

# **Do the Black Nurses Earn More than White?**

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## **Abstract**

The paper analyzes earning disparity between black and white nurses in the US. We find that on average black nurses in the US earn more than white nurses controlling for different levels of education, marital status, children status, experience, region and mobility. Although white nurses cumulatively have superior endowments such as higher levels of education and better experience in comparison with black nurses, black nurses have higher returns on their endowments and receive higher returns for additional investment in human capital.

## **Introduction**

Labor economists have been long occupied with explorations of the sources of wage differences between black and white (Oaxaca, 1973; Blinder, 1973; Beller and Blau, 2003; Card and Krueger, 1992; Neal and Johnson, 1996; Trejo, 1997; Black et al., 2006). According to these studies, whites earn more than blacks, and the wage gap is largely explained in terms of difference in education, working experience, marital status, and other characteristics between black and white (Neal and Johnson. 1996). Although black-white differences in skills account for a significant portion of the black-white earnings gap, large black-white earnings differences remain unexplained (Oaxaca, 1973; Blinder, 1973). Blinder (1973), for example, argued that 70% of the overall race differential is attributed to different types of discrimination.

Racial wage gap has been historically smaller among females as a result of less discrimination against black females than black males (Bayard et al., 1999). Moreover, Neal (2004) claimed that some studies of black-white wage gaps among women didn't take into account labor force participation and family structure that differed by race, and, therefore, suffered from selection bias. Neal (2004) concluded that among well-educated and highly skilled women black women work more than white; educated white women are wealthier than educated black women due to better marriage prospects, and therefore; black women are earning higher wages than white women of the same age and education levels.

The purpose of this research is to test and analyze the wage difference between black and white nurses in the US. Nurses are one of those professions that require investing at least three years in occupation-specific human capital. Therefore, it might be an occupation that attracts high ability individuals in some regions, where few alternative occupations available for highly educated females. In addition, nursing is a great source of professional female employment in the US.

The paper is organized as follows. In Section 1 we review the literature about earning disparity between different demographic groups. Section 2 describes the data. Section 3 explains the econometric models used in the paper to investigate the wage difference

between black and white female registered nurses in US. Section 4 presents the empirical results. Section 5 concludes.

## **1. Literature Overview**

### *1.1 Gender and Race Wage Differences*

In American economy whites earn more than blacks, and males have higher wages than females (Blinder, 1973; Oaxaca, 1973; Blau and Baller, 1992; Card and Krueger, 1992; Neal and Johnson, 1996). It is also known that the white-black as well as male-female wage differentials are major contributors of income inequality in the US. Consequently, the questions about earning disparities between different demographic groups such as blacks and whites, and males and females have attracted the attention of several generations of labor economists.

In economic literature, the wage differences have been often explained in terms of difference in characteristics or endowments of demographic groups such as education and work experience. Existing research (Balck et al., 2006; Trejo, 1997) suggest that wage differentials are largely attributable to racial and ethnic differences in premarket factors, for example, schooling. In particular, Trejo (1997) found that 21 percent of Mexican American men earn less than white men, and the earnings gap is due to differences in English language proficiency and years of schooling. According to Black et al. research (2006), even college-educated black men earn 19 percent less than white men, and the wage gap is explained by differences in age structure, formal education, and in English language proficiency.

Neal and Johnson (1996) also found that black-white wage gap reflected skills and ability gap. According to their research, lower test scores on the Armed Forces Qualification Test (AFQT), the measure of skills and ability, for blacks explained a large portion of the white-black wage difference. However, Bollinger (2002) argued that using proxy variables such as AFQT test scores to control unavailable variables may bias the coefficient estimate on the correctly measured variables. He found that the black-white wage differential is likely to be smaller than that found by Neal and Johnson (1996). In

addition, Bollinger (2002) argued that if human capital were perfectly measured, then black women might earn 3.5 percent more than their white counterparts.

The black-white wage gap has been historically smaller for women than for men. This phenomenon has been explained by a greater segregation in the labor market between black and white men than between black and white women (Bayard et al., 1999). Bayard et al. (1999) claimed that black are segregated into the jobs with black representation that tend to pay less than other jobs, and black men experienced more severe racial segregation than black women. According to their research, the labor market segregation is the important contributor to the lower wage paid to black men than white men with similar characteristics.

Although differences in knowledge and skills account for a significant part of earning gap, some part of wage differential remains unexplained. In 1973 Blinder and Oaxaca proposed a model to decompose the wage differential on explained and unexplained parts. The unexplained portion of wage differences is often attributed to discrimination in a labor market. In particular, Blinder (1973) found that 60 percent of the white-black wage differential is due to the white's superior endowments of various characteristics, while 40 percent is attributable to different types of discrimination. Similarly, Oaxaca's findings suggested that a substantial proportion of the male-female wage differential is attributed to the effects of discrimination, that are estimated as the residual left after condoling for differences in various characteristics between males and females.

According to Oaxaca (1973) and Blinder (1973), the most common way to study the difference between individual wages is to estimate a regression in the form:

$$\log(W_i) = a_o + \sum_{i=1}^k \beta_i X_i + u_i \quad (1)$$

where  $W_i$  equals the hourly wage rate for  $i$ -th individual;  $\beta_i$  is the set of coefficients for each explanatory variable  $X_i$ ; and  $u_i$  the error term. Equation (1) is regressed separately for two demographic groups, males and females, or blacks and whites. In our research we try to explain the wage difference between black and white female nurses:

$$\log(W_b) = a_b + \sum_{i=1}^k \beta_{bi} X_{bi} + u_b \quad (2)$$

$$\log(W_w) = a_w + \sum_{i=1}^k \beta_{wi} X_{wi} + u_w \quad (3)$$

where  $a$  is a constant, and the subscripts  $b$  and  $w$  refer to black and white female nurses equations respectively.  $X_i$  are the same in both (2) and (3).

The Oaxaca-Blinder decomposition is created by subtracting the equation of low-wage group (3) from the equation of high-wage group (2).

$$\log(W_b) - \log(W_w) = (a_b - a_w) + (\beta_b \bar{X}_b - \beta_w \bar{X}_w) \quad (4)$$

Using some algebra, in particular by adding and subtracting the composite term  $\beta_b \bar{X}_w$ , the equation (4) can be rewritten in the following way:

$$\log(W_b) - \log(W_w) = (a_b - a_w) + \beta_b(\bar{X}_b - \bar{X}_w) + (\beta_b - \beta_w) \bar{X}_w \quad (5)$$

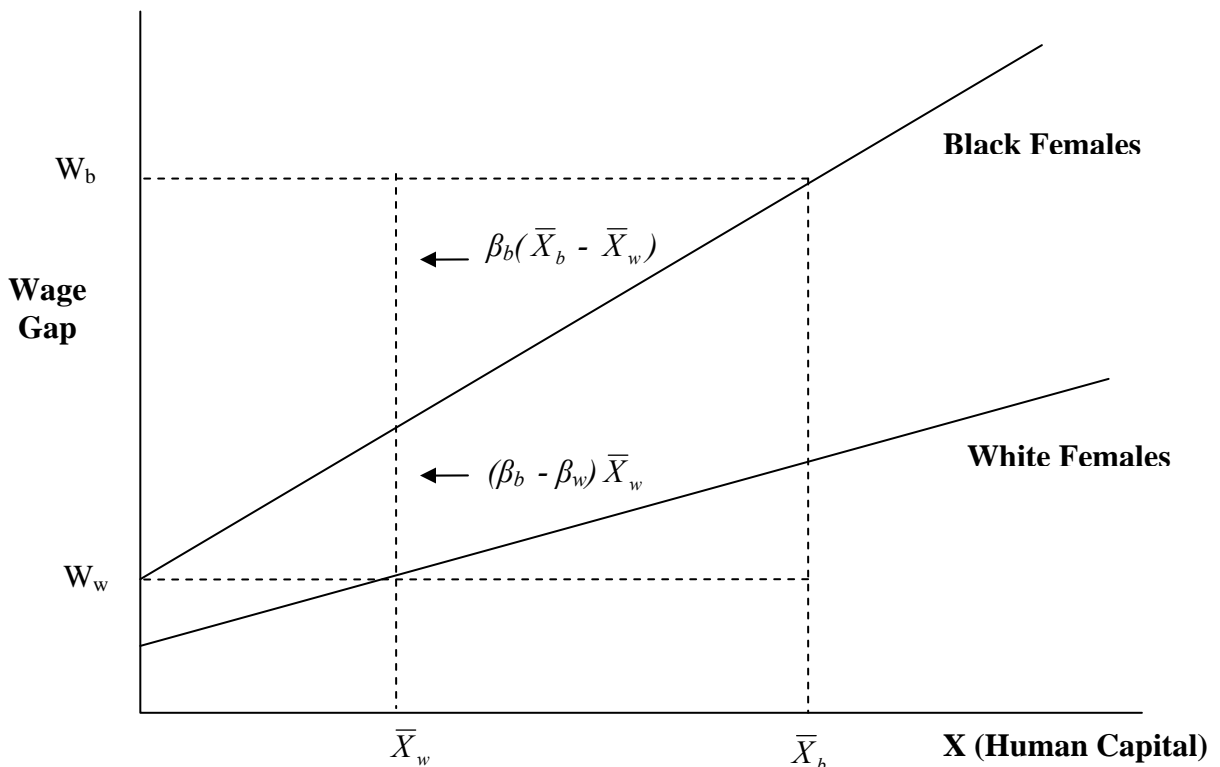
where  $a_b - a_w$  is unexplained portion in the difference of wages between black and white females;

$\beta_b(\bar{X}_b - \bar{X}_w)$  captures the difference in endowments; and

$(\beta_b - \beta_w) \bar{X}_w$  is attributable to the difference in coefficients.

Below is a graphical representation of wage gap between black and white female nurses.

**Figure 1: Graphical Representation of Racial Wage Gap**



### *1.2 Problem of Sample Selection*

In 1979 Heckman first showed that most wage equations suffered from sample selection bias due to a misspecification problem. He argued that the estimation of the wage equation without taking into account non-workers resulted in selectivity bias. Heckman considered not appropriate to use data only on those who work in the estimation because the wages of those who choose to work may not necessarily give accurate estimates of potential wages of those who did not work. In this case, a specification error leads to non-zero expected value of the error term in the wage equation, and therefore to the biased OLS estimates. He offered the solution to this problem by estimating a probit model that relates the probability of an individual being in the labor force to a set of determinants, and then using these probit estimates to compute the inverse Mills ratio or the hazard rate variable. This variable is then included as a covariate in the wage equation. Similarly, Beblo et al. (2003) also found that adjusting for selection into the labor market has an affect on the wage gap, but the direction of the affect is sensitive to the estimation procedure.

Neal (2004) also argued that the previous measures of black-white wage gaps among women are likely to suffer from selection bias because labor force participation and family structure differ by race. He found that white women who choose not to participate in the labor market are more likely to be married than black women who do participate. Moreover, white women who do not participate in the labor force are likely to be married to high income spouses. In contrast, black women who choose not to participate in the labor force are more likely to be single mothers receiving government assistance. Consequently, black women who are excluded from labor force are those with relatively low earnings. Therefore, it is important to consider different selection patterns into the labor force between white and black women. To correct the selection bias problem, Neal developed imputed wages technique, and found that the wage gap between black and white women in this case increased by almost 40 percent.

### *1.3 Characteristics of Labor Market of Registered Nurses*

Nursing is the largest occupation in the health care industry, which is itself a big part of the US economy. Therefore, nursing is a great source of professional female employment in the US.

Nursing also is one of those occupations that requires at least three years of investment in human capital to acquire professional knowledge and skills. A person is eligible for a Registered Nurse license after completing a Bachelor of Science degree program in nursing (BSN), and associate degree, or a 3-year hospital based diploma program. Since 1964 the American Nurses' Association (ANA) has advocated that all Registered Nurses be required to have BSN degree due to more complex technological and organizational changes in nursing. All these three entry-levels education in nursing levels can be considered a type of general training in human capital acquisition (Jones et al., 2004). These knowledge and skills acquired can be employed across different types of health care organizations.

Extensive research has been done on earnings of registered nurses (Krall, 1995; Schumacher, 1997; Schumacher and Hirsch, 1997; Walton, 1997). The primary focus of many studies was to examine the return to nursing education (Botelho et al., 1998, Schumacher, 1997; Spetz, 2002). These studies suggest that socio-demographic factors as well as human capital are major influences on wages of registered nurses.

Despite numerous researches studying nursing wages, a little attention has been dedicated to the nursing wage differentials. However, race and gender premiums exist in nursing (Spetz, 2002). According to Spetz (2002), male nurses receive higher wages than female nurses with the same human capital and employment characteristic. Additionally, Spetz (2002) found that in some years Black, Asian, and Native American nurses receive statistically significant wage premiums. He attributed this race and gender wage differentials to the possibility of holding specialized nursing positions by men and minority that were not addressed in the survey data that Spetz used in his research. Similarly, Jones et al. (2004) examined male-female wage differences in nursing and found that male nurses earn a wage premium largely explained in terms of specific nursing occupation (such as nurse anesthetist), job satisfaction, and experience.

## 2. Description of Data

We use the National Sample Survey of Registered Nurses that is conducted in the US Department of Health and Human Services, Health Resources and Services Administration<sup>1</sup>. The National Sample Survey of Registered Nurses (NSSRN) is a national sample of individuals holding active registered nurses' licenses in the 50 States and the District of Columbia. The NSSRN began in 1977 and has been conducted since that approximately every four years. The survey questionnaire is designed to capture the information about the profile of the registered nurses population in the workforce. It is mailed to a probability sample of registered nurses derived from state registries of those holding registered nurse licenses. The data are collected over an eight month period by mail, with telephone follow-up for non-respondents.

For the purpose of our research we use the surveys of years 1992, 1996, 2000, and 2004. Surveys were sent to 43,000 individuals in 1992 and 1996 and to approximately 56,000 individuals in 2000 and 2004. For these four samples the response rate averaged approximately 73 percent. The sample includes all individuals that have active registered nurse licenses, regardless of employment status. Respondents are asked questions regarding principal and secondary nursing employment status, formal education, additional training, and certificates received. The survey also includes both demographic and economic information such as gender, race, year of birth, marital status, presence of children, and household income.

Additionally, the survey provides very extensive information on those who are not actively utilize their license. Respondents are asked if they are unemployed, employed outside of nursing, and their reason for leaving nursing. Those who are employed outside of nursing are asked about their current job title, average hours worked per week and gross annual earnings at the current job.

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<sup>1</sup> Available at <http://datawarehouse.hrsa.gov/nursingsurvey.htm>

### 3. Econometric Models

We perform several econometric models to estimate the black-white female wage gap among nurses.

1. **The traditional model of Blinder (1973) and Oaxaca (1973)** in which separate log wage equations are estimated for black females and white females:

$$\log(W_i) = X_i\beta + u_i$$

where  $W_i$  equals the hourly wage rate for  $i$ -th individual;

$X_i$  is a vector of individual characteristics;

$\beta$  is a vector of coefficients; and,

$u_i$  is a disturbance term.

We calculate hourly wage as the gross earnings divided by the product of hours and weeks worked. As it is common with survey data analysis, we censor estimated hourly wage at the first and ninety-ninth percentiles. Our traditional Oaxaca-Blinder model includes four dummy variables for education: associates degree, diploma degree, bachelor degree, and master degree or higher. In order to become a registered nurse, an individual must complete one of the three programs offered at many registered nursing schools: an associate degree in nursing from a 2-year college, a Bachelor of Science degree in nursing from a 4-year college, or a three-year diploma program through a hospital. After completing any of these programs a nurse must pass a national licensing examination.<sup>2</sup>

Nurses also increase their human capital through the acquisition of work experience, and experience would probably increase nurses' wages. To approximate an actual work experience we include a potential experience variable and its square in our model. Potential experience is defined as age minus years of schooling completed minus six.

We aware that the potential experience probably overstates the actual working experience, especially for females, because many females leave the labor force for some period due to childbearing or other household activity. To control this problem we

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<sup>2</sup> Become a Registered Nurse, <http://www.allnursingschools.com/>, accessed 09/02/2009

include in our model three dummy variables for marital status (married, single, and divorced/separated/widowed) and three dummy variables for children (child less than six-years old in the home, child aged 6-17, and no child under 17 in the home).

We also have four region variables of current residence (Northeast, Midwest, South and West) in order to control for regional differences in nurses salaries. We also believe that being employed in nursing last year might affect the possibility of working in nursing in the following year; therefore, we have a variable whether the individual was employed in nursing last year. In addition, leaving or changing jobs frequently probably slows earning growth. Therefore, we include three dummy variables for mobility, which are, moved once to a different state since obtaining license, moved more than once, and not moved between states.

The traditional Oaxaca-Blinder model excludes those who are not working in nursing at the time of the survey. However, the decision to work or not work is made by the individual woman. It may be, for example, that women who would earn low wages choose not to work. Therefore, not working women constitute a self-selected sample and not a random sample. Neal (2004) showed that ignoring females who are not working biases the black-white female wage gap. According to Neal, the wage gap was 60 percent larger when accounting for those who were not employed. Therefore, to correct for this selection bias issue we perform two other models.

**2. The standard Heckman selection model.** The Heckman selection model is a two-stage statistical method to correct selection bias. In the first stage we estimate the probability of working in the probit regression form using an instrumental variable and all other independent variables that we used in the traditional Oaxaca-Blinder model. Since an instrumental variable should affect the decision to work but not the wage, a typical instrument used in the literature is household income. Women who have spouses with high earning are less likely to work outside the home, and having a high-earning spouse should not affect potential wages. The NSSRN has a bracketed variable for total household income. We calculate the household income as a difference between the midpoint of the bracketed total household income and the respondent nurse's earnings from her primary and secondary jobs. In the second stage, the transformation of these predicted

individual probabilities is added as an additional explanatory variable into our traditional Oaxaca-Blinder Model.

3. **The imputed wages model.** We follow Neal (2004) and impute a wage for those not employed in nursing. We create race, education, marital status, and children status cells and calculate median wage for different combinations of race, education, marital status and children status. After that, we assign the median of that cell to all women in that cell who do not have an observed wage. Using imputed wages in addition with reported wages we perform our traditional Oaxaca-Blinder model.

#### 4. Empirical results

Based on the results of NSSRN data, we find that on average black nurses in the US earn more than white nurses controlling for different levels of education, marital status, children status, experience, region, mobility, and prior nursing employment. This surprising result is robust for three different models and presented in Tables 1.1 – 3.2. In particular, black nurses earn 10.1%, 17.5%, and 11.7% more than their white counterparts using the OLS, Heckman and OLS with imputed values models respectively. After performing Oaxaca-Blinder wage differential decomposition we observe that most of the black wage advantage comes from unexplained factors.

According to the OLS model (Tables 1.1 - 1.2), black female nurses have 5.4% wage advantage that is not explained by the model specification. One interesting result of this model is that the regression (ignoring the constant) accounts for 4.7% differential in favor of black, most of which (6.1%) comes from higher return on endowments of black. To be more precise, while white have cumulatively superior endowments (-1.4%), black have higher return on their endowments (6.1%). In particular, most of white superior endowments come from geographical characteristics of white, that is, white nurses benefit from being residents and working in Northeast and West regions. However, if black nurses reside in Northeast and West, then their wage equation calls for higher return on these characteristics. In addition, there is not much of the difference in levels of

education between black and white nurses. However, black have higher return on their Associate and Bachelor degrees in comparison to white nurses.

*Table 1.1: OLS Model, NSSRN 1992-2004*

*Dependent Variable: Log Hourly Wage    Sample Size Black: 3,876 White 80,486*

	<b>Black</b>	<b>White</b>
<i>Potential experience</i>	0.0141* (0.003)	0.0132* (0.001)
<i>Potential experience2</i>	-0.0002* (0.001)	-0.0002* (0.000)
<i>Separated</i>	-0.0074 (0.014)	0.0142* (0.004)
<i>Never Married</i>	0.0289 (0.017)	0.0463* (0.005)
<i>Children less than 6</i>	0.0559* (0.018)	0.0338* (0.004)
<i>Children 6-18</i>	-0.0034 (0.014)	-0.0259* (0.003)
<i>Associate</i>	-0.0163 (0.019)	-0.0287* (0.004)
<i>Bachelor</i>	0.0546* (0.019)	0.0538* (0.004)
<i>Graduate</i>	0.1785* (0.025)	0.2292* (0.005)
<i>Northeast</i>	0.2017* (0.016)	0.0713* (0.004)
<i>Midwest</i>	-0.0031 (0.019)	-0.0516* (0.003)
<i>West</i>	0.1082* (0.019)	0.0471* (0.004)
<i>Prior Nursing Employment</i>	0.0969 (0.028)	0.1468 (0.006)
<i>Mobile</i>	0.0192 (0.013)	0.0073* (0.003)
<i>Very Mobile</i>	-0.0452 (0.019)	0.0050 (0.005)
<i>Constant</i>	2.8413 (0.044)	2.7973 (0.009)

*Note: \* - statistically significant at the 5 percent level  
standard error in parentheses*

Table 1.2: Structural Analysis of the Black-White Wage Differential for Female Nurses  
Based on OLS Model, NSSRN 1992-2004

<b>Casual Factors</b>	<b>Amount Attributable</b>	<b>Amount Attributable to Endowments</b>	<b>Amount Attributable to Coefficients</b>
	<b>%</b>	<b>%</b>	<b>%</b>
Potential experience	2.4	0.4	2.0
Potential experience2	3.0	-0.1	3.1
Separated	-0.5	-0.1	-0.4
Never Married	0.1	0.3	-0.2
Children less than 6	0.4	0.0	0.4
Children 6-18	0.8	0.0	0.8
Associate	0.4	0.0	0.4
Bachelor	0.3	0.3	0.0
Graduate	-0.2	0.3	-0.5
Northeast	1.7	-0.9	2.6
Midwest	1.3	0.0	1.3
West	0.0	-1.5	1.5
Prior Nursing Employment	-4.8	0.0	-4.8
Mobile	0.4	0.0	0.4
Very Mobile	-0.6	-0.1	-0.5
Subtotal	<b>4.7%</b>	<b>E=-1.4%</b>	<b>C=6.1%</b>
Shift Coefficient	<b>U=5.4%</b>		
Total	<b>R=10.1%</b>		<b>D=C+U=11.5%</b>

Note: Raw differential  $R=E+C+U$

D - Adjusted Differential

Therefore, according to the OLS model, 60% (6.1%/10.1%) of difference in earnings between black and white female nurses is attributable to superior wage equation of black, while 53% (5.4%/10.1%) of wage differential comes from unexplained factors that are not captured by the OLS model.

The results of the Heckman model (Tables 2.1 - 2.2) generally consistent with the results of the OLS model but are slightly different, which points out to the problems of sample selections that we have discussed earlier. According to the Heckman model, white nurses have both superior endowments and wage equations (return on their endowments). The regression (ignoring the constant) accounts for 3.2% wage differential in favor of whites, most of which come from superior endowments of white (2.4%). In line with the

OLS model, higher endowments of white are mostly attributable to white better places of residence and work such as Midwest, Northeast and West regions as opposed to South. In addition, there is not much of the difference in levels of education between black and white nurses, which is also consistent with the OLS model. In fact, according to the Heckman model, on average more white nurses have Associate degree than black nurses. However, black nurses have higher return on their Associate and Bachelor degrees.

We also find that white nurses have high return on such characteristic as having prior nursing employment (9.8%), which accounts for a significant part of superiority of the white wage equation in comparison to black.

So, the result of the Heckman model let us conclude that if we take into account nonworking population of nurses, then, according to the model, white nurses have better endowments and higher return on their endowments than black nurses do. However, even in this case black nurses earn more, and the difference in earnings is mostly attributable to unexplained factors.

Table 2.1: Heckman Selection Model, NSSRN 1992-2004

Dependent Variable: Log Hourly Wage Sample Size Black: 4,567 White 97,279

	<b>Black</b>	<b>White</b>
<i>Potential experience</i>	0.0106*	0.0132*
	(0.003)	(0.001)
<i>Potential experience2</i>	-0.0001	-0.0002*
	(0.000)	(0.000)
<i>Separated</i>	-0.0210	0.0077*
	(0.015)	(0.004)
<i>Never Married</i>	0.0135	0.0419*
	(0.018)	(0.005)
<i>Children less than 6</i>	0.0584*	0.0466*
	(0.019)	(0.004)
<i>Children 6-18</i>	-0.0027	-0.0266*
	(0.015)	(0.003)
<i>Associate</i>	-0.0218	-0.0329*
	(0.020)	(0.004)
<i>Bachelor</i>	0.0489*	0.0526*
	(0.020)	(0.004)
<i>Graduate</i>	0.1681*	0.2241*
	(0.025)	(0.005)
<i>Northeast</i>	0.2039*	0.0713*
	(0.017)	(0.004)
<i>Midwest</i>	0.0076	-0.0526*
	(0.020)	(0.003)
<i>West</i>	0.1155*	0.0477*
	(0.021)	(0.004)
<i>Prior Nursing Employment</i>	-0.0984	0.0155
	(0.065)	(0.017)
<i>Mobile</i>	0.0267	0.0099*
	(0.014)	(0.003)
<i>Very Mobile</i>	-0.0367	0.0107*
	(0.02)	(0.005)
<i>Constant</i>	3.1042	2.929
	(0.091)	(0.019)

Note: \* - statistically significant at the 5 percent level  
standard error in parentheses

Table 2.2: Structural Analysis of the Black-White Wage Differential for Female Nurses Based on Heckman Selection Model, NSSRN 1992-2004

<b>Casual Factors</b>	<b>Amount Attributable</b>	<b>Amount Attributable to Endowments</b>	<b>Amount Attributable to Coefficients</b>
	<b>%</b>	<b>%</b>	<b>%</b>
Potential experience	-5.8	0.3	-6.1
Potential experience2	9.0	-0.1	9.1
Separated	-0.7	-0.2	-0.5
Never Married	-0.1	0.1	-0.2
Children less than 6	0.2	0.0	0.2
Children 6-18	0.9	0.0	0.9
Associate	0.3	-0.1	0.4
Bachelor	0.1	0.2	-0.1
Graduate	-0.3	0.3	-0.6
Northeast	1.8	-0.9	2.7
Midwest	1.4	-0.1	1.5
West	0.0	-1.6	1.6
Prior Nursing Employment	-10.1	-0.3	-9.8
Mobile	0.6	0.0	0.6
Very Mobile	-0.5	0.0	-0.5
Subtotal	<b>-3.2%</b>	<b>E=-2.4%</b>	<b>C=-0.8%</b>
Shift Coefficient	<b>U=17.5%</b>		
Total	<b>R=14.3%</b>		<b>D=C+U=16.7%</b>

Note: Raw differential  $R=E+C+U$   
D - Adjusted Differential

Finally, the OLS model with imputed values (Tables 3.1 – 3.2) produces very similar result to the standard OLS model. In case of the OLS model with imputed values, black nurses earn more than white nurses, and the difference in earnings is 11.7%. The regression itself (without the constant) accounts for 5.6% wage differential in favor of black nurses; most of it (6.3%) comes from black superior wage equation. Again, as in the standard OLS and Heckman models, white have superior endowments that mostly attributable to the geographical differences between black and white. Moreover, 6.1% of wage differential between black and white is due to unexplained factors.

Table 3.1: OLS Model with Imputed Values, NSSRN 1992-2004

Dependent Variable: Log Hourly Wage Sample Size Black: 4,567 White 97,279

	<b>Black</b>	<b>White</b>
<i>Potential experience</i>	0.0148* (0.002)	0.0147* (0.001)
<i>Potential experience2</i>	-0.0002 (0.000)	-0.0002* (0.000)
<i>Separated</i>	-0.0137 (0.013)	0.0087* (0.003)
<i>Never Married</i>	0.0189 (0.015)	0.0279* (0.004)
<i>Children less than 6</i>	0.0459* (0.016)	0.0280* (0.004)
<i>Children 6-18</i>	-0.0179 (0.012)	-0.0404* (0.003)
<i>Associate</i>	0.0093 (0.017)	0.0133* (0.003)
<i>Bachelor</i>	0.0749* (0.017)	0.0990* (0.003)
<i>Graduate</i>	0.2021* (0.021)	0.2811* (0.004)
<i>Northeast</i>	0.1581* (0.015)	0.0626* (0.003)
<i>Midwest</i>	0.0021 (0.017)	-0.0379* (0.003)
<i>West</i>	0.0911* (0.018)	0.0366* (0.003)
<i>Prior Nursing Employment</i>	0.0199 (0.017)	0.0061 (0.003)
<i>Mobile</i>	0.0200 (0.012)	0.0079* (0.003)
<i>Very Mobile</i>	-0.0213 (0.017)	0.0182* (0.004)
<i>Constant</i>	2.7826 (0.036)	2.7212 (0.007)

Note: \* - statistically significant at the 5 percent level  
standard error in parentheses

Table 3.2: Structural Analysis of the Black-White Wage Differential for Female Nurses Based on OLS Model with Imputed Values, NSSRN 1992-2004

<b>Casual Factors</b>	<b>Amount Attributable</b>	<b>Amount Attributable to Endowments</b>	<b>Amount Attributable to Coefficients</b>
	<b>%</b>	<b>%</b>	<b>%</b>
Potential experience	0.6	0.5	0.1
Potential experience2	1.7	-0.2	1.9
Separated	-0.5	-0.1	-0.4
Never Married	0.1	0.2	-0.1
Children less than 6	0.3	0.0	0.3
Children 6-18	0.8	0.0	0.8
Associate	-0.1	0.0	-0.1
Bachelor	-0.4	0.4	-0.8
Graduate	-0.4	0.4	-0.8
Northeast	1.2	-0.7	1.9
Midwest	1.0	0.0	1.0
West	0.0	-1.3	1.3
Prior Nursing Employment	1.3	0.1	1.2
Mobile	0.4	0.0	0.4
Very Mobile	-0.4	0.0	-0.4
Subtotal	<b>5.6%</b>	<b>E=-0.7%</b>	<b>C=6.3%</b>
Shift Coefficient	<b>U=6.1%</b>		
Total	<b>R=11.7%</b>		<b>D=C+U=12.4%</b>

Note: Raw differential  $R=E+C+U$

D - Adjusted Differential

After performing Oaxaca-Blinder wage differential decomposition for all three models, we observe that white nurses cumulatively have superior endowments such as higher levels of education and better experience in comparison with black nurses. However, black nurses have higher returns on their endowments, that is, black nurses receive a higher reward for additional investment in human capital than white nurses. For example, we find that if both a black and a white nurse have an associate degree, a black nurse gets higher return on this human capital. A possible explanation of this interesting finding relates to occupation specific characteristics of nurses. Nursing is such a profession that requires at least 3 years of investment in human capital. It seems that employers pay a wage premium to attract those black women who are able to invest at

least 3 years in their education and successfully become registered nurses. Also, there might be other characteristics of nurses that affect their wages such as, for example, interpersonal skills that we cannot control for because of difficulties of measuring them or finding an instrument for them.

We also find a structural wage differential for black and white nurses. That is separated white nurses earn more than married white nurses while there is no statistically significant difference in earnings between separated and married black nurses. A possible explanation is that white women are often married to white men, who are the highest earners. White men's higher incomes make white women to be less concerned about their earnings and rely more on their white husbands. In contrast, black women are frequently married to black men who earn less than white men. Therefore, in a black household a black woman is in a better economic position to earn more to sustain the household. This can explain a structural wage difference between black and white nurses.

## **5. Conclusion**

This paper examines the earning disparity between black and white female nurses in the US using the data from National Sample Survey of Registered Nurses. Based on the results of the OLS, Heckman and OLS with imputed values models, we have shown that on average black nurses in the US earn more than white nurses controlling for different levels of education, marital status, children status, experience, region and mobility. Although white nurses cumulatively have superior endowments in comparison with black nurses, black nurses have higher returns on their endowments and receive higher returns for additional investment in human capital. In addition, most of the black wage advantage comes from unexplained factors not captured by our models.

Since the wage gap favors black women in nursing and white women in the general population, this might imply that the wage gap among non-nurses may be even higher. Therefore, our findings might motivate future research on whether the white-black female

wage gap follows a similar pattern in other occupations that require large occupation-specific human capital such as teaching.

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