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An Employment Profile of Bachelor of Arts Graduates in Statistics from Selected Universities in Taiwan, Since 1990

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AN EMPLOYMENT PROFILE OF BACHELOR OF ARTS GRADUATES IN STATISTICS FROM SELECTED UNIVERSITIES IN TAIWAN, SINCE 1990

A Project

Presented to

The Graduate Faculty

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In Partial Fulfillment

of the Requirements for the Degree

Master of Education

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by

James, Cheng-hsu Chen

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ABSTRACT

AN EMPLOYMENT PROFILE OF BACHELOR OF ARTS GRADUATES IN STATISTICS FROMSELECTED UNIVERSITIES IN TAIWAN, SINCE 1990

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The purpose of this project was to develop an employment profile of Bachelor of Arts(B.A.) graduates in Statistics from selected universities in Taiwan, since 1990. To accomplish this purpose, a review of current literature regarding professional opportunities in the field of Statistics was conducted. Additionally, a survey instrument was developed and mailed to recent graduates awarded B.A. degrees in Statistics from universities in Taiwan. Survey results were reported and analyzed.

ACKNOWLEDGEMENTS

I would like to express my appreciation to my family. During the past year, they supported me with all their heart spiritually and financially.

I gratefully acknowledge Dr. Gregory Chan, Graduate Committee Chairman, without whose counsel, support, and encouragement this study would not have been possible. Special thanks is extended to Dr. Jack McPherson and Dr. Susan Madley, without whose assistance, advice, and patience, this project could not have been completed.

Also hearty thanks go to all my Cohort 2 classmates for their support and solicitude.

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CHAPTER 1

BACKGROUND OF THE PROJECT

Introduction

> The use of statistical procedures in research is now universal in such diverse fields as agriculture, biology, chemistry, physics, medicine, and economics. For example, statistical procedures enable the educator to draw conclusions with respect to the efficacy of various instructional methods and materials; the psychologist to determine the precision with which he measures certain human traits; the sociologist to speak with confidence about the incidence of antisocial behavior; the physicist to interpret the activities of subatomic particles; the medical scientist to choose the most effective medicine; and, the agricultural engineer to select the most productive fertilizer (Roscoe, 1975, p.20).

In the above statement, Roscoe has explained how statistical techniques have been widely employed in all areas of activity where the analysis and presentation of numerical data and statistical procedures are useful.

Statistics as a decision-making tool plays an important role in the areas of research and development, and guidance and control in a wide variety of fields. For instance,

participation in the development, testing, and certification of new drugs and medicines, a process that often requires a large number of statistical tests (and decisions) concerns the safety and effectiveness of these drugs for public use. Similarly, the psychologist, the lawyer, and any person who makes decisions involving uncertain factors such as human behavior often will base decisions on data of a statistical nature (Hay, 1988).

According to Gay (1981), statistical research as a basic requirement for all graduate degrees is beyond all doubt. Statistics are useful in many disciplines for both describing a collection of data and making a decision based upon these data. Students can complete their research through data collecting, organizing, summarizing , and analyzing to make decisions .

Gay stated :

> Increasingly colleges and universities are acknowledging the need for professionals in all areas to possess research skills by including a course in Statistical research as a basic requirement for all graduate degrees (p.v).

Purpose of the Project

The purpose of this project was to develop an employment profile of Bachelor of Arts(B.A.) graduates in Statistics from selected universities in Taiwan, since 1990. To accomplish this purpose, a review of current literature regarding professional opportunities in the field of Statistics was conducted. Additionally, a survey

instrument was developed and mailed to recent graduates awarded B.A. degrees in Statistics from universities in Taiwan. Survey results were reported and analyzed.

Limitations of the Project

For purposes of this project , the following limitations were identified :

1. Research : The preponderance of research and literature reviewed was limited to the past ten (10) years .
2. Scope : The profile developed was designed for use by Departments of Statistics awarding B. A. degrees at selected universities in Taiwan.
3. Target population :Currently employed graduates of Departments of Statistics from universities in Taiwan, since 1990.

Definition of Terms

Significant terms used in the context of this project have been defined as follow :

1. Statistical Analysis System : Commonly abbreviated as S.A.S, Statistical Analysis System is a software system for data analysis. The goal of SAS Institute [the company that publishes the SAS System] is to provide data analysts one system to meet all their computing needs. The SAS System serves business, government, and educational institutions at thousands of locations worldwide. The SAS System is used to enter, manipulate, and manage data of all kinds; to provide not only printouts but plots,

charts, and technical graphs; to undertake complex statistical analysis; and, to monitor the performance of computer systems themselves (Jaffe, 1989, p.11)

2. Statistics : Statistics is a discipline that has evolved in response to the needs of scientists and others whose data exhibit variability. The concepts and methods of statistics enable the investigator to describe variability, to plan research so as to take variability into account, and to analyze data so as to extract the maximum information and also to quantify the reliability of that information (Samuels, 1986, p.2).

3. Survey : A survey involves the collection of information about characteristics of interest from some or all units of a population using well-defined concepts, methods and procedures, and the compilation of such information into a useful summary form. Surveys are carried out for either one of two purposes : descriptive or analytical (Satin and Shastry , 1988).

CHAPTER 2

REVIEW OF RELATED LITERATURE

Introduction

The review of research and literature summarized in Chapter 2 has been organized to address :

1. The Field of Statistics -- An Overview
2. The Work of the Statistician
3. Selected Careers in Statistics
4. Summary

Data current primarily within the past five (5) years were identified through an Educational Resource Information Centers (ERIC) computer search. Additionally, a survey instrument was developed and mailed to recent graduates awarded B.A. degrees in Statistics from universities in Taiwan.

The Field of Statistics -- An Overview

The word " statistics " has two meanings. Statistics can refer to sets of data relating to a wide range of topics, such as the size of populations, production activity, retail prices, incomes, rainfall, ect. Statistical information of this regularly produced by the government and other bodies and is part and parcel of everyday life. Statistics can also refer to the theory and methods used for the collection, description, analysis and

interpretation of numerical data.

Today, according to Fleming and Nellis (1994) statistical techniques have been widely employed in all areas of activity where the analysis and presentation of numerical data are useful. Examples of every day encounters with statistical data may range from high-level research in the physical sciences, through applications involving the regular monitoring of production processes in industry, economic analysis and forecasting, to the simple tabulation and presentation of data on common subjects of interest such as football scores, and examination results (p.1).

The phenomenal growth of statistical methods and statistical ideas in recent years has extended the collection of data and their presentation in tables and charts to almost all aspects of human endeavor. Modern statistics is directly concerned with the problem of decision making under uncertainty (Freund, Williams and Perles, 1988, p.2).

Almost everyone's life has been affected by applications of statistics, commonly referred to as numerical data. For example: (a) Vital statistics are numerical data on births, deaths, marriages, divorces, and communicable diseases; (b) business and economic statistics are numerical data on employment, production, prices, and sales; and, (c) social statistics are numerical data on housing, delinquency and crime, education, and social security and welfare (Neter, Wasserman and Whitmore, 1988, p.xvii).

As interpreted by Hamburg (1985)," statistics is a body of theory and methodology

for drawing inferences and marking decisions under conditions of uncertainty". Statistics also deals with how these inferences may be extended beyond the particular set of data examined and with how rational decisions may be based on appropriate analyses of such data. The raw material of statistics is statistical data or numbers that represent counts and measurements of events or objects. The theory and methodology of statistics aid in determining what data should be compiled and how they should be collected, analyzed, interpreted, and presented to make the best inferences and decisions(p.1~p.2).

The Role of Statistics :

Statistical concepts have been applied in many areas of human activity. For example, In the hard sciences, statistical applications range from the design and analysis of experiments to the testing of new and competing hypotheses. In industry, statistics makes its contributions in short-and long-range planning and decision making as well as in day-to-day operational decision making and control. Many firms use statistical methods to analyze patterns of change and to forecast future activity for a firm, an industry, or the economy as a whole. Such forecasts often provide the foundation for corporate planning and control. Areas such as Purchasing, production, and inventory control depend on short-range forecasts; areas such as capital investment and long-term development decisions depend on longer range forecasts. In addition to forecasts, areas such as production control, inventory control, and quality control often employ statistical methods on a standard basis (Hamburg , 1985, p.p2-3).

In business economics, managerial decisions involving both numerical data and uncertainty are required daily, on matters that range from ordering raw material for products for which demand is uncertain to hiring personnel whose performance cannot be predicted. Statistics can be helpful in formulating strategic short-term and long-term policies that affect a firm's survival, such as new-product development pricing, financing, forecasting, market expansion and growth. Statistics are used by government, business, foundations, and unions to forecast future economic conditions through an array of techniques to build, verify, or implement economic models(Lapin, 1982, p3).

Historically, the role of statistical data have been used for many centuries by governments in Western Europe as an aid in administration. In antiquity, statistics were compiled to ascertain the number of citizens liable for military service and taxation. After the Middle Ages, vital statistics were emphasized because of the widespread fear of devastating epidemics and the belief that population size could affect political and military power. As a result, data were compiled from registrations of christenings, marriages, and burials. In the sixteenth through eighteenth centuries, data began to be collected on such economic subjects as foreign trade, manufacturing, and food supply to sustain economic political power. Today, data are collected, classified, stored, and retrieved in diverse and comprehensive information systems facilitated by computers to supply individuals and organizations with the statistical intelligence required to carry out their activities in transmission, storage, retrieval of statistical data and data analysis

(Neter , Wasserman , and Whitmore, 1988, p.xvii).

Statistical Decision Theory :

In recent years, statistical inference has been extended to emphasize the problem of decision-making under conditions of uncertainty. This formulation is known as statistical decision theory, or Bayesian decision theory. Statistical decision theory addresses itself to the problem of making rational selections among alternative courses of action when information is incomplete and uncertain, from drawing an inference about the percentage of impoverished families in a city, to making a decision based on these findings. The various possible values of the percentage of impoverished families may be viewed as events or outcomes that affect the achievement of the decision maker's objectives. Statistical decision theory presents the principles and methods for making the best decisions under specified conditions(Hamburg , 1985, pp.4-5).

Applications of Statistics :

Statistical methods are versatile and have a wide scope of applicability. A few examples of methodology and reasoning, will be discussed in this section. A central concept underlying the theories of John Maynard Keynes, the British economist (1833-1946), is the consumption function -- the relationship between consumer expenditures and income. Statistical studies in the form of regression analyses, help to obtain quantitative measures of this relationship that eventually aid in assessing the effects of

various fiscal measures and proposed governmental monetary actions Statistical methods have also been applied to relevant numerical data to assess past trends and current status and to project future economic activity. These methods provide measures of human and physical resources, economic growth, well-being, and potential. They are essential tools for appraising the performance and analyzing the structure of an economy(Hamburg, p.5).

In short, applied statistical methods are used in innumerable ways for planning, decision making, and control. In marketing research, statistical methods have been used to measure the relationships between the demand for a company's products and the socioeconomic and demographic characteristics of the consumers of the product, such as income, savings, market value of home, family size, and family composition. Business companies often employ sample surveys to determine the most effective methods of promoting their products. Surveys aid in the evaluation of such promotional methods as television advertising, direct-mail promotion, and advertising in periodicals (Hamburg , pp.5-6).

Statistical techniques have had far-reaching and highly effective applications in the quality-control of manufactured products, in maintaining the average level of manufacturing processes within tolerable limits, and in measuring and controlling the variability of these processes. In these applications, statistical methods are used to differentiate between variations that are attributable to chance causes and those that are

too great to be considered the result of chance, resulting in substantial improvement in product quality and in lower cost due to reduced rework and spoilage(Hamburg, p.6).

Statistical Error :

The usefulness of statistical methods has been amply demonstrated. However, in carrying out and interpreting statistical studies, many potential errors, pitfalls, and limitations can occur. A healthy skepticism about the results of any statistical investigation is essential . To fully appreciate the proper applications of statistical methods, it is important to understand the possible misuses of these methods (Hamburg, p.7).

Statistics has embodied, to various degrees, all elements of the scientific method, most notably the element of error. Because statistics concerns uncertainty, there is always a chance of making erroneous inferences. Statistical procedures are available both to control and to measure the risks of reaching erroneous conclusions. Very often, a sample is biased in favor of persons who have similar tastes, education, and social experience. The validity of the opinion surveyor's claim is supported by a random selection from the public at large in which everyone has an equal chance of representation. When large samples are taken, bias can be introduced by statistical errors due to improper procedures (Lapin , 1982, p5).

The Work of The Statistician

Statistician Defined :

A statistician has typically, collected, analyzed, and interpreted numerical data in a particular subject-matter field. The information the statistician collects has then been used to provide help to business and governmental officials and professional workers in determining the best way to produce results in their work (Hopke, 1993, p.433).

Applied Statistics at Work :

One of the first known uses of statistical technique was undertaken in England in the mid-1800s. At that time, a disastrous epidemic of cholera broke out in a certain section of London. The usual medical practices of the day were unable to control it. A local physician named John Snow decided to conduct a survey a discover which sections of the city were affected by the disease. He then constructed a map that showed the distribution of the infection and, he was able to interview those who survived the illness to discover some of their accustomed habits. He found that everyone who had contracted the illness had drawn water from a certain pump in the area. When the pump was sealed , the cholera epidemic subsided. This was the first time that it was known definitely that cholera was transmitted through an Infected water supply. Once the source was located, cholera could be controlled. Statistical methods had uncovered a fact that has since saved countless lives (Hopke).

Like Dr. Snow, statisticians determined which number occurs most frequently,

what was the average of all of the numbers, which number represented the middle point of all the numbers in the group, or how great was the span from the largest to the smallest number. Statistics was used in all areas of science, as well as in industries and businesses. Government officials were especially dependent on statistics, from politicians to education officials to traffic controllers(Hopke).

Statistical Numbers and Symbols :

Statisticians are employed to work with numbers and symbols that have a special meaning. In many ways, the symbols they used resemble those of a special language. The symbols have served as a sort of a shorthand method to convey rather complex thoughts in a simple manner. When these thoughts must be expressed in everyday English, they take much longer to explain (Hopke).

Statisticians : Areas of Work

Most statisticians have worked in one of three kinds of jobs: (a) they may teach and do research at a large university; (b) they may work in a governmental agency such as the Bureau of Census; or, (c) they may work in a business or industry. A few statisticians work in private consulting agencies and sell their services to industrial or governmental organizations, or in public opinion research organizations. The work of the statistician has been greatly extended by the invention of computers in recent years. By the invention of computers. Statisticians have worked in the fields of economics,

political science, medicine, education, the physical and natural sciences, the space program, communication, agriculture, meteorology, national defense, and transportation (Hopke, 1993, p.433).

In major areas of the sciences, a mathematical statistician works primarily with theory, devising ways in which statistical method may be applied, and new ways in which the work may be accomplished through designing and improving statistical methods to obtain and interpret numerical information. They have served primarily as theoreticians, concerned with developing new statistical tools in areas such as probability theory, experimental design, and regression analysis. Applied statisticians have worked on more practical matters, using theories and known formulas to solve pressing, present-day problems. They have used statistical methods to collect and analyze data in a particular subject-matter field, such as economics, agriculture, psychology, education, public health, physics, demography, or engineering. They may forecast population growth or economic condition, estimate crop yield, predict and evaluate the result of a new marketing program, or help engineers and scientists determine the best design for a jet airplane(Hopke, pp.433-434).

In some cases, statisticians have actually gone out and gathered the facts by those who are trained especially in "sampling" and "fact-gathering techniques." This information is then turned over to the statistician for organization, analysis, and either conclusions or recommendations. Statisticians may make charts, plot numbers on graph

paper, or distribute them along a curve. They compare one set of numbers to another to discover similarities and the differences. Each number has a real significance, and represents something important to one person or to several people. " Organizing single numbers, sets of numbers, or groups of numbers to produce new and useful information is characteristic of the way in which the statistician works to contribute to the store of human knowledge."(Hopke , p.434).

Opportunities for experience and exploration for students :

College students have frequently obtained jobs as student assistants in the offices of faculty members who are engaged in some kind of research. Although these jobs carry little responsibility for undergraduate students, they provide opportunities to gain some insight into the nature of the research process, by observing the professor and the research assistants at work. High school students enrolled in mathematics courses may ask their teachers to assign them some simple statistical problems, perhaps related to grades or student government, and let them practice the kinds of techniques that statisticians use. A high school student who is interested in exploring the profession of the statistician may visit a local insurance agency, the local office of the Internal Revenue Service, or a nearby college, and talk to people who use statistical methods. Students may also find part-time or summer employment in an industry suited to the work of statisticians (Hopke, p.434).

Selected Careers in Statistics

Some knowledge of statistical techniques for use in decision making has been essential for career success in almost all areas of business, industry, government, or public service and for those pursuing advanced training in economics, genetics, and other sciences. Accountants, production managers, marketing executives, lawyers, and employment managers have required knowledge of statistics. It is difficult to think of any higher-level management or, profession that does not require some use of or ability to interpret statistical analysis . For example :

- In accounting , inventory auditing in large corporations.
- In production and operations management, quality control has been monitored by randomly selecting a few items from the line, checking their compliance with specifications, and then drawing a statistical conclusion about the quality of similar items.
- In marketing, samples of customers have commonly been used to assess the reaction of all potential customers to a new product.
- In personnel and legal proceedings, claims of sex or race discrimination in hiring or salary determination have been assessed, by statistically comparing the characteristic of an actual workforce to those of an ideal workforce (Becker, 1987, p.4).

Selected careers related to professional, training in statistics have enhanced various disciplines. Career fields for statisticians identified by Moore and Hopke

included the following:

(a) Government : Statistical offices release the latest numerical information on inflation and unemployment (Moore, 1989, p.xvii).

(b) Economists : Financial advisors, as well as policy makers in government and business, study statistical data in order to make informed decisions (Moore).

(c) Doctors : Medical specialists must understand the origin and trustworthiness of data that appear in medical journals if they are to offer their patients the most effective treatment(Moore).

(d) Politicians : Public opinion polls have been termed the " life blood " of politicians (Moore).

(e) Farmers : Data are used to evaluate(Moore).

(f) Engineers : Statistical data assess the quality and reliability of manufactured products (Moore).

(g) Business Management : Statisticians collect, analyze, and interpret numerical data to help business professionals determine the best way to produce results in their work (Hopke, 1993, p.89).

(h) Marketing : The group that will be interviewed by field researchers are selected by statisticians. Their background in statistics give them the ability to determine which group that will provide the best possible information for the company (Hopke, p.281).

(i) Chemicals and Drugs : Statisticians are expert in compiling data and facts, and then

applying these data problem or situation(Hopke, p.102).

(j) Sports : Statisticians maintain records of the performance of individual athletes. Since these records often change frequently during a contest, speed and accuracy are at a premium. Since the figures have become more and more sophisticated, statisticians rely heavily on computers(Hopke, p.448).

(k) Mathematics : Statisticians perform surveys, collect large amounts of data, and interpret the results. Many calculations are performed by using statistical software. However, statisticians must determine the validity and accuracy of their findings (Hopke, p.287).

(l) Social Services : Analyzing the effectiveness of the system, the statistician gathers data on operations to determine if these social-welfare systems being used are effectively and efficiently(Hopke, p.443).

Summary

The review of literature and research summarized in Chapter 2 supported the following themes :

1. Statistics is the art and science of collecting and understanding data. Since data refers to any kind of recorded information, statistics plays an important role in many human endeavors.
2. A statistician is a person who performs routine operations with statistical data; or, an analyst who is highly trained in statistical methodology and uses this methodology

in the collection and interpretation of data; or, finally, an applied mathematician who utilizes advanced mathematics in the development of new statistical methods. Statisticians are needed in all these capacities to make statistical data most useful.

3. Some knowledge of statistics is essential today for people pursuing careers in almost every area of industry, government, sports, business management, public service, or the professions.

CHAPTER 3

PROCEDURES OF THE PROJECT

The purpose of this project was to develop an employment profile of Bachelor of Arts graduates in Statistics from selected universities in Taiwan, since 1990. To accomplish this purpose, a review of current literature regarding professional opportunities in the field of Statistics was conducted. Additionally, a survey instrument was developed and mailed to recent graduates awarded Bachelor of Arts in Statistics from universities in Taiwan. Survey results were reported and analyzed.

Chapter 3 contains background information describing :

1. Need for the project
2. Development of support for the project
3. Procedures
4. Planned implementation and assessment of the project

Need for the Project

The need for the project was influenced by the following considerations:

1. The writer (Chen Cheng-Hsu), who has enjoyed working with numbers since early childhood, and who became skilled at calculating work and conducting classified analysis while attending elementary and secondary school, subsequently chose Statistics as a major field of study in his undergraduate, Bachelor of Arts (B.A.)

program in Taiwan.

2. As a graduate with a B.A. degree in Statistics of Tamkang University, Taipei, Taiwan, and a prospective statistics teacher in Taiwan, the writer has been searching for ways to further develop his instructional knowledge and skill in the field of Statistics .
3. While pursuing graduate studies at Central Washington University, Ellensburg, Washington, the writer has conducted extensive research related to developing an employment profile of Bachelor of Arts graduates in Statistics in Taiwan.
4. Undertaking this project coincided with the writer's graduate studies at Central Washington University.

Development of Support for the Project

It is generally believed that Statistics is a field of study not easy to control, and some people have even felt repelled by this seemingly complex subject. Compared with other subjects statistics has been considered by some to be boring. However, statistical concepts have exercised a profound influence in almost every field of human activity, and have been incorporated into the basic principles of such sciences as physics, genetics, meteorology, and economics. Statistical methods have been used to improve agricultural products, to design space equipment, to plan traffic control, to forecast epidemics, and to attain better management in business and in government. Yet, as far as this writer knows, many people who have graduated from the Department of Statistics at Tamkang

University, in Taiwan, were not subsequently employed in a job related to statistics. Still other graduates who did find employment in the field of Statistics may not have been satisfied with their job. The writer contemplated the following questions. Why did some university graduates who had completed a difficult degree program in Statistics not seek employment in this career field? Why were other graduates who were employed in jobs using these statistical skills either satisfied or dissatisfied with their careers. It was with these thoughts and questions in mind that the writer sought to develop an employment profile of Bachelor of Arts graduates in Statistics from selected universities in Taiwan.

Procedures

To obtain background information essential for developing an employment profile of Bachelor of Arts graduates in Statistics, the writer conducted an Educational Resources Information Center (ERIC) computer search. Additionally, a questionnaire survey was developed and mailed to recent graduates awarded Bachelor of Arts degrees in Statistics from universities in Taiwan, between 1990 and 1995. The target population surveyed included currently employed graduates of Departments of Statistics from eight universities in Taiwan. The survey instrument used and survey results obtained have been presented and analyzed in Chapter 4.

Planned Implementation and Assessment of the Project

The employment profile of Bachelor of Arts (B.A.) graduates in Statistics from

selected universities in Taiwan, will be made available to faculty and administration in those institutions, during fall, 1997. It was the intention of the writer, that the employment profile would serve as a counseling tool for use by university personnel for sharing, with prospective Statistics majors, essential information related to(e.g.), career opportunities and job satisfaction. Data presented in Chapter 4 might also be used, at the discretion of university faculty and administration, to modify existing Statistics Department curricula and instructional practices in universities in Taiwan.

CHAPTER 4

THE PROJECT

The purpose of this project was to develop an employment profile of Bachelor of Arts graduates in Statistics from selected Universities in Taiwan, since 1990. To obtain data essential for accomplishing this purpose, a survey instrument was developed and mailed to recent graduates awarded Bachelor of Art in Statistics from universities in Taiwan. The survey instrument used and survey results obtained have been presented in Chapter 4. Specifically, Chapter 4 has been presented in three sections, including :

Section A : Data Gathering Process

Section B : Presentation of Pertinent Data (A Summary)

Section C : Units of Analysis (U.A.) and Conclusions

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June, 1997

SECTION A

DATA GATHERING PROCESS

To obtain background information essential for developing an employment profile of Bachelor of Arts graduates in Statistics, a questionnaire survey was developed and mailed to recent graduates awarded Bachelor of Arts degrees in Statistics from universities in Taiwan, between 1990 and 1995. The target population surveyed included currently employed graduates of Departments of Statistics from eight universities in Taiwan.

During December, 1996, a Letter of Introduction and the one page, twenty item survey instrument were mailed. To assure a maximum survey response, a postage-paid, pre-addressed return envelope was enclosed with each survey instrument mailed.

A total of eleven hundred and two (1102) questionnaires were mailed to the respondents, and three hundred and seventy-five (375) were returned. Return rate was 0.34.

The resultant data from total population responses were then reported and analyzed. These data, which are presented in Sections B and Section C, have been supplemented by narrative analysis related to each questionnaire item. The following components are included in these analyses :

1. The total number (i.e, frequency) of responses for each questionnaire item.
2. The percentage of responses for each questionnaire item.

The Letter of Introduction and the 20-item survey instrument/questionnaire have been presented on the following pages.

November 25, 1996

Dear Mr./Mrs. :

My name is Chen Cheng-hsu and I am completing my Master of Education degree at Central Washington University, Ellensburg, Washington, U. S. A.

As part of my graduate studies, I am surveying graduates who have been awarded Bachelor of Arts degrees in Statistics, since 1990, from selected universities in Taiwan. These data are needed to develop " A Profile of Employment Characteristics and/or Opportunities for B.A. Graduates in Statistics in Taiwan ."

Because you have recently completed B.A. degree in Statistics in Taiwan, I am inviting you to share your knowledge and expertise, by completing and returning the enclosed questionnaire, which will take approximately fifteen (15) minutes of your time. Please return your questionnaire in the enclosed envelope. I must receive all completed questionnaires not later than January 15, 1997.

Your responses will be combined with those of other survey participants and will remain confidential. No respondent will be identified with his/her individual answers. Thank you for your time, and for sharing your knowledge and experience.

您好，我是陳正旭，現於美國中央華盛頓大學修讀教育碩士．目前我正在著手研究「台灣地區大學統計系畢業生就業狀況剖析」，亟需了解自 1990 年迄今統計系畢業生就業狀況的相關資訊，隨函附上問卷一份，希望您能撥冗　惠予協助填寫，並請於 1 月 15 日前寄回.謝謝您的合作.

Chen heng-hsu
Graduate Student

Dr. Jack L.Mcpherson
university Supervisor

Questionnaire Survey

(1). Gender ☐ Male ☐ Female

(2). Name of University you graduated from ?

☐ Chung Hsing University ☐ Cheng Kung University
☐ Tung Hai University ☐ Chengchi University ☐ Tamkang University
☐ Feng Chia University ☐ Fu-Jen University ☐ Ming Chung University

(3). Which year did you graduate ?

☐ 1990 ☐ 1991 ☐ 1992 ☐ 1993 ☐ 1994 ☐ 1995

(4). What were your graduating marks ?

☐ above 90 ☐ 80~89 ☐ 70~79 ☐ 60~69 ☐ below 60

(5).What is your status right now ?

☐ Working ☐ Studying ☐ Military service ☐ Other_____

(6). How soon after graduation did you get your first job ?

☐ within one month ☐ within three months
☐ between three months and six months ☐ between six months and one year
☐ beyond one year

(7). What was your first job ?

☐ Teaching ☐ Insurance ☐ Financial Services ☐ Service Trades
☐ Manufacturing ☐ Research Institute ☐ Other_____

(8). What was the salary range for your first job ?($NTD)

☐ below 25,000 ☐ between 25,001 and 30,000 ☐ between 30,001 and 35000
☐ between 35001 and 40,000 ☐ between 40001 and 50000 ☐ beyond 40,001.

(9). How many times have you changed jobs so far ?

☐ None ☐ One ☐ Two ☐ Three ☐ Four ☐ Other_____

(10). How did you get your current job ?

☐ through examination ☐ friend's introduction ☐ through newspaper
☐ through National Youth Commission ☐ Other_____

(11). What is your current job ?

☐ Teaching ☐ Insurance ☐ Financial Services ☐ Service Trades
☐ Manufacturing ☐ Research Institute ☐ Other_____

(12). What is the salary range for your present position?

☐ below 25,000 ☐ between 25,001 and 30,000 ☐ between 30,001 and 35000
☐ between 35001 and 40,000 ☐ between 40001 and 50000 ☐ beyond 50,001.

(13). How satisfied are you with your present job ?

☐ Completely satisfied ☐ Satisfied ☐ Indifferent ☐ Dissatisfied
☐ Completely dissatisfied .

(14). Have you ever looked for a job related to Statistics ? ☐ Yes ☐ No .

(15). Does your current job relate to Statistics ? ☐ Yes ☐ No .

(16). Do you want to find a job related to Statistics ?

☐ Yes ☐ No ☐ Indifferent

(17). Do you want to pursue graduate studies related to Statistics ? ☐ Yes ☐ No .

(18). What do you believe was the most useful subject in your university course ?

☐ Statistics ☐ Accounting ☐ Economics ☐ Management ☐ S.A.S.
☐ Insurance ☐ Sampling Survey ☐ None ☐ Other_____

(19). What do you believe is the most suitable job for students graduating in Statistics ?

☐ Teaching ☐ Actuary ☐ Insurance ☐ Finance ☐ Statistician
☐ Other_____

(20). Do you regret majoring in Statistics at the university ?

☐ Yes ☐ No ☐ Indifferent

Finally, thank you for helping me to gain an understanding of your experience in the field of Statistics . By the way , Do you want to know the results compiled on this questionnaire ? ☐ Yes ☐ No

SECTION B

PRESENTATION OF
PERTINENT DATA--A SUMMARY

TABLE OF CONTENTS

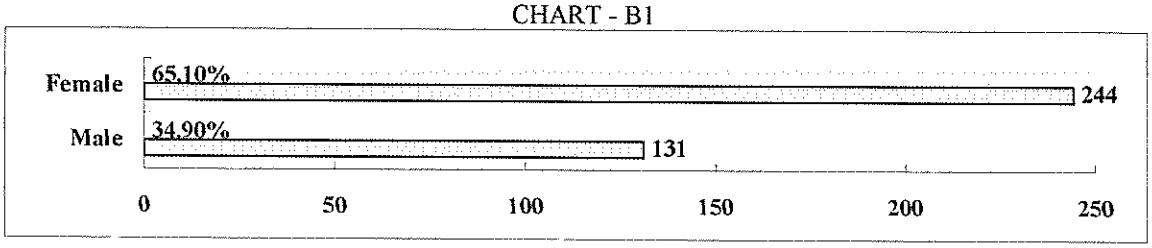
Questionnaire

(1) Gender

TABLE - B1

	Frequency	*Percent*
Female	244	65.10%
Male	131	34.90%
Total	375	100.00%

CHART - B1

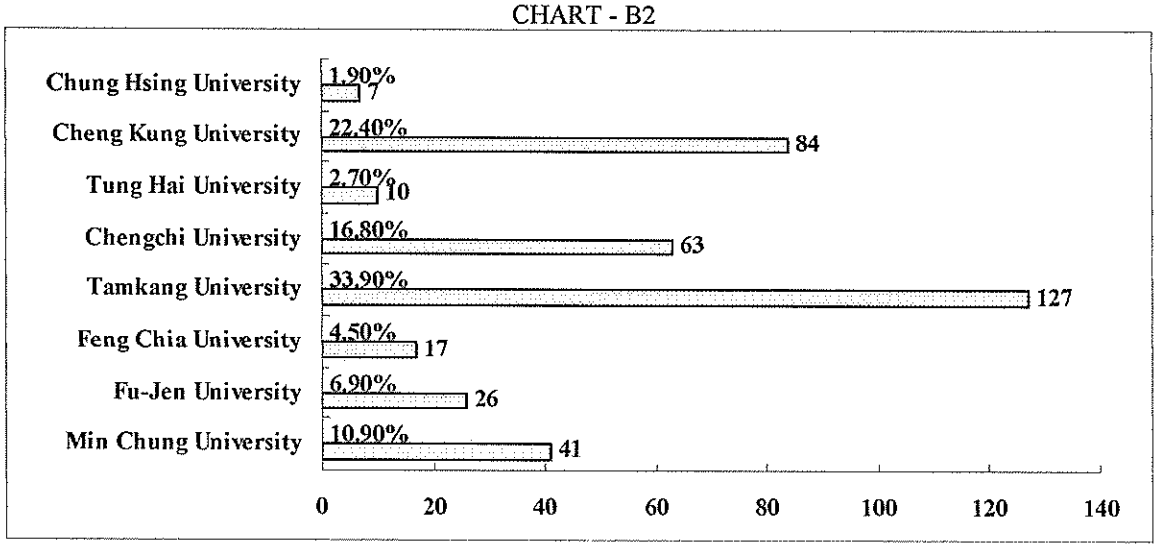


(2) Name of University Graduated From

TABLE - B2

	Frequency	*Percent*
Chung Hsing University	7	1.90%
Cheng Kung University	84	22.40%
Tung Hai University	10	2.70%
Chengchi University	63	16.80%
Tamkang University	127	33.90%
Feng Chia University	17	4.50%
Fu-Jen University	26	6.90%
Min Chung University	41	10.90%
Total	375	100.00%

CHART - B2

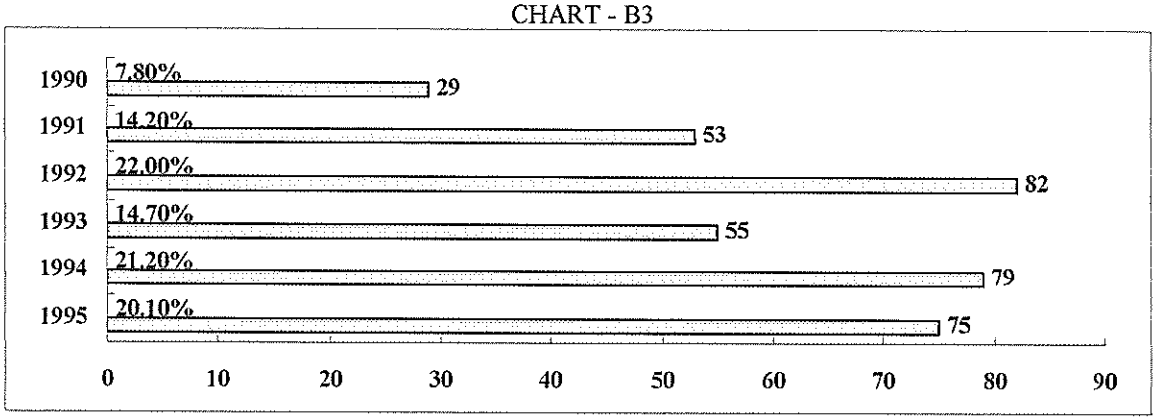


(3) Graduation Year

TABLE - B3

	Frequency	*Percent*
1990	29	7.80%
1991	53	14.20%
1992	82	22.00%
1993	55	14.70%
1994	79	21.20%
1995	75	20.10%
Total	373	100.00%

CHART - B3

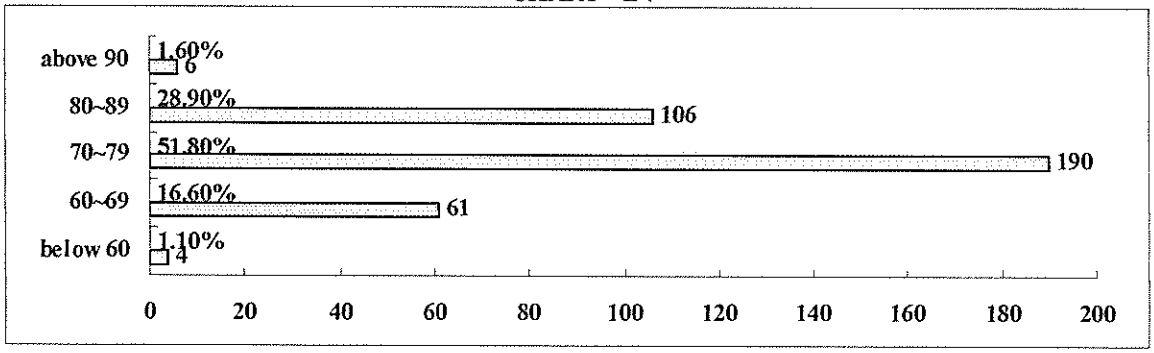


(4) Graduation Marks

TABLE - B4

	Frequency	*Percent*
above 90	6	1.60%
80~89	106	28.90%
70~79	190	51.80%
60~69	61	16.60%
below 60	4	1.10%
Total	367	100.00%

CHART - B4

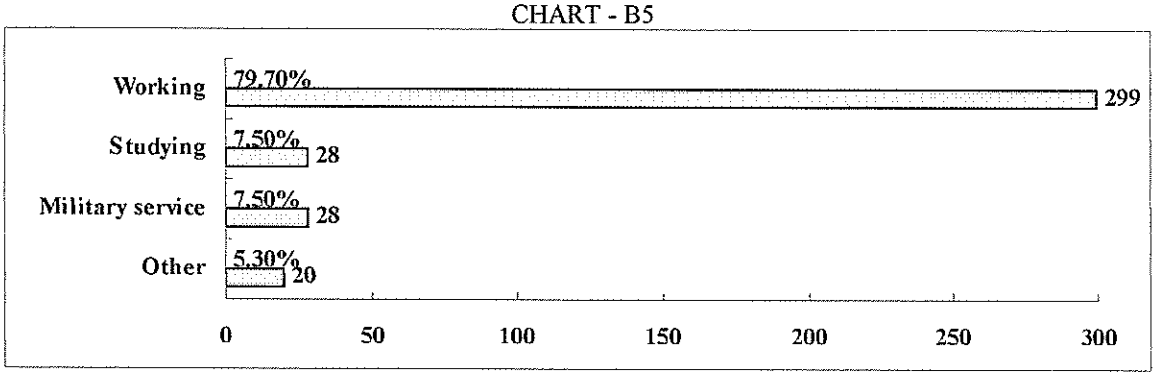


(5) Current Status

TABLE - B5

	Frequency	*Percent*
Working	299	79.70%
Studying	28	7.50%
Military service	28	7.50%
Other	20	5.30%
Total	375	100.00%

CHART - B5

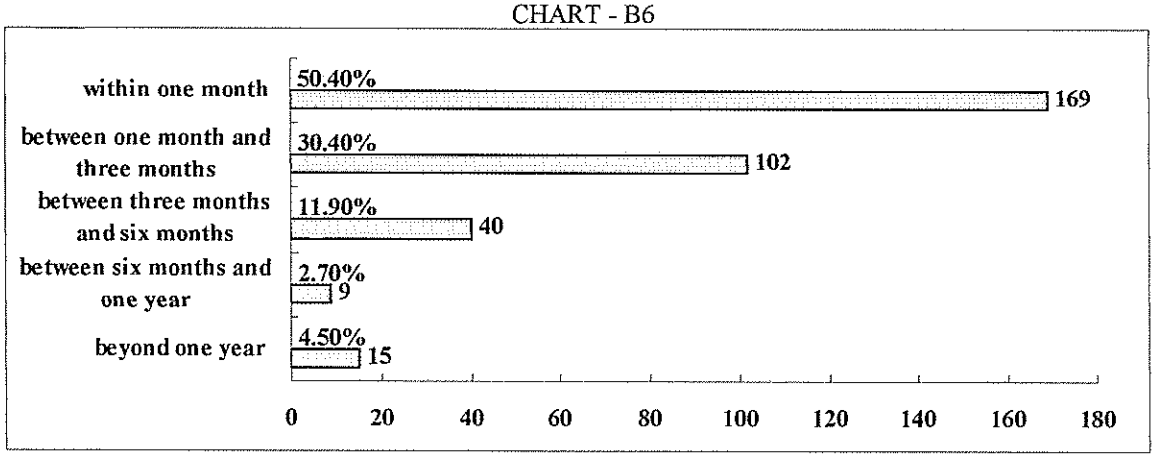


(6) How Long Before Employed

TABLE - B6

	Frequency	*Percent*
within one month	169	50.40%
between one month and three months	102	30.40%
between three months and six months	40	11.90%
between six months and one year	9	2.70%
beyond one year	15	4.50%
Total	335	100.00%

CHART - B6

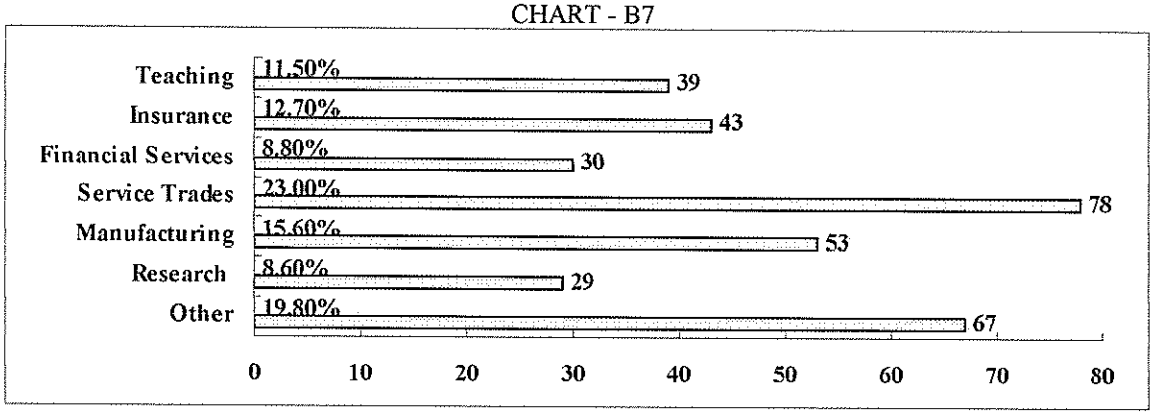


(7) First Job

TABLE - B7

	Frequency	*Percent*
Teaching	39	11.50%
Insurance	43	12.70%
Financial Services	30	8.80%
Service Trades	78	23.00%
Manufacturing	53	15.60%
Research	29	8.60%
Other	67	19.80%
Total	339	100.00%

CHART - B7

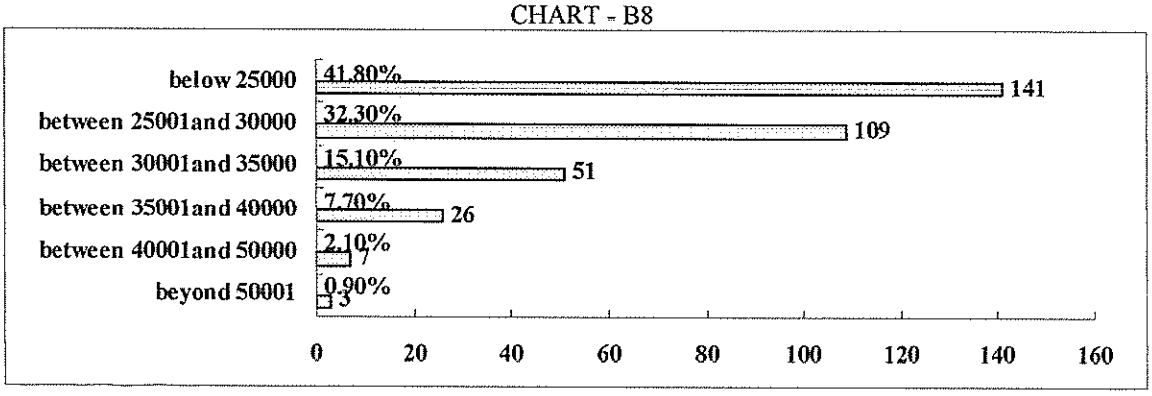


(8) First Salary

TABLE - B8

	Frequency	*Percent*
below 25000	141	41.80%
between 25001and 30000	109	32.30%
between 30001and 35000	51	15.10%
between 35001and 40000	26	7.70%
between 40001and 50000	7	2.10%
beyond 50001	3	0.90%
Total	337	100.00%

CHART - B8

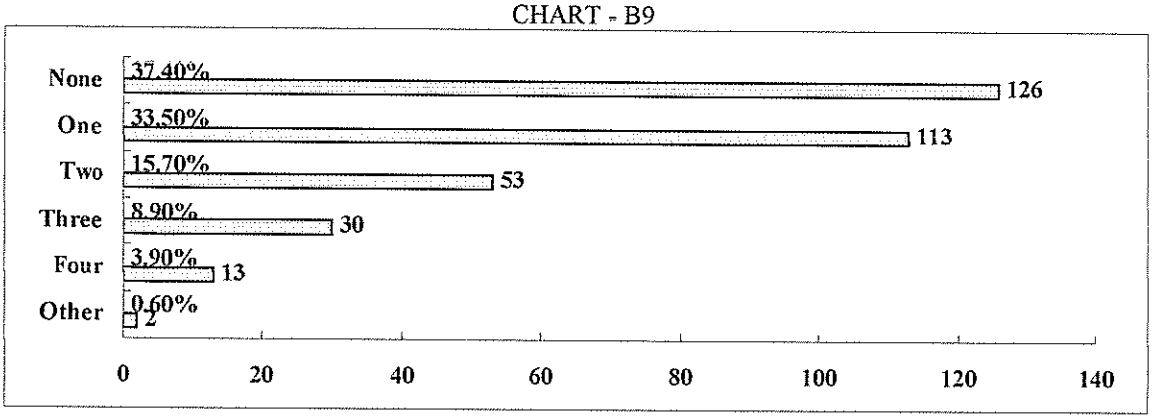


(9) Number of Job Changes

TABLE - B9

	Frequency	*Percent*
None	126	37.40%
One	113	33.50%
Two	53	15.70%
Three	30	8.90%
Four	13	3.90%
Other	2	0.60%
Total	337	100.00%

CHART - B9

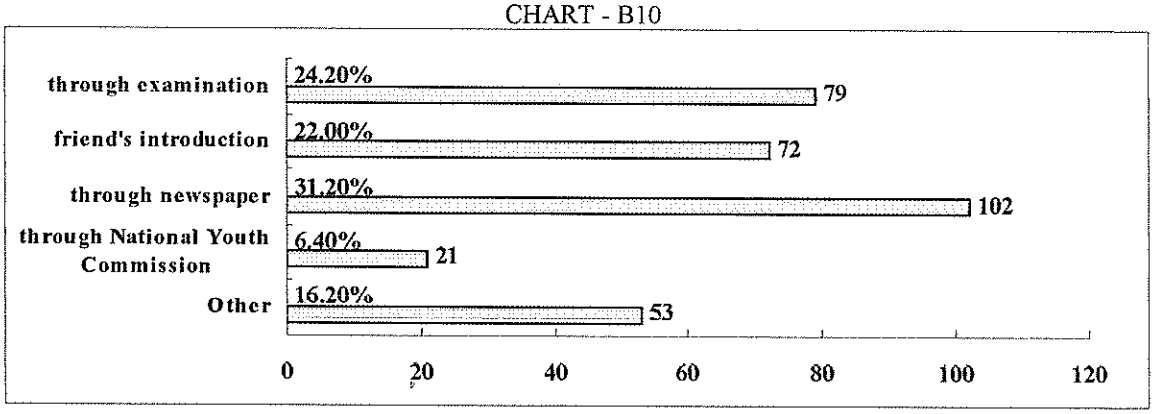


(10) How Current Job Obtained

TABLE - B10

	Frequency	*Percent*
through examination	79	24.20%
friend's introduction	72	22.00%
through newspaper	102	31.20%
through National Youth Commission	21	6.40%
Other	53	16.20%
Total	327	100.00%

CHART - B10

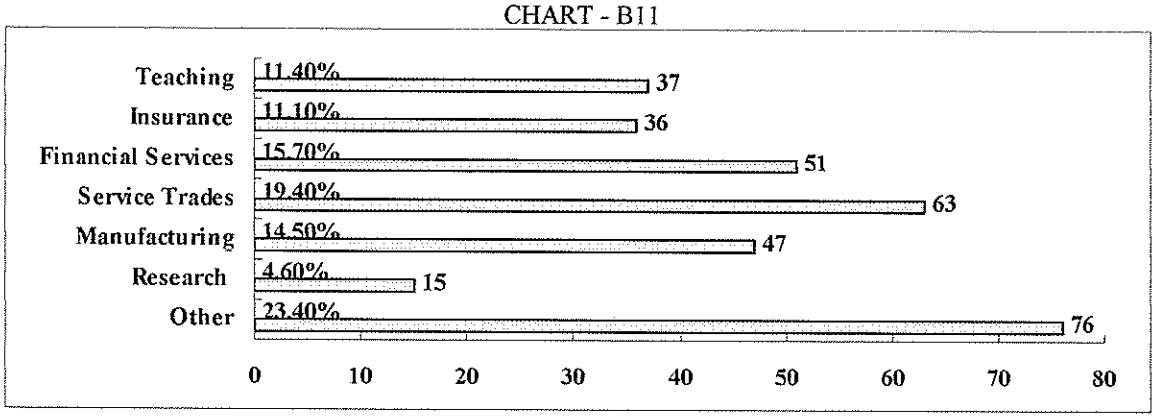


(11) Current Job

TABLE - B11

	Frequency	*Percent*
Teaching	37	11.40%
Insurance	36	11.10%
Financial Services	51	15.70%
Service Trades	63	19.40%
Manufacturing	47	14.50%
Research	15	4.60%
Other	76	23.40%
Total	325	100.00%

CHART - B11

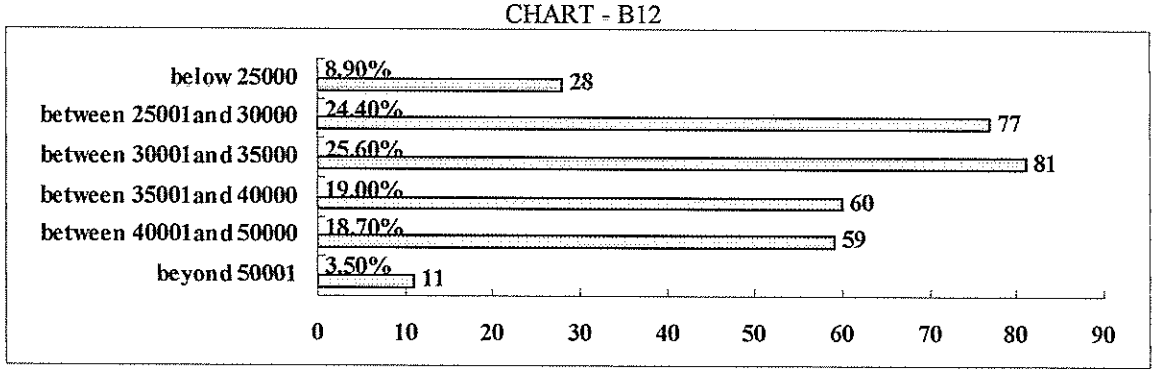


(12) Current Salary

TABLE - B12

	Frequency	*Percent*
below 25000	28	8.90%
between 25001and 30000	77	24.40%
between 30001and 35000	81	25.60%
between 35001and 40000	60	19.00%
between 40001and 50000	59	18.70%
beyond 50001	11	3.50%
Total	316	100.00%

CHART - B12

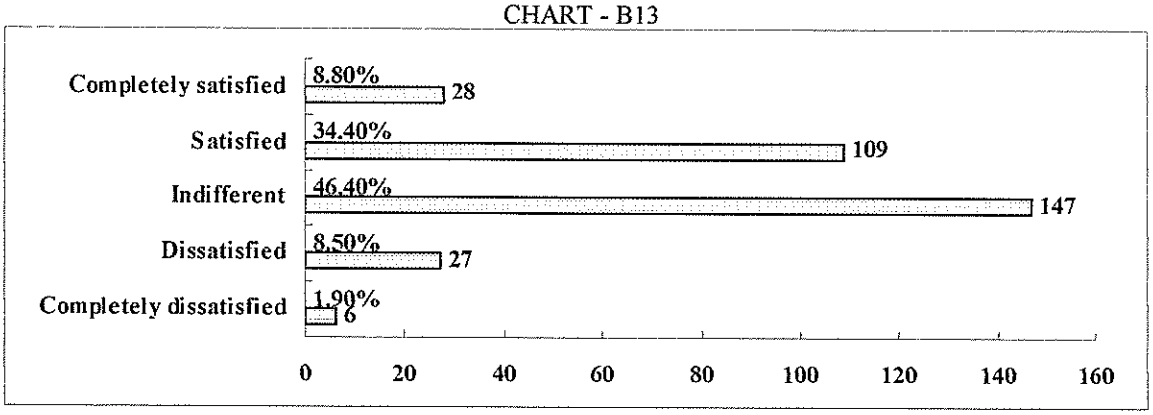


(13) Job Satisfaction

TABLE - B13

	Frequency	*Percent*
Completely satisfied	28	8.80%
Satisfied	109	34.40%
Indifferent	147	46.40%
Dissatisfied	27	8.50%
Completely dissatisfied	6	1.90%
Total	317	100.00%

CHART - B13

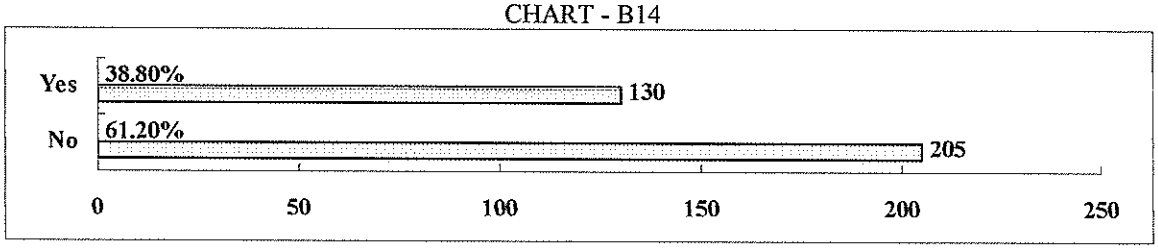


(14) Looked for Job Related to Statistics

TABLE - B14

	Frequency	*Percent*
Yes	130	38.80%
No	205	61.20%
Total	335	100.00%

CHART - B14

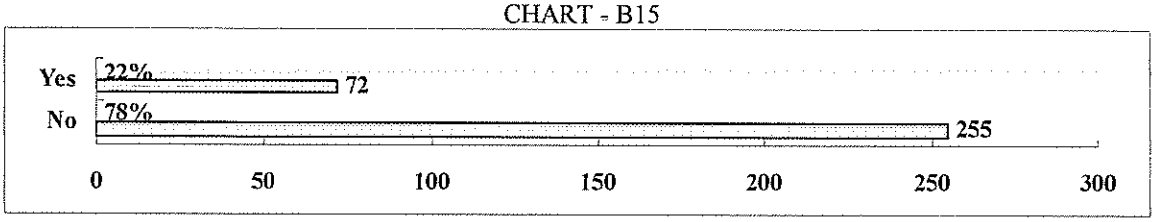


(15) Relationship of Current Job to Statistics

TABLE - B15

	Frequency	*Percent*
Yes	72	22%
No	255	78%
Total	329	100%

CHART - B15

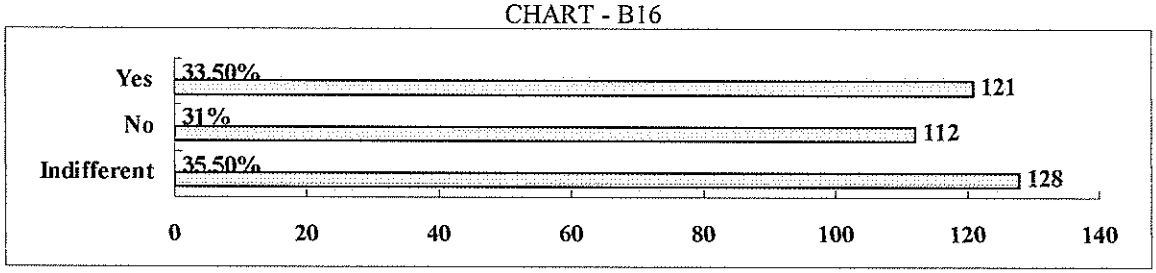


(16) Seeking Job Related to Statistics

TABLE - B16

	Frequency	*Percent*
Yes	121	33.50%
No	112	31%
Indifferent	128	35.50%
Total	361	100.00%

CHART - B16

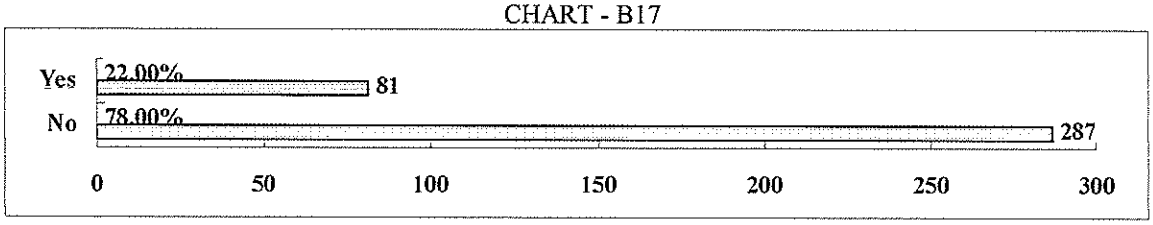


(17) Pursuing Graduate Studies in Statistics

TABLE - B17

	Frequency	*Percent*
Yes	81	22.00%
No	287	78.00%
Total	368	100.00%

CHART - B17

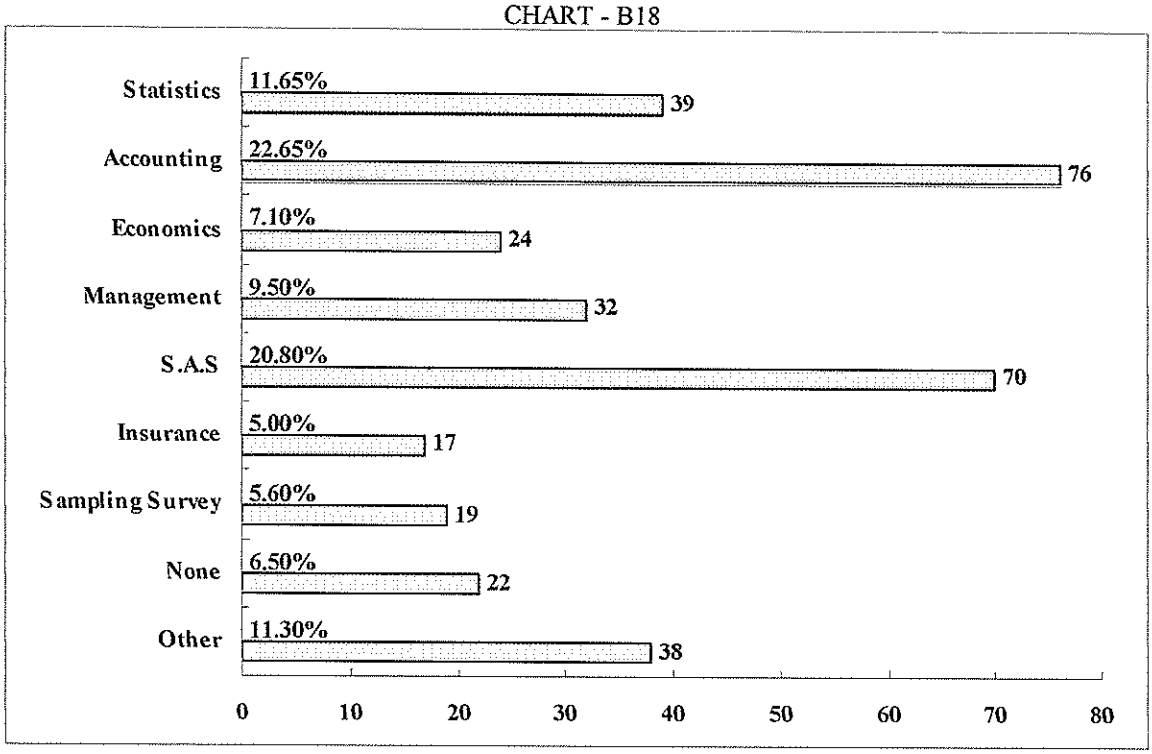


(18) Most Useful University Course

TABLE - B18

	Frequency	*Percent*
Statistics	39	11.65%
Accounting	76	22.65%
Economics	24	7.10%
Management	32	9.50%
** S.A.S*	70	20.80%
Insurance	17	5.00%
Sampling Survey	19	5.60%
None	22	6.50%
Other	38	11.30%
Total	337	100.00%

CHART - B18



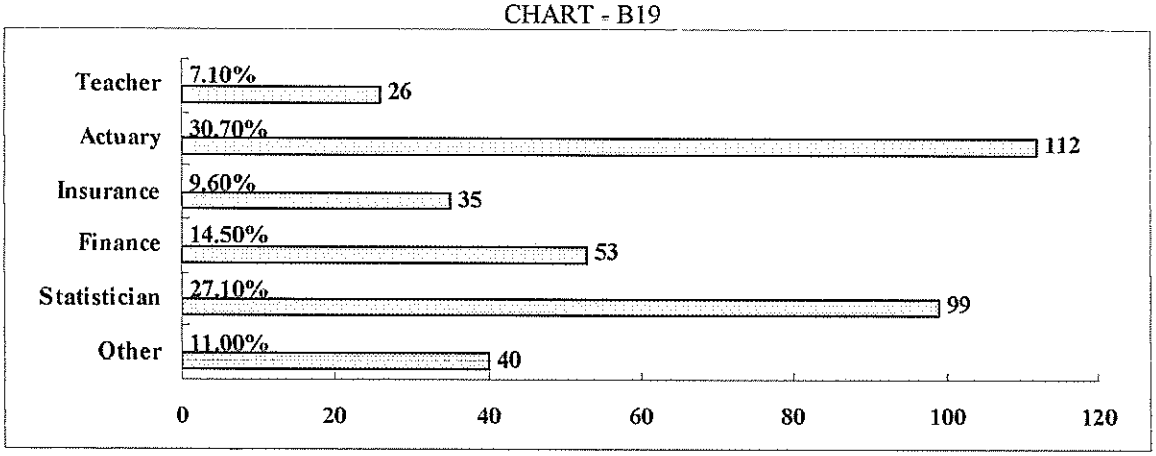
* S.A.S. : Statistical Analysis System

(19)Most Suitable Job for Statistics Graduates

TABLE - B19

	Frequency	*Percent*
Teacher	26	7.10%
Actuary	112	30.70%
Insurance	35	9.60%
Finance	53	14.50%
Statistician	99	27.10%
Other	40	11.00%
Total	365	100.00%

CHART - B19

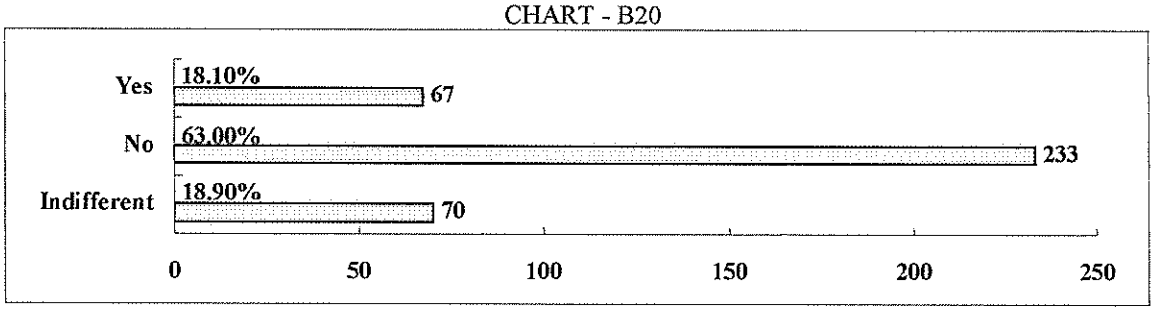


(20) Regret Majoring in Statistics

TABLE - B20

	Frequency	*Percent*
Yes	67	18.10%
No	233	63.00%
Indifferent	70	18.90%
Total	370	100.00%

CHART - B20



Summary--Section B

1. Survey respondents : Total, 375; female, **244** (65.10%); male, **131** (34.90%).

2. Highest number of graduates majoring in Statistics--**Tamkang University** (33.90%).

3. Highest number of Statistics graduates in a single year--**1992** (22.00%).

4. Most common graduation marks (i.e., grades)--**70 ~ 79** (51.80%).

5. Respondents currently employed (i.e., all areas)--**299** (79.70%).

6. Average length of time before employment--**One (1) month** (50.40%).

7. First job; most frequent area of employment--**Service Trades** (23.00%).

8. First jobs; most common salary range--**below 25001 NTD** (41.80%) (i.e., 1 New Taiwan Dollar : 27.5 United States Dollars).

9. Highest number of job changes--**None** (37.40%).

10 . Most common means for finding current job--**Through Newspaper** (31.20%).

11. Most common current job--**Service Trades** (19.40%).

12. Most common current job salary range--**30001~35000 NTD** (25.60%).

13. Job satisfaction; most frequent response--**Indifferent** (46.40%).

14. Job search choice immediately following university graduation--61.20% "**Did not**" seek a Statistics-related job.

15. Relationship of current job to Statistics--78.00% indicated "**No**" relationship.

16. Currently seeking a Statistics-related job—33.50% (35.50% were "**Indifferent**" as to the need to find a Statistics-related job).

17. Elected **not** to pursue graduate studies related to Statistics (78.00%).

18. Most useful university course--**Accounting** (22.65%).

19. Most suitable perceived job for Statistics graduates--**Actuary** (30.70%).

20. Regretted majoring in Statistics--"**No regret**" (63.00%).

SECTION C

UNITS OF ANALYSIS (U A)
AND CONCLUSION

TABLE OF CONTENTS

Unit 1 : Relationship of Current Job to Statistics VS. Gender

TABLE C1

	Female	*Male*	*Total*
Yes	55 (16.82%)	17 (5.20%)	72 (22.02%)
No	170 (51.99%)	85 (25.99%)	225 (77.98%)
Total	225(68.81%)	102(31.19%)	327 (100%)

CHART C1

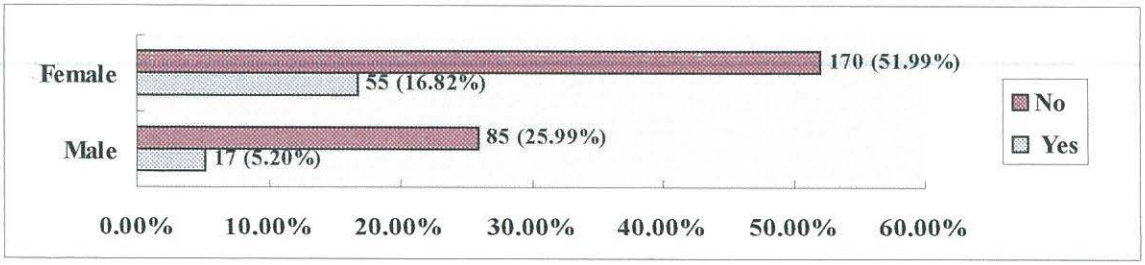


TABLE C1-1

	Female		*Male*	
Yes	55	24.44%	17	16.67%
No	170	75.56%	85	83.33%
Total	225	100%	102	100%

Analysis : According to data presented in TABLE - C1, 16.82 percent females and 5.20 percent males are currently employed in a job related to Statistics.

Presented in TABLE C1-1 , 55 of 225 female respondents (24.44%) were related to Statistics and 17 of 102 male respondents(16.67%) were related to statistics.

Conclusion : Gender was not a significant factor in determining the "relationship of current job to Statistics."

Unit 2 : Current Job VS. Relationship of Current Job to Statistics

TABLE C2

	Yes	*No*	*Total*
Teaching	**12 (3.73%)**	**25 (7.76%)**	**37 (11.49%)**
Insurance	**7 (2.17%)**	**29 (9.01%)**	**36 (11.18%)**
Financial Services	**4 (1.24%)**	**47 (14.6%)**	**51 (15.84%)**
Service Trades	**10 (3.11%)**	**53 (16.46%)**	**63 (19.57%)**
Manufacturing	**6 (1.86%)**	**41 (12.73%)**	**47 (14.60%)**
Research	**12 (3.73%)**	**3 (0.93%)**	**15 (4.66%)**
Other	**20 (6.21%)**	**53 (16.46%)**	**73 (22.67%)**
Total	**71 (22.05%)**	**251 (77.64%)**	**322 (100%)**

CHART C2

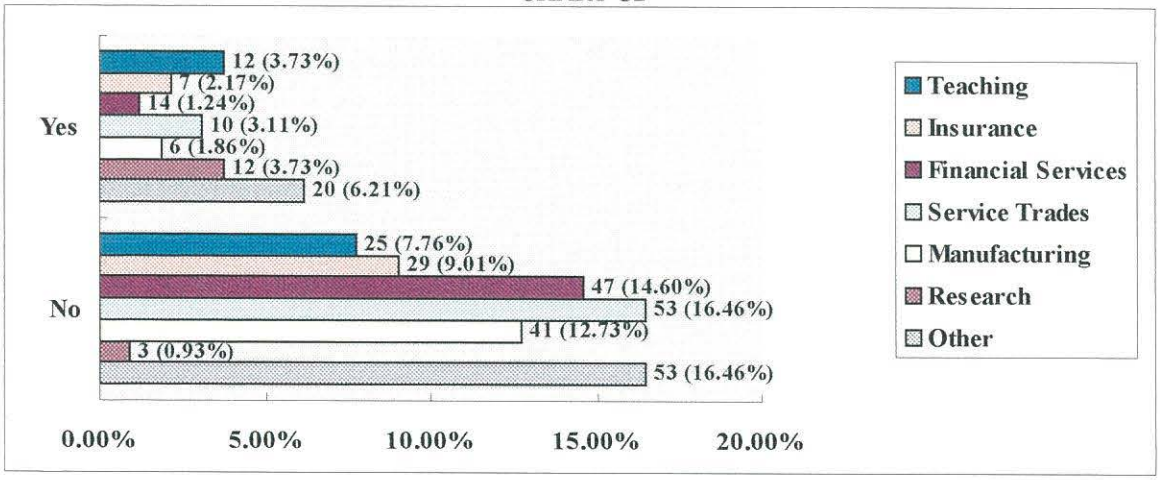


TABLE C2-1

	Yes		*No*	
Teaching	**12**	**16.90%**	**25**	**10.00%**
Insurance	**7**	**9.86%**	**29**	**11.20%**
Financial Services	**4**	**5.63%**	**47**	**18.80%**
Service Trades	**10**	**14.08%**	**53**	**21.20%**
Manufacturing	**6**	**8.45%**	**41**	**16.40%**
Research	**12**	**16.90%**	**3**	**1.20%**
Other	**20**	**28.17%**	**53**	**21.20%**
Total	**71**	**100%**	**251**	**100%**

Analysis : As indicated in TABLE C2 , 71 of 322 respondents (22.05%) were currently employed in jobs related to Statistics, while 251 (77.64%) were not employed in Statistics-related occupations.

Statistics-related jobs included:

Teachers, 3.73%; Insurance, 2.17%; Financial Services, 1.24%; Service Trades, 3.11%; Manufacturing, 1.86%; Research, 3.73%; and Other 6.21%.

According to data presented in TABLE C2-1, 12 of 71 respondents (16.90%)

whose current job related to Statistics were currently employed in Research, while 3 of 251 respondents(1.20%) whose current job was not related to Statistics were currently employed in Research.

Conclusion : Significantly, only 71 0f 322 respondents (22.05%), were currently employed in a job "related to Statistics", while 251 respondents (77.64%) were employed in non-statistics related work. One may conclude that a university major in statistics does not guarantee employment in a related occupation.

Unit 3 : Current Salary VS. Relationship of Current Job to Statistics

TABLE C3

	Yes	*No*	*Total*
below 25000	**6 (1.90%)**	**22 (6.96%)**	**28 (8.86%)**
between 25001 and 30000	**10 (3.16%)**	**67 (21.20%)**	**77 (24.37%)**
between 30001 and 35000	**15 (4.75%)**	**66 (20.89%)**	**81 (25.63%)**
between 35001 and 40000	**18 (5.70%)**	**42 (13.29%)**	**60 (18.99%)**
between 40001 and 50000	**17 (5.38%)**	**42 (13.29%)**	**59 (18.67%)**
beyond 50001	**4 (1.27%)**	**7 (2.22%)**	**11 (3.48%)**
Total	**70 (22.15%)**	**246 (77.85%)**	**316 (100%)**

CHART C3

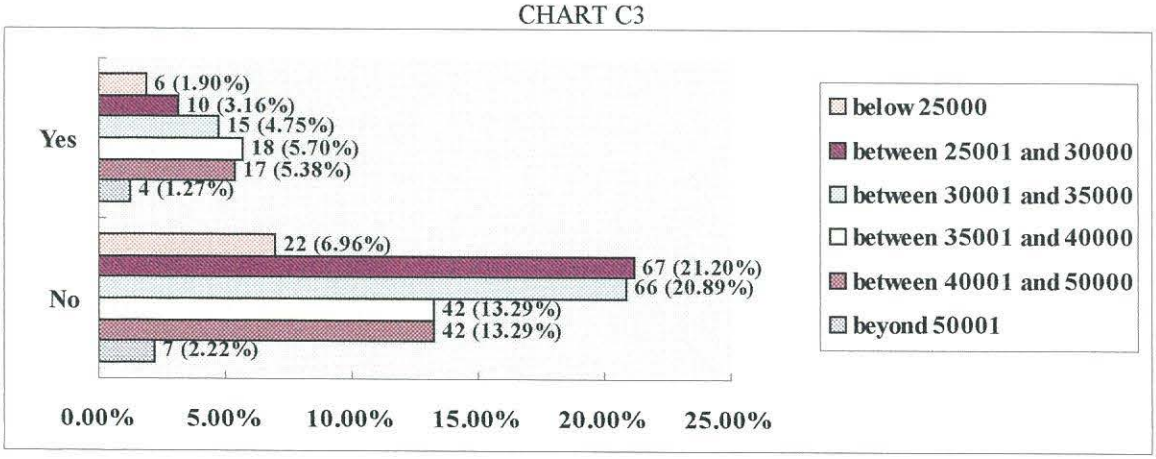


TABLE C3-1

	Yes		*No*	
below 25000	**6**	**8.57%**	**22**	**8.98%**
between 25001 and 30000	**10**	**14.29%**	**67**	**27.35%**
between 30001 and 35000	**15**	**21.43%**	**66**	**26.95%**
between 35001 and 40000	**18**	**25.71%**	**42**	**16.93%**
between 40001 and 50000	**17**	**24.29%**	**42**	**16.93%**
beyond 50001	**4**	**5.71%**	**7**	**2.86%**
Total	**70**	**100%**	**246**	**100%**

Analysis : As indicated in TABLE C3, Respondents reported:
"Current Salary" below 25000, 1.9%; between 25001 and 30000, 3.16%; between 30001 and 35000, 4.75%; between 35001 and 40000, 5.70%; between 40001 and 50000, 5.38%; and beyond 50001, 1.27%.

TABLE C3-1 shows that 55.71 percent of the respondents whose current job related to Statistics salaries ranged from 35001 to beyond 50001, while 36.72 percent of the respondents who were employed in non-statistics positions salaries ranged from 35001 to beyond 50001.

Conclusion :The respondents whose current job related to Statistics received higher pay than those employed in non-statistics employment.

Unit 4 : Job Satisfaction VS. Relationship of Current Job to Statistics

TABLE C4

	Yes	*No*	*Total*
Completely satisfied	6 (1.89%)	22 (6.94%)	28 (8.83%)
Satisfied	31 (9.78%)	78 (24.61%)	109 (34.38%)
Indifferent	31 (9.78%)	116 (36.60%)	147 (46.37%)
Dissatisfied	2 (0.63%)	25 (7.89%)	27 (8.52%)
Completely dissatisfied	0 (0.0%)	6 (1.89%)	6 (1.89%)
Total	70 (22.08%)	247 (77.92%)	317 (100%)

CHART C4

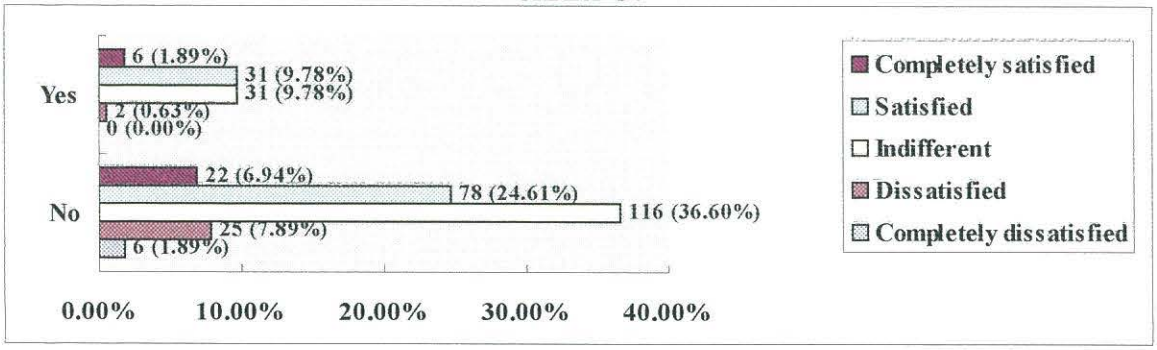


TABLE C4-1

	Yes		*No*	
Completely satisfied	6	8.57%	22	8.94%
Satisfied	31	44.29%	78	31.71%
Indifferent	31	44.29%	116	46.75%
Dissatisfied	2	2.86%	25	10.16%
Completely dissatisfied	0	0.00%	6	2.44%
Total	70	100%	247	100%

Analysis :According to TABLE C4, Satisfaction relationship to Statistics-related jobs indicated: Complete satisfaction with a current job, 1.89%; Satisfied, 9.78%; Indifferent, 9.78%; Dissatisfied, 0.63%; and no one completely dissatisfied.

As indicated in TABLE C4-1, 2 of 70 respondents (2.86%) whose current job was related to Statistics were dissatisfied or completely dissatisfied their current job, however 31 of 247 respondents (12.6%) who were employed in non-statistics jobs were dissatisfied or completely dissatisfied .

Conclusion : Respondents whose current jobs related to statistics were less dissatisfied than those employed in non-statistics jobs.

Unit 5 : Graduation Marks VS. Relationship of Current Job to Statistics

TABLE C5

	Yes	*No*	*Total*
above 90	0 (0.0%)	4 (1.25%)	4 (1.3%)
80~89	39 (12.23%)	55 (17.24%)	94 (29.47%)
70~79	24 (7.52%)	139 (43.57%)	163 (51.10%)
60~69	6 (1.88%)	48 (15.05%)	54 (16.93%)
below 60	0 (0.0%)	4 (1.25%)	4 (1.25%)
Total	69 (21.6%)	250 (78.37%)	319 (100%)

CHART C5

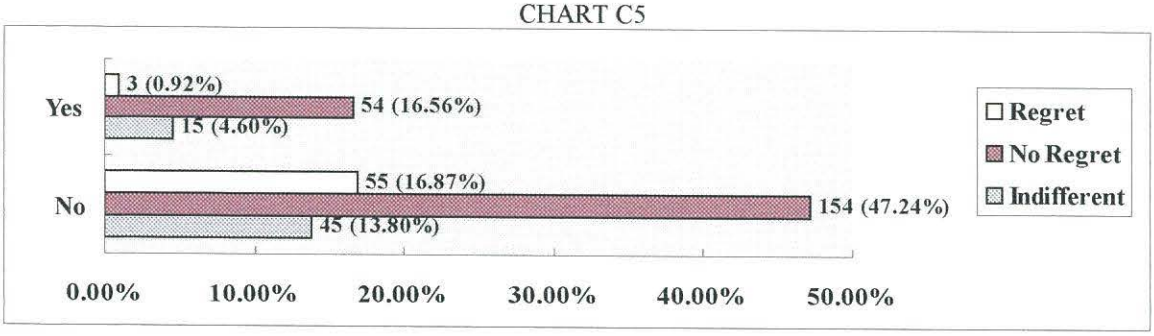


TABLE C5-1

	Yes		*No*	
above 90	0	0.00%	4	1.61%
80~89	39	56.52%	55	21.69%
70~79	24	34.78%	139	55.82%
60~69	6	8.70%	48	19.27%
below 60	0	0.00%	4	1.61%
Total	69	100%	250	100%

Analysis : According to data presented in TABLE C5, no respondents whose current job was related to statistics received graduation marks above 90 or below 60.

As indicated in TABLE C5-1, 63 of 69 respondents (91.3%) whose current job was related to statistics received graduation marks ranging from 70-89.

Conclusion: The majority of respondents whose current job related to statistics received graduation marks between 70-89.

Unit 6 : Regret Majoring in Statistics VS. Relationship of Current Job to Statistics

TABLE C6

	Yes	*No*	*Total*
Regret	**3 (0.92%)**	**55 (16.87%)**	**58 (17.79%)**
No Regret	**54 (16.56%)**	**154 (47.25%)**	**208 (63.81%)**
Indifferent	**15 (4.60%)**	**45 (13.80%)**	**60 (18.40%)**
Total	**72 (22.08%)**	**254 (77.92%)**	**326 (100%)**

CHART C6

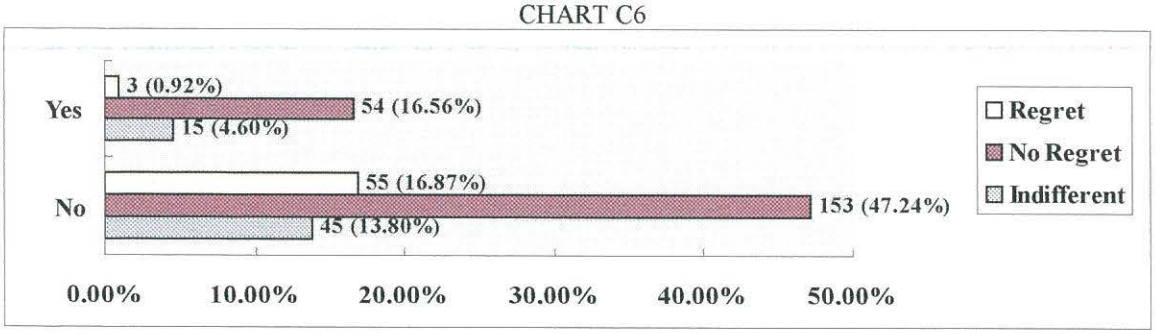


TABLE C6-1

	Yes		*No*	
Regret	**3**	**4.17%**	**55**	**21.74%**
No Regret	**54**	**75.00%**	**154**	**60.47%**
Indifferent	**15**	**20.83%**	**45**	**17.79%**
Total	**72**	**100%**	**254**	**100%**

Analysis :As indicated in TABLE C6, Respondents reported:
Regret majoring in Statistics, 0.92%; No regret, 15.56%; Indifferent, 4.60%.

According to data presented in TABLE C6-1, 3 of 72 respondents (4.17%) whose current job related to statistics regretted majoring in Statistics, while 55 of 254 respondents who were employed in non-statistics jobs regretted majoring in Statistics.

Conclusion: Respondents whose current job related to Statistics reported less regret majoring in Statistics than those employed in non-statistics jobs.

Unit 7 : Seeking Job Related to Statistics VS. Gender

TABLE C7

	Female	*Male*	*Total*
Yes	87 (24.10%)	34 (9.42%)	121 (33.52%)
No	69 (19.11%)	43 (11.91%)	112 (31.02%)
Indifferent	81 (22.44%)	47 (13.02%)	128 (35.46%)
Total	237 (65.65%)	124 (34.35%)	361 (100%)

CHART C7

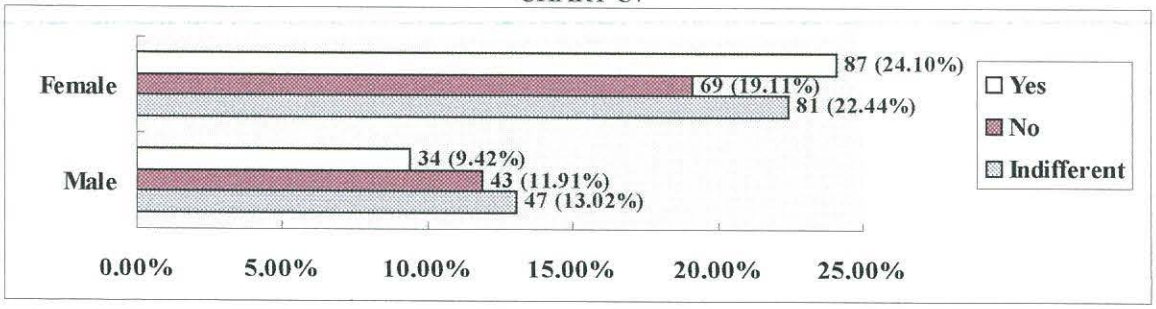


TABLE C7-1

	Female		*Male*	
Yes	87	36.71%	34	27.42%
No	69	29.11%	43	34.68%
Indifferent	81	34.18%	47	37.90%
Total	237	100%	124	100%

Analysis :As shown in TABLE - C7 , 24.10 percent female respondents would seek a job related to Statistics; 19.11 percent did not want to seek a job related to statistics, and 22.44 percent were indifferent.
9.42 percent male respondents would seek a job related to statistics; 11.91 percent did not want to seek a job related to statistics, and 13.02 percent were indifferent.

As indicated in TABLE C7-1, 87 of 237 female respondents (36.71%) would seek a job related to statistics, while 34 of 124 male respondents (27.42%) would seek a job related to statistics.

Conclusion: Female respondents would be more likely to seek a job related to statistics than male respondents.

Unit 8 : Seeking Job Related to Statistics VS. Relationship of Current Job to Statistics

TABLE C8

	Yes	*No*	*Total*
Yes	45 (13.84%)	62 (19.08%)	107 (32.92%)
No	4 (1.23%)	98 (30.15%)	102 (31.38%)
Indifferent	23 (7.08%)	93 (28.62%)	116 (35.70%)
Total	72 (22.15%)	253 (77.85%)	325 (100%)

CHART C8

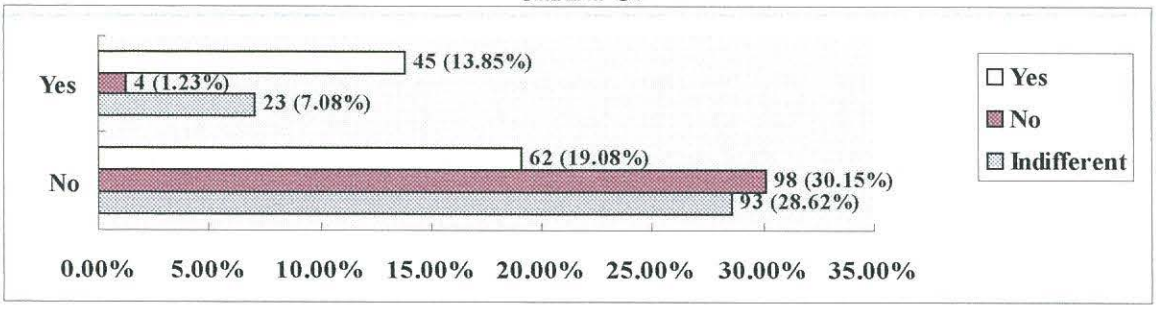


TABLE C8-1

	Yes		*No*	
Yes	45	62.50%	62	24.60%
No	4	5.56%	98	38.89%
Indifferent	23	31.94%	93	36.51%
Total	72	100%	253	100%

Analysis : In TABLE C9, 13.84 percent of the respondents whose current job was related to statistics would seek a further job related to statistics; 1.23 percent did not want to seek a job related statistics, and 7.08 percent were indifferent. 19.8 percent of the respondents who were employed in non-statistics jobs would seek a job related to statistics; 30.15 percent did not want to seek a job related to statistics, and 28.62 percent were indifferent.

In TABLE C8-1, 4 of 72 respondents (5.56%) whose current job related to statistics did not want to seek a job related to Statistics, while 98 of 253 respondents (38.89%) who were employed in non-statistics jobs did not want to seek a job related Statistics.

Conclusion: The majority of respondents whose current job was related to statistics indicated they would seek other jobs related to statistics, but approximately one third of the respondents who were employed in non-statistics jobs did not want to seek a job related to statistics.

Unit 9 : Regret Majoring in Statistics VS. Gender

TABLE C9

	Female	*Male*	*Total*
Regret	40 (10.81%)	27 (7.30%)	67 (18.11%)
No Regret	157 (42.43%)	76 (20.54%)	233 (62.97%)
Indifferent	43 (11.62%)	27 (7.30%)	70 (18.92%)
Total	240 (64.86%)	130 (35.14%)	370 (100%)

CHART C9

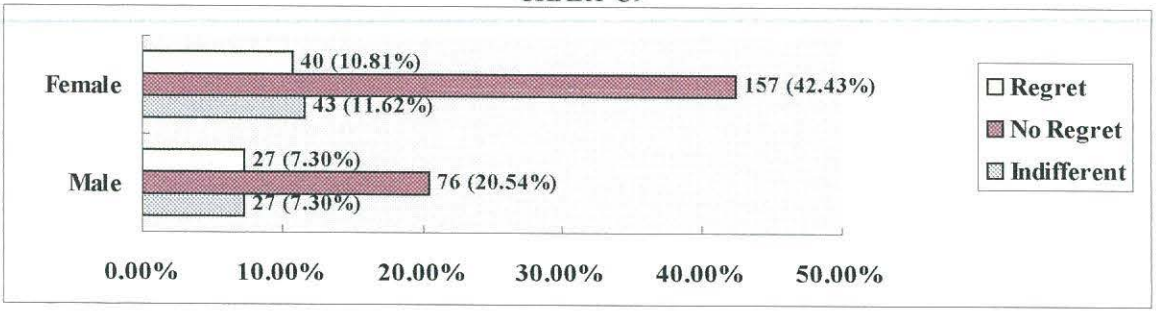


TABLE C9-1

	Female		*Male*	
Regret	40	16.67%	27	20.77%
No Regret	157	65.42%	76	58.46%
Indifferent	43	17.92%	27	20.77%
Total	240	100%	130	100%

Analysis : In TABLE C9 , 10.81 percent female respondents regretted majoring in Statistics; 42.43 percent did not regret majoring in statistics, and 11.62 percent were indifferent.

7.30 percent of the male respondents regretted majoring in Statistics; 20.54 percent did not regret majoring in Statistics , and 7.30 percent were indifferent.

In TABLE C9-1, 40 of 240 female respondents (16.67%) regretted majoring in Statistics, while 27 of 130 male respondents (20.77%) regretted majoring in Statistics.

Conclusion: Male respondents regretted majoring in Statistics marginally more than female respondents.

Unit 10 : Pursuing Graduate Studies in Statistics VS. Graduation Marks

TABLE C10

	above 90	*80~89*	*70~79*	*60~69*	*below 60*	*Total*
Yes	1 (0.28%)	35 (9.70%)	38 (10.53%)	4 (1.11%)	0 (0.00%)	78 (21.61%)
No	3 (0.83%)	69 (19.11%)	150 (41.55%)	57 (15.97%)	4 (1.11%)	283 (78.39%)
Total	4 (1.11%)	104 (28.81%)	188 (50.08%)	61 (16.90%)	4 (1.11%)	361 (100%)

CHART C10

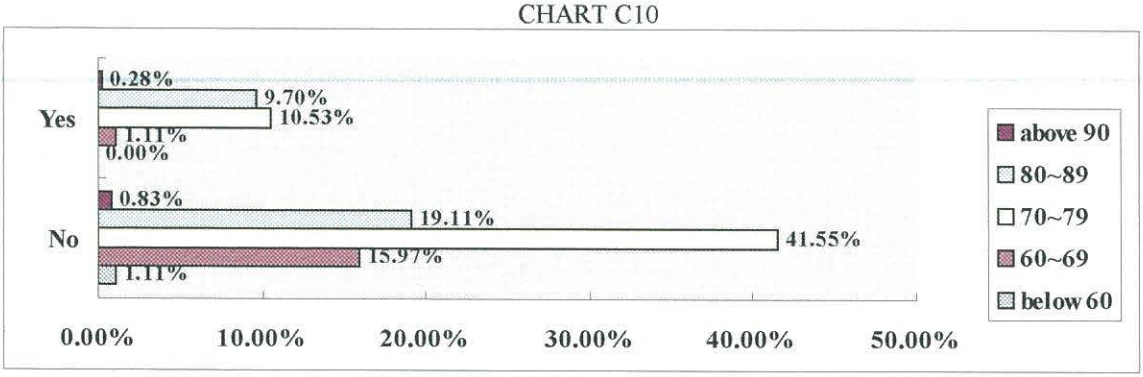


TABLE C10-1

	above 90		*80~89*		*70~79*		*60~69%*		*below 60*	
Yes	1	25.00%	35	33.65%	38	20.21%	4	6.56%	0	0.00%
No	3	75.00%	69	66.35%	150	79.79%	57	93.44%	4	100%
Total	4	100%	104	100%	188	100%	61	100%	4	100%

Analysis : In TABLE C10 , Respondents pursuing graduate studies in Statistics had graduation marks above 90, 0.28%; graduation marks 80~89, 9.70%; graduation marks 70~79, 10.53; graduation marks 60~69,1.11%.

In TABLE C10-1, 1of 4 respondents(25.00%)whose graduation marks were above 90 would like to pursue graduate studies in Statistics, 35 of 104 respondents (33.65%) whose graduation marks ranged from 80~89 would like to pursue graduate studies in Statistics, 38 of 188 respondents (20.21%) whose graduation marks ranged from 70~79 would like to pursue graduate studies in Statistics, 4of 61 respondents (6.56%) whose graduation marks ranged from 60~69 would like to pursue graduate studies in Statistics, and no one with graduation marks below 60 wanted to pursue graduate studies in statistics.

Conclusion : Respondents whose graduation marks ranged between 80~89 were more likely to pursue graduate studies in statistics.

Unit 11 : Regret Majoring in Statistics VS. Graduation Marks

TABLE C11

	above 90	*80~89*	*70~79*	*60~69*	*below 60*	*Total*
Regret	0(0.00%)	5(1.38%)	41 (11.29%)	18 (4.96%)	2(0.55%)	66(18.18%)
No Regret	4(1.10%)	85(23.42%)	112(30.85%)	26 (7.16%)	0(0.00%)	227(62.53%)
Indifferent	0(0.00%)	15(4.13%)	36 (9.92%)	17 (4.68%)	2(0.55%)	70(19.28%)
Total	4(1.10%)	105(28.93%)	189(52.07%)	61(16.80%)	4(1.10%)	363(100%)

CHART C11

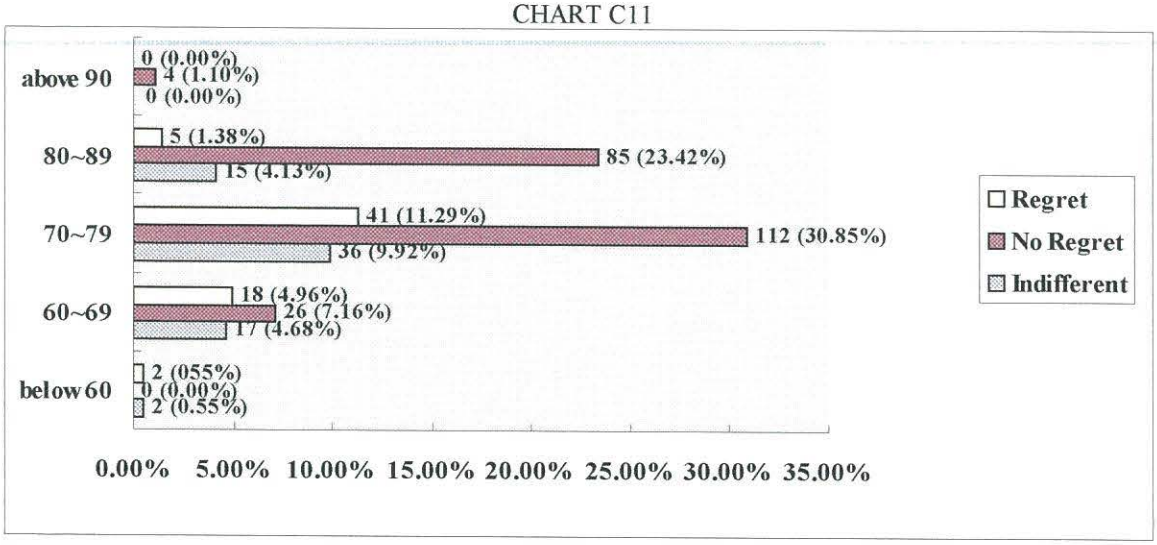


TABLE C11-1

	above 90		*80~89*		*70~79*		*60~69%*		*below 60*	
Regret	0	0.00%	5	4.76%	41	21.69%	18	29.51%	2	50.00%
No Regret	4	100%	85	80.95%	112	59.26%	26	42.62%	0	0.00%
Indifferent	0	0.00%	15	14.29%	36	19.05%	17	27.87%	2	50.00%
Total	4	100%	105	100%	189	100%	61	100%	4	100%

Analysis :According to data presented in TABLE C11 , 1.38 percent respondents whose graduation marks ranged from 80~89 regretted majoring in Statistics, 11.29 percent respondents whose graduation marks ranged from 70~79 regretted majoring in Statistics, 4.96 percent whose graduation marks ranged from 60~69 regretted majoring in Statistics, 0.55 percent respondents whose graduation marks below 60 regretted majoring in Statistics.

As indicated in TABLE C11-1, no respondents whose graduation marks above 90 regretted majoring in Statistics, 5 of 105 respondents(4.76%) whose graduation marks between 80 and 89 regretted majoring in Statistics, 41 of 189 respondents(21.69%) whose graduation marks between 70 and 79 regretted majoring in Statistics, 18 of 61 respondents (29.51%) whose

graduation marks between 60 and 69 regretted majoring in Statistics, and 2 of 4 respondents (50.00%) whose graduation marks below 60 regret majoring in Statistics.

Conclusion : Less regret for studying statistics was reported by respondents who received higher graduation marks.

Unit 12 : Most Suitable Job for Statistics Graduates VS. Graduation Marks

TABLE C12

	above 90	*80~89*	*70~79*	*60~69*	*below 60*	*Total*
Teaching	0(0.00%)	9(2.51%)	12(3.34%)	4(1.11%)	1(0.28%)	26(7.24%)
Actuary	2(0.56%)	32(8.91%)	58(16.16%)	17(4.74%)	0(0.00%)	109(30.36%)
Insurance	0(0.00%)	7(1.95%)	22(6.13%)	5 (1.39%)	1(0.28%)	35(9.75%)
Financial	1(0.28%)	10(2.79%)	23(6.41%)	17(4.74%)	2(0.56%)	53(14.76%)
Statistician	0(0.00%)	32(8.91%)	56(15.6%)	9(2.51%)	0(0.00%)	97(27.02%)
Other	1(0.28%)	14(3.90%)	16(4.46%)	8(2.23%)	0(0.00%)	39(10.86%)
Total	4(1.11%)	104(28.97%)	187(52.09%)	60(16.71%)	4(1.11%)	359(100%)

CHART C12

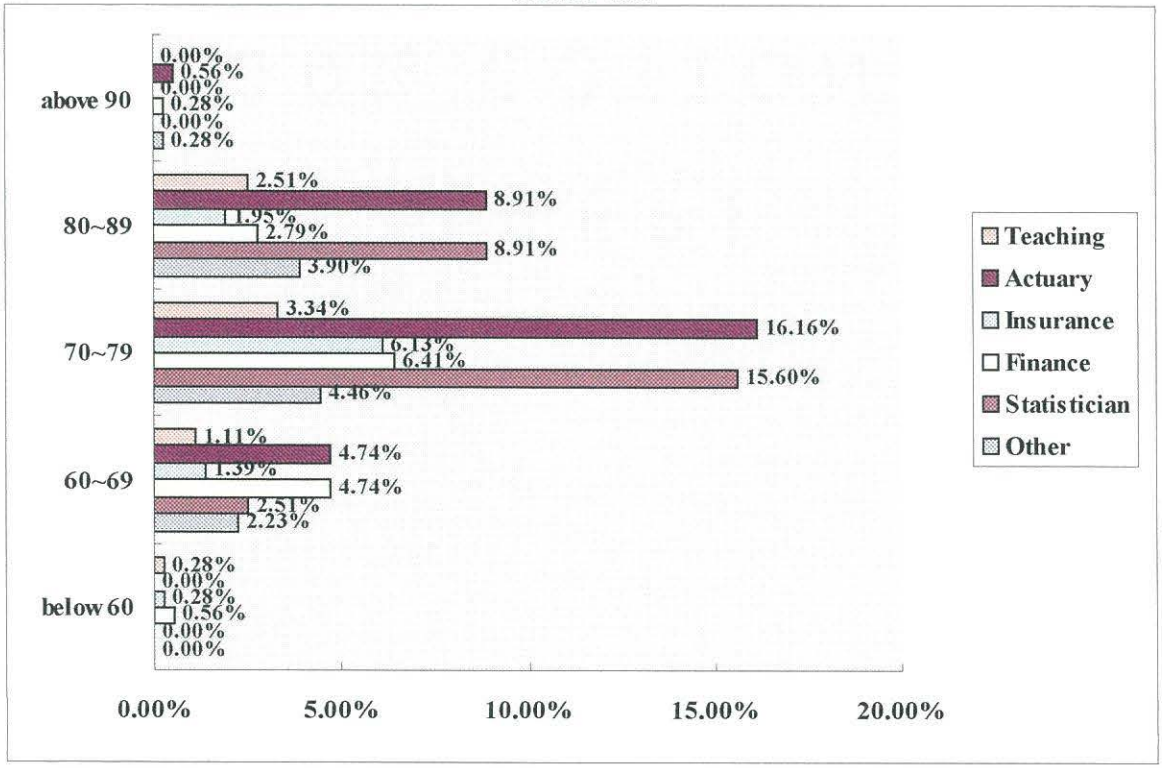


TABLE C12-1

	above 90		*80~89*		*70~79*		*60~69*		*below 60*	
Teaching	0	0.00%	9	8.65%	12	6.42%	4	6.67%	1	25.00%
Actuary	2	50.00%	32	30.77%	58	31.02%	17	28.33%	0	0.00%
Insurance	0	0.00%	7	6.73%	22	11.76%	5	8.33%	1	25.00%
Financial	1	25.00%	10	9.62%	23	12.30%	17	28.33%	2	50.00%
Statistician	0	0.00%	32	30.77%	56	29.95%	9	15.00%	0	0.00%
Other	1	25.00%	14	13.46%	16	8.56%	8	13.33%	0	0.00%
Total	4	100%	104	100%	187	100%	60	100%	4	100%

Analysis :According to data presented in TABLE C12 ,0.56 percent of respondents who received graduation marks above 90 believed being an Actuary was the most suitable job for Statistics graduates.

Of respondents whose graduation marks ranged from 80-89, 8.91% believed being an Actuary was the most suitable job for statistics graduates; and, 8.91% thought statistician was the preferred job for statistics graduates.

Statistics majors with graduation marks ranging from 79 to 60 consistently identified Actuary, Finance, and Statistician work as the most suitable job for statistics graduates.

In TABLE C12-1, 2 of 4 respondents(50.00%) who received graduation marks above 90 believed being an Actuary was the most suitable job for Statistics graduates, 32 of 104 respondents(30.77%) who received graduation marks ranging from 80~89 thought being an Actuary was the preferred job for statistics graduates, 58 of 187 respondents who received graduation marks ranging from 70~79 identified being an Actuary as the most suitable job for a statistics graduate, 17 of 60 respondents who received graduation marks ranging from 60~69 believed being an Actuary was the most suitable job for Statistics graduates.

Conclusion: All respondents except for those whose graduation marks were below 60 indicated that being an Actuary was the most suitable job for graduates in statistics.

Unit 13 : Most Useful University Course VS. Graduation Marks

TABLE C13

	above 90	*80~89*	*70~79*	*60~69*	*below 60*	*Total*
Statistics	0 (0.00%)	17 (5.15%)	17 (5.15%)	4 (1.21%)	0 (0.00%)	38(11.52%)
Accounting	1 (0.30%)	26 (7.88%)	36 (10.91%)	12 (3.64%)	1 (0.30%)	76(23.03%)
Economic	0 (0.00%)	7 (2.12%)	9 (2.73%)	7 (2.12%)	0 (0.00%)	23(6.97%)
Management	1 (0.30%)	8 (2.42%)	16 (4.85%)	5 (1.52%)	0 (0.00%)	31(9.39%)
S.A.S	1 (0.30%)	20 (6.06%)	36 (10.91%)	12 (3.64%)	1 (0.30%)	69(20.91%)
Insurance	0 (0.00%)	4 (1.21%)	11(3.33%)	2 (0.61%)	0 (0.00%)	17(5.15%)
Sampling Survey	0 (0.00%)	5 (1.52%)	10 (3.03%)	2 (0.61%)	1 (0.30%)	18(5.45%)
None	0 (0.00%)	3 (0.91%)	11 (3.33%)	5 (1.52%)	1 (0.30%)	20(6.06%)
Other	1 (0.30%)	9 (2.73%)	22 (6.67%)	6 (1.82%)	0 (0.00%)	38(11.52%)
Total	4(1.21%)	99(30.00%)	168(50.91%)	55(16.67%)	4(1.21%)	330(100%)

TABLE C13-1

	above 90		*80~89*		*70~79*		*60~69*		*below 60*	
Statistics	0	0.00%	17	17.17%	17	10.12%	4	7.27%	0	0.00%
Accounting	1	25.00%	26	26.26%	36	21.43%	12	21.82%	1	25.00%
Economic	0	0.00%	7	7.07%	9	5.36%	7	12.73%	0	0.00%
Management	1	25.00%	8	8.08%	16	9.53%	5	9.09%	0	25.00%
S.A.S	1	25.00%	20	20.20%	36	21.43%	12	21.82%	1	0.00%
Insurance	0	0.00%	4	4.04%	11	6.55%	2	3.64%	0	0.00%
Sampling Survey	0	0.00%	5	5.05%	10	5.95%	2	3.64%	1	25.00%
None	0	0.00%	3	3.03%	11	6.55%	5	9.09%	1	25.00%
Other	1	25.00%	9	9.09%	22	13.10%	6	10.91%	0	0.00%
Total	4	100%	99	100%	168	100%	55	100%	4	100%

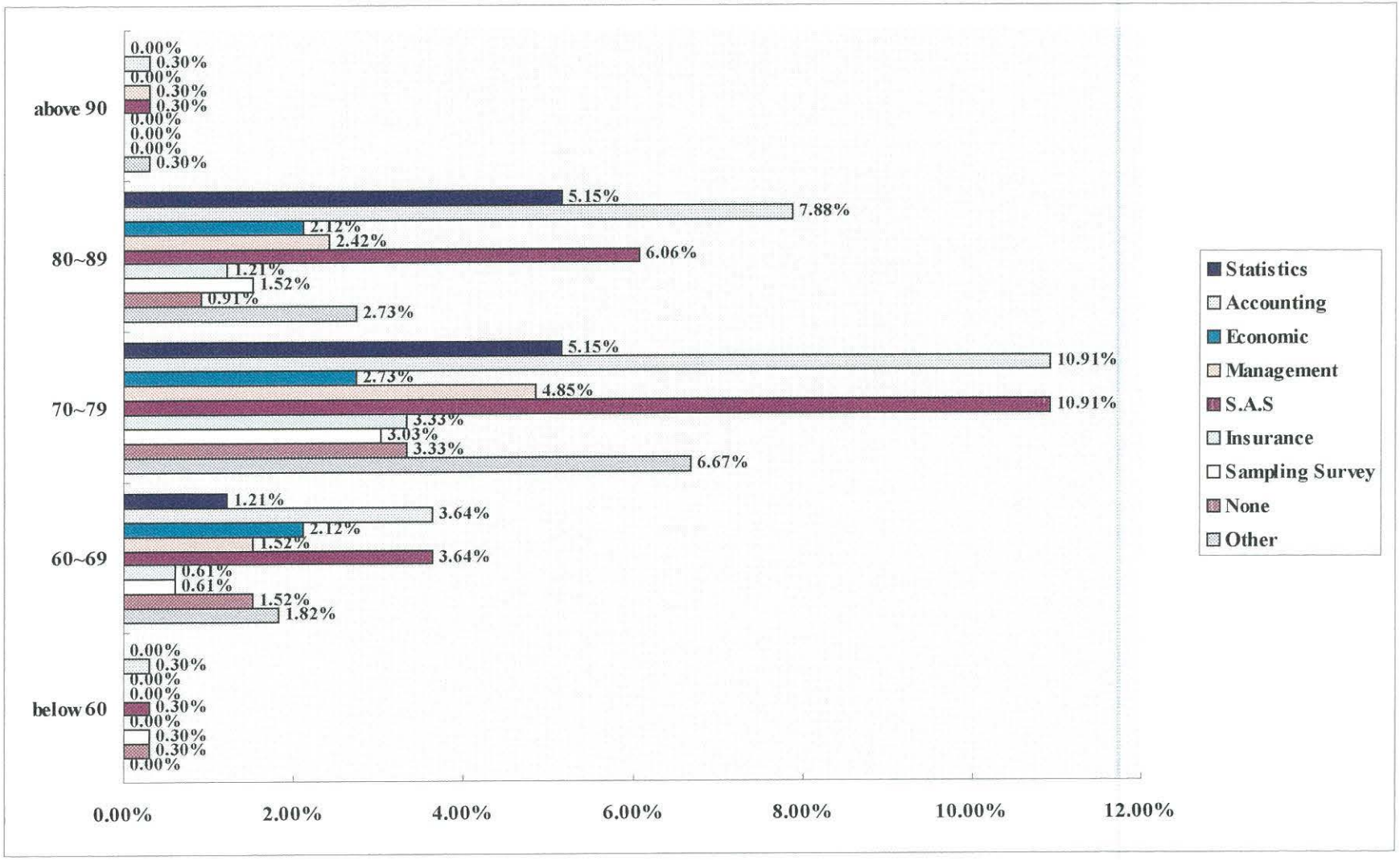
Analysis : The presented in TABLE C13 shows 0.30 percent of the respondents whose graduation marks were above 90 identified Accounting, Management, and S.A.S. as the most useful university courses. Respondents whose graduation marks ranged from 80~89 believed Accounting was the most useful university course.

10.91 percent of the respondents whose graduation marks ranged from 70~79 indicated Accounting and S.A.S. were the most useful university courses.
3.64 percent of the respondents whose graduation marks ranged from 60~69 indicated Accounting and S.A.S. were the most useful university courses.
0.30 percent of the respondents whose graduation marks were below 60 identified Accounting, S.A.S., and Sampling Survey as the most useful university courses.

In TABLE C13-1, 1 of 4 respondents (25.00%)whose graduation marks were above 90, 26 of 99 respondents (26.26%) whose graduation marks ranged from 80~89, 36 of 168 respondents (21.43%) whose graduation marks ranged from 70~79, 12 of 55 respondents (21.82%) whose graduation marks ranged from 60~69, 1 of 4 respondents (25.00%) whose graduation marks below 60 believed Accounting was the most useful university course.

Conclusion : Overall respondents indicated Accounting and S.A.S. were the most useful university courses.

CHART C13


above 90
80~89
70~79
60~69
below 60
0.00%
0.30%
0.00%
0.30%
0.30%
0.00%
0.00%
0.00%
0.30%
5.15%
7.88%
2.12%
2.42%
6.06%
1.21%
1.52%
0.91%
2.73%
5.15%
10.91%
2.73%
4.85%
10.91%
3.33%
3.03%
3.33%
6.67%
1.21%
3.64%
2.12%
1.52%
3.64%
0.61%
0.61%
1.52%
1.82%
0.00%
0.30%
0.00%
0.00%
0.30%
0.00%
0.30%
0.30%
0.00%
0.00%
2.00%
4.00%
6.00%
8.00%
10.00%
12.00%
Statistics
Accounting
Economic
Management
S.A.S
Insurance
Sampling Survey
None
Other

Unit 14 : Job Satisfaction VS. Graduation Marks

TABLE C14

	above 90	*80~89*	*70~79*	*60~69*	*below 60*	*Total*
Completely Satisfied	1(0.32%)	7(2.25%)	17 (5.47%)	3(0.96%)	0 (0.00%)	28(9.00%)
Satisfied	1(0.32%)	36(11.58%)	51(16.40%)	14(4.50%)	2(0.64%)	104(33.44%)
Indifferent	2(0.64%)	43(13.83%)	75(24.12%)	24(4.72%)	2(0.64%)	146(46.95%)
Dissatisfied	0 (0.00%)	4(1.29%)	13(4.18%)	10(3.22%)	0(0.00%)	27(8.68%)
Completely Dissatisfied	0(0.00%)	2(0.64%)	3(0.96%)	1(0.32%)	0 (0.00%)	6(1.93%)
Total	4(1.29%)	92(29.58%)	159(51.13%)	52(16.72%)	4(1.29%)	330(100%)

TABLE C14-1

	above 90		*80~89*		*70~79*		*60~69*		*below 60*	
Completely Satisfied	1	25.00%	7	7.61%	17	10.69%	3	5.77%	0	0.00%
Satisfied	1	25.00%	36	39.13%	51	32.08%	14	26.92%	2	50.00%
Indifferent	2	50.00%	43	46.74%	75	47.17%	24	46.15%	2	50.00%
Dissatisfied	0	0.00%	4	4.35%	13	8.18%	10	19.23%	0	0.00%
Completely Dissatisfied	0	0.00%	2	2.17%	3	1.89%	1	1.92%	0	0.00%
Total	4	100%	92	100%	159	100%	52	100%	4	100%

Analysis : According to data presented in TABLE C13 , no respondents with graduation marks above 90 and graduation marks below 60 were completely dissatisfied or, dissatisfied with their present job.

1.93 percent respondents whose graduation marks ranged from 80~89 were completely dissatisfied or, dissatisfied with their present job.

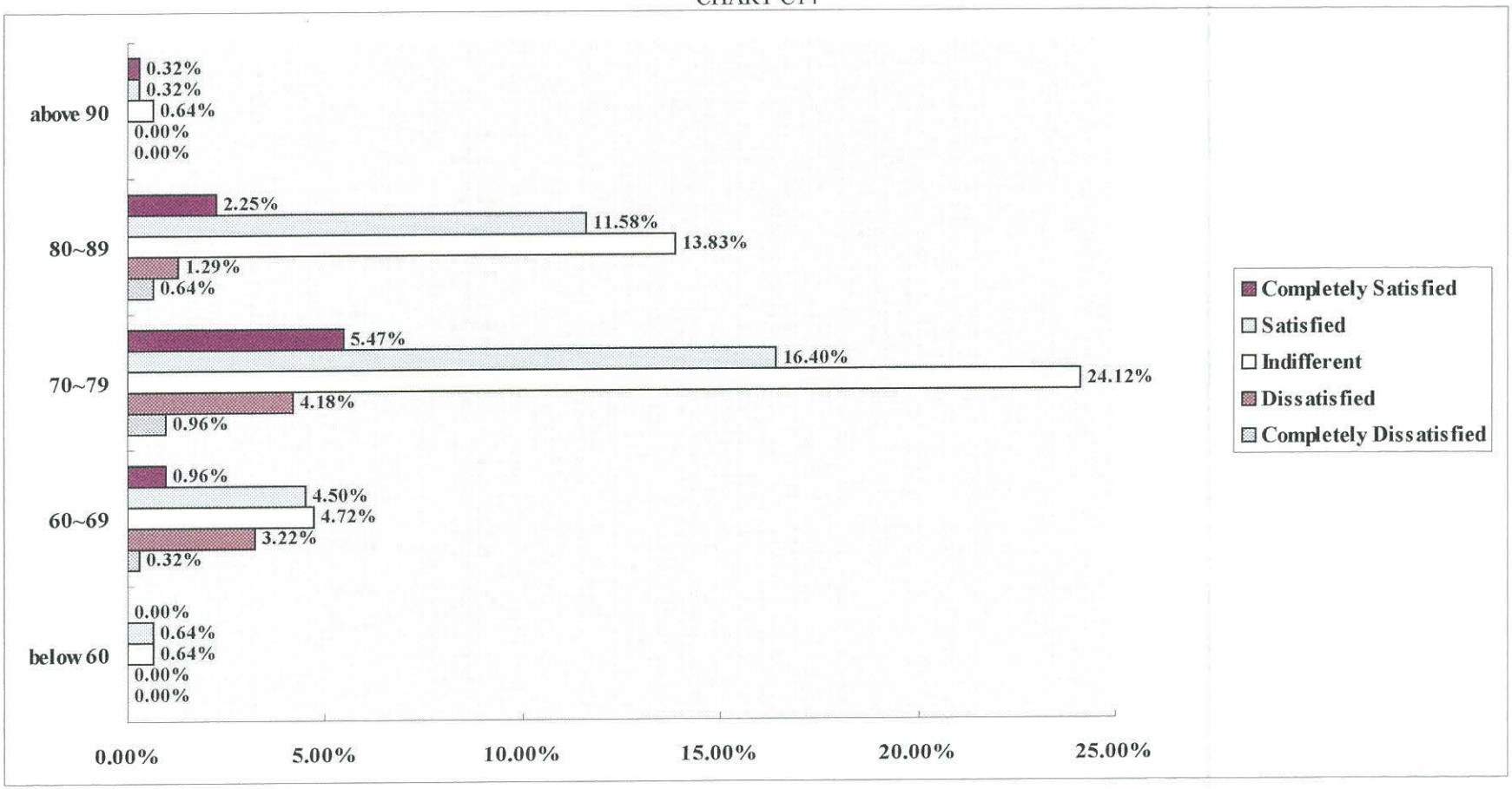
5.14 percent respondents whose graduation marks ranged from 70~79 were completely dissatisfied or, dissatisfied with their present job.

3.54 percent respondents whose graduation marks ranged from 60~69 were completely dissatisfied or, dissatisfied with their resent job.

As indicated in TABLE C13-1, no respondents whose graduation marks above 90 and graduation marks below 60 were completely dissatisfied or dissatisfied with their present job, 6 of 92 respondents (6.52%) whose graduation marks ranged from 80~89 ,26 of 159 respondents (10.07%) whose graduation marks ranged from 70~79, 11of 52 respondents (21.15%) whose graduation marks ranged from 60~69 were completely dissatisfied or dissatisfied with their present job.

Conclusion : The higher graduation marks the responder received, the more satisfied they were with their current job except for respondents whose graduation marks were below 60 who reported being satisfied with their current job.

CHART C14


above 90
0.32%
0.32%
0.64%
0.00%
0.00%
80~89
2.25%
11.58%
13.83%
1.29%
0.64%
70~79
5.47%
16.40%
24.12%
4.18%
0.96%
60~69
0.96%
4.50%
4.72%
3.22%
0.32%
below 60
0.00%
0.64%
0.64%
0.00%
0.00%
0.00%
5.00%
10.00%
15.00%
20.00%
25.00%
Completely Satisfied
Satisfied
Indifferent
Dissatisfied
Completely Dissatisfied

Unit 15 : How Long Before Employed VS. First Job

TABLE C15

	Teaching	*Insurance*	*Financial Services*	*Service Trades*	*Manufacturing*	*Research*	*Other*	*Total*
within one month	24(7.16%)	15(4.48%)	13(3.88%)	41(12.24%)	24(7.16%)	17(5.07%)	35(10.45%)	169(50.45%)
between 1 month and 3 months	12(3.58%)	21(6.27%)	6(1.79%)	22(6.57%)	18(5.37%)	9(2.69%)	14(4.18%)	102(30.45%)
between 3 months and 6 months	1(0.30%)	3(0.90%)	6(1.79%)	11(3.28%)	7(2.09%)	2(0.60%)	10(2.99%)	40(11.94%)
between 6 months and 1 year	0(0.00%)	3(0.90%)	0(0.00%)	2(0.60%)	3(0.90%)	0(0.00%)	1(0.30%)	9(2.69%)
beyond one year	2(0.60%)	0(0.00%)	5(1.49%)	2(0.60%)	1(0.30%)	0(0.00%)	5(1.49%)	15(4.48%)
Total	39(11.64%)	42(12.54%)	30(8.96%)	78(23.28%)	53(15.82%)	28(8.36%)	65(19.40%)	335(100%)

TABLE C15-1

	Teaching		*Insurance*		*Financial Services*		*Service Trades*		*Manufacturing*		*Research*		*Other*	
within one month	24	61.54%	15	35.71%	13	43.33%	41	52.56%	24	45.28%	17	60.71%	35	53.85%
between 1 month and 3 months	12	30.77%	21	50.00%	6	20.00%	22	28.21%	18	33.96%	9	32.14%	14	21.54%
between 3 months and 6 months	1	2.56%	3	7.14%	6	20.00%	11	14.10%	7	13.21%	2	7.14%	10	15.38%
between 6 months and 1 year	0	0.00%	3	7.14%	0	0.00%	2	2.56%	3	5.66%	0	0.00%	1	1.54%
beyond one year	2	5.13%	0	0.00%	5	16.67%	2	2.56%	1	1.89%	0	0.00%	5	7.69%
Total	39	100%	42	100%	30	100%	78	100%	53	100%	28	100%	65	100%

Analysis : According to data presented in TABLE C15, 7.16 percent respondents first job was Teaching, 4.48 percent respondents was in Insurance, 3.88 percent in Financial Services, 12.24 percent in Service Trades, 7.16 percent in Manufacturing, and 5.07 percent respondents in Research. All jobs were obtained within one month of graduation.

3.58 percent respondents first job was in Teaching, 6.27 percent in Insurance, 1.79 percent in Financial Services, 6.57 percent in Service Trades, 5.37 percent in Manufacturing, and 2.69 percent respondents in Research . All jobs were obtained between one month to three months after graduation.

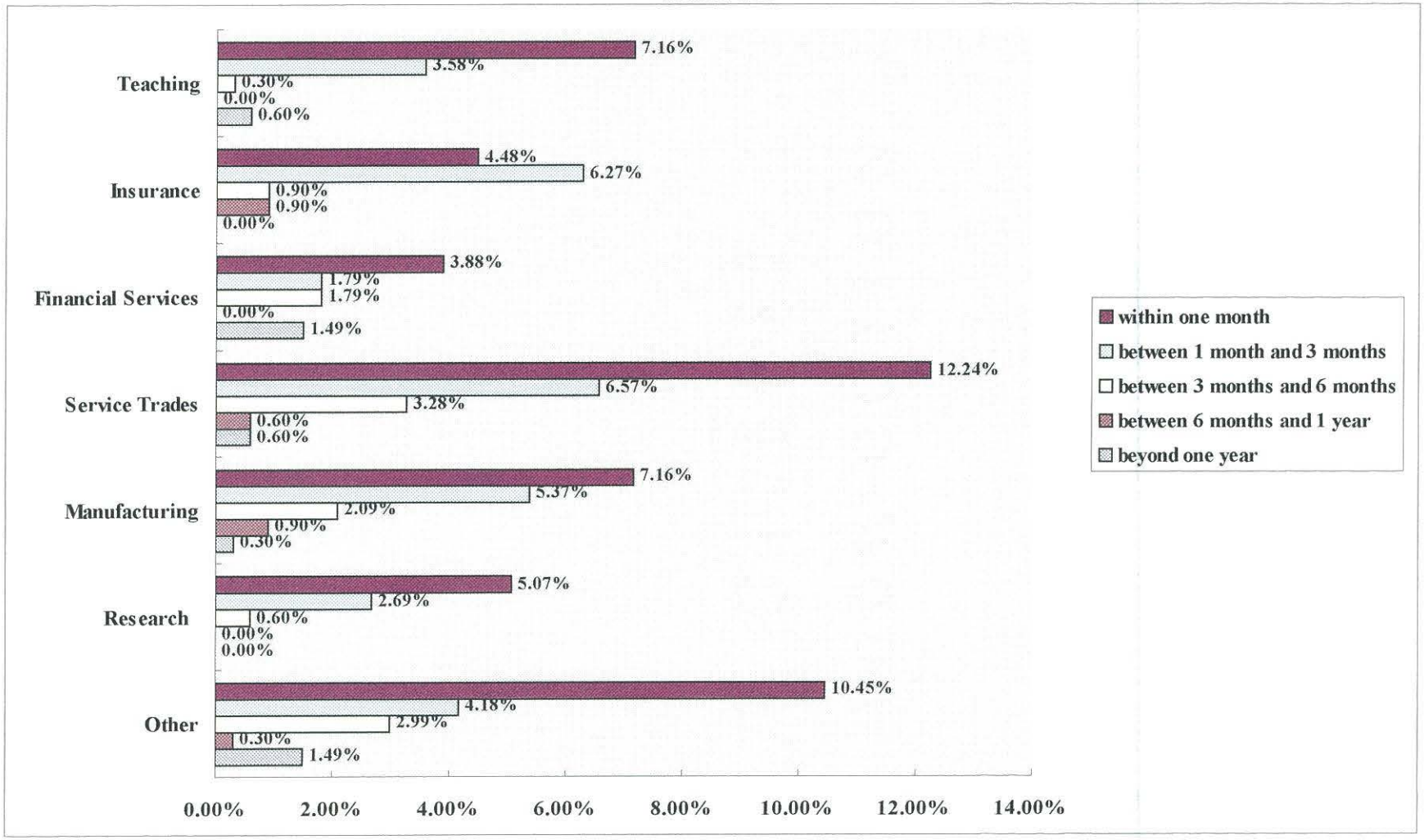
In TABLE C15-1, 24 of 39 respondents (61.54%) first job was in Teaching, 13 of 30 respondents (43.33%) in Financial

Services, 41 of 78 respondents (52.56%) in Service Trades, 24 of 53 respondents (45.28%) in Manufacturing, 17 of 28 respondents (60.71%) in Research. All jobs were obtained within one month of graduation.

21 of 42 respondents (50.00%) whose first job was in Insurance obtained their job between one to three months after graduation.

Conclusion : The majority of respondents obtained their first job within one month of graduation and most often this job was in Insurance.

CHART C15


Teaching
7.16%
3.58%
0.30%
0.00%
0.60%
Insurance
4.48%
6.27%
0.90%
0.90%
0.00%
Financial Services
3.88%
1.79%
1.79%
0.00%
1.49%
Service Trades
12.24%
6.57%
3.28%
0.60%
0.60%
Manufacturing
7.16%
5.37%
2.09%
0.90%
0.30%
Research
5.07%
2.69%
0.60%
0.00%
0.00%
Other
10.45%
4.18%
2.99%
0.30%
1.49%
0.00%
2.00%
4.00%
6.00%
8.00%
10.00%
12.00%
14.00%
within one month
between 1 month and 3 months
between 3 months and 6 months
between 6 months and 1 year
beyond one year

Unit 16 : How Long Before Employed VS. First Salary

TABLE C16

	below 25000	*between 25001 and 30000*	*between 30001 and 35000*	*between 35001 and 40000*	*between 40001 and 50000*	*beyond 50001*	*Total*
within one month	72(21.62%)	51(15.32%)	26(7.81%)	13(3.90%)	3(0.90%)	3(0.90%)	168(50.45%)
between 1 month and 3 months	50(15.02%)	29(8.71%)	16(4.80%)	5(1.50%)	2(0.60%)	0(0.00%)	102(30.63%)
between 3 months and 6 months	12(3.60%)	21(6.31%)	4(1.20%)	2(0.60%)	1(0.30%)	0(0.00%)	40(12.01%)
between 6 months and 1 year	3(0.90%)	4(1.20%)	0(0.00%)	2(0.60%)	0(0.00%)	0(0.00%)	9(2.70%)
beyond one year	2(0.60%)	3(0.90%)	4(1.20%)	4(1.20%)	1(0.30%)	0(0.00%)	14(4.20%)
Total	139(41.74%)	108(32.43%)	50(15.02%)	26(7.81%)	7(2.10%)	3(0.90%)	333(100%)

TABLE C16-1

	below 25000		*between 25001 and 30000*		*between 30001 and 35000*		*between 35001 and 40000*		*between 40001 and 50000*		*beyond 50001*	
within one month	72	51.80%	51	47.22%	26	52.00%	13	50.00%	3	42.86%	3	100%
between 1 month and 3 months	50	35.97%	29	26.85%	16	32.00%	5	19.23%	2	28.57%	0	0.00%
between 3 months and 6 months	12	8.63%	21	19.44%	4	8.00%	2	7.69%	1	14.29%	0	0.00%
between 6 months and 1 year	3	2.16%	4	3.70%	0	0.00%	2	7.69%	0	0.00%	0	0.00%
beyond one year	2	1.44%	3	2.78%	4	8.00%	4	15.38%	1	14.29%	0	0.00%
Total	139	100%	108	100%	50	100%	26	100%	7	100%	3	100%

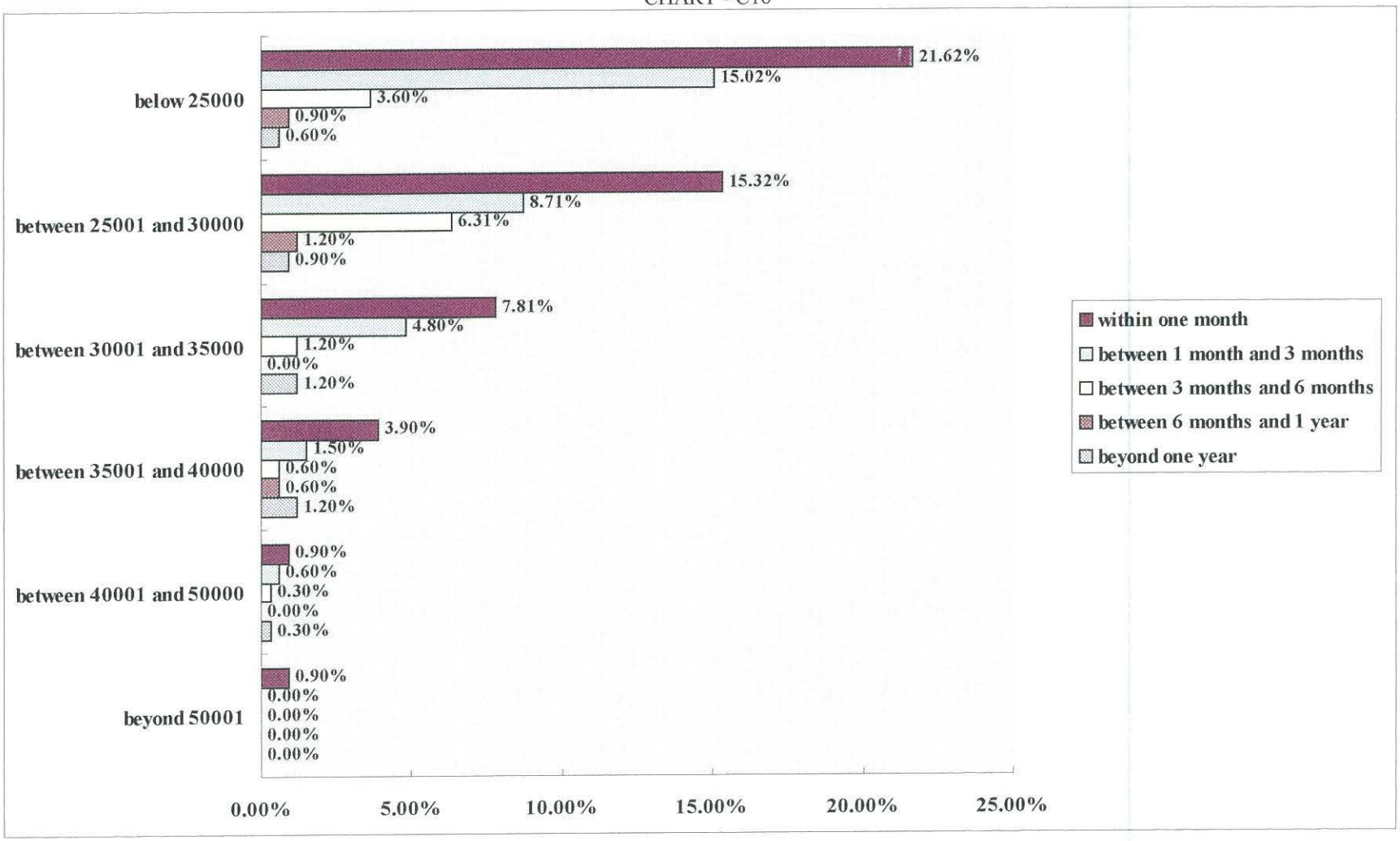
Analysis : According to data presented in TABLE C16, 21.62 percent of the respondents in their first job received a salary below 25000, 15.32 percent respondents from 25001~30000, 7.81 percent from 30001~35000 , 3.90 percent respondents from 35001~40000, 0.90 percent respondents from 40001~50000. 0.90 percent of respondents whose first salary was over 50001 obtained their job within one month of graduation.

15.02 percent respondents with salaries below 25000, 8.71 percent from 25001~30000, 4.80 percent from 30001~35000, 1.50 percent from 35001~40000 and 0.60 percent respondents from 40001~50000 obtained their job between one month and three months after graduation.

In TABLE C16 -1, 72 of 139 respondents (51.80%) first salary was below 25000, 51 of 108 respondents (47.22%) from 25001~3000, 26 of 50 respondents (52.00%) from 30001~35000, 13 of 26 respondents (50.00%) from 35001~ 4000, 3 of 7 respondents (42.86%) from 40001~50000. All respondents whose first salary was over 50001 obtained their job within one month of graduation.

Conclusion : Salary was not a significant factor in determining how long after graduation it took to find employment.

CHART - C16


below 25000
21.62%
15.02%
3.60%
0.90%
0.60%
between 25001 and 30000
15.32%
8.71%
6.31%
1.20%
0.90%
between 30001 and 35000
7.81%
4.80%
1.20%
0.00%
1.20%
between 35001 and 40000
3.90%
1.50%
0.60%
0.60%
1.20%
between 40001 and 50000
0.90%
0.60%
0.30%
0.00%
0.30%
beyond 50001
0.90%
0.00%
0.00%
0.00%
0.00%
0.00%
5.00%
10.00%
15.00%
20.00%
25.00%
within one month
between 1 month and 3 months
between 3 months and 6 months
between 6 months and 1 year
beyond one year

Unit 17 : First Salary VS. First Job

TABLE C17

	Teaching	*Insurance*	*Financial Services*	*Service Trades*	*Manufacturing*	*Research*	*Other*	*Total*
below 25000	9(2.68%)	11(3.27%)	7(2.08%)	35(10.42%)	30(8.93%)	13(3.87%)	35(10.42%)	140(41.67%)
between 25001 and 30000	10(2.98%)	17(5.06%)	12(3.57%)	30(8.93%)	12(3.57%)	11(3.27%)	17(5.06%)	109(32.44%)
between 30001 and 35000	14(4.17%)	9(2.68%)	4(1.19%)	8(2.38%)	5(1.49%)	4(1.19%)	7(2.08%)	51(15.18%)
between 35001 and 40000	5(1.49%)	3(0.89%)	7(2.08%)	3(0.89%)	3(0.89%)	1(0.30%)	4(1.19%)	26(7.74%)
between 40001 and 50000	1(0.30%)	2(0.60%)	0(0.00%)	1(0.30%)	2(0.60%)	0(0.00%)	1(0.30%)	7(2.08%)
beyond 50001	0(0.00%)	1(0.30%)	0(0.00%)	1(0.30%)	0(0.00%)	0(0.00%)	1(0.30%)	3(0.89%)
Total	39(11.61%)	43(12.80%)	30(8.93%)	78(23.21%)	52(15.48%)	29(8.63%)	65(19.35%)	336(100%)

TABLE C17-1

	Teaching		*Insurance*		*Financial Services*		*Service Trades*		*Manufacturing*		*Research*		*Other*	
below 25000	9	23.08%	11	25.58%	7	23.33%	35	44.87%	30	57.69%	13	44.83%	35	53.85%
between 25001 and 30000	10	25.64%	17	39.53%	12	40.00%	30	38.46%	12	23.08%	11	37.93%	17	26.15%
between 30001 and 35000	14	35.90%	9	20.93%	4	13.33%	8	10.26%	5	9.62%	4	13.79%	7	10.77%
between 35001 and 40000	5	12.82%	3	6.98%	7	23.33%	3	3.85%	3	5.77%	1	3.45%	4	6.15%
between 40001 and 50000	1	2.56%	2	4.65%	0	0.00%	1	1.28%	2	3.85%	0	0.00%	1	1.54%
beyond 50001	0	0.00%	1	2.33%	0	0.00%	1	1.28%	0	0.00%	0	0.00%	1	1.54%
Total	39	100%	43	100%	30	100%	78	100%	52	100%	29	100%	65	100%

Analysis : According to data presented in TABLE C17, 39 of 336 respondents (11.61%) first job was in Teaching, 43 of 336 respondents (12.80%) in Insurance, 30 of 336 respondents (8.93%) in Financial Services, 78 of 336 respondents (23.21%) in Service Trades, 52 of 336 respondents (15.48%) in Manufacturing, 29 of 336 respondents (8.63%) in Research.

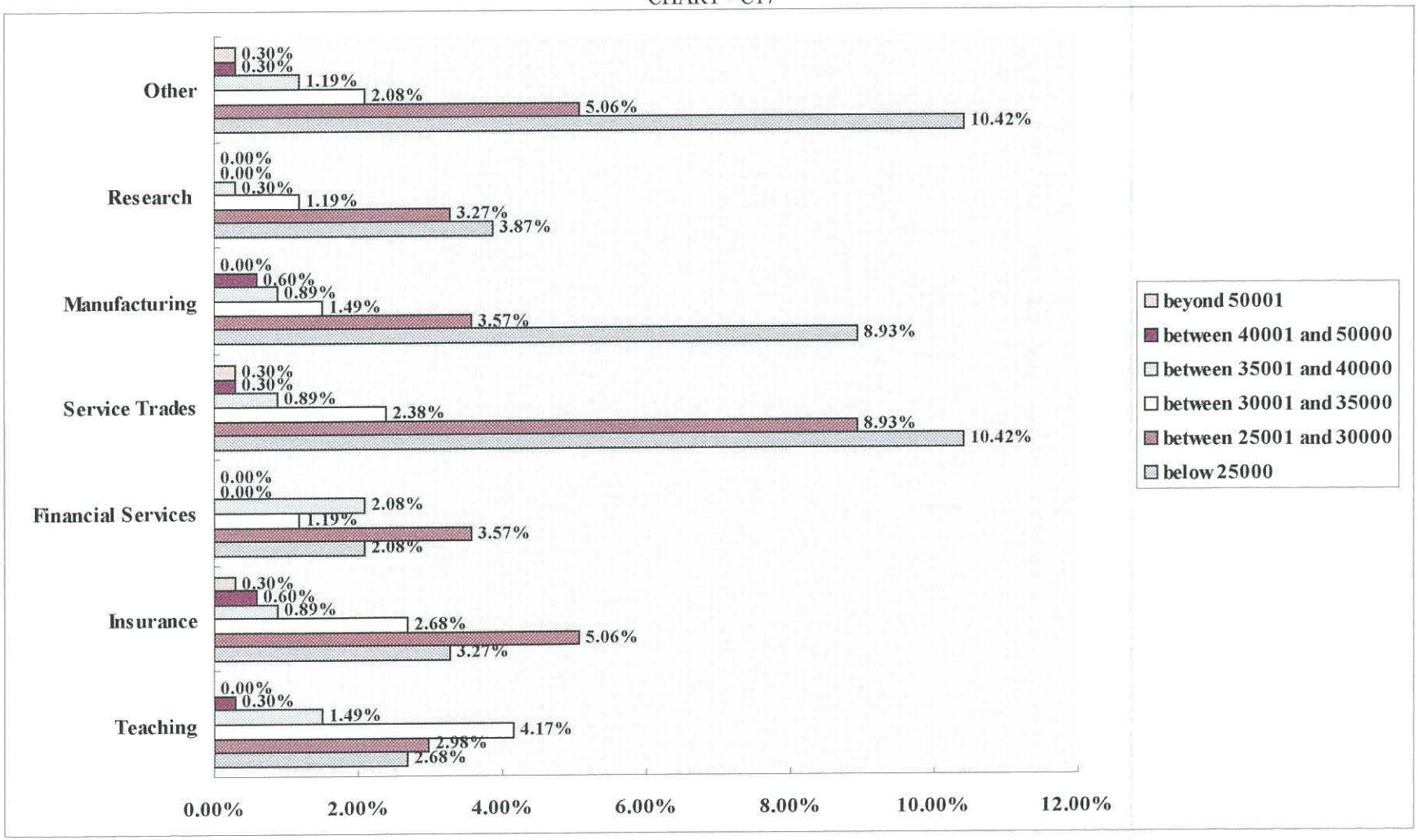
As indicated in TABLE C17-1, 28 of 43 respondents (65.12%) first job was in Insurance, 19 of 30 respondents (63.33%) in Financial Services, 65 of 78 respondents (83.33%) in Service Trades, 42 of 52 respondents (80.77%) in

manufacturing, 24 of 29 respondents (82.76%) in Research obtain first salary below 30000.

24 of 39 respondents(61.54%) whose first job was in Teaching received salaries ranging from 25001~30000.

Conclusion : The majority of respondents first salary was below 30000 NTD (i.e., 1 US dollar : 27.5 NTD); respondents whose first job was in Teaching, received salaries ranging from 25001~35000.

CHART - C17


Other
0.30%
0.30%
1.19%
2.08%
5.06%
10.42%
Research
0.00%
0.00%
0.30%
1.19%
3.27%
3.87%
Manufacturing
0.00%
0.60%
0.89%
1.49%
3.57%
8.93%
Service Trades
0.30%
0.30%
0.89%
2.38%
8.93%
10.42%
Financial Services
0.00%
0.00%
2.08%
1.19%
3.57%
2.08%
Insurance
0.30%
0.60%
0.89%
2.68%
5.06%
3.27%
Teaching
0.00%
0.30%
1.49%
4.17%
2.98%
2.68%
0.00%
2.00%
4.00%
6.00%
8.00%
10.00%
12.00%
beyond 50001
between 40001 and 50000
between 35001 and 40000
between 30001 and 35000
between 25001 and 30000
below 25000

Unit 18 : Current Salary VS. Current Job

TABLE C18

	Teaching	*Insurance*	*Financial Services*	*Service Trades*	*Manufacturing*	*Research*	*Other*	*Total*
below 25000	3(0.95%)	1(0.32%)	1(0.32%)	8(2.54%)	3 (0.95%)	1(0.32%)	11(3.49%)	28(8.89%)
between 25001 and 30000	7(2.22%)	6(1.90%)	9(2.86%)	17(5.40%)	20(6.35%)	2(0.63%)	16(5.08%)	77(24.44%)
between 30001 and 35000	8(2.54%)	12(3.81%)	8(2.54%)	17(5.40%)	11(3.49%)	6(1.90%)	18(5.71%)	80(25.40%)
between 35001 and 40000	7(2.22%)	6(1.90%)	22(6.98%)	9(2.86%)	5(1.59%)	2(0.63%)	9(2.86%)	60(19.05%)
between 40001 and 50000	10(3.17%)	8(2.54%)	10(3.17%)	8(2.54%)	7(2.22%)	2(0.63%)	14(4.44%)	59(18.73%)
beyond 50001	1(0.32%)	3(0.95%)	1(0.32%)	4(1.27%)	0(0.00%)	1(0.32%)	1(0.32%)	11(3.49%)
Total	36(11.43%)	36(11.43%)	51(16.19%)	63(1.90%)	46(14.60%)	14(4.44%)	69(21.90%)	315(100%)

TABLE C18

	Teaching		*Insurance*		*Financial Services*		*Service Trades*		*Manufacturing*		*Research*		*Other*	
below 25000	3	8.33%	1	2.78%	1	1.96%	8	12.70%	3	6.52%	1	7.14%	11	15.49%
between 25001 and 30000	7	19.44%	6	16.67%	9	17.65%	17	26.98%	20	43.48%	2	14.29%	16	23.19%
between 30001 and 35000	8	22.22%	12	33.33%	8	15.69%	17	26.98%	11	23.91%	6	42.86%	18	26.09%
between 35001 and 40000	7	19.44%	6	16.67%	22	43.14%	9	14.29%	5	10.87%	2	14.29%	9	13.04%
between 40001 and 50000	10	27.78%	8	22.22%	10	19.61%	8	12.70%	7	15.22%	2	14.29%	14	20.29%
beyond 50001	1	2.78%	3	8.33%	1	1.96%	4	6.35%	0	0.00%	1	7.14%	1	1.45%
Total	36	100%	36	100%	51	100%	63	100%	46	100%	14	100%	69	100%

Analysis : According to data presented in TABLE C18, 36 of 315 respondents (11.43%) first job was in Teaching, 36 of 315 respondents (11.43%) in Insurance, 51 of 315 respondents (16.19%) in Financial Services, 63 of 315 respondents (20.00%) in Service Trades, 46 of 315 respondents (14.60%) in Manufacturing, 14 of 315 respondents (4.44%) in Research.

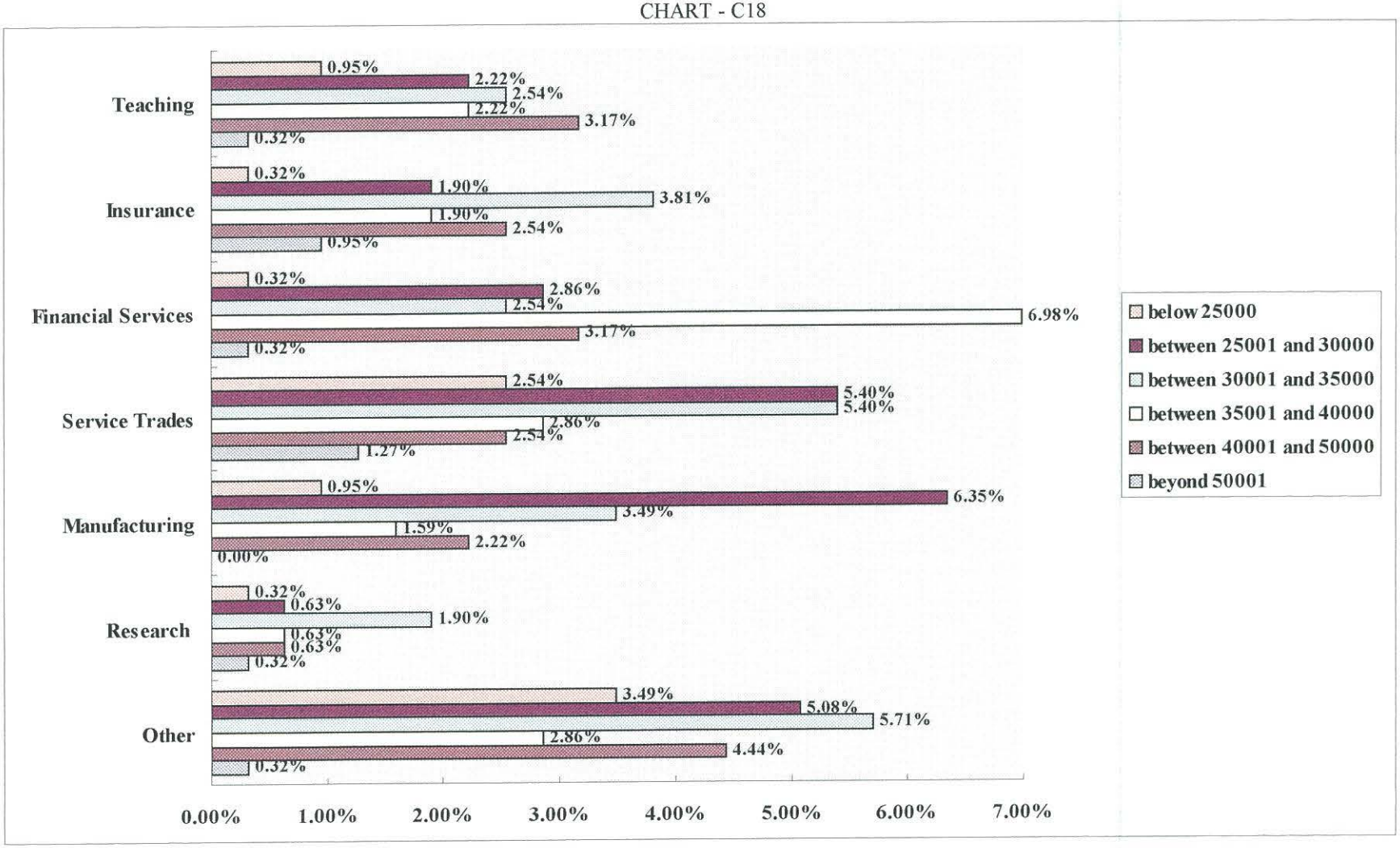
As indicated in TABLE C18-1, 25 of 36 respondents (69.44%) whose first job was in Teaching , 26 of 36 respondents (72.22%) in Insurance , 40 of 51 respondents (78.44%) in Financial Services, 10 of 14 respondents (71.44%) in

Research. Respondents in Research salaries ranged from 300001~50000.

43 of 63 respondents(68.25%) whose first job was in the Service Trades, 36 of 46 respondents(78.26%) in Manufacturing received first salaries ranging from 25001~40000.

Conclusion : Respondents who were employed in Service Trades or Manufacturing received less salary than respondents in other job categories.

CHART - C18


Teaching
0.95%
2.22%
2.54%
2.22%
3.17%
0.32%
Insurance
0.32%
1.90%
3.81%
1.90%
2.54%
0.95%
Financial Services
0.32%
2.86%
2.54%
6.98%
3.17%
0.32%
Service Trades
2.54%
5.40%
5.40%
2.86%
2.54%
1.27%
Manufacturing
0.95%
6.35%
3.49%
1.59%
2.22%
0.00%
Research
0.32%
0.63%
1.90%
0.63%
0.63%
0.32%
Other
3.49%
5.08%
5.71%
2.86%
4.44%
0.32%
0.00%
1.00%
2.00%
3.00%
4.00%
5.00%
6.00%
7.00%
below 25000
between 25001 and 30000
between 30001 and 35000
between 35001 and 40000
between 40001 and 50000
beyond 50001

Unit 19 : Job Satisfied VS. Current Job

TABLE C19

	Teaching	*Insurance*	*Financial Services*	*Service Trades*	*Manufacturing*	*Research*	*Other*	*Total*
Completely satisfied	3(0.95%)	2(0.63%)	6(1.90%)	4(1.27%)	1(0.32%)	0(0.00%)	12(3.80%)	28(8.86%)
Satisfied	16(5.06%)	14(4.43%)	19(6.01%)	21(6.65%)	12(3.80%)	10(3.16%)	17(5.38%)	109(34.49%)
Indifferent	16(5.06%)	19(6.01%)	19(6.01%)	33(10.44%)	27(8.54%)	3(0.95%)	30(9.49%)	147(46.52%)
Dissatisfied	2(0.63%)	1(0.32%)	6(1.90%)	4(1.27%)	3(0.95%)	1(0.32%)	9(2.85%)	26(8.23%)
Completely dissatisfied	0(0.00%)	0(0.00%)	0(0.00%)	1(0.32%)	4(1.27%)	0(0.00%)	1(0.32%)	6(1.90%)
Total	37(11.71%)	36(11.39%)	50(15.82%)	63(19.94%)	47(14.87%)	14(4.43%)	69(21.84%)	316(100%)

TABLE C19-1

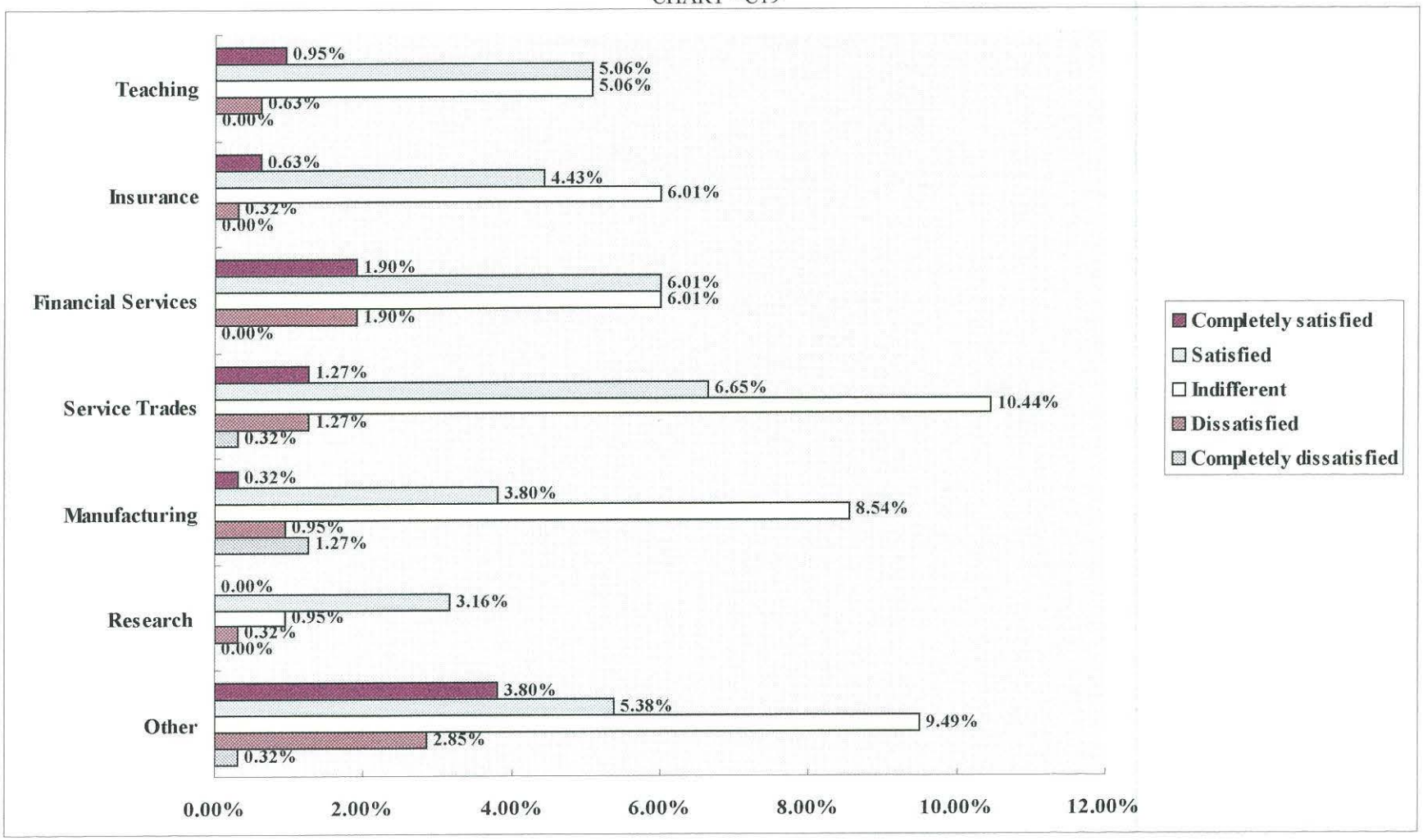
	Teaching		*Insurance*		*Financial Services*		*Service Trades*		*Manufacturing*		*Research*		*Other*	
Completely satisfied	3	8.11%	2	5.56%	6	12.00%	4	6.35%	1	2.13%	0	0.00%	12	17.39%
Satisfied	16	43.24%	14	38.89%	19	38.00%	21	33.33%	12	25.53%	10	71.43%	17	24.64%
Indifferent	16	43.24%	19	52.78%	19	38.00%	33	52.38%	27	57.45%	3	21.43%	30	43.38%
Dissatisfied	2	5.41%	1	2.78%	6	12.00%	4	6.35%	3	6.38%	1	7.14%	9	13.04%
Completely dissatisfied	0	0.00%	0	0.00%	0	0.00%	1	1.59%	4	8.51%	0	0.00%	1	1.45%
Total	37	100%	36	100%	50	100%	63	100%	47	100%	14	100%	69	100%

Analysis : According to data presented in TABLE C19, 0.63 percent respondents whose current job was in Teaching, 0.32 percent respondents in Insurance, 1.90 percent respondents in Financial Services, 1.59 percent respondents in Service Trades, 2.24 percent respondents in Manufacturing and 0.32 percent respondents in Research were completely dissatisfied, or dissatisfied in their current job.

As indicated in TABLE C19-1, 2 of 37 respondents(5.41%) whose current job was in Teaching, 1 of 36 respondents (2.78%) in Insurance, 6 of 50 respondents (12.00%) in Financial Services, 5 of 63 respondents (7.94%) in Service Trades, 7 of 47 respondents (14.89%) in Manufacturing and 1 of 14 respondents (7.14%) whose current job in Research, were completely dissatisfied or, dissatisfied in their current job.

Conclusion: Respondents employed in Manufacturing tended to be more dissatisfied than respondents employed in the other categories.

CHART - C19


Teaching
0.95%
5.06%
5.06%
0.63%
0.00%
Insurance
0.63%
4.43%
6.01%
0.32%
0.00%
Financial Services
1.90%
6.01%
6.01%
1.90%
0.00%
Service Trades
1.27%
6.65%
10.44%
1.27%
0.32%
Manufacturing
0.32%
3.80%
8.54%
0.95%
1.27%
Research
0.00%
3.16%
0.95%
0.32%
0.00%
Other
3.80%
5.38%
9.49%
2.85%
0.32%
0.00%
2.00%
4.00%
6.00%
8.00%
10.00%
12.00%
Completely satisfied
Satisfied
Indifferent
Dissatisfied
Completely dissatisfied

Unit 20 : Most Useful University Course VS. Most Suitable Job for Statistics Graduates

TABLE C20

	Teaching	*Actuary*	*Insurance*	*Finance*	*Statistician*	*Other*	*Total*
Statistics	1 (0.30%)	10 (3.00%)	4 (1.20%)	5 (1.50%)	15 (4.50%)	2 (0.60%)	37(11.11%)
Accounting	4 (1.20%)	24 (7.21%)	11 (3.30%)	9 (2.70%)	18 (5.11%)	9 (2.70%)	75(22.52%)
Economics	1 (0.30%)	9 (2.70%)	2 (0.60%)	3 (0.90%)	5 (1.50%)	4 (1.20%)	24(7.21%)
Management	4 (1.20%)	7 (2.10%)	4 (1.20%)	7 (2.10%)	6 (1.80%)	4 (1.20%)	32(9.01%)
S.A.S.	5 (1.50%)	26 (7.81%)	1 (0.30%)	10 (3.00%)	21 (6.31%)	7 (2.10%)	70(21.02%)
Insurance	1 (0.30%)	9 (2.70%)	1 (0.30%)	2 (0.60%)	4 (1.20%)	0 (0.00%)	17(5.11%)
Sampling Survey	1 (0.30%)	4 (1.20%)	3 (0.90%)	2 (0.60%)	8 (2.40%)	0 (0.00%)	18(5.41%)
None	3 (0.90%)	6 (1.80%)	0 (0.00%)	1 (0.30%)	4 (1.20%)	8 (2.40%)	22(6.61%)
Other	6 (1.80%)	8 (2.40%)	5 (1.50%)	6 (1.80%)	9 (2.70%)	4 (1.20%)	38(11.41%)
Total	26 (7.81%)	103 (30.93%)	31 (9.31%)	45 (13.51%)	90 (27.03%)	38 (11.41%)	333(100%)

TABLE C20-1

	Teaching		*Actuary*		*Insurance*		*Finance*		*Statistician*		*Other*	
Statistics	1	3.85%	10	9.71%	4	12.90%	5	11.11%	15	16.67%	2	5.26%
Accounting	4	15.38%	24	23.30%	11	35.48%	9	20.00%	18	20.00%	9	23.68%
Economics	1	3.85%	9	8.74%	2	6.45%	3	6.67%	5	5.565	4	10.53%
Management	4	15.38%	7	6.80%	4	12.90%	7	15.56%	6	6.67%	4	10.53%
S.A.S.	5	19.23%	26	25.24%	1	3.23%	10	22.22%	21	23.33%	7	18.42%
Insurance	1	3.85%	9	8.74%	1	3.23%	2	4.44%	4	4.44%	0	0.00%
Sampling Survey	1	3.85%	4	3.88%	3	9.68%	2	4.44%	8	8.89%	0	0.00%
None	3	11.54%	6	5.83%	0	0.00%	1	2.22%	4	4.44%	8	21.05%
Other	6	23.08%	8	7.77%	5	16.13%	6	13.33%	9	10.00%	4	10.53%
Total	26	100%	103	100%	31	100%	45	100%	90	100%	38	100%

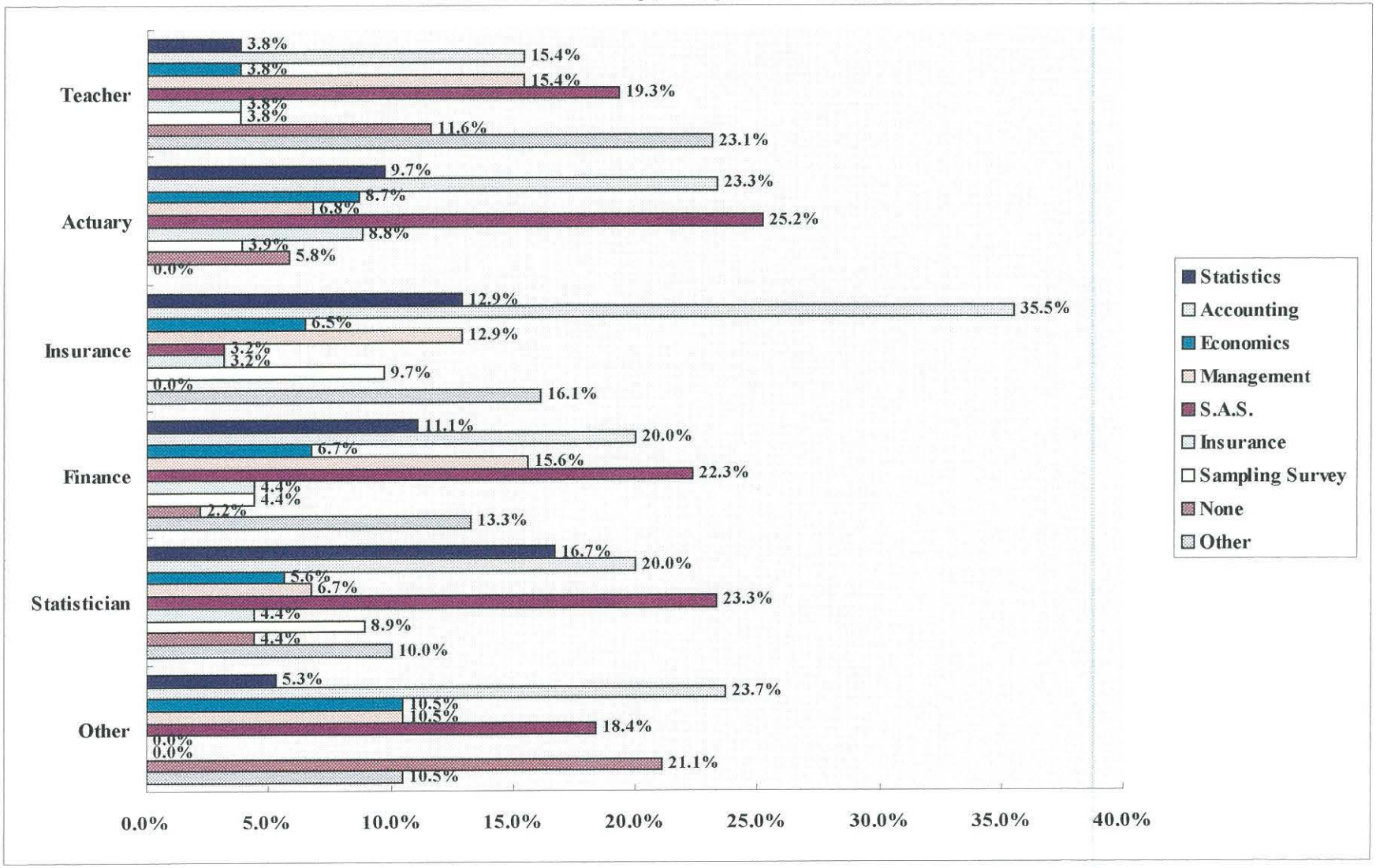
Analysis : According to data presented in TABLE C20-1, 5 of 26 respondents (19.23%) believed Teaching was the most suitable job for Statistics graduates, 26 of 103 respondents (25.24%) believed being an Actuary, 10 of 45 respondents (22.22%) believed Finance, 21 of 90 respondents (23.33%) believed being a Statistician. S.A.S. was identified as the most useful

university course.

11 of 31 respondents (35.48%) who believed Insurance was the most suitable job for Statistics graduates indicated Accounting was the most useful university course.

Conclusion : The majority of respondents indicated S.A.S. was the most useful university course. However, those respondents who indicated that Insurance was the preferred job for statistics graduates identified Accounting as the most useful course.

CHART C20


Teacher
3.8%
15.4%
3.8%
15.4%
19.3%
3.8%
3.8%
11.6%
23.1%
Actuary
9.7%
23.3%
8.7%
6.8%
25.2%
8.8%
3.9%
5.8%
0.0%
Insurance
12.9%
35.5%
6.5%
12.9%
3.2%
3.2%
9.7%
0.0%
16.1%
Finance
11.1%
20.0%
6.7%
15.6%
22.3%
4.4%
4.4%
2.2%
13.3%
Statistician
16.7%
20.0%
5.6%
6.7%
23.3%
4.4%
8.9%
4.4%
10.0%
Other
5.3%
23.7%
10.5%
10.5%
18.4%
0.0%
0.0%
21.1%
10.5%
0.0%
5.0%
10.0%
15.0%
20.0%
25.0%
30.0%
35.0%
40.0%
Statistics
Accounting
Economics
Management
S.A.S.
Insurance
Sampling Survey
None
Other

Summary--Section C

Unit

1. Gender was not a significant factor in determining the "relationship of current job to Statistics."

2. 71 0f 322 respondents (22.05%), were currently employed in a job "related to Statistics", while 251 respondents (77.64%) were employed in non-statistics related work. One may conclude that a university major in statistics does not guarantee employment in a related occupation.

3. The respondents whose current job related to Statistics received higher pay than those employed in non-statistics employment.

4. Respondents whose current jobs related to statistics were less dissatisfied than those employed in non-statistics jobs.

5. The majority of respondents whose current job related to statistics received graduation marks between 70-89.

6. Respondents whose current job related to Statistics reported less regret majoring in Statistics than those employed in non-statistics jobs.

7. Female respondents would be more likely to seek a job related to statistics than male respondents.

8. The majority of respondents whose current job was related to statistics indicated they would seek other jobs related to statistics, but approximately one third of the respondents who were employed in non-statistics jobs did not don't want to seek a job related to statistics.

Unit

9. Male respondents regretted majoring in Statistics marginally more than female respondents.

10. Respondents whose graduation marks ranged between 80~89 were more likely to pursue graduate studies in statistics.

11. Less regret for studying statistics was reported by respondents who received higher graduation marks.

12. All respondents except for those whose graduation marks were below 60 indicated that being an Actuary was the most suitable job for graduates in statistics.

13. Overall respondents indicated Accounting and S.A.S. were the most useful university courses.

14. The higher graduation marks the responder received, the more satisfied they were with their current job except for respondents whose graduation marks were below 60 who reported being satisfied with their current job.

15. The majority of respondents obtained their first job within one month of graduation and most often this job was in Insurance.

16. Salary was not a significant factor in determining how long after graduation it took to find employment.

17. The majority of respondents first salary was below 30000, but respondents whose first job was in Teaching, salaries ranged from 25001~35000 NTD.

Unit

18. Respondents who were employed in Service Trades or Manufacturing received less salary than respondents in other job categories.

19. Respondents employed in Manufacturing tended to be more dissatisfied than respondents employed in the other categories.

20. The majority of respondents indicated S.A.S. was the most useful university course. However, those respondents who indicated that Insurance was the preferred job for statistics graduates identified Accounting as the most useful course.

CHAPTER 5

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

Summary

The purpose of this project was to develop an employment profile of Bachelor of Arts(B.A.) graduates in Statistics from selected universities in Taiwan, since 1990. To accomplish this purpose, a review of current literature regarding professional opportunities in the field of Statistics was conducted. Additionally, a survey instrument was developed and mailed to recent graduates awarded B.A. degrees in Statistics from universities in Taiwan. Survey results were reported and analyzed.

Conclusions

Conclusions reached as a result of this project were :

1. The art and science of collecting and understanding statistical data play an important role in human endeavors.
2. The employment profile for a professional statistician is characterized by training in statistical methodology applied mathematics and the ability to use this knowledge in the collection and interpretation of data .
3. Knowledge of statistics is essential today for people pursuing careers in almost every area of industry, government, sports, business management, public service, or the professions.

Recommendations

As a result of this project, the following recommendations have been suggested :

1. Professional personnel who hope to survive in today's world of advanced technology and information processing must understand that the art and science of collecting and using statistical data plays an important role in all areas of human endeavor.
2. Those responsible for developing an employment profile for a professional statistician should focus on occupational characteristics such as statistical methodology, applied mathematics, and the ability to use this knowledge in the collection and interpretation of data.
3. Individuals pursuing careers in industry, government, sports, business management, public service, or the professions should possess knowledge, skill and training in the use of statistical methodology.
4. Those seeking to develop an employment profile for students with undergraduate degrees in statistics, may wish to adapt information compiled for purposes of this project, or undertake further, related research to meet their unique needs.

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