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Rural Registered Nurses:
Educational Preparation, Workplace, and Salary

Key findings:

- Rural registered nurses (RNs) were less likely to have a bachelor's degree (BSN) than were urban RNs (46.1% versus 57.9%).

- BSN-prepared nurses were concentrated in the hospital setting with 63.0% of rural BSN nurses and 69.1% of urban BSN nurses reporting this workplace.

- Within the hospital setting, half of rural hospital RNs were associate degree in nursing (ADN) trained (50.8%) versus 38.7% in urban hospitals.

- Rural, ADN-prepared nurses in physicians' offices had the lowest average salary at $37,273 per year, while urban, BSN-prepared nurses in hospitals had the highest average salary at $61,406 per year.

- The salary difference between ADN- and BSN- prepared nurses working in hospitals was higher for rural RNs than for their urban counterparts (16.3% versus 14.4%).

BACKGROUND

Registered nurses may work with an Associate Degree in Nursing (ADN) or with a Bachelor of Science in Nursing (BSN). Research suggests that a higher percentage of BSN nurses in a hospital workforce is associated with improved patient outcomes such as shorter length of hospital stays, reduction in failure to rescue, and lower patient mortality.[1,2] Since 2000, the American Association of Colleges of Nursing has recommended the BSN the minimal preparation needed for practice in health care citing the intricate responsibilities of nursing professionals.[3]

In 2011, an Institute of Medicine (IOM) report, "The Future of Nursing: Focus on Education," called for an increase in the skills and inter-professional capabilities of the nursing workforce.[4] The report set aggressive goals for increasing the educational attainment of the registered nurse (RN) workforce proposing that 80% of all RNs have bachelors-level education by 2020. The Robert Wood Johnson Foundation (RWJF) endorsed this goal[5] as they consider nursing one of the key professions for creating a "culture of health." RWJF provided initial funding for development of the IOM report and subsequent funding to select states for the development of statewide or regional action plans to achieve the IOM goal through the Academic Progression in Nursing Initiative and State Implementation Program.[6]

Reflecting the changing roles of nurses, more than half of nurses surveyed in 2015 reported that they planned to seek additional education in the coming years.[7] This is particularly important in rural areas where care coordination and community health competencies are critical skills in sometimes resource-poor environments. Rural nurses must navigate a broader scope of patient concerns in areas where an increasing proportion of the population is aged 65 and older and facing high rates of diabetes, cardiovascular disease, and mental health disorders.[8]

Although prior work has examined types of nurses across rural and urban communities (e.g., RN versus LPN), a detailed focus on rural RNs by educational status and other characteristics is not available. Using national data from Census data from the 2011-2015 American Community Survey (ACS) Public Use Microdata Sample (PUMS), the following brief looks at the reported education levels and work sites of rural and urban RNs.

FINDINGS

Approximately 40% of the total nursing workforce has an associate degree education making them eligible for RN-to-BSN programs. A higher proportion (53.9%) of the rural nursing workforce had an associate degree when compared to urban nurses (42.1%; See Table A-1).

Across the states, Nevada had the highest proportion of associate degree nurses (65.3%) followed by Alabama at (60.4%). Washington, DC has the lowest proportion of associate degree nurses at 20.9% followed by Hawaii at 21.7%. A full listing is provided in Table A-2.

Figure 1. Proportion of registered nurses with an Associate of Nursing Degree, by state, in quartiles 2011-2015 ACS
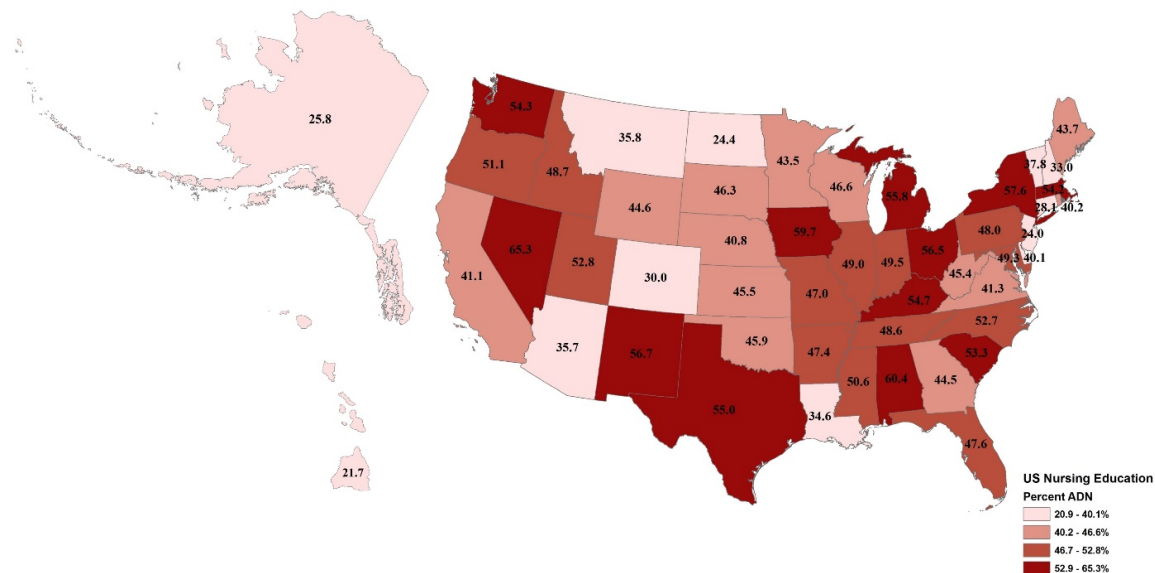
Nurse characteristics

Both rural and urban nurses were predominately female, married, and reported an average work schedule of around 38 hours per week. Rural nurses were slightly older (43.5 years vs 42.9, p<0.001) than their urban peers. Rural nurses were more likely to report their race as white (91.9% rural versus 86.0% urban, p <0.001). Rural nurses had slightly shorter travel times to work (22.9 vs. 24.4

minutes, p<0.001). Average salaries differed with urban nurses making, on average, nearly $4,500 per year more than rural nurses ($55,807 versus $51,361; p <0.001).

Distribution of nurses across settings

The five largest industries employing nurses were hospitals, skilled nursing facilities, outpatient care centers, home health care, and physicians' offices (Table A-3). The relationship between education and worksite is explored from two perspectives. First, we examine the distribution of nurses across worksites: of all nurses, what proportion work in different settings? Next, we examine educational training from the worksite perspective: what proportion of nurses are ADN prepared in each type of workplace?

Distribution of nurses across worksites

Hospitals employed the majority of nurses in both rural and urban settings with 59.1% of all rural nurses and 65.3% of all urban nurses working in hospitals (Table A-3). A higher proportion of rural nurses worked in skilled nursing facilities (SNFs) than was the case for their urban peers (12.7% versus 8.2%; overall workplace differences, p<0.001).

BSN-prepared nurses were particularly concentrated in the hospital setting with 63.0% of rural BSN nurses and 69.1% of urban BSN nurses reporting this workplace. Rural BSN nurses were more likely to report SNF work than were urban BSN nurses (8.8% versus 5.8%; overall workplace differences, p<0.001).

ADN-prepared nurses, while also concentrated in hospital settings (55.8% of all rural and 60.0% of all urban ADN nurses), were more likely to work in SNF settings than were BSN nurses (16.0% of rural and 11.5% of urban ADN nurses).

Percent of nurses who are ADN-prepared, within worksites

The proportion of ADN-prepared nurses within the nursing workforce was higher for rural than urban areas for all worksites except outpatient care centers and physician offices (see Figure 2, below, and Table A-4). The gap is largest for the hospital setting. Approximately half of rural hospital nurses were ADN prepared (50.8%) versus 38.7% in urban hospitals.

Figure 2. Proportion of nurses who are ADN prepared, by work setting and rurality, in percent, 2011-2015 ACS
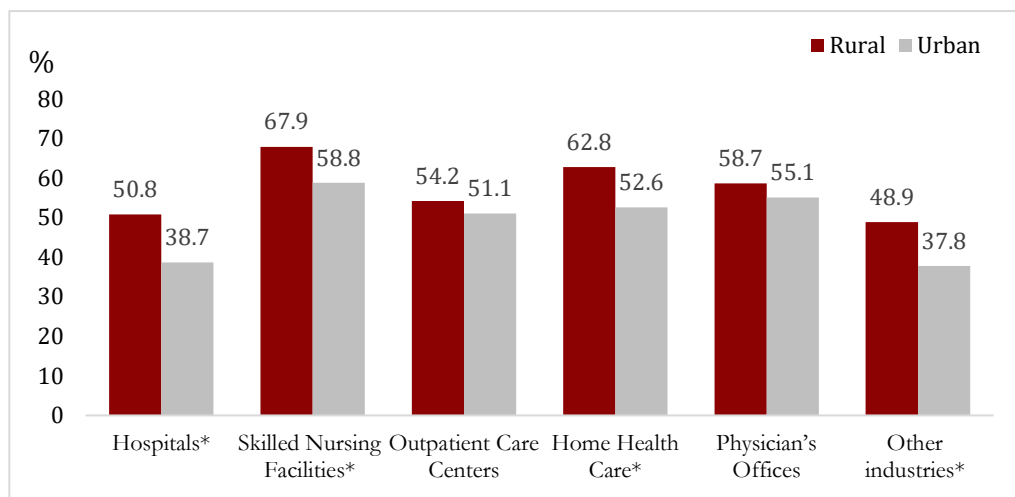
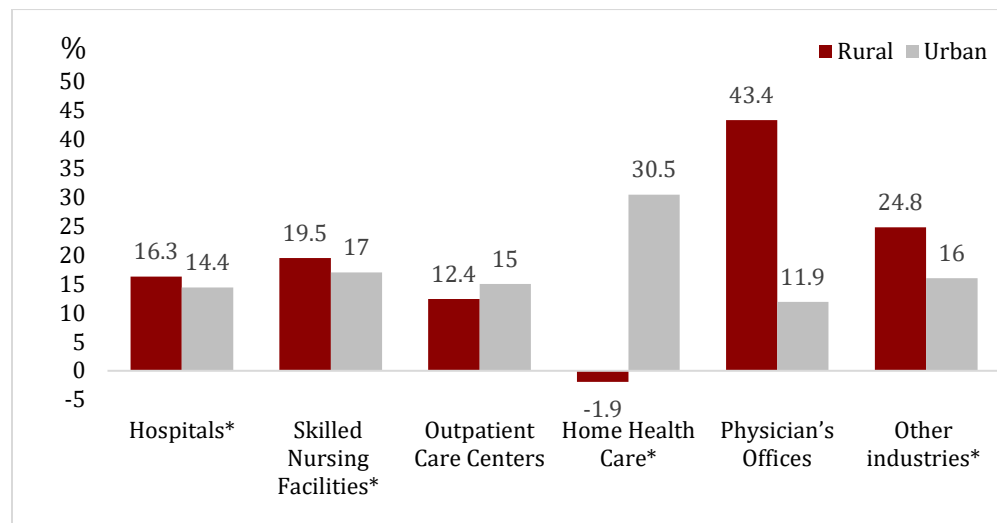*Rural different from urban at 0.003 or better

Salary differences by geography and setting

Across all levels of training, urban registered nurses had significantly higher salaries than rural nurses across almost all worksites with the exceptions of home health care and physicians' offices (Table A-5). Urban, BSN-prepared nurses in hospitals had the highest average salary, $61,406 per year, while rural, ADN-prepared nurses in physician offices had the lowest average salary, $37,273 per year.

When examined among BSN-prepared nurses only, urban versus rural salaries were significantly different in only two settings: hospitals and outpatient care centers. However, among ADN-prepared nurses, urban versus rural salaries were significantly different for hospitals, SNFs, outpatient care centers, and all other industries combined.

The difference in salary between ADN and BSN prepared nurses in the same setting is an indication of the economic value for the individual of pursuing the higher degree. BSN nurses had higher salaries than ADN nurses in all settings except home health care (Table A-5). Thus, a rural ADN-prepared nurse might increase his or her salary 16.3% by attaining a BSN from an average of $50,422 to $58,659, an increase of $8,273, with similar differentials across categories. The percentage by which the salaries of BSN- or higher educationally prepared nurses differ from those of ADN-prepared nurses are shown in Figure 3, below.

Figure 3. Salary differential, in percent, between BSN-prepared or higher nurses and ADN nurses, by work setting and rurality, 2011-2015 ACS

*Rural different from urban at 0.003 or better

CONCLUSIONS

Our findings indicated that rural nurses were less likely to be BSN trained than their urban counterparts. Urban-rural differences in nurse training may be most important for hospitals and for two other settings with large gaps, SNFs and home health care. In each of these contexts, nurses may be required to take immediate action without the ability to consult with a health care provider, particularly in rural areas, making nurse preparation more essential.

Some advocates seek to expand nurse preparation by mandating increased educational requirements. "BSN-in-10" legislation is moving ahead in many states.[9] This policy would require that newly licensed ADN nurses earn a BSN degree within ten years to continue nursing practice. Whether such policies would immediately help rural nurses and communities as well as ADN nurses currently in practice is not certain. At the individual level, increased education entails considerable time and financial costs. RN to BSN students are typically older and have greater work, family, and financial obligations compared to traditional BSN students; many also have prior college debt.[10, 11] Given competing student obligations, attrition rates in RN to BSN programs can be high with some schools reporting up to 40% attrition.[12]

Our findings support previous research indicating that nursing wages differ across practice settings and geography.[13] Rural nurses earned less, on average, than their urban counterparts regardless of nursing education level which may affect the willingness of rural ADN nurses to pursue further education. Nurses report that the principal barrier to enrolling in RN to BSN programs is cost followed by questions about the return on investment/value of a BSN degree.[10,11] For rural RNs in a hospital or SNF setting, the roughly $8,000 salary difference between the ADN- and BSN-prepared nurse may be attractive – if the nurses believe that job openings at the higher salary level are present in their community.[14]

Increasing the educational attainment of ADN-prepared RNs already practicing in rural areas will require system and community supports. Educational opportunities should be emphasized over job threat with financial and/or time supports from local health care systems if economically feasible. Such programs are already beginning to emerge in rural communities.[E.g.,15,16] The results of these programs may help guide future efforts to improve workforce preparation and thus the quality of care in rural healthcare facilities.

APPENDIX

Methods/Technical Notes

We used national Census data from the 2011-2015 American Community Survey (ACS) Public Use Microdata Sample (PUMS) to examine the educational backgrounds and work settings of individuals who reported that they are nurses. Use of five-year interval data was required to ensure that smaller rural areas were included in the tabulations. Our population was ACS respondents who were between the ages of 18-64 and reported RN as their primary occupation.

Our definition for rurality was based on the sample's Public Use Microdata Areas (PUMAs) for each person's place of work. PUMAs are geographic groupings (e.g., groups of counties) created to assure sufficient numbers of observations for respondent confidentiality particularly in rural areas where county populations are small. Rurality was assigned using methods developed by the Economic Research Service, US Department of Agriculture.[17] PUMAs with a majority of the 2010 Census population living in metro areas were defined as urban, and PUMAs with a majority of the population residing in nonmetro areas were defined as rural.

The educational attainment of RNs was categorized as associate's degree or bachelor's degree and higher.

All tabulations used population weights provided in the data as assigned by ACS. Comparisons were made by work location rurality at the national level. We tested significant differences with Chi-square tests for categorical analyses and analysis of variance for comparisons of means for continuous variables. All comparisons were tested at an alpha level of 0.05 or better. Analyses were performed using SAS Version 9.4.

Supporting tables

Table A-1. Demographic Characteristic of the Nursing Workforce

Demographic characteristics Population Weighted Percentages	Rural Nurses Unweighted n=13,369		Urban Nurses Unweighted n=20,735		Chi-square and T-test p-values
	%	SE	%	SE	
Education					<.0001
Associates Degree	53.9	0.6	42.1	0.4	
Bachelor's Degree or Higher	46.1	0.6	57.9	0.4	
Sex					0.0005
Male	8.1	0.3	9.6	0.3	
Female	91.9	0.3	90.4	0.3	
Race					<.0001
Caucasian	91.9	0.4	86.0	0.3	
African American	4.2	0.3	8.0	0.3	
Asian	1.5	0.2	3.4	0.2	
Other	2.5	0.2	2.6	0.2	
Marital Status					<.0001
Married	70.4	0.6	66.5	0.4	
Not Married	29.6	0.6	33.5	0.4	
Census Region					<.0001
Midwest	41.3	0.6	27.8	0.4	
Northeast	10.2	0.3	13.6	0.3	
South	35.6	0.6	45.3	0.4	
West	12.9	0.4	13.3	0.3	
Continuous Variables	**Mean**	**SE**	**Mean**	**SE**	
Age	43.5	0.1	42.9	0.1	<.0001
Salary in Past 12 months	$51,361	396	$55,807	282	<.0001
Usual Hours Worked Per Week	37.8	0.1	38.0	0.1	0.0800
Travel time to work (minutes)	22.9	0.2	24.4	0.1	<.0001

Table A-2. Proportion of nurses who are ADN-prepared, by state and rurality 2011 – 2015 American Community Survey

State	Overall		Rural		Urban	
	%	SE	%	SE	%	SE
Alabama	60.4	2.7	70.2	3.9	54.6	3.4
Alaska	25.8	6.6	60.8	16.3	22.2	7.1
Arizona	35.7	1.5	48.6	5.7	34.8	1.5
Arkansas	47.4	2.4	64.9	4.3	42.2	2.8
California	41.1	2.7	40.1	4.3	41.7	3.4
Colorado	30.0	4.3	30.2	4.3	*	*
Connecticut	28.1	1.5	38.4	7.2	27.6	1.5
District of Columbia	20.9	3.3	*	*	21.1	3.4
Delaware	40.1	5.6	*	*	40.4	5.7
Florida	47.6	2.5	68.5	7.2	45.7	2.7
Georgia	44.5	1.6	56.1	3.0	40.8	1.8
Hawaii	21.7	4.9	11.4	4.3	30.7	7.7
Idaho	48.7	6.1	45.5	7.9	53.3	9.5
Illinois	49.0	1.6	59.6	2.5	42.8	2.1
Indiana	49.5	1.7	53.7	2.9	47.8	2.1
Iowa	59.7	2.1	71.0	2.8	49.5	3.1
Kansas	45.5	2.7	62.4	3.3	30.3	3.8
Kentucky	54.7	2.1	60.9	2.7	48.1	3.0
Louisiana	34.6	1.8	46.0	5.3	33.5	1.9
Maine	43.7	3.8	50.7	4.9	32.4	5.5
Maryland	49.3	3.4	33.6	6.2	54.0	3.9
Massachusetts	54.2	8.2	74.2	14.8	52.0	9.0
Michigan	55.8	1.8	55.0	2.4	56.5	2.6
Minnesota	43.5	2.0	51.6	3.0	38.1	2.6
Mississippi	50.6	2.3	57.2	3.0	42.1	3.5
Missouri	47.0	2.1	54.5	3.0	41.2	2.8
Montana	35.8	4.5	34.5	6.2	37.7	6.6
Nebraska	40.8	3.2	45.3	4.1	31.6	5.2
Nevada	65.3	8.2	67.2	8.2	*	*
New Hampshire	33.0	4.4	36.1	5.0	21.0	9.3
New Jersey	24.0	2.6	25.7	23.1	23.9	2.6
New Mexico	56.7	4.6	61.8	5.5	46.1	8.3
New York	57.6	2.2	58.0	3.5	57.3	2.9
North Carolina	52.7	1.9	59.0	3.3	50.0	2.3
North Dakota	24.4	3.4	30.4	5.6	22.1	4.1
Ohio	56.5	1.8	58.4	2.3	54.0	2.8
Oklahoma	45.9	4.9	47.0	6.1	43.3	8.1
Oregon	51.1	3.5	54.2	4.3	46.7	5.9
Pennsylvania	48.0	1.9	47.3	2.6	48.6	2.8

State	Overall		Rural		Urban	
	%	SE	%	SE	%	SE
Rhode Island	40.2	4.4	*	*	40.7	4.5
South Carolina	53.3	2.6	61.9	4.6	49.4	3.2
South Dakota	46.3	4.5	54.0	5.2	32.0	7.9
Tennessee	48.6	2.1	53.8	3.9	46.4	2.4
Texas	55.0	1.6	54.3	2.6	55.4	2.0
Utah	52.8	5.0	47.8	7.6	55.2	6.3
Vermont	37.8	4.3	44.3	5.5	30.3	6.6
Virginia	41.3	1.9	54.9	4.4	37.9	2.0
Washington	54.3	3.6	56.3	5.7	53.3	4.5
West Virginia	45.4	2.5	53.8	4.5	42.1	2.9
Wisconsin	46.6	1.8	49.4	2.4	44.5	2.5
Wyoming	44.6	4.8	43.9	6.9	45.3	6.6

*Insufficient data

Table A-3. Distribution of Nurses Across Principal Employers, by rurality, 2011 – 2015 American Community Survey

Top 5 Industries of Employment	Rural Nurses		Urban Nurses		p-value
All nurses	**%**	**SE**	**%**	**SE**	**<.0001**
Hospitals	59.1%	0.6	65.3%	0.4	
Skilled Nursing Facilities	12.7%	0.4	8.2%	0.3	
Outpatient Care Centers	5.4%	0.3	5.2%	0.2	
Home Health Care	5.4%	0.3	4.2%	0.2	
Physicians' Offices	3.9%	0.2	4.0%	0.2	
Other Industries	13.6%	0.4	13.1%	0.3	
Total	100%		100%		
BSN-prepared or higher nurses	**%**	**SE**	**%**	**SE**	**<.0001**
Hospitals	63.0%	0.9	69.1%	0.6	
Skilled Nursing Facilities	8.8%	0.5	5.8%	0.3	
Outpatient Care Centers	5.4%	0.4	4.4%	0.2	
Home Health Care	4.3%	0.4	3.5%	0.2	
Physicians' Offices	3.5%	0.4	3.1%	0.2	
Other Industries	15.1%	0.6	14.1%	0.4	
Total	100%		100%		
ADN nurses	**%**	**SE**	**%**	**SE**	**<.0001**
Hospitals	55.8%	0.8	60.0%	0.7	
Skilled Nursing Facilities	16.0%	0.6	11.5%	0.5	
Outpatient Care Centers	5.4%	0.4	6.3%	0.3	
Home Health Care	6.3%	0.4	5.3%	0.3	
Physicians' Offices	4.2%	0.3	5.3%	0.3	
Other Industries	12.4%	0.5	11.7%	0.4	
Total	100%		100%		

Table A-4. Proportion of nursing workforce who are ADN prepared, by workplace and rurality, 2011-2015 American Community Survey

Top 5 Industries of Employment	Rural Employers		Urban Employers		p-value
Proportion of nurses who are ADN prepared	**%**	**SE**	**%**	**SE**	**<.0001**
Hospitals	50.8	0.8	38.7	0.5	<.0001
Skilled Nursing Facilities	67.9	1.7	58.8	1.6	0.0001
Outpatient Care Centers	54.2	2.5	51.1	2.0	0.3373
Home Health Care	62.8	2.5	52.6	2.2	0.0030
Physician's Offices	58.7	3.2	55.1	2.2	0.3451
Other Industries	48.9	1.6	37.8	1.2	<.0001

Table A-5. Average Nurse Salaries Across Principal Employers, by education and rurality, 2011 – 2015 American Community Survey

Top 5 Industries of Employment Population Weighted Percentages	Rural Nurses		Urban Nurses		T-test p-value
All nurses	$	SE	$	SE	
Hospitals	54,472	533	58,419	355	<.0001
Skilled Nursing Facilities	45,135	1192	50,285	1097	<.0001
Outpatient Care Centers	47,575	1153	53,652	996	<.0001
Home Health Care	47,178	1082	48,348	1075	0.3387
Physicians' Offices	43,961	1869	46338	1311	0.1928
Other Industries	48,884	1058	52,428	726	0.0002
Total	51,361	396	55,807	282	<.0001
BSN-prepared or higher nurses					
Hospitals	58,659	906	61,406	516	0.0003
Skilled Nursing Facilities	50,753	3360	54,981	2298	0.1003
Outpatient Care Centers	51,173	1950	57,497	1162	0.0061
Home Health Care	46,610	2040	50,070	1746	0.1044
Physicians' Offices	53,460	4000	53,184	2466	0.9418
Other Industries	54,143	1803	54,621	996	0.7484
Total	56,181	726	59,255	426	<.0001
ADN nurses					
Hospitals	50,422	561	53,691	399	<.0001
Skilled Nursing Facilities	42,483	665	47,002	928	<.0001
Outpatient Care Centers	45,530	1302	49, 976	1158	<.0001
Home Health Care	47,515	1225	46,797	1285	0.6181
Physicians' Offices	37,273	1332	40,752	1142	0.0103
Other Industries	43,398	993	48,821	994	<.0001
Total	47,232	377	51,073	313	<.0001

REFERENCES

1. Aiken LH, Cimiotti JP, Sloane DM, Smith HL, Flynn L, Neff DF. Effects of nurse staffing and nurse education on patient deaths in hospitals with different nurse work environments. *J Nurs Adm.* 2012 Oct;42(10 Suppl):S10-6.

2. Blegen MA, Goode CJ, Park SH, Vaughn T, Spetz J. Baccalaureate education in nursing and patient outcomes. *J Nurs Adm.* 2013 Feb;43(2):89-94.

3. American Association of Colleges of Nursing. "The Baccalaureate Degree in Nursing as Minimal Preparation for Professional Practice." Available at https://www.aacnnursing.org/News-Information/Position-Statements-White-Papers/Bacc-Degree-Prep

4. IOM (Institute of Medicine). 2011. *The Future of Nursing: Leading Change, Advancing Health.* Washington, DC: The National Academies Press.

5. Robert Wood Johnson Foundation, "Campaign for Action," available at https://campaignforaction.org/. Accessed May 30, 2017.

6. Robert Wood Johnson Foundation (2012, March 21). Robert Wood Johnson Foundation Launches Initiative to Support Academic Progression in Nursing. Retrieved from http://www.rwjf.org/en/library/articles-and-news/2012/03/robert-wood-johnson-foundation-launches-initiative-to-support-ac.html

7. AMN Healthcare, Inc. *2015 Survey of Registered Nurses: Viewpoints on Retirement, Education and Emerging Roles.* AMN Healthcare Inc, San Diego, CA

8. Rural Health Information Hub, "Rural Health Disparities." Available at https://www.ruralhealthinfo.org/topics/rural-health-disparities.

9. Jones-Schenk, J. (2017). Co-creating a movement. *The Journal of Continuing Education in Nursing, 48*(10), 442-444

10. Spetz, J., & Bates, T. (2013). Is a baccalaureate in nursing worth it? The return to education, 2000-2008. *HSR: Health Services Research, 48*(6), 1859-1878.

11. Duffy, T., Friesen, M, A., Speroni, K.G., Swengros, D., Shanks, L.A., Waiter, P.A., & Sheridan, M. J. (2014). BSN completion barriers, challenges, incentives, and strategies. *J Nursing Administration. 44.* 232-6.

12. Jones-Schenk J, Leafman J, Wallace L, Allen P. Addressing the Cost, Value, And Student Debt in Nursing Education. *Nurs Econ.* 2017 Jan-Feb;35(1):7-13, 29.

13. Skillman SM, Palazzo L, Keepnews D, Hart LG. Characteristics of registered nurses in rural versus urban areas: implications for strategies to alleviate nursing shortages in the United States. J Rural Health. 2006 Spring;22(2):151-7.

14. Girard SA, Hoeksel R, Vandermause R, Eddy L. Experiences of RNs Who Voluntarily Withdraw From Their RN-to-BSN Program. J Nurs Educ. 2017 May 1;56(5):260-265.

15. Anderson J, Wells K, Mather C, Burman ME. ReNEW: Wyoming's Answer to Academic Progression in Nursing. *Nursing Education Perspectives,* 2017;38(5):E18-E22.

16. Hawkins, J., Wiles, L.L., Karlowicz, K., Tufts, K.A. (2018). Educational model to increase the number and diversity of RN to BSN graduates from a resource-limited rural community. *Nurse Educator, 43*(4), 206-209.

17. Hertz T. Identifying the Metro-Nonmetro Status of Public Use Microdata Areas. 2016. available at https://www.ers.usda.gov/topics/rural-economy-population/rural-classifications/data-for-rural-analysis/ Accessed May 30, 2017.