figure 10 also shows that the mode for overall satisfaction was 8, with 9 and 10 the next most frequent responses and nearly equal. The mean was 8.2

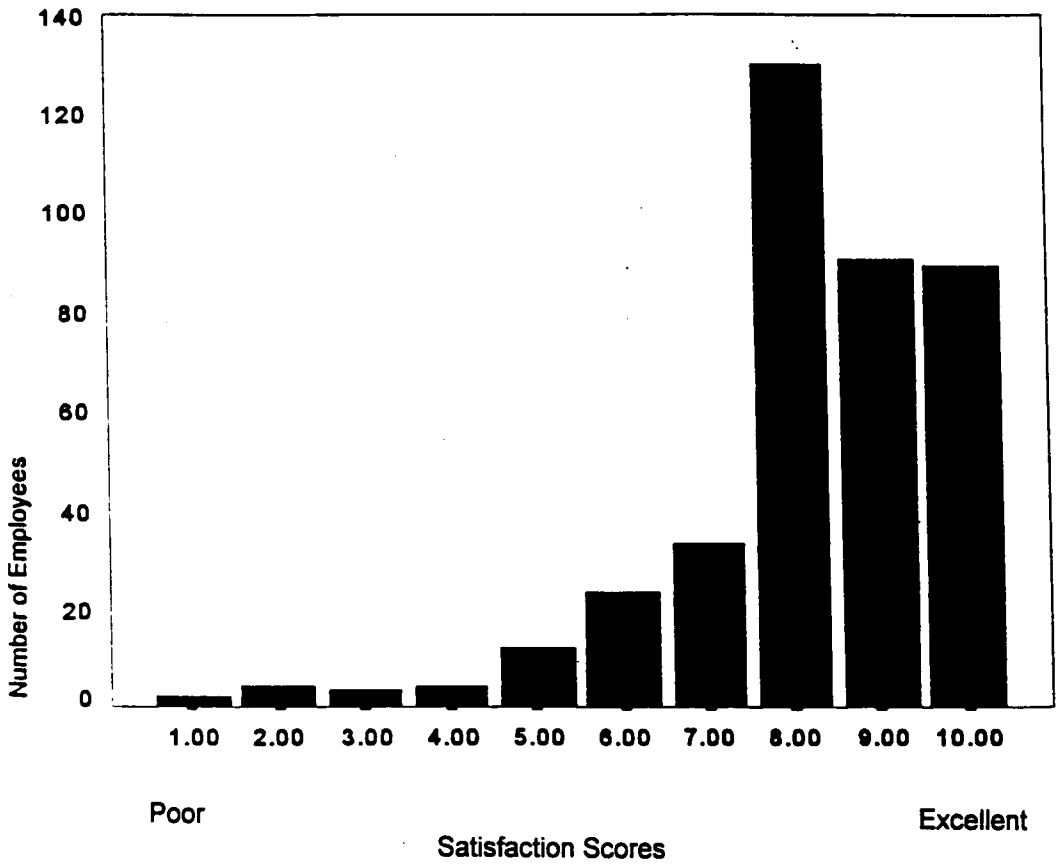


Figure 10. Overall Satisfaction Scores for Services Provided by the ORNL Health Division

with a standard deviation of 1.64. The distribution was skewed to the left with a few respondents giving the lowest overall satisfaction scores.

Race groups (Caucasians and minorities) differed significantly on their scores for overall satisfaction. Caucasians were more satisfied as shown in their mean scores of 8.30 vs. 7.65. There was a difference between age groups on overall satisfaction with the biggest difference between the younger and older groups' means (7.83 vs. 8.55) with the older employees being more satisfied. A lack of statistical significance between the groups comprised of gender, length of employment, payroll status, usage, and reason for visit indicated no great variation of overall satisfaction scores across a wide selection of factors. These different subgroups viewed provided services similarly, and since the average scores were high, they collectively viewed provided services positively.

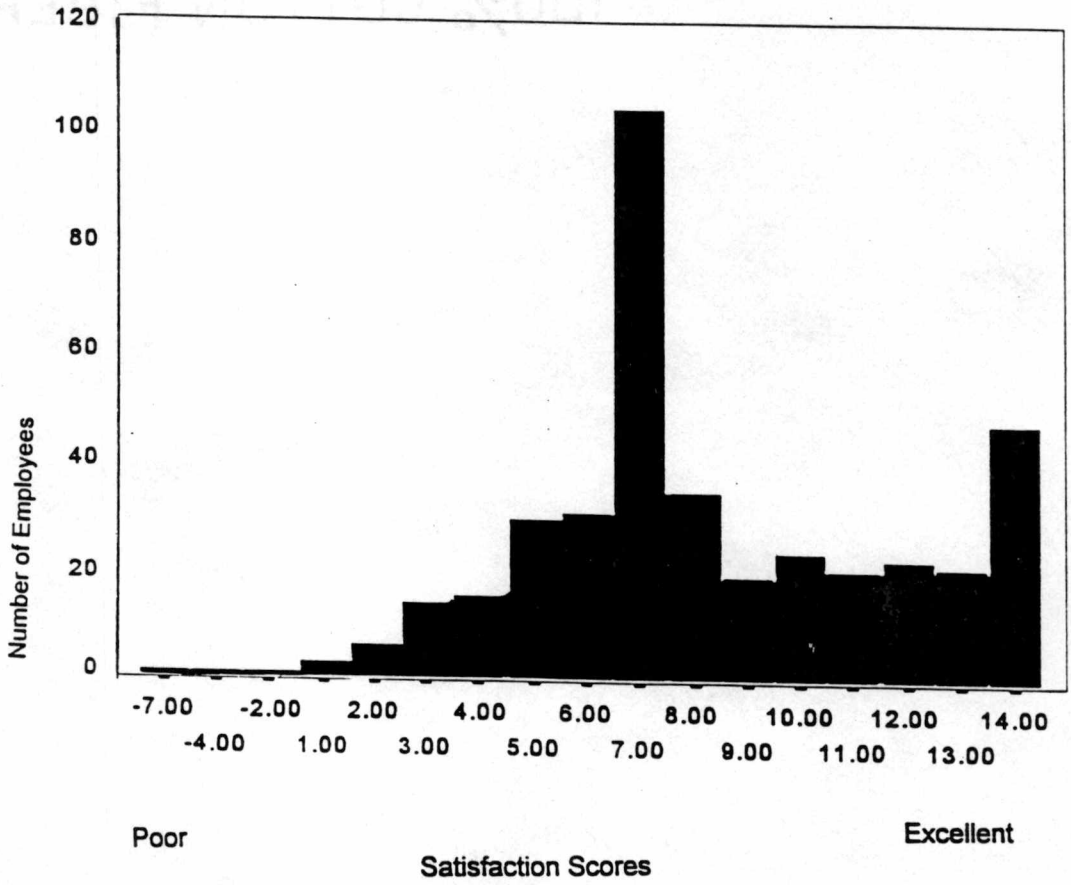
SCORES FOR STRUCTURE

Satisfaction scores were calculated from the first seven questions of the Health Care Satisfaction Scale. The Likert-type scale response positions were coded -2 for very dissatisfied, -1 for dissatisfied, 0 for not applicable, 1 for satisfied, and 2 for very satisfied. A score for structure (services provided) was a composite of the first seven questions. Each of these questions dealt with different health care services provided by the Health Division: (1) physicians, (2) physician assistant, (3) health nurses, (4) optician, (5) X-ray laboratory, (6) blood laboratory, and (7) clerical staff. Thus, the structure score deals specifically with the services provided and how the respondents identified with their satisfaction of these services.

Figure 11 shows the distribution of scores for structure broken out by a satisfaction index for the combined 7 questions, ranging from a possible low of -7 to a high of 14 (the highest possible score). The maximum possible score for structure was 14, with a minimum possible of -7. The mode was 7 and the second highest frequency score was 14. The mean was 8.3 and the standard deviation was 3.9. This indicated total satisfaction with services offered by the Health Division.

SCORES FOR PROCESS

The *process* (personal treatment extended) score is a composite of the questions (#8 through #17) dealing with how respondents felt about the personal care they received. These questions asked about the following personal feelings: (#8) concern for you as a person, (#9) interest shown in your problem, (#10) courtesy, (#11) explanation, (#12) resolution, (#13) way your questions were answered, (#14) quality of care received, (#15) efficiency, (#16) assessment, and (#17) accessibility of health care services offered by the Health Division. Thus, employee satisfaction with personal treatment is synonymous with process. Figure 12 shows the distribution of scores for process or how respondents felt about the way they were treated personally. The maximum possible score for process was 20, with a minimum possible of -20. The mean was 11.5 and the standard deviation was 6.13. The mode was 10 and the next highest frequency score was 20-, again indicating total satisfaction with the process. Although the majority of the scores were positive, some respondents felt that the process was less than perfect, and only a very few scored process as totally unsatisfactory.



Note: Structure is services provided to employees (questions #1 through #7)

Figure 11. Scores for Structure

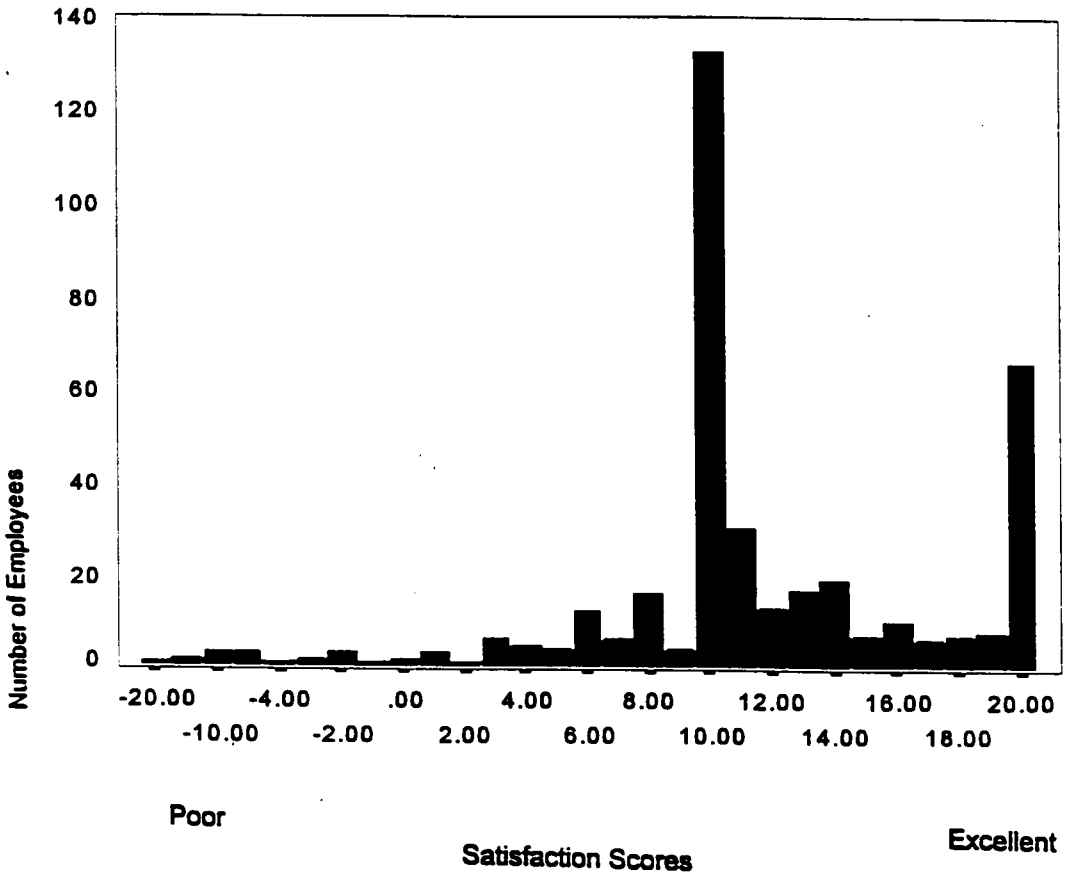
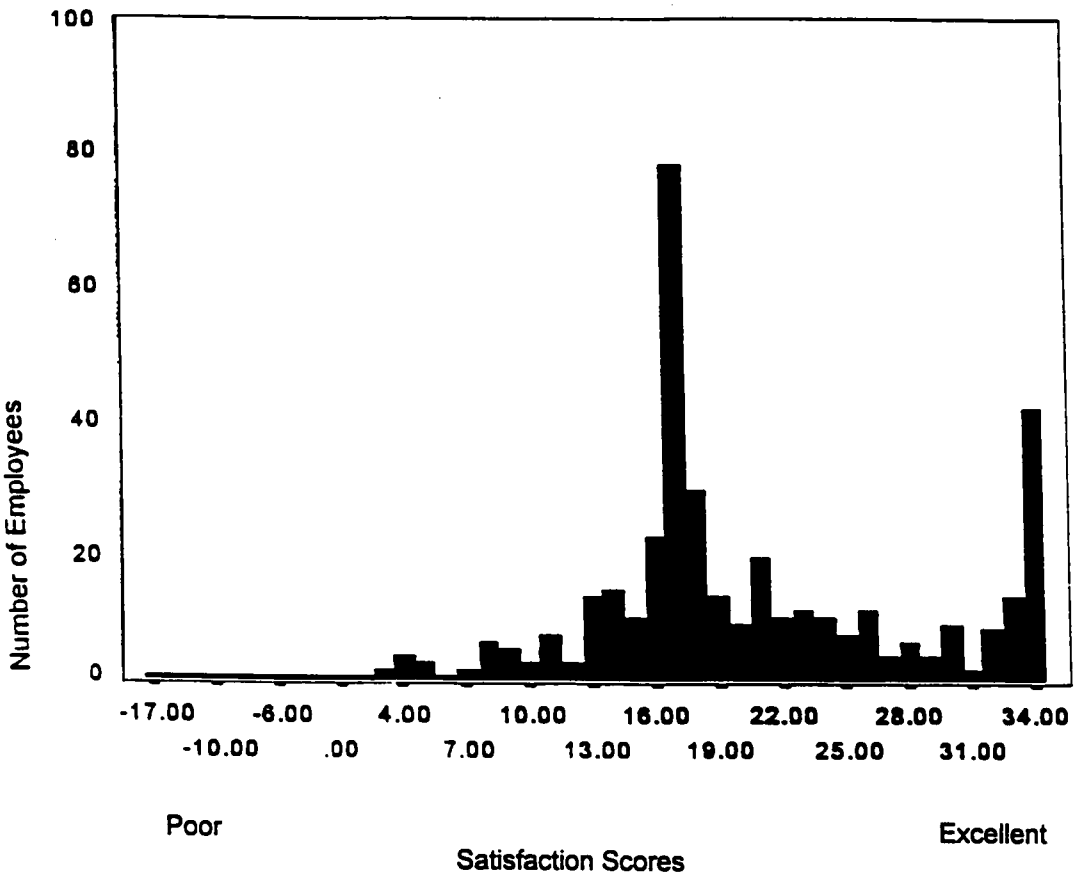


Figure 12. Scores for Process

TOTAL SATISFACTION SCORE

A final satisfaction score was calculated by taking the sum of the process and structure scores; this was called the *total satisfaction score.* The total satisfaction score could vary from -27 (very dissatisfied on every question) to 34 (very satisfied on every question). The possible score of -27 (very dissatisfied on every question) was a combination of the possible low score of -7 for structure and the possible low score of -20 for process. The possible score of 34 (very satisfied on every question) was derived by adding the maximum possible score of 14 for structure with the maximum score of 20 for process.

Figure 13 displays the histogram of scores for total satisfaction. The mode was 17 with the second largest frequency occurring for a score of 34, indicating complete satisfaction for both process and structure. The mean was 19.8 with a standard deviation of 8.89. The lowest score observed was -17 which indicates dissatisfaction but is still a long way from total dissatisfaction which was -34. The total satisfaction score shows most employees were satisfied with the services provided by the Health Division.



Note: Total satisfaction score is the sum of the process and structure scores

Figure 13. Total Satisfaction Score

INDEPENDENT VARIABLES

Next is the breakdown of the scores by the eight independent variables mentioned previously. The focus was to determine if any of the eight variables (race, gender, age group, payroll status, length of employment, use of health services, viewed as a benefit, and reason for visit) had any discriminating effect on the four satisfaction scores (structure, process, total satisfaction, and overall satisfaction). The first five variables are descriptors for the Laboratory population, while the last three describe the users of Health Division services. These variables were used to determine if there were significant differences between minorities and Caucasians on the four satisfaction scores, similarity between sexes, and so on.

ANALYSIS OF VARIANCE

The assumption of equality of variance is violated based on Levene's test. Therefore, an adjusted t-test was performed which accounts for this inequality of variance. The adjusted t-test was not significant. Satterthwaite's approximation (1946) calculates an adjusted pooled variance with adjusted degrees of freedom. The tables that show the analysis of variance give Levene's test which tests for equality of variance (an assumption in the t-test). Due to the sensitivity of Levene's test to non-normality, a significance level of .0001 was chosen as the criteria for deciding the variances not equal. This choice is substantiated by Anderson McClean (1974)

GENDER

Was there a significant difference between the way males and females rate their satisfaction with Health Division services based on the four different scores discussed above? It was previously shown that 269 males and 121 females participated in the survey. Table 1 shows the four scores broken down by gender. Males were slightly more satisfied with both the structure and process than the females. The males also had a higher mean value for total satisfaction.

Table 1. Summary of Satisfaction Scores by Gender

SEX		Score for Process - Personal Treatment	Score for Structure - Services Offered	Total Satisfaction Score	Overall Satisfaction
Females	N	121	121	121	121
	Mean	11.0579	8.1818	19.2397	8.3140
	Std. Deviation	5.5577	3.1091	7.9226	1.4493
	Minimum	-11.00	2.00	-9.00	3.00
	Maximum	20.00	14.00	34.00	10.00
	Range	31.00	12.00	43.00	7.00
Males	N	269	269	269	269
	Mean	11.7026	8.3829	20.0855	8.1710
	Std. Deviation	6.3711	3.6465	9.2983	1.7149
	Minimum	-20.00	-7.00	-17.00	1.00
	Maximum	20.00	14.00	34.00	10.00
	Range	40.00	21.00	51.00	9.00
Total	N	390	390	390	390
	Mean	11.5026	8.3205	19.8231	8.2154
	Std. Deviation	6.1304	3.4859	8.8928	1.6366
	Minimum	-20.00	-7.00	-17.00	1.00
	Maximum	20.00	14.00	34.00	10.00
	Range	40.00	21.00	51.00	9.00

In response to question 24 for overall satisfaction, women had a higher mean score (8.31) than men (8.17). The question is whether these differences are statistically significant, and the answer is given in Table 2, which gives the t-test for equality of means between males and females for each of the four scores. The fifth column in Table 2 contains the significance level or the probability of observing a difference as great as that given by the sample when it is assumed that the true difference is zero. The probabilities are all greater than or equal to .425, indicating that the differences between males and females on the satisfaction scores were not significantly different. Thus, males and females both scored Health Division services equally with regard to overall satisfaction.

RACE

Tables 3 and 4 provide the overall satisfaction score broken down by race. There were 338 Caucasian and 52 minority respondents in the sample. Caucasians gave higher scores for each of the four satisfaction measures. The t-test for equality of means was significant for both the score for structure (that is, services offered) ($p = .030$) and for overall satisfaction ($p = .008$). Thus, for the structure score, a difference as large as what was observed in the sample (mean difference = 1.1242), only 3 times in 100 would be observed. The mean difference between minorities and Caucasians on the overall satisfaction score was 0.648; this would

Table 2. Comparison of Satisfaction Scores by Gender

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Mean	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Score for Process - Personal Treatment	Equal variances assumed	1.559	.213	.961	388	.337	.6448	.6711	-.6747	1.9642
	Equal variances not assumed			1.012	262.694	.313	.6448	.6373	-.6101	1.8996
Score for Structure - Services Offered	Equal variances assumed	4.575	.033	.526	388	.599	.2011	.3819	-.5498	.9520
	Equal variances not assumed			.559	268.424	.577	.2011	.3596	-.5069	.9091
Total Satisfaction Score	Equal variances assumed	1.998	.158	.869	388	.386	.8458	.9737	-1.0686	2.7603
	Equal variances not assumed			.923	268.601	.357	.8458	.9166	-.9588	2.6505
Overall Satisfaction	Equal variances assumed	.402	.526	-.798	388	.425	-.1430	.1792	-.4954	.2093
	Equal variances not assumed			-.850	270.666	.396	-.1430	.1682	-.4742	.1881

Table 3. Summary of Satisfaction Scores by Race

RACE		Score for Process - Personal Treatment	Score for Structure - Services Offered	Total Satisfaction Score	Overall Satisfaction
Minority	N	52	52	52	52
	Mean	10.5000	7.3462	17.8462	7.6538
	Std. Deviation	6.4001	3.9748	9.7224	1.8137
	Minimum	-10.00	-7.00	-17.00	2.00
	Maximum	20.00	14.00	34.00	10.00
	Range	30.00	21.00	51.00	8.00
Caucasian	N	338	338	338	338
	Mean	11.6568	8.4704	20.1272	8.3018
	Std. Deviation	6.0831	3.3862	8.7340	1.5930
	Minimum	-20.00	-4.00	-15.00	1.00
	Maximum	20.00	14.00	34.00	10.00
	Range	40.00	18.00	49.00	9.00
Total	N	390	390	390	390
	Mean	11.5026	8.3205	19.8231	8.2154
	Std. Deviation	6.1304	3.4859	8.8928	1.6366
	Minimum	-20.00	-7.00	-17.00	1.00
	Maximum	20.00	14.00	34.00	10.00
	Range	40.00	21.00	51.00	9.00

Table 4. Comparison of Satisfaction Scores by Race

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Mean	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Score for Process - Personal Treatment	Equal variances assumed	.587	.444	1.268	388	.206	1.1568	.9125	-.6372	2.9508
	Equal variances not assumed			1.221	65.969	.226	1.1568	.9472	-.7344	3.0480
Score for Structure - Services Offered	Equal variances assumed	.000	1.000	2.175	388	.030	1.1243	.5168	.1082	2.1403
	Equal variances not assumed			1.934	62.906	.058	1.1243	.5812	-3.7150E-02	2.2857
Total Satisfaction Score	Equal variances assumed	.060	.807	1.726	388	.085	2.2811	1.3213	-.3168	4.8789
	Equal variances not assumed			1.596	64.300	.115	2.2811	1.4295	-.5744	5.1366
Overall Satisfaction	Equal variances assumed	1.805	.180	2.679	388	.008	.6479	.2419	.1724	1.1235
	Equal variances not assumed			2.436	63.688	.018	.6479	.2660	.1164	1.1794

only occur eight times in 1000 if the true means were equal. Race groups (Caucasians and minorities) differed significantly on their satisfaction scores for structure and for overall satisfaction. Caucasians gave higher mean scores for structure (8.47 vs. 735) and for overall satisfaction (8.30 vs. 7.65).

LENGTH OF EMPLOYMENT

Table 5 presents the overall satisfaction scores by length of employment grouped into 3 categories (1-5 years, 6-15 years, and greater than 15 years). The table shows that those with the longest length of employment had a higher mean satisfaction score for all four measures. Those having 6-15 years of service had a higher mean score than those with 1-5 years employment, except on structure. Thus, in general, those with longer service records gave higher satisfaction scores. Table 6 shows the analysis of variance results for each of the values and indicates there are no statistically significant differences between the mean scores for the three employment groups --- 1-5 years, 6-15 years, and greater than 15 years.

Table 5. Summary of Satisfaction Scores by Grouped Length of Employment

			N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
							Lower Bound	Upper Bound		
Score for Process - Personal Treatment	Length of Employment - Grouped	1 to 5 years	64	10.5313	6.9624	.8703	8.7921	12.2704	-10.00	20.00
		6 to 15 years	119	10.9664	6.0449	.5541	9.8690	12.0637	-20.00	20.00
		> 15 years	207	12.1111	5.8635	.4075	11.3076	12.9146	-11.00	20.00
		Total	390	11.5026	6.1304	.3104	10.8922	12.1129	-20.00	20.00
Score for Structure - Services Offered	Length of Employment - Grouped	1 to 5 years	64	8.3438	3.1382	.3923	7.5599	9.1276	3.00	14.00
		6 to 15 years	119	8.0924	3.2390	.2969	7.5044	8.6804	2.00	14.00
		> 15 years	207	8.4444	3.7255	.2589	7.9339	8.9550	-7.00	14.00
		Total	390	8.3205	3.4859	.1765	7.9735	8.6676	-7.00	14.00
Total Satisfaction Score	Length of Employment - Grouped	1 to 5 years	64	18.8750	9.0878	1.1360	16.6049	21.1451	-7.00	34.00
		6 to 15 years	119	19.0588	8.5928	.7877	17.4990	20.6187	-15.00	34.00
		> 15 years	207	20.5556	8.9792	.6241	19.3251	21.7860	-17.00	34.00
		Total	390	19.8231	8.8928	.4503	18.9377	20.7084	-17.00	34.00
Overall Satisfaction	Length of Employment - Grouped	1 to 5 years	64	8.0313	1.7545	.2193	7.5930	8.4695	2.00	10.00
		6 to 15 years	119	8.1008	1.6229	.1488	7.8062	8.3954	2.00	10.00
		> 15 years	207	8.3382	1.6045	.1115	8.1183	8.5580	1.00	10.00
		Total	390	8.2154	1.6366	8.287E-02	8.0525	8.3783	1.00	10.00

Table 6. Comparison of Satisfaction Scores by Grouped Length of Employment

		Sum of Squares	df	Mean Square	F	Sig.
Score for Process - Personal Treatment	Between Groups	171.250	2	85.625	2.293	.102
	Within Groups	14448.2	387	37.334		
	Total	14619.5	389			
Score for Structure - Services Offered	Between Groups	9.404	2	4.702	.386	.680
	Within Groups	4717.532	387	12.190		
	Total	4726.936	389			
Total Satisfaction Score	Between Groups	238.093	2	119.046	1.509	.222
	Within Groups	30524.7	387	78.875		
	Total	30762.8	389			
Overall Satisfaction	Between Groups	6.852	2	3.426	1.281	.279
	Within Groups	1035.056	387	2.675		
	Total	1041.908	389			

PAYROLL STATUS

Table 7 presents the overall satisfaction scores by payroll status (hourly, weekly, and monthly). The weekly group gave higher satisfaction ratings on each of the four previously identified satisfaction measures, with the hourly and monthly groups giving nearly equal ratings on each of the measures. Table 8 shows the analysis of variance results among the three groups on each of the four measures and shows that there are no statistically significant differences between the mean scores. These groups have nearly equal mean scores on each of the measures and are especially close on the overall satisfaction score (question #24).

Table 7. Summary of Satisfaction Scores by Payroll Status

			N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
							Lower Bound	Upper Bound		
Score for Process - Personal Treatment	Payroll Status	hourly	143	11.3007	6.3568	.5316	10.2499	12.3515	-11.00	20.00
		weekly	80	12.2500	5.4203	.6060	11.0438	13.4562	-3.00	20.00
		monthly	167	11.3174	6.2595	.4844	10.3610	12.2737	-20.00	20.00
		Total	390	11.5026	6.1304	.3104	10.8922	12.1129	-20.00	20.00
Score for Structure - Services Offered	Payroll Status	hourly	143	8.1608	3.4245	.2864	7.5947	8.7269	-4.00	14.00
		weekly	80	8.9625	3.2509	.3635	8.2391	9.6859	2.00	14.00
		monthly	167	8.1497	3.6283	.2808	7.5954	8.7040	-7.00	14.00
		Total	390	8.3205	3.4859	.1765	7.9735	8.6676	-7.00	14.00
Total Satisfaction Score	Payroll Status	hourly	143	19.4615	9.0022	.7528	17.9734	20.9497	-12.00	34.00
		weekly	80	21.2125	8.0594	.9011	19.4190	23.0060	1.00	34.00
		monthly	167	19.4671	9.1604	.7089	18.0675	20.8666	-17.00	34.00
		Total	390	19.8231	8.8928	.4503	18.9377	20.7084	-17.00	34.00
Overall Satisfaction	Payroll Status	hourly	143	8.1538	1.8050	.1509	7.8555	8.4522	1.00	10.00
		weekly	80	8.2750	1.8959	.2120	7.8531	8.6969	1.00	10.00
		monthly	167	8.2395	1.3318	.1031	8.0361	8.4430	2.00	10.00
		Total	390	8.2154	1.6366	8.287E-02	8.0525	8.3783	1.00	10.00

Table 8. Comparison of Satisfaction Scores by Payroll Status

		Sum of Squares	df	Mean Square	F	Sig.
Score for Process - Personal Treatment	Between Groups	56.248	2	28.124	.747	.474
	Within Groups	14563.2	387	37.631		
	Total	14619.5	389			
Score for Structure - Services Offered	Between Groups	41.490	2	20.745	1.713	.182
	Within Groups	4685.446	387	12.107		
	Total	4726.936	389			
Total Satisfaction Score	Between Groups	194.297	2	97.149	1.230	.293
	Within Groups	30568.5	387	78.988		
	Total	30762.8	389			
Overall Satisfaction	Between Groups	.923	2	.462	.172	.842
	Within Groups	1040.985	387	2.690		
	Total	1041.908	389			

AGE GROUPS

Table 9 shows the satisfaction scores for each of the four age groups (20-30, 31-40, 41-50, and over 50). The mean scores of the lowest age group were the highest for structure, process, and total satisfaction scores, with the next highest mean scores coming from the oldest age group. The middle two age groups were nearly equal in their mean scores, with the 31-40 age group rating process lower than the 41-50 age group, but the reverse was true for the structure score. Table 10, an analysis-of-variance table, shows no significant difference in satisfaction scores by age groups for each of the four values. The p value for the comparison between the age groups on overall satisfaction is .054 (marginally close to being significant assuming the usual .05 level for statistical significance).

For overall satisfaction, the youngest age group gave the lowest satisfaction score and the mean values increased with the age groups (that is, as the age groups got older, the satisfaction mean values increased). There was an inconsistency among the youngest age groups -- with high satisfaction scores on process, structure, and total satisfaction, but with the lowest scores on overall satisfaction.

Table 9. Summary of Satisfaction Scores by Age Groups

			N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
							Lower Bound	Upper Bound		
Score for Process - Personal Treatment	AGE_GRP	20-30	23	13.3043	4.8844	1.0185	11.1922	15.4165	5.00	20.00
		31-40	74	10.8243	6.1918	.7198	9.3898	12.2589	-10.00	20.00
		41-50	179	11.4804	6.2767	.4691	10.5546	12.4062	-11.00	20.00
		> 50	114	11.6140	6.0770	.5692	10.4864	12.7416	-20.00	20.00
		Total	390	11.5026	6.1304	.3104	10.8922	12.1129	-20.00	20.00
Score for Structure - Services Offered	AGE_GRP	20-30	23	9.3478	3.1131	.6491	8.0016	10.6941	3.00	14.00
		31-40	74	8.1892	3.2800	.3813	7.4293	8.9491	2.00	14.00
		41-50	179	8.1397	3.7578	.2809	7.5854	8.6939	-7.00	14.00
		> 50	114	8.4825	3.2321	.3027	7.8827	9.0822	2.00	14.00
		Total	390	8.3205	3.4859	.1765	7.9735	8.6676	-7.00	14.00
Total Satisfaction Score	AGE_GRP	20-30	23	22.6522	7.8486	1.6365	19.2582	26.0462	8.00	34.00
		31-40	74	19.0135	8.5904	.9986	17.0233	21.0037	-7.00	34.00
		41-50	179	19.6201	9.3653	.7000	18.2388	21.0015	-17.00	34.00
		> 50	114	20.0965	8.4978	.7959	18.5197	21.6733	-15.00	34.00
		Total	390	19.8231	8.8928	.4503	18.9377	20.7084	-17.00	34.00
Overall Satisfaction	AGE_GRP	20-30	23	7.8261	1.2668	.2641	7.2783	8.3739	5.00	10.00
		31-40	74	8.0270	1.5258	.1774	7.6735	8.3805	2.00	10.00
		41-50	179	8.1285	1.7224	.1287	7.8744	8.3825	1.00	10.00
		> 50	114	8.5526	1.5970	.1496	8.2563	8.8490	1.00	10.00
		Total	390	8.2154	1.6366	8.287E-02	8.0525	8.3783	1.00	10.00

Table 10. Comparison of Satisfaction Scores by Age Groups

		Sum of Squares	df	Mean Square	F	Sig.
Score for Process - Personal Treatment	Between Groups	110.213	3	36.738	.977	.403
	Within Groups	14509.3	386	37.589		
	Total	14619.5	389			
Score for Structure - Services Offered	Between Groups	34.394	3	11.465	.943	.420
	Within Groups	4692.542	386	12.157		
	Total	4726.936	389			
Total Satisfaction Score	Between Groups	248.482	3	82.827	1.048	.371
	Within Groups	30514.3	386	79.053		
	Total	30762.8	389			
Overall Satisfaction	Between Groups	20.428	3	6.809	2.573	.054
	Within Groups	1021.479	386	2.646		
	Total	1041.908	389			

USAGE

The number of times a respondent visited the Health Division in the past year was categorized into 0, 1, 2, 3, 4, 5-9, 10-19, 20-49, and 50 or more visits. These categories were chosen to balance the number of respondents in each category. This categorized variable was called usage. Table 11 shows the four satisfaction measures broken down by usage categories. Employees in the groups using Health Division services either 4 times or 20-49 times in the past year gave the highest satisfaction ratings. Those visiting the most (more than 50 times) gave the lowest ratings on structure (services offered), while those visiting 5-9 times last year gave the lowest ratings on process (personal treatment). Table 12 contains the results of the analysis of variance, and these results indicate no statistically significant differences between the groups on any of the four satisfaction measures.

REASON FOR VISIT

There were seven primary reasons for a respondent to visit the Health Division: (1) physical examination, (2) allergy shots, (3) other, (4) return to work, (5) work-related injury, (6) illness, and (7) off-the-job injury. The satisfaction scores broken down by reasons for visit are given in Table 13. Respondents who visited due to physical examination, allergy shots, other, and off-the-job injury gave higher ratings on satisfaction scores. Low satisfaction scores came from (1) returning to work, (2) work-related-injury, and (3) illness groups.

Table 11. Summary of Satisfaction Scores by Usage

			N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
							Lower Bound	Upper Bound		
Score for Process - Personal Treatment	USAGE	0	24	12.0417	4.4083	.8998	10.1802	13.9031	3.00	20.00
		1	37	10.8649	7.4691	1.2279	8.3746	13.3552	-11.00	20.00
		2	59	10.8644	7.4289	.9672	8.9284	12.8004	-20.00	20.00
		3	61	11.3607	5.5348	.7087	9.9431	12.7782	-10.00	20.00
		4	38	12.7368	5.1396	.8338	11.0475	14.4262	-2.00	20.00
		5-9	52	10.3077	7.7802	1.0789	8.1417	12.4737	-11.00	20.00
		10-19	35	11.8857	5.9050	.9981	9.8573	13.9141	.00	20.00
		20-49	44	13.4091	4.7118	.7103	11.9766	14.8416	3.00	20.00
		50 or more	40	10.8750	3.7906	.5993	9.6627	12.0873	5.00	20.00
		Total	390	11.5026	6.1304	.3104	10.8922	12.1129	-20.00	20.00
Score for Structure - Services Offered	USAGE	0	24	8.5833	3.1611	.6453	7.2485	9.9182	4.00	14.00
		1	37	8.0811	3.7887	.6229	6.8179	9.3443	2.00	14.00
		2	59	8.4576	3.3287	.4334	7.5902	9.3251	3.00	14.00
		3	61	7.8525	3.2600	.4174	7.0175	8.6874	1.00	14.00
		4	38	8.5000	3.3591	.5449	7.3959	9.6041	1.00	14.00
		5-9	52	8.1346	4.2887	.5947	6.9406	9.3286	-7.00	14.00
		10-19	35	8.5143	3.4160	.5774	7.3409	9.6877	2.00	14.00
		20-49	44	9.5682	3.0606	.4614	8.6377	10.4987	4.00	14.00
		50 or more	40	7.4250	3.2886	.5200	6.3733	8.4767	-2.00	14.00
		Total	390	8.3205	3.4859	.1765	7.9735	8.6676	-7.00	14.00
Total Satisfaction Score	USAGE	0	24	20.6250	7.2401	1.4779	17.5678	23.6822	9.00	34.00
		1	37	18.9459	10.7392	1.7655	15.3653	22.5266	-9.00	34.00
		2	59	19.3220	9.7582	1.2704	16.7790	21.8650	-15.00	34.00
		3	61	19.2131	8.0210	1.0270	17.1588	21.2674	-7.00	34.00
		4	38	21.2368	7.4523	1.2089	18.7873	23.6864	4.00	34.00
		5-9	52	18.4423	11.4642	1.5898	15.2507	21.6340	-17.00	34.00
		10-19	35	20.4000	8.8855	1.5019	17.3477	23.4523	4.00	34.00
		20-49	44	22.9773	7.1055	1.0712	20.8170	25.1375	13.00	34.00
		50 or more	40	18.3000	6.4259	1.0160	16.2449	20.3551	6.00	34.00
		Total	390	19.8231	8.8928	.4503	18.9377	20.7084	-17.00	34.00
Overall Satisfaction	USAGE	0	24	7.6667	2.1400	.4368	6.7630	8.5703	3.00	10.00
		1	37	7.8649	1.5840	.2604	7.3367	8.3930	2.00	10.00
		2	59	8.0000	1.6505	.2149	7.5699	8.4301	2.00	10.00
		3	61	8.1311	1.6581	.2123	7.7065	8.5558	2.00	10.00
		4	38	8.5263	1.2245	.1986	8.1238	8.9288	5.00	10.00
		5-9	52	8.4038	1.5372	.2132	7.9759	8.8318	1.00	10.00
		10-19	35	8.1714	2.0362	.3442	7.4720	8.8709	1.00	10.00
		20-49	44	8.3636	1.7665	.2663	7.8266	8.9007	4.00	10.00
		50 or more	40	8.6500	1.0513	.1662	8.3138	8.9862	6.00	10.00
		Total	390	8.2154	1.6366	8.287E-02	8.0525	8.3783	1.00	10.00

Table 12. Comparison of Satisfaction Scores by Usage

		Sum of Squares	df	Mean Square	F	Sig.
Score for Process - Personal Treatment	Between Groups	360.234	8	45.029	1.203	.296
	Within Groups	14259.3	381	37.426		
	Total	14619.5	389			
Overall Satisfaction	Between Groups	29.053	8	3.632	1.366	.210
	Within Groups	1012.855	381	2.658		
	Total	1041.908	389			
Score for Structure - Services Offered	Between Groups	123.159	8	15.395	1.274	.256
	Within Groups	4603.777	381	12.083		
	Total	4726.936	389			
Total Satisfaction Score	Between Groups	798.692	8	99.836	1.269	.258
	Within Groups	29964.1	381	78.646		
	Total	30762.8	389			

Table 13. Summary of Satisfaction Scores by Reason for Visit

		Sum of Squares	df	Mean Square	F	Sig.
Score for Process - Personal Treatment	Between Groups	396.946	6	66.158	1.782	.102
	Within Groups	14222.6	383	37.135		
	Total	14619.5	389			
Score for Structure - Services Offered	Between Groups	53.743	6	8.957	.734	.622
	Within Groups	4673.193	383	12.202		
	Total	4726.936	389			
Total Satisfaction Score	Between Groups	538.753	6	89.792	1.138	.340
	Within Groups	30224.0	383	78.914		
	Total	30762.8	389			
Overall Satisfaction	Between Groups	21.941	6	3.657	1.373	.224
	Within Groups	1019.966	383	2.663		
	Total	1041.908	389			

Table 14 contains the results of the analysis of variance which indicate that there is no significant difference between the groups formed by the different reasons for visiting the Health Division. The process score for the group formed by work-related injury shows a significantly lower satisfaction score than that given by the groups formed by physical examination, allergy shots, other, and off-the-job injury. The same comparison was made for overall satisfaction, and again the work-related-injury group gave lower satisfaction scores than did those in all other groups.

FRINGE BENEFIT

Respondents were asked whether they viewed Health Division services as a fringe benefit (yes or no). Table 15 provides the satisfaction measures broken down by benefit. The vast majority of respondents viewed Health Division services as being a benefit, while only 25 respondents did not. The only measure that the two groups differed on significantly was overall satisfaction ($p = .003$) where those who viewed Health Division services as a benefit gave higher scores for overall satisfaction. Table 16 shows that those who did not view Health Division services as a benefit gave higher satisfaction scores on structure (services offered), which is a contradiction.

Table 14. Comparison of Satisfaction Scores by Reason for Visit

			N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
							Lower Bound	Upper Bound		
Score for Process - Personal Treatment	REASON	Physical	164	11.7256	5.9901	.4677	10.8020	12.6492	-11.00	20.00
		Allergy Shots	75	12.0000	4.7477	.5482	10.9077	13.0923	3.00	20.00
		Other	77	12.0779	5.6002	.6382	10.8068	13.3490	-2.00	20.00
		Return to Work	10	9.2000	7.2541	2.2940	4.0107	14.3893	-8.00	19.00
		Work Related Injury	18	8.4444	10.2969	2.4270	3.3239	13.5650	-20.00	20.00
		Illness	41	10.1463	6.9913	1.0919	7.9396	12.3531	-10.00	20.00
		Off the Job Injury	5	14.6000	4.7749	2.1354	8.6712	20.5288	10.00	20.00
		Total	390	11.5026	6.1304	.3104	10.8922	12.1129	-20.00	20.00
Score for Structure - Services Offered	REASON	Physical	164	8.4451	3.3694	.2631	7.9256	8.9647	1.00	14.00
		Allergy Shots	75	8.3867	3.4363	.3968	7.5961	9.1773	-2.00	14.00
		Other	77	8.3506	3.5197	.4011	7.5518	9.1495	1.00	14.00
		Return to Work	10	6.4000	4.8580	1.5362	2.9248	9.8752	-4.00	14.00
		Work Related Injury	18	8.8889	2.8261	.6661	7.4835	10.2943	5.00	14.00
		Illness	41	7.8780	3.8288	.5980	6.6695	9.0866	-7.00	14.00
		Off the Job Injury	5	8.2000	4.2661	1.9079	2.9030	13.4970	4.00	13.00
		Total	390	8.3205	3.4859	.1765	7.9735	8.6676	-7.00	14.00
Total Satisfaction Score	REASON	Physical	164	20.1707	8.7239	.6812	18.8258	21.5159	-10.00	34.00
		Allergy Shots	75	20.3867	7.4777	.8635	18.6662	22.1071	6.00	34.00
		Other	77	20.4286	8.2899	.9447	18.5470	22.3101	4.00	34.00
		Return to Work	10	15.6000	12.0204	3.8012	7.0012	24.1988	-12.00	33.00
		Work Related Injury	18	17.3333	12.1559	2.8652	11.2884	23.3783	-15.00	34.00
		Illness	41	18.0244	10.3911	1.6228	14.7446	21.3042	-17.00	34.00
		Off the Job Injury	5	22.8000	9.0388	4.0423	11.5770	34.0230	14.00	33.00
		Total	390	19.8231	8.8928	.4503	18.9377	20.7084	-17.00	34.00
Overall Satisfaction	REASON	Physical	164	8.0793	1.6762	.1309	7.8208	8.3377	1.00	10.00
		Allergy Shots	75	8.4933	1.3791	.1592	8.1760	8.8106	4.00	10.00
		Other	77	8.4156	1.4082	.1605	8.0960	8.7352	3.00	10.00
		Return to Work	10	8.0000	1.5635	.4944	6.8816	9.1184	5.00	10.00
		Work Related Injury	18	7.5000	2.7279	.6430	6.1435	8.8565	1.00	10.00
		Illness	41	8.2683	1.7033	.2660	7.7307	8.8059	2.00	10.00
		Off the Job Injury	5	8.0000	1.2247	.5477	6.4793	9.5207	7.00	10.00
		Total	390	8.2154	1.6366	8.287E-02	8.0525	8.3783	1.00	10.00

Table 15. Summary of Satisfaction Scores by Benefit

BENEFIT		Score for Process - Personal Treatment	Score for Structure - Services Offered	Total Satisfaction Score	Overall Satisfaction
No	N	25	25	25	25
	Mean	11.0800	8.6400	19.7200	7.2800
	Std. Deviation	6.4802	3.5105	9.4935	2.5252
	Minimum	-11.00	1.00	-10.00	1.00
	Maximum	20.00	14.00	33.00	10.00
	Range	31.00	13.00	43.00	9.00
Yes	N	365	365	365	365
	Mean	11.5315	8.2986	19.8301	8.2795
	Std. Deviation	6.1140	3.4880	8.8640	1.5420
	Minimum	-20.00	-7.00	-17.00	2.00
	Maximum	20.00	14.00	34.00	10.00
	Range	40.00	21.00	51.00	8.00
Total	N	390	390	390	390
	Mean	11.5026	8.3205	19.8231	8.2154
	Std. Deviation	6.1304	3.4859	8.8928	1.6366
	Minimum	-20.00	-7.00	-17.00	1.00
	Maximum	20.00	14.00	34.00	10.00
	Range	40.00	21.00	51.00	9.00

Table 16. Comparison of Satisfaction Scores by Benefit

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Mean	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Score for Process - Personal Treatment	Equal variances assumed	.000	.987	-.356	388	.722	-.4515	1.2688	-2.9461	2.0431
	Equal variances not assumed			-.338	27.009	.738	-.4515	1.3350	-3.1906	2.2876
Score for Structure - Services Offered	Equal variances assumed	.239	.626	.473	388	.636	.3414	.7214	-1.0769	1.7597
	Equal variances not assumed			.471	27.347	.642	.3414	.7254	-1.1462	1.8290
Total Satisfaction Score	Equal variances assumed	.029	.864	-.060	388	.952	-.1101	1.8408	-3.7294	3.5091
	Equal variances not assumed			-.056	26.945	.955	-.1101	1.9546	-4.1210	3.9007
Overall Satisfaction	Equal variances assumed	10.166	.002	-2.984	388	.003	-.9995	.3350	-1.6580	-.3409
	Equal variances not assumed			-1.954	25.240	.062	-.9995	.5114	-2.0523	5.339E-02

CORRELATION OF SATISFACTION MEASURES

Table 17 shows the Pearson correlation results for the four satisfaction measures (overall satisfaction, process, structure, and total satisfaction). Since the total satisfaction score is the sum of the process and structure scores, a high correlation between these measures was to be expected. The overall satisfaction score was correlated significantly (statistically) with the process score, but not with the structure score. This indicates that employee's highest overall satisfaction with Health Division services was not with actual health care services provided, but with personal treatment the employee received while at the Health Division.

Table 17. Correlation of Satisfaction Measures

		Overall Satisfaction	Score for Process - Personal Treatment	Score for Structure - Services Offered	Total Satisfaction Score
Pearson Correlation	Overall Satisfaction	1.000	.203****	.085	.173***
	Score for Process Personal Treatment	.203****	1.000	.687****	.959****
	Score for Structure - Services Offered	.085	.687****	1.000	.865****
	Total Satisfaction Score	.173***	.959****	.865****	1.000

** Correlation is significant at the 0.01 level (2-tailed)
*** Correlation is significant at the .001 level (2-tailed)
**** Correlation is significant at the .0001 level (2-tailed)
Sample sizes for correlation estimates are 390

SUMMARY OF DATA ANALYSIS

In summary, this chapter provided an analysis of the data collected in this study. The data were collected from 390 employees using provided health care services during a designated two-week period. All employees using Health Division services during the selected time frame were given an opportunity to participate in the study. To answer the five research question formulated for this study, employees' attitudes about Health Division services were compared by the following eight categories: gender, race, length of employment, payroll status, age, usage, reason for visit, and benefit.

Tabulation of the descriptive statistics data was completed using statistical programs designed to analyze this type data, while the informational data questions were analyzed using the Pearson product-moment correlation coefficient, analysis of variance (ANOVA), and a t-test. In the following chapter, the researcher's findings, conclusions, and recommendations are outlined as they relate to the information and analysis presented in this chapter.

CHAPTER 5

SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

SUMMARY

This research was undertaken for the purpose of assessing employees' level of satisfaction with provided health care services at the Oak Ridge National Laboratory, Oak Ridge, Tennessee. The problem associated with the purpose of this study was to determine what relationship existed between employees' satisfaction about provided health care services when compared by gender, race, length of employment, payroll status, age, usage, reason for visit, and benefit.

FINDINGS

The following findings are based upon an analysis of the data presented in Chapter 4 per the respective research questions:

Question #1

What were employees' overall satisfaction levels toward health care services provided during the past 12 months when compared by groupings of gender, race,

length of employment, payroll status, age, usage, reason for visit, and benefit?

Question #1 Findings

1. There was no significant difference between males and females for overall satisfaction of provided health care services.
2. Race groups (Caucasians and minorities) differed significantly on overall satisfaction at the .05 level with Caucasians more satisfied overall than minorities.
3. There was no significant difference for overall satisfaction among any of the length of employment groups (1-5 years, 6-15 years, and greater than 15 years). Employees with the longest length of employment (greater than 15 years) were more satisfied with provided health care services than any of the other groups.
4. While there were no significant differences among any of the payroll groups (hourly, weekly, and monthly), the weekly payroll group was more satisfied overall for provided health care services.
5. The over-50 age group was more satisfied overall with provided health care services than the other three groups (ages 20-30, 31-40, and 41-50). There was no significant difference among any of the groups.
6. There was no significant difference among any of the groups (0, 1, 2, 3, 4,

5-9,10-19, 20-49, and 50 or more times) using Health Division services in the past year.

7. For overall satisfaction of provided health care services, there was not a significant difference among any of the reason-for-visit groupings (off-the-job injury, return-to-work, physical, illness, allergy shots, work-related-injury and other). However, the work-related-injury group was less satisfied than all other groups. The allergy shots group was most satisfied of all groups.

8. There was a significant difference at the .05 level for overall satisfaction for provided health care services between the employees who viewed Health Division services as a benefit and those who did not. Employees who viewed health care services as a benefit were more satisfied overall with provided health care services.

Question #2

What was the relationship between employees' level of satisfaction toward health care services (structure) provided during the past 12 months when compared by groupings of gender, race, length of employment, payroll status, age, usage, reason for visit, and benefit?

Question #2 Findings

1. There was no significant difference between males and females for the level of satisfaction for structure (services offered). Males were slightly more satisfied than females for services offered.
2. Race groups (Caucasians and minorities) differed significantly on the satisfaction level for structure (services offered) at the .05 level. Caucasians were more satisfied than minorities with services offered by the Health Division.
3. The 6-15 year length-of-employment group had a lower satisfaction level for structure (services offered) than the other two groups (1-5 years and greater than 15 years), but there was no significant difference among the groups. The age group greater than 15 years had the highest level of satisfaction for services offered.
4 While the payroll groups (hourly, weekly, and monthly) did not differ significantly on their level of satisfaction for structure (services offered), the weekly group was much more satisfied than the other groups. The monthly payroll group was the least satisfied for services provided.
5. The various age groups (21-30, 31-40, 41-50, and greater than 50) did not differ significantly on their level of satisfaction for structure (services offered). The lowest age group (21-30) was most satisfied with the services offered

and the 41-50 age group was least satisfied.

6. There was no significant difference among the groups of employees' use (0, 1, 2, 3, 4, 5-9,10-19, 20-49, and 50 or more times) of Health Division services during the past year for structure (services offered). Those visiting most often (more than 50 times) were least satisfied with services offered and those visiting 20-49 times were most satisfied.

7. There was no significant difference in the satisfaction level among the groups (off-the-job injury, return-to-work, physical, illness, allergy shots, work-related-injury and other) formed by the different reasons for visiting the Health Division. Employees least satisfied were in the work-related-injury category while the most satisfied employees were in the off-the-job injury category.

8. There was no significant difference between the employees' level of satisfaction for structure (services offered) when viewing Health Division services as a benefit. Employees who did not view provided health services as a benefit were more satisfied than those who did.

Question #3

What was the relationship between employees' level of satisfaction toward personal treatment (process) received during the past 12 months when compared by groupings of gender, race, length of employment, payroll status, age, usage,

reason for visit, and benefit?

Question #3 Findings:

1. While there was no significant difference between the males' and females' level of satisfaction for the process (personal treatment) extended by the Health Division, males were more satisfied than females.
2. Race groups (Caucasians and minorities) did not differ significantly on the level of satisfaction for process (personal treatment) extended by the Health Division, but Caucasians were much more satisfied than minorities.
3. There was no significant difference among the length-of-employment groups (1-5 years, 6-15 years, and greater than 15 years) for process (personal treatment) extended by the Health Division. Employees in the greater-than-15-year age group were more satisfied than the other groups for personal treatment extended by the Health Division and employees in the 1-5 year age group were least satisfied.
4. There was no significant difference among payroll groups (hourly, weekly, and monthly) on their level of satisfaction for process (personal treatment) extended by the Health Division. The weekly payroll group was most satisfied with the personal treatment and the hourly payroll group was the least satisfied.
5. There was no significant difference among the various age groups (21-30,

31-40, 41-50, and greater than 50) on their level of satisfaction for process (personal treatment) extended by the Health Division. The 21-30 age group was the most satisfied with the personal treatment extended and the 31-40 age group was the least satisfied.

6. There was no significant difference among the groups of employees' use (0, 1, 2, 3, 4, 5-9,10-19, 20-49, and 50 or more times) of Health Division services during the past year on their level of satisfaction for process (personal treatment) extended by the Health Division. The 20-49 use group was the most satisfied with personal treatment extended and the 5-9 use group was the least satisfied.

7. There was no significant difference among the employees' level of satisfaction for process (personal treatment, off-the-job injury, return-to-work, physical, illness, allergy shots, work-related-injury and other) extended by the Health Division in categories of services (reason for visit). The work-related injury group was least satisfied with personal treatment extended and the off-the-job injury group was the most satisfied.

8. There was no significant difference for the process (personal treatment) extended by the Health Division among employees who viewed Health Division services as a benefit and those who did not. Employees who viewed provided health services as a benefit were more satisfied with services than those who did not.

Question #4

What was the relationship between employees' overall level of satisfaction toward provided health care services and the primary reason for their visit (physical, allergy shots, return to work, work-related injury, illness, off-the-job injury, or other) to the Health Division on the day they completed the questionnaire?

Question #4 Findings

1. Employees who visited the Health Division due to work-related injury were less satisfied than any of the other groups when compared in a pairwise fashion to see if any of the groups differed. However, no significant difference existed at the .05 level.
2. There was no significant difference among employee groups visiting the Health Division. Employees who were at the Health Division for allergy shots were more satisfied than any of the other six groups.

Question #5

What was the relationship between employees' overall level of satisfaction toward provided health care services and their opinion of provided health care services as a fringe benefit?

Question 5 Finding

1. Although no significant difference existed at the .05 level, employees who viewed provided health care services as a fringe benefit had the highest level of satisfaction while employees who did not view provided health care services as a fringe benefit had the lowest level of satisfaction.

CONCLUSIONS

Within the limitations of this study, analysis of the data, and findings, it was concluded that:

1. All employee subgroups (gender, length of employment, payroll status, age, usage, reason for visit) showed overall satisfaction with provided health care services, with the exception of race and fringe benefit groups, which differed significantly.
2. The number of times employees visited the Health Division during the past year did not bring about a significant difference in the levels of satisfaction among the groups in the category usage.
3. The majority of employees in the study viewed Health Division services as a fringe benefit. It is apparent that employees who did not view the services

as a fringe benefit had differing views from the majority of employees, and those views were significantly different only with respect to overall satisfaction.

4. Employees did not exhibit a significant difference among the reasons for visiting the Health Division (physical, allergy shots, return to work, work-related injury, illness, off-the-job injury, and other).

5. A majority (94 percent) of the employees viewed Health Division services as a fringe benefit.

RECOMMENDATIONS

The following recommendations for further study are presented based on the findings as presented in this chapter:

1. Because this study was a sample of convenience and appeared to mimic the general population of the Laboratory, it should be replicated to allow all employees who utilize Health Division services an opportunity to participate. This could be accomplished by mailing the Health Care Satisfaction Scale to all employees at their home addresses.

2. A separate study should be conducted to determine why Caucasians and minorities differed significantly on the levels of satisfaction for structure and

overall satisfaction.

3. This study has provided a brief insight into employees' attitudes toward provided health care services and should be continued at the Laboratory at least on an annual basis.

4. A small percent (5 percent) of the employees commented in some form that they did not know what services were available or the extent to which they could utilize services offered by the Health Division. Based on this, albeit a small percent, a more effective means of communication between the Health Division and employees could be established.

CHAPTER 6

THE STUDY IN RETROSPECT

This is a retrospective view of this completed research covering the strengths and weaknesses, surprises, and other factors which were not precisely determined by an analysis of the data. The rapidly changing business environment is creating dynamic changes in the health care environment. Reengineering, downsizing, rightsizing, utilization management, and value are all present terms used in everyday discussion by employers in their efforts to manage escalating health care costs. While satisfaction measures are reported to be pivotal in the assessment of the quality of care for patients or clients, no study had been done at the Oak Ridge National Laboratory to assess employees' satisfaction with provided health care services for employees.

Good health is prized very highly by most Americans. For the millions of Americans who are employed, good health is important for them to retain their employment and to continue the lifestyle to which they may have become accustomed. Many employers now recognize that a continued healthy lifestyle and work environment can prevent many chronic illnesses and even premature death. Some employers are encouraging their employees to reduce their health risks by

altering factors over which they have control. Some are helping employees quit smoking, manage stress, or providing information on nutrition. While this is good for the employee, it is also good for the employer as it has long been recognized that primary prevention not only can enhance the quality of life, but can also reduce the cost of health care.

At the beginning of this study, a search was made for a valid and reliable instrument previously developed for assessing employees' satisfaction with provided health care services in an occupational setting. The search revealed no existing instrument that adequately addressed the research questions which had been developed for this study. When no instrument could be found, one was developed and validated for this study that would reliably assess provided health care services at the Oak Ridge National Laboratory. As it turned out, the design and development of the instrument consumed much more time and effort than anticipated. Before the Health Care Satisfaction Scale that was used in the study was developed, a thorough study on satisfaction measures was made. The scarcity of sound measures for assessing work environment attitudes dictated using a type of scale with a clear empirical approach to the measurement of attitude. Following established guidelines, a Likert-type scale was developed after a review of different types of satisfaction scales indicated one would yield satisfactory reliability when properly constructed. Reliability and validity of the developed scale were tested and

confirmed before it was used in the study by using a panel of judges during the development of the instrument and a pilot-test on 20 Laboratory employees.

The extensive review and testing of the Health Care Satisfaction Scale provided the researcher confidence about its validity and reliability. The panel of judges included, but was not limited to, a physician and three university professors. Any concerns expressed by this panel regarding the questions or the format of the form were addressed before it was pilot-tested on 20 employees. The employees were chosen at random and asked if they would be interested in helping in the development of a health services satisfaction scale that would be used at the Health Division. All employees who were asked to participate expressed a sincere desire to be of assistance. Plus, various unsolicited comments by employees completing the instrument indicated a genuine interest by them in expressing their opinions. However, of all the extraneous comments made, there were not enough that would cause an item to be altered or a new one formulated.

The Health Division staff exhibited an enthusiastic, concerted effort in the distribution and collection of the questionnaires. Could that enthusiasm have played a pivotal role in the high return rate of questionnaires that were distributed? Whether that was the reason or whether employees were ready for the opportunity to speak out and be heard, the return rate of questionnaires was much higher than expected by the investigator. Of the 500 scales distributed by the Health Division

staff, 405 were returned for an 81 percent rate. After deducting the 15 that were discarded because they were incomplete or established guidelines were not followed, the completion rate still remained high at 78 percent.

In a cover letter accompanying the scale, employees were asked to not identify themselves in any way, but a few felt compelled to sign their name and two even went so far as to list their employee identification number. Those with identifiers were part of the 15 that were discarded because the Laboratory committee on human studies was explicit when granting permission to do the study in stating no personally identifiable data would be tabulated and analyzed.

It was obvious once the forms started coming in that employees were very interested in speaking out. The last item (#24) on the instrument asked what employees felt could be done to improve Health Division services or if they had any additional comments. However, many comments were made, with most related to the doctors and nurses. All of the comments about nurses were positive while comments about doctors were both positive and negative (most were positive). The negative comments about the doctors were more about how employees felt they were treated versus the quality of care they received. Other unsolicited comments were made on just about every aspect of the Health Division. Again, the positive comments outnumbered the negative ones.

Two items (#23 and #24) were included on the questionnaire that did not

address the problem studied. These items were designed to elicit information that would be of benefit to the Health Division medical director. Item #23 asked if there were any services offered at the Health Division that the employee would not use and the following are responses to that question (the number of responses for each category is in parentheses):

- Most medical services (52)
- Gynecological services (28)
- Vision care (12)
- Mammogram (12)
- Physical therapy (9)
- Allergists (6)
- Urology (5)
- Blood work (4)
- Annual checkup (6)

Other services identified three times or less as not using were: treatment for hypertension, skin disorders, joint problems, gout, nerves, and lupus. Further study would be required to determine why employees will not use those services they identified as not using.

Item #24 asked what employees thought could be done to improve the quality of care and services provided by the Health Division. During the

development of the instrument, the investigator believed the question to be clear and employees would be responsive to it. However, of all the responses rendered by employees during the survey, none answered the question that was asked. Comments made were more of a reflection on the care they received rather than any suggestions asked for. This revealed a weakness in the instrument which had been developed to gather data for this study. The weakness was not detected during the pilot-test as 4 of the 20 employees completing the scale provided suggestions for improving services offered by the Health Division. To correct this oversight on the Health Care Satisfaction Scale, item #24 will be revised to provide choices or examples that will produce a defined response.

It is believed however, that most employees who answered item #24 viewed provided health services similarly. The comments correlate with the rest of the study in which employees were satisfied overall with the services they received, but at the same time there were several services offered they indicated they would not use. It was surprising to see very few health education concerns were noted in the returned surveys. This could mean employees felt they were receiving all the information they needed or wanted from the Health Division or it could mean they didn't know what they needed or even what to ask for in terms of health education. These are important concerns and to say employees are poorly equipped to make decisions concerning their health care is not meant to be implied. The necessity for

employee involvement in determining what should be provided in health care programs can be pivotal in the success of those programs.

Another surprise was revealed when the groups formed by reason for visit were compared. When all seven groups' means were simultaneously compared, there were no significant differences between the groups' means on any of the satisfaction scores. However, when the groups were compared in a pairwise fashion to see if any of the groups differed, it was revealed that the group whose reason for visit was work-related injury had a significantly lower mean satisfaction score for overall satisfaction than all of the other groups. Another surprising point was that the same group (work-related injury) also differed significantly on the mean score for process which is the personal treatment extended by the Health Division staff. Since many of these questions were dealing with how the employees were treated, it showed that employees who had been injured on the job felt the staff did not show enough concern for them, thus making them less satisfied than all other groups.

From the information obtained in this study, it may be projected that a person's attitude was not influenced by services provided as much as the way he or she was treated during the time services were received. This corresponded to a study that was recently reported by the Associated Press and will soon appear in the Journal of the American Medical Association. It was reported that a study found

primary-care doctors who rushed their patients were more likely to be accused of malpractice than those who took more time, encouraged patients to talk, and injected a little humor during patient visits. While it may correspond, to support such speculation is rather difficult from the data generated in this project.

Perhaps one shortcoming of this research was the failure to ask employees if they were seeking health care services on their own accord or if they were at the Health Division as a condition of employment. Since a vast majority of the employees involved in the study were required to be there because of their job requirements, it is important for the Health Division to know the attitudes of all employees at the Laboratory. One recommendation addressed this issue and how it could be accomplished.

FINAL NOTE

This research effort served as a useful means of not only finding information about employees' attitudes, but also provided an avenue to furnish management of the attitudes of 390 employees at one time. The population was divided into three categories (hourly, weekly, and monthly), and within these categories a wide variation existed in age, length of employment, and ethnic background. Because the population served by the Health Division was so varied in composition, this

could present a problem to management in any communication to employees as a result of this study. Problems could be encountered in communication due to differences of not only the independent variables used in this study, but intelligence levels and background of the individual could play an important role in this process. This is important for the Health Division because part of their mission is to assist in achieving and maintaining the highest physical and emotional health of all employees.

From comments provided that did not become part of the findings, it was clear employees based most of their negative responses on past experiences not related to the current approach used by the Health Division. The prevailing philosophy is to provide a licensed or certified staff as applicable and the utilization of some of the most current technology available. Perhaps the Health Division could follow the actions of a local hospital and use public relations to enhance their image. The hospital mentioned has an extensive advertising campaign to inform the public how they have changed from the way the public perceived them in the past. The message being sent by the hospital is that they have changed everything but their name. This is not meant to imply the Health Division should go to that extreme, but the qualifications of the staff and the major programs of the Health Division are vital and should be promoted as an asset to the Laboratory. Perhaps more employees would then recognize how fortunate they are to have provided

health care services and use the available services to maintain or improve their health while at the same time help management reduce health care costs.

The answers to today's rising health care costs for employers are still waiting to be found. It is hoped this company and others will consider using employees' satisfaction with provided health care services as a measure to gauge the success of health care programs. It is a matter of expert judgment that the Health Care Satisfaction Scale developed for this study would provide that measure by accurately measuring employees' satisfaction with provided health care services.

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APPENDICES

APPENDIX A

UNIVERSITY OF TENNESSEE OFFICE OF RESEARCH LETTER OF APPROVAL

THE UNIVERSITY OF TENNESSEE
KNOXVILLE

Office of Research
404 Andy Holt Tower
Knoxville, Tennessee 37996-0140
PHONE: (423) 974-3466
FAX: (423) 974-2805
URL: http://www.ra.utk.edu/ora

08/20/96

IRB # : 5138 A

Title : Employees Attitude Towards Provided Health Services

Morgan, Carl
Health, Leisure & Safety
409 Lambert Lane
Maryville, TN 37803

Kirk, Dr. Robert
Health, Leisure & Safety
1914 Andy Holt Ave.
Campus

The project listed above has been reviewed and has been certified as EXEMPT from review by the Institutional Review Board.

Unless there are major changes in the experimental methods or project design, no further reporting to this office is required. The responsibility for oversight of this project becomes that of the Principal Investigator, Student Advisor (if any), and the Departmental Review Committee.

We wish you success in your research endeavors.

Sincerely,

Brenda Lawson

Brenda Lawson
Compliances

cc: Dr. Charles Hamilton

Attachment: Form A

APPENDIX B

OAK RIDGE NATIONAL LABORATORY COMMITTEE ON HUMAN STUDIES LETTER OF APPROVAL

Oak Ridge
Associated
Universities

Post Office Box 117
Oak Ridge, Tennessee 37831-0117

MEMORANDUM

TO: Carl O. Morgan
ORNL/Bldg 3550/MS-6292

FROM: Shirley A Fry, M.B., B.Ch,; M.P.H. SAF
Chair, ORAU/ORNL Committee on Human Studies (MPA #1394)

DATE: September 5, 1996

RE: EMPLOYEE ATTITUDES TOWARDS PROVIDED HEALTH SERVICES

Your project identified above, has been reviewed and determined to be in compliance with 45CFR46, 100(b) on the grounds that it is a voluntary survey in which no personally identifiable or other personally sensitive data will be collected. This project presents no more than minimal risk to participants and therefore is exempt from review by the ORAU/ORNL Committee on Human Studies.

Unless any unexpected or untoward events involving study subjects, or any major changes in the project design or methods, no further reporting to the Committee is required. If such events or changes do occur or are planned, you, as the Principal Investigator, are responsible for immediately notifying the Committee and discontinuing the project pending the Committee's review.

As Principal Investigator, you, together with your supervisor and division director, are responsible for oversight of this project with respect to Oak Ridge National Laboratory.

Best wishes for the success of your project.

SAF:bh

cc: Dr. G. Davis, ORAU
Dr. J. Swanks, ORNL
Dr. J. Jankovic, ORNL

APPENDIX C

HEALTH CARE SATISFACTION SCALE COVER LETTER

October 1996

Dear co-worker:

The ORNL Health Division is allowing me to conduct a survey of employees using its services. The information you provide will be essential to the Health Division in assessing existing services.

Please do not identify yourself in any way on the questionnaire. We will reveal no individual responses and we will report all data in composite form. Completion of the document should take no more than 10 minutes of your time. Your return of the completed questionnaire is your informed consent to participate in this study.

Though your participation in this research is voluntary, your opinion is important. Please do your best to give accurate and complete answers as the information you provide must be very accurate in order to be useful. Should you have any questions regarding this survey, please feel free to contact me at 574-6682.

Instructions for completing the questionnaire are on the following page. Thank you for your assistance in this study.

Sincerely,

Carl O. Morgan

APPENDIX D

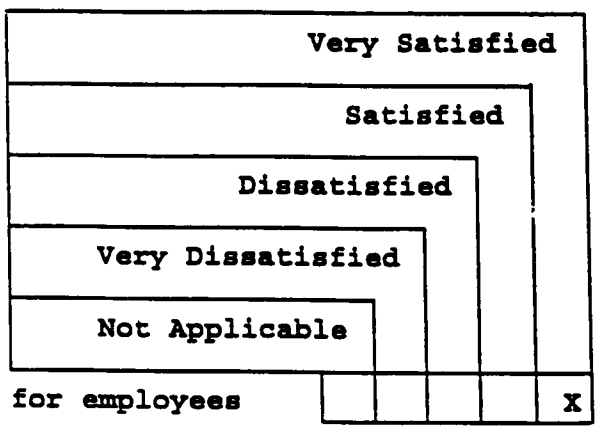
HEALTH CARE SATISFACTION SCALE INSTRUCTIONS

INSTRUCTIONS

The questions on the first page of this questionnaire that you have agreed to fill out have a rating scale with five places. The rating scale consists of words that represent increasing amounts of satisfaction. The level of satisfaction ranges from very dissatisfied to very satisfied and the choices are located at the end of each statement. Please mark an "x" in the space that best depicts your feelings. There are no right or wrong responses.

EXAMPLE:

If you are very satisfied with health insurance provided for employees, you would place an "x" as follows:



Please keep the following in mind as you mark your responses:

1. Place only one "X" for each response.
2. Provide a response for each question.
3. Answer by giving your honest opinion.

You will also be answering questions on page two that require you to fill in the blanks. For example, if you view insurance as a benefit then you would place an "x" as follows:

Do you view health insurance provided to employees as a benefit?
Yes ___x____ No _____

The remaining questions on page two allow you to provide your own response.

APPENDIX E

HEALTH CARE SATISFACTION SCALE

Please indicate your degree of satisfaction with ORNL Health Division services for the following questions. To do so, place an X under the response you feel most appropriate.

How satisfied were you with the following?	Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied	Not Applicable
1. Services provided by a physician					
2. Services provided by the physician assistant					
3. Services provided by a health nurse					
4. Services provided by the optician					
5. Services provided by the X-ray laboratory					
6. Services provided by the blood laboratory					
7. Services provided by the clerical staff					
8. The concern extended to you					
9. The interest shown in your health problem					
10. The courtesy extended to you					
11. The explanation of your health problem					
12. The resolution of your health problem					
13. The way your questions were answered					
14. The quality of care you received					
15. The efficiency of services you received					
16. The assessment of your problem					
17. The accessibility of health care services					

PLEASE CONTINUE YOUR RESPONSES ON PAGE TWO

Now, you will be asked questions that offer you an opportunity to answer more in detail. All responses are confidential.

18. Do you view Health Division services as a fringe benefit?
Yes _____ No _____

19. Approximately how many times did you use Health Division services during the past 12 months? _____

20. What was your primary reason for today's visit? (check only one)
Physical ____ Allergy shot(s) ____ Return to work ____ Illness ____
Work-related injury ____ Off-the-job injury ____ Other ____

21. This section collects demographic data about employees responding to this survey. Please provide the following information:
Years of employment (ORNL) ___ Age ___ Gender ___ Race ___
Payroll status: Hourly ____ Weekly ____ Monthly ____

22. On a scale of 1 to 10 (one the least to 10 the most), what is your overall satisfaction with Health Division services? _____

23. Does the Health Division offer any services you will not use?
No ____ Yes _____ If yes, please list service(s):
_____

24. What do you think can be done to improve the quality of care and services that you received today?
_____
_____
_____

Further comments:
_____
_____
_____

Please make sure all items are answered before returning the survey to the reception area. Thank you for your participation.

APPENDIX F

OAK RIDGE NATIONAL LABORATORY HEALTH DIVISION MISSION, STAFF, AND PROGRAMS

OAK RIDGE NATIONAL LABORATORY HEALTH DIVISION MISSION, STAFF, AND PROGRAMS

MISSION

The Oak Ridge National Laboratory Health Division assists in achieving and maintaining the highest physical and emotional health of all employees so that optimal job performance may be achieved with minimal stress, thereby reducing absenteeism, enhancing productivity, and prolonging the employee's productive years. This is achieved by the application of good medical practices in both periodic health assessments and other appropriate medical services.

STAFF

PHYSICIAN STAFF

Medical Director: The director is a licensed physician responsible for all activities of the Health Division. His training/background is in internal medicine and he is board certified in preventive medicine with a speciality in occupational medicine.

Physicians: Licensed physicians provide diagnostic and therapeutic medical services. Some staff physicians are board certified in occupational medicine, family practice, internal medicine, and general surgery.

Physician Assistant: Certified physician assistants (PAs) are authorized by law to provide diagnostic and therapeutic medical services under the auspices of the medical director and staff physicians. The PA has a training/background in primary care, occupational, and preventive medicine.

Clinical Psychologist: A licensed Ph.D. clinical psychologist provides psychological evaluations as well as consultation/advisory services with both employees and management. The clinical psychologist is certified by the American Board of Professional Psychology.

NURSING STAFF

Nurses: Licensed nurses provide nursing assessment, treatment, and patient education to employees. All nurses are registered as certified by the state of Tennessee, and all eligible nurses are Certified Occupational Health Nurses.

LABORATORY STAFF

Medical Laboratory Technologists: Utilizing the most current technology, licensed medical technologists perform various diagnostic testing, reporting findings to the staff physicians. The technologists are certified by the American Society of Certified Physicians and also certified as Occupational Hearing Conservationists by CAOHC and have completed a National Institute of Occupational Safety and Health (NIOSH)-approved program in pulmonary function testing.

Radiologic (X-Ray) Technologist: Registered radiologic technologists perform various diagnostic x-ray procedures in compliance with applicable regulations. The technologists are certified by the ARRT, and the x-ray equipment meets state and federal regulations. The technologists have also completed a NIOSH approved program in pulmonary function testing.

Optical Technician: A licensed dispensing optician operates the safety glasses department. The optician orders, fits, dispenses, and repairs safety glasses.

SUPPORT STAFF

Secretarial/Clerical Staff: The secretarial/clerical staff operate the data collection and processing of medical data and perform multiple supportive and administrative functions.

Receptionists: The receptionists manage the reception and medical area. They perform the scheduling procedures and interface with employees on their arrival to the Health Division.

Transcriptionists: The transcriptionists transcribe medical staff dictation into medical records.

Dispensary Attendants: The dispensary attendants maintain housekeeping and assist other staff in multiple functions.

MAJOR PROGRAMS OF THE HEALTH DIVISION

Patient Care

- Occupational illness/injury
- Nonoccupational illness/injury (limited)

Evaluations

- Preplacement
- Periodic (voluntary)
- Termination

Fitness for duty

Disability

Return to work

Mandatory

Laboratory Procedures

Hematology

Blood chemistries

Serology

Urinalysis

Stool hemoccult

Strep test

Electrocardiograph (EKG)

Pulmonary function test

Audiometry

Vision testing

Chest and other x-rays

Skin testing (tuberculin and allergy)

Urine collection for drug testing

Prostate specific antigen (PSA)

Immunizations

Tetanus/diptheria

Influenza

Hepatitis B

Allergy desensitization

Occupational Vision

Prescription safety glasses

Adjustments/repairs

Hazard Assessment

Work site visits

Bioassays

Emergency Response

CPR training

Emergency care

Disaster planning

Health Counseling (Wellness)

Retiree seminars

Employee assistance program

Smoking cessation

Nutrition

Prenatal care

Physical activity

Breast self-examination

Emotional/mental/stress

Hypertension

Administration

Generation and maintenance of medical records

Interface with employees

Patient scheduling

Development of computerization

APPENDIX G

NCG RESEARCH LETTER OF APPROVAL

NCG Research INCORPORATED

January 18, 1996

Mr. Carl Morgan
409 Lambert Lane
Maryville, TN 37803

Dear Mr. Morgan:

We were asked by Marie Ensley of Baptist Health Systems to send you a copy of the NCG Inpatient Viewpoint® Survey, which you will find enclosed.

Please sign the statement below and return one copy of this letter to us in the enclosed envelop. You may retain the other copy for your file.

Sincerely,

Elizabeth Caron

Elizabeth Caron
Director, Integrated Support Systems

cc: Marie Ensley

****

I agree to use the NCG Inpatient Viewpoint® Survey for the purpose of student research only. Any references to the survey used in research writing will cite NCG Research Inc., Nashville, Tennessee.

_____ _____

Carl Morgan Date

Vanderbilt Plaza
2100 West End Avenue • Suite 800
Nashville, TN 37203
(615) 327-3373 • FAX (615) 327-3433

VITA

VITA

Carl O. Morgan was born in Martel, Tennessee, and attended public schools in Blount County, Tennessee. He attended the University of Southern California in Los Angeles, California, for one year after winning a merit scholarship in national competition. He later entered evening school at the University of Tennessee, Knoxville, where he earned three degrees: Bachelor of Science, Master of Public Health, and Doctor of Philosophy. While attending the University of Tennessee, Carl worked first for ALCOA and then at the Oak Ridge National Laboratory where he did his study for this dissertation.

Carl is a Certified Safety Professional (CSP) and a professional member of the American Society of Safety Engineers.