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Earnings of Nurses in Non-Nursing Occupations: Evidence of Significant Nursing Dissatisfaction?

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Abstract: In examining the nursing shortage, many scholars note the high correlation between job dissatisfaction and "intentions" to leave. This study compares the earnings of individuals with nurse training in non-nursing occupations to those in nursing occupations. Nurses exiting the occupation while remaining employed appear to occur if alternative occupations pay a premium. This premium is higher for males and increases with education. Earnings of nurses in non-nursing occupations do not provide evidence of significant nursing dissatisfaction.

Keywords Nurse, earnings, job satisfaction

Introduction

In 2004, 2,909,357 registered nurses were located in the United States. Nurses comprise the largest group of heath care professionals (U.S. Dept. of Health and Human Services, 2006) and are a sizeable portion of the overall U.S. workforce. Using data from the 2004 National Sample Survey of Registered Nurses (NSSRN), this paper examines the earnings of "nurses" in non-nursing occupations. If nurses are willing to work in non-nursing occupations at a *discount*, it suggests that the level of job dissatisfaction among nurses may be noteworthy.

In this study, the term "nurses" refers to registered nurses with prior nurse training and education, and not necessarily those employed in a nursing occupation. Several factors make examining the earnings of nurses in non-nursing occupations of particular importance. First, there is a commonly noted nursing shortage that seems to be a global phenomenon (Kingma, 2001; Buerhaus et al, 2009; Murray, 2002). The shortage is likely to be further exasperated if nurses can potentially earn a premium in non-nursing occupations. That said, a recent econometric and literature review of the labor supply of nurses examines 16 separate estimates of how responsive nurses are to pay changes and finds supply elasticities in the range of 0.2 to 0.4 (Shields, 2004). A five percent increase in nursing wages increases hours worked by one to two percent. Another study finds that a 10 percent increase in nursing wages relative to other potential income increases the probability of nurses remaining in the occupation by 2 percentage points (Ahlburg and Mahoney, 1996). Nurses are not particularly responsive to changes in wages and may not be significantly impacted by a modest wage premium or discount in non-nursing occupations.

Several studies examine the wages of nurses relative to the wages of non-nurses using data from the U.S. Current Population Survey (CPS). In one, nurses are much less sensitive to "outside" wages than secretaries. (Schumacher, 1997) In another, an analysis of 252 separate U.S. labor

markets finds no evidence of hospital monopsony market power which would tend to put downward pressure on the wages of nurses "relative" to other occupations (Hirsch and Schumacher, 1995). However, CPS data used to estimate outside or relative wages does not contain detailed information about the field of study of the worker. Research in the current paper is unique in that it examines outside wages by examine the earnings of individuals with a nursing background.

Motivated by the apparent nursing shortage, several scholars examine dissatisfaction among practicing nurses. This also appears to be a global phenomenon. In a published literature review on job satisfaction of nurses, it is noted that "numerous factors have been linked to nurses' turnover; job satisfaction is the most frequently cited." (Lu, White, and Barribal, 2005, p.211) In England, nurses who express job dissatisfaction have a 65 percent higher probability of intending to quit.(Shields and Ward, 2001) One third of nurses in England and Scotland and more than one fifth of nurses in the United States report an intention of leaving their job within a year.(Larrabee, Janney, and Ostrow, 2003) Moreover, in the United States, 41 percent of nurses express dissatisfaction, the highest among developed countries.(Aiken et al, 2001) A meta-analysis of nurses in Taiwan finds that job dissatisfaction is among the strongest factors in predicting nurses intention to turnover.(Yin and Yang, 2002)

It is important to note that the above mentioned studies focus on quit or turnover "intentions" and not turnover behavior. According to one study using the same data as found in this paper (NSSRN), a large share or nurses working in non-nursing jobs state *ex post* that dissatisfaction is the key reason for exiting the profession (Black, Spetz, and Harrington, 2008). Another recent study analyzing turnover behavior finds job turnover rates are relatively high, while occupation turnover rates (exiting nursing altogether) are low. In California, among community college graduates of Registered Nurse and Licensed Vocational Nurse programs, 42% see job turnover in three years. In contrast, occupation turnover is 14% over a seven year period. (Spetz and Rickles, 2008) Employers may lose nurses and nurses may be dissatisfied with a particular job, but most nurses are satisfied enough to remain in the occupation and continue to serve patients.

This study adds to an existing literature by examining the earnings of individuals with a nursing education who work in non-nursing occupations. According to economic theory, occupations are chosen based on whether the benefits of one occupation in terms of wages, satisfaction, and other factors are greater in one occupation than the benefits in another occupation. Moreover, economic theory (human capital theory) suggests that earnings are positively correlated to educational attainment and other forms of human capital. Accordingly, estimates of earnings of nurses in non-nursing occupations can reasonably be made. This study has the added benefit of analyzing earnings *ex post* at the occupation level rather than the "intentions" of dissatisfied nurses at a particular firm.

If nurses are willing to work in non-nursing occupations at a *discount* to their counterparts in nursing occupations, it would suggest that the level of dissatisfaction in the profession is of particular importance. Under this scenario, nurses would be demonstrating that their level of dissatisfaction is high enough so that they are willing to take a pay cut to exit the profession (or in rare cases never enter the profession). In contrast, if nurses in non-nursing occupations work for a *premium* relative to their counterparts in nursing occupations it suggests that concerns about

job dissatisfaction, while important in areas such as cost containment and the efficiency and effectiveness of care (Aiken et al, 2002; Blegen, Vaughn, and Goode, 2001; Jones, 2004; Needleman et al, 2002) and often the stated reason for exiting the profession, may not be a primary cause of the nursing shortage. Under this scenario, nurses would be demonstrating *ex post* that while they may be dissatisfied with the nursing occupation, they are only willing to exit (or never enter) the occupation if the price is right.

Nursing Education

Educational attainment levels of nurses have been expanding. For example, in the U.S. the number of nurses with a master's degree rose by 37 percent from 2000 to 2004 (U.S. Dept. of Health and Human Services, 2006). Such an occurrence may also serve to expand the occupational opportunities outside of nursing even further. This will be particularly apparent if some of the skills taught in nursing education are transferable. Many nursing skills, such as clinical decision making, may not be transferable. However, skills such as critical thinking, both in the context of discovery and in the context of justification (McPeck, 1981) are likely transferable and in demand outside of nursing. In a literature review of critical thinking in nursing education, Simpson and Courtney (2002, p. 90) summarize critical thinking within the context of nursing. In doing so, they summarize a skill set demanded by employers in many non-nursing occupations, "Through applying critical-thinking abilities to both technical and interpersonal aspects of their practice, they are able to promote creative, personalized solutions to unpredictable client circumstances. Nurses need to be prepared for life-long learning, and the future nursing profession is going to recognize a graduate who can think critically and identify complex (clinical) phenomena. In order to solve unique and complex problems, nurses need to be organized and utilize information innovatively."

Data and Preliminary Findings

Data in this study are from the public use data file for the 2004 National Sample Survey of Registered Nurses (NSSRN), a survey conducted by mail approximately every four years since the 1970s in the United States. Included in the analysis are nurses who work full time either in a nursing occupation or in a non-nursing occupation, have positive earnings, report their level of education and are from an urban commuting area (n = 15,668; 1,655,246 when weighted). This paper looks at annual earnings because hourly earnings and annual hours worked are not available for nurses in non-nursing occupations in the public use NSSRN data. Those from urban commuting areas are selected to avoid monopsony situations, ensuring ample nursing and non-nursing occupational opportunities.

Two variables in the current study merit a detailed explanation. Educational attainment (*ED*) of nurses is estimated based on several key variables in the NSSRN. For most nurses, *ED* is their highest nursing educational degree (*prepsum* variable in 2004 NSSRN). Unfortunately, the NSSRN combines individuals with a master's degree, post-master's certification, and a doctorate

degree in the public use file. Accordingly, other variables are used to further breakdown this categorization. For advanced practice nurses (nurse practitioners, nurse midwives, clinical nurse specialist, and nurse anesthetist) the survey differentiates between the top educational categories (*q12c_a, q12c_b, q12c_c* and *q12c_d* variables in 2004 NSSRN). In addition, those whose initial nursing education is a master's degree (*q2*) and who report obtaining an additional degree (*q11*) are assumed to have obtained a post-master's certificate. *ED* equals 14, 16, 18, 19, and 20 for nurses with a diploma certificate or an associate degree, a bachelor's degree, a master's degree, a post mater's certificate, and a doctorate degree, respectively. Experience (*EXP)* is estimated as years since completing one's initial nursing education (*yr_since* in NSSRN). For 89 nurses who did not provide such information, experience is estimated as age minus five minus *ED*.

Table 1
Comparing Average Full-Time Earnings of Nurses in Nursing Occupations to All Full-Time Workers By Educational Attainment: March 2004 NSSRN and CPS Data

	Overall Average	Associate's Degree*	Bachelor's Degree	Master's Degree**	Doctorate Degree
Nursing Occupations	57,785	53,650	57,081	74,377	80,795
All Full-Time Workers	46,444	42,807 (39,817)	60,664	73,024 (129,297)	99,169
Discount / Premium to Full Time Nurses	-20%	-20% (-26%)	6%	-2% (74%)	23%

* Associate's degree includes nurses with a diploma nursing certificate. Average earnings of all workers with "some college," and no associates degree are $39,817, a 26 percent discount.
**Those with a "professional degree" have average earnings of $129,297, a 74 percent premium over nurses with a master's degree.
Sources: "The Registered Nurse Population" by the HSRA, Table 31, "Educational Attainment in the United States: March 2004" by U.S. Census Bureau, Table 9, and author's calculations.

As noted in Table 1, according to summary findings of the 2004 NSSRN (1), average full time earnings of nurses are $57,785. In contrast, according to the March 2004 CPS, average full time earnings of U.S. by workers in all occupations are $46,444, a 20 percent discount to their nursing counterparts. (20) Among bachelor's degree holders, average earnings of practicing nurses are $57,081. The average full time earnings of workers with a bachelor's degree are $60,664, a 6 percent premium. Nurses with a master's degree earn slightly more than other individuals with a master's degree, but substantially less than those with a professional degree.

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Table 2
Comparing Average Full-Time Earnings of Nurses in Nursing Occupations to Non-Nursing Occupations In Urban Commuting Areas By Educational Attainment: March NSSRN 2004 Data

	Overall Average	Some College**	Bachelor's Degree	Master's Degree	Post Master's Certificate	Doctorate Degree*
Nursing Occupations	59,508	55,520	58,179	75,841	74,628	85,877
Non-Nursing Occups.	72,617	67,502	72,286	79,691	77,545	120,000
Discount / Premium to Nursing Occupations	22%	22%	24%	5%	4%	40%

* Public use files contain limited information on doctorate degree holder. See text for details.
**Those categorized as "Some College" include associate degree and diploma certificate nurses.

Publicly available NSSRN data allow for a more meaningful and more direct comparison between the earnings of nurses from an urban commuting area with a nursing position with those not in a nursing occupation. Four percent of the full-time nurses in the survey work in non-nursing occupations. The results based on data from March 2004 are shown in Table 2. Overall, the average earnings of full-time nurses in a non-nursing occupation are $72,617, a 22 percent premium to nurses in nursing occupations. Nurses with a bachelor's degree earn 24 percent more in non-nursing occupations while nurses with a master's degree earn four percent more in non-nursing occupations.

Econometric Methods and Models

While the results in Table 1 and Table 2 provide a useful start to our analysis, they fail to control for a variety of other factors including experience. A Mincerian earnings function, the standard in labor economics, is adjusted to capture the premium or discount for working in non-nursing occupations while controlling for other factors. The earnings function becomes:

$$lnW = \beta_1 ED + \beta_2 EXP + \beta_3 EXP^2 + \beta_4 NON\_RN + \beta_5 MALE + \Phi_k X_k + \varepsilon \qquad (1)$$

with *lnW* the natural log of annual earnings, *ED* and *EXP* years of educational attainment and experience as discussed above, *NON_RN* and *MALE* dummy variables indicating the nurse works in a non-nursing occupation and the nurse's gender, X_k a vector of other control variables (see Table 3), and ε an error term. The coefficient for *NON_RN* capture the premium or discount nurses earn in non-nursing occupations.

To determine if the premium or discount being paid to nurses working in non-nursing occupations varies by gender, an interactive independent variable is added to the model, *MALE*NON_RN*. The earnings function becomes:

$$lnW = \beta_1 ED + \beta_2 EXP + \beta_3 EXP^2 + \beta_4 NON\_RN + \beta_5 MALE + \beta_6 MALE*NON\_RN + \Phi_k X_k + \varepsilon \quad (2)$$

To determine if the premium or discount being paid to nurses working in non-nursing occupations varies by educational levels, an interactive independent variable is added to the model, *ED*NON_RN*. The earnings function becomes:

$$lnW = \beta_1 ED + \beta_2 EXP + \beta_3 EXP^2 + \beta_4 NON\_RN + \beta_5 MALE + \beta_7 ED*NON\_RN + \Phi_k X_k + \varepsilon \quad (3)$$

Lastly, Equation (4) includes the interactive variables from the previous equations. The combined equation becomes:

$$lnW = \beta_1 ED + \beta_2 EXP + \beta_3 EXP^2 + \beta_4 NON\_RN + \beta_5 MALE + \beta_6 MALE*NON\_RN + \beta_7 ED*NON\_RN + \Phi_k X_k + \varepsilon \quad (4)$$

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Table 3
Descriptive Statistics and Observations

Number of Observations by Educational Attainment and Full-Time Occupation			
		Unweighted	Weighted
Associate's Degree or Diploma Certificate		7,339	636,797
Bachelor's Degree		5,869	497,643
Master's Degree		2,279	189,579
Post-Master's Certificate		167	14,600
Doctorate		4	351
Nursing Occupation		15,122	1,286,819
Non-Nursing Occupation		546	52,149
Descriptive Statistics of Select Independent Variables		15,668	1,338,968
		Mean	Std. Dev.
CHILDREN6	1 if has children under age 6	0.12	0.33
CHILDREN6_18	1 if has children age 6 to 18	0.34	0.47
ED	year of educational attainment at highest nursing degree	15.37	1.47
EXP	years of potential nursing experience	17.95	11.50
FOREIGN_RN	1 if foreign nurse	0.05	0.21
HISPANIC	1 if of Hispanic origin	0.02	0.14
MALE	1 if male	0.08	0.27
MARRIED	1 if married	0.65	0.48
MINORITY	1 if racial minority	0.21	0.40
MULTILING	1 if multilingual	0.02	0.13
NON_RN	1 if employed in non-nursing occupation	0.04	0.19
UNION	1 if unionized	0.17	0.37

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Table 4
Weighted Least Square Estimate of Natural Log of Annual Earnings by Nurses, March 2004.

	Equation			
	(1)	(2)	(3)	(4)
Primary Variables of Interest				
ED	.051	.052	.051	.051
	(286.8)	(287.1)	(278.1)	(278.1)
NON_RN	.043	.035	.044	.036
	(31.3)	(24.3)	(32.4)	(25.2)
*MALE*NON_RN*	--	.078	--	.086
		(17.6)		(19.1)
*(ED-16)*NON_RN*	--	--	.010	.012
			(11.5)	(13.7)
EXP	.020	.020	.020	.020
	(248.9)	(248.9)	(249.1)	(249.2)
EXP_SQ/100	-.038	-.038	-.038	-.038
	(190.2)	(190.2)	(190.5)	(190.6)
MALE	.164	.161	.165	.161
	(170.2)	(162.3)	(170.4)	(162.2)
Other Variables of Interest				
CHILDREN6	-.013	-.013	-.013	-.013
	(15.4)	(15.2)	(15.4)	(15.2)
CHILDREN6_18	.006	.006	.006	.006
	(11.3)	(11.3)	(11.1)	(11.1)
FOREIGN_RN	.016	.016	.016	.016
	(11.6)	(11.7)	(11.6)	(11.7)
HISPANIC	.013	.014	.014	.014
	(7.1)	(7.3)	(7.2)	(7.5)
MARRIED	-.010	-.010	-.010	-.010
	(17.7)	(18.1)	(17.7)	(18.2)
MINORITY	.029	.029	.029	.029
	(39.4)	(39.3)	(39.3)	(39.2)
MULTILING	.029	.029	.029	.029
	(14.1)	(14.2)	(14.2)	(14.4)
UNION	.007	.007	.007	.007
	(9.5)	(9.5)	(9.4)	(9.5)
Obs. (weighted)	1,338,968	1,338,968	1,338,968	1,338,968
Obs. (unweighted)	15,668	15,668	15,668	15,668
F-statistic	15264.4	14588.0	14578.0	13963.8
Significance	0.001	0.001	0.001	0.001
Adj. R Sq.	0.193	0.193	0.193	0.193

A constant and 8 regional dummy variables are included in each estimate of ln(W).
t-values in parenthesis. All coefficients are significant at the .01 level (p<.01).

All equations are estimated using the weighted least squares technique, which is a simple regression method that estimates regression models with different weights for different cases. Since it is reasonable to assume that not every observation should be treated equally (as noted in the data documentation), the weighted least squares regression technique should improve the efficiency of parameter estimates and lower the standard errors.

Econometric Results

Results of the weighted least squares estimates of Equation 1, Equation 2, Equation 3 and Equation 4 can be found in Table 4. All coefficient estimates are statistically significant at the .01 level ($p<.01$). Each additional year of educational attainment increases earnings by 5.1 percent. The experience variable reveals the traditional concave shape. Earning increase with experience at a decreasing rate until the individual obtains 26.4 years of potential nursing experience. Other things equal, male nurses earn over 16 percent more than their female counterparts. Smaller, but similar signed coefficient for gender is found in other studies that model earnings with a specification designed to better analyze male-female pay differentials (Jones and Gates, 2004 and Kalist, 2002). Minority and Hispanic nurses earn more than white non-Hispanic nurses, a result also found in other studies (Jones and Gates, 2004 and Kalist, 2002). Being married and having young children lowers expected earnings.

The key finding from the estimate for Equation (1) is that nurses in non-nursing occupations earn a 4.3 percent premium. For males, this premium is 7.8 percentage points higher than it is for females as noted in the estimate for Equation (2). The estimate for Equation (3) demonstrates that each year of additional education increases the premium by about one percentage point, with the premium being 4.4 percent for nurses with a bachelor's degree. The estimate for Equation (4) shows that a 3.6 percent premium is paid for female nurses with a bachelor's degree working in a non-nursing occupation. Male nurses with a bachelor's degree are paid a 12.2 percent premium working in a non-nursing occupation (=0.036+0.086).

Conclusion

In examining the nursing shortage, many scholars note the high correlation between job dissatisfaction and "intentions" to leave. This study compares the earnings of individuals with nurse training in non-nursing occupations to those in nursing occupations. Nurses exiting the occupation while remaining employed appears to occur if alternative occupations pay a premium. This premium is higher for males and increases with education. Though the literature finds dissatisfaction as a key reason for leaving the profession, earnings of nurses in non-nursing occupations do not provide additional evidence of significant nursing dissatisfaction. Dissatisfied nurses appear only willing to exist the occupation if the price is right.

To answer the question in the title, earnings of nurses in non-nursing occupations do not provide evidence of significant dissatisfaction among nurses, particularly among male nurses. The

dissatisfaction commonly noted in the literature does not appear to cause nurses to be willing to exit the nursing profession if earnings are adversely impacted. This, combined with low occupational turnover among nurses suggests that while dissatisfaction may be an important factor in areas such as turnover intentions and quality of care, it may not be a primary factor in the overall nursing shortage. Nurses with more education are paid a larger premium for working outside the occupation. Going forward, this is a cause of concern as educational attainment levels of nurses have been increasing in recent years.

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