



Bureau of Business &
Economic Research

**RECENT POPULATION DYNAMICS
OF NEW MEXICO NURSES**

Daren Ruiz

July 2008

Funded and Coordinated By:



State of New Mexico Board of Nursing

Center for
NEW MEXICO
Nursing Excellence

Recent Population Dynamics
Of New Mexico Nurses
UNM Bureau of Business and Economic Research

Forward/Executive Summary
By the
NM Center for Nursing Excellence
NM Board of Nursing

Forward

We would like to sincerely thank Lee Reynis, Ph.D., Director, Darren Ruiz, Researcher, and the rest of the UNM Bureau of Business and Economic Research staff for conducting this study. As the New Mexico nursing community works to address nursing shortage and nursing practice issues, having a clear picture of the nursing workforce is invaluable. The value of such study is not only in what is revealed, but also in the process of study as challenges and limitations are uncovered and more questions are generated.

Executive Summary

The University of New Mexico Bureau of Business and Economic Research conducted an analysis of population dynamics of New Mexico registered nurses (RNs) using the license database of the New Mexico Board of Nursing. The database contained information on nurses who held active licenses anytime between January 1997 and February 2008. The analysis focused on two areas: nurses entering practice in New Mexico (inflow) and those leaving practice in New Mexico (outflow).

Nurses Entering Practice in New Mexico (Inflow)

Nurses enter practice in New Mexico by one of two routes: license by examination and license by endorsement. License by examination is accomplished by meeting the NM Board of Nursing requirements and passing the National Council Licensure Examination – Registered Nurse (NCLEX-RN). There were 19,525 nurses licensed by examination in the database for the study period. Nurses who were initially licensed in another state obtain their first New Mexico license by meeting the NM Board of Nursing's requirement for endorsement. There were 17,849 nurses in the database obtaining New Mexico licensure by endorsement for the study period. For the purposes of clarity, nurses obtaining initial licensure by examination will be referred to as "New Mexico nurses"; those obtaining initial New Mexico licensure by endorsement will be referred to as "Endorsed nurses".

New Mexico Nurses:

- The total number of nurses obtaining initial licensure by examination was steady for the periods of 1993 -1997 (2,492) and 1998-2002 (2,349); it then experienced a sharp increase in the 2003-2007 period (9,552). Two factors influencing this increase are the capacity expansion of the state's nursing education program, and the sharp increase in foreign nurses seeking licensure through New Mexico.
- **Graduation Age:** The growth of nurses graduating from a New Mexico nursing program occurred in nurses greater than 25 years. The average graduation age increased from 27.9 years (1993) to 31.5 years (2007).

Recent Population Dynamics
Of New Mexico Nurses
UNM Bureau of Business and Economic Research

Forward/Executive Summary
By the
NM Center for Nursing Excellence
NM Board of Nursing

- **Age at First Licensure:** While the average age at graduation has increased, the age at first licensure has decreased from 33.5 years (1993) to 31.8 years (2007). This is most likely due to a substantial decrease in the lapsed time between graduation and passing NCLEX-RN examination (75.4 months to 8.1 months). The computerization of the NCLEX-RN examination process most likely contributed to decrease in the graduation-to-license period.

Endorsed Nurses:

- The number of endorsed nurses increased steadily from 3,558 (1993 – 1997) to 5,273 (2003-2007).
- The average age of endorsed nurses rose from 39.8 years (1993) to 45.3 years (2007).
- Seventeen percent (17%) of endorsed nurses were in the 45-49 age group.

Nurses Leaving Practice in New Mexico

Inactive nursing license: The number of inactive New Mexico nurses has increased by 59.4% from 1998-2002 period to the 2003-2007 period. The number of inactive endorsed nurses increased by 18.6%. Endorsed nurses accounted for twice as many inactive nurses as New Mexico nurses.

Retention:

- The first 2 years are critical for retaining New Mexico nurses. The most license expirations occur at the first license renewal period (2 years after initial licensure).
- Historically, New Mexico nurse retention rate at the first renewal period is 93 – 95%; at 4 years the retention rate is 87-92%.
- The first 4 years are critical in retaining endorsed nurses.
- Historically, endorsed nurses have a retention rate of 72-78% at the first renewal period (2 years after initial NM licensure), and a retention rate of 60-68% at 4 years. Less than half (48%) of nurses who initially endorsed into New Mexico in 1997 were actively licensed and living in the state in 2007.

Nurses Leaving the State:

Due to challenges with the database, researchers were unable to determine when a nurse left the state, only that they had left. This was determined by the presence of an out-of-state address at the most recent licensure renewal recorded. Rates were determined by year of first licensure cohorts. For New Mexico nurses, the departure rate steadily fell from 25% to 21% (1997-2002). In 2003, there was a large increase in licensure by examination particularly for foreign nurses, as previously discussed. Most of these foreign nurses do not have New

Recent Population Dynamics
Of New Mexico Nurses
UNM Bureau of Business and Economic Research

Forward/Executive Summary
By the
NM Center for Nursing Excellence
NM Board of Nursing

Mexico residency – they have either not yet entered the United States or are living/working in other states. This dramatically raised the departure rates: 44% in 2003; 75% in 2007. For endorsed nurses, the departure rate was consistently around 55%.



Bureau *of* Business &
Economic Research

**RECENT POPULATION DYNAMICS
OF NEW MEXICO NURSES**

Daren Ruiz

July 2008

ACKNOWLEDGEMENTS

I want to acknowledge the people and organizations that made this study possible. The New Mexico Center for Nursing Excellence (NMCNE) contracted the Bureau of Business and Economic Research (BBER) to study population dynamics of New Mexico nurses. The New Mexico Board of Nursing (NMBON) allowed BBER access to the Board's nursing license database. Erica Grong, Information Technology Manager for NMBON, and Paul Butts, Information Technology Applications Developer for the New Mexico Department of Information Technology, ensured the integrity of and provided insight to the nursing license database. Lee Reynis, Director of BBER, helped design the methodology of the study and Molly Bleecker, Research Scientist at BBER, contributed to the framework of the report.

Daren Ruiz
Bureau of Business and Economic Research
University of New Mexico

TABLE OF CONTENTS

Acknowledgements.....	iii
Table of Contents.....	iv
Table of Tables and Figures.....	v
Introduction.....	1
Methodology.....	1
Data Source.....	1
Unit of Analysis.....	2
Definitions.....	2
Limitations.....	2
Inflow.....	3
New Mexico Nurse Graduates.....	3
Time between Graduation and First License of New Mexico Nurses.....	4
First License.....	5
Out of State Nurses.....	6
Outflow.....	7
Inactive Nurses.....	7
New Mexico Nurse Retention Rates.....	9
Out of State Nurse Retention Rates.....	10
Departed Nurses.....	11
New Mexico Nurse Departure Rates.....	11
Out of State Nurse Departure Rates.....	13
Conclusion.....	13
Appendix.....	14

TABLE OF TABLES AND FIGURES

Table 1: Graduation Age by Year of New Mexico Nurses.....	4
Figure 1: Average Months between Graduation and First License of New Mexico Nurses, 1993-2006	5
Table 2: First License Age by Year of New Mexico Nurses.....	5
Table 3: First New Mexico License Age by Year of Out of State Nurses.....	6
Figure 2: Average First New Mexico License Age of New Mexico and Out of State Nurses, 1993-2007	7
Table 4: Inactive Age by Year of New Mexico Nurses.....	8
Table 5: Inactive Age by Year of Out of State Nurses	8
Table 6: License Expirations of New Mexico Nurses, 1999-2007.....	9
Table 7: Retention Rates of New Mexico Nurses, 1999-2007	10
Table 8: License Expirations of Out of State Nurses, 1999-2007	10
Table 9: Retention Rates of Out of State Nurses, 1999-2007.....	11
Table 10: Departure Rates of New Mexico Nurses, 1997-2007	12
Table 11: Departure Rates of Out of State Nurses, 1997-2007	13
Figure 1a: Average Graduation Age of Licensed Practical Nurses, 1993-2007.....	14
Table 1a: Graduation Age by Year of New Mexico Licensed Practical Nurses	14
Table 2a: Graduation Age by Year of Out of State Licensed Practical Nurses.....	14
Figure 2a: Average First New Mexico License Age of Out of State Licensed Practical Nurses, 1993-2007	15
Table 3a: First License Age by Year of New Mexico Licensed Practical Nurses.....	15
Table 4a: First New Mexico License Age by Year of Out of State Licensed Practical Nurses	15

INTRODUCTION

The New Mexico Center for Nursing Excellence (NMCNE) contacted the Bureau of Business and Economic Research (BBER) to analyze data on New Mexico nurses. This is the third and final study BBER subsequently produced. Our first study, “Status of Nurses in New Mexico”, used secondary data sources to examine market forces and institutional constraints affecting nurse supply. Our second study, “Employment and Earnings of Licensed Nurses in New Mexico from 1996 to 2006,” examined nursing employment and earnings from 1996 to 2006 using employment and earnings records provided by the New Mexico Department of Labor under a confidentiality agreement matched to the New Mexico Board of Nursing’s (NMBON) proprietary license database.

This study analyzes recent population dynamics of New Mexico nurses also with the license database from NMBON. NMCNE wants to project future nursing shortages and advocate for a commensurate increase in nursing education resources. In order to do so, a sound understanding of the changing nature of the nursing population is needed. This study explores nursing population dynamics in two sections: inflow and outflow.¹

The inflow of nurses comes from graduates passing the National Council Licensure Examination – Registered Nurse (NCLEX-RN) and from out of state nurses migrating to New Mexico to practice. The inflow section examines the trend and age distribution of New Mexico nurse graduates over the last 15 years. The inflow section also examines the trend and age distribution of New Mexico and out of state nurses receiving their first New Mexico license over the same period.

The outflow of nurses comes from licenses expiring and from nurses leaving the state. The outflow section examines the trend and age distribution of inactive New Mexico and out of state nurses over the last 10 years. The outflow section also compares cumulative departure rates of New Mexico nurses to out of state nurses by first New Mexico license year.

METHODOLOGY

DATA SOURCE

We used NMBON license data to analyze recent New Mexico nursing trends. NMBON collects administrative and demographic information on nurses from license and license renewal applications. The nursing license database used contains data on nurses who held an active license anytime between January 1, 1997 and February 1, 2008, for a total of 44,056 nurse records. The database contains information on the type of license, certificate of authorization, state of residence, date of birth, date of graduation, date of

¹ Due to license database limitations we were unable to address internal changes.

first license, date of license expiration, and license status, among other information particular to nurses.

UNIT OF ANALYSIS

Registered nurses (RNs) are the focus of this study. Information on licensed practical nurses (LPNs) is reported in the appendix without any commentary in the hope it may prove valuable to future studies. The two groups are distinct and face different market forces and should be analyzed separately. We chose to focus on RNs because the majority of nurses in the license database are RNs (the license database contained 37,374 RN records compared to 6,682 LPN records) and because when a nurse transitions from an LPN to an RN, an RN record is created and the LPN record is retained. This practice inflates the number of LPNs on record, since transitions from LPNs to RNs are frequent.

DEFINITIONS

Nurses were defined according through which state they passed the NCLEX-RN. A registered nurse must complete a board approved registered nurse program and pass the NCLEX-RN to become licensed. There were 19,525 nurses who passed the NCLEX-RN through the NMBON and 17,849 nurses who passed the NCLEX-RN through out of state boards that were licensed in New Mexico between 1997 and 2008. We called these groups “New Mexico nurses” and “out of state nurses”, respectively.

LIMITATIONS

The analysis was limited because the license database is constantly updated with new information overwriting old information. For example, if a nurse moved, then state, city, zip, and county would be updated and no record of the old address would be kept. Thus we were unable to examine changes of the nursing population coming from within.

We were also unable to examine out-migration trends due to the lack of a date field that would have indicated when a nurse left the state. There were 16,434 nurses whose last state of residence on file was not New Mexico. Instead we analyzed the cumulative departure rate from first New Mexico license.

Foreign-educated nurses also presented a limitation because they are indistinguishable from other nurses in the license data. This limitation is particularly evident in the analysis of New Mexico nurses.² Discussion of the foreign-educated effect on the variable of interest will be presented in the corresponding sections.

² Foreign-educated nurses are classified under New Mexico nurses since they take the NCLEX-RN through the NMBON.

INFLOW

NEW MEXICO NURSE GRADUATES

New Mexico nurse graduates were analyzed from 1993 through 2007, even though 6,772 graduated before 1993. Going back further would skew the graduation age to look younger in previous years, since older graduates from previous years are more likely to have left the workforce, leaving a higher proportion of younger graduates. For example, a 45 year old nurse graduate from 1970 would be less likely hold an active license between 1997 and 2008 (when active nurses were selected for the database) than a 20 year old nurse graduate from the same year. The 45 year old graduate would be 72 years old in 1997 while the 20 year old graduate would be 49 years old. Evidence of young graduation bias persisted into the early 1990s.

Our first study found New Mexico nurses are old and the current shortage will persist as nurses retire.³ The nursing age structure has several causes, two of which are "... fewer young nurses entering the RN population, ... , and older graduates from initial nursing education programs entering the RN population", according to the U.S. Department of Health and Human Services.⁴

The number of nurses graduating younger than 25 years old decreased from 1993-1997 to 2003-2007 by 473. Table 1 shows the graduation age of New Mexico nurses over time with total nurse graduates by period. Also, the percentage of nurses graduating younger than 25 years old decreased each successive period, from 53% in 1993-1997 to 40% in 2003-2007. Consequently, the growth of nurses graduating occurred mostly in nurses older than 25 years old. The average nurse graduation age increased from 27.9 years in 1993 to 31.5 years in 2007.

³ Ruiz, Daren. University of New Mexico, Bureau of Business and Economic Research. (December 2007). "Status of Nurses in New Mexico"

⁴ U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing. (March 2000). "The Registered Nurse Population: Findings from the National Sample Survey of Registered Nurses".

The growth in the number of nurses graduating during the periods in review occurred in 2003-2007, when 1,037 more nurses graduated than the previous period (1998-2002) and 232 more nurses graduated than the initial period (1993-1997).

Table 1: Graduation Age by Year of New Mexico Nurses

Graduation Year	Graduation Age										Total
	UNDER 25	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	OVER 65	
1993 - 1997	2,328 53%	644 15%	502 11%	433 10%	312 7%	151 3%	50 1%	11 0%	0 0%	0 0%	4,431
1998 - 2002	1,699 47%	708 20%	458 13%	311 9%	253 7%	135 4%	54 1%	8 0%	0 0%	0 0%	3,626
2003 - 2007	1,855 40%	985 21%	670 14%	509 11%	296 6%	197 4%	104 2%	42 1%	4 0%	1 0%	4,663
Total	5,882	2,337	1,630	1,253	861	483	208	61	4	1	12,720

Frequency Missing = 33

Source: BBER calculations based on NMBON license database, July 2008.

Note: 6,772 New Mexico nurses graduated before 1993.

TIME BETWEEN GRADUATION AND FIRST LICENSE OF NEW MEXICO NURSES

After graduating from a board approved registered nursing program, prospective nurses must pass the NCLEX-RN to become licensed. The time between graduation and first license steadily decreased for New Mexico nurses. Figure 1 shows the average months between graduation and first license of New Mexico nurses rapidly declined, from a high of 75.4 months in 1993 to a low of 8.1 months in 2006.⁵ It appears efficiency gains from decreasing time between graduation and first license are approaching their limit and there is little room for improvement.⁶

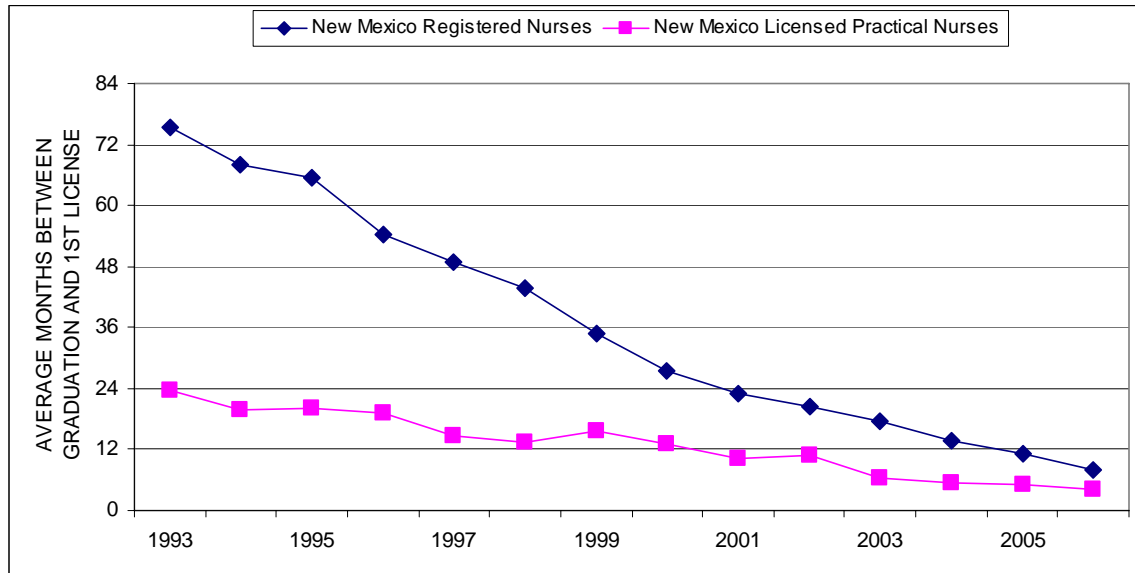
The administration of the NCLEX-RN could explain the long lag between graduation and first license in the mid 1990s. The exam was hand written and given only twice a year.⁷ Also, the exam took a long time to grade and if the applicant failed they had to wait a year before they could retake it. Currently, the NCLEX-RN is computer based with little scheduling restriction. The results are almost instantaneous and if the applicant fails they do not need to wait a year to retake it.

⁵ We did not include 2007 because there may still be prospective nurses who graduated in 2007 but have not yet passed the NCLEX-RN and received their license.

⁶ The gain of 67.4 months should increase the work life of a nurse. However, if the time between graduation and first license continues to shorten, nurses could feel rushed into duty and leave the profession. Care must be taken in balancing extending work life and retaining new nurses.

⁷ This narrative is based upon a discussion with Pat Boyle, Executive Director of the New Mexico Center for Nursing Excellence in August 2008.

Figure 1: Average Months between Graduation and First License of New Mexico Nurses, 1993-2006



Source: BBER calculations based on NMBON license database, July 2008.

FIRST LICENSE

Despite the increased graduation age, the shortened time between graduation and first license led to a younger first license age for New Mexico nurses. Table 2 shows the first license age by first license year of New Mexico nurses. The percentage of nurses receiving their first license younger than 40 years old increased each successive period, from 75% in 1993-1997 to 85% in 2003-2007. The average first license age decreased from 33.5 years in 1993 to 31.8 years in 2007.

Table 2: First License Age by Year of New Mexico Nurses

1st License Year	1st License Age										Total
	UNDER 25	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	OVER 65	
1993 - 1997	461 19%	526 21%	465 19%	418 17%	336 13%	205 8%	58 2%	20 1%	3 0%	0 0%	2,492
1998 - 2002	479 20%	624 27%	447 19%	311 13%	257 11%	153 7%	64 3%	12 1%	2 0%	0 0%	2,349
2003 - 2007	1,676 18%	2,373 25%	2,569 27%	1,502 16%	701 7%	435 5%	216 2%	68 1%	11 0%	1 0%	9,552
2008	48 26%	40 22%	36 20%	36 20%	12 7%	6 3%	2 1%	2 1%	1 1%	0 0%	183
Total	2,664	3,563	3,517	2,267	1,306	799	340	102	17	1	14,576

Frequency Missing = 2

Source: BBER calculations based on NMBON license database, July 2008.

Note: 4,947 New Mexico nurses received their first license before 1993.

OUT OF STATE NURSES

Our first study showed high nursing wages increased the interest in the profession as the number of nurses educated in New Mexico and passing the NCLEX-RN increased each year since 2002.⁸ For out of state nurses, wages are high enough not to dissuade migration to New Mexico.

Although the number of New Mexico nurses (19,525) is close to the number of out of state nurses (17,849), the trend of when each group became first licensed in New Mexico is much different. The number of New Mexico nurses receiving their first license is nearly constant from 1993-1997 to 1998-2002 and then triples from 1998-2002 to 2003-2007. However, out of state nurses receiving their first New Mexico license steadily increased from 1993-1997 to 2003-2007. Table 3 shows the first New Mexico license age by year of out of state nurses over time.⁹

The growth in the number of out of state nurses receiving their first New Mexico license between the 1993-1997 and 2003-2007 periods occurred mostly in the older age groups. There were 1,599 more out of state nurses 45 years or older receiving their first New Mexico license compared to only 116 more out of state nurses receiving their first New Mexico license younger than 45 years old. This pulled the average first New Mexico license age of out of state nurses up from 39.8 years in 1993 to 45.3 years in 2007. Overall, the largest age group of out of state nurses receiving their first New Mexico license was the 45-49 group with 17% of the total.

Table 3: First New Mexico License Age by Year of Out of State Nurses

1st License Year	1st NM License Age										Total
	UNDER 25	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	OVER 65	
1993 - 1997	175 5%	445 13%	519 15%	619 17%	701 20%	524 15%	336 9%	161 5%	62 2%	16 0%	3,558
1998 - 2002	142 3%	544 13%	544 13%	592 14%	656 16%	738 18%	562 13%	263 6%	97 2%	34 1%	4,172
2003 - 2007	166 3%	526 10%	627 12%	570 11%	686 13%	903 17%	833 16%	604 11%	270 5%	88 2%	5,273
2008	5 6%	7 9%	8 10%	8 10%	10 13%	7 9%	15 19%	15 19%	2 3%	1 1%	78
Total	488	1,522	1,698	1,789	2,053	2,172	1,746	1,043	431	139	13,081

Frequency Missing = 5

Source: BBER calculations based on NMBON license database, July 2008.

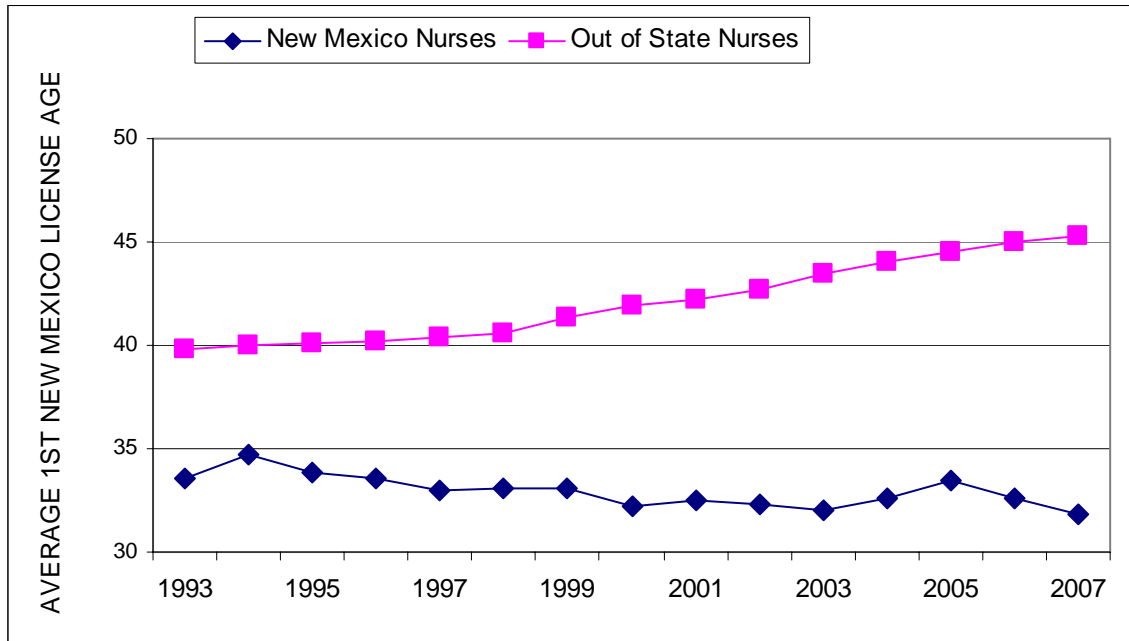
Note: 4,763 out of state nurses received their first New Mexico license before 1993.

Figure 2 compares the average first New Mexico license age of New Mexico nurses to that of out of state nurses. The figure clearly shows the diverging average age of entry into New Mexico practice. The average first license age slowly declined for New Mexico nurses while the average first New Mexico license age of out of state nurses steadily increased. The difference in average first license age between the two groups increased from 6.3 years in 1993 to 13.4 years in 2007.

⁸ Ruiz, Daren. University of New Mexico, Bureau of Business and Economic Research. (December 2007). "Status of Nurses in New Mexico"

⁹ Out of state nurses were analyzed from 1993 through 2007, even though 4,763 received their first New Mexico license before 1993, to avoid young first license bias.

Figure 2: Average First New Mexico License Age of New Mexico and Out of State Nurses, 1993-2007



Source: BBER calculations based on NMBON license database, July 2008.

OUTFLOW

INACTIVE NURSES

We queried inactive New Mexico nurses by selecting New Mexico nurses from the license database whose status was not active¹⁰ and whose last state of residence on file was New Mexico. Similarly, inactive out of state nurses were queried by selecting out of state nurses from the license database whose status was not active and whose last state of residence on file was New Mexico. It is important to note that neither selection includes nurses whose last state of residence was not New Mexico.

Out of state nurses accounted for twice as many of the inactive records, 3,462 compared to 1,576, even though New Mexico nurses accounted for more than half of the records in the database, 19,525 compared to 17,849. Table 4 and Table 5 show inactive age by year of New Mexico and out of state nurses. Inactive New Mexico nurses increased by 59.4% from the 1998-2002 period to the 2003-2007 period, while inactive out of state nurses increased by only 18.6%.

¹⁰ These include status types of “lapsed”, “suspended”, “inactive-good standing”, “deceased”, “void”, or “application incomplete”.

Table 4: Inactive Age by Year of New Mexico Nurses

Inactive Year	Inactive Age										Total
	UNDER 25	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	OVER 65	
1930 - 1997	1 14%	2 29%	0 0%	0 0%	0 0%	1 14%	1 14%	0 0%	2 29%	0 0%	7
1998 - 2002	6 1%	38 6%	85 14%	57 10%	91 15%	61 10%	92 15%	42 7%	77 13%	50 8%	599
2003 - 2007	15 2%	56 6%	130 14%	84 9%	134 14%	90 9%	141 15%	89 9%	102 11%	114 12%	955
2008	0 0%	0 0%	1 7%	1 7%	0 0%	2 13%	2 13%	3 20%	1 7%	5 33%	15
Total	22	96	216	142	225	154	236	134	182	169	1,576

Source: BBER calculations based on NMBON license database, July 2008.

Table 5: Inactive Age by Year of Out of State Nurses

Inactive Year	Inactive Age										Total
	UNDER 25	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	OVER 65	
1930 - 1997	1 9%	0 0%	2 18%	1 9%	2 18%	2 18%	0 0%	0 0%	2 18%	1 9%	11
1998 - 2002	9 1%	67 4%	153 10%	121 8%	228 15%	193 12%	227 15%	144 9%	188 12%	232 15%	1,562
2003 - 2007	5 0%	68 4%	187 10%	114 6%	205 11%	178 10%	317 17%	178 10%	263 14%	338 18%	1,853
2008	0 0%	1 3%	0 0%	1 3%	4 11%	3 8%	6 17%	5 14%	7 19%	9 25%	36
Total	15	136	342	237	439	376	550	327	460	580	3,462

Source: BBER calculations based on NMBON license database, July 2008.

New Mexico Nurse Retention Rates

The first two years are critical for retaining New Mexico nurses. Table 6 shows license expirations of New Mexico nurses still residing in state by first license year. Most expirations occurred at the first possible chance, two years after issuance.¹¹ Of the first licenses issued to New Mexico nurses from the 1997 cohort, 24 did not renew in 1999. The license expirations are relatively steady thereafter. The pattern remains the same for the following cohorts, the largest number of licenses expire at the first possible chance, then drop to a lower level of expirations in subsequent years.

Table 6: License Expirations of New Mexico Nurses, 1999-2007

First License Year	New Mexico Nurse License Expirations										Total Licenses Issued to New Mexico Nurses Residing in NM
	1999	2000	2001	2002	2003	2004	2005	2006	2007		
1997	24		13	1	11	3	18	1	12		379
1998		18		12		11		9	1		361
1999			25		22		13		15		367
2000				25		13	3	6	1		357
2001					25		12	1	20		378
2002						18		13			357
2003							28		21		411
2004								26			488
2005									39		578
Grand Total	24	18	38	38	58	45	74	56	109		3,676

Source: BBER calculations based on NMBON license database, July 2008.

Note: Residing in New Mexico as of 2008 February 1.

The retention rate normalizes the variation in the absolute number of license expirations in terms of the percentage remaining so we can compare the relative size of license expirations for different cohorts. Table 7 shows retention rates of New Mexico nurses by first license year. Of the first licenses issued to New Mexico nurses from the 1997 cohort, 94% retained an active license in 1999 and 90% retained an active license in 2001.

Historically, the New Mexico nurse initial retention (two years after issuance) rate has been between 93% and 95% and the secondary retention rate (four years after issuance) has been between 87% and 92%.

¹¹ License expirations provide an upper bound for nursing retention rates. Nurses may renew their license even though they do not plan to work as a nurse. However, mandated continuing education and license renewal fees may limit this practice. Also, license expirations do not take into account the nurse's status, whether the nurse is suspended, deceased, etc. Additionally, continuous renewal is assumed between first license and license expiration. As noted earlier, the NMBON license database is continuously updated, and license expiration date changes with each renewal.

Table 7: Retention Rates of New Mexico Nurses, 1999-2007

First License Year	New Mexico Nurse Survival Rates									
	1999	2000	2001	2002	2003	2004	2005	2006	2007	
1997	0.94	0.94	0.90	0.90	0.87	0.86	0.82	0.81	0.78	
1998		0.95	0.95	0.92	0.92	0.89	0.89	0.86	0.86	
1999			0.93	0.93	0.87	0.87	0.84	0.84	0.80	
2000				0.93	0.93	0.89	0.89	0.87	0.87	
2001					0.93	0.93	0.90	0.90	0.85	
2002						0.95	0.95	0.91	0.91	
2003							0.93	0.93	0.88	
2004								0.95	0.95	
2005									0.93	

Source: BBER calculations based on NMBON license database, July 2008.

The cumulative retention rate is taken to be the ratio of actively licensed and residing in state nurses in 2007 to the number of nurses in a given initial license year. Table 7 shows approximately 78% of the New Mexico nurses first licensed in 1997 held an active license and resided in state in 2007. For the most part, the cumulative retention rate increases from the 1997 cohort to the 2005 cohort.

Out of State Nurse Retention Rates

The first four years are critical in retaining out of state nurses. Table 8 shows license expirations of out of state nurses still residing in state by first^{New} Mexico license year with most license expirations occurring at the first possible chance, two years after issuance. Of the first licenses issued to out of state nurses from the 1997 cohort, 123 did not renew in 1999. The second chance to renew produces the second largest license expiration group. Of the remaining nurses from 1997, 47 did not renew their license in 2001. After the first four years, the number of license expirations steadily drops off for out of state nurses. The pattern remains the same for the following cohorts.

Table 8: License Expirations of Out of State Nurses, 1999-2007

First New Mexico License Year	Out of State Nurse License Expirations										Total Licenses Issued to Out of State Nurses Residing in NM
	1999	2000	2001	2002	2003	2004	2005	2006	2007		
1997	123		47		25	2	19	2	22		461
1998		115		56	2	24	3	15	4		425
1999			89		34		22	2	16		379
2000				98		39	2	21	5		367
2001					97		44	1	46		374
2002						92		43	1		384
2003							169		62		597
2004								125			464
2005									88		398
Grand Total	123	115	136	154	158	157	259	209	244		3,849

Source: BBER calculations based on NMBON license database, July 2008.

Note: Residing in New Mexico as of 2008 February 1.

Table 9 shows the historical initial retention rates are much lower and less consistent for out of state nurses, between 72% and 78% compared to New Mexico nurses. Secondary retention rates are also lower and less concentrated, from 60% to 68% compared to New Mexico nurses. The low initial and secondary retention rates of out of state nurses flows into the cumulative retention rates. Less than half, about 48%, of the out of state nurses who were licensed in 1997 were actively licensed and residing in state as of 2007. For the most part, the retention rate increases as the time between first license year and 2007 decreases.

Table 9: Retention Rates of Out of State Nurses, 1999-2007

First NM License Year	Out of State Nurse Survival Rates									
	1999	2000	2001	2002	2003	2004	2005	2006	2007	
1997	0.73	0.73	0.63	0.63	0.58	0.57	0.53	0.53	0.48	
1998		0.73	0.73	0.60	0.59	0.54	0.53	0.49	0.48	
1999			0.77	0.77	0.68	0.68	0.62	0.61	0.57	
2000				0.73	0.73	0.63	0.62	0.56	0.55	
2001					0.74	0.74	0.62	0.62	0.50	
2002						0.76	0.76	0.65	0.65	
2003							0.72	0.72	0.61	
2004								0.73	0.73	
2005									0.78	

Source: BBER calculations based on NMBON license database, July 2008.

DEPARTED NURSES

We queried departed New Mexico nurses by selecting New Mexico nurses from the license database whose last state of residence on file was not New Mexico, resulting in 8,545 nurse records. Similarly, departed out of state nurses were queried by selecting out of state nurses from the license database whose last state of residence on file was not New Mexico, resulting in 7,889 nurse records. Each group was analyzed from 1997 through 2007 and only cumulative departure rates were calculated. We were unable to identify when a nurse left the state, only that they had left the state. It is important to note that neither selection includes the license status of the departing nurse.

New Mexico Nurse Departure Rates

The cumulative departure rates of New Mexico nurse cohorts exhibit two distinct trends: a slow consistent decrease followed by a rapid increase. Table 10 shows the number of New Mexico nurses who left the state by first license year and the corresponding total first licenses issued to New Mexico nurses. In 1997, the state licensed 506 New Mexico nurses, of which 127 have since left the state, for a departure rate of 25%. From the 1997 cohort to the 2002 cohort, the New Mexico nurse departure rate steadily fell from 25% to 21%. Over the same period, both the number of departures and the number of total licenses issued to New Mexico nurses decreased in roughly the same proportion, except in 2001 when each increased by about the same proportion.

Beginning in 2003, it appears New Mexico has been a virtual revolving door used by foreign-educated nurses. NMBON has a clearing house verify nursing education credentials and allows the foreign nursing graduates to take the NCLEX-RN from their home county. The number of first New Mexico licenses issued per year increased almost seven times from 454 in 2002 to 3,090 in 2007. It is highly doubtful the New Mexico nursing education system expanded capacity at the same rate during this period.¹² The more likely scenario is the number of foreign-educated nurses receiving their first New Mexico license increased substantially while the number of state-educated nurses increased moderately. Subsequent to receiving their first New Mexico license, foreign-educated nurses began practice in other states in large percentages.

Table 10: Departure Rates of New Mexico Nurses, 1997-2007

1st License Year	New Mexico Nurses		
	Cumulative New Mexico Departures	Total Licenses Issued	% of New Mexico Nurses that have left the state
1997	127	506	0.25
1998	116	477	0.24
1999	107	474	0.23
2000	100	457	0.22
2001	109	487	0.22
2002	97	454	0.21
2003	326	737	0.44
2004	1,043	1,531	0.68
2005	946	1,524	0.62
2006	1,985	2,672	0.74
2007	2,329	3,090	0.75
Grand Total	7,285	12,409	0.59

Source: BBER calculations based on NMBON license database, July 2008.

Note: 1,260 New Mexico nurses left New Mexico before 1997 and in 2008 and 7,116 licenses were issued to New Mexico nurses before 1997 and in 2008.

¹² Our first study identified three new nursing programs coming on line in 2006 and 2007 expecting to contribute an additional 292 nursing candidates a year. It is also possible that current nursing programs have expanded, but not to the magnitude needed to explain the large increase in first licenses issued beginning in 2003.

Out of State Nurse Departure Rates

Somewhat surprisingly, the out of state nurse departure rate was consistently around 55% for each first New Mexico license cohort. Out of state nurses licensed in 1997 have more time to leave New Mexico than a nurse licensed in 2007, however there is little variation in departure rates between 1997 and 2007. Table 11 shows the number of out of state nurses who left the state by first license year and the corresponding total first licenses issued to out of state nurses. In 1997, the state endorsed 1,080 nurses, of which 619 have since left the state, for a departure rate of 57%.

Table 11: Departure Rates of Out of State Nurses, 1997-2007

1st NM License Year	Out of State Nurses		
	Cumulative New Mexico Departures	Total Licenses Issued	% of Out of State Nurses that have left New Mexico
1997	619	1,080	0.57
1998	513	938	0.55
1999	458	837	0.55
2000	470	837	0.56
2001	452	826	0.55
2002	351	735	0.48
2003	1,244	1,841	0.68
2004	427	891	0.48
2005	357	755	0.47
2006	456	908	0.50
2007	474	878	0.54
Grand Total	5,821	10,526	0.55

Source: BBER calculations based on NMBON license database, July 2008.

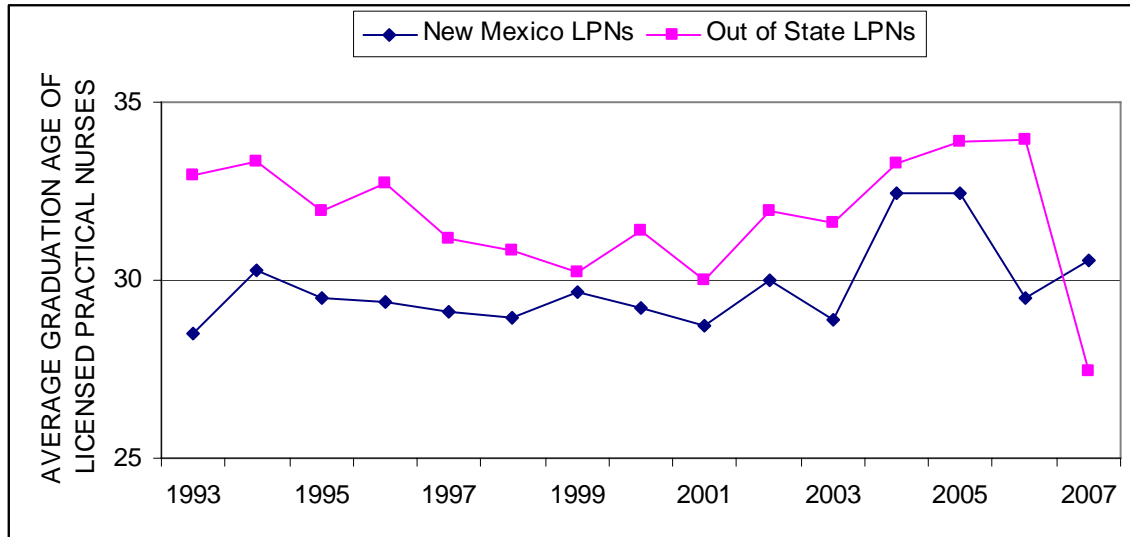
Note: 2,067 out of state nurses left New Mexico before 1997 and in 2008 and 7,324 licenses were issued to out of state nurses before 1997 and in 2008.

CONCLUSION

The NMBON license data allowed us to observe trends in the inflow and outflow of New Mexico nurses previously unseen. We split the nursing population into two groups, New Mexico nurses and out of state nurses. For the most part, the growth in New Mexico nurses graduating occurred between 2003 and 2007. The average age of New Mexico nurses graduating has been increasing throughout the study period. However, the decreased average time between graduation and first license has led to a younger average first license age and a recent explosion of first licensed New Mexico nurses. On the other hand, out of state nurses have been entering the state's nursing population at older ages and in steadily increasing numbers. New Mexico nurses exhibit a higher retention rate than out of state nurses: the first two years are important in retaining New Mexico nurses, whereas the first four years are important in retaining out of state nurses. In addition to the higher retention rates, New Mexico nurses exhibit a lower departure rate than out of state nurses, after taking foreign-educated nurses into account.

APPENDIX

Figure 1a: Average Graduation Age of Licensed Practical Nurses, 1993-2007



Source: BBER calculations based on NMBON license database, July 2008.

Table 1a: Graduation Age by Year of New Mexico Licensed Practical Nurses

Graduation Year	Graduation Age									Total
	UNDER 25	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	
1993 - 1997	231 39%	116 20%	89 15%	65 11%	40 7%	31 5%	13 2%	4 1%	0 0%	589
1998 - 2002	381 42%	180 20%	109 12%	105 12%	58 6%	42 5%	18 2%	9 1%	1 0%	903
2003 - 2007	356 36%	183 18%	160 16%	102 10%	83 8%	52 5%	41 4%	18 2%	4 0%	999
Total	968	479	358	272	181	125	72	31	5	2,491

Frequency Missing = 22

Source: BBER calculations based on NMBON license database, July 2008.

Note: 1,538 New Mexico licensed practical nurses graduated before 1993.

Table 2a: Graduation Age by Year of Out of State Licensed Practical Nurses

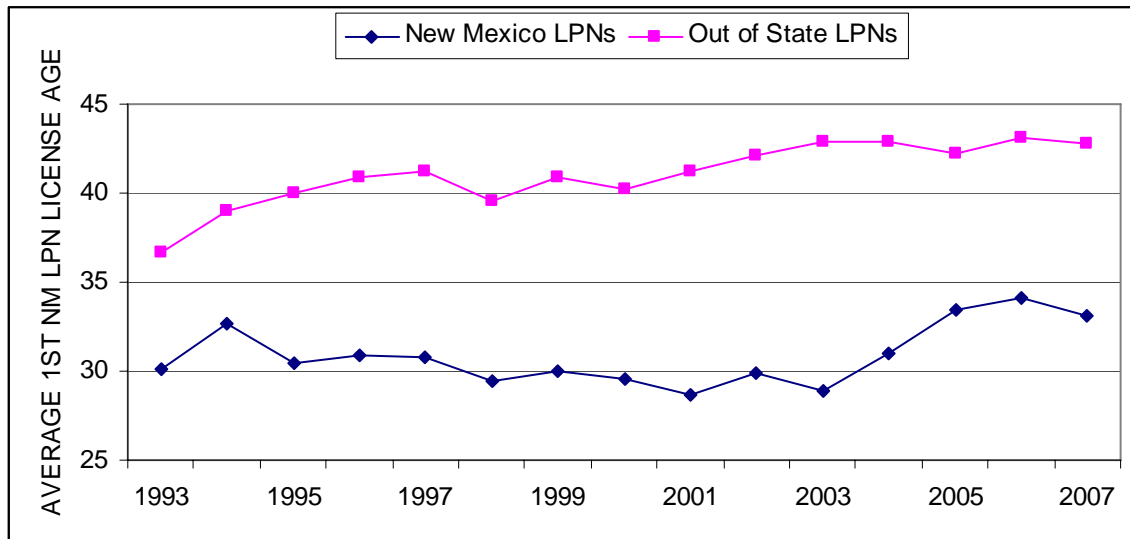
Graduation Year	Graduation Age										Total
	UNDER 25	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	OVER 65	
1993 - 1997	116 24%	100 20%	101 21%	71 14%	57 12%	32 7%	11 2%	3 1%	0 0%	1 0%	492
1998 - 2002	80 29%	69 25%	55 20%	27 10%	15 5%	15 5%	7 3%	4 1%	1 0%	0 0%	273
2003 - 2007	41 28%	31 21%	23 16%	15 10%	12 8%	10 7%	10 7%	3 2%	0 0%	0 0%	145
Total	237	200	179	113	84	57	28	10	1	1	910

Frequency Missing = 6

Source: BBER calculations based on NMBON license database, July 2008.

Note: 1,715 out of state licensed practical nurses graduated before 1993.

Figure 2a: Average First New Mexico License Age of Out of State Licensed Practical Nurses, 1993-2007



Source: BBER calculations based on NMBON license database, July 2008.

Table 3a: First License Age by Year of New Mexico Licensed Practical Nurses

1st License Year	1st License Age									Total
	UNDER 25	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	
1993 - 1997	172 33%	92 18%	86 17%	69 13%	40 8%	34 7%	17 3%	6 1%	0 0%	516
1998 - 2002	318 39%	183 22%	104 13%	103 13%	54 7%	37 5%	12 1%	8 1%	1 0%	820
2003 - 2007	342 29%	227 19%	189 16%	141 12%	109 9%	79 7%	57 5%	28 2%	10 1%	1,182
2008	1 7%	1 7%	7 47%	2 13%	1 7%	1 7%	1 7%	1 7%	0 0%	15
Total	833	503	386	315	204	151	87	43	11	2,533

Frequency Missing = 27

Source: BBER calculations based on NMBON license database, July 2008.

Note: 1,491 New Mexico licensed practical nurses received their first license before 1993.

Table 4a: First New Mexico License Age by Year of Out of State Licensed Practical Nurses

1st License Year	1st NM License Age										Total
	UNDER 25	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	OVER 65	
1993 - 1997	29 6%	60 12%	83 16%	86 17%	87 17%	90 17%	51 10%	18 3%	9 2%	4 1%	517
1998 - 2002	48 7%	86 12%	98 14%	97 14%	123 17%	122 17%	73 10%	49 7%	16 2%	2 0%	714
2003 - 2007	39 5%	71 10%	101 14%	95 13%	85 12%	114 16%	122 17%	64 9%	26 4%	10 1%	727
2008	1 9%	1 9%	0 0%	3 27%	2 18%	0 0%	2 18%	0 0%	1 9%	1 9%	11
Total	117	218	282	281	297	326	248	131	52	17	1,969

Source: BBER calculations based on NMBON license database, July 2008.

Note: 662 out of state licensed practical nurses received their first New Mexico license before 1993.