

North Carolina Trends in Nursing: 1987 - 2006

RN and LPN Workforce Demographics

June, 2007

The North Carolina Center for Nursing

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This report reviews trends over the last 20 years in the demographic characteristics of RNs and LPNs actively practicing in the nursing workforce in North Carolina. All analyses presented in this report are based only on those nurses employed in full or part time nursing positions within the state, based on information reported in the biennial license renewal files collected and maintained by the North Carolina Board of Nursing. Knowledge about how the demographic characteristics of the nursing workforce are changing allows us to anticipate related issues such as the link between the aging of the nursing workforce and retirement, and to determine if efforts to increase diversity within the profession have been successful. The charts and tables presented here examine both the RN and LPN workforces in terms of their age, race, and gender characteristics from 1987 through 2006; a projection of the age distribution of the RN workforce into the year 2020; and a profile of the changing educational characteristics of the RN workforce.

In 2004, the average age within the national RN workforce was 45.4 years old, according to findings from the 2004 National Sample Survey of Registered Nurses.¹ In North Carolina, the average age of RNs in the workforce that year was 43.8 years. The graph and data table on page 4 show changes in the average age of both the RN and LPN workforce over the past 20 years. The major trend has been a progressive increase over time. Average age in the LPN workforce appeared to drop in 2001 and 2002, but regained its earlier level in 2003, suggesting a problem in the age data those years rather than an actual decline in the age structure of that workforce. There has, however, been a leveling off in the average age of the LPN workforce over the past 3 or 4 years. In the RN workforce the average age rose steadily over the past 19 years and dropped slightly in the past year. This decline appears to be a result of both a slight increase in younger RNs in the workforce (age 21 – 25: 5% in 2004, 6.6% in 2006) and a slight decline in RNs aged 36 – 50 as a proportion of the total workforce (from 45% in 2004 to 43% in 2006). The proportion of other age groups represented in the RN workforce has remained essentially the same over the past 3 years.

Page 5 shows the age distribution of our current RN and LPN workforce. Note that 27.2% of RNs and 36.5% of LPNs currently in the workforce are over the age of 50. Page 6 presents a forecast of expected changes in the age distribution of the RN workforce to the year 2020.² Based on actual workforce age statistics in North Carolina in 2000, these long range estimates show a significant change in the shape of the age distribution for

RNs: more are expected to remain in the workforce at older ages than has been true in the past. These trends raise serious planning issues for nurse employers. How can work processes and environments – especially in hospitals and nursing homes - be adapted or changed in order to retain as many of these older workers in direct care roles as possible? What are the consequences of losing a large portion of our most experienced nurses to retirement in a relatively short period of time? What can nurse employers do to ensure that clients and patients will not be adversely affected by these changes in the workforce?

Another demographic issue facing nursing workforce planners is the relatively low level of men and racial/ethnic minorities in the profession. Nationally, men comprised 6.1% of the RN workforce in the year 2004,¹ an increase of just 0.2% since 2000, and 1.7% since 1992. In North Carolina the proportion of men in the RN workforce has increased faster than the national trend: 2.8% over 1992 levels, a total of 6.3% in 2000 rising to 6.9% in 2006. In the LPN workforce, the proportion of men rose at about the same rate as in the RN workforce from 1987 to 1995, but leveled off and has not changed much in the past 10 years. The chart on page 7 reveals this trend. Constituting 4% of the LPN workforce in 1992, the proportion of men rose to 4.8% in 1996, 5.1% in 2000, and rose to 5.3% in 2006.

Achieving racial parity with the people they serve is an important issue in nursing, as it is in all health care professions. According to the 2000 census, approximately 28% of North Carolina's population is composed of people from racial minority groups.³ African Americans make up 21.6%, American Indians 1.2%, Asians 1.4%, other racial groups 2.3%, and those who report they are multiracial compose 1.3% of the state's population. Hispanics, who are an ethnic group comprised of all of the above-mentioned racial groups, account for 4.7% of the state's population, based on 2000 census counts. Our examination of the racial characteristics of nurses in the state shows that the LPN workforce has come close to achieving racial parity with the general population over the past two decades. Within the RN workforce, however, only 14.2% are people of color. The proportion has been increasing in recent years, but very slowly (see page 8).

Pages 9 and 10 explore this issue further by showing how various racial and ethnic minority groups within the RN and LPN workforces have changed over time. Blacks and Asians have been the fastest growing minority groups within the RN workforce. Proportionately, blacks grew from 7.3% in 1987 to 9.5% in 2006. Asian RNs made up just 0.2% in 1987, but grew to 2.2% of the total workforce by 2006 (see page 9). Blacks have consistently made up almost a quarter of the LPN workforce in our state for the past 20 years. In 2006, 24.4% of all LPNs in the workforce were black. Although their numbers are still quite small, both Hispanics and

American Indians have substantially increased their presence in the LPN workforce (see page 10): Hispanics grew from 0.1% to 0.9% of the workforce from 1987 to 2006; American Indians from 0.8% to 1.5%; Asians from 0.2% to 0.7%; and LPNs identifying themselves as multiracial or from other racial groups grew from 0% in 1987 to 1.4% in 2006. When viewing the charts on pages 9 and 10 note that two different axis scales are used – the bars represent the actual number increase for minority groups that constituted less than 1.5% of the total workforce in 2006 and the line graphs are groups that constitute more than 1.5% of the total workforce.

Page 11 reports the percentage of RNs in the 2006 workforce that have extended their education beyond entry level, based on the type of entry-level degree. This is a snapshot of all RNs in the workforce as of October 31, 2006, some of whom have been in the profession for many years, and others who are just starting out. Among RNs, educational mobility does not usually occur in the early years of a career. Longitudinal analysis of educational mobility among North Carolina RNs revealed that, over a 20 year period, about 25% of RNs extended their education beyond entry level, and the timing of that additional education was spread out over the entire 20 year period.⁴ The data and chart on Page 12 also presents an educational profile of the RN workforce, but this time by showing just the highest degree held and how that has changed over time. Since the majority of nurses do not pursue education beyond entry-level, the chart on Page 12 also reveals the changes that have occurred in the types of available nursing education programs over the past 20 years. It shows the sharp decline in the proportion of RNs educated in hospital-based diploma programs and the concurrent increase educated in associate degree programs. Although difficult to see in this busy graph, it also shows that the proportion of the RN workforce holding a Master's Degree in Nursing more than doubled from 3% in 1990 to 6.6% in 2006. Similarly, the number of RNs holding a doctoral degree has grown by 157% from a total of 176 in 1990 to 452 in 2006.

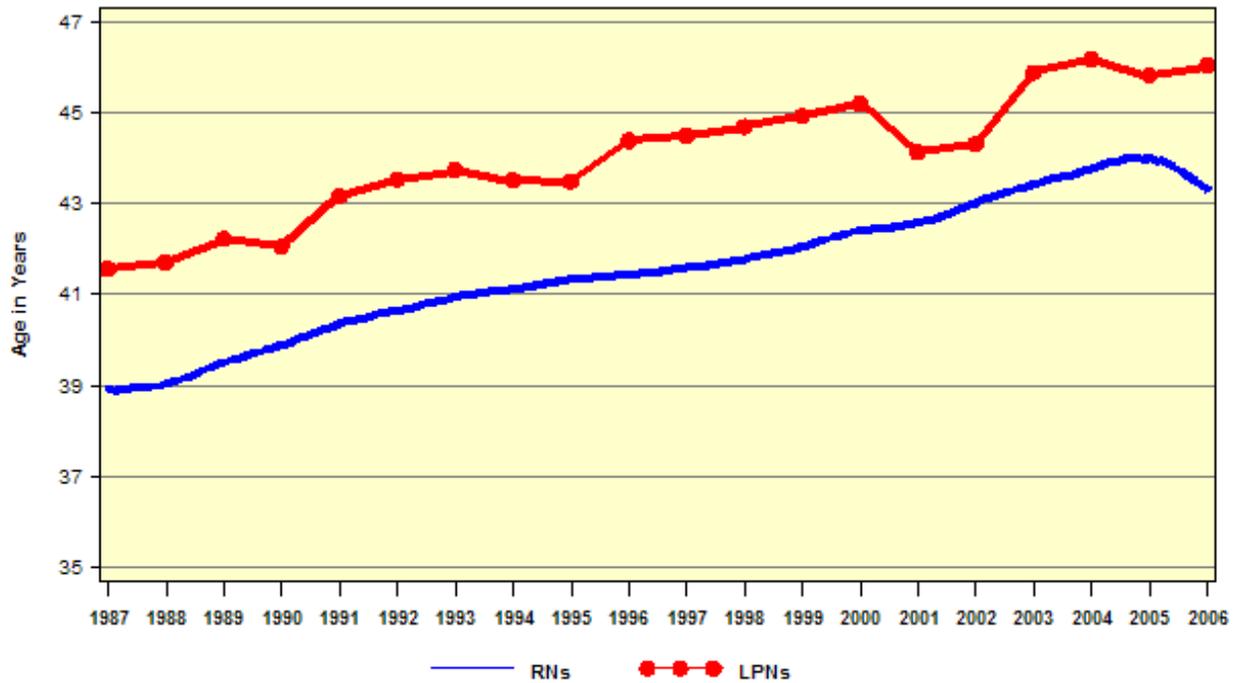
¹ The Registered Nurse Population: Findings from the March 2004 National Sample Survey of Registered Nurses. June, 2006. U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions.

² These estimates were calculated using the 2004 version of the Nurse Supply Model developed by the Bureau of Health Professions at the U.S. Department of Health and Human Services, Health Resources and Services Administration.

³ Census 2000 Summary File 1 for the state of North Carolina, prepared by the U.S. Census Bureau, 2001. Published by the North Carolina State Data Center, accessed at www.census.state.nc.us

⁴ Bevill, J.W., Cleary, B.L., Lacey, L.M., and Nooney, J.G. (2007) "Educational Mobility of RNs in North Carolina: Who Will Teach Tomorrow's Nurses?" *American Journal of Nursing*, Vol. 107, No. 5. pp. 60 – 70.

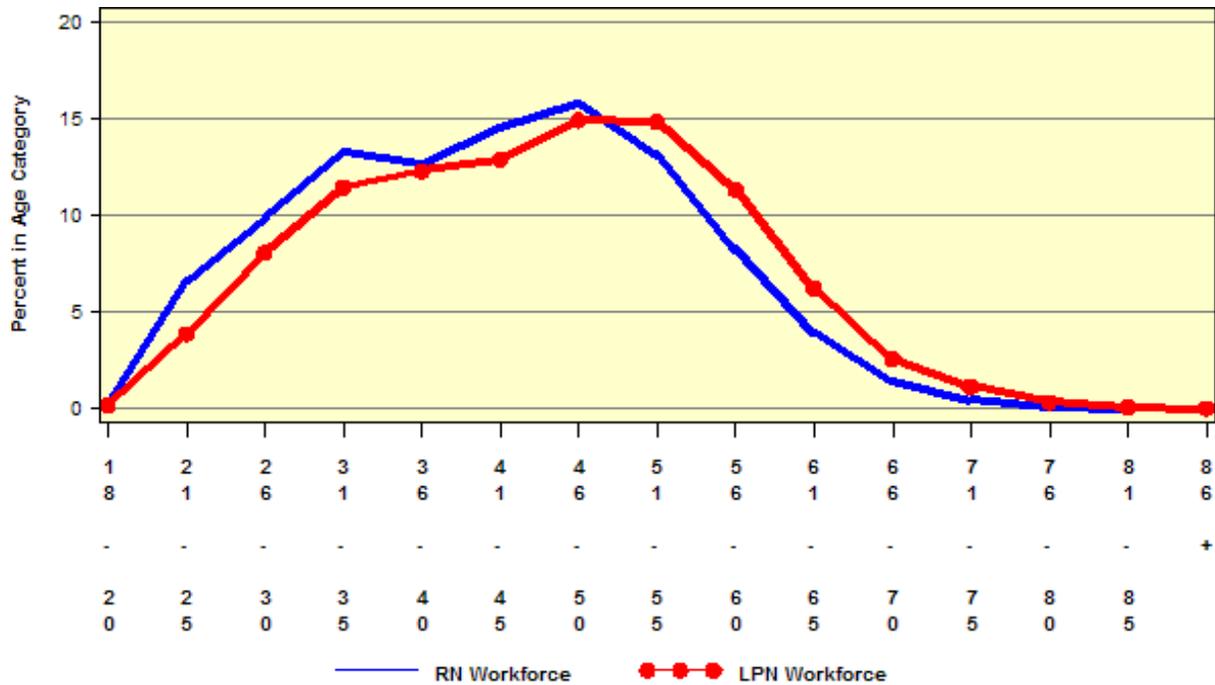
Average Age in the Nursing Workforce in North Carolina



Year	RNs	LPNs
1987	38.9	41.6
1988	39.0	41.7
1989	39.5	42.2
1990	39.9	42.1
1991	40.4	43.2
1992	40.6	43.5
1993	40.9	43.8
1994	41.1	43.5
1995	41.3	43.5
1996	41.4	44.4
1997	41.6	44.5
1998	41.8	44.7
1999	42.1	44.9
2000	42.4	45.2
2001	42.6	44.1
2002	43.0	44.3
2003	43.4	45.9
2004	43.8	46.2
2005	44.0	45.8
2006	43.3	46.0

Data source: RN and LPN license renewal data collected by the NC Board of Nursing as of 10/31 each year. Any LPN also holding a valid RN license has been removed from the LPN data.

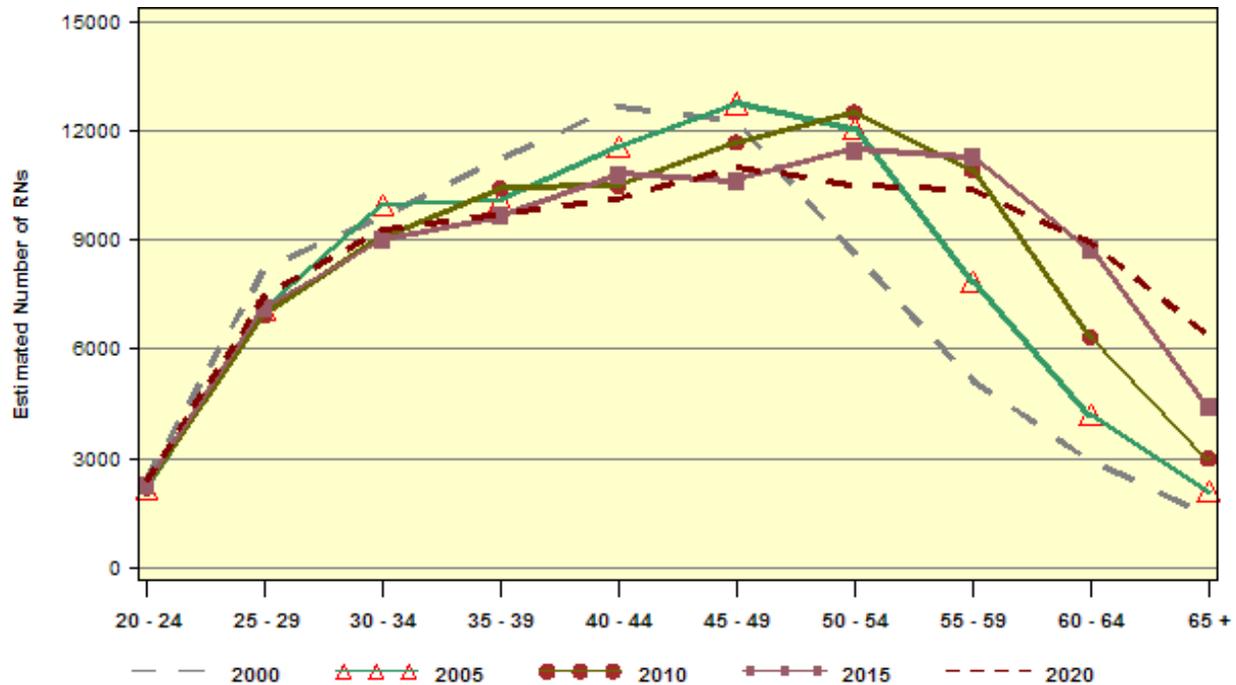
Age Distributions within the 2006 Nursing Workforce in North Carolina



Age Group	Number of RNs	Percentage of RNs	Number of LPNs	Percentage of LPNs
18 - 20	175	0.2%	28	0.2%
21 - 25	5,346	6.6%	647	3.9%
26 - 30	8,019	9.9%	1,348	8.0%
31 - 35	10,754	13.2%	1,915	11.4%
36 - 40	10,270	12.6%	2,056	12.3%
41 - 45	11,792	14.5%	2,153	12.9%
46 - 50	12,824	15.8%	2,495	14.9%
51 - 55	10,659	13.1%	2,481	14.8%
56 - 60	6,683	8.2%	1,897	11.3%
61 - 65	3,206	3.9%	1,041	6.2%
66 - 70	1,127	1.4%	427	2.5%
71 - 75	344	0.4%	192	1.1%
76 - 80	70	0.1%	54	0.3%
81 - 85	20	0.0%	12	0.1%
86 +	0	0	2	0.0%
age unknown	19	0.0%	2	0.0%

Data source: RN and LPN license renewal data collected by the NC Board of Nursing as of 10/31/06. Any LPN also holding a valid RN license has been removed from the LPN data.

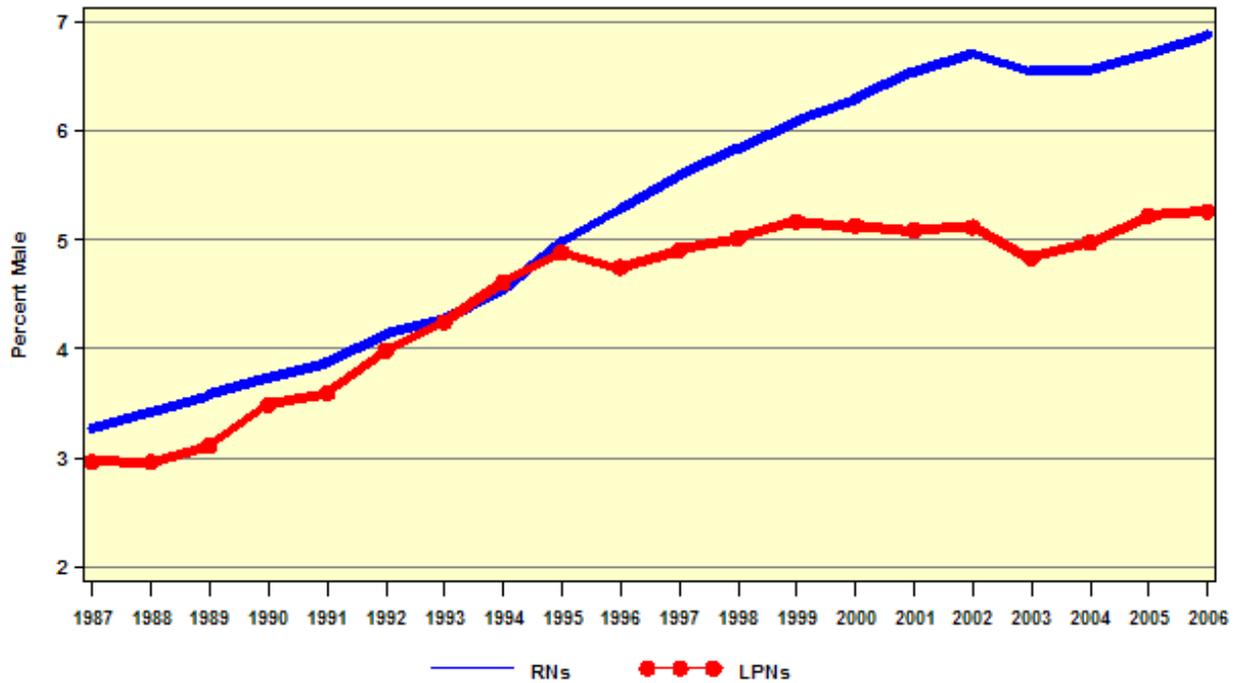
Future Forecasts of RN Workforce Age Distributions in North Carolina: 2000 - 2020



Age Group	2000	2005	2010	2015	2020
20 - 24	2,441	2,164	2,217	2,310	2,404
25 - 29	8,222	7,102	6,946	7,156	7,457
30 - 34	9,630	9,964	9,053	9,006	9,300
35 - 39	11,243	10,108	10,422	9,669	9,691
40 - 44	12,667	11,555	10,488	10,815	10,138
45 - 49	12,242	12,750	11,679	10,649	10,993
50 - 54	8,616	12,059	12,509	11,488	10,504
55 - 59	5,152	7,863	10,922	11,295	10,370
60 - 64	2,909	4,197	6,336	8,774	8,929
65 +	1,477	2,104	3,007	4,455	6,364
Total RNs Expected in the Workforce	74,599	79,866	83,580	85,617	86,150

Data source: Using actual RN workforce age statistics for 2000, based on RN license renewal data, these estimations were calculated by the most recent version of the Nurse Supply Model. These age profiles are based on the number and age of RNs expected to be employed full or part time in the nursing workforce in North Carolina in the future. Because these are model-based extrapolations, the numbers in each age group on this page do not correspond to those on the previous page which are from a different source and cover a different time period. However, an examination of the actual age profile of the 2005 RN workforce and the figures for 2005 in the table above show a remarkable consistency in both the age profile and the total number in the workforce.

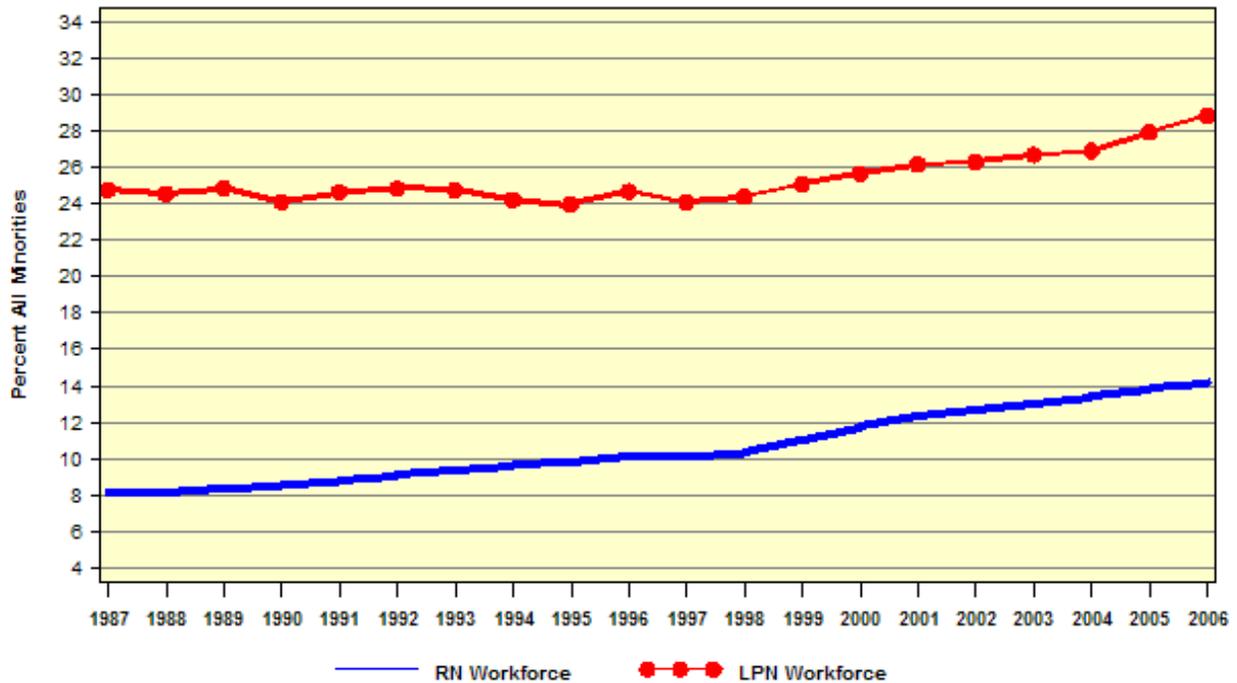
Gender Distribution in the Nursing Workforce in North Carolina



Year	Female RNs	Male RNs	Missing RNs	Total RNs	Female LPNs	Male LPNs	Missing LPNs	Total LPNs
1987	37,563	1,271	4	38,838	12,780	391	1	13,172
1988	40,282	1,427	5	41,714	13,029	398	0	13,427
1989	42,438	1,578	3	44,019	13,444	433	0	13,877
1990	44,192	1,716	0	45,908	14,632	529	1	15,162
1991	46,753	1,889	0	48,642	14,167	530	38	14,735
1992	49,237	2,123	0	51,360	14,508	602	1	15,111
1993	52,743	2,351	4	55,098	14,986	665	5	15,656
1994	54,676	2,603	2	57,281	15,425	746	4	16,175
1995	57,455	3,013	34	60,502	15,746	809	6	16,561
1996	59,604	3,327	53	62,984	14,112	704	2	14,818
1997	62,236	3,693	105	66,034	14,536	751	16	15,303
1998	63,988	3,983	195	68,166	14,526	768	18	15,312
1999	65,843	4,274	101	70,218	14,611	797	5	15,413
2000	67,365	4,522	15	71,902	14,578	789	1	15,368
2001	67,457	4,714	13	72,184	14,759	792	3	15,554
2002	70,391	5,063	46	75,500	14,734	795	0	15,529
2003	71,296	4,996	10	76,302	14,855	755	0	15,610
2004	72,880	5,115	11	78,006	14,818	776	0	15,594
2005	74,468	5,362	144	79,974	15,582	861	32	16,475
2006	75,585	5,591	132	81,308	15,825	882	43	16,750

Data source: RN and LPN license renewal data collected by the NC Board of Nursing. Any LPN also holding a valid RN license has been removed from the LPN data.

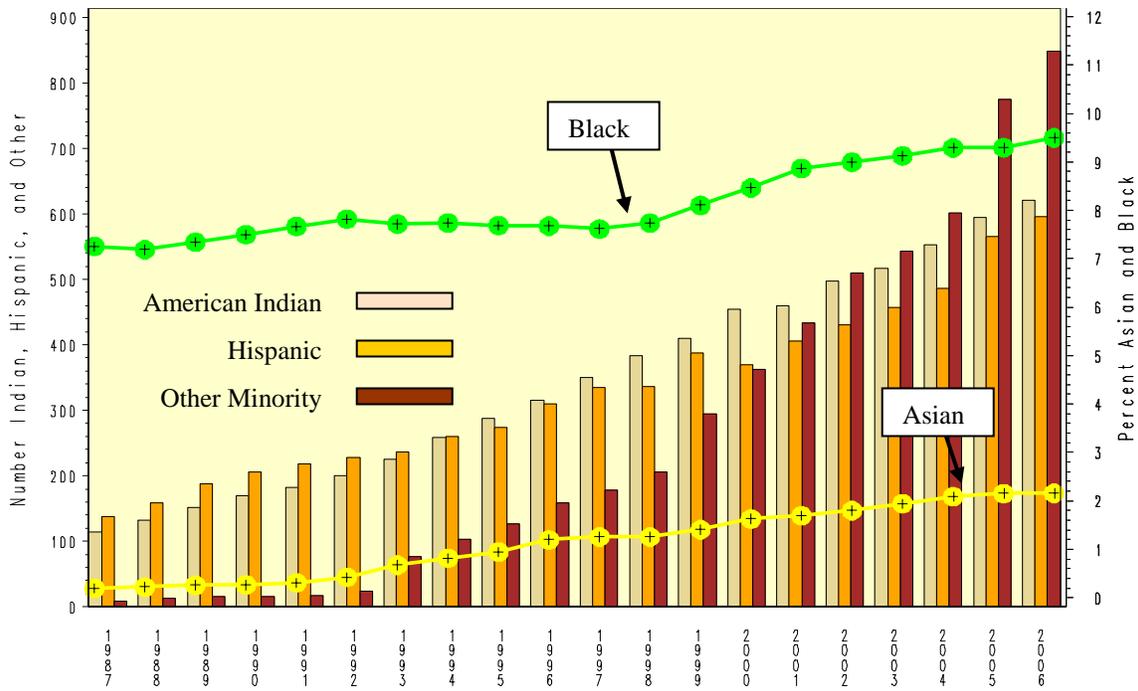
Comparison of RN and LPN Workforce Racial Composition



Year	RNs			LPNs		
	% White	% Black	% Other	% White	% Black	% Other
1987	89.3	7.3	0.9	71.6	23.6	1.1
1988	88.9	7.2	0.9	71.8	23.3	1.2
1989	88.9	7.3	1.1	71.7	23.6	1.3
1990	89.5	7.5	1.1	71.3	22.8	1.4
1991	89.8	7.7	1.2	73.2	23.3	1.4
1992	90.1	7.8	1.3	74.0	23.3	1.6
1993	90.1	7.7	1.6	74.4	23.0	1.8
1994	90.0	7.7	1.9	75.0	22.3	2.0
1995	89.1	7.7	2.1	74.7	21.9	2.1
1996	88.1	7.7	2.4	74.2	22.6	2.1
1997	85.8	7.6	2.6	72.5	22.1	2.0
1998	83.9	7.7	2.6	72.6	22.0	2.4
1999	86.2	8.1	3.0	73.9	22.5	2.6
2000	87.3	8.5	3.3	73.7	22.8	2.9
2001	87.1	8.9	3.5	73.4	23.1	3.1
2002	86.9	9.0	3.7	73.3	23.1	3.2
2003	86.5	9.1	3.9	72.9	23.3	3.4
2004	86.0	9.3	4.2	72.7	23.4	3.5
2005	85.5	9.3	4.6	71.4	23.8	4.1
2006	85.2	9.5	4.7	70.4	24.4	4.5

Data Source: RN and LPN license renewal data collected by the NC Board of Nursing. Any LPN also holding a valid RN license has been removed from the LPN data. Absolute numbers of RNs and LPNs in each racial category can be found in the tables on pages 9 and 10.

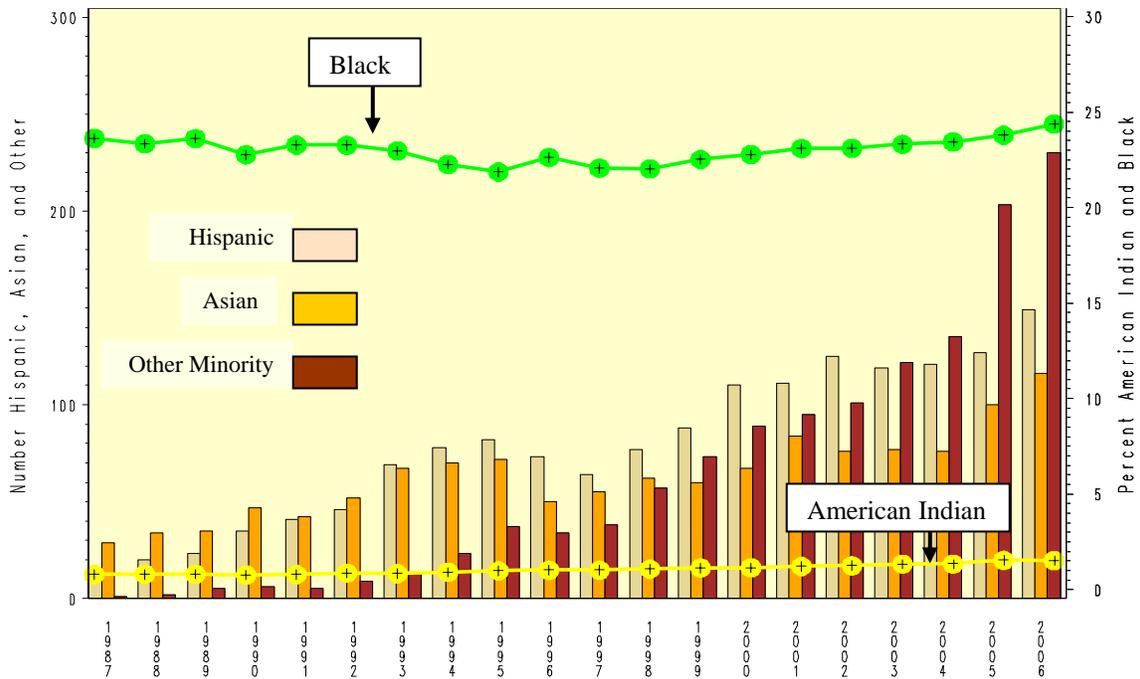
Changes in the RN Minority Workforce in North Carolina



Year	White	Black	American Indian	Hispanic	Asian	Other	Missing	Total
1987	34,668	2,819	114	138	76	8	1,015	38,838
1988	37,074	2,999	132	159	92	13	1,245	41,714
1989	39,117	3,233	151	187	114	16	1,201	44,019
1990	41,100	3,444	170	206	122	16	850	45,908
1991	43,662	3,731	182	218	152	17	680	48,642
1992	46,301	4,017	200	228	218	24	372	51,360
1993	49,657	4,252	225	236	371	76	281	55,098
1994	51,548	4,436	259	260	469	103	206	57,281
1995	53,897	4,653	288	274	573	126	691	60,502
1996	55,501	4,835	315	310	754	158	1,111	62,984
1997	56,690	5,031	350	335	830	178	2,620	66,034
1998	57,160	5,275	383	336	856	206	3,950	68,166
1999	60,505	5,691	410	387	987	295	1,943	70,218
2000	62,805	6,086	454	370	1,172	362	653	71,902
2001	62,864	6,402	460	405	1,223	434	396	72,184
2002	65,587	6,791	497	431	1,360	510	324	75,500
2003	65,978	6,963	516	457	1,485	543	360	76,302
2004	67,071	7,249	553	486	1,629	602	416	78,006
2005	68,344	7,433	595	565	1,722	775	540	79,974
2006	69,269	7,723	621	596	1,755	848	496	81,308

Data source: RN license renewal data collected by the NC Board of Nursing.

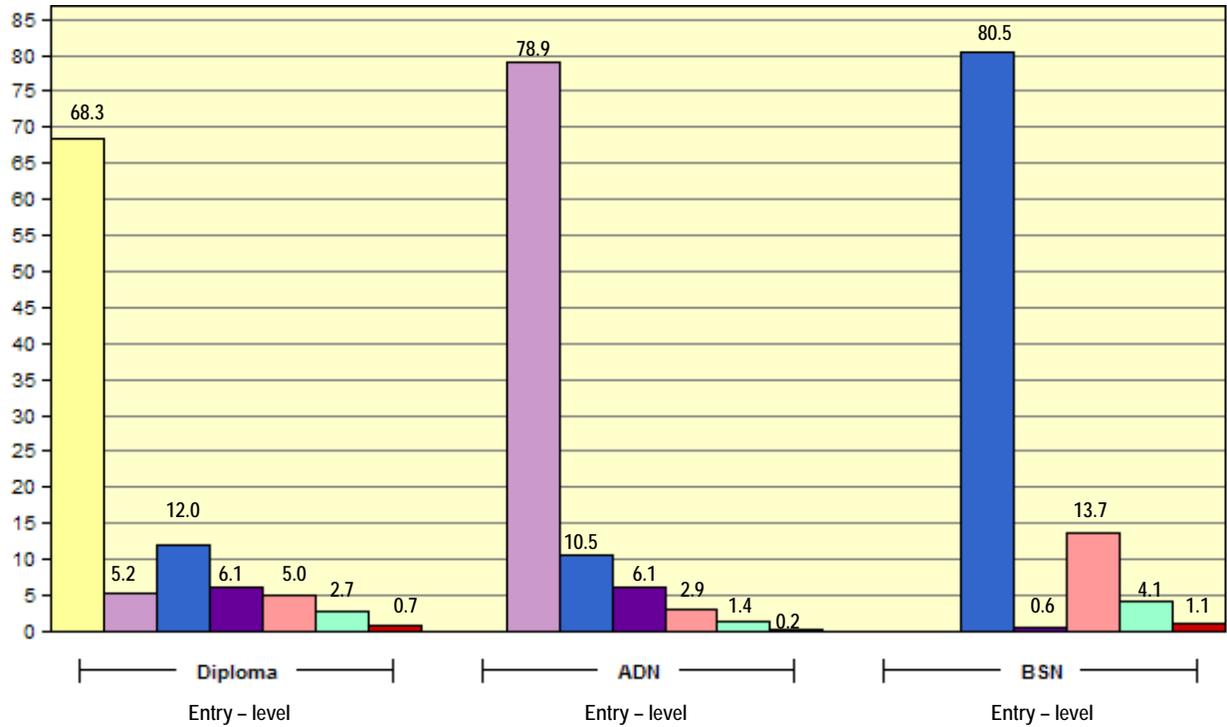
Changes in the LPN Minority Workforce in North Carolina



Year	White	Black	American Indian	Hispanic	Asian	Other	Missing	Total
1987	9,431	3,113	105	16	29	1	477	13,172
1988	9,634	3,135	108	20	34	2	494	13,427
1989	9,946	3,278	112	23	35	5	478	13,877
1990	10,805	3,452	117	35	47	6	700	15,162
1991	10,790	3,430	117	41	42	5	310	14,735
1992	11,181	3,516	132	46	52	9	175	15,111
1993	11,648	3,596	132	69	67	13	131	15,656
1994	12,135	3,601	148	78	70	23	120	16,175
1995	12,366	3,621	163	82	72	37	220	16,561
1996	10,999	3,353	151	73	50	34	158	14,818
1997	11,089	3,376	156	64	55	38	525	15,303
1998	11,110	3,374	165	77	62	57	467	15,312
1999	11,395	3,472	174	88	60	73	151	15,413
2000	11,331	3,501	177	110	67	89	93	15,368
2001	11,417	3,592	189	111	84	95	66	15,554
2002	11,386	3,589	195	125	76	101	57	15,529
2003	11,383	3,640	210	119	77	122	59	15,610
2004	11,333	3,656	210	121	76	135	63	15,594
2005	11,758	3,920	253	127	100	203	114	16,475
2006	11,795	4,084	255	149	116	230	121	16,750

Data source: LPN license renewal data collected by the NC Board of Nursing. Any LPN also holding a valid RN license has been removed from the analysis.

Educational Mobility within the 2006 RN Workforce in North Carolina



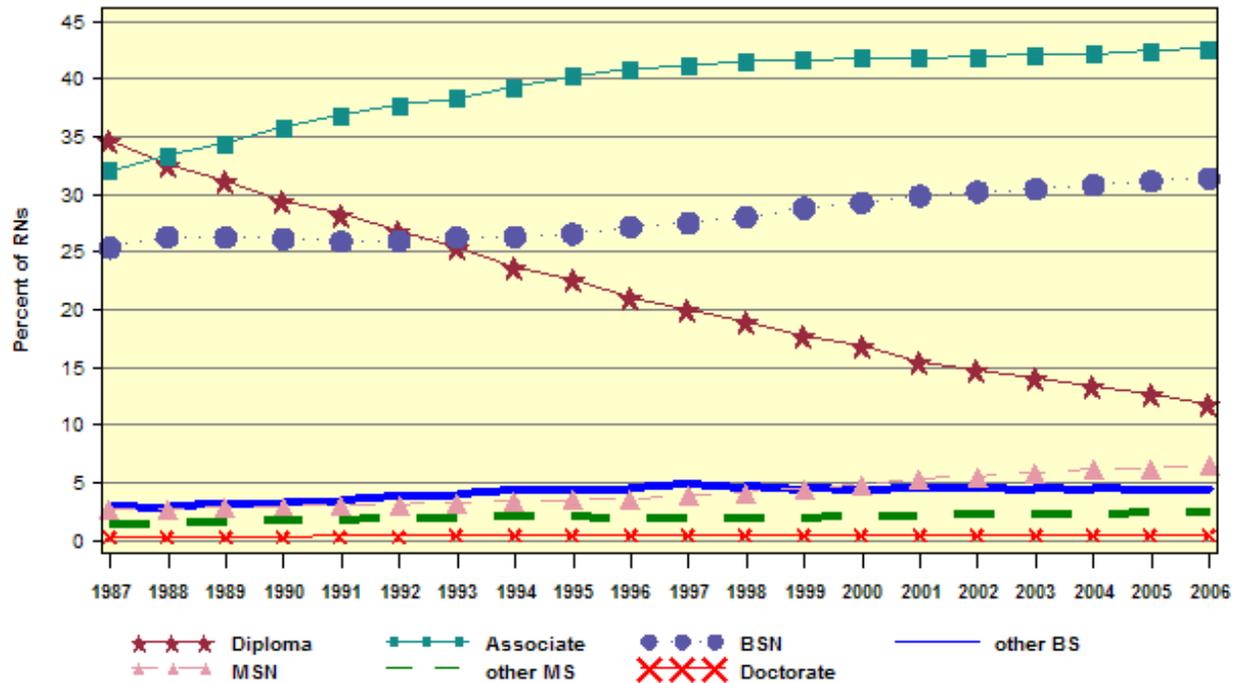
Entry Level Degree Type and Highest Degree Earned by RNs in the 2006 NC Nursing Workforce

Highest Degree Reported	Entry-level RN degree type:		
	Diploma	ADN	BSN
Diploma	68.3%	.	.
Associate	5.2%	78.9%	.
BSN	12.0%	10.5%	80.5%
BA/BS	6.1%	6.1%	0.6%
MSN	5.0%	2.9%	13.7%
MA/MS	2.7%	1.4%	4.1%
Doctorate	0.7%	0.2%	1.1%
Total	100.0%	100.0%	100.0%

Note: The chart and table show all of the RNs in the 2006 nursing workforce by their type of entry-level degree, and the percentage that have maintained that degree as their highest educational degree or have earned a degree beyond that entry level. "Highest Degree" reports only the highest degree held by an RN as of 10/31/06, not any interim degree(s).

Data source: RN license renewal data collected by the NC Board of Nursing as of 10/31/06. This data file includes both the entry-into-practice degree held by a nurse and the highest degree held at the time they last renewed their license. This analysis includes only those RNs actively practicing in the North Carolina nursing workforce in 2006.

Highest Degree Reported by RNs in the Nursing Workforce in North Carolina



Year	Diploma	Associate	BSN	Other BS / BA	MSN	Other MS / MA	Doctorate	Unknown	Total RN Workforce
1987	13,443	12,471	9,870	1,170	1,053	565	122	144	38,838
1988	13,603	13,942	10,993	1,231	1,157	638	140	10	41,714
1989	13,717	15,154	11,578	1,413	1,274	721	156	6	44,019
1990	13,544	16,446	12,024	1,530	1,368	816	176	4	45,908
1991	13,766	17,956	12,620	1,684	1,497	885	195	39	48,642
1992	13,753	19,376	13,346	2,004	1,626	995	222	38	51,360
1993	14,040	21,151	14,505	2,210	1,798	1,127	264	3	55,098
1994	13,592	22,528	15,114	2,558	1,988	1,219	280	2	57,281
1995	13,656	24,376	16,100	2,710	2,137	1,246	277	0	60,502
1996	13,311	25,781	17,143	2,893	2,293	1,271	292	0	62,984
1997	13,171	27,179	18,194	3,281	2,563	1,344	300	2	66,034
1998	12,910	28,371	19,142	3,226	2,848	1,353	314	2	68,166
1999	12,511	29,287	20,258	3,183	3,204	1,418	357	0	70,218
2000	12,145	30,092	21,104	3,216	3,479	1,496	370	0	71,902
2001	11,129	30,229	21,590	3,365	3,882	1,604	384	1	72,184
2002	11,103	31,653	22,857	3,522	4,231	1,728	406	0	75,500
2003	10,749	32,123	23,259	3,515	4,498	1,751	406	1	76,302
2004	10,397	32,926	24,054	3,531	4,824	1,846	427	1	78,006
2005	10,117	33,951	24,953	3,558	5,029	1,920	445	1	79,974
2006	9,639	34,668	25,565	3,621	5,378	1,985	452	0	81,308

Data source: RN license renewal data collected by the NC Board of Nursing. Diploma=hospital diploma (not an academic degree), Associate= Associate Degree in Nursing, BSN=Baccalaureate in Science of Nursing, Other BS/BA = Baccalaureate in Science or Arts (non-nursing degree), MSN=Masters in Science of Nursing, Other MS/MA = Masters of Science or Arts, Doctorate = any type of doctoral degree in any field.