

Virginia Professional Nurses Survey:  
A Comparison of Psychiatric and Other Professional Nurses

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## **Introduction**

To date, nursing shortages have stimulated much interest from the government and health care industry, but this interest has not included studies within the psychiatric care sector.

Studies of the general health care system offer direction for studying the issues of nurse shortages and nurse supply within psychiatric care. The relevancy of the findings of general nursing labor studies has been difficult to evaluate in that little is known about how similar or different psychiatric nurses' supply characteristics are from other registered nurses. This study determines supply characteristics of psychiatric nurses, including career patterns and plans, employment satisfaction, and perceptions of quality of care and contrasts these characteristics with other registered nurses. It facilitates the application of information regarding the professional nurse workforce to psychiatric care. It determines how similar or dissimilar the psychiatric nurse supply is to the supply of other types of registered nurses.

Initially the population of registered nurses in Virginia will be described. Then a comparison will be made between psychiatric nurses and other registered nurses in Virginia. Models will then be presented that identify the influence of nurse, employment, and practice characteristics on nurse satisfaction, earnings, perceptions of quality of care, and career plans.

Additionally Merwin & Fox in conjunction with the Center for Mental Health Services, identified additional questions/answers to be added to the 1992 National Sample Survey of Registered Nurses to better identify psychiatric nurses. This paper will contrast findings of the Virginia study with results of the 1992 National Sample Survey. The two studies complement each other. The Virginia study is much more in depth, while the National Sample Survey is generalizable to the nation.

## **Relevance**

Over the ten years of this study's conception, pilot work and report, from 1988-1998, a complete cycle has occurred in the development, resolution, stabilization and re-development of a nursing shortage. In 1988 a major shortage was commonly perceived. Merwin and Fox (1990) determined that the nation's State Boards of Nursing did not have the data necessary to evaluate the supply of psychiatric nurses and the majority of Boards were unable to offer an opinion on whether or not there was a shortage of psychiatric nurses in their state. However, Merwin and Fox conducted a national survey of certified psychiatric clinical nurse specialists that determined 38% of these specialists identified a moderate or severe shortage of psychiatric nurses in their work settings. Indeed, a nursing shortage poses a critical challenge to the provision of quality patient care. But the extent to which this shortage affected psychiatric care was unclear.

In the early to mid-nineties the effects of health care reform and managed care curtailed expansion of nursing positions, facilitating an availability for hire of entry level nurses. In the mid-nineties a scholar of nurse labor trends predicted a future shortage (McCloskey, 1995) and, currently in 1998, an impending shortage is increasingly being recognized (Buerhaus, 1998; BOL, 1998). This process parallels the chronic shortage of nurses described years ago by Yett (1970) who discussed the commonly perceived 30 year long term "shortage" of nurses preceded by stability prior to 1930. Questioning if it was a needs based vs economic shortage. Recent reports confirm continued cyclical trends in nursing shortages and offers explanation of factors influencing the cycles.

Friss, 1994 describes cyclical, century long, shortages of nurses and reviews the limitations and failures of governmental studies commissions and policies to address long term solutions. She points out that despite opposing study recommendations and USDHHS recommendations continuous interventions related to improved images of nursing and increasing the entry level

supply of new graduates have been implemented and have failed to prevent ongoing nursing shortages. She concludes that real system changes including license laws relating to education with relevant differences in reimbursement are necessary. (p 1). She also points out the need for restructuring nursing practice through redesign of the broader practice environment. (p.622).

McCloskey (1995) acknowledges that new nurses experienced a tight job market in the mid-nineties but pointed out that nursing history reflects cyclical nursing shortages. She defined the cycle in relation to working conditions and market responses. She stresses the importance of determining where the cycle is prior to implementing changes. She sees the cycle as a favorable work environment resulting in increased numbers of nursing school graduations, followed by dissatisfaction in the field about costs, resulting in substitutions and raised expectations which result in dissatisfied nurses. This dissatisfaction results in increased turnover, decreased enrollment in nursing schools and resultant poor working environments. This in turn results in fewer new nurse graduates, a shortage of nurses and concern regarding quality of care. The response includes increasing incentives and salaries resulting in decreased turnover and increased enrollments in nursing programs (p. 67).

Buerhaus (1998), in an article "Is Another RN Shortage Looming?" analyses supply and demand issues and trends which he believes have potential for impacting both short and long term shortages. Demand factors, including the aging of society, increasing technology, increased income and possibly the increased availability of insurance, the increasing severity of patients treated in inpatient settings with all but the most acute are treated in the community, an increased focus on quality of care and increased roles in different community settings could influence a shortage of nurses. (p. 103-105). Supply factors, include the aging of the RN workforce, poor wage growth, low unemployment, a positive economy offering stability to spouses' earnings and the growth of the stock market may also influence a shortage. He comments "during the next 5 to 10 years, the number of RNs, particularly older and married RNs, who may leave the labor force easily could exceed the number of new entrants, resulting in a new shortage" p. 107. He believes that future nursing shortages will be different and its resolution will be compounded by the lack of the availability of an aging workforce to respond. He points out in the current pressure for organizational quality of care, a shortage may threaten survival. (p. 107).

The Bureau of Labor (BOL) estimates an additional 41,000 new RN positions, an increase of 21% from 1996-2006. The predicted increase in RN positions is in the top 5 occupations for job growth. The BOL expects School of Nursing enrollments to stabilize or decline, "reducing competition for jobs." (p.3). They expect that "many job openings also will result from the need to replace experienced nurses who leave the occupation" due to a rising average RN age.

These trends threaten a shortage of psychiatric nurses. In addition to concern about the growing possibility of a shortage of nurses which may affect all types of psychiatric nurses, a crisis maybe approaching in the supply for advanced practice psychiatric nurse. There is no one statistic or database which allows for enumerating advanced practice psychiatric nurses

One view of the nursing shortage is the education of advanced practitioners of psychiatric nursing. The number of graduates of masters programs in psychiatric nursing is one trend useful in evaluating the future availability of these specialists. The percentage of graduates of masters programs in nursing specializing in psychiatric nursing declined from 16.4% in 1980 to a low of 5.6% in 1995 (Merwin & Fox, in press). Table 1 shows changes in the number of graduates and the focus of their training in psychiatric nursing graduate programs. The focus on advanced clinical practice declined, as did the focus on teaching while the numbers of nurses graduating from psychiatric nurse practitioner programs increased. The largest percentage of graduates continue to be clinical specialists with an advanced clinical focus. Of note is the decline in the total number of psychiatric nurses from the programs. The number of graduates declined from 585 to 515 graduates from 1991 to 1995.

Table 1

Graduations from NP, Advanced Clinical Practice and Teaching Programs				
Year	ADV Clinical Practice	Teaching	NP	Total
1991	492	46	47	585
1992	425	32	53	510
1993	404	54	64	522
1994	469	29	70	568
1995	418	2	95	515
<b>Total</b>	<b>2,208</b>	<b>163</b>	<b>329</b>	<b>2,700</b>

Source: National League of Nursing Publications.

### Selected Literature Review

It has been pointed out by Aiken (personal communication, October 1991) that the supply of RNs has continued to increase regardless of demand for RNs. Therefore, despite cyclical shortages of nurses the actual number of nurses has steadily increased. Consistent with economic theory of supply and demand, when health care agencies desire to hire more nurses than are available at the prevailing wage they raise wages. Increasing wages have a moderate effect on the nurse labor market. Buerhaus (1991) has found that as demand for RNs increases, as evidenced by increases in wages, the short-run supply of unmarried nurses increases, with no change in married nurses' average number of hours worked. This research, indicates a relationship between the demand for nurses and the supply of nurses consistent with that discussed by O'Donoghue and Roberts (1981) as the expected relationship supported by economic theory. Buerhaus (1991) however, points out that in several prior studies the wage elasticity of supply has consistently been less than 1.0, indicating an inelastic supply curve (p. 320), and that only the sample of unmarried RNs significantly increased their work hours while the collective sample did not. Therefore, for this total sample, Buerhaus found an inelastic supply curve. Although the supply response to increased demand appears weak, Buerhaus (1991) points out that increases in wages for nurses traditionally increases enrollment in nursing schools.

Schoeman (1988) studied factors that influence the short-run supply of RNs. She estimated an equation to predict a nurse's decision to work or to be unemployed. She found that educational level had no effect; nurses with degrees in other fields were less likely to work as RNs; Blacks and Hispanics were more likely than Asians and American Indians to work; foreign graduates were more likely to work; and whites were overall the least likely to work. Age had a quadratic effect in that young nurses were more likely to work whereas there was an apparent decline during child bearing years, and then an increase in the likelihood of working once again. Married nurses were less likely to work; nurses with family incomes over \$50,000/year were less likely to work; and finally nurses with young children were also less likely to work.

In addition to considerations of supply and demand for registered nurses, it is important to address other aspects contributing to the shortage of nurses in the psychiatric specialty field. A unique issue affects the availability of RNs in psychiatric care. The nurses must choose psychiatric nursing as a specialty area within the broad spectrum of nursing specialties and only 4.26% of registered nurses actually work in psychiatric care (Merwin & Fox, 1990). In an effort to maintain employee satisfaction, one would do well to recognize what influences cause nurses to work in psychiatric care. Targeting these influences will also allow the profession's employers to successfully recruit potential employees from the general population of RNs. In a study of all RNs and LPNs employed in inpatient care within one state's mental health system, Fox and Merwin determined that the reasons nurses chose to work in their current facilities include: the opportunity to practice psychiatric, geriatric, or mental retardation nursing (36%); proximity of work site to home (18%);

pay and benefits (24%); and other reasons (22%). The main reasons they remain employed include: pay and benefits (34%); loving their work (20%); satisfying work relationships (11%); and proximity to home (10%).

Statistics support the idea that nurse satisfaction is directly influenced by the type of hospital and the type of unit these professionals work within, as well as by the type of job actually being held. There exists extensive literature describing factors which affect nurses' job satisfaction including job expectations, decentralization of management, scheduling alternatives, leadership behaviors, collective bargaining, motivation and hygiene factors, organizational characteristics, locus of control, and job tension (Larson, 1984; Shoemaker, 1983; Duxbury, 1984; McGillick, 1983; Hunter, 1986; Munro, 1982; Prescott, 1986; Bateman, 1983; & Kosmoski, 1986). While it is not possible to review all the literature on this topic here, the aforementioned factors point out the wide range of variables that have been shown to sway the total satisfaction of RNs.

It is necessary to understand supply characteristics of psychiatric nurses so that qualified candidates will be available for hire at the level desired by psychiatric organizations and for consumers through private practices. When there is a shortage available for hire, Merwin and Fox note that hospitals have been shown to respond in three ways: lowering staffing or skill-mix levels, reducing access to care, or incurring additional costs. In response to nursing shortages in the late eighties, nurses in the researchers' survey report that their units took some or all of the following action: operated under recommended staffing levels (49%), replaced RNs with LPNs (19%), replaced RNs with aides (4%), closed beds (5%), stopped admissions (1%), paid overtime for RNs (11%), and paid for recruiting nurses (9%).

## **Section A: Supply Characteristics of Registered Nurses**

### **Population**

The population of RNs in Virginia in 1994 served as the focus for this study as identified from a mailing list of RN's provided by the Virginia State Board of Nursing. This included nurses licensed as nurse practitioners and those registered as Clinical Nurse Specialists. To ensure inclusion of a representative sample of the nurses, small subsets of these groups were sampled separately from other RN's. One hundred percent of CNS's were sampled and approximately 20% of NPs and other RNs. (See Technical Appendix for details on sampling and response rates.) Since 1994 there has been an increase in each type of RN as shown in Table 1. The total number of nurses has increased by over 5,000 individuals. The results of this study are weighted to reflect characteristics of the RN population in 1994.

### **Limitations**

A limitation of this design is that it uses the population of nurses from only one state and therefore may not be generally applicable to the nation as a whole. Unfortunately, there is no currently established database that would allow for random sampling of psychiatric and other registered nurses on a national level. In order to obtain a national sample either the entire population of RNs (over 2 million) would have to be sampled to determine their practice areas. Or at a minimum, a random sample of states would have to be chosen and multiple states used as the focus for the study. To overcome this limitation, a parallel study of the 1992 National Survey of Registered Nurses conducted by the Division of Nursing was conducted; the results of this national data set was used to compare characteristics of RNs in Virginia with nurses throughout the country.

### **Registered Nurses in Virginia**

There were 70,254 RNs in Virginia in 1994. Of these 335 were registered as CNS's, 2,265 were licensed as NP's and 67,654 were licensed as RN's. Seventeen of the NP's were also registered as CNS's. The nurse practitioner group includes: 47% nurse anesthesiology, 17% FNP, 9% adult

NPs, 9% pediatric NPs, 7% ob/gyn, 4% nurse midwives, 3% neonatal and less than 2% in other category based on first classification of specialty area.

Table 1

Changes in Types of Nurses from 1994 - 1997			
Type	Years <sup>1</sup>	1995	1997
CNS	1994	335	443
NP	1994	2,265	3,179 <sup>3</sup>
RN	1994	67,654	72,361
Total	1994	70,254	75,983

1 The 1994 data is derived from Data set purchased early in 1994; 1995 is as of 6/30/95 and 1997 is as of 12/31/1997. The number of CNS's are subtracted from total number of RNs to result in unduplicated counts. There are a few NPs who are also CNSs.

2 Includes 700 with prescription privileges.

3 Includes 1,277 with prescription privileges.

Source: Virginia State Board of Nursing Newsletters.

These results are based on a representative sample of these nurses. Ninety-seven percent of RN's are female. Only 10% are non-white, 4.2% are African American, 0.5% are American Indian Alaskan, 1.9% are Asian, and 1.6% are of other races. The average number of years of being a RN is 20 years. On average nurses work 36 hours a week.

### Education and Credentialing

15% have graduate education in either Nursing or a non-nursing area. The highest degree/diploma earned in nursing included: Baccalaureate, 33%; Diploma in Nursing, 33%; and associate degree 23%.

Masters 10% and Doctorate 0.6%. Thirty-three percent have other types Credentialing beyond the RN licenses. 20% of nurses have a degree outside of nursing including 599 nurses with Doctorates, 3,014 with masters, 6,222 with baccalaureate degrees and 2,816 with associate degrees. Nine percent were currently enrolled in some type of educational program. Thirty-eight percent plan to seek an additional degree in the next 5 years.

As Table 1 shows there has been a continual increase in registered Clinical Nurse Specialists and licensed Nurse Practitioners. But tracking only these two designations of nurses overlooks the majority of Master's prepared advanced practice nurses in Virginia who are not registered as CNS's or licensed as NP's. Reasons for this may reflect the completion of educational programs as CNS's and/or NPs without holding current registration or licensure as a CNS or NP. Particularly for CNS's many fill positions which don't require CNS registration. CNS registration requires certification by a national certifying agency thus incurring the dual expenses of certification and registration. Nurses with the education as a CNS, filling other types of positions, may not seek registration. Similarly, if a nurse with education as a nurse practitioner is not practicing as a nurse practitioner they may not chose to maintain licensure as such.

Figure A.1 shows the clinical practice areas of the different types of nurses. Of all categories examined, fewer nurses work in psychiatric-mental health nursing in both their primary and secondary setting of employment than in any other clinical area. Most nurses are not registered as CNS's or NPs but are in the general category of other Registered Nurses. Figure A.2 shows that all types of nurses fill many types of positions, but the staff nurse position is by far the most common position, followed by administrative/management types of positions. The modal position for CNS's was the CNS position as was the NP position for NP's.



## Employment

Most nurses are employed full time (56%) with an additional 22% working part time and about 7% work less than 12 months per year in primary setting. Approximately 7.6 are retired (maybe understated) and not employed, and 9% are not employed. 10% were currently seeking additional employment. Eighty-three percent of employed nurses work in one position, but 14% work in 2 positions and 2% in 3 positions. The average number of hours in the primary care setting is 35 hours; for nurses working in a secondary setting, they averaged 10.6 hours work in that setting. About 6.5% of nurses do not consider nursing to be their primary professional discipline.

Nurses work in a variety of employment setting but as the chart in Figure A.3 shows, hospitals are the dominant place of employment. Fifty-one percent work in hospitals, 7% in Home Health, 6.5% in academic settings, 6.3% in clinics, 3% in psychiatric hospitals, 4% in nursing homes, and 5% in physicians offices in the primary setting. In secondary settings of employment, hospitals still dominate at 31% but the percent of nurses working in home health increases to 17%.

Over eight percent of nurses consider their primary position to be a non-nursing position, however 16% of positions in secondary setting are considered non-nursing.

## Primary Setting Descriptions

Most nurses work in private settings with 30% in for profit and 34% in non-profit organizations; 36% work for public agencies. 25% changed jobs in 1993 or 1994, while 48% hadn't switched primary positions in the last 5 years. 54% of nurses work as staff nurses, 3.5% are nursing on hospital administration, 9.5% other managers, 6% as case managers. Diverse schedules are characteristic of nursing positions. 7% work permanent evening, 10% permanent nights, 14% rotate shifts, and 56% work permanent days. Twenty-seven percent of nurses are on call during off hours. Most have responsibility for direct patient care (80%).

Nurses spend an average of 51% of time in direct patient care, 15% on indirect care activities, 11% on management administration, 9% in clinical supervision, 3% in consultation activities, 8% on educational activities and 2.5% of time on research in their primary setting.

## Support Services

A frequent criticism by nurses is the lack of support services facilitative of quality nursing care. Nurses were asked to rate support services. As Figures A.4 and A.5 show, there is room for improvement in these areas. In Figure A.4 less than 25% of nurses rate support of clinical services as excellent, but physician services had the highest ranking. Other than physician services all other services were rated as inadequate by over seventeen percent of the nurses. Figure A.5 shows that there is also concern regarding the support of non-clinical services. Supplies, patient transportation, secretarial and housekeeping services were areas in which over 20% of the nurses perceived inadequacies. The average number of years nurses have worked in their primary setting was 8 years. Sixty-four percent care for adults, while approximately 31% care for children and adolescents. Forty-nine percent care for the elderly. Most provide care to individuals (70%) but 15% care for couples, 32% families, 6% groups and 6% provide direct services to community systems.

## Quality of Care

The nurses rated the quality of care in their primary setting. Thirty-nine percent believed the overall quality of care was excellent; 45% above average, 14% average, 1.2% below average and 1.3% rated it as poor. Over 3% rate emergency services/crisis intervention as below average.

Over 2% rate patient safety activities as below average, 6.4% rate discharge planning below average and 10.7% rate follow-up care as below average. These are areas of potential harm to patients. Handling emergencies or crisis situation adequately can prevent negative consequences. Ensuring patient safety is a minimum requirement in any evaluation of patient care. With the tendency toward rapid discharge the lack of discharge planning and adequate follow-up should be of major concern to providers and consumers and deserves further study and intervention.

2.1% rated medication administration management below average. This also is a concern due to the potential harm that can arise from medication errors. Most nurses (71%) were responsible for medication administration in their positions. Of the 2,721 nurses responding to a question asking the number of medication errors they made in the last year the average was 0.7.

With health care reform occurring during the time of this survey, nurses were asked about changes in the quality of care in their settings in the last five years. About half indicated improved quality, and 31% rated graduates the same. Of concern is that 16% reported somewhat decreased quality and 4.5% greater decreased quality (see Figure 6).

### **Financial Compensation of RNs**

Most RNs are either salaried (42%) or paid by the hour (53%) in their primary positions; 2.5% are paid through contracts, and only 1.7% are reimbursed through a fee-for-service arrangement. For the nurses with a secondary setting of employment most are paid hourly (58%) or through fee-for-service (15.3). For nurses working full-time in 1993 4% earned less than \$20,000; 14% earned \$20-29,999, 37% earned \$30-39,999; 29% earned \$40-49,999 and 16% earned greater than \$50,000 (see Figure A.7). As expected those working part-time earned less income, but 5% of those working part-time earned over \$40,000. For the 293 nurses who reported income from self-employment, they earned on average \$16,237 with a range from \$1-\$90,000.

### **Professional Satisfaction and Future Plans**

Most nurses are satisfied with their current position and with their choice of nursing as a profession. Seventy-one percent of nurses all would choose nursing again. Forty-one percent are very satisfied with their current position, while 39% are somewhat satisfied, eight percent are somewhat dissatisfied and 35 are very dissatisfied.

Most nurses (61%) plan to remain in their current position with their current employer over the next 5 years; 12% plan to seek a similar position with another employer; 13% plan to switch specialty areas. Six percent plan to work in a non-nursing position; 8% plan to retire; 5% plan to stay home and raise children and 1.6% plan to stay home for other reasons.

Of concern is the reasons why 16.5% of respondents are retired or not employed. While there may be health or age reasons that prohibit working, voluntary reasons should be understood. There were 403 retirees as respondents. On average it has been 7 years since these individuals last worked as a nurse. The top reason for not working was other - possibly the lack of category for health reasons or eligible for social security were not options may have affected this. A personal decision to stay home was the next most mentioned factor. Since only 3% identify the inability to find a suitable position it is unlikely that the lack of work opportunities greatly influence retirement decisions.

In contrast to the retirees, the largest reason for not being employed for the non-retirees was family responsibilities (56%) followed by a personal desire to stay home. The non-employed offer clues as to what would entice them back to the workforce. 13% were unable to find a suitable position, 13% cited child care problems and 10% report insufficient financial reimbursement. The average age was 45.

### Section B.

#### Comparison of Psychiatric Nurses with Other Registered Nurses

Nurses were classified as being psychiatric nurses if they either were certified by the ANA as a psychiatric nurse, worked in a psychiatric hospital in either their primary or secondary site of employment, or identified the clinical practice area as psychiatric mental health nursing in either setting. Since there is no one variable nor one standard definition of a psychiatric nurse an evaluation was made of the number of psychiatric nurses given different definitions:

There were 228 observations (non-psychiatric nurses) who reported working in settings whose main purpose was caring for patients with psychiatric problems. Fifty-nine percent worked in hospitals, 10% in nursing homes in their primary setting. Twenty-seven percent listed medical surgical nursing as their clinical practice area in primary setting, and 11% geriatric nursing. Most worked as staff nurses. This sub-population of nurses will be studied separately in later analyses.

#### Demographic and Educational Characteristics

The characteristics of psychiatric and other registered nurses will be compared. Differences in demographic characteristics, work settings, roles and responsibilities are described. Perceptions of quality of care will be presented. Finally, the satisfaction levels of these nurses will be contrasted. There are demographic differences between psychiatric and other registered nurses (See Table 1). Five percent of psychiatric nurses are men compared to 3% of other registered nurses. Slightly more psychiatric nurses are non white – 8.9% compared to 7.5% of other registered nurses. Psychiatric nurses are also older with an average age of 48 years compared to 45.6 for other RN's.

In this study 29% of psychiatric nurses were prepared at the graduate level compared to 13.6 of other RN's. While some nurses highest academic degrees are outside of nursing in related fields, there were differences in the percentage of psychiatric and other registered nurses with their highest degrees earned in nursing. Doctorates in nursing were held by 1.4% of psychiatric nurses and 0.5 of other nurses. Similarly 19.9% of psychiatric nurses have masters degrees and 25.4% have baccalaureate degrees, compared to 9.5% masters and 33.7% baccalaureate degrees for others. Overall 47% of psychiatric nurses are prepared at the baccalaureate degree level or higher compared to 44% of other registered nurses. Thirty-two percent of other RNs hold other types of

#### Psychiatric Nurse Operational Definition

- |         |      |  |
|---------|------|--|
| N = 449 | I.   | A. Certified Clinical Nurse Specialist in Psychiatric Nursing  |
|         |      | B. Certified Generalist in Psychiatric Nursing   |
|         |      | C. Employed in Primary Setting in Clinical Practice Area of Psychiatric Nursing                                  |
|         |      | D. Employed in Psychiatric Hospital in Primary Setting   |
| N = 456 | II.  | All criteria of #I, plus those employed in a psychiatric hospital as their secondary setting of employment.      |
| N = 472 | III. | All criteria of # I & II, plus a clinical practice area of psychiatric mental health in their secondary setting. |
| N = 687 | IV.  | All of I-IV, plus the primary setting primarily provides care for clients with psychiatric problems.             |
| N = 700 | V.   | All of I-V, plus their secondary setting primarily provides care for clients with psychiatric problems.          |

credentialing compared to 42% of psychiatric nurses. This could include other licenses or certification. Twenty percent of psychiatric nurses are certified as psychiatric clinical nurse specialists by the American Nurses Association. Nine percent of nurses in both groups are currently pursuing additional degrees, completing or other for academic training.

### **Employment Characteristics**

As Table 2 and Figure B.1 shows most registered nurses work full time but 71.3% of psychiatric nurses do compared to 55% of other registered nurses. Consistently, there are fewer psychiatric nurses employed part-time, retired and not currently employed. The statistics for percent retired and not employed may be artificially low for psychiatric nursing due to employment in psychiatric care being one part of the definition of a psychiatric nurse. For the nurses who are retired or not employed it has been an average of 9 years for psychiatric nurses and 7.5 years for non-psychiatric nurses since they last worked. Figure B.2 shows the average age for these groups. Both groups of retirees are over 65; unemployed psychiatric nurses are 54 on average or nine years older than the average age of other registered nurses. More psychiatric nurses (15.1%) than other RNs (9.9%) are currently seeking additional employment.

Table 2 shows the employment settings, type of clinical practice and ownership status for psychiatric and other nurses. Figure B.3 shows the diverse settings of practice of registered nurses. Sixty-one percent of psychiatric nurses work in hospitals compared with 53% of other nurses. Few psychiatric nurses work in nursing homes, home health, or physicians offices. More psychiatric nurses work in academia, clinics and other outpatient settings and in independent practice. About 27% of psychiatric nurses and 16% of other registered nurses work in more than one paid position. As Figure B.3 shows, 12.5% of psychiatric nurses work in independent practice in a secondary setting compared to 3.3% of other nurses. Hospitals are frequently sites for secondary employment. Home health is a frequent site for other registered nurses (18%) but much less so for psychiatric nurses (4.5%).

Figure B.4 shows the ownership of settings of the nurses employment. More psychiatric nurses work in public settings in their primary setting. Private for profit agencies is most frequent in secondary settings. Both types of nurses work in diverse positions. Staff nurse is the predominant position. As Table 4 shows, most psychiatric nurses are salaried in their primary positions in contrast to hourly reimbursement for other registered nurses. Only 1.7% of psychiatric nurses compared to 1.5% of other RNs are paid by fee for service arrangements in their primary setting. Reimbursement in secondary settings primarily consists of hourly payments and fee for service reimbursement for both types of nurses (see Figure B.6). Nineteen percent of full-time psychiatric nurses earn over \$50,000 a year compared to 14.5% of other nurses.

Table 5 shows that registration as a CNS or licensure as a NP results in higher earnings. For both psychiatric and other non-psychiatric nurses, nurse practitioners earned the highest wages followed by CNS's.

Table 6 shows the diverse types of positions filled by the nurses, staff nurse and management types of positions are frequent. Most nurses work permanent day schedules.

Not all psychiatric nurses work in the clinical area of psychiatric nursing, as Figure B.7 shows only 77% do so in their primary setting and 65% do so in their secondary setting. Ten percent of psychiatric nurses work in other non listed clinical areas, followed in frequency by medical surgical nursing, gerontological, community health and maternal child nursing in both primary and secondary settings. Table 7 and Figure B.8 shows the work activities of registered nurses. Psychiatric nurses spend less time in direct patient care and more time in clinical supervision and in indirect care activities. There are similar levels of management (11%) and educational activities

(8%) between the two types of nurses. In contrast, psychiatric nurses spend a higher percentage of time in direct patient care and educational activities in their secondary settings of employment. Table 8 and Figure B.9 contrasts the average number of hours of direct patient care in primary and secondary settings. Probably due to psychiatric nurses working more hours their number of direct patient care hours is slightly higher.

Table 9 shows nurses care for patients from all population groups and economic backgrounds. A higher percentage of psychiatric nurses care for those on public assistance. (See Figure B.10). Both types of nurses are most likely to care for individuals. Fewer psychiatric nurses report caring for couples, but more provide care to groups, families and communities (see Figure B.11). Most nurses care for adults and over 50% for the elderly. Fewer care for children or adolescents; only 20% of psychiatric nurses care for children (see Figure B.12 and Table 9).

### **Perceptions of Quality of Care**

Nurses were requested to evaluate the quality of different treatment services in their primary setting as reported in Table 10. Psychiatric nurses were more critical of care in their settings compared to non psychiatric nurses. Overall quality of care was rated excellent by 40% of non psychiatric nurses but only by 30% of psychiatric nurses. Of concern is the large difference in medical care. Only 23% of psychiatric nurses rated medical care excellent, compared to 38% of other nurses. Similarly fewer psychiatric nurses (42.5%) compared to other RNs (48.6%) rated nursing care excellent. However, very few nurses of either type rated the care poor. But, in all cases the higher percentage of psychiatric nurses rated care as below average than did non psychiatric nurses. The service with the worst rating by both psychiatric and non psychiatric nurses was follow-up care. Nineteen percent of psychiatric nurses and 10% of other nurses rated follow-up care as either below average or poor. Psychiatric nurses ratings are presented in Figure B.13 and can be compared with non-psychiatric nurse ratings in Figure B.14. Emergency services/crisis intervention were rated high by both groups. Figure B.15 showed discharge planning and follow-up care. These are areas for potential improvement.

Nurses were also asked to rate the changes quality of care in their settings over the last 5 years. Figure B.16 shows that almost half of the nurses report improvements of care during this time frame. Another approximately 30% report the same quality of care. A greater percentage of psychiatric nurses (17.1%) versus non-psychiatric nurses (15.8%) report somewhat decreased quality. Six percent of psychiatric nurses and 4.3% of other registered nurses report greatly decreased quality of care.

Another measure of quality of care is medication errors. Sixty-four percent of psychiatric nurses and 71% of non-psychiatric nurses were responsible for administering medications in the last year. Psychiatric nurses medication error rate was higher although both averages were less than 1 error per nurse in a year; of concern is that both groups of nurses included nurses with 9-10 errors in a year (see Table 11).

### **Satisfaction of Nurses**

Table 12 shows that Virginia registered nurses are generally satisfied with their primary positions. However, fewer psychiatric nurses are very satisfied and a greater percentage is dissatisfied or somewhat dissatisfied (see Figure B.17). Of concern is that only 71% of both types of nurses would choose nursing again as a profession. Table 13 compares the scores of Virginia nurses with the norms for a work satisfaction scale. In general, Virginia nurses are more satisfied than the groups of nurses who were used to develop the norms; this may be a time effect with the scale being published about 10 years prior to this study. But the scale is useful in the comparison between the psychiatric nurses and the other registered nurses at the same point in time. Psychiatric nurses were less satisfied with their professional status, interactions, task requirements

and organizational policies, the only area where they were slightly more satisfied with pay. Overall satisfaction for psychiatric nurses was slightly lower than for other registered nurses.

### **Section C: Factors Influencing Earnings, Satisfaction, Perceptions of Quality of Care and Career Plans of Psychiatric versus Other Registered Nurses**

The most direct comparison of the characteristics of psychiatric nurses with other registered nurses can occur by comparing those who are working and are providing direct patient care as a part of their work. Therefore the population of nurses in Virginia was constrained to those working and providing direct patient care. Table 1 provides definitions of the variables used in these analyses. Supply characteristics of nurses measured included demographic and employment characteristics, work activities, salary, career patterns, populations served, job satisfaction, perceptions of quality of care, and perceptions of support staff were defined. Table I contains a list of variables which were used to measure these concepts. Job satisfaction was measured by the Stamps-Piedmont nurse work satisfaction tool. The hypotheses tested include:

*H1: There will be no differences between psychiatric nurses and other registered nurses in career plans, satisfaction levels, perception of quality of care, or satisfaction with support services when populations served, work activities, salaries and benefits, and demographic and employment characteristics are statistically controlled.*

*H2: There will be no differences between the salary or satisfaction levels of psychiatric nurses and other registered nurses when their demographic and employment characteristics and their work activities are statistically controlled.*

Table 2 reports the results of analyses evaluating these hypotheses. Psychiatric nurses are not different from other registered nurses in satisfaction, perceptions of quality of care and their perceptions of the adequacy of support services when demographic, employment, and work characteristics are accounted for. Earnings of psychiatric nurses are higher even after controlling for these factors. Nurses living in rural areas have lower earnings and perceive quality of care to be lower in their work settings even after considering the influence of other factors. Thirty-four percent of the variation in earnings is explained by being older, having a graduate degree, working in academia, hospitals, or independent practice as compared to office/clinic or other settings. Those working in nursing homes earned less. Increased number of hours worked, being paid by salary, contract, or fee-for-service as a payment mechanism resulted in higher earnings than if paid through hourly or other arrangements. Those with higher percentages of clerical, dietary and indirect care activities earned less. Those working in for-profit private settings earned more than those in public agencies which earned more than those working in private non-profit agencies.

Only 13% of satisfaction was explained. Older nurses, those with graduate education, those with permanent day schedules, those in management, and those with high earnings were more satisfied. Those working in hospitals or nursing homes were less satisfied when compared to those in academia, independent practice or other settings; those in office/clinic settings were most satisfied. Only 5% of the nurses perceptions of care is explained by the variables in this model. Those with graduate education, working in academia, hospitals or nursing homes perceived lower quality of care in their primary setting, as did those working in public and private for-profit settings as compared to private not-for-profit agencies. Those working days perceived a higher quality of care as did those providing a higher percentage of direct patient care and those living in urban/suburban versus rural areas. Those providing more clerical, housekeeping and more indirect care activities perceived lower quality of care. Seven percent of the variation in Inadequate Support Services is explained. Younger nurses were less likely to find the support services inadequate. Those with graduate education, working in psychiatric hospitals, in public settings, with higher percentages of time spent in clerical and dietary activities, and those with higher earnings were more likely to find support services inadequate.

*H3: Psychiatric nurses' career plans for staying in psychiatric nursing will be predicted by an upwardly mobile salary level, a positive level of job satisfaction, and a positive perception of quality of care.*

Table 3 shows that there are differences in earnings, perception of quality of care, overall satisfaction level, and satisfaction with pay, autonomy, tasks, organizational policies, professionals, and interactions depending on the classification of type of nurse. This chart compares the two main types of advanced practice psychiatric nurses with other registered nurses. It should be noted that not all master's and doctorally prepared nurses are registered as CNS's or NP's; therefore the other RN category includes these nurses.

This table shows that there are few psychiatric nurse practitioners (only 6 responders) in Virginia. However, this category of nurse had the highest earnings, about 10,000 more than CNS's and about 17,000 more than other Registered Nurses. NPs also had the highest perception of quality of care, and highest levels of overall job satisfaction followed by the CNS's. However, CNS's were more satisfied with their earnings, and with their level of autonomy. Overall, advanced practice nurses were more satisfied on each of these factors than were other registered nurses. Table 4 shows the influence of variables that are related to psychiatric nurses' plans to leave nursing. The only statistically significant variable was work satisfaction. Those with high work satisfaction were less likely to have 5 year career plans of leaving nursing.

*H4: There will be no differences among psychiatric nurses working in different work settings (hospitals, clinics, private practice, etc.) with respect to career plans, salary levels, job satisfaction level, or perception of quality of care after controlling for demographic and employment characteristics.*

While the only variable predictive of psychiatric nurses leaving nursing above was work satisfaction, other factors were found to be influential in additional analyses considering influences of additional factors. Without considering the influence of work satisfaction, earnings, or quality of care (other dependent variables of this hypothesis) the higher the amount of time nurses spent in non-nursing work activities and the higher percent of time that nurses spent in providing direct patient care the more likely that nurses were to plan to leave nursing within five years.

There were many factors that explained psychiatric nurses work satisfaction (17% of variation, see Table 5). Those who were paid through salaries, hourly wages, contracts or fee-for-service mechanisms were more satisfied than those paid through all other types of ways. Those spending a high percentage of their time on clerical or dietary work activities were less satisfied, while those spending more time on educational activities were more satisfied. There was no difference in work satisfaction for nurses living in rural versus urban/suburban areas. Two factors influenced the perception of quality of care in primary settings. Fourteen and a half percent of variation was explained by older nurses, and those in independent practice rating care more favorably.

## **Conclusions**

The design of this study of psychiatric nurses will allow for a comparison of supply characteristics of psychiatric registered nurses with the general population of registered nurses. Since nurses enter or exit at will from any specialty area of nursing it is important to know how current psychiatric nurses compare to the general population. This knowledge will help the specialty area of psychiatric nursing better define the similarities and differences between itself and the general group of registered nurses. Such information might be useful for promoting the specialty career to nurses who are not currently practicing psychiatric nursing; it may also help the specialty deal with the risk of psychiatric nurses leaving the specialty area and returning to other areas of practice.

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**SECTION A**

### Clinical Practice Areas of Virginia Nurses

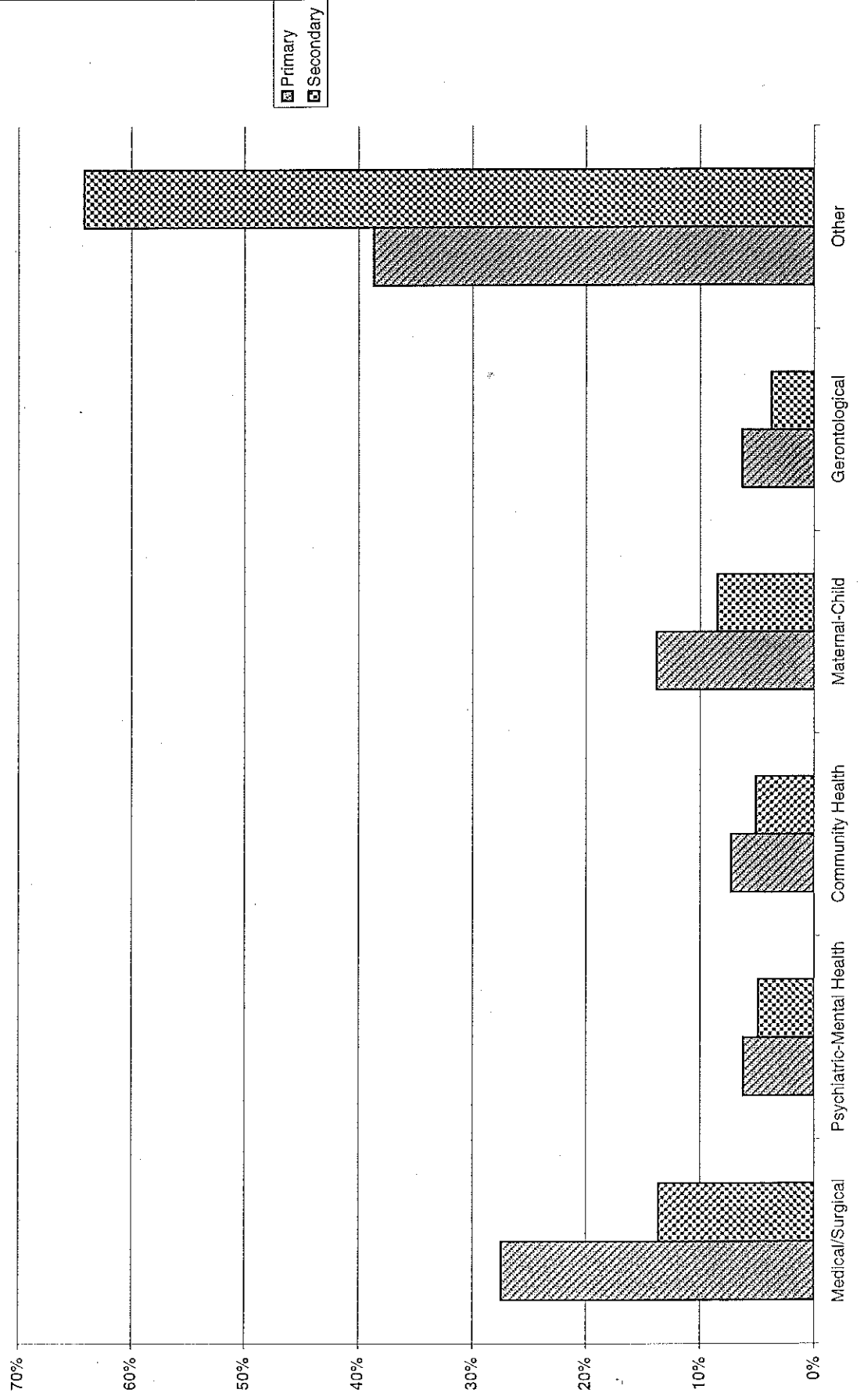


Figure 1

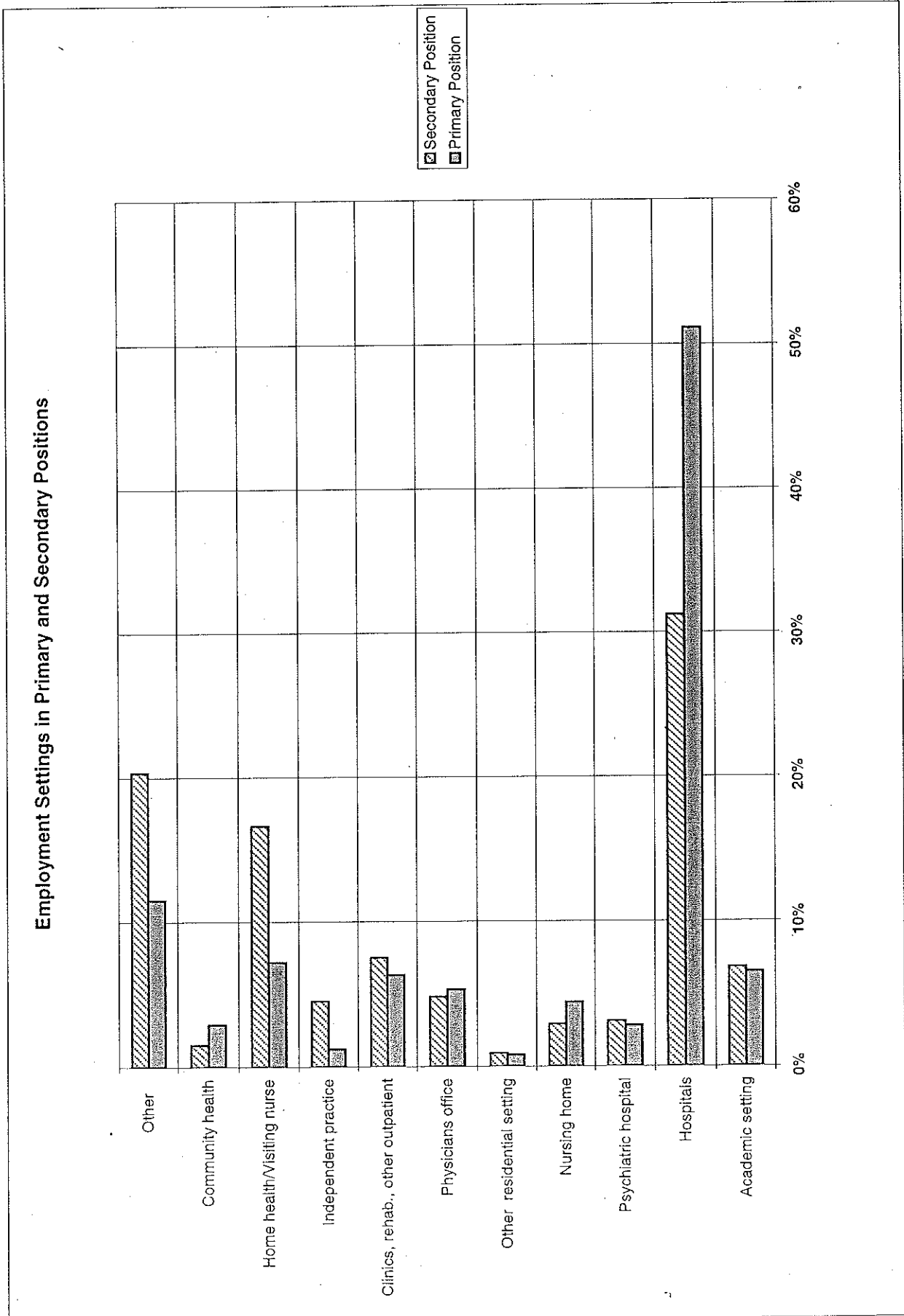
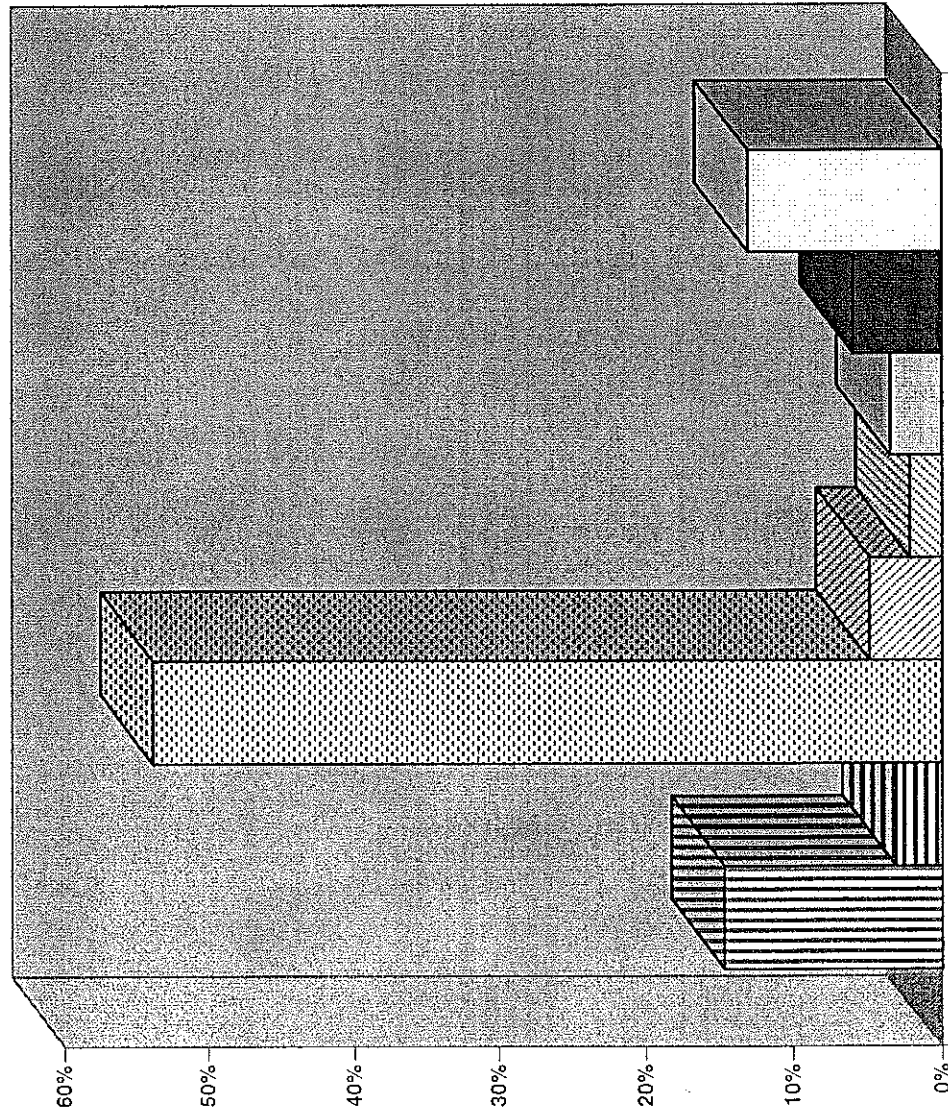


Figure 3

### Positions of Nurses in Primary Work Settings



Legend: A: Administrators, C: Clinical Nurse Specialist, D: Staff Nurse, E: Instructors, F: Consultant/Researchers, G: Nurse Practitioner, H: Case Manager, I: Other

Figure 2

Four different categories of satisfaction were measured in percentages for each clinical support service area

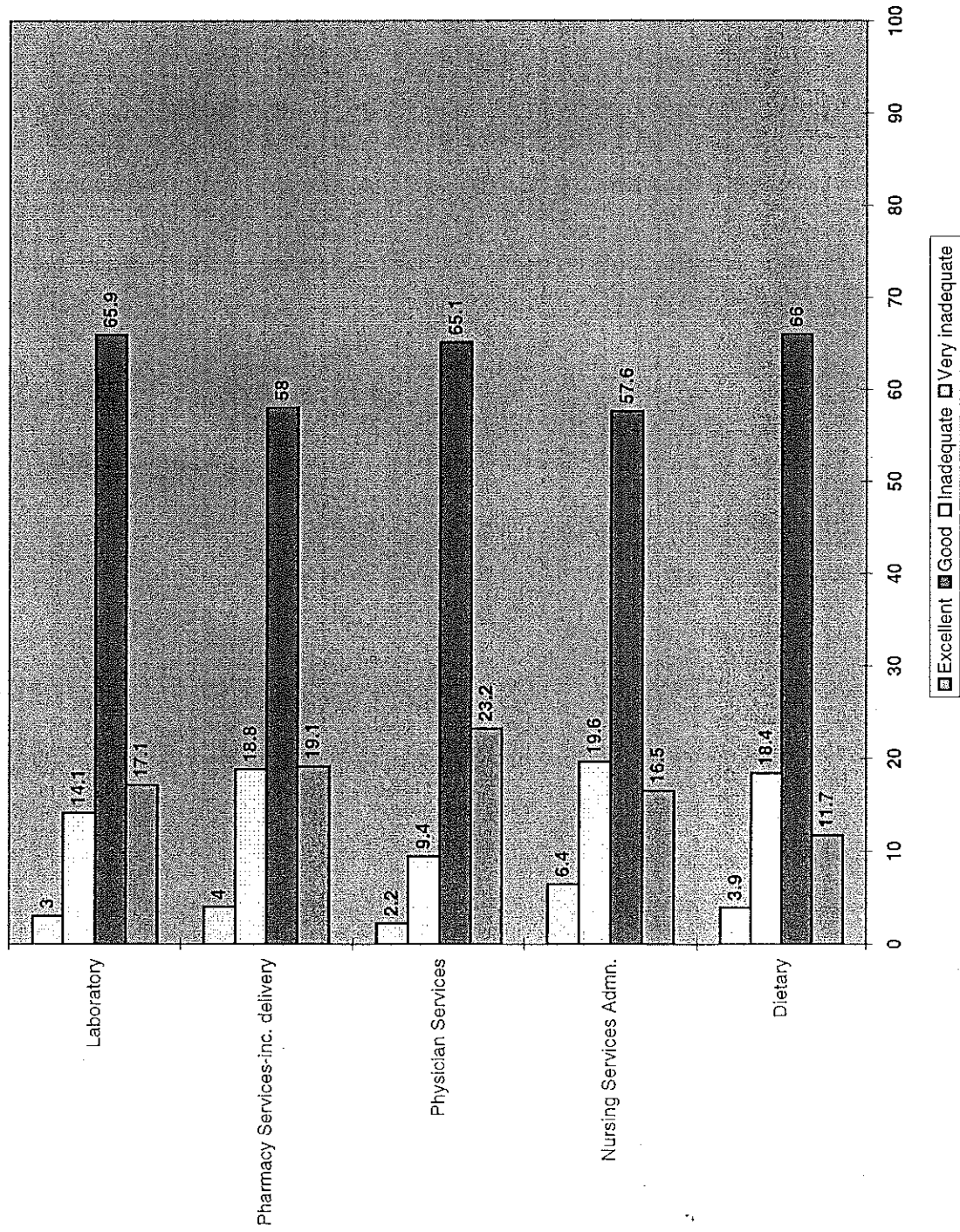


Figure 4

Four different categories of satisfaction were measured in percentages for each non-clinical support service area

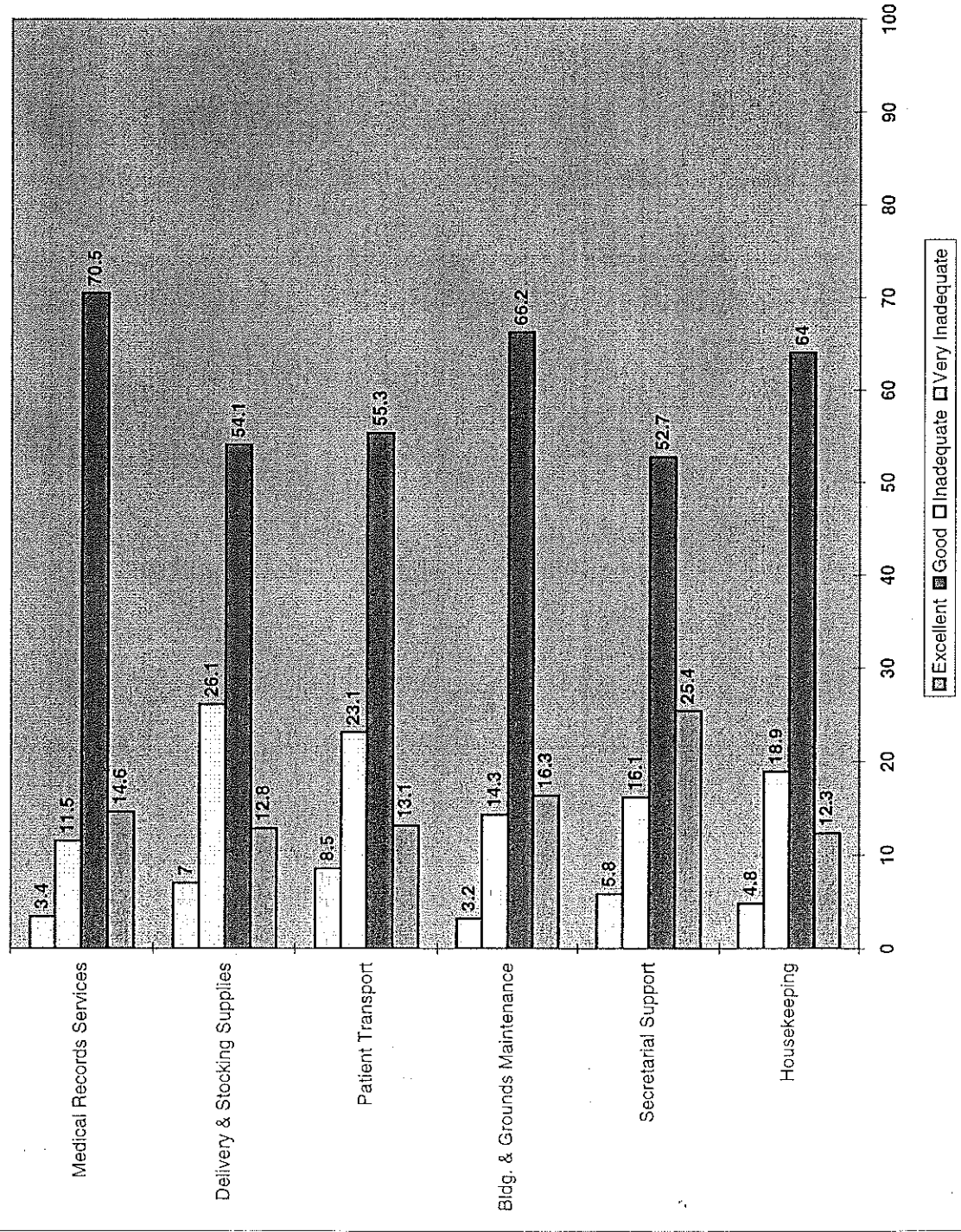
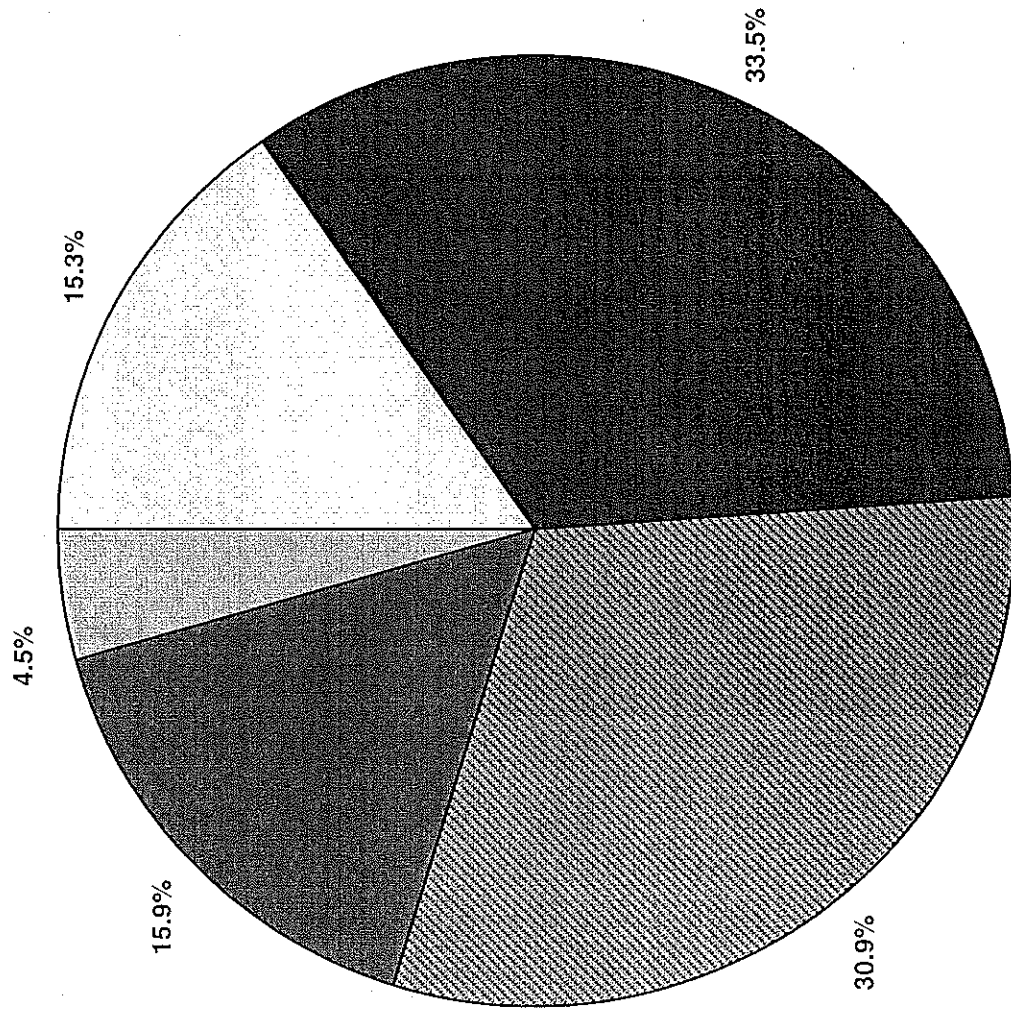


Figure 5

### Change in Quality of Nursing Care

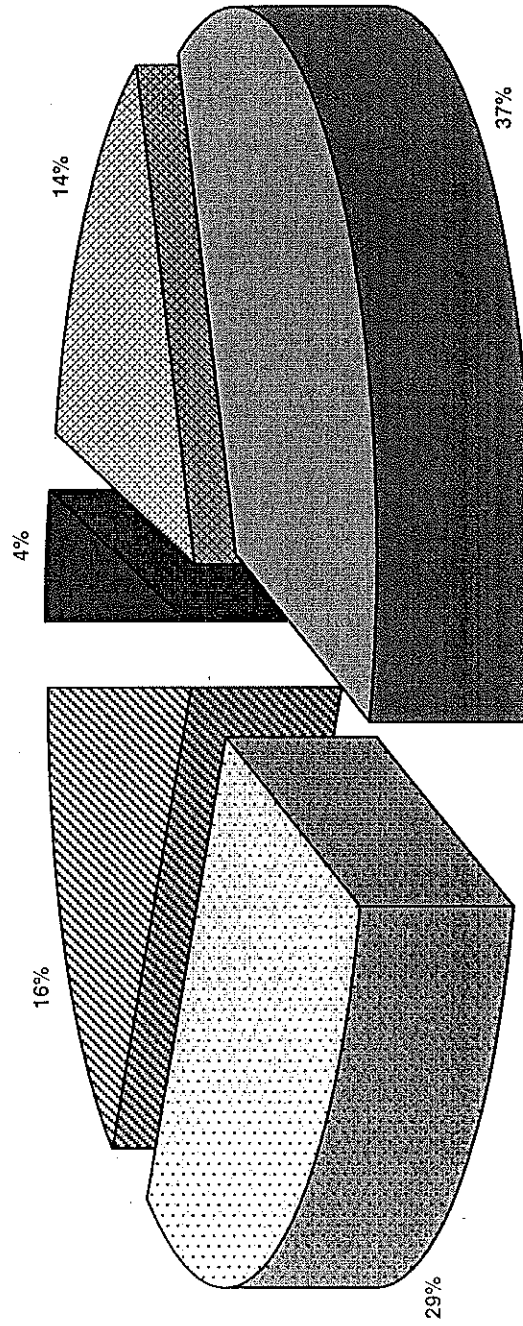


Change in Quality of Nursing Care

- Greatly improved
- Somewhat improved
- Same
- Somewhat decreased
- Greatly decreased

Figure 6

Total 1993 Earnings Before Taxes By Full Time Work Hours



■ Less than \$20,000 ■ \$20-29,999 ■ \$30-39,999 ■ \$40-49,999 ■ \$50,000+



**SECTION B**

Table 1

Characteristics of Virginia Registered Nurses: Demographics

Characteristics	Psychiatric Nurses	Psychiatric Nurses	Non-Psychiatric Nurses	Non-Psychiatric Nurses
	Percent	N	Percent	N
<b>Sex<sup>1</sup>:</b>				
Male	5.2	24	2.8	139
Female	94.8	440	97.2	4920
<b>Race<sup>2</sup>:</b>				
White	91.1	427	92.5	4681
African-American	5.2	24	4.3	218
Asian/Pacific Islander	1.7	6	2.0	100
American Indian/Alaskan	1.4	5	0.5	25
Other	2.0	8	1.6	78
Hispanic Ethnicity	1.6	8	1.4	69
<b>Mean age</b>	48.1	458	45.6	5005
<b>Educational Attainment</b>				
Has a Graduate Degree	28.9	207	13.5	767
Has Another Education	71.1	256	86.5	4351
<b>Highest Nursing Degree or Diploma Earned</b>				
Doctorate	1.4	11	0.5	25
Masters	19.9	157	9.5	558
Baccalaureate	25.4	97	33.7	1686
Associate	24.9	89	22.4	1120
Diploma in Nursing	27.3	102	33.2	1659
Other	1.2	5	0.8	38
<b>Hold Other Types of Credentials</b>	41.8	227	32.2	1552
<b>Clinical Specialist in Psychiatric Nursing</b>	20.2	163	0	5040
<b>Student, Intern, Resident, Trainee, Post-doctoral</b>	9.4	47	8.6	454
<b>Nursing is Primary Discipline</b>	94.9	446	93.5	4747

1. The sex variable has 138 missing cases, 47 more missing cases than the race variables. We looked at 9 actual surveys to investigate the reason for more missing cases on the sex variable. We found that: 1 case refused to give the demographic information; 1 case was found to have a data entry error (on sex as well as 2 other variables, these were corrected); 2 cases were surveys returned blank; 5 cases skipped the last two facing pages of the survey.

2. Race statistics may not sum to 100% due to rounding.

NOTE: Percentages are weighted to the Virginia population of Registered Nurses. The N's relate to the numbers in the sample. The N's in the non-psychiatric nurses will be revised to reflect a subtraction of 7 out of the 5,198 cases for all the tables. Not all N's will be reduced by exactly 7 because of the effect of missing cases in the 7 deleted cases.

**TABLE 2**  
**Current Employment Status**  
**For Psychiatric and Other Registered Nurses**

	Psychiatric Nurses		Non- Psychiatric Nurses	
	Percent	N	Percent	N
<b>Current Employment Status</b>				
Full-time	71.3	332	55.4	2857
Part-time	17.2	78	22.3	1141
Retired and not employed	3.4	14	8.0	402
Not currently employed	3.2	13	9.7	490
Other	4.9	22	4.6	234
<b>Currently Seeking Additional Employment</b>	15.1	68	9.9	411
<b>Number of Paid Positions Currently Held</b>				
None	0	0	0.2	9
One	72.7	273	83.7	3164
Two	23.9	109	13.5	515
Three	2.5	12	2.1	83
Four	0.8	5	0.3	11
Five	0.1	2	0.0	1
Six	0.0	0	0.0	1
Seven	0.0	0	0.0	1
Eight	0.0	0	0.0	1
Mean number of positions	1.3	401	1.2	3792

Data are weighted to the Virginia population of Registered Nurses.

**TABLE 3**  
**Characteristics of Virginia Registered Nurses:**  
**Employment Setting Primary Position**

<b>Employment Setting</b>	<b>Psychiatric Nurses Percent</b>	<b>Psychiatric Nurses N</b>	<b>Non-Psychiatric Nurses Percent</b>	<b>Non-Psychiatric Nurses N</b>
<b>Type of Setting:</b>				
Academic setting	8.3	46	6.3	261
Hospital	24.3	85	53.3	2134
Psychiatric Hospital	36.6	133	0.0	0
Nursing Home	1.6	5	4.8	187
Other Residential setting	2.7	10	0.6	23
Physicians Office	1.0	4	5.7	222
Clinics, Rehab, Other Outpatient Setting	9.1	44	6.1	245
Independent Practice	2.2	28	1.1	46
Home Health/Visiting Nurse	1.0	5	7.8	308
Community Health	1.7	7	3.0	117
Other	11.6	43	11.4	447
<b>Type of Clinical Practice</b>				
Medical/Surgical Nursing	5.7	19	29.3	1100
Psychiatric-Mental Health Nursing	76.9	333	0.0	0
Community Health Nursing	2.6	9	7.7	281
Maternal-Child Nursing	1.0	4	15.1	574
Gerontological Nursing	3.8	12	6.7	244
Other	10.0	36	41.3	1537
<b>Ownership Status of Setting:</b>				
Public	47.7	214	35.4	1450
Private for Profit	30.9	135	29.7	1202
Private Not for Profit	21.3	87	34.9	1431

Data are weighted to the Virginia population of Registered Nurses

**TABLE 4**  
**Characteristics of Financial Arrangements in Primary Work Setting**  
**For Psychiatric and Other Registered Nurses**

	Psychiatric Nurses		Non- Psychiatric Nurses	
	Percent	N	Percent	N
<b>Type of Financial Arrangement:</b>				
Salaried payroll employee	54.0	245	39.5	1581
Paid by the hour	38.9	137	55.4	2155
Paid under contract	4.4	16	2.4	93
Fee for service arrangement	1.7	17	1.5	59
Other arrangement	1.0	5	1.2	45
<b>Fulltime Earnings Before Taxes:</b>				
Less than \$20,000	0.4	1	3.7	97
\$20-29,999	8.3	22	15.7	412
\$30-39,999	40.0	110	37.9	1000
\$40-49,999	32.8	104	28.3	779
\$50,000 or more	18.6	69	14.5	401
<b>Parttime Earnings Before Taxes:</b>				
Less than \$20,000	41.0	34	44.1	411
\$20-29,999	33.2	28	36.4	340
\$30-39,999	19.3	18	14.4	134
\$40-49,999	3.0	2	3.2	31
\$50,000 or more	3.6	5	1.8	17
<b>Mean Earnings From Self Employment</b>				
	\$21,347	78	\$19,151	283
<b>Average Number Of Overtime Hours Worked Per Month</b>				
	7.3	364	7.8	3554

Data weighted to the Virginia population of Registered Nurses.

**TABLE 5**  
**Differences in 1993 Earnings By Type of Position**  
**Between Psychiatric and Other Registered Nurses<sup>1</sup>**

Type of Nursing Position	Mean Earnings (N) Psychiatric Nurses	Mean Earnings (N) Other Nurses	Mean Earnings (N) Total
Clinical Nurse Specialists	42.6 (112)	43.8 (89)	43.1 (201)
Nurse Practitioners	52.0 (10)	49.3 (148)	49.5 (158)
Registered Nurses	37.2 (307)	33.7 (3771)	33.9 (4078)

1. Earnings based on 1993 wages.

Data are weighted to the Virginia population of Registered Nurses.

**TABLE 6**  
**Characteristics of Primary Position**  
**For Psychiatric and Other Registered Nurses**

	Psychiatric Nurses		Non- Psychiatric Nurses	
	Percent	N	Percent	N
<b>Description of Position:</b>				
Nursing or Hospital Admin.	3.2	13	3.5	140
Manager	11.0	42	9.4	378
Clinical Nurse Specialist	6.0	79	2.7	154
Program Director	2.6	12	1.6	63
Staff Nurse	44.5	147	54.5	2166
Staff Development Instructor	1.2	4	1.6	66
School of Nursing Instructor	4.2	25	2.2	92
Consultant	1.0	5	1.5	59
Nurse Practitioner	2.1	7	3.4	143
Researcher	1.3	5	0.6	27
Case Manager	7.5	28	5.9	233
Other	15.3	56	13.1	521
<b>Employed to Work Less Than 12 Months Per Year?</b>				
	6.5	36	7.1	293
<b>Type of Shift Worked:</b>				
Permanent Days	56.5	257	58.7	2333
Permanent Evenings	12.8	44	6.6	255
Permanent Nights	8.3	27	10.3	397
Rotating Shifts	13.8	49	14.8	576
Regular Weekend Shifts	9.9	32	11.1	430
Other Work Schedule	9.8	53	11.9	469
<b>Mean Hours Worked in Average Week</b>				
	35.8	432	34.9	4135
<b>Mean Hours of Pro-bono Work in Average Week (any setting)</b>				
	6.4	376	4.8	3624

Data are weighted to the Virginia population of Registered Nurses.

**Table 7**  
**Differences in Percent of Time Spent in Work Activities**  
**Between Psychiatric and Other Registered Nurses**

Work Activities	Mean % (Total N) Psychiatric Nurses	Mean % (Total N) Other Nurses	Mean % (Total N) Total Sample
<b>Work Activities In Primary Setting<sup>1</sup>:</b>			
Direct Patient Care	42.7 (396)	52.5 (3777)	51.7 (4173)
Clinical Supervision of Staff & Trainees	11.7 (367)	8.7 (3352)	8.9 (3719)
Clinical/community Consultation & Prevention	4.1 (339)	2.8 (3177)	2.9 (3516)
Educational Activities	8.2 (371)	7.7 (3396)	7.7 (3767)
Management & Administration	11.4 (346)	10.6 (3289)	10.7 (3635)
Research	3.2 (337)	2.5 (3154)	2.6 (3491)
Indirect Care	17.9 (381)	15.0 (3567)	15.2 (3948)
Other Activities	7.3 (335)	6.5 (3203)	6.6 (3538)
<b>Professional and Support Services:</b>			
Clerical	22.1 (374)	20.5 (3546)	20.7 (3920)
Housekeeping	4.7 (305)	5.5 (3087)	5.5 (3392)
Dietary	4.6 (289)	3.5 (2870)	3.6 (3159)
Transporting	3.9 (296)	5.9 (2992)	5.7 (3288)
Other Non-Nursing	14.3 (272)	15.6 (2729)	15.5 (3001)

1. The data file consists of working nurses who provide direct patient care. However, as a result of shortening the survey instrument to boost the response rate in the third wave, 170 respondents were not asked certain questions about their work activities (see file: 'p4\srnhrc\lvf4m\tbl8ck0.sas'). This leaves a total possible N=3180 for work activities. Responses not totaling to between 80% and 120% of time accounted for are treated as missing, further reducing the sample for work activities by N=114.

Data are weighted to the Virginia population of Registered Nurses.



**TABLE 8**  
**Characteristics of Nurses Providing Direct Patient Care**  
**For Psychiatric and Other Registered Nurses**

	All Psychiatric Nurses		All Non- Psychiatric Nurses	
	Percent	N	Percent	N
<b>Percent Providing Direct Patient Care in Either Primary or Secondary Setting</b>	81.3	360	79.7	3292
<b>NURSES PROVIDING ANY DIRECT CARE</b>	<b>Psychiatric Nurses</b>		<b>Non-Psychiatric Nurses</b>	
	Percent	N	Percent	N
<b>Mean Hours Providing Direct Patient Care in Average Week:</b>				
Primary Setting	26.3	390	27.1	3702
Secondary Setting	13.1	107	10.5	476

Data are weighted to the Virginia population of Registered Nurses.

**TABLE 9**  
**Characteristics of Direct Patient Care Population in Primary Work Setting**  
**For Psychiatric and Other Registered Nurses**

Direct care given to:	Psychiatric Nurses		Non-Psychiatric Nurses	
	Percent	N	Percent	N
Children	19.9	64	42.5	1178
Adolescents	31.6	98	41.6	1150
Adults	81.3	244	81.2	2257
Elderly	51.4	146	63.8	1768
Individuals	92.6	266	91.7	2504
Couples	16.8	67	20.1	550
Groups	34.7	106	6.1	167
Families	42.5	141	41.9	1153
Community Systems	13.2	47	6.8	190
<b>Percent of Time Providing Direct Care to Certain Client Types<sup>1</sup>:</b>	<b>Mean Percent of Time N=168</b>		<b>Mean Percent of Time N=1131</b>	
Public Assistance	40.6		33.3	
Lower Income	21.9		22.8	
Middle Class	30.9		34.1	
Upper Class	6.6		9.5	

1. Only those respondents whose responses summed to 80-120% of time accounted for are included.

Data are weighted to the Virginia population of Registered Nurses.

**TABLE 10**  
**Characteristics of Virginia Registered Nurses:**  
**Quality of Care for Treatment Services in Primary Position**

TREATMENT SERVICES	Quality Rating Percent (N)				
	Poor	Below Average	Average	Above Average	Excellent
<i>Psychiatric Nurses</i>					
Emergency Services, Crisis Intervention	1.7 (5)	4.5 (16)	24.1 (91)	34.4 (125)	35.4 (144)
Medical Care	0.0 (0)	6.0 (22)	35.0 (120)	36.1 (123)	22.9 (77)
Nursing Care	0.0 (1)	2.5 (10)	13.8 (53)	41.2 (154)	42.5 (157)
Medical Admin/Management	0.0 (1)	1.8 (7)	22.1 (81)	41.9 (161)	34.2 (125)
Patient Safety Activities	0.0 (1)	3.5 (13)	28.7 (103)	37.7 (139)	30.0 (113)
Discharge Planning	1.1 (4)	7.6 (26)	29.5 (99)	33.8 (129)	28.0 (101)
Follow-up Care	3.5 (12)	15.5 (52)	36.9 (122)	27.7 (112)	16.4 (68)
Overall Quality of Care	0.4 (2)	2.0 (8)	15.8 (63)	51.5 (193)	30.4 (133)
<i>Non-Psychiatric Nurses</i>					
Emergency Services, Crisis Intervention	0.4 (15)	2.7 (91)	22.5 (768)	37.6 (1297)	36.8 (1264)
Medical Care	0.0 (1)	1.0 (36)	19.0 (691)	42.1 (1543)	37.9 (1388)
Nursing Care	0.1 (2)	1.0 (39)	12.3 (461)	38.1 (1441)	48.6 (1829)
Medical Admin/Management	0.4 (13)	1.7 (65)	21.3 (774)	40.5 (1480)	36.1 (1308)
Patient Safety Activities	0.3 (9)	2.0 (71)	22.4 (813)	41.0 (1488)	34.4 (1234)
Discharge Planning	1.0 (30)	5.3 (165)	30.0 (949)	36.9 (1176)	26.9 (839)
Follow-up Care	1.8 (57)	8.2 (272)	32.0 (1065)	33.6 (1120)	24.4 (805)
Overall Quality of Care	0.3 (10)	1.1 (43)	14.2 (541)	44.2 (1698)	40.2 (1525)
<b>CHANGE IN QUALITY OF NURSING CARE</b>					
	Greatly Improved	Somewhat Improved	About the Same	Somewhat Decreased	Greatly Decreased
<i>Psychiatric Nurses</i>	16.6 (74)	31.8 (134)	28.5 (122)	17.1 (59)	6.0 (21)
<i>Non-Psychiatric Nurses</i>	15.0 (587)	33.7 (1302)	31.2 (1199)	15.8 (607)	4.3 (166)

Data are weighted to the Virginia population of Registered Nurses

**TABLE 11**  
**Nursing Responsibilities**  
**Between Psychiatric and Other Registered Nurses**

	<b>Psychiatric Nurses Percent (N)</b>	<b>Non- Psychiatric Nurses Percent (N)</b>
<b>Responsible for Administering Medication (percent)</b>	63.6 (232)	71.1 (2895)
<b>Number Of Medication Errors (mean)</b>	1.0 (204)	0.6 (2582)

Data are weighted to the Virginia population of Registered Nurses

**TABLE 12**  
**Characteristics of Virginia Registered Nurses:**  
**General Satisfaction**

Characteristics	Psychiatric Nurses		Psychiatric Nurses		All Nurses	
	%	N	%	N	%	N
Satisfaction w/ Current Primary Position						
Very Satisfied	38.6	181	41.7	1705	41.5	1886
Somewhat Satisfied	36.9	158	39.7	1622	39.5	1780
Neutral	10.5	39	7.9	320	8.1	359
Somewhat Dissatisfied	9.6	37	7.8	317	7.9	354
Very Dissatisfied	4.4	17	2.9	116	3.0	133
Would Choose Nursing Again	70.6	307	71.4	2824	71.4	3131

Data are weighted to Virginia population of Registered Nurses

TABLE 13

Differences in Satisfaction  
Between Psychiatric and Other Registered Nurses  
and Between General and Psychiatric Hospital Nurses

Satisfaction Level	Norm Adjusted Mean <sup>1</sup>	Sample of All Nurses			Sample of All Hospital Nurses		
		Adjusted Mean (N) Psychiatric Nurses	Adjusted Mean (N) Other Nurses	Adjusted Mean (N) Total	Adjusted Mean (N) Psychiatric Nurses	Adjusted Mean (N) Other Nurses	Adjusted Mean (N) All Hospital Nurses
Autonomy	15.8	18.4 (414)	18.6 (3864)	18.6 (4278)	17.7 (209)	18.0 (2012)	18.0 (2221)
Pay	9.4	12.9 (424)	12.7 (3907)	12.7 (4331)	13.1 (211)	12.6 (2019)	12.6 (2230)
Professional Status	17.8	17.5 (420)	17.8 (3899)	17.7 (4319)	17.4 (211)	17.9 (2013)	17.8 (2224)
Interaction	13.8	14.9 (410)	15.0 (3852)	15.0 (4262)	14.6 (209)	14.6 (2013)	14.6 (2222)
Task Requirements	7.8	10.4 (410)	10.9 (3861)	10.9 (4271)	10.0 (206)	10.5 (2008)	10.4 (2214)
Organizational Policies	6.7	8.9 (413)	9.2 (3849)	9.2 (4262)	8.3 (209)	8.6 (2012)	8.6 (2221)
Overall	12.0	13.8 (385)	14.0 (3692)	14.0 (4077)	13.5 (205)	13.7 (1987)	13.7 (2192)

1. Data obtained with Stamps and Piedmonte work satisfaction scale; Adjusted means are weighted by the value placed upon the importance of each concept by nurses when establishing the tool (1986).

Data are weighted to Virginia population of Registered Nurses.

A comparison of current employment status between Psychiatric and Nonpsychiatric Nurses

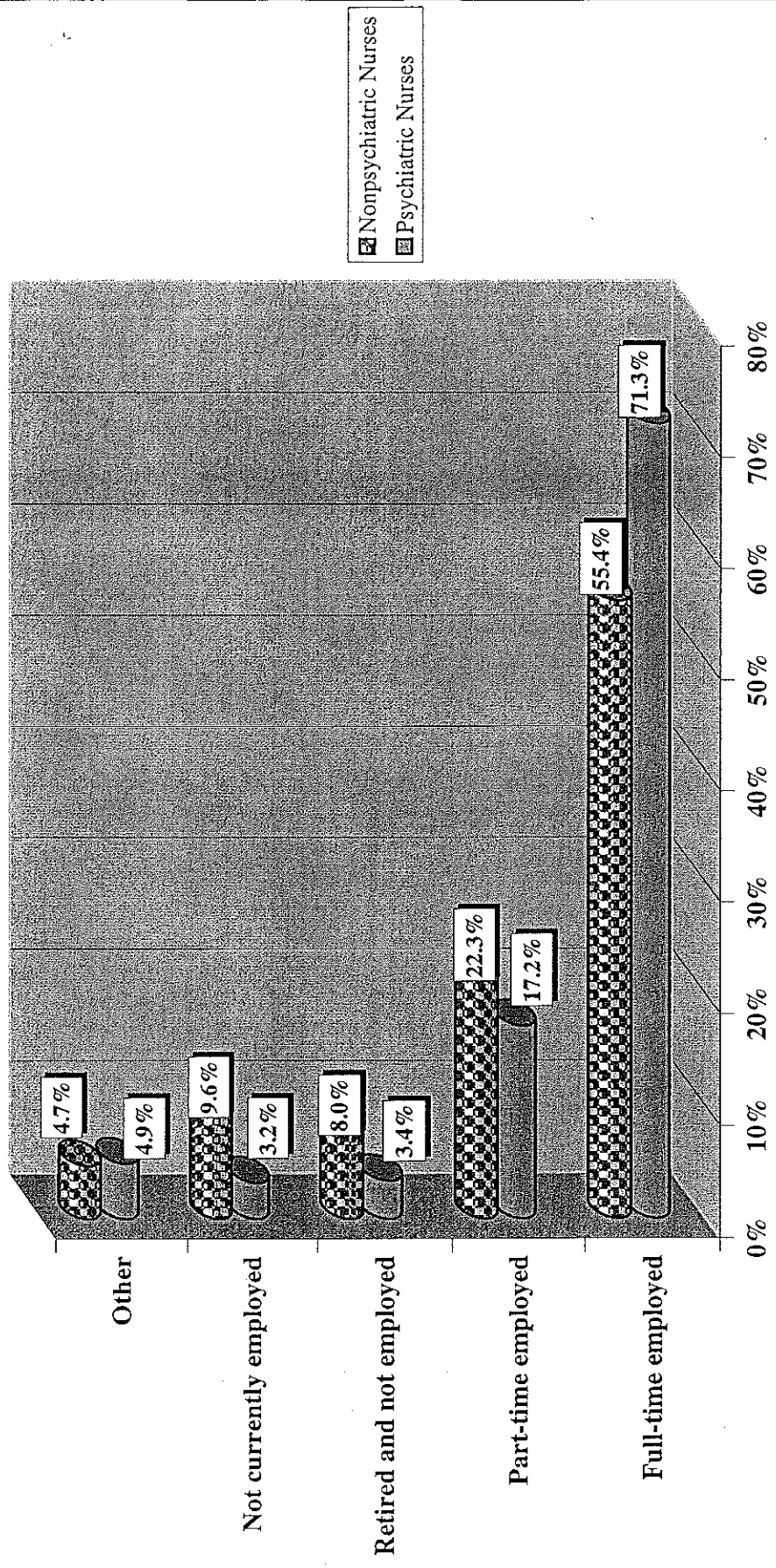


Figure 1

# A comparison between Psychiatric and Nonpsychiatric Nurses' average age for being retirees or unemployed

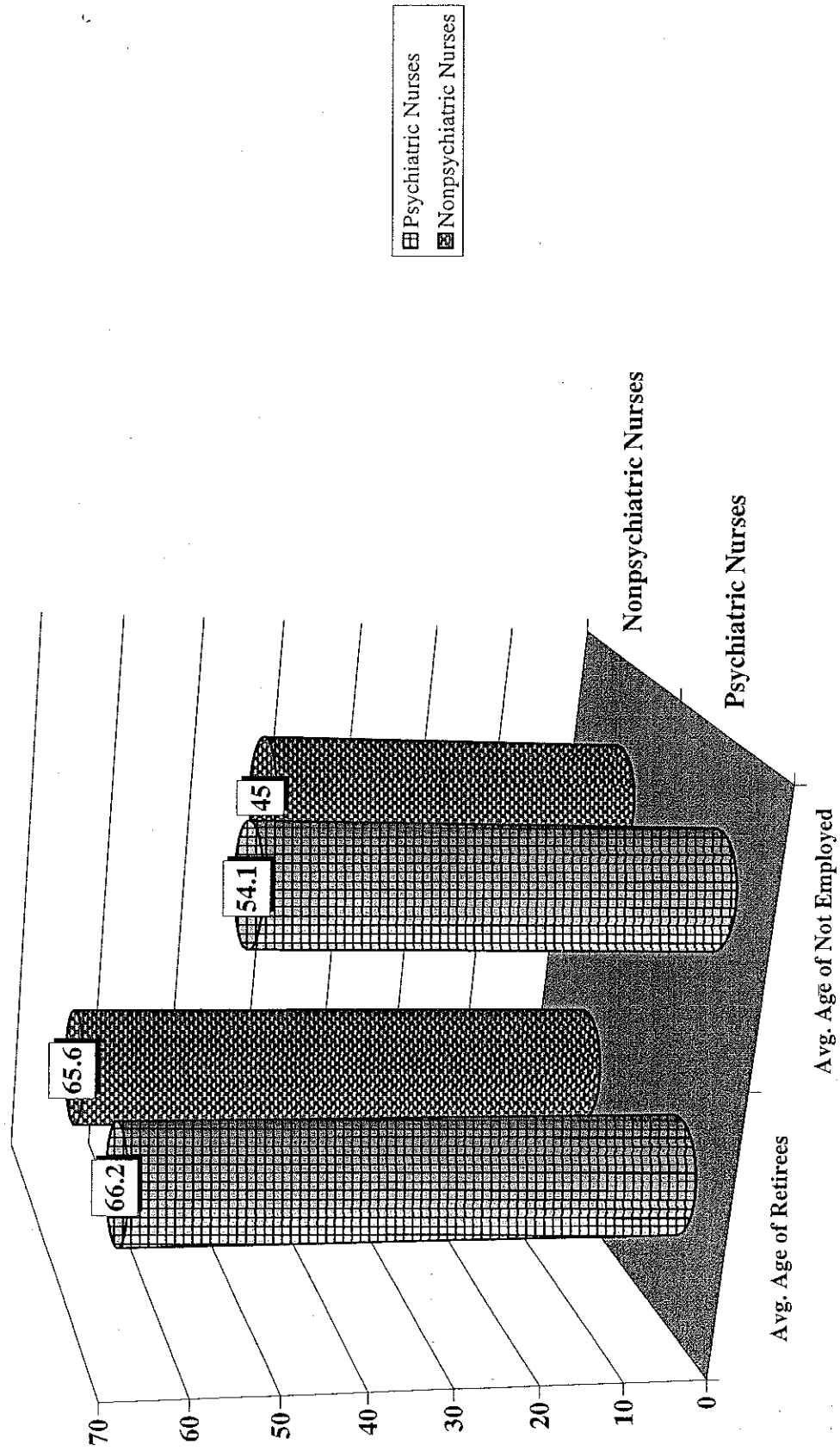


Figure 2



A comparison of percentages of Psychiatric & Nonpsychiatric Nurses in various categories of their respective Primary/Secondary employment settings

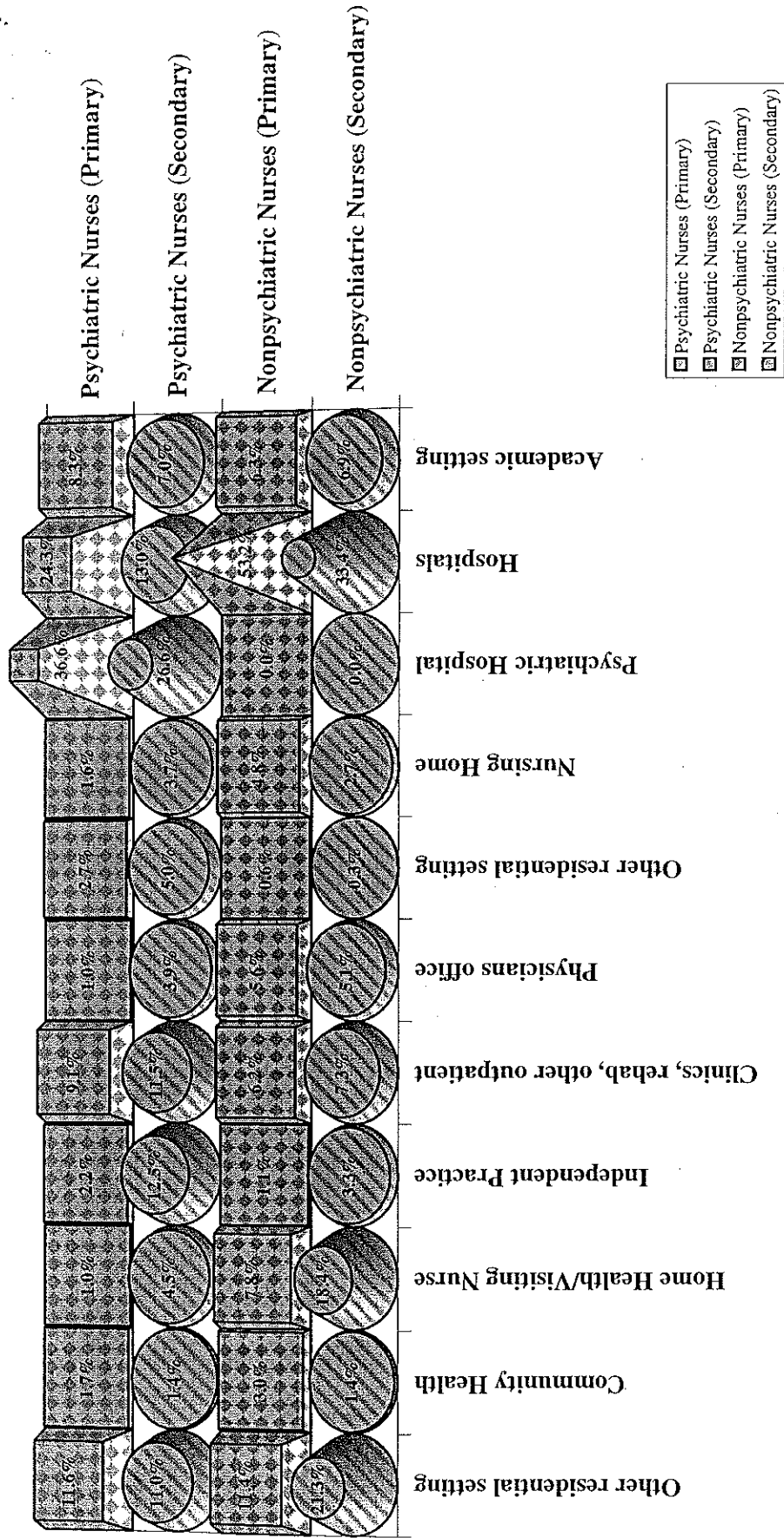


Figure 3

# Ownership status for Primary/Secondary employment settings for Psychiatric and Nonpsychiatric Nurses

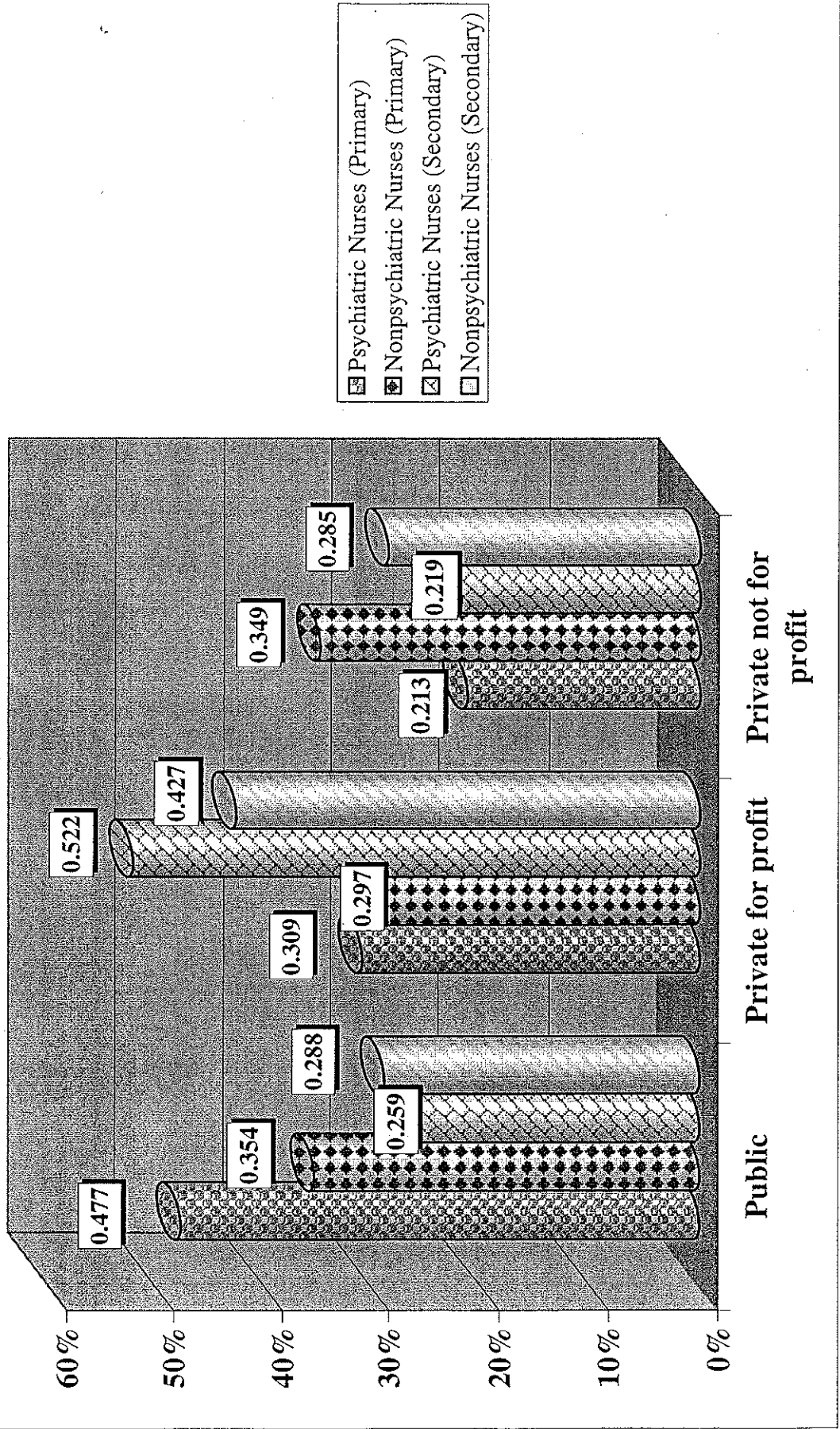






Figure 4

# Position description for Psychiatric and Nonpsychiatric Nurses in Primary/Secondary employment settings

-  Psychiatric Nurses (Primary)
-  Nonpsychiatric Nurses (Primary)
-  Psychiatric Nurses (Secondary)
-  Nonpsychiatric Nurses (Secondary)

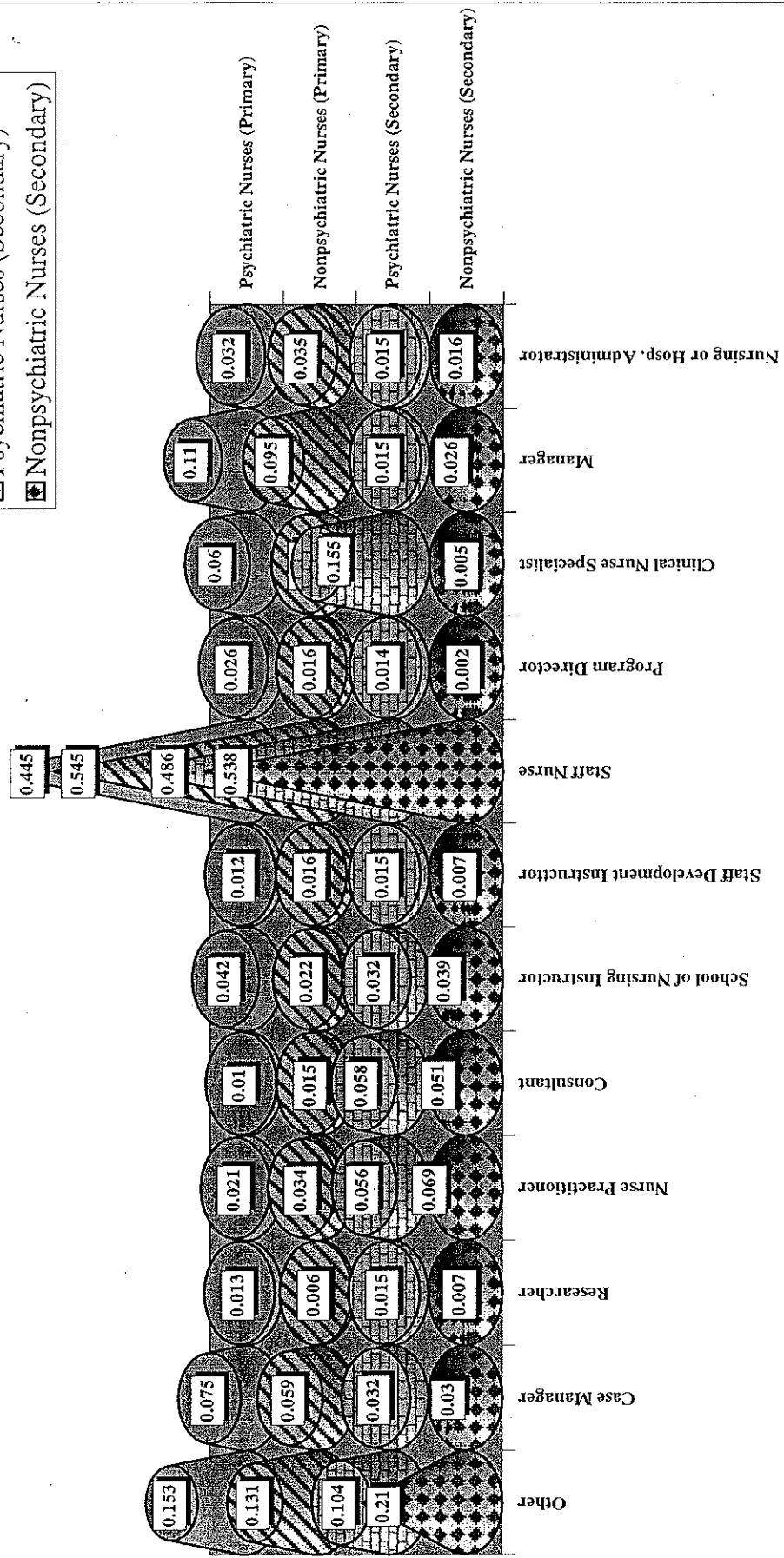


Figure 5

A comparison of percentages on various methods of payment for services rendered was performed using data from Psychiatric and Nonpsychiatric Nurses in Primary/Secondary employment settings

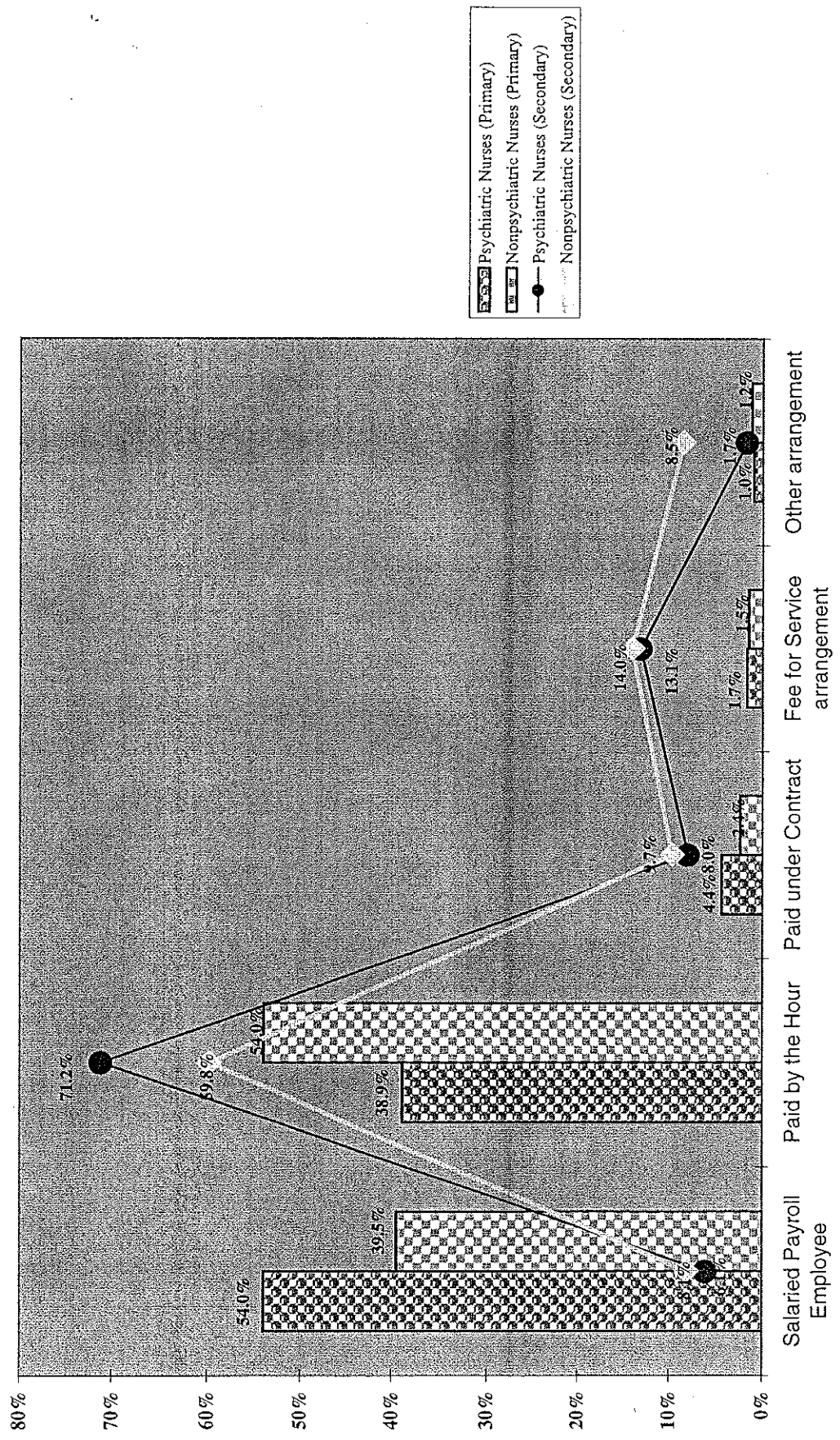


Figure 6

A comparison of percentages of Psychiatric/Nonspsychiatric Nurses who work in Primary/Secondary clinical practice areas

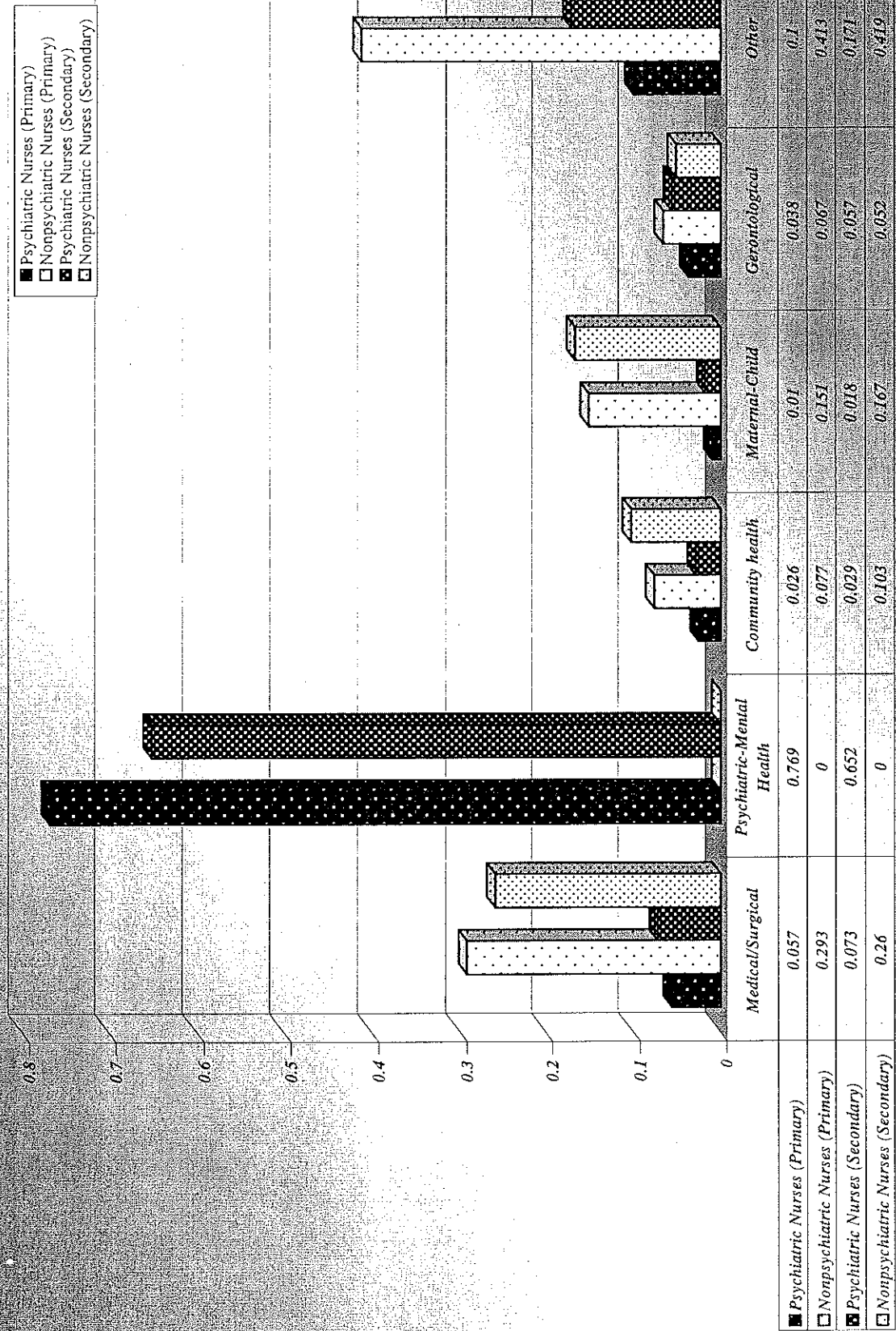
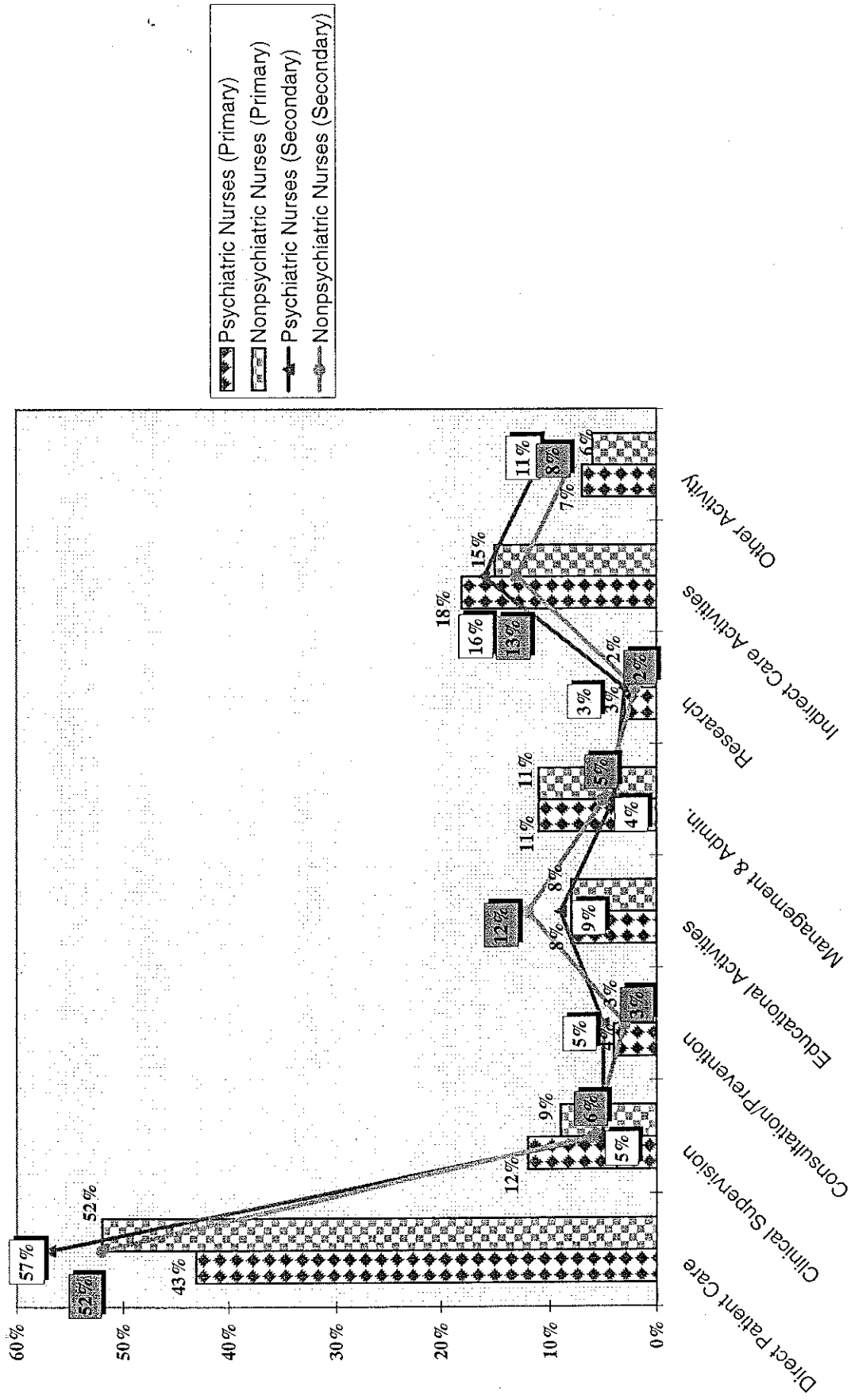


Figure 7

A comparison between Psychiatric and Nonpsychiatric Nurses on the percent of time spent in Primary/Secondary employment settings



The average number of hours of direct patient care in an average week

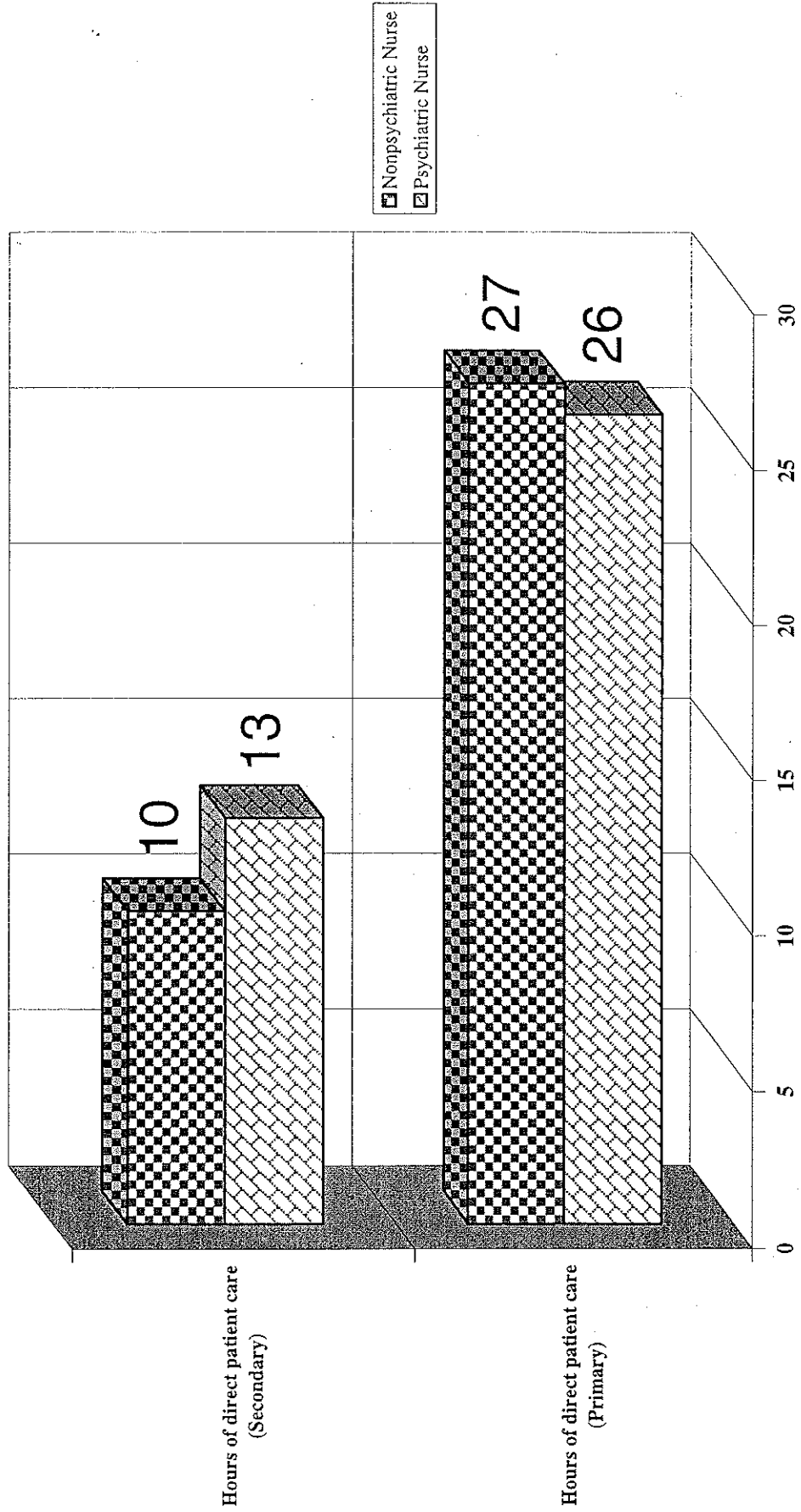


Figure 9

The average percentage of time that Psychiatric and Nonpsychiatric Nurses spend with certain client populations

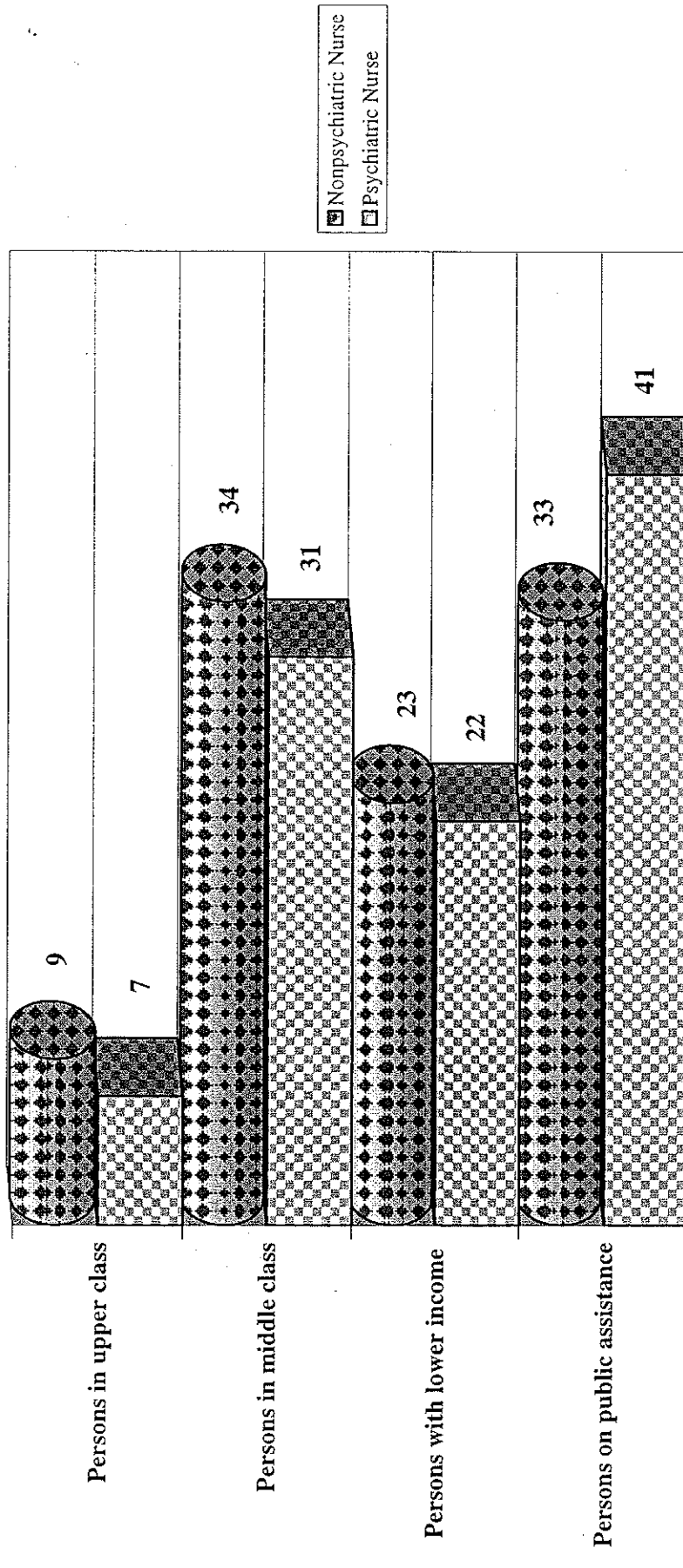


Figure 10



## The percentage of Psychiatric and Nonpsychiatric Nurses who administer direct services to individuals, couples, groups, families, and communities

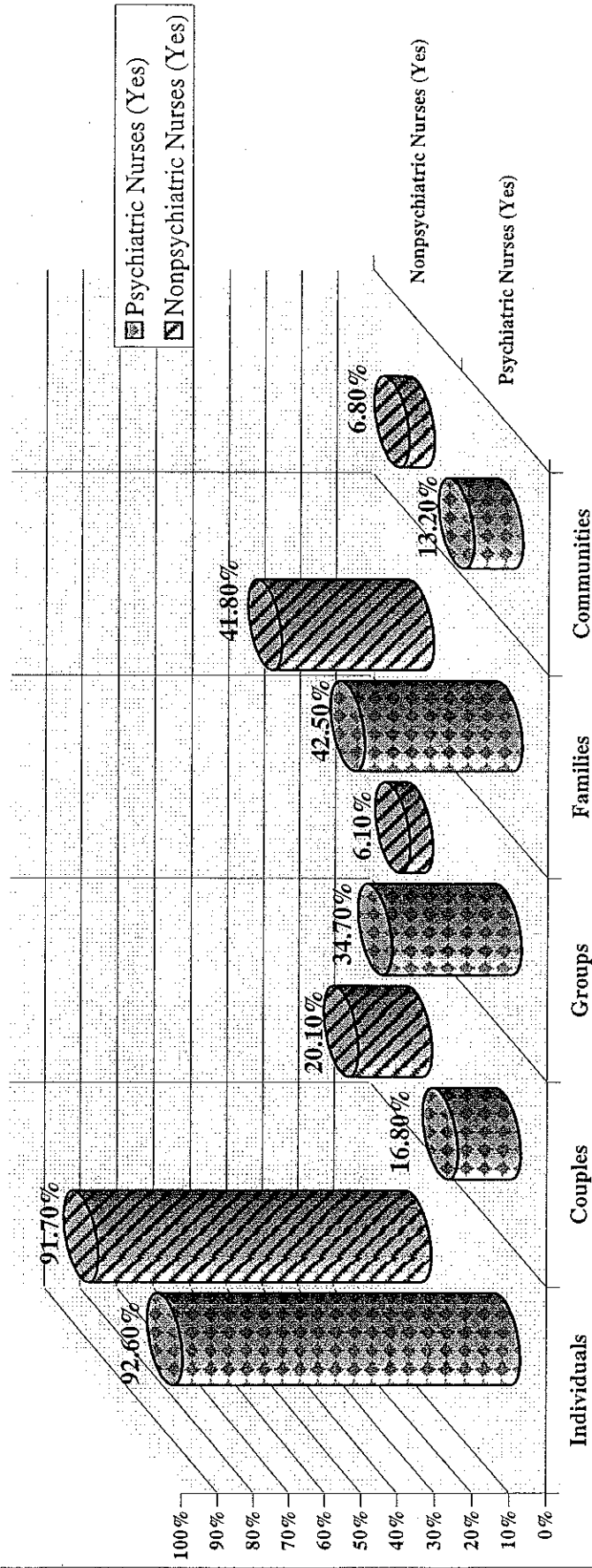


Figure 11

The percentage of Psychiatric and Nonpsychiatric Nurses who administer direct services to children, adolescents, adults, and the elderly

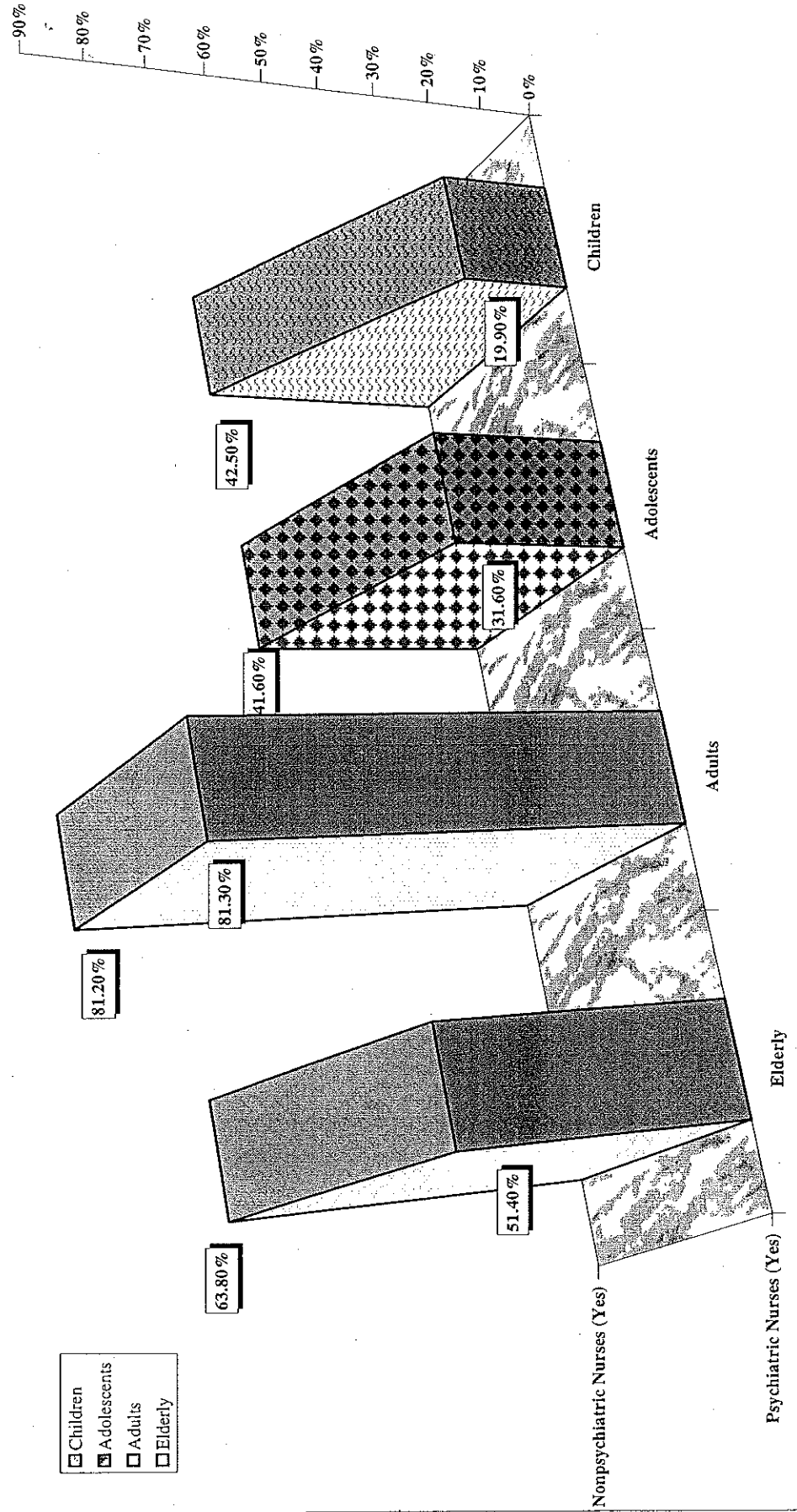


Figure 12

### Psychiatric Nurses' ratings of clinical services

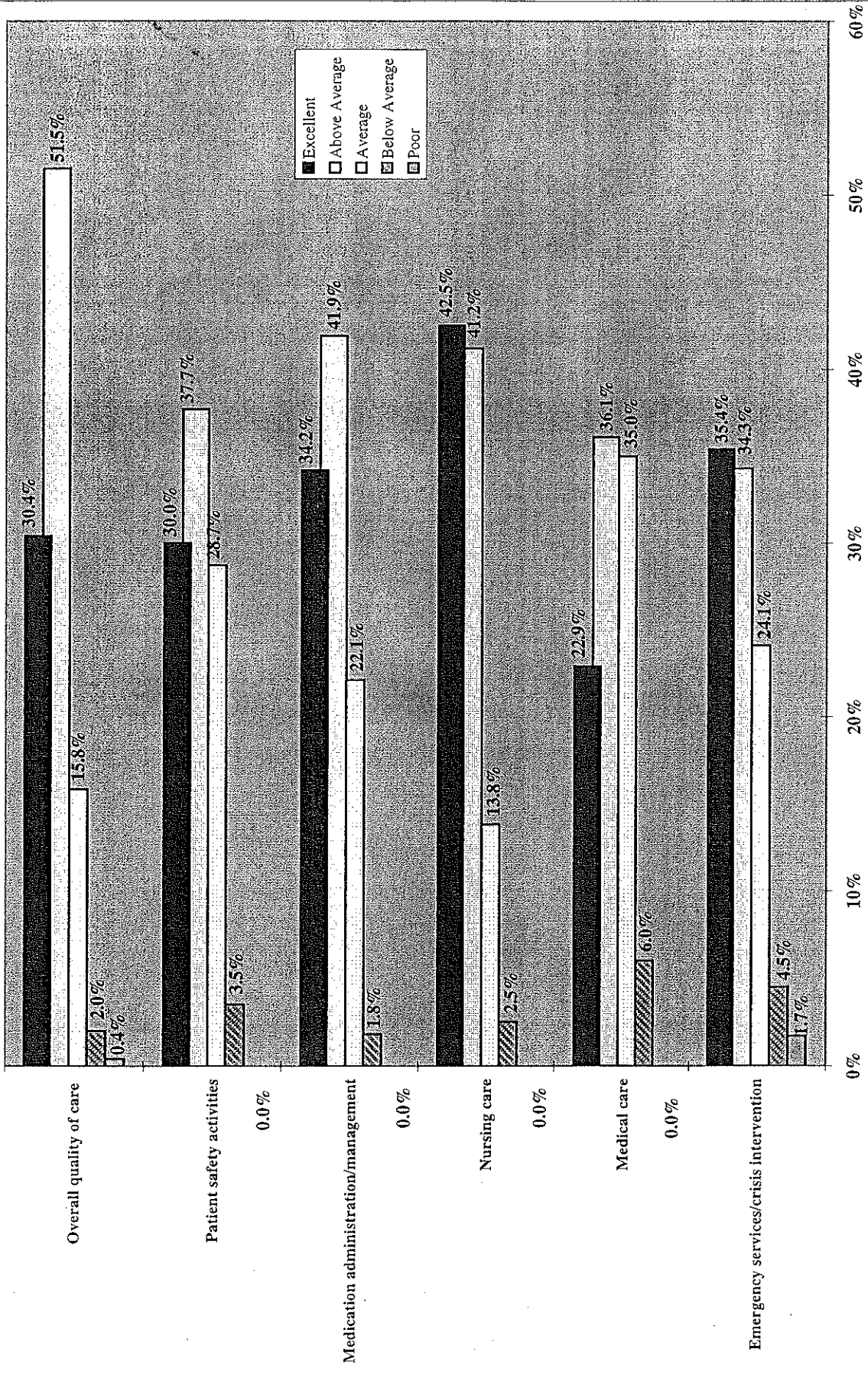


Figure 13

### Nonpsychiatric Nurses' ratings of clinical services

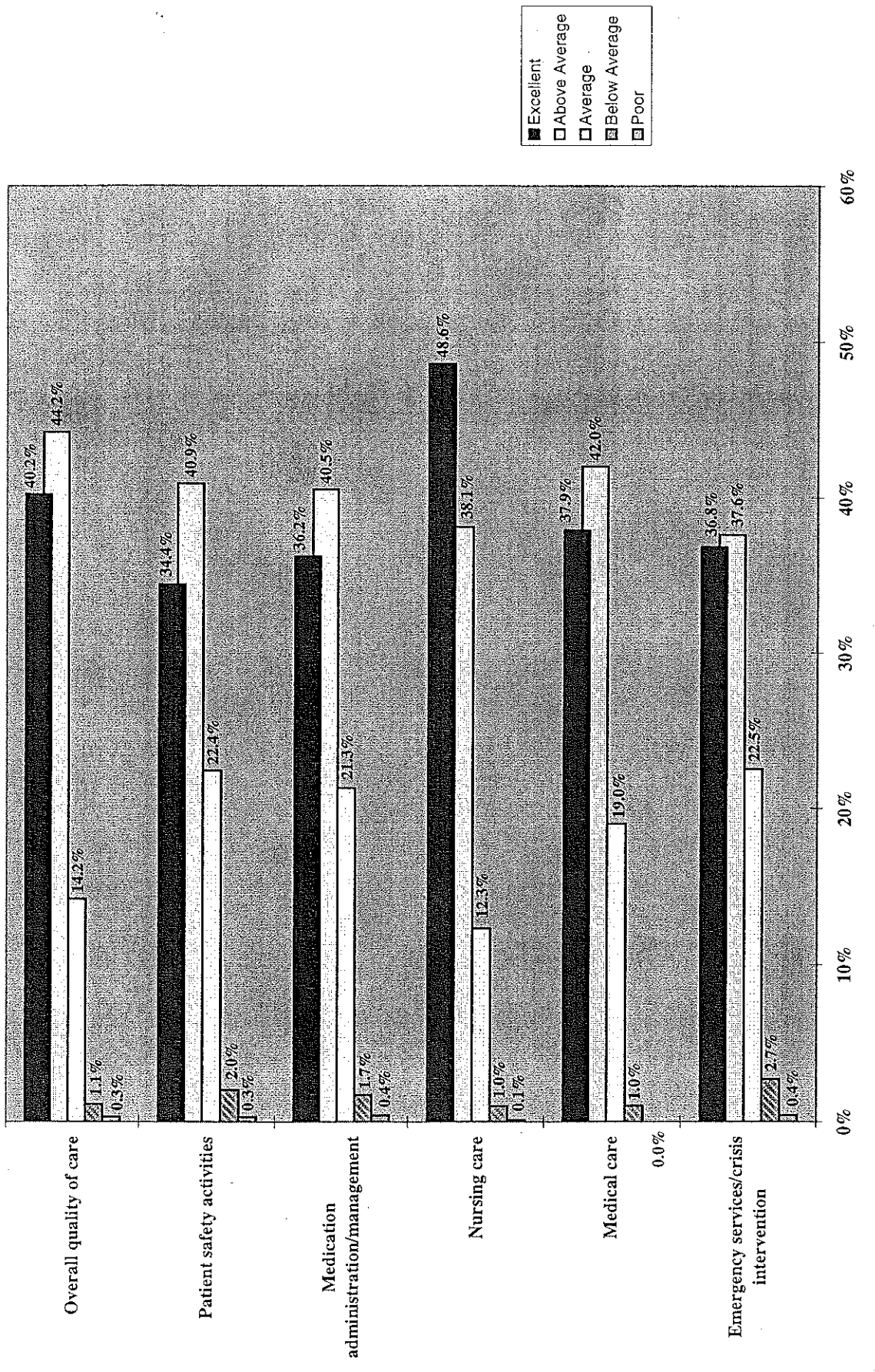


Figure 14

Comparison between Psychiatric and Nonpsychiatric Nurses' ratings of nonclinical services

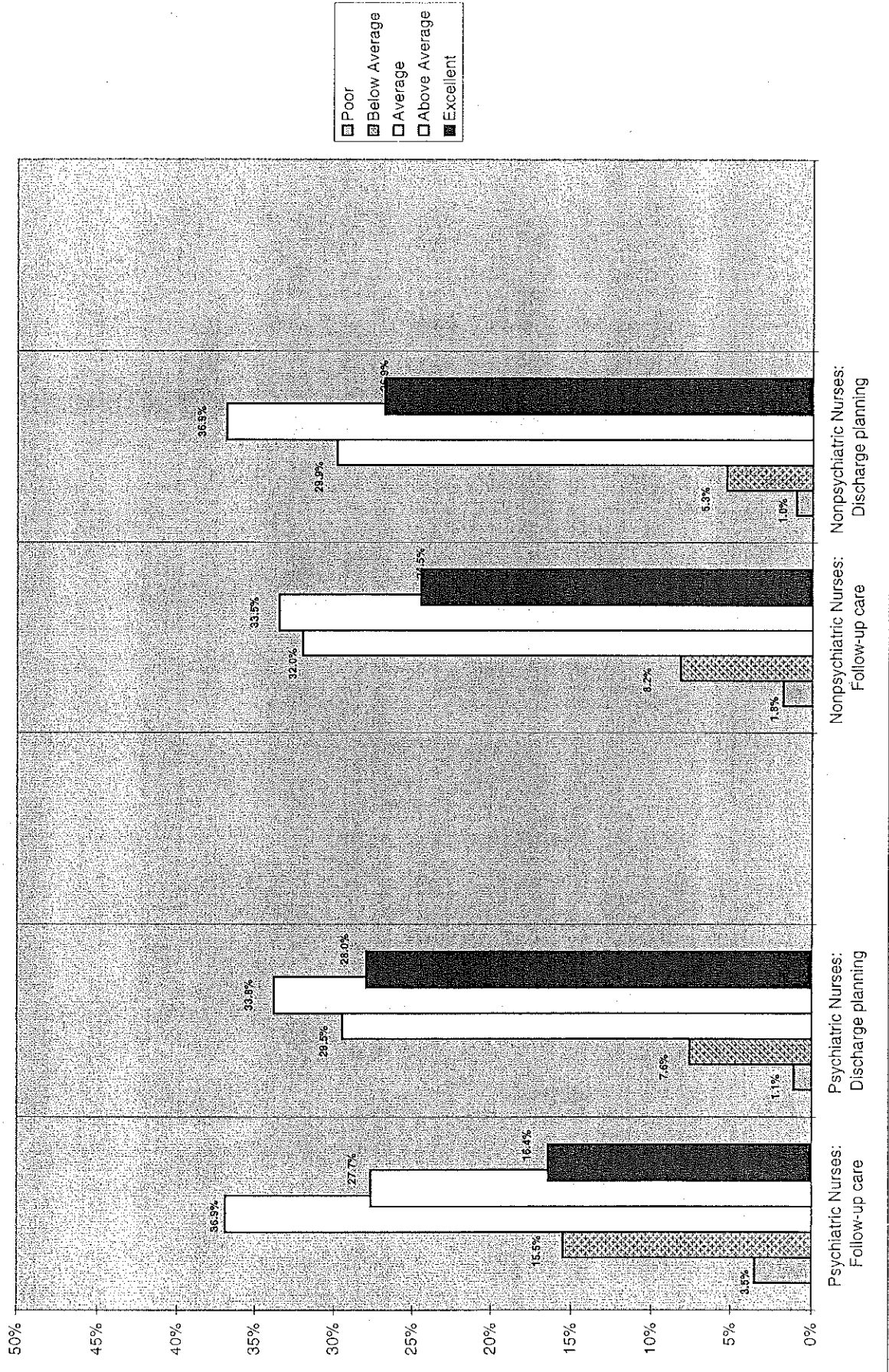


Figure 15

### Comparison between Psychiatric and Nonpsychiatric Nurses on what type of change has occurred in the quality of nursing care

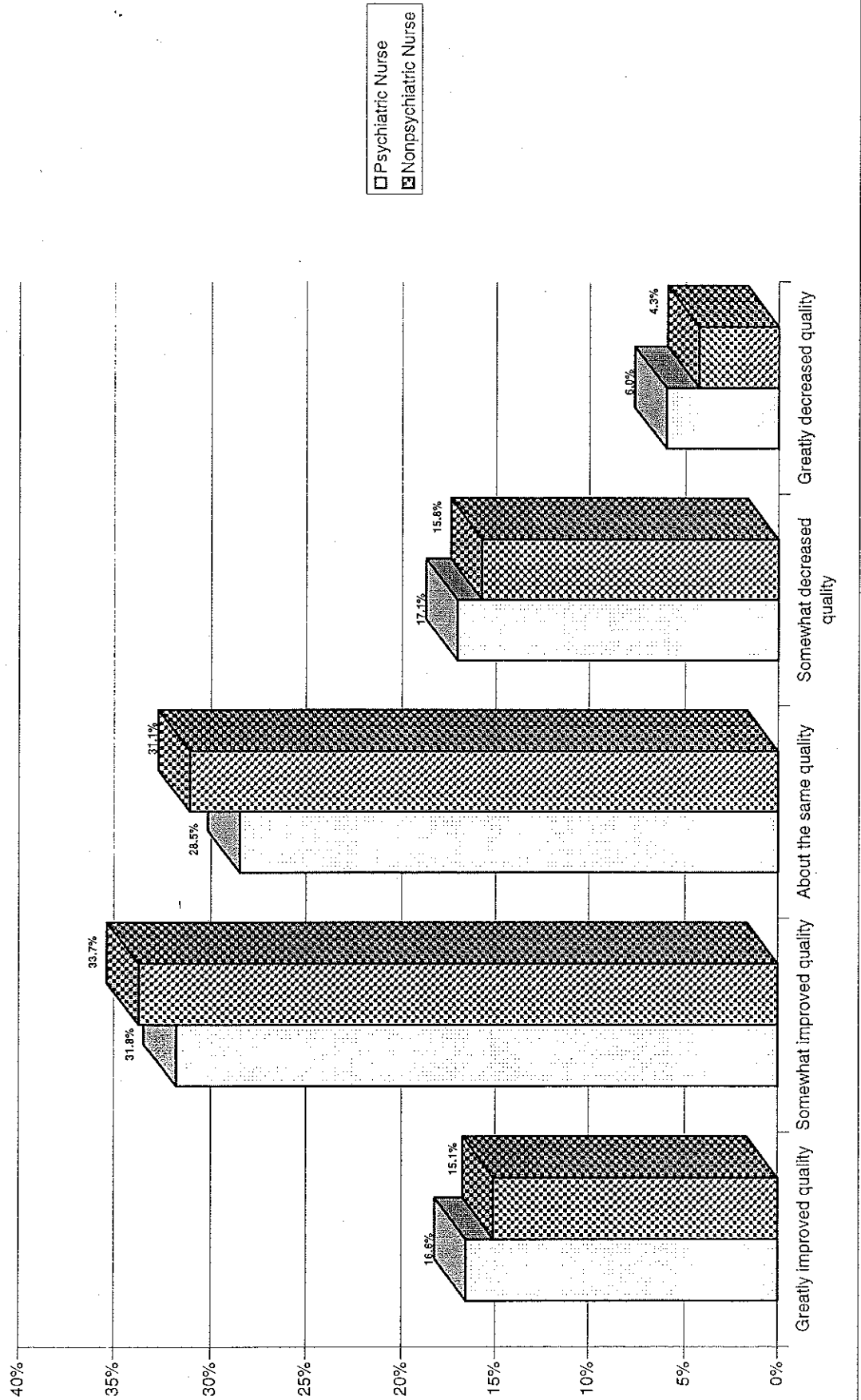


Figure 16

The degree of satisfaction that Psychiatric and Nonpsychiatric Nurses have for their nursing careers

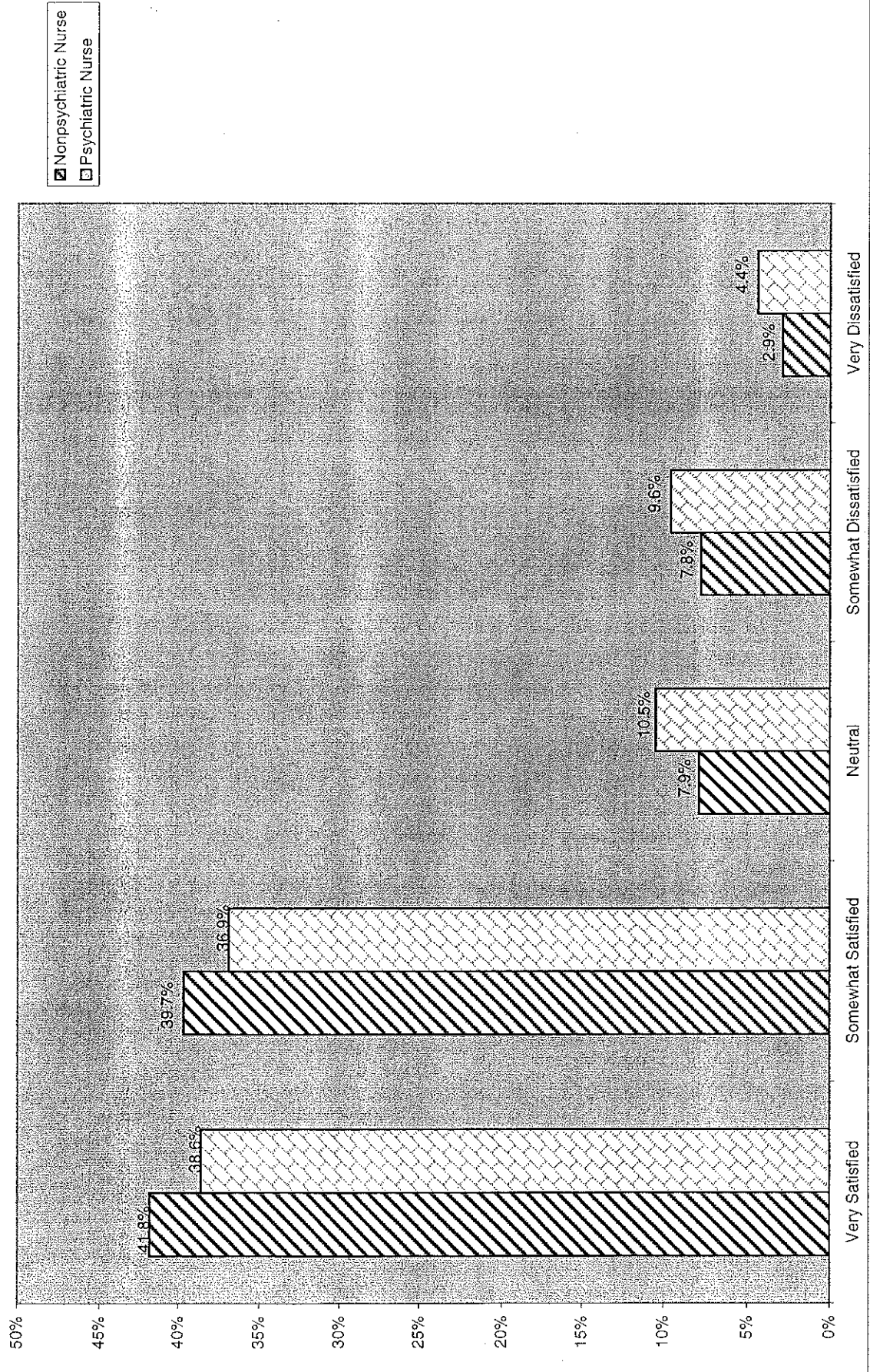


Figure 17

**SECTION C**



Table 1

## Variable List

Demographics	Operational Definition	Special Coding
Age	95-Q59C (Year of Birth)	
Gender	1 = Female 2 = Male	
Race African-American American Indian or Alaskan Native Asian or Pacific Islander White Other	Q55A = 1 Q55B = 1 Q55C = 1 Q55D = 1 Q55E = 1	1 = White 2 = Non-White
Education	1 = Graduate Degree 2 = Other	
Highest Degree in Nursing	1 = Doctorate 2 = Masters 3 = Baccarulate 4 = Associate 5 = Diploma in Nursing 6 = Other	
Highest Degree Outside of Nursing	1 = No Other Degree 2 = Doctorate 3 = Masters 4 = Baccarulate 5 = Associate 6 = Other	
Certification	1 = Yes 2 = No	
<b>Classification Variables</b>		
Psychiatric Nurse	1 = Yes 2 = No Is certified by ANA in psychiatric nursing and/or works in psychiatric hospital in primary or secondary setting or describes psych-MH nursing as clinical practice area in either setting	Yes if: Q6d1 = 1 or Q6d2 = 1 or Q12A = 3 or Q12B = 3 or Q15A = 2 or Q15B = 2
Type	1 = CNS N = 335 2 = NP N = 2282 3 = Other RN's based on licensure list classification N = 67,634	
Weight	Population ÷ # responders for each type of nurse CNS = 335/219 NP = 2265/180 RN = 67,654/5,271	

Employment Characteristics	Operational Definition
<p style="text-align: center;"><b>Settings</b></p> 1 Academic 2 Hospitals 3 Psychiatric Hospitals 4 Nursing Homes 5 Other Residential Settings 6 Physicians Office 7 Clinics/Rehabilitation/Outpatient 8 Independent Practice 9 Home Health, VNA 10 Community Health 11 Other 12 No Secondary Employment	Place of employment where spends most paid work time (primary setting) or next most work time (secondary setting)  S/PSET = 1 = Academic S/PSET = 2 = Hospitals or Psych Hospitals S/PSET = 3 = Nsg Homes or other Residential S/PSET = 4 = Physicians office; Outpt, etc. S/PSET = 5 = Independent Provider S/PSET = 6 = Home Health, VNA; CH, or Other
Experience RN	# yrs as a RN (Q5)
Experience Psych RN	# yrs as Psychiatric RN (Q5)
Hours Employed	# hours typically work per week (Q9)
Nursing Position	Primary position is a nursing position; 1=yes, 2 = no (Q13e)
Ownership	Ownership of primary position 1 = Public 2 = private profit 3 = private non-profit
Schedule	Works permanent days; 1 = yes, 0 = no; Q18A
Populations Served in Primary Setting Children Adolescents Adults Elderly Individuals Couples Groups Family Systems	QA30A-d; QB20A-e; 1 = Yes; 9 = No
Work	1 = Currently Working 2 = Not Currently Working
Career Plans	1 = Staying in Nursing 2 = Leaving Nursing 3 = Other Options
<b>Satisfaction Levels</b>	
Satisfaction Primary Setting	1 = Very satisfied, 5 = Very dissatisfied Q48
Satisfaction Score	INS score from Stamps & Piedmont Scale Q50
Subscale Satisfaction Scores	Average of questions related to each subscale 1 = Disagree & 7 = Agree
Pay	Satisfaction with Salary
Autonomy	Satisfaction with Authority Position
Tasks	Satisfaction with work activities
Organization	Satisfaction with organizational and administrative aspects of position
Professional	Satisfaction with importance of professional practice
Interaction	Satisfaction with communication and respect among colleagues

Employment Characteristics	Operational Definition
<b>Quality of Care</b>	
Overall in Primary Setting	1 = Poor, 5 = Excellent Q37h
Care (imputed) CARE3	Q37H or mean of Q37a ⇒ Q37g if missing 1 = Above average ⇒ Excellent 0 = Average or below
FACTOR1	Factor score based on Q37A-Q37h which are 1-5 ratings on emergency/crisis services, medical care, nursing care, medication administration/management, patients activities; discharged planning, follow-up care
Support Services	How much support services facilitate nursing care including housekeeping, secretarial support, dietary, maintenance, nursing administration, physician services, patient transportation, supplying pharmacy, medical records and lab. Mean of ratings on each form: 1 = excellent, 4 = inadequate
Earnings	Midpoint of salary range; in thousands
Work Hours	1 = 1-10 2 = 11-20 3 = 21-30 4 = 31-40 5 = 41-50 6 = 51-60 7 = 61-70 8 = 71-80 9 = 81-90
Non-Nursing	Percentage of non-nursing activities
<b>Extra Variables</b>	
Check1	Yes = sum of non-nursing work activities is > 110% (Q47A-Q47A)
Check2	Yes = sum of work activities is > 110% (Q28A-Q28L)

TABLE 2

**Predictors of Nurse Satisfaction, Perceptions of Quality of Care, Effectiveness of Support Staff and Earnings Comparing Psychiatric and Other Nurses**

	<b>Earnings 3,311</b>	<b>Satisfaction 3,077</b>	<b>Quality/Care 3,265</b>	<b>Inadequate Support Services 3,157</b>
Age	+	+		-
Female	-			
White		+		
Grad EDU	+		-	+
Setting				
Academia	+	NS	-	NS
Hospital	+	-	-	NS
Psychiatric Hospital	+	-	-	+
Nursing Home	-	-	-	NS
Office/Clinic	NS	+	NS	-
Independent	+	NS	NS	-
Others	Base			
Hours Work	+	-		
Ownership				
Public		-	-	+
Private	+	NS	-	NS
Private	-			
Schedule		+	+	-
Payment				
Salaried	+	NS		
Hourly	NS	-		
Contract	+	NS		
Fee-For-Service	+	NS		
Other				
%Clerical	-	-	-	+
%Dietary	-			
%Housekeeping		-	-	+
%Non-Nursing		-		
%Direct Care			+	
%Clinical Supervision	+			
% Management	+	+		
% Indirect	-		-	
#Paid Positions		-		
Earnings		+	NS	+
Non-Rural	+	NS	+	NS
Psychiatric Nurse	+	NS	NS	NS
Model F	1736*	4729*	6608*	4861*
R <sup>2</sup>	34%	13%	5%	7%
*Significant at .05 or lower				

**TABLE 3**

**Comparison of Earnings, Satisfaction and Perceptions of Care By Type of Nurse<sup>1</sup>**

	<b>CNS N = 76 Mean (S.E.)</b>	<b>NP N = 6 Mean (S.E.)</b>	<b>Other RN N = 209 Mean (S.E.)</b>
<b>Average Annual Earnings</b>	42,430 (1,530)	52,500 (5,160)	36,070 (830)
<b>Perception of Quality Care</b>	4.2 (0.09)	4.5 (0.22)	4.07 (0.05)
<b>Overall Satisfaction Score</b>	15.01 (0.22)	15.06 (0.77)	13.61 (0.18)
<b>Satisfied with Pay</b>	3.96 (0.15)	3.79 (0.38)	3.59 (0.10)
<b>Satisfied with Autonomy</b>	5.66 (0.11)	5.46 (0.42)	4.97 (0.08)
<b>Satisfied with Tasks</b>	4.46 (0.14)	5.03 (0.33)	3.60 (0.09)
<b>Satisfied with Organization</b>	4.58 (0.14)	4.14 (0.58)	3.56 (0.09)
<b>Satisfied with Professionals</b>	5.61 (0.06)	5.52 (0.18)	5.30 (0.06)
<b>Satisfied with Interactions</b>	5.20 (0.12)	(5.05) (0.48)	4.98 (0.08)
<sup>1</sup> Numbers of Missing Variables Differ for Each Variable			

TABLE 4

PREDICTORS OF LEAVING NURSING

	Leave Nursing N288
Earnings	-
Work Satisfaction	.*
Perception of Quality	-
Chi Square	13.60*
*Statistically significant at .05 level or lower	

TABLE 5

Comparisons of Predictors of Earnings, Satisfaction and Perceptions of Quality of Care for Psychiatric Nurses Providing Direct Care (N = 327)

	Earnings N = 317	Satisfaction N = 293	Quality of Care N = 318	Leaving Nursing N = 327
Age			+	
Female	-			
Grad EDU	+			
Certification	+			
Work Hours	+			NS
<b>Settings</b>				
Academia			NS	
Hospital			NS	
Psychiatric Hospital			NS	
Nursing Home			NS	
Office/Clerical			NS	
Independent			+	
Others				
<b>Payment</b>				
Salaried	+	+	NS	
Hourly	+	+	NS	
Contract	+	+	NS	
Fee-for-Service	NS	+	NS	
Other				
% Clerical		-	NS	
% Dietary	+	-		
% _____			NS	
% ED Activities		+		
% Indirect	-			
% Non-Nursing				+
% Management	+			
% Other	+			
% Direct				+
Non-Rural	+	NS	NS	NS
R <sup>2</sup>	46%	17%	14.5%	12.8 Chi Square

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# Virginia Professional Nurse Survey

Elizabeth Merwin, PhD  
Principal Investigator

Technical Appendix



## Table of Contents

Technical Description	2-4
Tables	
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2 Unduplicated List of Types of Nurses in Virginia	6
3 Response Rates by type of Nurse	7
4 Sampling Rate, Response Rates, Weighting by Type of Nurse	8
Appendix A Code Book/Questionnaire	
Appendix B VCU Survey Research Center Documentation	
Appendix C Data Documentation	

A survey of registered nurses in the state of Virginia was undertaken to allow for the identification of psychiatric nurses in Virginia and to compare the characteristics of these nurses with other registered nurses. The study was conducted between 1993 and 1998. The Virginia Commonwealth University Survey Research Lab was a contractor for mailing out the survey and for preparation of the data set. The Division of Statistics at the University provided statistical consultation, and participated in the analyses of the data.

## Population

A mailing list of the population of nurses licensed in Virginia was obtained from the State Board of Nursing in January, 1994. (See Table 1) There were 95,474 names on the list including 24,885 Licensed Practical Nurses (LPNs), 335 Clinical Nurse Specialists (CNSs), 2282 Nurse Practitioners (NP's) and 67,969 Registered Nurses (RNs). The 24,885 LPN's were eliminated from the list, leaving a list of the population of professional nurses. The data set was checked for duplicate licenses. CNS's were consistently in the data base as CNS's and also RN's, and in 17 cases as NP's. Therefore the population of RNs was unduplicated to result in 335 CNS's, 2,265 NPs, and 67,654 RNs. The unduplication strategy was to retain nurses in their first group of membership with CNS, NP, RN being the order of the groups. Therefore the 17 NPs are included in the CNS group and are removed from the NP group. The 335 CNS's are removed from the RN group. (See Table 2)

The type of nurse (CNS, LPN, NP, and RN) was identified by a four digit specialty code component of the license number: RNs=0001, LPNs=0002, CNSs=0015, and NPs=0001. The RNs and NPs both shared a four digit code of 0001. In addition NPs have a specialty code of 1-14 which defines the specialty of the nurse practitioner. If the specialty code is coded 1-14 then the nurse was identified as a nurse practitioner.

## Sampling

SPSS-X was used to choose a stratified, simple random sample of the three types of nurses. A 100% sample of CNSs were chosen, a 20% sample of NPs, and finally a 20% sample of RN's. The chosen sample was then unduplicated to insure that individuals who held more than one license would only be included in the survey once. This resulted in final sample and sampling rates of: CNS 335, 100%; NP 469, 20.7%; and RNs 13,493, 19.95%. In addition three names who were chosen for the sample included investigators or their supervisors; these three names were eliminated from the RN category resulting in a final sample size of 14,297. (See Table 3)

Following return of the study questionnaires it was noted that a number of nurses reported being CNS's or NPs other than those classified in the respective strata. Of the 214 CNS responders, 14 are included in the population of NPs. An additional 5 indicate they are a NP, but are not included in the licensing list as a NP—these may be advanced psychiatric nurse practitioners or may include those with education as NP, or certification but not licensed, or they may have become licensed NPs after the purchase of the licensing list used for this survey. There were 17 NPs who reported they were CNSs. None of these 17 were included on the list of CNS's registered in Virginia. It is expected that they have educational master's degrees in a clinical area that prepare them as CNSs but they have chosen not to become registered in Virginia. There were also RNs who reported that they were CNSs or NPs. Of these we found through careful review of the mailing list that two of the RN responders also had been surveyed as CNS's and in fact had received and returned two surveys. Their CNS response was retained and their RN response was eliminated. (These explorations were done prior to the addition of the final 140 cases.)

## Survey Procedures

The mail out procedures were implemented by the VCU Survey Research Center and are described in detail in a memo of May 31, 1995. They are summarized as follows. The first mailout occurred on November 22, 1994; a two week follow-up/reminder post-card was mailed on December 15, 1994. A second mailing of the full survey occurred on January 22, 1995. A final mailout to all CNSs and NPs who had not responded and to 37% of RNs who had not responded (n=3000) occurred in Spring,

1995. The final survey was reduced from 16-12 pages and surveys were sent by first class mail instead of bulk mail. Response rates are presented in Table 3.

Appendix A contains the survey tool used for this study. Appendix B contains a description of the survey process for distribution and data entry of returned surveys. It reports the VCU Survey Research Center's work regarding the survey. There was a discrepancy in the number of final surveys respondents between the SRL's figure of 5,677 and the 5,536 in the final data set. Initial analyses were done on the 5,536 data set. Upon checking each survey received against the data set it was determined that 140 surveys were not contained in the data set that should have been. These were added resulting in a final dataset of 5,677 used in final analyses. In addition, the SRL received information as to why additional surveys (143) were not completed including 95 retirees, 11 deceased, and 42 refusals. It was not possible to verify these reasons. Seven surveys were returned after the final preparation of the data set. Table 4 presents the final response rates. Additional checking for duplicates revealed that there appeared to be seven duplicate records, reducing the final data set to 5,670.

The VCU Survey Research center provided support in selecting the samples, preparing the mailing lists, and sending out and receiving the surveys. The SRC entered the data in to a SPSS system file and provided a labeled SAS data file for analyses.

### **Limitations**

There was no information available on non-responders. Despite the large volume of surveys 5,677 serving as the basis on this study response rates were around 37% for the NP and RN group. The response rate of 67% for the CNS group was 30% higher. This probably relates to the fact that about half the CNS's are psychiatric mental health specialists. Few NP's and only about 5% of the RN group can be expected to have been psychiatric nurses. The survey may have been more relevant to the psychiatric nurses which may have influenced the choice of non-psychiatric nurses to respond.

With any survey data set as large as this one there is some level of sampling and data entry error. Sampling error was affected by the number of incorrect addresses in the data base. There is no way to assess the accuracy of the licensing list; however since it is used as the major form of documentation of licensure status it is expected to be accurate. There was a 10 month interval from licensure list purchase to first mailout. It is expected that additional nurses were licensed and/or registered in this time. Therefore, the study results do not include information on nurse licensed less than 10 months.

The level of data set error was evaluated. In all data sets of this size there is some level of error. There were 5,677 records in the data set. The survey questionnaires were sequenced numerically and compared to the ids of the records in the data set to evaluate accurate inclusion of surveys and to determine if any surveys were not available for comparison of original survey answers with the answers in the dataset. Through this process it was determined that: 140 surveys were marked received but were not in the dataset. They were added to the data set.

While safeguards were taken to ensure the accuracy of the data entry process some data entry errors were noted and addressed in the analyses of the study. In addition a formal evaluation of the level of error was made. A 2% random sample of all surveys were chosen. Approximately 20 variables important to the study were chosen for comparison with the actual surveys. Fifty-nine surveys were reviewed for a total number of variables of 1,180. Three errors were found for an error rate of 0.25. No variable was found that was systematically entered in error; instead most of the error appeared random. Answers that involved the judgement of the data coder, and could have gone two ways, were not included in the error rate. For example, the rater may have had to make a judgement about the correct response when the way it was answered did not provide for an absolute answer. For example, sometimes an appropriate answer might be missing if the answer wasn't obvious, or the answer might be easily deduced from other answers or from written in comments. It was determined that the data set had a low level of error. Resources prevented cleaning the data set to ensure 100% accuracy for every variable.

## Statistical Analyses

The stratified, disproportionate probability sampling design requires the adjustment of variance estimation based on design effects. SUDDAAN software was used for all but descriptive averages and frequencies which were computed using the weight function in SAS. Table 4 shows the numbers used to create weights to generate population estimates. The population of each type of nurse is divided by the number of responders in order to properly weight the data to the population of nurses in Virginia.

**Table 1**  
**The Number of Nurses in the State Board of Nursing's Dataset of Nurse Licensees, 1994**

Total Names including LPN's	95,474
Number LPN's	24,885
 Total Names without LPN's	 70,589
 Names by Type of Nurse	
CNS	335
RN's & NPs      Combined	70,254
NPs only	2,282
RNs	67,969

**Table 2**  
**Unduplicated to Individuals from list of Names of Nurses in all Classifications<sup>1</sup>**

CNS	335
NP	2,265
RN	67,654 <sup>2</sup>
Total	70,254

<sup>1</sup> Decision rule: if name is in 2 or more groups, place in first group in order of CNS, NP, RN. There are seventeen NPs who are identified as also being CNS's. Therefore they are included in the 335 CNS's and are removed from the mailing lists' 2282 listed NPs. The CNS's also hold a separate RN license. So the total number of RNs and NPs of 70,254 is reduced by 2,265 NPs and 335 CNSs [70,254-2600 (335+2265) = 67,654] to 67,654 in order to have unduplicated counts of the 3 types of nurses. While these numbers are presented as absolutes one needs to remember that there are constantly new nurses being licensed, nurses moving out of state, etc. and that there was about a 10% non-delivery rate to listed mailing addresses.

<sup>2</sup> [70,254-335=69,919; 69,919-2,265=67,654]

**Table 3**  
**Final Sample by Type of Nurse**

Type	Final Sample
CNS	335
NP	469
RN	13,493
Total	14,297

**Table 4**  
**Sampling Rate, Response Rates, Weighting, by Type of Nurse**

Type	Population	Sample	Planned Rate	Actual Rate <sup>1</sup>	Responses N	%	Weight
CNS	335	335	100%	100%	219	65%	1.53
NP	2,265 <sup>4</sup>	469	20%	20.5%	180	38%	12.58
RN	67,654 <sup>4</sup>	13,493 <sup>2</sup>	20%	19.95%	5,271	39%	12.8
Total	70,254	14,297			5,670	43% <sup>3</sup>	

<sup>1</sup> Removing duplicates from selected sample resulted in slightly different sampling rates than planned.

<sup>2</sup> Three individuals were deleted from sample due to their status as investigators or supervisors of investigators of the study.

<sup>3</sup> This is based on an effective sample size of 12,769. Of the 14,297 sampling frame, 1,528 individuals were eliminated due to bad address [1,422], retirement [95], or because they were reported deceased [11]. Of the remaining 12,769 there were 5,677 responders (44%) and 7,092 (56%) non-responders. The 10% bad address rate may have been influenced by the length of time between purchase of the licensing list (early 1994), the survey mailout dates (Nov., 1994-May, 1995) and also by the requirement to renew licenses only every two years.

<sup>4</sup> The weight used in analyses was based on 67,651 population instead of 67,654. The small difference would not be expected to affect the estimates.

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