

# Wages, benefits, hours, commuting time, and license renewal for Iowa Registered Nurses

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## **Executive Summary**

This study makes use of the Iowa Board of Nursing licensing database for Registered Nurses to evaluate the factors that influence the decision to renew an RN license and to examine current nurses' salaries, benefits, working hours and commuting decisions. Among the findings:

### **License Renewal**

- Nurses are most likely to renew if they are young, white, female, and residing outside but adjacent to a metropolitan area.
- The exit rate from nursing is extremely small—80% reach 30 years of tenure without letting the license expire. Many license holders will still maintain the license even after moving to jobs that do not require the license.
- By far the most important reason nurses let their licenses expire is because they have left the labor force.
- Home responsibilities are more important than poor compensation as a reason for letting the license expire.
- Only 7% of nurses with expired licenses thought they would return to the profession and another 17% said they might. For these compensation and home responsibilities were key factors in triggering a reentry.

### **Wages, Benefits and Hours**

- Average family income for registered nurses is well above the median for Iowa households.
- Average wages for RNs in nursing or nursing-related jobs are well above the pay RNs receive for jobs outside nursing. Similarly health insurance and pension benefits are much better in nursing jobs than jobs outside nursing.
- The higher pay for nursing than for other jobs is partly due to working longer hours, but also due to higher hourly compensation.
- Pay is highest in metropolitan markets. However, most nurses work within commuting distance of jobs at or near top paying jobs.
- Nurses' salaries do not vary greatly with education and experience, suggesting significant wage compression for experienced nurses and little incentive to gain additional schooling beyond the bachelor's degree.
- Nurses with young children work 2.5 fewer hours per week than average. Male nurses average 7 more hours per week.
- Rural nurses earn 22% less and nurses in small urban areas earn 17% less than otherwise comparable nurses in metropolitan areas.
- Female nurses are less likely to receive pension benefits, but there are no other significant differences in compensation between men and women holding Iowa nursing licenses.

### **Commuting**

- One-third of nurses commute over 21 minutes each way to work. Nurses residing in rural and small urban communities are the most likely to commute with average distance exceeding 40 minutes.
- Commuting has a significant impact on average pay and access to benefits for nurses in small urban and urban communities. It does not appear as important on average for nurses in rural communities. On average, commuting 20 minutes raises pay by about 5%.
- The probability of commuting is not related to household characteristics, suggesting that there are no serious constraints to commuting, even for nurses with larger households, with young children in the home, or for nurses residing in rural or small urban markets.
- The geographic distribution of registered nurses closely matches the distribution of the Iowa population. This suggests that there is no current evidence that rural markets lack a potential supply of nurses. Wage differences between urban and rural markets indicate that rural areas may need to pay more to keep their resident nurses from commuting to urban markets.

## Glossary of terms

**Compensation:** Includes both wages and benefits from employment.

**Family Income:** Total combined income of all household members during the 2005 calendar year, including money from jobs, net income from business, farm, or rent, pensions, dividends, interest, social security payments and any other money income received by members of this family who are 15 years of age or older.

**Pay:** Used interchangeably with **Wage**

**Personal Earnings:** Annual wages from personal employment in a job or personal net income from a wholly owned business during the 2005 calendar year.

**Return to (education or experience):** The proportional increase in pay from an additional year of schooling or job experience.

**Wage:** Amount of pay received per unit of time worked. Unit of time is weekly or hourly. Also see **Pay**

**Wage Compression:** Occurs when wages for more experienced employees grow at a slower rate than wages for new employees. This shrinks the pay gap between more and less experienced employees so that there is little increase in wages as time worked increases.

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The Iowa Board of Nursing licensing database for Registered Nurses (RNs) contains information on nurses<sup>1</sup> who have renewed their licenses including age, race, gender, education, and location of employment. It also contains comparable information on nurses who opted not to renew at the time of their last renewal. In the analysis below, we refer to the licensing database as the Master dataset. In addition, because the database includes each nurse's address at the time of the last renewal, we were able to send a labor market survey to a randomly drawn subset of nurses in the Master dataset. This report contains an analysis of the nurses' characteristics that increase the likelihood of license renewal based on all useable information contained in the Master dataset. We then report on various aspects of the Iowa nursing labor market using responses to the labor market survey.

***A. Analysis of the Registered Nurse Licensing Master Dataset***

Table A1 presents the sample statistics for the subset of nurses in the licensing database who held an Iowa registered nurse's license at some time between 1994 and 2005 and for whom the database had complete information on age, education, gender, race, and residential address. Our analysis excluded nurses over age 80, although these nurses may have been included in the original survey dataset. The working subsample is roughly 87% of the full sample, with the most common reasons for exclusion being missing information about the individual's education (7%); age over 80 (3.2%); and missing information about the individual's county of residence (2.8%). The notes to Table A1 show the impact of each of the sample selection criteria on the number of observations in the working subsample.

Of those in our Master dataset subsample, 66% still had active licenses as of 2005. The average age was 50, ranging from 21 to 80. Iowa nurses are overwhelmingly white (97%) and female (96%). Average education is 14 years, ranging from 12 to 20 years. The distribution of nurses is slightly more urban than the population distribution as a whole but generally matches the state. Fifty-eight percent of licensed nurses live in a metropolitan county compared to 53% of the Iowa population. However, the distribution of nurses is not so heavily urban as to suggest that rural areas are underserved by nursing services. Six percent of nurses live in rural counties compared to 7% of the state population; and 25% of nurses live in small urban counties compared to 28% of the Iowa population as whole. The 11% of nurses living in larger urban counties matches the population average. Twenty-one percent of nurses live in counties adjacent to a metropolitan county compared to 24% of the Iowa population.

Table A2 reports the results of regressions explaining the probability of renewing a license versus letting it lapse. The demographic factors included in the licensing database can explain 18% of the variation in the likelihood of renewal. The coefficients in the first column show how a unit change in each factor changes the probability of renewal. The

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<sup>1</sup> Unless otherwise noted, the words "nurse" and "nurses" refer to persons holding or having held Iowa Registered Nursing licenses.

second column shows the percentage change in the probability of renewal from a 1% increase in each factor. Positive signs imply that an increase in the factor raises the probability of renewal while negative signs mean the factor decreases the probability of renewal.

Age has a nonlinear effect on probability of renewal. Over the relevant age range in the sample (21-80), the probability of renewal decreases at an increasing rate as age increases. The probability of renewal is higher for women, for whites, and for the more educated than it is for others. Whites are 17% more likely to renew and women are 6% more likely to renew. Education has only a small effect on renewal—every additional year of schooling led to less than a 1% increased probability of renewal.

Nurses residing in metropolitan areas are the least likely to renew. The probability of renewal rises as the county becomes less urban. Compared to metropolitan residents, nurses residing in large urban counties are 2% more likely; those in small urban counties 4% more likely; and those in rural counties 6% more likely to renew. However, residing in a county adjacent to a metropolitan county raises the probability of renewal by 4 percentage points.

Table A3 presents a proportional hazards analysis of the likelihood of leaving nursing for the subsample about whom we have information on the date the individual obtained the first Iowa license. Hazard ratios greater than 1 imply the factor raises the probability of exiting the nursing profession. Age and education raise the probability of exit, but the effect is extremely small. More substantial are the reduced likelihood of exit for women; for whites; for urban, small urban, and rural county residents; and for residents of counties adjacent to a metropolitan area. These results corroborate the conclusions from the probit analysis of Table A2.

We replicated this analysis using the subsample of nurses for whom we have data on the date the individual obtained the first Iowa license and who were active in or after 1994. Results are not very different when we restrict the dataset to this younger subsample. The plots below are based on the larger subsample.

The graphs plot the probability of renewing as nursing tenure increases, where nursing tenure is measured by the time elapsed since the first Iowa nursing license was obtained. All plots are downward sloping, indicating the falling likelihood of renewal as the person ages. As Figure A1 shows, even after 50 years of nursing the probability of renewal is still over 40%, and many nurses continue to renew their licenses even after retiring.

Other implications:

- Figure A2: At the same level of tenure, probability of renewal is lower for nurses who enter licensure at older ages.
- Figure A3: Nonwhite nurses are less likely to renew, and the probability of nonrenewal starts very quickly after the date of first licensure.
- Figure A4: The gender gap in renewal begins after about 5 years of tenure and slowly widens thereafter.

- Figures A5-6: Residents of the large and small urban counties renew at rates comparable to statewide averages.
- Figure A7: Rural residents renew with greater frequency after 5 years of nursing tenure, but the difference in probability of renewal compared to nonrural residents does not exceed 10 percentage points until 40 years of tenure.
- Figure A8: Living adjacent to a metropolitan area increases the likelihood of staying in nursing.

***B. Details of RN survey population, sample, and response rates***

In addition to the analysis of the population detailed above, a sample of the population was surveyed to determine what factors influenced their decision to renew or not renew their RN licenses, their employment choices, and their willingness to commute.

A solicitation letter (contained in Appendix 1) was mailed to 7,000 addresses taken from the Board of Nursing’s RN license database. The recipients were selected randomly from three subsets of the database population.

5,201 (74.3% of the survey sample) were RNs whose licenses were set to expire on June 16, 2006 or later. These RNs had current licenses during the survey period.

605 (8.65% of the survey sample) were RNs whose licenses expired between the time our database was drawn and the time the survey solicitation was sent (November 15, 2005 and May 15, 2006). The license status of these nurses was unknown.

1,194 (17.05% of the survey sample) were RNs whose licenses had expired prior to November 15, 2005. These RNs were assumed to be inactive.

The distribution of letters across these categories was consistent with the distribution of the entire population that these individuals were selected from. The surveyed population was derived as follows.

62,030 RNs were listed in the database received from the Board of Nursing.

16,030 records that expired prior to January 1, 1996 were removed.

3,038 records that included no expiration date were removed.

6 records that included no last name or invalid ZIP codes were removed.

43,504 records remained in the final population.

Of these,

32,324 had active licenses.

3,761 were of undetermined status.

7,419 had inactive/expired licenses.

Of the 7,000 solicitations sent, 610 (8.71% of total solicitations sent) were returned as undeliverable. Of these:

- 184 had active licenses (3.54% of the active sample).
- 42 were of undetermined status (6.94% of the indeterminate sample).
- 384 had inactive/expired licenses (32.16% of the inactive/expired sample).

As a result, solicitations reached (at maximum) 6,390 members of the population. Of these:

- 5,017 had active licenses (78.51% of unreturned solicitations).
- 563 were of undetermined status (8.80% of unreturned solicitations).
- 810 had inactive/expired licenses (12.68% of unreturned solicitations).

Nine hundred twenty-six (926) RNs completed the survey. This equates to 14.49% of all unreturned solicitations or 13.23% of all solicitations sent. Files containing printed versions of the survey for both licensed and unlicensed RNs are attached as Appendices 2 and 3, respectively. Responses are categorized by whether the respondent has a currently valid RN license and whether the respondent provided an identification number. Responses were distributed as follows:

- With license
  - With ID = 794
  - Anonymous = 59
- Without license
  - With ID = 67
  - Anonymous = 6

Two hundred sixteen (216) additional online surveys were initiated but not completed. Of these, 182 are known to be unique solicitation recipients, because they provided ID numbers. Thirty-four (34) incomplete online surveys were initiated anonymously. We cannot tell whether these are unique solicitation recipients. Likewise, five requested paper copies of the survey were not returned and cannot be counted as unique recipients. Incomplete surveys break down as follows:

- With license
  - With ID = 159
  - Anonymous = 23
- Without license
  - With ID = 23
  - Anonymous = 9

Two incomplete surveys did not indicate license status (aborted at the first question beyond the “Consent to participate” screen).

### ***C. Why nurses decide not to renew their licenses***

Of all the respondents to the survey, 7.9% had expired Iowa registered nursing licenses. The survey investigated why these nurses decided not to renew and whether they would consider returning to a job that required a nursing license.

Table C1 lists the reasons for deciding not to renew. Respondents could list multiple reasons. Consistent with their age (average age for the nonrenewal sample is nine years older than the average age for those holding active licenses), retirement is by far the most important reason for non-renewal. The next most important reasons listed are “career change” and “home responsibilities,” which can also be part of the retirement decision. Therefore, only a very small proportion of nurses are deciding not to renew because they are moving to an alternative field of work. In fact, more nurses retain an active license despite working outside nursing than opt not to renew after leaving nursing employment.

Home responsibilities are a more important reason for leaving nursing than is dissatisfaction with the compensation or job attributes of the nursing jobs. Less than one-quarter of the respondents list wages, benefits or commuting costs as a reason not to renew.

As shown in Table C2, the great majority (76%) of the nonrenewal group had left nursing for good. Only 7% said they thought they might return while another 17% were still undecided. The factors that affect the decision of whether to reenter the nursing profession are listed in Table C3. Although insufficient earnings are not the leading cause for exiting nursing, improvement in wages is cited by 88% of the respondents as a factor in the decision of returning to nursing, and improved health insurance and pension benefits are cited by over 70%. Easing of home responsibilities is cited as a factor by 70% of the potential returnees.

### ***D. Why nurses decide to retain their licenses***

Of all the respondents to the survey, 92.1% had active Iowa registered nursing licenses. Of these licensed respondents, 91% were required to have an active license by their primary employer while 9% did not have to have a nursing license for their current job (Table D1).

Job-related licensing requirements are clearly important: 91% of respondents plan to renew, including most of those in jobs requiring a license, and an additional 5% are undecided about whether to renew. Only 3% plan to let their license expire (Table D2).

Interestingly, only 10% of those who are not in jobs requiring a license plan to let their license expire (Table D3). The main reason to retain a license, even when it is not required, is to retain the option of returning to a licensed job (61%). Nearly one-quarter maintain the license because it helps certify qualifications, even if the job does not require the license. In other words, the license signals training and skills, even when it is not a mandated requirement of the job.

### *E. Sample Characteristics of Nurses*

#### *Active and Inactive Licensed Nurses*

Average attributes of respondents to the nursing market survey are reported in Table E1. The averages are weighted to match the distribution of education and age distributions of all nurses in the state of Iowa. Sample breakdowns are 92% of the respondents with active Iowa RN licenses and 8% with expired licenses.

The mean age<sup>2</sup> of the active respondents is nine years less than that of the inactive respondents, reflecting the high proportion retirees within the inactive group. Both active and inactive nurses in Iowa are heavily drawn from the population of white women.

Seventy-eight percent of the licensed respondents and 55% of unlicensed respondents are married. The average yearly family income of the active licensees (\$75,140) and of the inactive licensees (\$50,904) is well above the Iowa median family income of just over \$43,000. Respondents with active licenses average just under three members in the household, with 16% having children less than six years of age and 55% having children aged 6-18. Reflecting their older ages, only 5% of those with inactive licenses have children under 6 and 22% have children in the 6-18 age range.

Ninety-five percent of active licensees were employed during 2005 while only 25% of inactive licensees were employed. The average workweek is 34 hours for employed licensed nurses and their average pay is \$23 per hour, or \$794 per week. Eighty-four percent are offered health insurance and 91% are offered a pension through their primary employer. The average commute from home to work is 21 minutes.

For those with expired licenses who are employed, the average workweek is 26 hours with average pay of \$11 per hour or \$287 per week. These averages are well below the averages for those with active licenses. Only 20% have access to health insurance through their employer, although many unlicensed workers are over 65 and qualify for Medicare. Three-quarters get pension benefits through their employer. Their average commute is 14 minutes.

#### *Characteristics of Positions Taken by Registered Nurses*

Weighted averages of the job attributes of nurses are reported in Table E2. Of the 89% of the respondents who were employed in 2005, the majority (90%) was employed as nurses, while 5.4% were in nursing-related jobs and 4.8% were employed outside nursing. Hours worked and hourly wages in nursing and nursing-related fields are comparable to one another and are considerably higher than those in non-nursing jobs. The workweek averages 35 hours in nursing and 33 in nursing-related jobs. Weekly earnings and average hourly wages are modestly higher in licensed nursing jobs than in nursing-related jobs. Those employed as nurses are more likely to have health insurance benefits than are those in nursing-related jobs (85% versus 71%), but both types of jobs are equally likely to have pension benefits offered (92%). Those in nursing-related jobs have a longer average commute than do nurses (27 minutes versus 21 minutes).

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<sup>2</sup> Proxy age is measured by years of education plus reported work career plus 6. It corresponds well with the subset of the sample for whom we have actual age.

Nurses employed outside of nursing have markedly different job attributes. The average workweek is 21 hours. Hourly and weekly pay (\$11, \$298) is well below the average for nursing and nursing-related jobs. The jobs outside nursing are also less likely to include health insurance and pension benefits, and the average commuting time for those with jobs outside nursing is lower at 15 minutes.

For nurses, average weekly pay is higher than the average pay reported for the best local job option but less than the average for the best regional job (within a 45-minute commute). The majority of these best alternative jobs are also in nursing. For those in nursing-related jobs, the average pay received dominates the alternative in either the local or regional market. A much smaller fraction of these alternative jobs is in nursing. For those employed outside nursing, alternative pay in the local and regional market generally exceeds pay in their current job. The majority of these alternative jobs are also in nursing, and so, on average, nurses who accept jobs outside nursing take a substantial pay reduction relative to their options in nursing. The tradeoff is presumably the shorter commute and access to part-time work.

#### ***F. Compensation Terms***

Our analysis of the compensation and employment decisions of Iowa nurses uses two datasets. The first, which we refer to as the Survey Database, consists of all respondents to the survey conducted in 2006. The survey data include 894 observations. We also use a reduced sample that merges in residential county, gender, and age from the nursing license database for the subset of nurses who agreed to identify themselves (nurses were given the option of answering anonymously). The Merged Database had 824 respondents. Smaller subsets of each database were used to generate information on compensation, as some of the nurses were retired or unemployed. The results in this section refer only to employed nurses.

#### ***Sample statistics***

Table F1 contains sample average information for nurses' compensation in four markets: metropolitan, urban, small urban, and rural counties. The highest family incomes are in metropolitan areas while the lowest are in small urban and rural markets. Nurses' personal earnings are roughly half the family incomes across all markets

A nurse is labeled as a commuter if it takes at least 20 minutes to travel to work, the average across all nurses in the sample. For commuters, the average length of time spent commuting is over 40 minutes in all nonmetro areas, while metro area commuters commute an average of 34 minutes to work. Noncommuters live within ten minutes of work.

The role of commuting is readily apparent in that personal earnings for commuters are higher than for noncommuters in all markets except the metropolitan areas.<sup>3</sup> Commuting allows individuals living outside the metro markets to access the higher wages paid in

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<sup>3</sup> Because pay tends to be highest in metropolitan areas, metro area commuters are actually commuting to lower paying markets.

metro areas. Part of the explanation for the higher weekly wages earned by nonmetro commuters versus noncommuters is that the commuters work more hours per week. Urban commuters also earn more per hour than urban noncommuters, whereas the advantage for rural commuters is entirely from working longer hours but at lower average wages. The opposite pattern holds for metro commuting nurses who have lower personal earnings and hours worked than do metro noncommuters.

Nonmetro commuters are more likely than noncommuters to be offered health insurance and pension benefits, although the likelihood of accepting benefits if offered is either equal or sometimes higher for nonmetro noncommuters. In metro areas, benefit incidence is roughly equal between commuters and noncommuters.

Surveyed nurses were asked what their best alternative jobs would pay, where one is in their immediate local market and the other would be within a reasonable commuting distance. The highest paid alternative local jobs were in urban and metropolitan areas and in the nursing profession. Local pay was substantially lower in small urban and rural communities. However, pay within the commuting region serves as the great equalizer across areas, suggesting that most nurses living in low-paying markets are within commuting distance of a higher-paying market.

#### Wage Function

We estimated equations that examine how various individual attributes affect nurses' earnings. The results are reported in Table F2. The coefficients are quite consistent between the equations using the broader survey dataset and the smaller but more complete merged dataset, and so we concentrate our discussion on the latter. The equation fit is somewhat disappointing, with only 17% of the variance explained by the model, but the coefficients appear to be reasonable.

One reason for the weak fit is that there is not much variation in pay by experience and education, two elements that normally factor prominently in determining pay in datasets containing a broader array of jobs and education levels. In our setting, pay does not vary by years of work experience, suggesting unusually flat age-earnings profiles in nursing compared to other professions. This profile may suggest fairly rapid pay increases for new market entrants and pay compression for experienced nurses, a situation that can lead to the loss of experienced nurses from the profession. Years of schooling are also rewarded minimally in the sample, but there is not much variation in education in the sample of registered nurses. Future work may be able to assess the pay increment that goes to nurses holding a Master's degree or higher, but if these results continue to hold, they suggest minimal return to obtaining a degree beyond the bachelor's level.

The highest paying jobs are in the nursing profession, suggesting that on average, those who leave the nursing profession take a pay cut. Other things equal, average pay for those in nursing jobs or nursing-related areas is more than double the average pay for those outside nursing.

Other things equal, commuters get a positive but small return from their travel to a more distant job. The coefficient suggests that a twenty-minute commute is rewarded with about 5% higher earnings. Nevertheless, the evidence shows that there is a large pay penalty to living in a rural or small urban area. Compared to equally skilled nurses residing in a metropolitan market, rural nurses earn 22% less and small urban nurses earn 17% less.

There is no statistically significant difference in the wages of male and female nurses. There is no statistically significant evidence of wage differentials between those residing in metropolitan markets and those residing in adjacent markets or in larger urban areas.

### Benefits

Table F2 contains information on access to benefits. Again the results using the smaller but more complete merged dataset do not differ substantially from the results using the broader sample, so we concentrate our discussion on the merged dataset.

Results are interpretable as the impact of each factor on the probability of receiving the benefit. Work experience has a positive but very small effect on the probability of being offered a pension plan but has no impact on the likelihood of receiving health insurance. As with wages, education has no effect on the probability of receiving either benefit.

Being in a registered nursing or nursing-related job has a large positive effect on the probability of being offered a pension plan of 40% and 9%, respectively. Probability of receiving health insurance benefits is unaffected by type of job.

Commuters do not have better access to either type of benefit. However, individuals working more hours are more likely to receive health insurance, which is consistent with national data that suggest that health insurance is primarily offered to full-time but not part-time workers.

Women have an 8% lower probability of being offered a pension plan than men. There is no statistically significant difference in access to health insurance between the sexes.

The probability of receiving a pension does not differ by population density although there is marginal evidence that those residing adjacent to a metro area are 7% less likely than average to be offered a pension. However access to health insurance is significantly higher in metropolitan markets than in the rest. Those residing outside metropolitan areas have a 15-20% lower likelihood of being offered employer-provided health insurance, with the lowest probability being in rural markets.

### Work Hours

In Table F3, we show how individual attributes affect hours of work. Again we concentrate on the results in the first column. Hours initially rise with years of work experience, but at a diminishing rate. Peak work hours occur at 21 years of experience or when nurses are in their early to mid 40s. More educated nurses work significantly more

hours per week. The coefficients suggest that bachelor's degree holders work nearly 1.5 hours more than do community college graduates.

The substantial pay advantage for those in the nursing jobs is partly due to much longer work weeks. Nursing jobs average 10-15 more hours per week compared to jobs outside nursing, suggesting that one reason to exit nursing may be to get part-time hours.

Family responsibilities do not appear to have much of an impact on hours, with the exception of nurses who have children younger than school age in the home. They work 2.5 fewer hours per week on average than do other nurses. Hours worked are not strongly influenced by family size or the presence of older children in the home. However, women work seven hours less per week on average than do men.

Hours of work per week do not differ by geographic market.

#### Commuting Time

Table F4 presents results on how these various factors affect time spent commuting. The overriding conclusion is that none of the factors appear to affect commuting time, with the possible exception that more educated nurses may commute one more minute per year of schooling more than do less educated nurses. This is interesting because it suggests that there are no serious constraints to commuting, even for nurses with larger households, with young children in the home, or for nurses residing in rural or small urban markets. The implication is that if market wages in more distant markets are sufficiently attractive, nurses will respond equally regardless of home responsibilities.

#### ***G. Licensed Practical Nurses***

The historical database of Registered Nurse licensees upon which the survey in this study was based does not provide information that would have facilitated a similar survey of Licensed Practical Nurses. It is possible, however, to utilize results from the current investigation and existing knowledge of Licensed Practical Nurses' labor supply decisions to make some informed hypotheses regarding Licensed Practical Nurse behavior.

Previous work by the authors that included information on both RNs and LPNs found that the labor supply and commuting decisions of LPNs were even more sensitive to prevailing wages and economic circumstances than were the decisions by RNs. That suggests that the results found in this study are likely to understate how LPNs' decisions regarding license renewal, work in or out of nursing, and time spent commuting are affected by local versus regional wages, family responsibilities, education, and age.

Additionally, a point-in-time (December 2004) database of Iowa licensed nurses by county of residence provided by the Iowa Board of Nursing shows 45,046 Iowa resident holders of Iowa Registered Nurse and Licensed Practical Nurse licenses. Of these,

9,199 held an LPN license only.

23,059 held an RN license only.

12,788 held both an LPN and an RN license.

This results in 21,987 LPN licenses and 35,847 RN licenses held by Iowa residents in December 2004. Over half (58%) of the LPN license holders and over one-third (36%) of the RN license holders held dual licenses. Consequently, roughly one third of the current sample includes responses from LPNs.

It appears that a substantial proportion of LPNs transition into RN licenses. Because the LPN population is much smaller and there is no reason to assume that RNs are transferring in the other direction, a reasonable assumption is that LPNs as a group are younger and less experienced than RNs. Unfortunately, to evaluate these presumptions more accurately, we would need to survey the LPNs as a group rather than just the RNs who also maintain an LPN license. Future research should investigate the extent to which the LPN serves as a gateway into the RN and whether registered nurses who enter the profession as LPNs differ in wages or characteristics from nurses who enter directly as RNs.

## **A: Analysis based on the Master Dataset**

**Table A1: Variable definitions and summary statistics**

Variable	Definition	Number of observations	Mean
Active	= 1 if registered nurse has active license 0 otherwise	54444	.66
Age	Age of registered nurse	49830	50.033
age_sq	Square of the age		
White	= 1 if white of non Hispanic origin 0 otherwise	51617	.97
Female	= 1 if gender is female 0 otherwise	54327	.96
Education	number of years of education	54444	14.18
URBAN	= 1 if Beale code is 4 or 5 0 otherwise	54444	.11
SMURB	= 1 if Beale code is 6 or 7 0 otherwise	54444	.25
RURAL	= 1 if Beale code is 8 or 9 0 otherwise	54444	.06
ADJACENT	= 1 if Beale code is 4, 6 or 8 0 otherwise	54444	.21

### **Reasons for sample exclusion**

	Number of observations
Master dataset	62564
Deleted records with no information on education	58150 (-4414)
Deleted records with age >80	56175 (-1975)
Deleted records with missing or wrong county information	54444 (-1731)

Note: Number of observations lost due to each exclusion restriction is reported in parentheses.

### **Description of Rural-Urban Continuum (Beale) Codes**

#### **Metro counties:**

- 0 Central counties of metro areas of 1 million population or more.
- 1 Fringe counties of metro areas of 1 million population or more.
- 2 Counties in metro areas of 250,000 to 1 million population.
- 3 Counties in metro areas of fewer than 250,000 population.

#### **Nonmetro counties:**

- 4 Urban population of 20,000 or more, adjacent to a metro area.
- 5 Urban population of 20,000 or more, not adjacent to a metro area.
- 6 Urban population of 2,500 to 19,999, adjacent to a metro area.
- 7 Urban population of 2,500 to 19,999, not adjacent to a metro area.

#### **Rural counties:**

- 8 Completely rural or less than 2,500 urban population, adjacent to a metro area.
- 9 Completely rural or less than 2,500 urban population, not adjacent to a metro area.

**Table A2: Probit Estimation Results of factors affecting the probability of renewing a registered nurse license**

	dF/dx	Elasticities
Age	0.021 (0.001)	1.42
age_sq	-0.003 (0.000)	-1.23
White	0.171 (0.015)	0.20
Female	0.058 (0.011)	0.07
Education	0.007 (0.001)	0.13
URBAN	0.016 (0.007)	0.00
SMURB	0.036 (0.006)	0.01
RURAL	0.062 (0.009)	0.01
ADJACENT	0.043 (0.006)	0.01
Log likelihood	-23767.72	
Pseudo R square	0.180	
Number of observations	49445	

Notes: All marginal effect estimates are significant at the 5% level.  
Standard errors are given in parentheses.

**Table A3: Cox Proportional Hazard Model Estimates of Registered Nurse Duration**

Variables	Hazard Ratios	
	1 <sup>a</sup>	2 <sup>b</sup>
Age	1.017 (0.001)	1.004 (0.002)
White	0.411 (0.025)	0.405 (0.283)
Female	0.771 (0.042)	0.719 (0.043)
Education	1.015 (0.008)	1.034 (0.009)
URBAN	0.910 (0.043)	0.967 (0.052)
SMURB	0.889 (0.036)	0.963 (0.044)
RURAL	0.745 (0.051)	0.838 (0.064)
ADJACENT	0.761 (0.035)	0.731 (0.038)
Log likelihood	-54098.36	-41473.97
Chi squared	513.02	287.16
Number of observations	31076	29815

Notes: In Cox proportional hazards model the hazard is assumed to be:

$$h(t) = h_0(t) \exp(\beta_1 x_1 + \dots + \beta_k x_k).$$

Standard errors are given in parentheses.

<sup>a</sup> Results for the whole subsample. All estimates are significant at the 5% level.

<sup>b</sup> Results for the subsample of nurses who were active in 1994 or later. All estimates except the coefficients for URBAN and SMURB are significant at the 5% level.

### C. INACTIVE RESPONDENTS

**Table C1: Reasons for Not Renewing Nursing License, by Importance**

Reason	Weighted Importance <sup>a</sup>	% Citing <sup>b</sup>
Other (retirement)	6.36	83.6
Career Change	3.23	45.9
Home Responsibilities	2.95	47.5
Insufficient Earnings	1.56	24.6
Poor Health Benefits	1.07	21.3
Commuting Distance	0.87	19.7
Poor Pension	0.85	18.0
Move to Another State	0.69	13.1

Notes:

<sup>a</sup> Maximum possible weighted importance is 8

<sup>b</sup> Percent of respondents listing this as at least one of the reasons for nonrenewal

**Table C2: Possibility of returning to a job requiring a RN license**

	%
Yes	7.04
No	76.06
Undecided	16.90
Total Inactive Respondents = 71	

**Table C3: Conditions for Reapplication for Nursing License, by Importance**

Reason	Weighted Importance <sup>a</sup>	% Citing <sup>b</sup>
Earning Improvement	4.24	88.2
Reduced Home Responsibility	2.47	70.6
Health Benefits Improvement	2.47	70.6
Commute Distance Improvement	2.18	76.5
Pension Improvement	2.12	76.5
Other	2.11	76.5
Total inactive respondents who could return or were undecided about return = 17		

Notes:

<sup>a</sup> Maximum possible weighted importance is 8.

<sup>b</sup> Percent of respondents listing this as at least one of the conditions for reapplication.

**D. ACTIVE RESPONDENTS**

**Table D1: Primary Employer requires IA RN license**

	%
Yes	91.10
No	8.90
Total respondents with active licenses = 832	

**Table D2: Intention of renewing at next expiration date**

	%
Yes	91.23
No	3.37
Undecided	5.29

**Table D3: Reason for maintaining an Iowa RN license although not required by primary employer**

	% <sup>a</sup>
Return to position requiring RN license in the future	6.8
License relevant to nursing-related position	24.3
Maintain future employment option	60.8
Will let license expire at next renewal date	9.5
Other	23.0
Total respondents with active licenses though not required by primary employer = 74	

Notes:

<sup>a</sup> Percent of respondents listing this as at least one of the conditions for maintaining active IA RN license.

**E. Summary Statistics of the RN Survey Sample**

**Table E1: Characteristics of the weighted sample by active and inactive licenses**

	Active	Inactive
Proxy age	51	60
White	0.99	0.97
Married	0.78	0.55
Household size	2.9	1.8
Family Income	75140	50904
Dependents in 2005		
Total dependents	2.15	1.00
Dependent children aged 5 years or less	0.16	0.05
Dependent children aged 6 - 18 years	0.55	0.22
If employed in 2005		
N	776	18
Employed proportion	0.95	0.25
Primary weekly hours	33.89	25.65
Primary weekly earnings	794.31	287.10
Primary hourly wage	22.95	11.05
Primary commute time <sup>a</sup>	21	14
Health insurance offered by primary employer	0.84	0.20
Health insurance accepted <sup>b</sup>	0.69	0.90
Pension plan offered by primary employer	0.91	0.64
Pension plan accepted <sup>c</sup>	0.85	0.89
Pension plan offered by any employer	0.92	0.75
Pension plan accepted <sup>c</sup>	0.89	0.76

Notes:

<sup>a</sup> In minutes.

<sup>b</sup> Conditional on health insurance being offered.

<sup>c</sup> Conditional on some pension plan being offered.

**Table E2: Weighted primary job characteristics and alternate job characteristics by primary employment type**

	RN	Nursing-related	Non-nursing
% of employed in 2005	89.80	5.41	4.79
Weekly hours	34.61	32.82	21.17
Weekly earnings	815.00	804.67	297.99
Hourly wage	23.50	22.49	11.24
Commute time <sup>a</sup>	21	27	15
Health insurance offered	0.85	0.71	0.47
Health insurance accepted <sup>b</sup>	0.71	0.56	0.40
Pension plan offered	0.92	0.92	0.63
Pension plan accepted <sup>c</sup>	0.84	0.88	0.83
Alternate local job			
Weekly earning	704.31	620.03	418.71
Nursing position	0.71	0.27	0.65
Alternate regional job			
Weekly earning	941.68	792.88	529.48
Nursing position	0.80	0.54	0.69
N	713	43	38

Notes:

<sup>a</sup> In minutes.

<sup>b</sup> Conditional on health insurance being offered.

<sup>c</sup> Conditional on some pension plan being offered.

**F: Compensation, Hours of Work and Commuting Patterns of Surveyed Nurses**  
**Table F1: Characteristics of weighted sample by primary commute and residence areas**

	Metro		Urban		Small Urban		Rural	
	Commute	Non-commute	Commute	Non-commute	Commute	Non-commute	Commute	Non-commute
% (Total = 741)	15.38	39.95	2.43	7.15	12.69	17.14	3.10	2.16
Personal Earnings	35324	41692	40788	30183	36912	29236	35417	33486
Family Income	80212	83136	67504	72725	72480	62762	65019	59709
Weekly hours	31.97	35.12	37.22	33.04	36.16	31.89	38.54	32.60
Weekly earnings	838.79	837.12	1009.99	761.99	794.06	616.01	717.85	727.60
Hourly wage	25.50	23.47	27.01	23.29	22.24	18.89	18.96	21.88
Commute time <sup>a</sup>	34	12	44	10	48	9	40	10
Health insurance offered	0.88	0.90	0.88	0.78	0.85	0.66	0.85	0.82
Health insurance accepted <sup>b</sup>	0.66	0.63	0.78	0.77	0.8	0.76	0.38	0.52
Pension plan offered	0.93	0.90	0.92	0.90	0.95	0.83	0.89	0.87
Pension plan accepted <sup>c</sup>	0.74	0.90	0.88	0.87	0.78	0.88	0.81	0.77
Alternate local job								
Weekly earning	596.76	840.53	813.19	776.24	566.41	549.05	556.07	760.15
Nursing position	0.57	0.71	0.77	0.80	0.72	0.65	0.70	0.78
Alternate regional job								
Weekly earning	787.97	1027.87	1170.68	990.09	786.20	820.14	880.14	965.57
Nursing position	0.73	0.80	0.73	0.80	0.84	0.79	0.83	0.77

Notes:

An individual is assumed to commute if the commuting time to the primary employer is greater than 20 minutes.

<sup>a</sup> In minutes.

<sup>b</sup> Conditional on health insurance being offered.

<sup>c</sup> Conditional on some pension plan being offered.

The personal earnings of the commuters is higher than those of non-commuters across all regions.

**Table F2: Wage Function for primary job**

	Coefficients (Standard Errors)	
	Merged Database	Survey Database
Intercept	2.078 (0.260)**	1.756 (0.245)**
Total experience	0.001 (0.002)	0.002 (0.002)
Education	0.018 (0.012)	0.026 (0.011)**
RN	0.921 (0.226)**	0.915 (0.222)**
Nursing-related	0.859 (0.237)**	0.833 (0.235)**
Commuting time <sup>a</sup>	0.002 (0.001)**	0.002 (0.001)**
Female	-0.152 (0.096)	
URBAN	-0.091 (0.091)	
SMURB	-0.188 (0.059)**	
RURAL	-0.244 (0.122)**	
ADJACENT	0.059 (0.063)	
R <sup>2</sup>	0.1725	0.1483
Number of observations	688	733

Note:

<sup>a</sup>Commuting time in minutes.

\* and \*\* imply significance at the 10% and 5% levels respectively.

**Table F3: Benefits in primary job**

	dF/dx (Standard Errors)			
	Pension		Health Benefits	
	Merged Database	Survey Database	Merged Database	Survey Database
Total experience	0.001 (0.001)*	0.002 (0.001)*	-0.002 (0.002)	-0.001 (0.002)
Education	0.002 (0.006)	0.004 (0.006)	0.002 (0.008)	0.009 (0.009)
RN	0.339 (0.122)**	0.319 (0.114)**	0.048 (0.114)	0.027 (0.118)
Nursing-related	0.086 (0.018)**	0.095 (0.017)**	-0.027 (0.122)	-0.060 (0.150)
Commuting time <sup>a</sup>	0.001 (0.001)	0.001 (0.001)	0.000 (0.001)	0.000 (0.001)
Weekly hours	0.002 (0.001)	0.002 (0.001)	0.009 (0.002)**	0.010 (0.002)**
Female	-0.077 (0.019)**		-0.069 (0.047)	
URBAN	0.019 (0.038)		-0.153 (0.086)**	
SMURB	-0.003 (0.032)		-0.183 (0.054)**	
RURAL	-0.003 (0.054)		-0.201 (0.114)**	
ADJACENT	-0.067 (0.040)*		0.028 (0.036)	
Log pseudo-likelihood	-216.909	-235.172	-233.727	-262.334
Pseudo R <sup>2</sup>	0.110	0.090	0.2838	0.270
Number of observations	738	788	738	788

Note:

<sup>a</sup>Commuting time in minutes.

\* and \*\* imply significance at the 10% and 5% levels respectively.

**Table F4: Weekly hours in primary job**

	Coefficients (Standard Errors)	
	Merged Database	Survey Database
Intercept	19.837 (6.007)**	13.668 (5.665)**
Total experience	0.422 (0.189)**	0.505 (0.181)**
(Total experience) <sup>2</sup>	-0.010 (0.004)**	-0.012 (0.004)**
Education	0.695 (0.329)**	0.634 (0.310)**
RN	10.147 (3.418)**	9.378 (3.306)**
Nursing-related	14.506 (5.676)**	11.392 (5.424)**
Household size	0.241 (0.256)	0.190 (0.246)
Dependent children aged 5 years or less	-2.571 (0.815)**	-2.790 (0.803)**
Dependent children aged 6 - 18 years	-0.041 (0.459)	-0.018 (0.449)
Married	-1.420 (1.154)	0.432 (1.389)
Female	-6.950 (1.492)**	
URBAN	0.454 (1.783)	
SMURB	-0.400 (1.491)	
RURAL	-0.125 (1.574)	
R <sup>2</sup>	0.198	0.201
Number of observations	740	791

Note:

\*and \*\* imply significance at the 10% and 5% levels respectively.

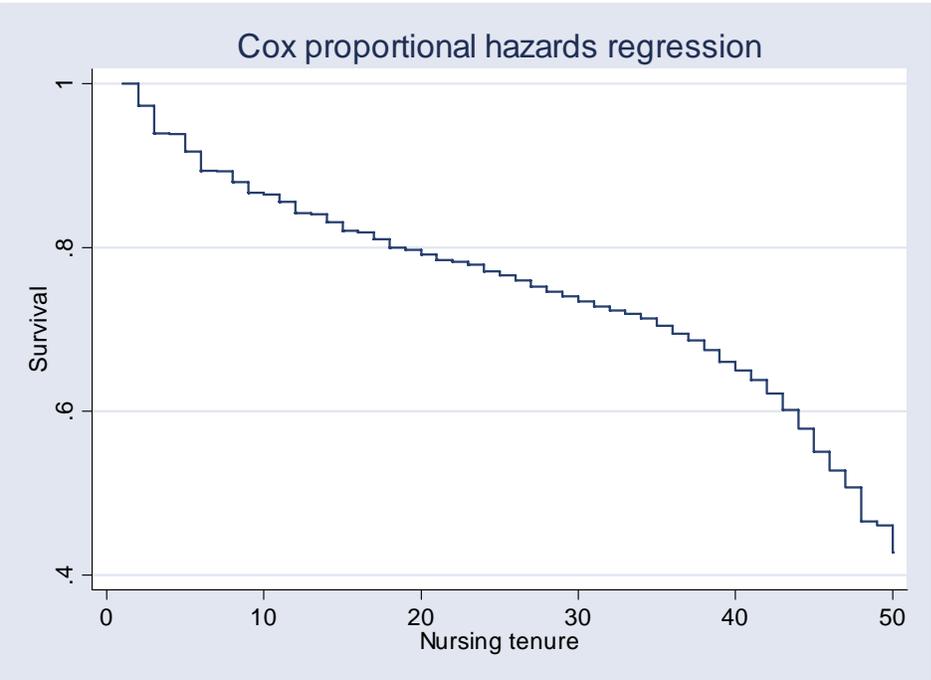
**Table F5: Commuting time<sup>a</sup> for primary employment**

	Coefficients (Standard Errors)		
	Merged Database		Survey Database
	1	2	
Intercept	11.533 (8.613)	9.408 (8.580)	16.426 (6.830)**
Total experience	-0.061 (0.079)	-0.066 (0.073)	-0.072 (0.077)
Education	1.038 (0.594)*	0.906 (0.516)**	0.775 (0.524)
Household size	-0.095 (0.232)	-0.184 (0.278)	-0.074 (0.250)
Dependent children aged 5 years or less	-1.088 (1.699)	-0.790 (1.638)	-0.988 (1.545)
Dependent children aged 6 - 18 years	1.167 (1.118)	1.152 (1.060)	1.222 (1.082)
Married	-1.386 (2.794)	-1.249 (2.700)	-1.379 (2.643)
Female	-2.048 (4.641)	-1.483 (4.517)	
URBAN	-2.073 (3.397)	-2.753 (3.359)	
SMURB	2.244 (2.328)	2.711 (2.204)	
RURAL	5.562 (4.203)	5.480 (4.081)	
ADJACENT	6.134 (3.910)	6.755 (3.714)*	
Alternate local wage	-0.004 (0.003)		-0.005 (0.002)**
Alternate regional wage	-0.001 (0.002)		-0.000 (0.001)
R <sup>2</sup>	0.0034	0.033	0.015
Number of observations	701	741	749

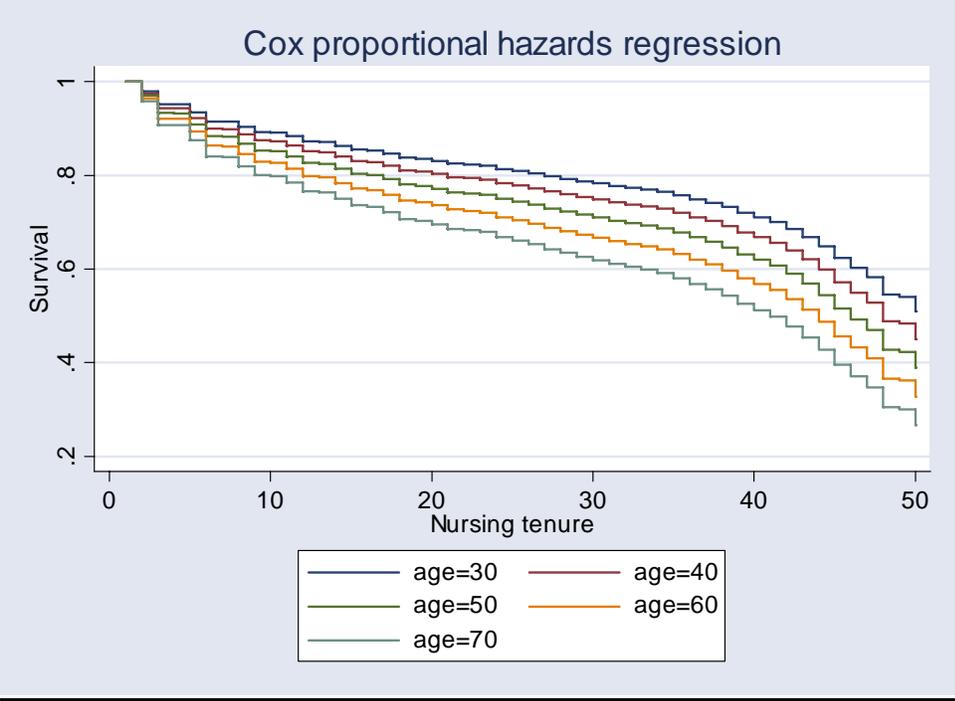
Note:

\*and \*\* imply significance at the 10% and 5% levels respectively.

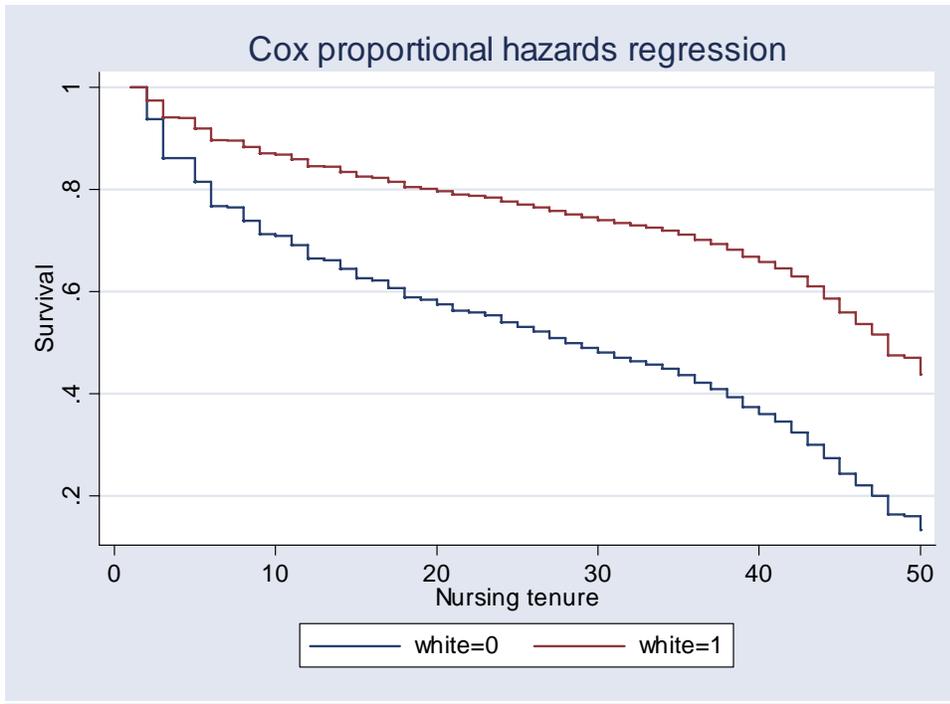
<sup>a</sup> Commuting time (in minutes) to the primary employer.



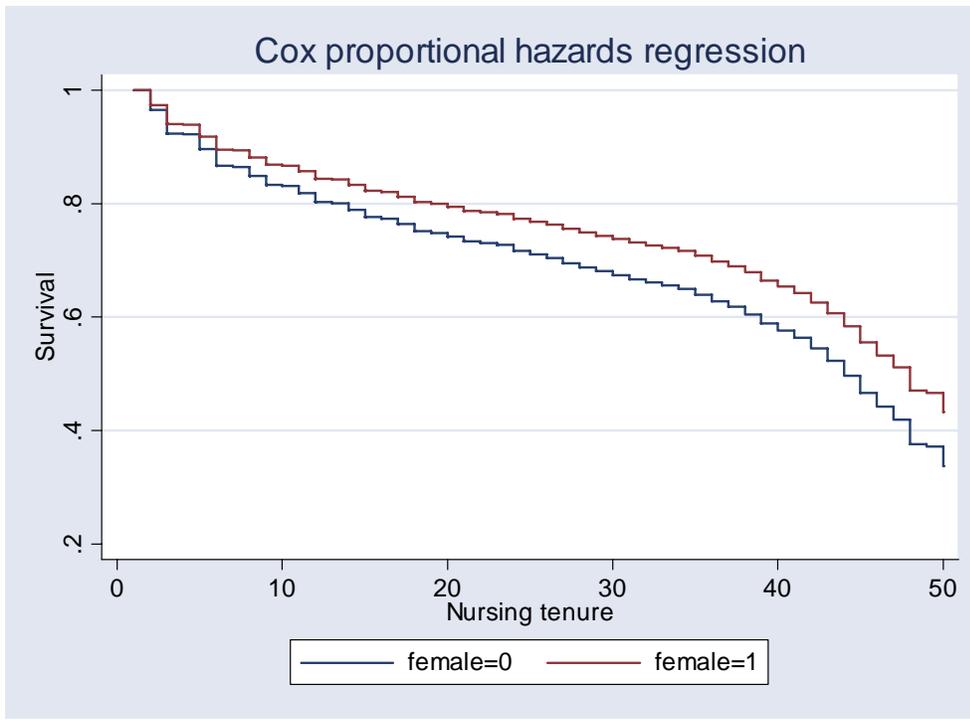
**FIGURE A1: Estimated Survival function at the mean values of all the predictors**



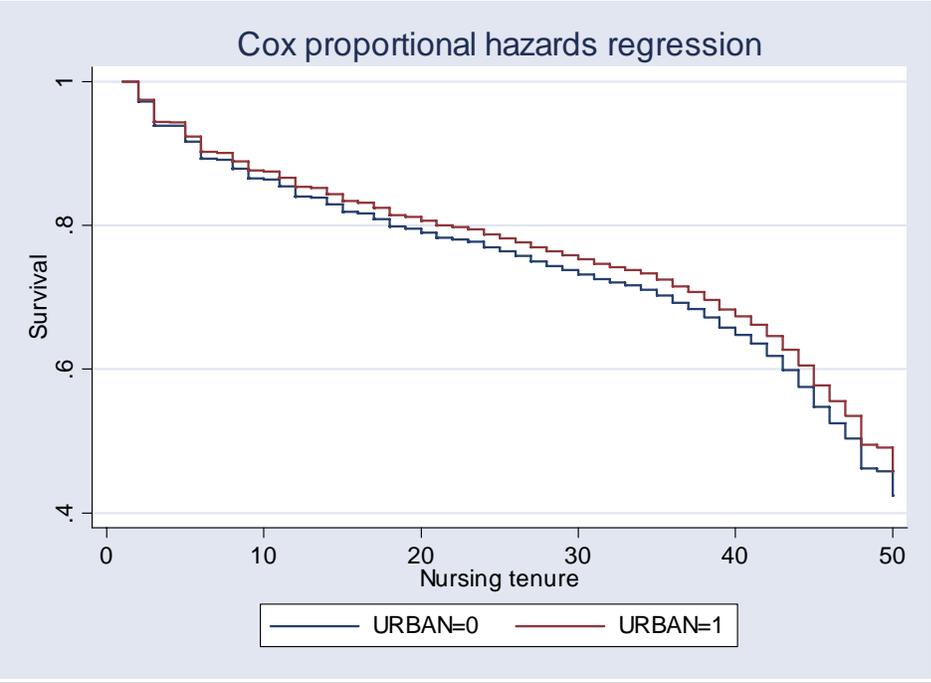
**FIGURE A2: Estimated Survival functions at different ages**



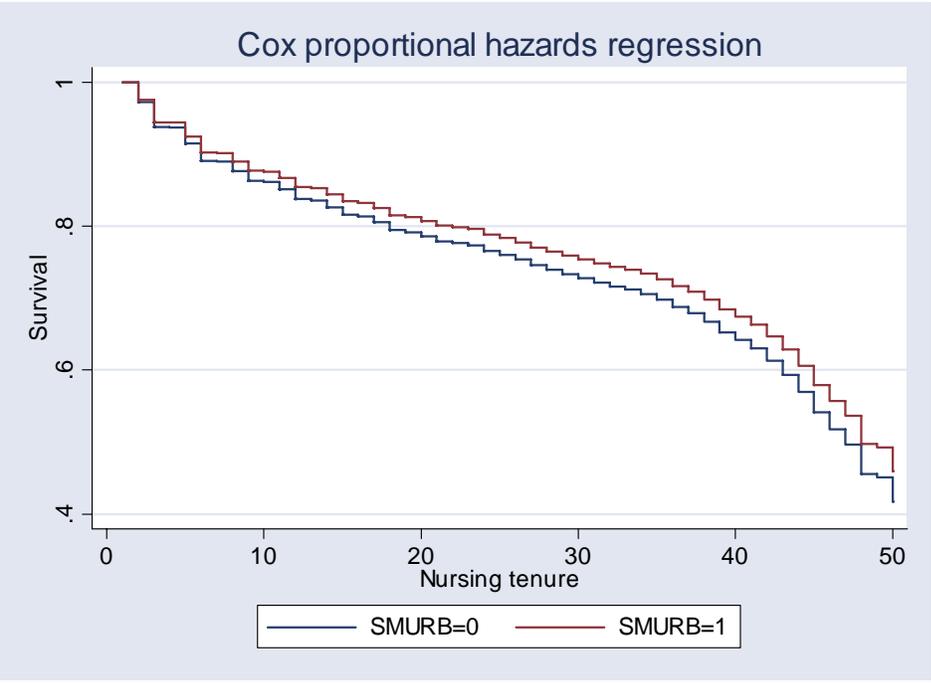
**FIGURE A3: Estimated Survival functions by race**



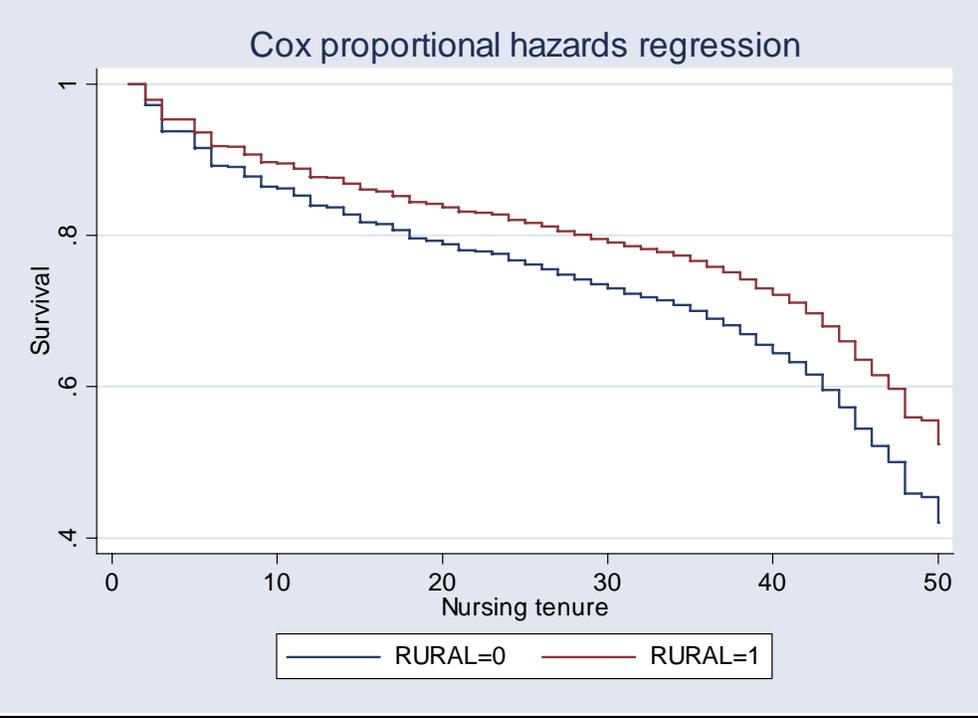
**FIGURE A4: Estimated Survival functions by gender**



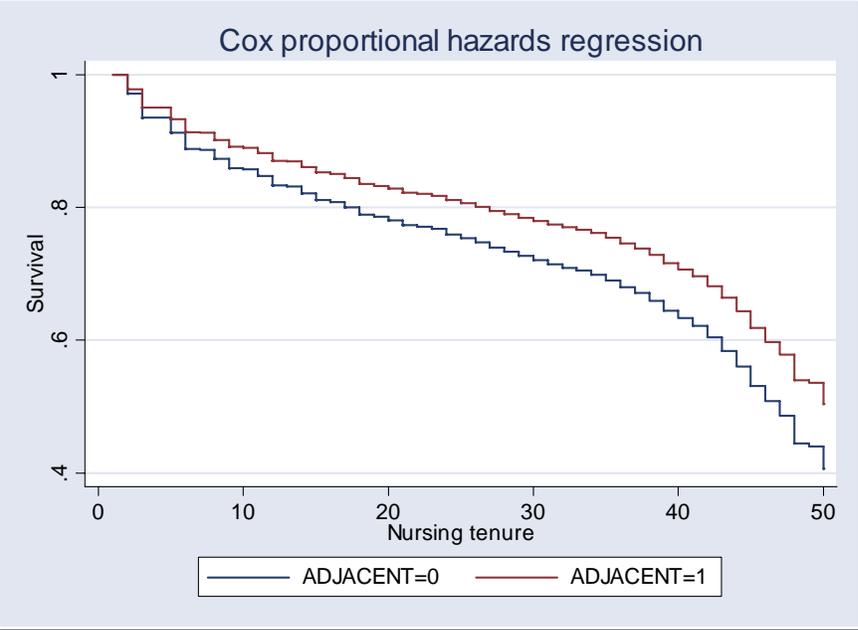
**FIGURE A5: Estimated Survival functions by URBAN**



**FIGURE A6: Estimated Survival functions by SMURB**



**FIGURE A7: Estimated Survival functions by RURAL**



**FIGURE A8: Estimated Survival functions by ADJACENT**

Appendix 1: Text of survey solicitation letter sent out under Iowa State University letterhead on May 3, 2006

Dear [FULL\_NAME],

You have been randomly selected from all Registered Nurses who have been licensed in Iowa over the past ten years. We would like you to participate in an online survey about factors that influence the decision to obtain and/or renew an Iowa Registered Nurse license.<sup>4</sup> We need your response whether you are currently licensed as a nurse or you have decided not to renew your license. The more responses we get, the more reliable our conclusions about the market for nurses in Iowa will be.

Participation in the survey is completely voluntary. Responses will be completely confidential. The survey should take approximately 10 to 15 minutes of your time. Survey questions about family status and income closely match those asked by the U.S. Bureau of Labor Statistics' monthly surveys of employment and earnings in the U.S. labor market.

We will use the responses to this survey in combination with national data to estimate the effects of nursing earnings and family status on nursing shortages in Iowa. Survey results will inform policy decisions aimed at attracting and retaining Registered Nurses in Iowa.

The survey can be completed on the World Wide Web at

<http://www.seta.iastate.edu/survey/nursing/>

If you do not have internet access available at home, many public libraries and Iowa State University Extension Service offices offer public access internet.

**You have been assigned a participant identification (ID) number: [ID\_NUMBER]**

Entering this code when you complete the survey will enter you in a drawing for several Best Buy gift cards to be given to selected participants as thanks for completing the survey<sup>5</sup>. This ID will be removed from your response before August 31, 2006 to assure your confidentiality. Entering this code on the survey is entirely optional, and you can fill out the survey without the code if you prefer.

If you would prefer to complete a paper copy of the survey, please contact Mark Imerman at the address, email, or phone number below. Leave your participant identification number if you want a paper copy sent to the same address as this letter. If you want the survey sent to an alternative address, please leave the address desired or a phone number where you can be reached.

Thank you for taking the time to complete this survey. We believe that its results will be very valuable for improving the availability of Registered Nurses and quality health care in Iowa.

Sincerely,

Peter Orazem, University Professor  
Department of Economics  
Iowa State University  
Ames, IA 50011-1070  
[pfo@iastate.edu](mailto:pfo@iastate.edu)  
(515) 294-8656

Mark Imerman, Staff Economist  
Department of Economics  
Iowa State University  
Ames, IA 50011-1070  
[Imerman@iastate.edu](mailto:Imerman@iastate.edu)  
(515) 294-5781

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<sup>4</sup> This project was made possible by grant number 1 D1DHP06382-01-00 from the Bureau of Health Promotions, Health Resources and Services Administration, U.S. Department of Health and Human Services with additional funds provided by the Iowa State University Economics Department.

<sup>5</sup> No federal funds will be used to provide these incentives.

## CONSENT TO PARTICIPATE IN RESEARCH

Title of Study: Nurse Labor Market Analysis

Investigators: Peter Orazem, University Professor of Economics  
pfo@iastate.edu  
(515) 294-8656  
Department of Economics  
Iowa State University  
Ames, Iowa 50011

Mark Imerman, Staff Economist  
imerman@iastate.edu  
(515) 294-5781  
Department of Economics  
Iowa State University  
Ames, Iowa 50011

The survey that you have been asked to participate in is part of a research study. Please take your time in deciding if you would like to participate. Please feel free to contact any of the investigators at any time to ask questions or express concerns. You may exit the survey at any time. Incomplete responses will not be retained for the research dataset.

The purpose of this study is to identify the factors that influence whether Iowa registered nurses opt to renew their licenses. In particular, we want to determine the effect upon this decision of

- Wages
- Benefits and working conditions
- Skill level
- Length of journey to work
- Family environment

It is hoped that the results of this study will inform policies designed to attract and retain Registered Nurses in Iowa and rural areas. You were selected as part of a random sample of licensed or recently licensed (within the last ten years) Registered Nurses from the Iowa Board of Nursing's Registered Nurse License Database. Your participation is completely voluntary.

### DESCRIPTION OF PROCEDURES

If you agree to participate in this study, your participation will last for approximately 10-to-15 minutes. Depending upon the responses received from the entire participating sample, the investigators may follow up with brief telephone inquiries of a small subset of the random sample surveyed here. Your participation will consist of answering a maximum of 36 survey questions (depending upon the survey version you receive). It is the intent of the investigators that you answer questions on the basis of your best recollections or estimates while taking the survey. It is not the intent of the investigators that responses should require you to access personal files or records in order to obtain perfect responses.

## RISKS AND BENEFITS

We know of no foreseeable risks from participating in this study.

If you decide to participate in this study there will be no direct benefit to you. It is hoped that the information gained in this study will benefit society by improving access to skilled health care professionals through a better understanding of the factors that influence the decisions of those professionals to remain active in the health care industry.

## COSTS AND COMPENSATION

You will not have any costs from participating in this study. You will not be directly compensated for participating in this study. Respondents that do provide a participant ID (from your selection letter) when completing the survey will be entered into a drawing for gift cards from Best Buy. Chances being drawn for a gift card will be one-in-one-hundred for participants providing an ID number and completed survey prior to June 1, 2006.

## PARTICIPANT RIGHTS

Your participation in this study is completely voluntary and you may refuse to participate or leave the study at any time. If you decide to not participate in the study, it will not result in any penalty or loss of benefits to which you are otherwise entitled. Incomplete survey responses will not be retained for the research dataset.

## CONFIDENTIALITY

Records identifying participants will be kept confidential to the extent permitted by applicable laws and regulations and will not be made publicly available. However, federal government regulatory agencies and the Institutional Review Board (a committee that reviews and approves human subject research studies) may inspect and/or copy your records for quality assurance and data analysis. These records may contain private information.

To ensure confidentiality to the extent permitted by law, the following measures will be taken. All individuals invited to participate in this survey will be assigned a unique individual identification code. Individuals that provide this identifier on the survey will be entered into a drawing for Best Buy gift cards at the conclusion of the study. Participants can also complete the survey in complete anonymity. All individual identification codes will be stripped from the research data before August 31, 2006. After this point, only anonymous data will be retained. No information from this survey or the subsequent analysis of responses will be released in any way that violates the confidentiality of the participants. If the results are published, your identity will remain confidential.

## QUESTIONS OR PROBLEMS

You are encouraged to ask questions at any time during this study. For further information about the study contact:

Peter Orazem  
pfo@iastate.edu  
(515) 294-8656  
Department of Economics

Iowa State University  
Ames, Iowa 50011

Mark Imerman  
imerman@iastate.edu  
(515) 294-5781  
Department of Economics  
Iowa State University  
Ames, Iowa 50011

If you have any questions about the rights of research subjects or research-related injury, please contact Ginny Austin Eason, IRB Administrator, (515) 294-4566, [austingr@iastate.edu](mailto:austingr@iastate.edu), or Diane Ament, Director, Office of Research Assurances (515) 294-3115, [dament@iastate.edu](mailto:dament@iastate.edu)

#### AGREEMENT TO PARTICIPATE

Circling "AGREE" below indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read this document and that your questions have been satisfactorily answered. This consent will be maintained with the survey responses that you provide. You are free to exit the survey at any time, regardless of your agreement here. Incomplete surveys will not be retained for the research data.

Circle one:

AGREE

DO NOT AGREE TO PARTICIPATE

NURSE SURVEY

1. Please mark the racial category below that most closely describes yourself.

- White
- Black
- American Indian or Alaska native
- Oriental or Asian
- Pacific islander
- Multiracial
- Other

2. Please mark one choice to indicate whether you have an Hispanic ethnicity.

- Hispanic
- Not Hispanic

3. Please indicate the educational level that best describes your basic RN education (your educational level at the time you first received an RN license).

- Hospital-based nursing program diploma
- Associate degree
- Baccalaureate degree
- Masters degree
- Other

4. Please indicate the highest level of education that you have attained to date.

- Hospital-based nursing program diploma
- Associate degree
- Baccalaureate degree in nursing
- Baccalaureate degree in another field
- Masters degree in nursing
- Masters degree in another field
- Doctorate degree in nursing
- Doctorate degree in another field

5. Please indicate your marital status on the list below.

- Single (never married)
- Married
- Widowed

\_\_\_\_\_ Separated and/or divorced

6. TOTAL FAMILY INCOME By selecting one of the income categories from the list below, please indicate the total combined income of all members of this FAMILY during the 2005 calendar year. This includes money from jobs, net income from business, farm, or rent, pensions, dividends, interest, social security payments and any other money income received by members of this FAMILY who are 15 years of age or older.

\_\_\_\_\_ Less than \$15,000  
\_\_\_\_\_ \$15,000 to \$19,999  
\_\_\_\_\_ \$20,000 to \$24,999  
\_\_\_\_\_ \$25,000 to \$29,999  
\_\_\_\_\_ \$30,000 to \$34,999  
\_\_\_\_\_ \$35,000 to \$39,999  
\_\_\_\_\_ \$40,000 to \$49,999  
\_\_\_\_\_ \$50,000 to \$59,999  
\_\_\_\_\_ \$60,000 to \$74,999  
\_\_\_\_\_ \$75,000 to \$99,999  
\_\_\_\_\_ \$100,000 or more

7. Indicate the total number of people that lived in your household at any time during calendar year 2005.

\_\_\_\_\_ Number of People

8. Please indicate the number of dependents (including yourself) that you supported during calendar year 2005. Answer "0" (zero) if you did not support anyone, even yourself.

\_\_\_\_\_ Total number of dependents (including yourself and adults and minors living either at or away from home that you supported)

Of these dependents, how many were:

\_\_\_\_\_ Children five years of age or younger living at Home

\_\_\_\_\_ Children aged 6-18 living at home

9. In each of the categories listed below, please indicate the years of employment experience that you have obtained since attaining the age of 18. Answer "0" (zero) for any category for which you have no employment experience.

\_\_\_\_\_ Registered Nurse (positions that require a valid Registered Nurse License)

\_\_\_\_\_ Nurse-related employment (positions that do not require a valid Registered Nurse License but which make use of training or experience that you have

obtained as a Licensed Registered Nurse)

\_\_\_\_\_ Other (non-nursing-related) employment

10. For how many weeks during calendar year 2005 did you hold more than one job?

\_\_\_\_\_ Did not hold multiple jobs at any time during 2005

\_\_\_\_\_ Held multiple jobs from one (1) to thirteen (13) weeks in 2005

\_\_\_\_\_ Held multiple jobs from fourteen (14) to twenty-six (26) weeks in 2005

\_\_\_\_\_ Held multiple jobs for twenty-seven (27) weeks or more in 2005

11. How many weeks during 2005 were you self-employed, either full or part time? Answer "0" (zero) for either category if you were not self-employed in that category for any weeks during 2005.

\_\_\_\_\_ Self employed, part time

\_\_\_\_\_ Self employed, full time

12. For each of the categories below, please indicate the hours that you worked during a typical week in calendar year 2005 and the number of weeks that you were employed in the category during 2005. Answer "0" (zero) for any category in which you were not employed during a typical week during the year.

\_\_\_\_\_ Typical hours per week employed as a Registered Nurse (positions that require a valid Registered Nurse License)

\_\_\_\_\_ Number of weeks you worked as a Registered Nurse during 2005

\_\_\_\_\_ Typical hours per week employed in nurse-related employment (positions that do not require a valid Registered Nurse License but which make use of training or experience that you have obtained as a Licensed Registered Nurse)

\_\_\_\_\_ Number of weeks you worked in nurse-related employment in 2005

\_\_\_\_\_ Typical hours per week employed in other (non-nursing-related) employment

\_\_\_\_\_ Number of weeks you worked in other employment in 2005

13. PERSONAL EARNINGS FROM EMPLOYMENT Please indicate YOUR individual earnings from personal employment in a job or net income from a wholly owned business during the 2005 calendar year. Do not include income from other nonlabor sources (income from business or farm activities, pensions, social security, dividends, interest, rent, alimony, etc.) or income earned by other members of your family.

- Less than \$5,000
- \$5,000 to \$7,499
- \$7,500 to \$9,999
- \$10,000 to \$12,499
- \$12,500 to \$14,999
- \$15,000 to \$19,999
- \$20,000 to \$24,999
- \$25,000 to \$29,999
- \$30,000 to \$34,999
- \$35,000 to \$39,999
- \$40,000 to \$49,999
- \$50,000 to \$59,999
- \$60,000 to \$74,999
- \$75,000 or more

14. At any time during calendar year 2005, were you or anyone else in your household covered by a health plan provided through a spouse's employment?

- Yes
- No

15. At any time during calendar year 2005, were you or anyone else in your household covered by a health plan PURCHASED DIRECTLY FROM AN INSURANCE COMPANY?

- Yes
- No

16. Select one choice from the list below that best describes the activities you performed for your PRIMARY EMPLOYER in calendar year 2005. "PRIMARY EMPLOYER" refers to the employer that received your largest time commitment (paid work and commuting time) during a typical week.

- Was not employed in 2005  
*IF YOU WERE NOT EMPLOYED IN 2005, SKIP QUESTIONS 17-21.  
BEGIN AGAIN WITH QUESTION 22*
- Registered Nurse (positions that require a valid Registered Nurse License)
- Nurse-related employment (positions that do not require a valid Registered Nurse License but which make use of training or experience that you have obtained as a Licensed Registered Nurse)
- Other (non-nursing-related) employment

17. Indicate on the list below the state in which your PRIMARY EMPLOYER is located.

- Iowa
- Illinois
- Kansas
- Minnesota
- Missouri
- Nebraska
- South Dakota
- Wisconsin
- Other

18. Regarding your PRIMARY EMPLOYER in calendar year 2005

- Indicate your typical WEEKLY hours worked for your primary employer
- Indicate your typical WEEKLY earnings (before payroll deductions and taxes) from this job
- Indicate your typical commuting time (minutes one-way) to this job

19. Are you offered health insurance through your PRIMARY EMPLOYER (or the union representing you, if applicable)?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

If "Yes", do you accept this insurance coverage?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

If "Yes", (you accept this insurance coverage), what other household members covered under the plan?

\_\_\_\_\_ Spouse

\_\_\_\_\_ Children

\_\_\_\_\_ Other dependents

\_\_\_\_\_ No one else is covered under this plan

20. Other than Social Security did your PRIMARY EMPLOYER (or the union representing you, if applicable) have a pension or other type of retirement plan for any of its employees in 2005?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

If "Yes", were you included in that plan?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

21. Other than Social Security did ANY employer that you work for (or the union representing you, if applicable) in 2005 have a pension or other type of retirement plan for any of its employees?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

If "Yes", were you included in that plan?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

22. If you had to accept a position other than one (if any) you hold now, and were constrained to work WITHIN A 10 MINUTE DRIVE (one way) from your residence, what would your WEEKLY earnings (before deductions for benefits and payroll taxes) be in this best alternative job?

\_\_\_\_\_ Expected WEEKLY earnings from alternative local employment

Would this alternative be a nursing position?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

23. If you had to accept a position other than one (if any) you hold now, and were constrained to work WITHIN A 45 MINUTE DRIVE (one way) from your residence, what would your WEEKLY earnings (before deductions for benefits and payroll taxes) be in this best alternative job?

\_\_\_\_\_ Expected WEEKLY earnings from alternative regional employment

Would this alternative be a nursing position?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

24. Do you intend to renew your Iowa Registered Nurse license at your next expiration date?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

\_\_\_\_\_ Don't know

25. At the time of your last license renewal did your position with your PRIMARY EMPLOYER require a valid license to practice as a Registered Nurse in Iowa?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

26. If you do not currently work in a position that requires your Iowa Registered Nurse license, why do you maintain the license (select all that apply)?

\_\_\_\_\_ Intend to return to a position requiring the license at some future date

\_\_\_\_\_ License is not required but is relevant to my nursing-related position

\_\_\_\_\_ Want to maintain my future employment options

\_\_\_\_\_ Will let license expire at next renewal date

\_\_\_\_\_ Other

## CONSENT TO PARTICIPATE IN RESEARCH

Title of Study: Nurse Labor Market Analysis

Investigators: Peter Orazem, University Professor of Economics  
pfo@iastate.edu  
(515) 294-8656  
Department of Economics  
Iowa State University  
Ames, Iowa 50011

Mark Imerman, Staff Economist  
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(515) 294-5781  
Department of Economics  
Iowa State University  
Ames, Iowa 50011

The survey that you have been asked to participate in is part of a research study. Please take your time in deciding if you would like to participate. Please feel free to contact any of the investigators at any time to ask questions or express concerns. You may exit the survey at any time. Incomplete responses will not be retained for the research dataset.

The purpose of this study is to identify the factors that influence whether Iowa registered nurses opt to renew their licenses. In particular, we want to determine the effect upon this decision of

- Wages
- Benefits and working conditions
- Skill level
- Length of journey to work
- Family environment

It is hoped that the results of this study will inform policies designed to attract and retain Registered Nurses in Iowa and rural areas. You were selected as part of a random sample of licensed or recently licensed (within the last ten years) Registered Nurses from the Iowa Board of Nursing's Registered Nurse License Database. Your participation is completely voluntary.

### DESCRIPTION OF PROCEDURES

If you agree to participate in this study, your participation will last for approximately 10-to-15 minutes. Depending upon the responses received from the entire participating sample, the investigators may follow up with brief telephone inquiries of a small subset of the random sample surveyed here. Your participation will consist of answering a maximum of 36 survey questions (depending upon the survey version you receive). It is the intent of the investigators that you answer questions on the basis of your best recollections or estimates while taking the survey. It is not the intent of the investigators that responses should require you to access personal files or records in order to obtain perfect responses.

## RISKS AND BENEFITS

We know of no foreseeable risks from participating in this study.

If you decide to participate in this study there will be no direct benefit to you. It is hoped that the information gained in this study will benefit society by improving access to skilled health care professionals through a better understanding of the factors that influence the decisions of those professionals to remain active in the health care industry.

## COSTS AND COMPENSATION

You will not have any costs from participating in this study. You will not be directly compensated for participating in this study. Respondents that do provide a participant ID (from your selection letter) when completing the survey will be entered into a drawing for gift cards from Best Buy. Chances being drawn for a gift card will be one-in-one-hundred for participants providing an ID number and completed survey prior to June 1, 2006.

## PARTICIPANT RIGHTS

Your participation in this study is completely voluntary and you may refuse to participate or leave the study at any time. If you decide to not participate in the study, it will not result in any penalty or loss of benefits to which you are otherwise entitled. Incomplete survey responses will not be retained for the research dataset.

## CONFIDENTIALITY

Records identifying participants will be kept confidential to the extent permitted by applicable laws and regulations and will not be made publicly available. However, federal government regulatory agencies and the Institutional Review Board (a committee that reviews and approves human subject research studies) may inspect and/or copy your records for quality assurance and data analysis. These records may contain private information.

To ensure confidentiality to the extent permitted by law, the following measures will be taken. All individuals invited to participate in this survey will be assigned a unique individual identification code. Individuals that provide this identifier on the survey will be entered into a drawing for Best Buy gift cards at the conclusion of the study. Participants can also complete the survey in complete anonymity. All individual identification codes will be stripped from the research data before August 31, 2006. After this point, only anonymous data will be retained. No information from this survey or the subsequent analysis of responses will be released in any way that violates the confidentiality of the participants. If the results are published, your identity will remain confidential.

## QUESTIONS OR PROBLEMS

You are encouraged to ask questions at any time during this study. For further information about the study contact:

Peter Orazem  
pfo@iastate.edu  
(515) 294-8656  
Department of Economics  
Iowa State University

Ames, Iowa 50011

Mark Imerman  
imerman@iastate.edu  
(515) 294-5781  
Department of Economics  
Iowa State University  
Ames, Iowa 50011

If you have any questions about the rights of research subjects or research-related injury, please contact Ginny Austin Eason, IRB Administrator, (515) 294-4566, [austingr@iastate.edu](mailto:austingr@iastate.edu), or Diane Ament, Director, Office of Research Assurances (515) 294-3115, [dament@iastate.edu](mailto:dament@iastate.edu)

#### AGREEMENT TO PARTICIPATE

Circling "AGREE" below indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read this document and that your questions have been satisfactorily answered. This consent will be maintained with the survey responses that you provide. You are free to exit the survey at any time, regardless of your agreement here. Incomplete surveys will not be retained for the research data.

Circle one:

AGREE

DO NOT AGREE TO PARTICIPATE

NURSE SURVEY

1. Please mark the racial category below that most closely describes yourself.

- White
- Black
- American Indian or Alaska native
- Oriental or Asian
- Pacific islander
- Multiracial
- Other

2. Please mark one choice to indicate whether you have an Hispanic ethnicity.

- Hispanic
- Not Hispanic

3. Please indicate the educational level that best describes your basic RN education (your educational level at the time you first received an RN license).

- Hospital-based nursing program diploma
- Associate degree
- Baccalaureate degree
- Masters degree
- Other

4. Please indicate the highest level of education that you have attained to date.

- Hospital-based nursing program diploma
- Associate degree
- Baccalaureate degree in nursing
- Baccalaureate degree in another field
- Masters degree in nursing
- Masters degree in another field
- Doctorate degree in nursing
- Doctorate degree in another field

5. Please indicate your marital status on the list below.

- Single (never married)
- Married
- Widowed

\_\_\_\_\_ Separated and/or divorced

6. TOTAL FAMILY INCOME By selecting one of the income categories from the list below, please indicate the total combined income of all members of this FAMILY during the 2005 calendar year. This includes money from jobs, net income from business, farm, or rent, pensions, dividends, interest, social security payments and any other money income received by members of this FAMILY who are 15 years of age or older.

\_\_\_\_\_ Less than \$15,000  
\_\_\_\_\_ \$15,000 to \$19,999  
\_\_\_\_\_ \$20,000 to \$24,999  
\_\_\_\_\_ \$25,000 to \$29,999  
\_\_\_\_\_ \$30,000 to \$34,999  
\_\_\_\_\_ \$35,000 to \$39,999  
\_\_\_\_\_ \$40,000 to \$49,999  
\_\_\_\_\_ \$50,000 to \$59,999  
\_\_\_\_\_ \$60,000 to \$74,999  
\_\_\_\_\_ \$75,000 to \$99,999  
\_\_\_\_\_ \$100,000 or more

7. Indicate the total number of people that lived in your household at any time during calendar year 2005.

\_\_\_\_\_ Number of People

8. Please indicate the number of dependents (including yourself) that you supported during calendar year 2005. Answer "0" (zero) if you did not support anyone, even yourself.

\_\_\_\_\_ Total number of dependents (including yourself and adults and minors living either at or away from home that you supported)

Of these dependents, how many were:

\_\_\_\_\_ Children five years of age or younger living at Home

\_\_\_\_\_ Children aged 6-18 living at home

9. In each of the categories listed below, please indicate the years of employment experience that you have obtained since attaining the age of 18. Answer "0" (zero) for any category for which you have no employment experience.

\_\_\_\_\_ Registered Nurse (positions that require a valid Registered Nurse License)

\_\_\_\_\_ Nurse-related employment (positions that do not require a valid Registered Nurse License but which make use of training or experience that you have

obtained as a Licensed Registered Nurse)

\_\_\_\_\_ Other (non-nursing-related) employment

10. For how many weeks during calendar year 2005 did you hold more than one job?

\_\_\_\_\_ Did not hold multiple jobs at any time during 2005

\_\_\_\_\_ Held multiple jobs from one (1) to thirteen (13) weeks in 2005

\_\_\_\_\_ Held multiple jobs from fourteen (14) to twenty-six (26) weeks in 2005

\_\_\_\_\_ Held multiple jobs for twenty-seven (27) weeks or more in 2005

11. How many weeks during 2005 were you self-employed, either full or part time? Answer "0" (zero) for either category if you were not self-employed in that category for any weeks during 2005.

\_\_\_\_\_ Self employed, part time

\_\_\_\_\_ Self employed, full time

12. For each of the categories below, please indicate the hours that you worked during a typical week in calendar year 2005 and the number of weeks that you were employed in the category during 2005. Answer "0" (zero) for any category in which you were not employed during a typical week during the year.

\_\_\_\_\_ Typical hours per week employed as a Registered Nurse (positions that require a valid Registered Nurse License)

\_\_\_\_\_ Number of weeks you worked as a Registered Nurse during 2005

\_\_\_\_\_ Typical hours per week employed in nurse-related employment (positions that do not require a valid Registered Nurse License but which make use of training or experience that you have obtained as a Licensed Registered Nurse)

\_\_\_\_\_ Number of weeks you worked in nurse-related employment in 2005

\_\_\_\_\_ Typical hours per week employed in other (non-nursing-related) employment

\_\_\_\_\_ Number of weeks you worked in other employment in 2005

13. PERSONAL EARNINGS FROM EMPLOYMENT Please indicate YOUR individual earnings from personal employment in a job or net income from a wholly owned business during the 2005 calendar year. Do not include income from other nonlabor sources (income from business or farm activities, pensions, social security, dividends, interest, rent, alimony, etc.) or income earned by other members of your family.

- Less than \$5,000
- \$5,000 to \$7,499
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- \$35,000 to \$39,999
- \$40,000 to \$49,999
- \$50,000 to \$59,999
- \$60,000 to \$74,999
- \$75,000 or more

14. At any time during calendar year 2005, were you or anyone else in your household covered by a health plan provided through a spouse's employment?

- Yes
- No

15. At any time during calendar year 2005, were you or anyone else in your household covered by a health plan PURCHASED DIRECTLY FROM AN INSURANCE COMPANY?

- Yes
- No

16. Select one choice from the list below that best describes the activities you performed for your PRIMARY EMPLOYER in calendar year 2005. "PRIMARY EMPLOYER" refers to the employer that received your largest time commitment (paid work and commuting time) during a typical week.

- Was not employed in 2005  
(IF YOU WERE NOT EMPLOYED IN 2005, SKIP QUESTIONS 17- 21. BEGIN AGAIN WITH QUESTION 22)
- Registered Nurse (positions that require a valid Registered Nurse License)
- Nurse-related employment (positions that do not require a valid Registered Nurse License but which make use of training or experience that you have obtained as a Licensed Registered Nurse)
- Other (non-nursing-related) employment

17. Indicate on the list below the state in which your PRIMARY EMPLOYER is located.

- Iowa
- Illinois
- Kansas
- Minnesota
- Missouri
- Nebraska
- South Dakota
- Wisconsin
- Other

18. Regarding your PRIMARY EMPLOYER in calendar year 2005

- Indicate your typical WEEKLY hours worked for your primary employer
- Indicate your typical WEEKLY earnings (before payroll deductions and taxes) from this job
- Indicate your typical commuting time (minutes one-way) to this job

19. Are you offered health insurance through your PRIMARY EMPLOYER (or the union representing you, if applicable)?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

If "Yes", do you accept this insurance coverage?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

If "Yes", (you accept this insurance coverage), what other household members covered under the plan?

\_\_\_\_\_ Spouse

\_\_\_\_\_ Children

\_\_\_\_\_ Other dependents

\_\_\_\_\_ No one else is covered under this plan

20. Other than Social Security did your PRIMARY EMPLOYER (or the union representing you, if applicable) have a pension or other type of retirement plan for any of its employees in 2005?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

If "Yes", were you included in that plan?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

21. Other than Social Security did ANY employer that you work for (or the union representing you, if applicable) in 2005 have a pension or other type of retirement plan for any of its employees?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

If "Yes", were you included in that plan?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

22. If you had to accept a position other than one (if any) you hold now, and were constrained to work WITHIN A 10 MINUTE DRIVE (one way) from your residence, what would your WEEKLY earnings (before deductions for benefits and payroll taxes) be in this best alternative job?

\_\_\_\_\_ Expected WEEKLY earnings from alternative local employment

Would this alternative be a nursing position?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

23. If you had to accept a position other than one (if any) you hold now, and were constrained to work WITHIN A 45 MINUTE DRIVE (one way) from your residence, what would your WEEKLY earnings (before deductions for benefits and payroll taxes) be in this best alternative job?

\_\_\_\_\_ Expected WEEKLY earnings from alternative regional employment

Would this alternative be a nursing position?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

24. For your last employment position that required an Iowa Registered Nurse license, please provide the following

\_\_\_\_\_ Last year that you held a position requiring your Iowa Registered Nurse license

\_\_\_\_\_ Typical WEEKLY hours worked in your last position requiring your Iowa Registered Nurse license

\_\_\_\_\_ Typical WEEKLY earnings (before deductions for benefits and payroll taxes) from you last position requiring your Iowa Registered Nurse license

25. Please rank the following factors in order of importance in influencing your decision to exit the nursing profession and not renewing your Iowa Registered Nurse license ("1" for most important, "2" for second most important, "3" for third most important, etc)

- Did not exit nursing. Maintain a valid Registered Nurse License from another state.
- Insufficient earnings
- No health benefits available
- No retirement benefits available
- Distance to potential employers was too large
- Responsibilities at home (children, etc.)
- Desired a change in career
- Other

26. Is there any realistic possibility that you will return to employment that requires a Registered Nurse license if the conditions cited in Question 34 change?

- Yes
- No
- Don't know

27. Please rank the following factors in order of importance in influencing your decision to apply for another Iowa Registered Nurse license in the future ("1" for most important, "2" for second most important, "3" for third most important, etc)

- Increased earning potential
- Better availability or quality of health benefits
- Better availability or quality of retirement benefits
- Reduced distance to potential employers
- Reduced responsibilities at home (children, etc.) or more accessible child/elder care
- Other