

What Happened to the Shortage of Registered Nurses: The Arizona Experience 2008-2012

William G. Johnson

Professor, Biomedical Informatics

Gevork Harootunian

Statistical Programmer

December 2012

The authors gratefully acknowledge the cooperation of the Arizona Board of Nursing with special thanks to Joey Ridenour, Executive Director and Pamela Randolph, Associate Director of Education and Evidence Based Regulation. Their assistance was essential to the completion of this project.

This project was sponsored by the Arizona Hospital and Healthcare Association. LeAnn Swanson, Vice President of Education & Quality Services was a most helpful project officer.

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Appendix A: RN Renewal Form 1

Executive Summary

A shortage of registered nurses has persisted for several decades in the United States and in Arizona. In 2008, the ratio of registered nurses to 100,000 population was significantly below national averages, a condition that had persisted for many years. A report, commissioned by the Arizona Health and Hospitals Association (AZHHA) estimated that strenuous efforts to increase nursing school enrollments and other initiatives might succeed in reaching the national average RN to population ratio (825) by the year 2017 (Johnson, Wilson, et al. 2009).

The predictions did not include the effects of the economic recession that began in 2007-2008. While employment in most occupations drops during recessions the supply of Arizona registered nurses increased in every subsequent year with the exception of 2007-2008. The 2017 target ratio of 825 registered nurses per 100,000 population was reached in 2010 and continues to increase.

The elimination of the shortage of RNs during a recession occurred nationally as well as in Arizona, but the timing was slightly different. The largest increase in hospital employment of registered nurses in the US in 40 years occurred between 2007-2008. (Wood 2011) (Staiger, Auerbach and Buerhaus 2012). One important difference between Arizona and the US as a whole was that Arizona, which had been one of the fastest growing of the States, suffered a drastic decline in population growth beginning in 2008-2009. Furthermore, the population declined in absolute terms between 2009-2010 and growth rates in subsequent years are low. Between 2007 and 2011 the RN workforce increased, respectively by 4.5%, 3.5% and 2.7%. In absolute terms the number of RNs employed in nursing jobs, increased from 48,300 in 2008 to 54,100 in 2011.

This report explores the changes in the demand for RNs and changes in the labor supply of registered nurses in Arizona from 2007-2012. The growth in the RN workforce in Arizona is the result of several sometimes conflicting influences. The influences include:

- An increased percentage of RNs remaining in the labor force beyond ages of eligibility for retirement pensions.(+)
- A shift among employed RNs from part time to full time work (an increase in the supply of nursing services but a reduction, all else equal, in the number of employed RNs (-)
- Re-entry into the nursing profession of RNs with expired licenses (+)

- Above average proportion of RNs who did not renew licenses 2007-2008) (-) with lower proportions in subsequent years (-)
- “Added worker effect” licensed but inactive RNs returning to work because members of their households lost their jobs (+)
- Reduction in demand for health care from persons who lost health insurance coverage because of unemployment or shrinkage in AHCCCS coverage (-)
- Increased demand for hospital based outpatient care (ED etc.) rather than primary care among newly uninsured persons (+)

The attainment of national average ratios of RNs to population in 2010 resulted from the increase in the size of the RN workforce and decreased population growth.

What is the most likely pattern of employment among RNs in Arizona? First, population growth is once more positive and slightly increasing but the rate of increase in the RN labor force in 2012 is one of the highest rates in recent years. The ratios of RNs to population levels exceed conventional targets for an adequate supply of RNs and first time applications have not slowed. Taken together, these facts suggest the possibility of a surplus in RNs in the near future.

Part I. Introduction

Background

The commonly held belief among hospital systems, nursing schools and other interested parties in the 2000's was that there was a very large shortage of registered nurses in the United States and that it would persist. The national nursing shortage was initially estimated to reach over 800,000 by 2020 (Auerbach, Buerhaus and Staiger 2007). These estimates assumed that future cohorts of nurses would follow the same career paths as the existing workforce, entering nursing school shortly after high school graduation. It was also assumed that the proportion of high school graduates entering nursing would decline over time, as had been the case. The projected declines were attributed to competing employment opportunities (notably for women) (Buerhaus, Donelan, et al. 2006; Hassmiller and Cozine 2006), lack of encouragement from high school counselors (Brewer, et al. 2006), and reductions in sex discrimination in the labor force as a whole (Suganthi 2007).

The demographics of nursing school applicants began to change in the late 1990s with an influx of people who selected nursing as a second career (F. Mennick 2007). It was also speculated that the tragedy of 9/11 induced many to seek careers in helping professions (Auerbach, Buerhaus and Staiger 2007). Whatever the reasons, nursing school enrollments have substantially increased since 2000. Although the increase in enrollments increased supply, the national nursing shortage was estimated to equal 340,000 RNs by 2020 (Auerbach, Buerhaus and Staiger 2007).

The nursing shortage would be intensified, it was believed, by the increasing needs for nursing care among aging members of the baby boom generation (Thompson, et al. 2001) and a wave of retirement among nurses. The average age for an RN employed in a hospital in the U.S. was 48 years, up from an average of 39 years in 2004 (Buerhaus, Donelan, et al. 2007). A 2006 survey conducted by the American Association of Colleges of Nursing found that 55% of nurses surveyed intend to retire between 2011 and 2020 (American Association of Colleges of Nursing 2012). The effect of retirements was expected to be intensified by a shrinking pool of potential replacements in the U.S. The 44 million Generation Xers (born between 1965 and 1980) are the smallest entry-level workforce since the 1930s (Cooper 2003). It was estimated that the number

of entrants into the nursing workforce would be insufficient to replace departures by 2015 (Hudson 2007).

The national opinion was strongly echoed in Arizona. The ratio of registered nurses to 100,000 persons in the population was below national averages, a condition that had persisted for many years.

A number of initiatives were launched to increase the number of high school students applying to nursing schools. One such program, "*Roadways to Healthcare Careers*", focused on developing the pipeline of future health care workers by engaging and encouraging students, beginning at the junior high age, to pursue careers in health care (Mercy Gilbert Medical Center 2012). The program also provided financial support to members of the health care workforce to pursue higher degrees, hoping to address the severe shortage in qualified health care educators. The program was successful but the impact was muted by the lack of capacity in nursing schools. At one point more than 2,000 qualified applicants in nursing programs were turned away each year due to faculty shortages and deficiencies in clinical space.

Nursing school students would not, of course, enter the RN workforce until 2-4 years after entry. Thus, the effect of the expanded student enrollments that began in 2008, for example, would not be felt until 2010 to 2012.

In 2007, the Arizona Hospital and Healthcare Association (AzHHA) sponsored a project to estimate the number of registered nurses that would have to be added to the Arizona workforce to reach the national average of 825 registered nurses per 100,000 population by the year 2017. The study, *The Arizona Health Care Workforce*, published by CHiR in 2009, used 2008 data to estimate that more than 48,000 registered nurses would be needed to reach the desired ratio by 2017 (Johnson, et al. 2009). The projections were based on historical patterns of attrition, retirement, additions of newly graduated nurses to the workforce and the then current population projections. It was assumed that approximately 80% of RNs would work in nursing jobs based on national averages.

The projection is described in Table 1.

Table 1. Net Changes in the Number of RNs Employed in Nursing to Reach 2017 Target

<i>Year</i>	<i>Attrition at 3.3% (000s)</i>	<i>Actual Net Change (000s)</i>	<i>Estimated Employed New Licenses (000s)</i>	<i>Total (000s)</i>	<i>@ 825 Ratio (000s)</i>
2004				39.14	47.36
2005	<i>-1.29</i>	+1.35	+2.6	40.49	49.00
2006	<i>-1.34</i>	0.95	+2.3	41.44	50.15
2007	<i>-1.37</i>	+3.5	+4.9	44.90	51.30
2008	<i>-1.80</i>	+1.3	+3.1	46.20	52.45
2009	<i>1.52</i>	+2.1	+3.6	48.30	53.60
2010	<i>-2.70</i>	+2.1	+4.8	50.40	54.76
2011	<i>-2.82</i>	+2.1	+4.9	52.50	56.17
2012	<i>-2.94</i>	+2.1	+5.0	54.60	57.59
2013	<i>-3.06</i>	+2.1	+5.2	56.70	59.00
2014	<i>-3.17</i>	+2.1	+5.3	58.80	60.42
2015	<i>-3.29</i>	+5.38	+5.4	60.90	61.83
2016	<i>-3.41</i>	+5.50	+5.5	63.00	63.42
2017	<i>-3.53</i>	+5.62	+5.6	65.10	65.01
Total 2009-2017	<i>-26.4</i>	+48.9	75.3		

Notes: Estimated numbers are in italics.

The 2017 target was reached in 2010. This report explores the reasons for the abrupt change in the ratio of RNs to population.

The factors that changed the projected estimates of the supply of RNs included several sometimes conflicting influences.

The influences include:

- A rapid decline in population growth in Arizona.
- An increased percentage of RNs remaining in the labor force beyond ages of eligibility for retirement pensions.(+)
- A shift among employed RNs from part time to full time work (an increase in the supply of nursing services but a reduction, all else equal, in the number of employed RNs) (-)
- Re-entry into the nursing profession of RNs with expired licenses (+)
- Above average proportion of RNs who did not renew licenses 2007-2008) (-) with lower proportions in subsequent years (-)
- “Added worker effect” licensed but inactive RNs returning to work because members of their households lost their jobs (+)
- Reduction in demand for health care from persons who lost health insurance coverage because of unemployment or shrinkage in AHCCCS coverage (-)
- Increased demand for hospital based outpatient care (ED etc.) rather than primary care among newly uninsured persons (+)

The attainment of national average ratios of RNs to population in 2010 resulted from the increase in the size of the RN workforce and decreased population growth

The net effect of the influences on demand for and supply of nurses depends on the relative size of the decreases in demand and the increases in the supply of nurses. An understanding of those differences requires some background on the measures used to measure the supply of labor. One outcome of the previous study was the collection of more specific measures of the labor force status of registered nurses by the Arizona Board of Nursing (Johnson, et al. 2009). The new measures and their underlying concepts are described next.

Labor Force Concepts

Conventional Workforce Measures

Our results include the ratio of nurses to population, but we focus on more direct measures of the supply of nurses and the potential responses of supply to reductions in the demand for nurses. The measures of the civilian workforce include:

- **Labor Force Participation:** Persons who are employed or actively seeking work. The percentage of persons in a state, for example, who belong to the civilian labor force is known as the “labor force participation rate.” Persons who are not seeking work for wages are not included in the civilian workforce and are defined as not in the labor force (NILF).
- **Unemployed:** Persons who are not employed, but actively seeking work for wages. Unemployment rates are calculated based on the number of persons who are members of the civilian labor force.
- **Working for Wages:** Persons employed in paid, not volunteer, positions. Work can be full time or part time; permanent or temporary.

In 2008, we developed a question on employment status of nurses with the cooperation of the Arizona Board of Nursing (AZBON). The question includes standard labor force categories plus some information specific to nurses. The question is described in Table 2.

Table 2. Labor Force Status Survey Question (RNs Renewing Licenses)

Question 10: Check one box that best describes your current employment status.
• Actively employed in a paid position in healthcare but not in nursing
• Actively employed in a paid position in nursing
• Actively employed, but not in nursing or healthcare
• Retired/Disabled/No plans to return to work
• Unemployed and seeking work as a nurse
• Unemployed and seeking work outside of nursing
• Unemployed but not seeking employment of any type
• Working in nursing but only as a volunteer

Note: Any position that requires an active nursing license is considered to be a position in nursing. Direct patient care is not a requirement.

An adequate picture of workforce trends requires considering all of the measures described in Table 2. It is well known, for example, that during the downward phase of recessions, unemployment rates understate the true size of unemployment because unemployed workers become frustrated with seeking work and drop out of the labor force.(the “discouraged worker effect”). The drop-outs reduce the number of labor force participants, which is the denominator

used to calculate unemployment rates. Thus, exits from the labor force, all else equal, reduce calculated unemployment rates. As economic activity recovers, previously discouraged workers re-enter the labor force, limiting reductions in the measured unemployment rate, understating the true rate of recovery. Another recession related labor force phenomenon is that individuals who were not working re-enter the labor force to offset reductions in household income caused by job losses among other household members (the “added worker effect”).

The measures in Table 2 provide a better understanding of potential responses by nurses to decreases in demands for their services. There could, for example, be an increase in the percentage of nurses working in jobs that are outside of healthcare or within healthcare, but in positions that do not require a nursing license.

The supply of nursing services can also vary among persons employed in nursing with variations in hours worked. One potential response to a recession that may be especially important for nurses is the possibility that employers replace part time workers with full time workers to reduce administrative expenses and create a more stable workforce.

Hours Worked

Many nurses traditionally work part-time. Should employers decide to limit part time work and rely instead on full time workers, the number of nurses employed would drop even though the effective supply of nursing services was unchanged. Our survey captures information on full and part time work by measuring *hours worked per week*, *weeks worked per month* and *months worked per year*.

It is usual in workforce studies to control for variations between full and part time workers by estimating full time equivalents. A full time equivalent, or FTE is typically calculated as the number of total hours worked divided by the number of compensable hours in a work year considered to be full time work for an occupation. An FTE for employees who work 40 hours per week year-round, with a paid two week vacation, would, for example, equal 2,080 hours.

Many health care organizations define a full time employee as one who works 36 hours/week or more, year-round (given 12 hour shifts are common). We assume that an average vacation is two weeks. A person who works 36 hours per week , year round, for example, works 1,800 hours per year.

Our survey questions are asked in terms of intervals (e.g., 1-12 hours, 13-23 hours, etc.) to avoid recall error for hours worked in the previous twelve months. This approximation limits

total hours worked for an RN working four weeks per month, year round to less than 1,800 hours unless he or she works more than 41 hours per week. Therefore, we adopt a total hours worked equal to 1,770 hours per year as equivalent to full time employment.

Ratio Measures

The ratio of nurses employed in nursing to population attempts to measure the adequacy of supply by using population size as a proxy for the demand for health care. The reliance on national average ratios of RNs to population offers the advantage of a common standard of interstate comparisons but the advantage comes at the cost of disguising important interstate differences in the demand for RNs.

The failure to measure interstate differences in population characteristics is especially important for Arizona because its population is so different than the populations of most other states. Arizona has a much higher proportion of Hispanic or Latino citizens than most states, a much lower proportion of its population is Black or African American, and the state is home to the largest American Indian population in the United States. A very large segment (approximately one-sixth) of the population of Arizona qualifies for the state Medicaid program. The ratio measures do not reflect any of these and other differences in the needs of a population for health care, thereby limiting the value of interstate comparisons.

The national average is also subject to substantial variability in its components, In March, 2004, for example, the national average ratio of RNs per 100,000 population was 825 but the District of Columbia had over 2,000 RNs per 100,000, and California reported the lowest ratio at 589 per 100,000 population.(Health Resources and Services Administration 2006).

In 2007, AzHHA set the national average ratio of 825 RNs per 100,000 population as one of the targets for the RN workforce (Ellis 2008). The national average subsequently increased to approximately 841.

Another problem with ratio measures is that they do not convert the total number of health care professionals into the hours of service supplied, nor the extent to which the services are for patient care or for activities such as clinical research. We can make these adjustments for Arizona, but comparable national data are not available.

Part II. Data

CHiR has a long history of collecting and analyzing data on the Arizona physician workforce dating back to the early 1990s. The data collection process adds survey questions to license applications. First time applicants are asked to respond to different survey questions than physicians who are renewing existing licenses. Physician specific information from the survey questions is merged with the information collected for licensing to create individual physician records. The data include demographic information on every physician licensed in Arizona along with specialty, board certification, office location, practice changes, retirement status, hours worked, medical school, date of graduation from medical school, and graduate training experiences (Johnson, Rimsza, et al. 2005; Rimsza, et al. 2006). The survey questions vary with changing research and policy interests.

The approach used to survey physicians was applied to nurses and pharmacists for the first time in 2007. Constraints on the 2007 AZBON data limited information on the citizenship of RNs, the percentage of RNs working in providers' offices, the percentage of RNs in direct patient care, and the extent to which employed RNs worked in part-time or full-time positions. The ability to distinguish between RNs working in Arizona or in other locations was also limited. The limitations were resolved through a coordinated effort between AzHHA, CHiR, and the Arizona State Board of Nursing (ABON). The new data collection protocols were first applied in the 2008 renewal cycle.

Registered Nurses in Arizona renew their licenses every four years. Information on employment was collected for the first time from approximately one-fourth of the registered nurses in each of the years 2008-2012. The nurses who renewed their applications in any one year are a natural sample of the total set of registered nurses with active Arizona licenses for the year in question. The renewals for the period 2008-2011 include, therefore, one complete cohort of renewals. The data for 2012 are the first year of the next four year cycle, providing the opportunity to determine if there is a change in the trends.

We measure changes in the supply of RNs as the differences between the number of registered nurses with active licenses and Arizona addresses on December 31st in each year. The year-to-year differences in the number of RNs employed in nursing can be analyzed as the net effect of attrition and new entrants. Attrition is measured as the year-to-year difference between the numbers of nurses with active licenses and the number of first time applicants.

The data are further stratified to measure the distribution of nurses among the different categories of participation, employment and unemployment. The employment data are not collected for first time applicants since their employment status is likely to be temporary at the time of their application for a license.

The number of respondents to the survey questions varies among the different questions. In each year, we calculate the distribution of nurses among the different responses for each question to derive the percentage of nurses in each category. Then the percentages are applied to the total number of renewals to weight the answers to represent the total number of renewals.

The data used in this report are restricted to RNs with Arizona Licenses who also reside in Arizona. The AZBON reports are not restricted to Arizona residents and, therefore, include a larger number of nurses.

Part III. RESULTS

We cannot directly measure changes in the demand for healthcare or the derived demand for registered nurses. Our measures are limited to characteristics that are important influences on demand for health care. The most important influences on the demand for health care in a State include the size and characteristics of the population. All else equal, demand for health care will be higher the older a population and the greater the proportion of residents with health insurance. As unemployment increases, household incomes decline and many unemployed workers lose their job related health insurance. Reductions in job related health insurance are partially offset, however, by the increased number of unemployed workers newly eligible for Medicaid because of their income losses.

Changes in coverage by either public programs (Medicaid) or private health insurers have a direct and immediate effect on demand for health care. Reductions in coverage can also shift the locus of care as newly uninsured persons seek care through hospital emergency departments of hospitals rather than outpatient primary care. Thus, reductions in insurance coverage and shifts in the locus of care can have different impacts on the demand for registered nurses.

The Arizona Labor Market

The proximate cause of the recession that began in 2007-2008 was financial improprieties associated with the residential mortgage market and its spillover to broader financial markets. Arizona was severely impacted by the recession because of the great importance of the home building industry in the State. The importance of homebuilding in Arizona was due to above average rates of population growth, strengthened by unduly easy financing of residential mortgages.

As indicated in Figure 1, the average statewide unemployment rate increased from 3.7% in 2007 to 6% in 2008, an increase of 62%. The unemployment rate continued to increase in 2009 and 2010, reaching a peak of 10.5% in 2010.

The labor force participation rate in Arizona was nearly constant from 2007-2010 but dropped in 2011. The reductions in labor force participation rates reflect, in part, the situations of persons

with long term unemployment who are no longer counted as participants when they are no longer eligible for state/federal unemployment benefit payments.

Thus, the reduction in the unemployment rate between 2010-2011 is attributable to a reduction in the labor force participation rate as well as some increase in the number of persons employed.

Preliminary estimates for 2012 show a further reduction in unemployment rates. The decline was partially due to a drop in labor force participation rates and the addition of approximately 58,000 jobs between September 2011 and September 2012.

http://www.bls.gov/news.release/archives/laus_07202012.pdf

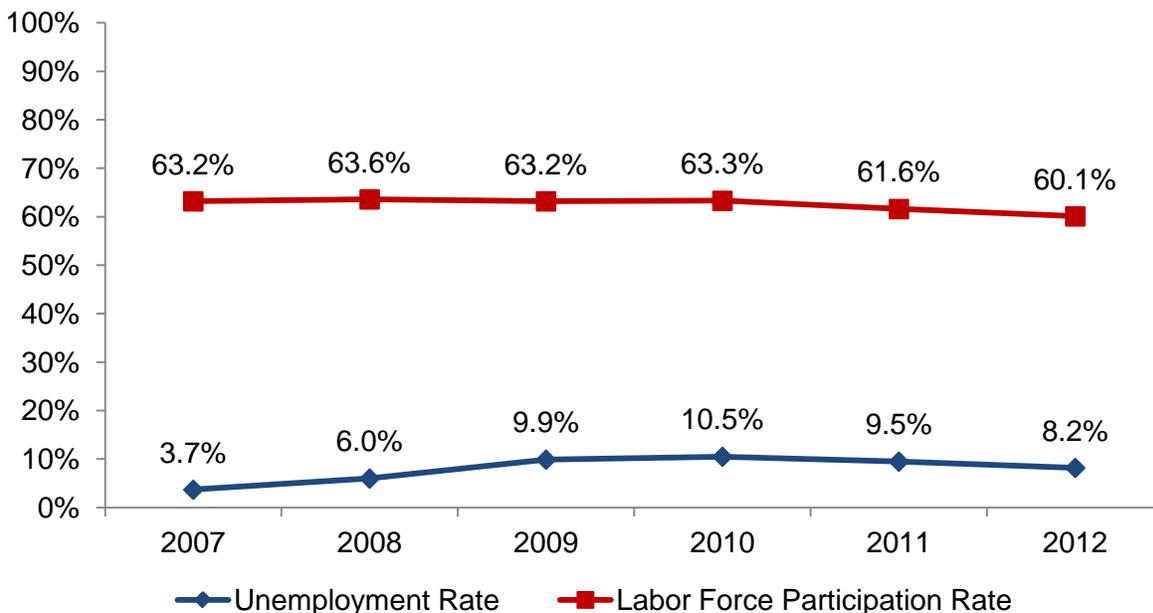
The increases in unemployment rates with nearly constant labor force participation rates for the years 2007-2010 and the decreasing but still high unemployment rates in subsequent years suggest that the effects of unemployment on the demand for health care peaked in 2010 and improved slightly in 2011-2012. Thus, the renewal cycle 2008-2011 encompasses the years in which the recessionary decline in overall employment in Arizona was at a maximum.

Table 3. Unemployment & Labor Force Participation Rates, Arizona 2007-2012

	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012 (Sept)</i>
Unemployment Rate*	3.7%	6.0%	9.9%	10.5%	9.5%	8.2%
Labor Force Participation Rate**	63.2%	63.6%	63.2%	63.3%	61.6%	60.1%

Source: *www.bls.gov/LAU; **<http://www.bls.gov/lau/rdscnp16.htm#data>

Figure 1. Unemployment & Labor Force Participation Rates, Arizona 2007-2012



Source: *www.bls.gov/LAU; **<http://www.bls.gov/lau/rdscnp16.htm#data>

Population Growth

Arizona was one of the fastest growing states in the United States in the years prior to the economic recession. Much of the economic activity in the State and the financial support for health care and health care insurance depended on the continuation of those growth rates.

Table 4. Population Growth 2007-2012

<i>Year Intervals</i>	<i>Population (000's)</i>	<i>% Change</i>
2006-2007	6,339	2.81%
2007-2008	6,500	2.31%
2008-2009	6,596	1.48%
2009-2010	6,392	-3.09%
2010-2011	6,483	1.40%
2011-2012	6553	1.10%

Source: <http://www.census.gov/popest/data/historical/2000s/index.html>.

As indicated in Table 4 and Figure 2, the rate of population growth reached a maximum in 2007, declined slightly in 2008 and dropped sharply thereafter. The most recent data (2012) indicate a further slowing in population growth.

Figure 2. Arizona Population 2006-2012

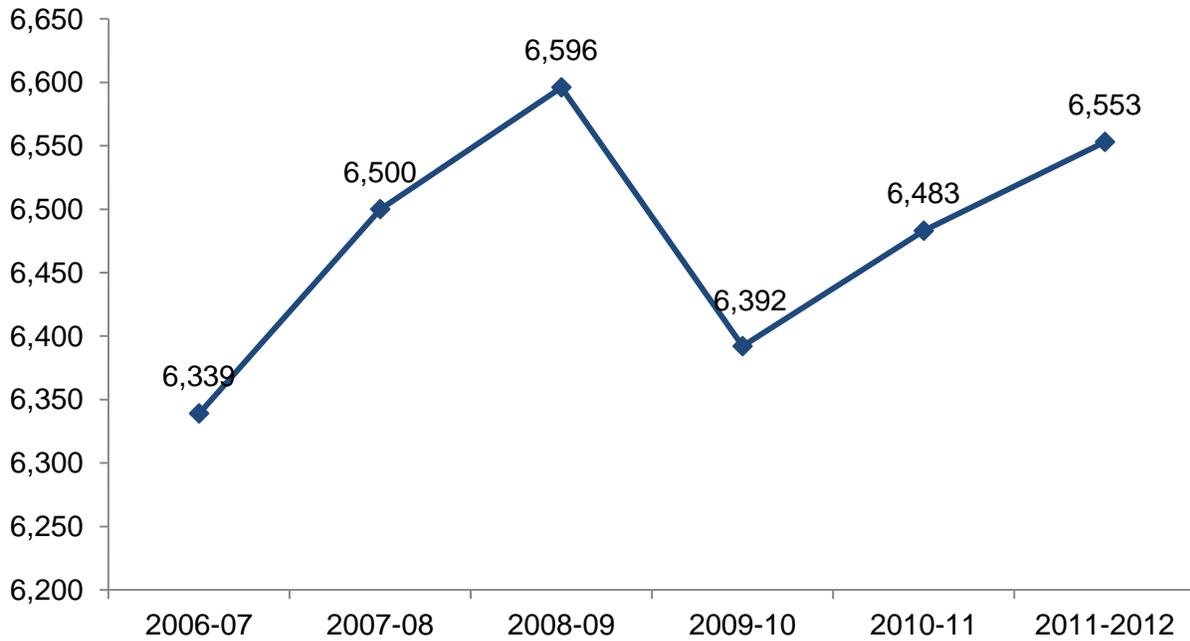
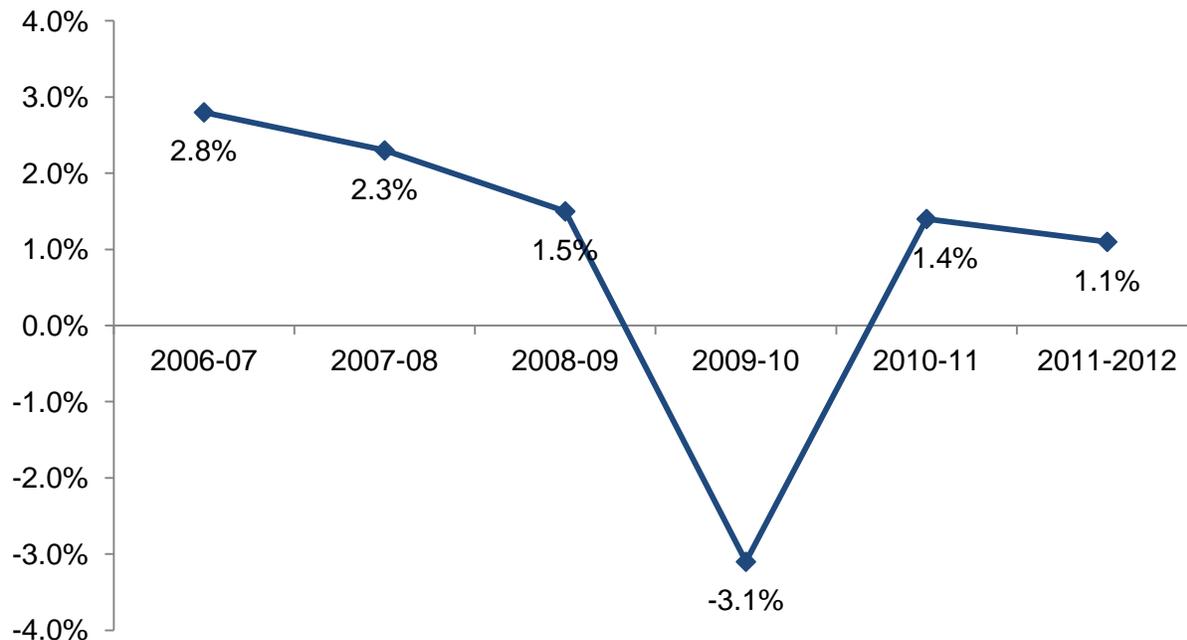


Figure 3. Percent Change in Arizona Population 2006-2012



Population growth slowed as the availability of jobs declined. The decline was magnified by the effects of SB1070, the controversial legislation regarding the status and treatment of undocumented residents, most of whom were from Mexico.

We have no direct measure of the impact of slowing population growth on the demand for health care but recognize that, all else equal, declines in population size reduce aggregate demand for health care. Declines in population growth and declines in the population also affect the ratio measures of the adequacy of nursing services. The decline in population, as in 2009-2010, for example, would have increased the ratio of RNs to population even if the RN workforce had not changed. In fact, the RN workforce increased in every year after 2008.

The Impact on Hospitals

Hospitals are the single largest employer of RNs. A series of events that substantially reduced hospital revenues included a reduction in philanthropic contributions to not-for-profit hospitals and several reductions in Medicaid payments and patient coverage. Fifty-four percent of hospitals reported a decrease in philanthropic support for the nine months ending September 30, 2008. At the same time, hospital revenues and operating margins were further reduced by a significant decline in the utilization of elective medical procedures. Sixty-one percent of reporting

hospitals reported they have experienced a decline in elective procedures, which typically are covered by private insurance payers. (Arizona Hospital and Healthcare Association 2009)

The AHCCCS actions included an October 1, 2008 hospital payment rate freeze. As a result, fifty-nine percent of hospitals reported shifting costs to commercial health plans (Arizona Hospital and Healthcare Association 2009).

Governor Jan Brewer signed into effect an enrollment freeze on KidsCare (Arizona's SCHIP) on December 19, 2010, and no new applications were accepted to the program as of January 1, 2011 (The Center of Health Information & Research 2010). The freeze decreased enrollment in KidsCare from 46,886 children in December, 2009 to 17,642 children in July, 2011 (Heberlein, Guyer and Hope 2011).

During this period, 44% of the children formerly enrolled in KidsCare were shifted to AHCCCS due to a decline in family income (Heberlein, Guyer and Hope 2011). New enrollees in the program were put on a waiting list. As of July, 2011, approximately 108,000 children were on the waiting list for KidsCare (Heberlein, Guyer and Hope 2011).

In January, 2011, AHCCCS insurance coverage was also eliminated for nearly 289,450 adults and children who had been covered under Proposition 204. (ASU Center for Health Information & Research 2010)

The reductions in health insurance coverage impacted all types of health care providers, ranging from primary care physicians to community health centers, hospitals and others. A countervailing effect, however, was the growth in the number of persons enrolled in AHCCCS. Despite increased restrictions on eligibility for AHCCCS, enrollment in AHCCCS increased from 1.1 million in 2007 to 1.4 million in 2011. The data for 2012 show a decline to 1.3 million (AHCCCS, 2012). The increase reflected increases in the numbers of previously employed persons who became eligible as their wage incomes fell.

The changes in health insurance coverage combined with a shift in demand from outpatient care to hospital based outpatient care, such as emergency department care, had a significant impact on hospital revenues. All else equal, reductions in hospital revenues reduce the demand for RNs but increased demand for hospital based services would increase the demand for nurses.

The net effect of the decreases in insurance coverage and increases in AHCCCS enrollment is difficult to estimate. Although the changes reduced hospital jobs, the effect on nurses was much less than on personnel who are not directly involved in patient care.

Trends in the Supply of Nurses

Employers and workers can respond to falls in the demand for labor in several ways. Workers who lose full time jobs may have to take part time jobs. Older workers who are near or at age of eligibility for old age benefits may “retire” if their prospects of work for wages are poor. Workers who receive unemployment benefits and continue to seek work often drop out of the labor force if benefits end before they find employment. Others might compensate by accepting lower paying jobs.

Nurses may find work outside the health care industry if health care job opportunities decline. If, for example, these shifts occur before their licenses are due for renewal, they may decide to make the change permanent and not seek renewal. We cannot obtain the reasons for non-renewals but we do measure the number of nurses who were eligible for renewal but did not apply.

The final effects of the various influences on the nursing workforce are described in Table 5. The results decompose changes in the numbers of nurses with active licenses into losses to non-renewals (“attrition”) and additions in the form of first time applicants.

The influences on the supply of nurses include:

- Changes in the absolute numbers of nurses with active licenses, including the net effect of non-renewals (-) and first time applicants (+).
- Other characteristics of interest including changes in the age distribution and marital status of nurses.
- Changes in the labor force status of registered nurses with active licenses.
- Among nurses employed in nursing, changes in hours worked, including measures of full time and part time work.

Nurses with Active Licenses

Registered nurses in Arizona renew their licenses once every four years. The only information that is current for a particular year is obtained from nurses who renew in that year and for first time applicants in that year. If, for example, a registered nurse left the labor force or left nursing for other occupations after renewing his or her license (say in 2008) the change in labor force status would not be known until 2012. , Since our data include one complete renewal cycle

(2008-2011), they provide additional information on the dynamics that occur within a licensing cycle.

The “first time applicants” include recent graduates of nursing schools and RNs with existing licenses from other states and a wide possible range of experience who obtain an Arizona license by “endorsement”, meaning that they need not complete a test. The distinction between the two types of new additions to the RN workforce is Arizona is of particular interest in regard to the widely held belief that it has been very difficult for newly graduated RNs to obtain nursing jobs in health care.

Perhaps the most notable feature of the trends described in Table 5 is the large reduction in the number of nurses with active licenses from 2007-2008. Absent the influx of nearly 3,900 new applicants, the number of nurses with active licenses would have dropped by more than 4,900, or 8.9%. Attrition rates had been estimated to be 1.3% per year based on the age distribution of nurses. The new, more accurate estimates show that attrition was unusually high between 2007-2008. In subsequent years, the attrition rate was 2.1% (2009); 3.0% (2010); 2.9% (2011); 1.6% (2012).

Table 5. Trends for Arizona Resident RNs with Active Licenses (2007-2012)

<i>RNs with active licenses</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>*2012</i>
In AZ (a)	55,349	54,263	56,712	58,711	60,290	62,798
Renewals (b)	11,015	10,417	13,227	11,427	11,302	11,769
First Time Applicants (c)	?	2,549	2,552	2,641	2,447	2,530
Endorsements (d)		1,296	1,084	1,035	833	922
(e= a-(b+c+d))	--	40,001	39,849	43,608	45,708	47,577
Net Change (f) =a(t) - a(t-1)	--	-1,086	2,449	1,999	1,579	2,508
Attrition (f-(c+d))	--	-4,931	-1,187	-1,677	-1,701	-944

Note: *Data for 2012 are not for the complete year.

The 2008 results also reflect the introduction, in April 2004 of a requirement that an applicant practiced for at least 960 hours in the past five years in a position that recommends or requires an RN, license or graduation from a nursing program within 5 years prior to application..

(Arizona State Board of Nursing 2012) The first group of renewals to be affected by the requirement would have been renewals in 2008.

The average annual number of first time applications and endorsements for 2008-2011 was 3,609. There was no clear trend across the years. The attrition rates in 2012, although not strictly complete, cover most of the months in the year and the entire period for on time renewals. The attrition rate in 2012 is the lowest of the years under consideration

Added and Discouraged Workers

One well known effect of economic recessions on labor market activity is that household members who are not working for wages may be induced to enter the labor market if a spouse or other important wage earner in the household loses their job. Thus the rather large increase in first time applicants in 2008 could in fact include nurses who had previously left the labor force, allowing their licenses to lapse.

A recent study of national employment trends among registered nurses shows that the nursing labor force increased during the 2007-2008 years of the recession (Staiger, Auerbach and Buerhaus 2012). The increases in hospital employment of registered nurses in the United States that began in 2007-2008 ended the national shortage of registered nurses that had persisted for over a decade (Staiger, Auerbach and Buerhaus 2012).

Staiger et al. effectively makes the “added worker” argument without using the term. It states that the RNs who were not working entered the labor force or moved from part time to full time work to “bolster their household’s economic security” (Staiger, Auerbach and Buerhaus 2012, 1464). Staiger and colleagues used an existing multivariate model of the propensity of persons in different age cohorts to enter nursing (Buerhaus et. al 2009) and added unemployment rates for the total workforce (not just nurses). They estimated that an increase of 1.2% in the RN workforce was associated with a 1 percent point increase in overall unemployment rates.

We applied the Staiger et al. (2012) estimates to the Arizona data. Obviously the relationship is not a good fit in Arizona. The difference is likely to be found in the differences between Arizona and national data in other variables that are included in the model including age distributions and changes in population. This is a topic that may be worthy of additional examination. Although the specific estimates are not very accurate, Arizona does share the experience of the national RN workforce in that both increased during a period of recession.

Table 6. Unemployment Rates & Increases in the RN Workforce (2007-2012)

<i>Population</i>	<i>Unemployment Rates</i>	<i>Percentage Point Change in Unemployment Rates</i>		<i>RNs w/Active Licenses*</i>		<i>Staiger Model Estimate</i>
		<i>Years</i>	<i>%</i>	<i>(000s)</i>	<i>%</i>	
<i>Year</i>	<i>%</i>	<i>Years</i>	<i>%</i>	<i>(000s)</i>	<i>%</i>	<i>(000s)</i>
2007	3.7%	2006-2007		55.3		
2008	6.0%	2007-2008	+2.3	54.3	-1.84%	+2.76%
2009	9.9%	2008-2009	+3.9	56.7	4.42%	+4.68%
2010	10.5%	2009-2010	+0.6	58.7	3.53%	+0.12%
2011	9.5%	2010-2011	-1.0	60.3	2.73%	-1.2%
2012	8.2%	2011-2012	-1.3	62.8	4.15%	-1.56%

We cannot directly measure an added worker effect but can review the marital status and ages of the first time applicants. If the age distribution of first time applicants increased and the percentage of first time applicants who were not married declined, one could suggest that some of the applicants were added workers, contributing to the growth in the labor force. We also consider shifts between full time and part time work in the subsequent section on hours worked.

Table 7. First Time Applicants: Changes in Marital Status over Time, 2008-2012

<i>Marital Status</i>	<i>2008 (%)</i>	<i>2009 (%)</i>	<i>2010 (%)</i>	<i>2011 (%)</i>	<i>2012 (%)</i>
Never Married	1,144 (33.2%)	1,204 (35.6%)	1,225 (35.7%)	1,135 (37.4%)	1,180 (37.1%)
Married	1,788 (51.8%)	1,659 (49.0%)	1,680 (49.0%)	1,473 (48.5%)	1,559 (49.0%)
Separated	42 (1.2%)	44 (1.3%)	68 (2.0%)	36(1.2%)	40 (1.3%)
Divorced	450 (13.1%)	444 (13.1%)	427 (12.5%)	372 (12.3%)	374 (11.8%)
Widowed	25 (0.7%)	35 (1.0%)	30 (0.9%)	20 (0.7%)	30 (0.9%)

Source: ABON data, 2012.

Notes: Missing records: 396 in 2008; 250 in 2009; 246 in 2010; 244 in 2011; 269 in 2012.

Table 8. Changes in Marital Status of the Active RN Workforce (2008-2012)

<i>Marital Status</i>	<i>2008 (%) N = 52,422</i>	<i>2009 (%) N = 54,865</i>	<i>2010 (%) N = 56,793</i>	<i>2011 (%) N = 58,272</i>	<i>2012 (%) N = 60,665</i>
Never Married	7,896 (15.1%)	8,607 (15.7%)	9,107 (16.0%)	9,599 (16.5%)	10,040 (16.6%)
Married	33,190 (63.3%)	34,352 (62.6%)	35,335 (62.2%)	36,111 (62.0%)	37,702 (62.2%)
Separated	458 (0.9%)	457 (0.8%)	480 (0.9%)	492 (0.8%)	499 (0.8%)
Divorced	9,596 (18.3%)	10,102 (18.4%)	10,487 (18.5%)	10,694 (18.4%)	11,027 (18.2%)
Widowed	1,282 (2.5%)	1,347 (2.5%)	1,384 (2.4%)	1,376 (2.4%)	1,397 (2.3%)

Source: ABON data, 2012.

Notes: Missing records: 1,841 in 2008; 1,847 in 2009; 1,918 in 2010; 2,018 in 2011; 2,133 in 2012.

Neither the data on the first time applicants nor on the age composition of the active RN workforce support the existence of measurable added worker effect. It is true, however, that the nursing workforce in Arizona has grown during the recession, despite a one time reduction between 2007 and 2008.

Another possible reaction to the recession is that employed nurses, who reach ages of eligibility for retirement pensions, opt to remain in the labor force until a recession ends. We examine that possibility by comparing the age distributions of nurses in the workforce.

The percentage of nurses in the active workforce who were 63+ years of age increased from 8.6% in 2008 to 11.6% in 2012. The percentage increased in each of the years 2009 (9.4%); 2010 (10.4%) and 2011 (11%). All else equal, the results suggest that the recession induced *employed* registered nurses to remain at work beyond the ages at which they would have retired in earlier years.

Table 9. Changes in the Age Composition of the Active RN Workforce (2008-2012)

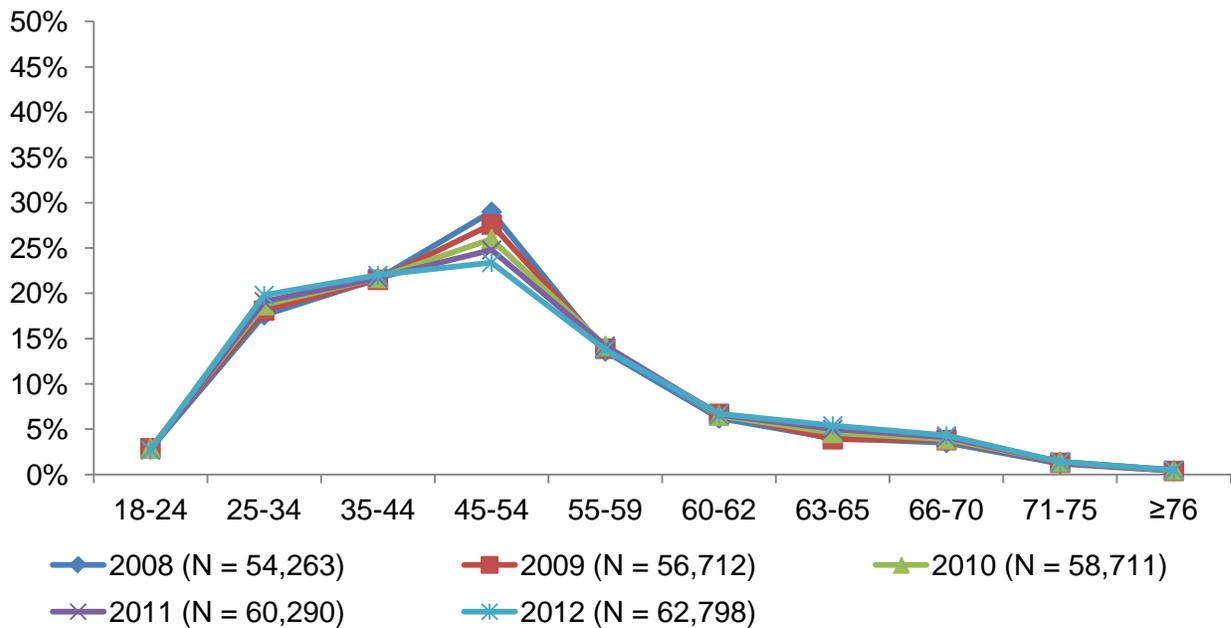
<i>Age Group</i>	<i>2008 (%) N = 54,263</i>	<i>2009 (%) N = 56,712</i>	<i>2010 (%) N = 58,711</i>	<i>2011 (%) N = 60,290</i>	<i>2012 (%) N = 62,798</i>
18 - 24 years	1,499 (2.8%)	1,647 (2.9%)	1,674 (2.9%)	1,652 (2.7%)	1,685 (2.7%)
25 - 34 years	9,565 (17.6%)	10,244 (18.1%)	10,960 (18.7%)	11,532 (19.1%)	12,460 (19.8%)
35 - 44 years	11,729 (21.6%)	12,175 (21.5%)	12,709 (21.7%)	13,104 (21.7%)	13,787 (22.0%)
45 - 54 years	15,728 (29.0%)	15,658 (27.6%)	15,240 (26.0%)	14,927 (24.8%)	14,697 (23.4%)
55 - 59 years	7,374 (13.6%)	7,853 (13.9%)	8,324 (14.2%)	8,529 (14.2%)	8,639 (13.8%)
60 - 62 years	3,385 (6.2%)	3 811 (6.7%)	3,786 (6.5%)	3,949 (6.6%)	4,178 (6.7%)
63 - 65 years	2,179 (4.0%)	2,211 (3.9%)	2,680 (4.6%)	3,006 (5.0%)	3,404 (5.4%)
66 - 70 years	1,913 (3.5%)	2,153 (3.8%)	2,280 (3.9%)	2,465 (4.1%)	2,708 (4.3%)
71 - 75 years	661 (1.2%)	724 (1.3%)	791 (1.4%)	831 (1.4%)	900 (1.4%)
≥76 years	229 (0.4%)	235 (0.4%)	267 (0.5%)	295 (0.5%)	340 (0.5%)

Source: ABON data, 2012.

Notes: 1 record missing in 2008; 1 RN <18 yrs in 2009.

Another influence, although the numbers are relatively small (approximately 104 licenses in 2007), is the number of nurses who re-entered the workforce by taking a refresher course to compensate for failing to meet the 960 hour requirement for eligibility for a license. (Randolph 2012) The refresher course nurses were typically older than RN renewals with 46% of the group in the 45-54 year group versus 25% among renewals. (Randolph 2012)

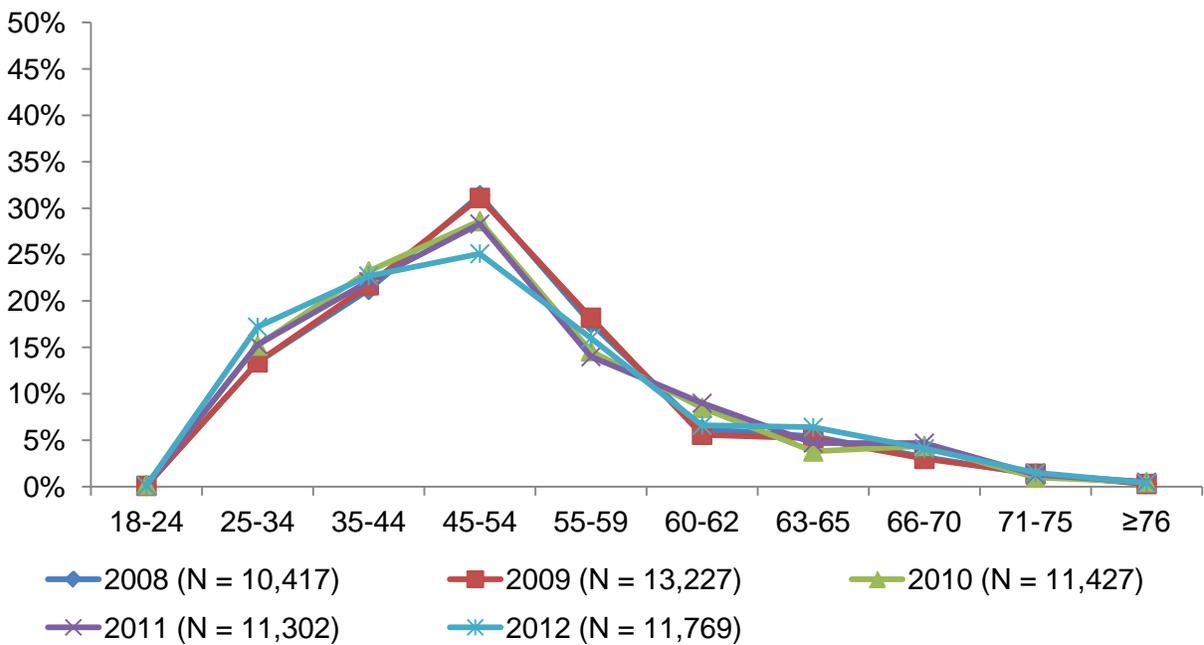
Figure 4. RNs with Active Licenses Living in Arizona, 2008 - 2012, by Age Group



Source: ABON data, 2012.

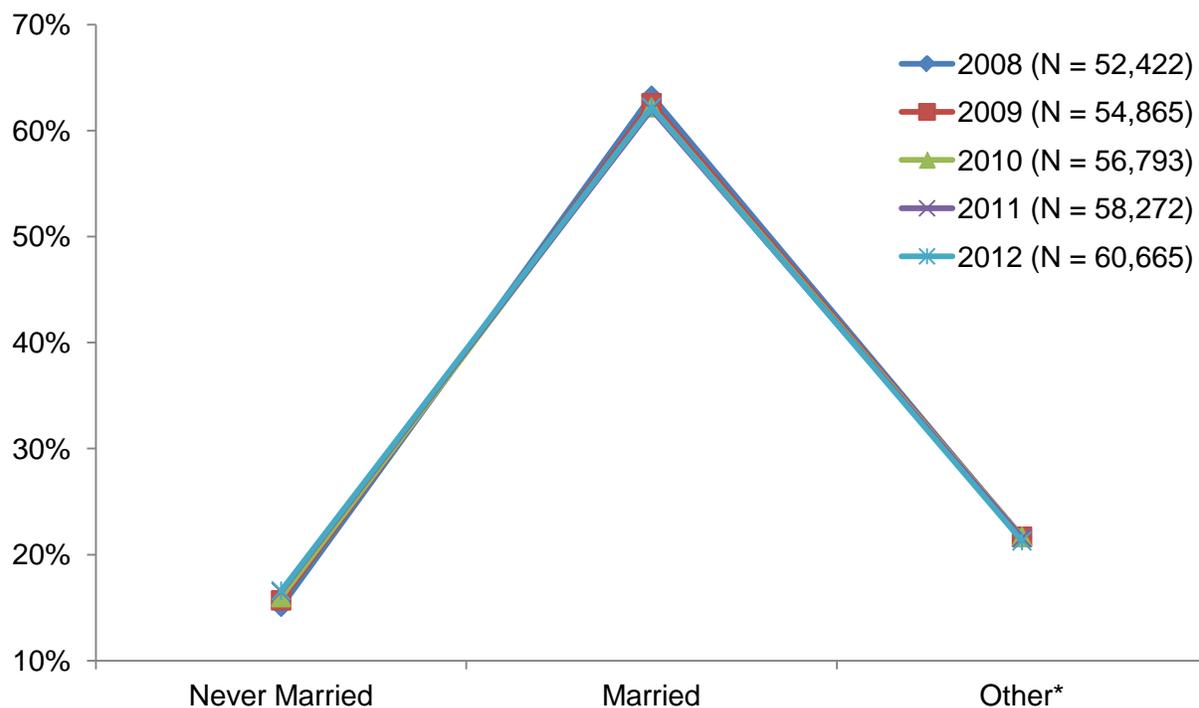
Notes: 1 record missing in 2008; 1 RN <18 yrs in 2009.

Figure 5. Age Distribution of RN Renewals with an Arizona Address, 2008-2012



Source: ABON data, 2012.

Figure 6. Changes in Marital Status Over Time, 2008-2012



Source: ABON data, 2012.

Note: *Other category includes Separated, Divorced and Widowed RNs.

As indicated in Figure 6, nothing in the time trends of marital status supports the hypothesis that married nurses were likely to rejoin the workforce to compensate for wage losses experience by their spouses or other household members. The results are limited by the lack of information on the composition of the households in which non-married persons reside. The preponderance of married RNs, however, suggests that the results would not substantially change of such information were available.

Employment

The distribution of nurses by labor force status, described in Table 10, shows that in 2008 through 2011, the percentage of renewals who were employed *in healthcare as nurses* varied narrowly between 89.0% and 89.8%. In 2012, the percentage dropped slightly to 89.6%. In absolute terms, the number of nurses employed as nurses in healthcare was at a minimum in 2008, increased to 11,825 in 2009 and then decreased to 10,239 in 2010 and 10,149 in 2011, with the variations associated with variations in the number of nurses renewing their licenses.

Table 10. Labor Force Status of RNs Renewing Their Licenses*

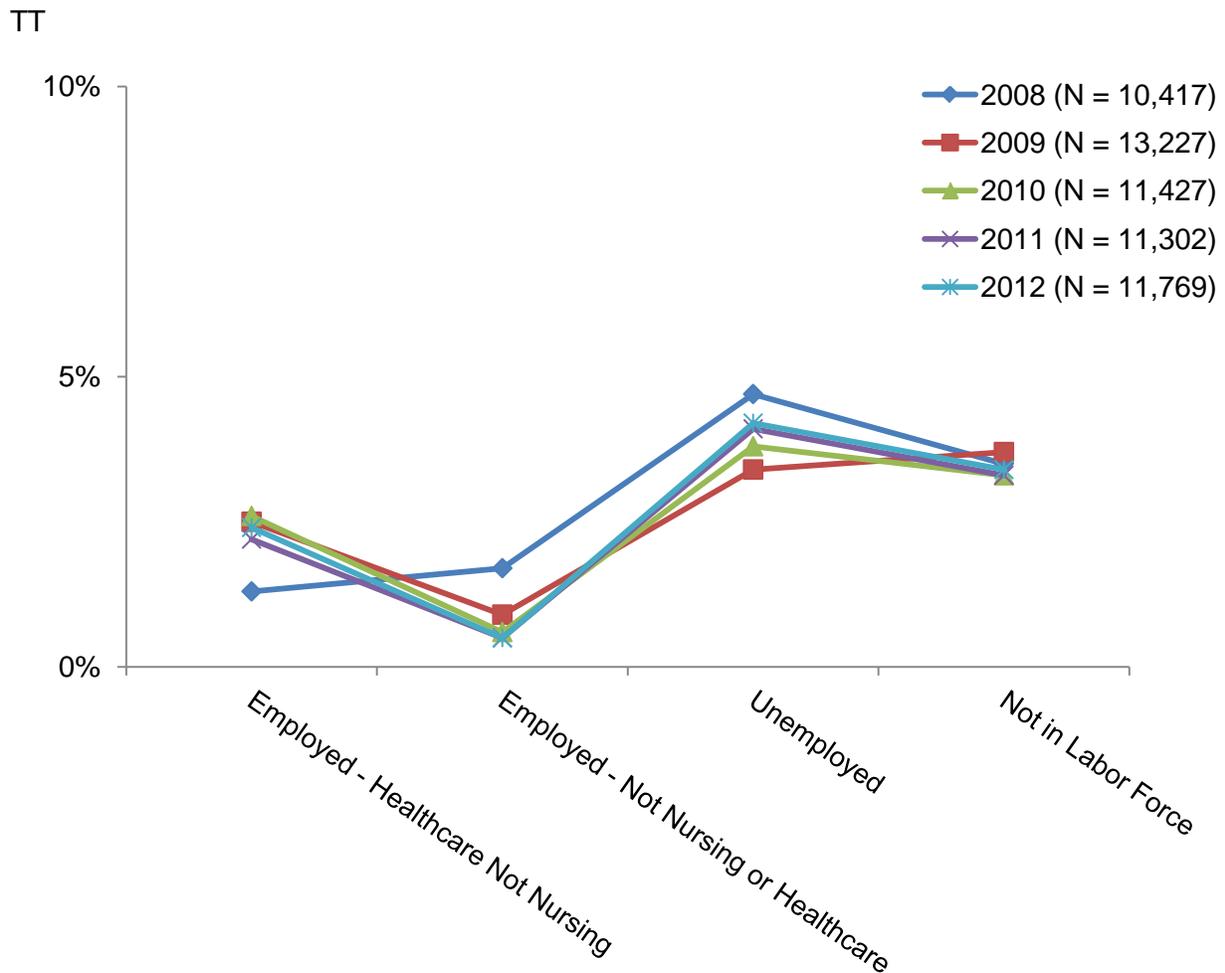
<i>Year</i>	<i>No. of Renewals</i>	<i>Employed in Nursing & Healthcare</i>	<i>Employed in Healthcare not Nursing</i>	<i>Employed not Nursing not Healthcare</i>	<i>Unemployed</i>	<i>Not in the Labor Force</i>
2008	10,417	9,271 (89.0%)	135 (1.3%)	177 (1.7%)	490 (4.7%)	365 (3.5%)
2009	13,227	11,825 (89.4%)	331 (2.5%)	119 (0.9%)	450 (3.4%)	489 (3.7%)
2010	11,427	10,239 (89.6%)	297 (2.6%)	69 (0.6%)	434 (3.8%)	377 (3.3%)
2011	11,302	10,149 (89.8%)	249 (2.2%)	57 (0.5%)	463 (4.1%)	373 (3.3%)
2012	11,769	10,549 (89.6%)	282 (2.4%)	59 (0.5%)	494 (4.2%)	400 (3.4%)
Totals	58,142	52,033 (89.5%)	1,294 (2.2%)	481 (0.8%)	2,331 (4.0%)	2,004 (3.4%)

Source: ABON, 2012. *Totals are respondents to employment question weighted to adjust for item non-responses.

The results in Figure 7 show that the effects of the recession appear to be concentrated in 2008. In 2008, the percentage of renewing RNs who were employed in nursing jobs in healthcare was the low point in the 2008-2012 cycle. The percentage of RNs neither employed in healthcare nor in nursing is at its maximum in 2008 as was the percentage of RNs who were unemployed. The proportion of RNs who renewed their active licenses but who were not in the labor force was little different among the years, varying from 3.7% to 3.3%. The effect on NILF RNs suggests that the unusually large number of non-renewals in 2008 (see Table 5: nearly 5,000 RNs lost to attrition) could represent decisions of nurses to leave nursing altogether rather than renew without actively seeking employment. They may, therefore have either left the labor force or have taken employment in jobs that did not require a license as a registered nurse.

The differences between 2008 and the nearly coincident measures in subsequent years suggest that the primary impact of the recession on the employment of RNs, including employment in health care in a nursing job, occurred in 2008.

Figure 7. RN Renewals Not Employed in Healthcare in Nursing Jobs (2008-2012)*



The employment status of RNs appears to be slightly depreciating in 2011-2012 but the differences among the years are quite small.

We next consider the possibility that RNs in part time employment shifted to full time work because of additional needs for family income or, alternatively, that employers took advantage of the effects of the recession to attempt to create a more stable nursing workforce and reduce the administrative costs of managing their employees. The analysis considers hours worked per week, weeks worked per month and months worked per year. The individual components are then combined to estimate the numbers of full time and part time workers.

Hours Worked

The RNs were asked to estimate, within certain ranges, hours worked per week, weeks worked per month, and months worked per year during the 12 months prior to their applications. The product of the three components was used to classify nurses as part time or full time workers. As we described in a previous section, a full time worker was defined as a person who worked 1,770 hours or more in a calendar year.

Table 11. Full Time and Part Time Equivalentents 2008-2012

<i>Year</i>	<i>FTE</i>	<i>PTE</i>
2008	71.8%	28.2%
2009	73.2%	26.8%
2010	73.0%	27.0%
2011	75.3%	24.7%
2012	75.6%	24.4%

Note: Percentages are based on responses weighted to adjust for non-responses.

The data in Table 11 show a shift from part time to full time work among employed RNs. Approximately 76% of the employed 2012 renewals worked full time compared to approximately 72% in 2008. The percentage of full time workers increased in every year except between 2009-2010. The year to year changes in each of the three components were not large but the combined effect is a clear trend toward more full time and fewer part time workers.

A shift from part time to full time work increases the supply of nursing services while it reduces the number of nurses needed to produce a given level of services. If experienced, employed RNS increased their hours of work, the reduction in the demand for RNs would have presumably fallen primarily on new graduates. The employment status of first time applicants for RN licenses is not, however, recorded by the Arizona Board of Nursing, since at the time of application, most applicants are not yet employed as RNs. Information on renewals and the labor force status in 2012 for first time applicants in 2008 is presented in a subsequent section.

It is true, however, that other influences aside, a shift from full time to part time work among employed nurses is likely to reduce the job opportunities of first time entrants into the RN labor market.

We next consider the changes in nurse to population ratios which, despite their many limitations, are widely used to compare the adequacy of supply of RNs among each of the States in the United States.

Nurse to Population Ratios

The ratio of RNs to 100,000 residents in Arizona between 2007-2012 was influenced by the increase in the supply of RNs and a rapid reduction in population growth. The population of Arizona in 2011 was only 2.3% larger than the population in 2007 because of increased out-migration and reduced immigration. By contrast the supply of nurses with active licenses was 8.2% greater in 2011 than in 2007. It was assumed (in 2008) by the employers of registered nurses that a massive effort to accelerate the growth of the RN workforce was required to reach the national average ratio of 825 RNs per 100,000 by 2017. The goal was reached in 2010 and the ratio continued to increase in 2011 and 2012. Although several initiatives increased the number of students in nursing programs most of the increases in the ratios in Arizona result from large and unexpected decreases in the population.

Table 12. Population Growth vs. Workforce Growth, 2007-2012, Arizona

<i>Population</i>		<i>Population Growth</i>		<i>RNs w/Active Licenses</i>		<i>RNs/100K Population</i>	<i>Employed RNS*</i>	<i>Employed RNs/100K</i>
<i>Year</i>	<i>(000s)</i>	<i>Years</i>	<i>%</i>	<i>(000s)</i>	<i>%</i>	<i>Ratio</i>	<i>(000s)</i>	<i>Ratio</i>
2007	6,339	2006-2007	2.81%	55.3		872		
2008	6,500	2007-2008	2.31%	54.3	-1.84%	840	48.3	744
2009	6,596	2008-2009	1.48%	56.7	4.42%	860	50.7	769
2010	6,392	2009-2010	-3.09%	58.7	3.53%	929	52.6	823
2011	6,483	2010-2011	1.40%	60.3	2.73%	930	54.1	835
2012	6,553	2011-2012	1.10%	62.8	4.15%	958	58.7	896

*employed in a nursing job in health care sample survey % applied to no. of RNs with active licenses

The net effect of the differential in growth rates is that the ratios of nurses to population in Arizona no longer indicate that there is a shortage. The rate of population growth is still low, dropping to the lowest rate in all but one of the previous years. The rate of increase in the RN

workforce in 2012 is next to the highest rate in the five years. A continuation of these trends predicts that a surplus of RNs could occur in the next two-three years unless the aging of the population combines with other factors such as increased health care coverage increase the demand for care among the members of a more slowly growing population.

First Time Applicants

If the widespread perception that first time applicants were the nurses most disadvantaged by the recession, it would be reasonable to expect that their problems would have been most severe in 2008. Unfortunately, the labor force status of newly graduated RNs and other first time applicants is not recorded by AZBON as the applicants are not available for jobs until they receive their licenses.

The first look at the labor force status of the first time applicants occurs at their first renewal, four years after their initial application. Although the information does not describe the dynamics of their employment during the four years, it does provide a measure of the outcomes of those dynamic changes.

We selected all first time applicants in 2008 and measured the labor force status of all of those applicants who renewed their licenses in 2012.

Table 13. First Time Applicants in 2008 & Their Labor Status in 2012

<i>Year 2012</i>	<i>No. of Renewals</i>	<i>Employed Nursing & Healthcare</i>	<i>Employed Healthcare not Nursing</i>	<i>Employed Not Nursing Not Healthcare</i>	<i>Unemployed</i>	<i>Not in the Labor Force</i>	<i>Missing</i>
Renewals Excluding 08 applicants	9,172 (100%)	8,075 (88.0)%	264 (2.9%)	48 (0.5%)	414 (4.5%)	358 (3.9%)	13 0.0%
Applicant exams	1,883 (100%)	1,793 (95.2%)	8 (0.4%)	3 (0.0%)	48 (2.6%)	25 (1.3%)	.
Applicant endorsements	714 (100%)	652 (91.3%)	9 (1.3%)	2 (0.2%)	29 (4.1%)	19 (2.7%)	3 (0.4%)

As previously discussed, there are several potential reactions among persons having difficulty finding a job. The reactions including accepting part time work; taking jobs outside of nursing and leaving the labor force. The latter seems an unlikely option for persons at the beginning of a career in nursing but it is possible for a new entrant to leave the state in which they are licensed and, thereby disappear from the measured labor force in Arizona.

The outcomes of those unknown reactions and other actions during the four years are described in Table 13. At first glance the 2008 applicants have better labor force outcomes than the other 2012 renewals. A higher percentage are employed in nursing jobs in health care and much smaller proportions are unemployed or not in the labor force.

What is not shown is that nearly one-third of the 2008 applicants did not renew their licenses in 2012. The reasons that nurses do not renew at the appropriate time are not recorded but the attrition among the 2008 applicants is substantially higher than the average across all renewal cohorts.

The results suggest that first time applicants in 2008 dealt with problems in finding jobs by either leaving the State or by giving up their pursuit of a career in nursing and, therefore, eliminating the need to renew their licenses in 2012. In either case, the substantial loss of investments in training can be counted as another unfortunate outcome of the greatest economic recession in the United States since 1929.

Summary & Conclusions

The recession that began in 2007-2008 was accompanied by a very large increase in the employment of registered nurses in the United States. The detailed data on RNs in Arizona who renewed their licenses shows that after a sharp drop in renewals between 2007-2008, the nursing workforce increased in each of the subsequent years. The supply of RNs with active licenses was 8.2% greater in 2011 than in 2007. Preliminary data from 2012 indicates that the 2012 workforce is 13.6% greater than in 2007.

In 2008, the percentage of renewing RNs who were employed in non-nursing jobs in healthcare was the low point in the 2008-2012 cycle. The percentage of RNs neither employed in healthcare nor in nursing is at its maximum during the four years as was the percentage of RNs who were unemployed. The percentage of nurses not in the labor force is not different from the percentages in the other years. The effect on NILF RNs suggests that the unusually large

number of non-renewals in 2008 could represent decisions of nurses to leave nursing altogether rather than renew without actively seeking employment.

The evaluation of the 2012 labor force status of first time applicants in 2008 re-inforces the conclusion that the effect of the recession on the employment of nurses was most severe in 2008. That conclusion can only be tested when the renewal data for the 2009 first time applicants becomes available in 2013.

The differences between 2008 and the nearly coincident measures in subsequent years suggest that the primary impact of the recession on the employment of RNs occurred in 2008.

Unemployment reached a minimum in 2010 as did the percentage of nurses working outside of health care in non-nursing jobs. The employment status of RNs appears to be slightly depreciating in 2011-2012 but the differences between the two years are quite small.

Several national studies suggest that economic recessions induce registered nurses who are not working or who work part time, to seek nursing jobs or to shift from part time to full time work. In the general labor market, this behavior (the “added worker” effect) is a well-documented feature of labor supply responses to recessions.

We had no direct measure of an added worker effect and the admittedly weak proxies were not informative. There is, however, clear evidence of a shift from part time to full time work among employed RNs. Approximately 76% of the employed 2012 renewals worked full time compared to approximately 72% in 2008. A shift from part time to full time work increases the supply of nursing services while it reduces the number of nurses needed to produce a given level of services. If experienced, employed RNS increased their hours of work, the reduction in the demand for RNs would have presumably fallen primarily on new graduates. The employment status of first time applicants for RN licenses is not, however, recorded by the Arizona Board of Nursing, since at the time of application, most applicants are not yet employed as RNs. It is likely, all else equal, that increases in hours worked in a year by experienced nurses would decrease opportunities for new entrants to the RN workforce.

The pattern of a major impact on employment in 2008 with slow subsequent improvement with some sign of slowing in 2012..may fit the paradigm that employment of RNs in hospitals tends to increase in recessions. The changes in Arizona were, however, accompanied by a abrupt end to the state’s above average rates of population growth. The combination of increases in the labor supply of RNs and slow negative years of population change have increased the ratio measures of the adequacy of the supply of RNs to levels that were not expected to be

accomplished before 2017 or later without strenuous efforts to accelerate the number of first time applicants.

What is the most likely pattern of employment among RNs in Arizona?. First, population growth is once more positive and slightly increasing but the rate of increase in the RN labor force in 2012 is one of the highest rates in recent years. The ratios of RNs to population levels exceed conventional targets for an adequate supply of RNs and first time applications have not slowed. Taken together, these facts suggest the possibility of a surplus in RNs in the near future.

The possibility of a surplus may be offset, however, but increases in health insurance coverage. The Kidscare II initiative will increase health care coverage for a large number of Arizona children and there has been discussion of restoring the proposition 204 coverage because of the Affordable Care Act and its federal funding. The percentage of older nurses is at a maximum. If they have delayed retirement because of poor economic conditions in their households, their reasons for remaining will diminish with improvements in the economy. In any case, there is a limit to how long the older nurses will be able to meet the physical demands associated with patient care. It is reasonable to expect that retirement rates will increase in the next few years.

Another influence on the number of RNs needed to staff hospitals and other health care organizations is the distribution between full time and part time work. The long standing shortage of RNs created, in part, the very unusual reliance on part time work. The current trend toward more RNs in full time jobs and fewer in part time work, offers employers an opportunity to create the kind of stable, full time workforces that have been shown to be successful in most other industries in the United States.

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Appendix A: RN Renewal Form



ARIZONA STATE BOARD OF NURSING
 Renewal Application for Registered Nurse/Practical Nurse
 License & Advanced Practice Certification

For Office Use Only

* DESIGNATES REQUIRED FIELDS - PRINT CLEARLY IN ALL CAPITAL LETTERS

* RENEWAL DUE DATE [] [] / [] [] / [] [] [] []
 * RN/LPN LICENSE NUMBER [] [] [] [] [] [] [] [] [] [] [] [] [] []
 (Example: RN012345 or LP012345)
 AP/CRNA CERTIFICATE AP [] [] [] [] CRNA [] [] [] []
 * FEE \$ [] [] []

STATUS/LICENSE APPLICATION

RENEWAL For all renewals submitted before the renewal due date or within the 30 days following the due date, renewal fee is \$160. If you are submitting an application more than 30 days after your renewal due date and worked on an Arizona license beyond those 30 days, a late fee is required. See the Late/Invalid License Questionnaire (page 3) for an explanation of the late fees. If you have not worked on your AZ license at any time more than 30 days after the due date, no late fee is due.

RENEWAL PENDING REFRESHER COURSE COMPLETION If one of the three practice requirement options are not met (see question 8) complete a refresher course in order to renew. In addition to the renewal application and fee, submit proof of payment for the Board approved refresher course and an application for temporary license.

REACTIVATION OF INACTIVE LICENSE If applying for reactivation within 4 years of your last renewal or original issue date, no fee applies. If it has been 4 years or more since your last license was issued, you will need to renew.

INACTIVE OR RETIRED STATUS Complete the one-page Inactive Status Application or Retired Nurse Application, both of which can be found on our website, www.azbn.gov under Download Applications. A license can also be inactivated online via My Services.

*** 1. DEMOGRAPHICS**

* Applicant's Legal First Name [] Middle Initial [] []
 * Applicant's Legal Last Name []
 * SSN [] [] [] - [] [] - [] [] [] [] * Date of Birth [] [] / [] [] / [] [] [] []
 * Birth City []
 * Birth State/Province [] [] * Birth Country (Example: USA) []

Gender	Marital Status	Ethnicity
<input type="checkbox"/> Female	<input type="checkbox"/> Never Married <input type="checkbox"/> Divorced	<input type="checkbox"/> Black - Not of Hispanic Origin <input type="checkbox"/> Hispanic
<input type="checkbox"/> Male	<input type="checkbox"/> Married <input type="checkbox"/> Widowed	<input type="checkbox"/> White - Not of Hispanic Origin <input type="checkbox"/> Multi Racial
	<input type="checkbox"/> Separated	<input type="checkbox"/> Asian/Pacific Islander <input type="checkbox"/> Other
		<input type="checkbox"/> American Indian/Alaskan

2. APPLICATION FOR NAME CHANGE

Do you have a new name? No Yes - Write in your new name (Documentation is required. See instructions.)

* First Name []
 Middle Name []
 * Last Name []



RNRA



* Is there a change of mailing address? Yes No If yes, address changes are required to be submitted to the Board within 30 days. If it has been more than 30 days since you relocated and you have not submitted a change of address to the Board, include a \$25 address change fee.

*** 3. PRIMARY STATE OF RESIDENCE** (This declares that the state listed below is the primary state of residence. The primary state of residence reflects where you vote, pay federal taxes or obtain a drivers license.)

* Street Address Line 1

Street Address Line 2

* City

* State/Province * Zip Code

* County (Example: Maricopa)

* Country (Example: USA)

4. MAILING ADDRESS (If different than primary state of residence)

* Street Address Line 1

Street Address Line 2

* City

* State/Province * Zip Code

* County (Example: Maricopa)

* Country (Example: USA)

*** 5. CONTACT INFORMATION** (Either a home or cell phone number is required)

* Home Phone Number () -

* Cell Phone Number () -

E-Mail Address

Please print e-mail address clearly. E-mail address is used for notification of renewal dates and pertinent Board related information. E-mail address is not shared, sold, or otherwise disseminated by the Arizona State Board of Nursing. E-mail address should be kept up to date at www.azbn.gov/myservices.

*** 6. LIST ALL OTHER STATES IN WHICH THERE IS AN ACTIVE LICENSE TO PRACTICE AS AN RN/LPN**

*** 7. LIST ALL STATES WHERE CURRENTLY PRACTICING NURSING, WHETHER PHYSICALLY OR ELECTRONICALLY**

12. COLLEGE OR UNIVERSITY FOR HIGHEST DEGREE OBTAINED SINCE LAST RENEWAL

* School Name

* City

* State/Province * Zip Code

* Country (Example: USA)

* Graduation Month/Year /

* Degree Licensed Practical Nurse Bachelors in Nursing Bachelors Other Field Doctoral Other Field
 RN Diploma Masters in Nursing Associates Other Field
 RN Associates Doctorate in Nursing Masters Other Field

13. CERTIFICATION If applicable list any current national certification in nursing that you hold (not including CPR).

* Specialty/Category

* Certification Body

* Certification Date / * Expiration Date /

14. SINCE YOUR LAST RENEWAL, CHECK ALL DEGREES OBTAINED AND WRITE THE MONTH AND YEAR OF GRADUATION

TYPE OF PROGRAM	MM	YYYY	TYPE OF PROGRAM	MM	YYYY
<input type="checkbox"/> RN Diploma, Nursing	<input type="text"/>	<input type="text"/>	<input type="checkbox"/> Masters Degree, Nursing	<input type="text"/>	<input type="text"/>
<input type="checkbox"/> Associate Degree, Nursing	<input type="text"/>	<input type="text"/>	<input type="checkbox"/> Masters Degree, Other	<input type="text"/>	<input type="text"/>
<input type="checkbox"/> Associate Degree, Other	<input type="text"/>	<input type="text"/>	<input type="checkbox"/> Doctoral Degree, Nursing	<input type="text"/>	<input type="text"/>
<input type="checkbox"/> Baccalaureate Degree, Nursing	<input type="text"/>	<input type="text"/>	<input type="checkbox"/> Doctoral Degree, Other	<input type="text"/>	<input type="text"/>
<input type="checkbox"/> Baccalaureate Degree, Other	<input type="text"/>	<input type="text"/>			

15. ESTIMATE THE TIME WORKED DURING THE PAST YEAR

Number of hours worked as a nurse in a typical week (do not count on call hours): >41 36-40 24-35 13-23 1-12 0

Approximate number of weeks worked per month: 4 3 2 1 <1

Approximate number of months worked: 10-12 7-9 4-6 1-3 <1



16. WHICH SETTING DO YOU PRACTICE THE MOST HOURS PER WEEK IN A TYPICAL WEEK? (Check One)

- | | | | |
|--|--|--|--|
| <input type="checkbox"/> Hospital | <input type="checkbox"/> Ambulatory Care | <input type="checkbox"/> Public/Community Health | <input type="checkbox"/> Occupational Health |
| <input type="checkbox"/> Insurance Company | <input type="checkbox"/> Long Term Care | <input type="checkbox"/> Home Health Care | <input type="checkbox"/> Nursing Education |
| <input type="checkbox"/> School Health | <input type="checkbox"/> Other | | |

17. WHICH NURSING ROLE DO YOU PRACTICE THE MOST HOURS PER WEEK IN A TYPICAL WEEK? (Check One)

- | | |
|--|--|
| <input type="checkbox"/> Quality Assurance, Infection Control | <input type="checkbox"/> Facility or Nursing Department Administrator/Supervisor |
| <input type="checkbox"/> Discharge Planner, Case Manager | <input type="checkbox"/> Staff/general duty nurse/team leader/charge nurse |
| <input type="checkbox"/> Educator (School or In-Service Education) | <input type="checkbox"/> Researcher, Consultant |
| <input type="checkbox"/> Nurse Practitioner, Certified Nurse Midwife, Clinical Nurse Specialist, Nurse Anesthetist | <input type="checkbox"/> Nurse Manager or Head Nurse |
| <input type="checkbox"/> Utilization Review, Outcomes Management, Other Insurance Related Role | <input type="checkbox"/> Other |

18. MAJOR CLINICAL OR TEACHING AREA IN NURSING (Check One)

- | | |
|---|---|
| <input type="checkbox"/> Generalized Community Health (Public Health) | <input type="checkbox"/> Special Care (e.g. OR, ER, ICU, CCU) |
| <input type="checkbox"/> Obstetric/Gynecological | <input type="checkbox"/> Psychiatric/Mental Health |
| <input type="checkbox"/> Pediatric | <input type="checkbox"/> Telehealth |
| <input type="checkbox"/> Geriatric | <input type="checkbox"/> Information |
| <input type="checkbox"/> Medical Surgical | <input type="checkbox"/> Other |

Continue to next page

RNRE

*** 20. CITIZENSHIP OR NATIONAL STATUS DECLARATION**

Are you a citizen of the United States? No Yes

If yes, submit with your application a legible xeroxed copy of your proof of citizenship document. Most often submitted is a photocopy of a birth certificate or US passport. If you submit a copy of a birth certificate, please include copy of photo I.D. Social security cards are not accepted. To see a list of other accepted documents, visit www.azbn.gov/applications.aspx and click on 'Citizenship and or Lawful Presence Cover Sheet/Alien Status Declaration/Lists A & B'. If you have already submitted a proof of citizenship/nationality document after 1/1/08 you will not need to submit the document again.

Type of document you are submitting (i.e. passport, birth certificate) _____ Already Submitted

Expiration Date, if any (mm/dd/yyyy) _____ / _____ / _____

If you are a citizen or national of the United States, go directly to Question 22. If you are not a citizen or national of the United States, complete question 21.

OR

*** 21. ALIEN STATUS DECLARATION**

To be completed by applicants who are not citizens or nationals of the United States. Please indicate alien status by checking the appropriate box. Submit a legible xeroxed copy of the front and back of a document from List B with your application. See List B on our website by visiting www.azbn.gov/applications.aspx and clicking on 'Citizenship and or Lawful Presence Cover Sheet/Alien Status Declaration/Lists A & B'.

"Qualified Alien" Status

- A. An alien lawfully admitted for permanent residence under the Immigration and Nationality Act (INA).
- B. An alien who is granted asylum under Section 208 of the INA.
- C. A refugee admitted to the United States under Section 207 of the INA.
- D. An alien paroled into the United States for at least one year under Section 212(d)(5) of the INA.
- E. An alien whose deportation is being withheld under section 243(h) of the INA.
- F. An alien granted conditional entry under Section 203(a) (7) of the INA as in effect prior to April 1, 1980.
- G. An alien who is a Cuban and Haitian entrant (as defined in section 501(e) of the Refugee Education Assistance Act of 1980).
- H. An alien who has, or whose child or child's parent has, been declared a "battered alien" or an alien subjected to extreme cruelty in the United States.

Nonimmigrant Status (8 U.S.C § 1621(a) (2))

- I. A nonimmigrant under the Immigration and Nationality Act [8 U.S.C § 1101 et seq.] Nonimmigrants are persons who have temporary status for a specific purpose. See 8 U.S.C § 1101(a) (15).

Alien paroled into the United States for less than one year (8 U.S.C § 1621(a) (3))

- J. An alien paroled into the United States for less than one year under Section 212(d) (5) of the INA.

Other Person (8 U.S.C § 1621 (c) (2) (A) and (C))

- K. A nonimmigrant whose visa for entry is related to employment in the United States
- L. A citizen of a freely associated state, if section 141 of the applicable compact of free association approved in Public Law 99-239 or 99-658 (or a successor provision) is in effect [Freely Associated States include the Republic of the Marshall Islands, Republic of Palau and the Federate States of Micronesia, 49 U.S.C § 1901 et seq.];
- M. A foreign national not physically present in the United States.

Otherwise Lawfully Present (A.R.S. § 1-501)

- N. A person not described in categories A-M who is otherwise lawfully present in the United States. **PLEASE NOTE: The federal Personal Responsibility and Work Opportunity Reconciliation Act may make persons who fall into this category ineligible for licensure.**

To establish alien status, submit with your application a legible xeroxed copy of one of the documents from List B.

Type of document you are submitting _____

Expiration Date, if any (mm/dd/yyyy) _____ / _____ / _____

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*** 22. APPLICATION QUESTIONS (must complete and sign before submitting)**

- i. Have you, since your certificate was granted or since your last renewal, whichever is later:
- A. Been convicted, entered a plea of guilty, no lo contender or no contest, been sentenced or served time in jail for any **felony or undesignated offense**?
 - B. Had prosecution deferred or probation deferred in any **felony or undesignated offense**?
 - C. Had a **felony or undesignated offense** pardoned, expunged, dismissed, deferred, reclassified or redesignated?
- No Yes If yes, provide a detailed **written explanation** of the details of each arrest conviction and sentence. Return the written explanation, a copy of the police report and court documents for each arrest conviction indicating type of conviction, conviction date, and sentence including the date of absolute discharge of the sentence for each **felony or undesignated offense** conviction.
- If yes, has this previously been reported to the Arizona Board of Nursing? No Yes
- ii. Are you currently participating in a state board/designee monitoring program in a state **other than Arizona** including alternative to discipline, diversion, or a peer assistance program?
- No Yes If yes, include a detailed **written explanation** and a copy of the documentation with your application.
- iii. Have you ever been terminated from an alternative to discipline, diversion, or a peer assistance program due to unsuccessful completion?
- No Yes If yes, include a detailed **written explanation** and a copy of the documentation with your application.
- iv. Since your last renewal, have you had any drug or alcohol related convictions?
- No Yes If yes, provide a detailed **written explanation** of the details of each arrest conviction and sentence. Return the written explanation and court documents for each conviction indicating type of conviction, conviction date, and sentence.
- If yes, has this previously been reported to the Arizona Board of Nursing? No Yes
- v. Since your last renewal, has disciplinary action or revocation been taken or is there currently a complaint, investigation, or disciplinary action pending against your CNA certificate or, any other health care or non health care related license or certification, in any state or territory of the United States? (If your nursing license/CNA certificate is under investigation in Arizona **only**, do not mark yes.)
- No Yes If yes, include a detailed **written explanation** and a copy of the documentation regarding the current investigation or pending disciplinary action with your application.
- If yes, has this previously been reported to the Arizona Board of Nursing? No Yes

PLEASE BE ADVISED THAT FAILURE TO PROVIDE THE REQUESTED DOCUMENTS WILL DELAY THE PROCESSING OF YOUR APPLICATION

***VERIFICATION BY OATH OR AFFIRMATION OR DECLARATION**

The undersigned declares under penalty of perjury under the laws of Arizona, that he/she:

- Is the person referred to in the foregoing application;
- That the statements are true in every respect to the best of his/her knowledge;
- That he/she has not suppressed any information that would affect this application;
- That he/she will conform to ethical standards of conduct in the profession of nursing and obey the laws and rules of the Arizona Board of Nursing;
- That he/she has read and understands that failure to disclose the requested information or disclosure of false information or disclosure of misleading information may constitute fraud and may result in denial of licensure/certification or disciplinary action, up to and including revocation, taken against an issued license or certificate
- Failure to disclose the requested information or disclosure of false or misleading information may also result in criminal prosecution.

REMEMBER TO ENCLOSE A COPY OF CITIZENSHIP/LAWFUL PRESENCE DOCUMENTATION ON 8 1/2 BY 11 PAPER WITH THE APPLICATION IF NOT PREVIOUSLY SUBMITTED.

Applicant's Signature

Date

PLEASE NOTE:

Online Renewal- If renewing online and proof of citizenship/lawful presence documentation has already been received and processed by the Board, your license will be immediately renewed and verifiable via the license verification on our website (www.azbn.gov) within minutes, and the paper copy mailed to you within a week. You can renew online 24 hours a day, 7 days a week.

Paper Renewal- It may take up to 2 weeks to process your application before the license can be issued and verified, and another week for you to receive the paper copy. If this application is not postmarked by midnight on May 1st of your renewal year and you have been working on your Arizona license you will be required to pay a late fee. If you do not renew on or before August 1st, your license expires. If your application is not completely filled out or the fee is incorrect, it will be returned to you and further delay the renewal process.

Please staple all pages of the application together with documentation of citizenship/lawful presence and mail to: ARIZONA STATE BOARD OF NURSING
4747 N. 7TH STREET, SUITE 200
PHOENIX, AZ 85014-3655

■ **RNRH** ■