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*UCSF Health Workforce Research Center
on Long-Term Care*

Research Report

Trends in Licensed Practical Nurse/Licensed Vocational Nurse Education and Licensure Examinations, 1998 to 2013

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Trends in Licensed Practical Nurse/Licensed Vocational Nurse Education and Licensure Examinations, 1998-2013

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Trends in Licensed Practical Nurse/Licensed Vocational Nurse Education and Licensure Examinations, 1998 to 2013

Executive Summary

Licensed practical nurses (LPNs), referred to as licensed vocational nurses (LVNs) in some states, are the second largest health care occupation that requires postsecondary education. Demand for LPNs is projected to grow substantially over the coming decades, particularly among long-term care providers, due to the aging of the US population. One third of LPNs are over age 50, prompting questions about whether the supply of newly licensed LPNs will be adequate to meet demand.

This report updates previous studies of trends in LPN education and licensure by presenting the newest available national data. The report describes trends in numbers and types of LPN education programs, numbers of persons completing LPN education and their characteristics, and numbers of persons taking and passing the National Council Licensure Examination-Practical Nurse (NCLEX-PN). It complements our [recent report](#) on trends in LPN employment and demographic characteristics.

Methods

We analyzed data from the Integrated Postsecondary Education Data System (IPEDS) describing LPN education programs. IPEDS is the most comprehensive source of data on postsecondary education in the United States. We also compiled data from the National Council of State Boards of Nursing on persons taking the NCLEX-PN.

Results

LPN Education

Trends in Numbers of Programs and Completions

Between 1998 and 2013:

- The number of LPN education programs in the United States grew by 30%, increasing from 839 to 1,094 programs.
- The number of persons completing LPN education programs grew by 64%, increasing from 32,105 to 56,486 persons, with the number of completions peaking at 60,799 in 2011.
- Most persons who completed LPN education programs were educated at 2-year institutions, such as community colleges, and completed non-degree programs of > 1 year but < 2 years duration.
- The number of LPN education programs operated by for-profit institutions grew more than 8-fold, increasing from 23 to 189 programs.
- Commensurate with the increase in for-profit LPN education programs, the number of persons completing LPN education programs at for-profit institutions increased from 1,785 to 13,458 persons.
- Public institutions accounted for the largest percentage of LPN education programs and completers throughout this time period but their share of programs decreased from 94% to 79% and their share of completions fell from 92% to 73%.

Demographic Characteristics of Persons Completing LPN Education

- Although the number of men completing LPN education programs more than doubled between 1998 and 2013, women still account for the overwhelming majority of persons (89%) completing LPN education programs.

- Whites remain the largest racial/ethnic group among persons completing LPN education programs, accounting for 63% of completers in 2013.
- Hispanics and Asian/Pacific Islanders had the highest rates of growth in the number of persons completing LPN education.
- The percentage rate by which African Americans completing LPN education grew was higher than the percentage rate for Whites but not as high as the rates of growth in Hispanics and Asian/Pacific Islanders completing LPN education.
- African American, Hispanic, Asian, and persons in other non-White racial/ethnic groups were more likely to complete for-profit LPN education programs than were Whites.

Regional Comparisons

- The ratio of LPN completions to population varies across the 4 Census regions, ranging from a low of 6 per 100,000 persons in the West region to a high of 10 per 100,000 persons in the Midwest region.

Between 1998 and 2013:

- The number of LPN education programs grew in all 4 Census regions. The largest increase was in the West region, where the number of LPN education programs increased by 67%.
- The number of LPN completions also grew substantially. The Northeast region had the largest percentage increase (98%) and the South had the smallest percentage increase (66%).
- The number of LPNs completing education programs at for-profit institutions increased substantially in all Census regions.
 - The increase was most pronounced in the West region, where the number of completions of LPN education programs at for-profit institutions increased from 566 to 4,321 completions.

- By 2013, for-profit education programs accounted for 46% of LPN completions in the West region.

LPN Licensure Examination Completions and Pass Rates

In 2014:

- 73,731 persons completed the NCLEX-PN examination and an estimated 51,547 passed the examination.
- 57,112 persons (77%) took the examination for the first time and 16,619 (23%) were repeat exam takers.
- The vast majority of NCLEX-PN examination takers (97%) completed their LPN education in the United States.
- US-educated LPNs were much more likely to pass the examination on the first attempt than internationally-educated LPNs (82% vs. 50%).
- Among both US-educated and internationally-educated LPNs, first-time exam takers were more likely to pass than repeat exam takers.

Between 1998 and 2014:

- The total number of persons passing the NCLEX-PN examination increased from 39,134 to 51,547, an increase of 32%.
- The pass rate for all LPN licensure exam takers decreased from 78% to 70% and the pass rate for US-educated LPNs decreased from 87% to 82% during this time period.

Conclusions

Three major findings emerge from this analysis of trends in LPN education and completion of the LPN licensure examination:

- The numbers of persons completing LPN education programs and passing the LPN licensure examination grew substantially between 1998 and 2011 and then decreased slightly between 2011 and 2013.

- Much of this increase is due to exponential growth in the numbers of persons completing for-profit LPN education programs, who now account for 24% of completions.
- The numbers of African Americans, Hispanics, and Asians completing LPN education programs have grown more rapidly than the number of Whites completing LPN education and they are more likely than Whites to complete for-profit LPN education programs.

These findings suggest a need to monitor trends in LPN education over time to assess whether supply is keeping pace with demand. Ongoing monitoring is critical to determine whether the decrease in completions between 2011 and 2013 reflects a minor adjustment due to the improvement of the US economy or the start of a long-term downward trend in completions.

Monitoring trends in for-profit LPN education is especially important because this sector accounts for a large and growing percentage of completions, especially among non-Whites. Students attending for-profit higher education institutions often incur substantially more student loan debt than students attending public institutions. In addition, recent increases in federal government scrutiny of for-profit higher education institutions could result in closures of LPN education programs, which could disrupt students' education and reduce the number of completions per year. Policymakers should also explore why non-White students are more likely to enroll in for-profit LPN education programs than non-Whites, even in regions with large numbers of public LPN education programs.

Trends in Licensed Practical Nurse/Licensed Vocational Nurse Education and Licensure Examinations, 1998 to 2013

Background

Licensed practical nurses (LPNs), referred to as licensed vocational nurses (LVNs) in some states, are the second largest health care occupation that requires postsecondary education. Demand for LPNs is projected to grow substantially over the coming decades. Due primarily to the aging of the US population, the number of full-time equivalent LPNs working in long-term care settings is expected to increase by 70% (approximately 70,000 LPNs) between 2010 and 2030.¹

Data describing the supply of LPNs raise questions about whether there will be sufficient numbers of LPNs to meet demand. In 2013, one third of LPNs were over age 50.² These LPNs will reach retirement age during the same time period as demand is projected to increase substantially. Substantial numbers of new LPNs will need to be educated and licensed to replace retiring LPNs. Data on trends in LPN education need to be analyzed to determine whether the capacity of LPN education programs is adequate to meet demand. Information on the numbers of persons passing the National Council Licensure Examination-Practical Nurse (NCLEX-PN) is also important because LPNs must be licensed to practice.

This report updates previous studies of trends in LPN education and licensure^{2,3} by presenting the latest national data available. The report describes trends in numbers and types of LPN education programs, numbers of persons completing LPN education and their characteristics, and numbers of persons taking and passing the NCLEX-PN. It complements our Center's [recent report](#)⁴ on trends in LPN employment and demographic characteristics.

Methods

We analyzed data from the Integrated Postsecondary Education Data System (IPEDS) describing completions of LPN education programs. IPEDS is a collection of interrelated surveys conducted annually by the National Center for Education Statistics, which is an agency of the US Department of Education. It is the most comprehensive source of data describing

postsecondary education in the United States. Completion of IEPDS surveys are mandatory for any institution that participates in (or applies to participate in) federal student financial aid programs. Institutions surveyed include 4-year universities & colleges, 2-year community & technical colleges, and non-degree granting schools. We analyzed trends in numbers of programs, numbers of completions, numbers of programs and completions by program length and ownership sector (public, private for-profit, private not-for-profit), and in the demographic characteristics of completers.

We also compiled data from the National Council of State Boards of Nursing on trends in the number of exam takers and pass rates for the NCLEX-PN. We compared US and foreign-educated exam takers and first-time and repeat exam takers.

Results

LPN Education

Trends in Numbers of Programs and Completions

The numbers of LPN education programs and completions steadily increased between 1998 and 2013. (Figures 1 and 2.) The number of programs grew by 30%, from 839 to 1,094, while the number of persons completing a program grew even faster, increasing from 32,105 to 56,486 persons, a rate of 64%.

Figure 1. Number of LPN Education Programs, 1998-2013

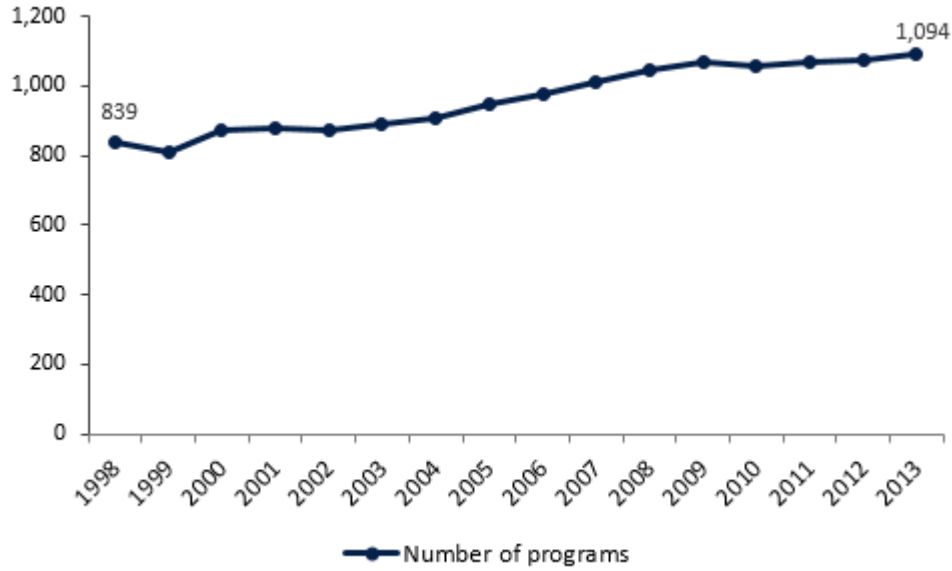
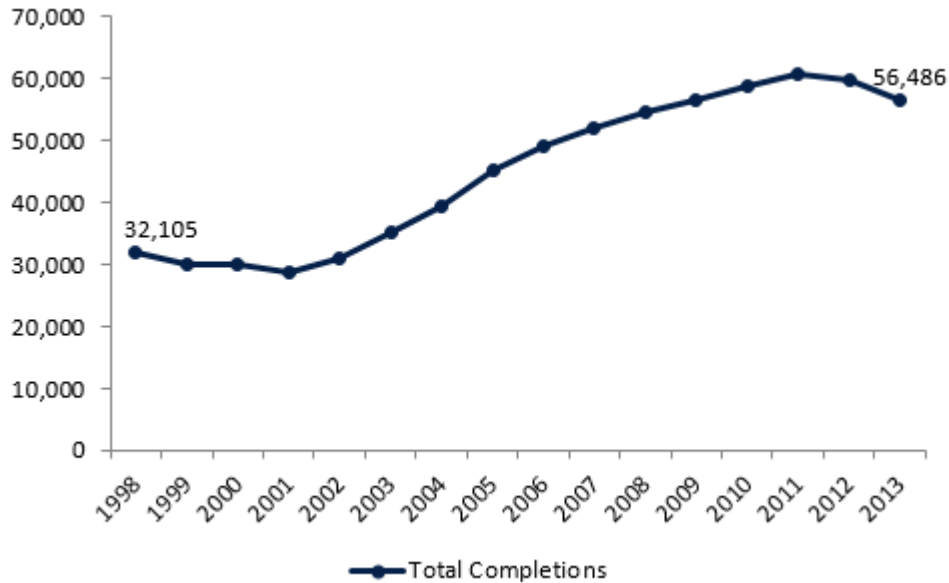


Figure 2. LPN Program Completions, 1998-2013



Because the rate of growth for LPN completions has outpaced the growth in programs, the average number of completions per program has increased by 38%, from 39 in 1998 to 54 in 2013. (Figure 3.) This is largely driven by significant growth in LPN completions between 2001 and 2011, which was not matched by comparable growth in the number of programs.

Since 2011, the trend has reversed: the number of completions has dipped while the number of LPN programs has continued to increase. The decrease in completions coincides with the recovery of the US economy from the Great Recession in 2008. Enrollment in higher education often drops when the economy improves because there are more job opportunities, which may lead some persons to work instead of pursuing additional education.⁵

Figure 3. LPN Completions Per Program, 1998-2013ⁱ

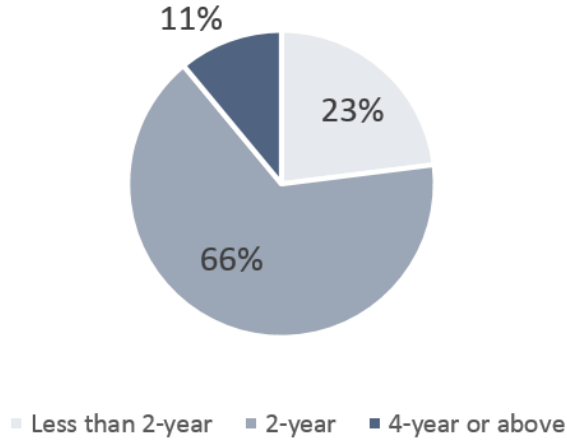


ⁱLPN programs that reported “zero” total completions were excluded from the calculation of average completions per program.

Type of Institution and Award Level

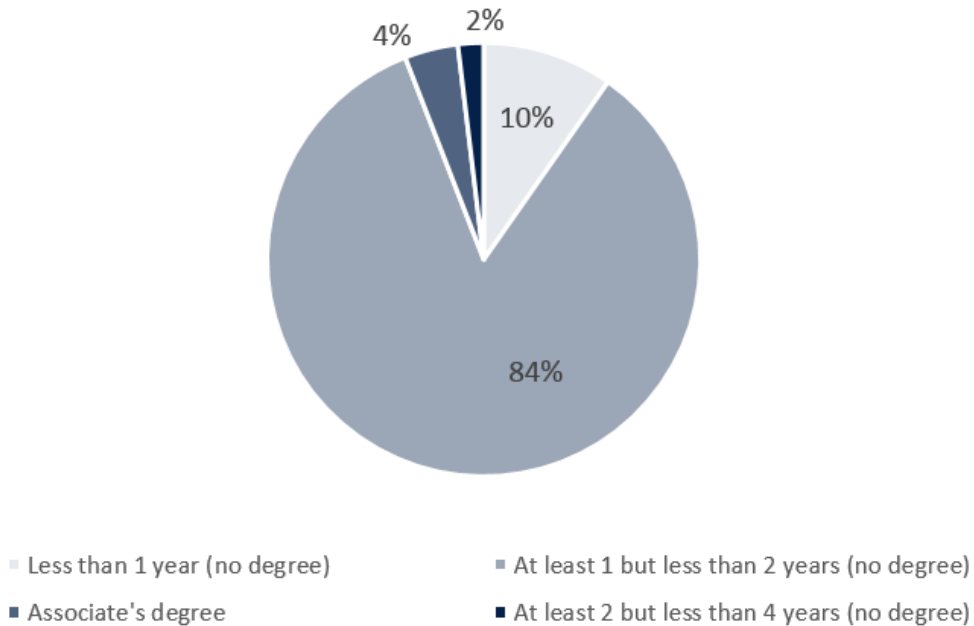
In 2013, approximately two-thirds of all LPN completions were reported by programs at 2-year institutions; nearly one-quarter were reported by less than 2-year institutions (e.g., vocational schools). A small percentage of total LPN completions were reported by programs at institutions offering 4-year degrees or higher. (Figure 4.)

Figure 4. LPN Programs by Type of Institution, 2013



The vast majority of LPN completions were reported as non-degree awards taking at least 1 but less than 2 years to complete. In 2013, only 4% of students completing an LPN program received an Associate’s degree, and just 2% completed a non-degree program of at least 2 years but less than 4 years in duration. (Figure 5.)

Figure 5. LPN Program Completions by Award Level, 2013



A comparison of rates of growth in completions by award level shows that between 1998 and 2013, LPN programs taking at least 1 year but less than 2 years to complete grew more slowly compared with associate degree programs and non-degree programs taking less than 1 year to complete. The number of completions awarded by programs taking at least 2 years but less than 4 years duration declined during this period. (Table 1.)

Table 1. LPN Program Completions by Award Level, 1998 and 2013ⁱ

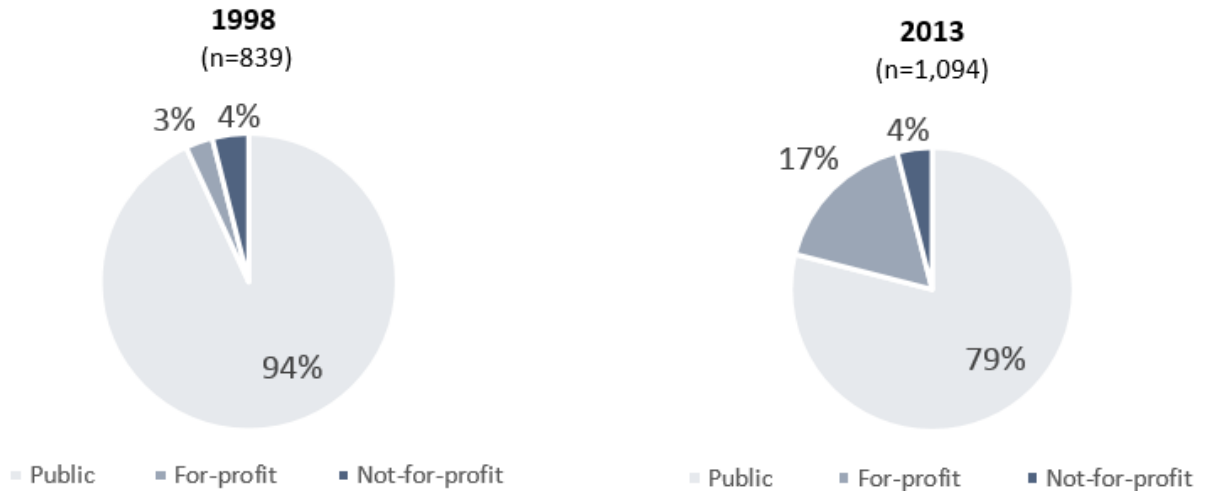
Award Level	1998	2013	% Change
< 1 year (no degree)	1,464	5,493	275%
At least 1 but < 2 years (no degree)	29,340	47,634	62%
Associate's Degree	696	2,253	224%
At least 2 but < 4 years (no degree)	1,625	1,083	-33%

ⁱA small number of Bachelor's degrees reported in 2013 are not included in Table 1.

Distribution Across Sectors

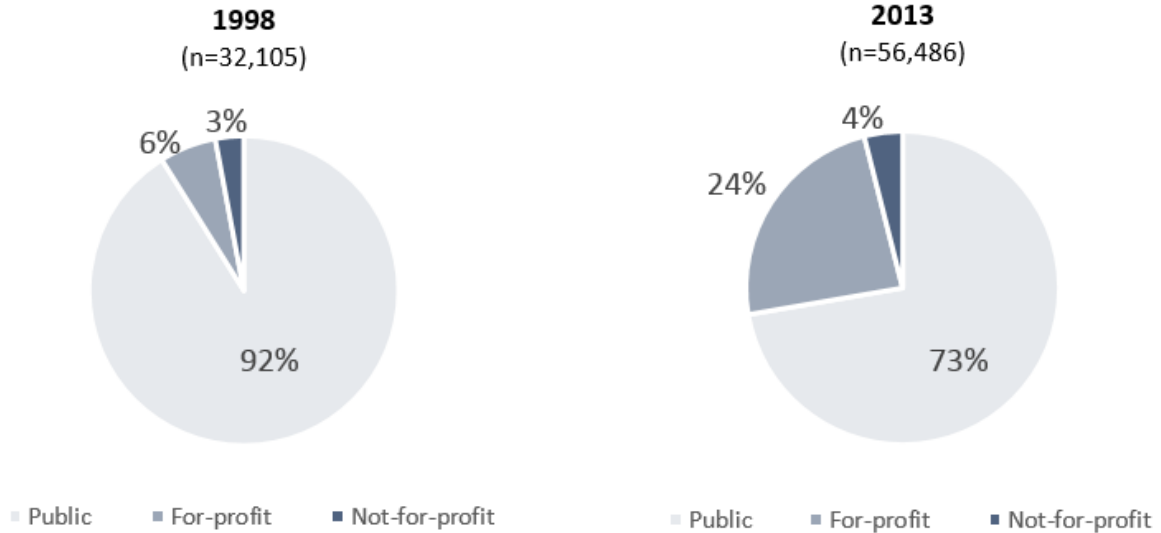
The distribution of LPN education programs across institutional sectors changed substantially between 1998 and 2013. (Figure 6.) All sectors experienced growth in the number of programs, but the rate of growth was much larger among for-profit institutions compared with other sectors. The number of for-profit LPN programs increased over 700% during this period, from 23 to 189 programs. As a consequence, the share of all LPN programs offered by for-profit institutions increased from 3% of the total in 1998 to 17% of the total in 2013. During this same period, the number of LPN programs offered by public institutions declined and the share of all LPN programs offered by public institutions decreased from 94% to 79%.

Figure 6. LPN Programs by Sector, 1998 and 2013



The number of completions of for-profit LPN education programs has grown even more rapidly than the number of for-profit programs. Between 1998 and 2013, the number of completions reported by for-profit programs increased from 1,785 total completions to 13,458 total completions in 2013. (Figure 7.) In 2013, for-profit LPN programs accounted for 17% of all programs, but 24% of all programs completions. Mirroring the decline in the number of public LPN programs, between 1998 and 2013, the share of total program completions reported by public programs declined from 92% to 73%.

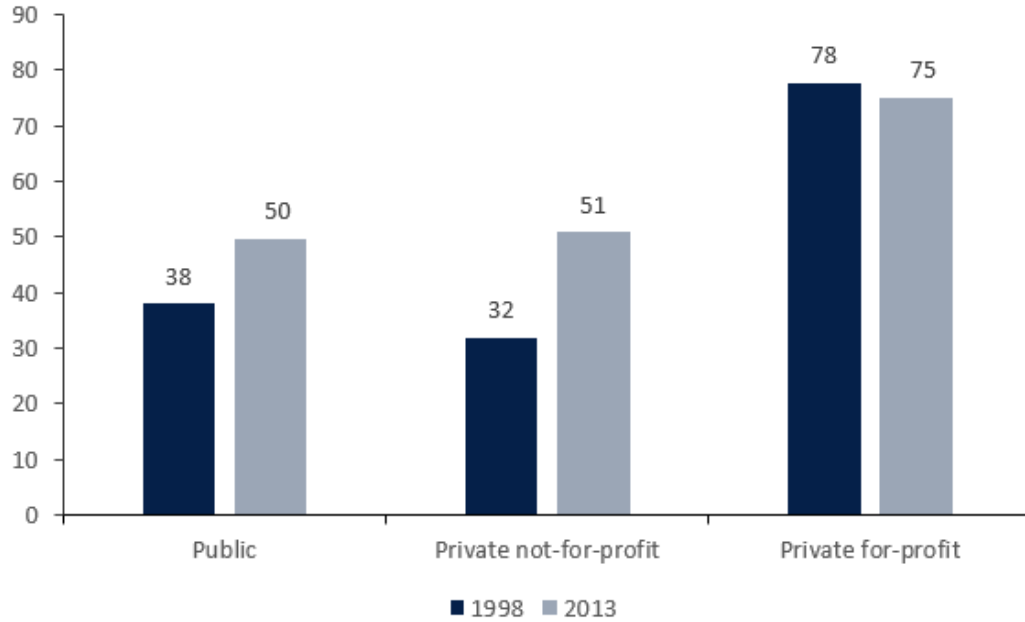
Figure 7. LPN Program Completions by Sector, 1998 and 2013



*Percentages may not add to 100% due to rounding

Although LPN education is largely situated in the public sector, for-profit programs have grown at a faster rate and tend to have larger class sizes. In 2013, the average number of completions per LPN program was 75 among programs at for-profit institutions versus 50 completions per program among programs at public institutions. (Figure 8.)

Figure 8. LPN Completions per Program by Sector, 1998 and 2013ⁱ



ⁱLPN programs that reported “zero” total completions were excluded from the calculation of average completions per program.

Demographic Characteristics of Persons Completing LPN Education

Over the fifteen years between 1998 and 2013, the number of men completing an LPN program more than doubled. In 2013, 11% of all LPN program completions were awarded to men. (Figures 9 and 10.)

Figure 9. LPN Program Completions by Gender, 2013

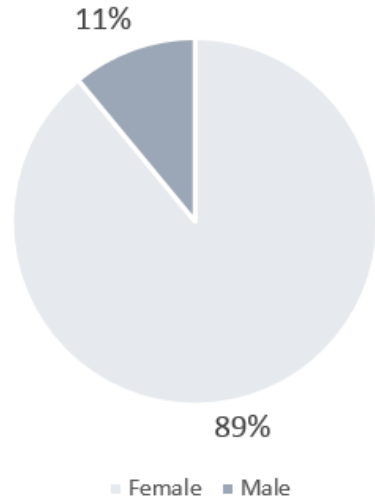
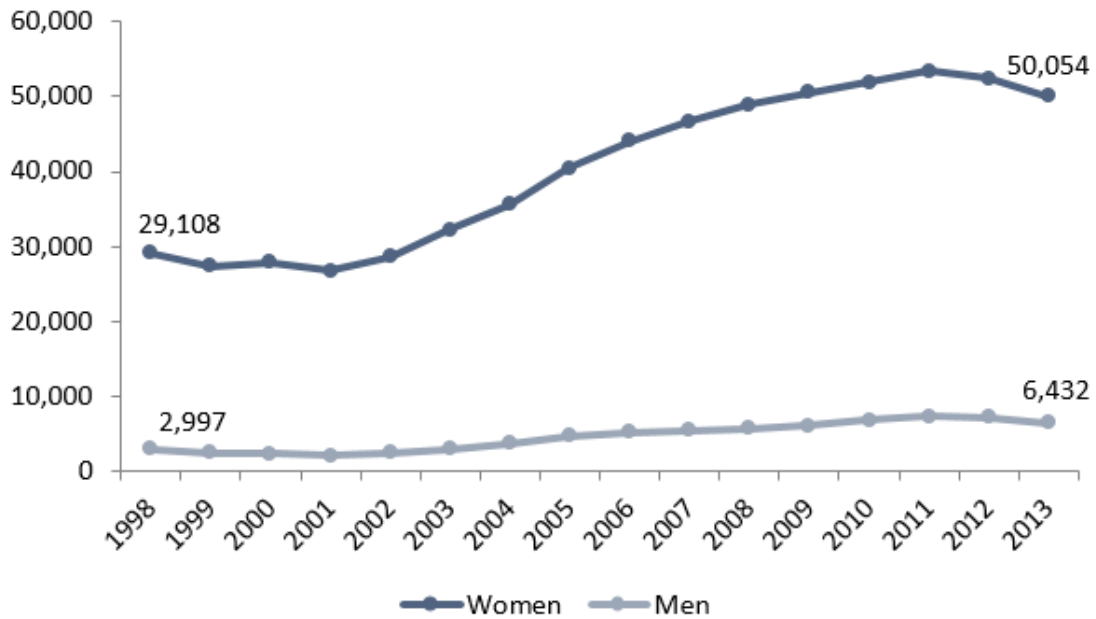
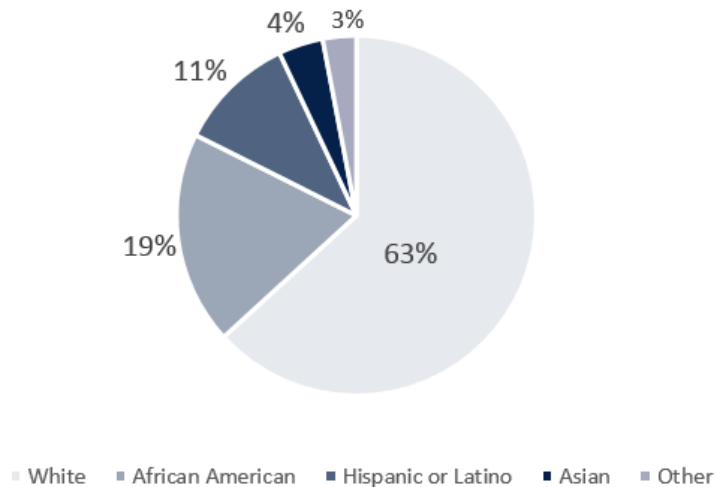


Figure 10. LPN Program Completions by Gender, 1998-2013



Whites remain the largest racial/ethnic group among persons completing LPN education, accounting for 63% of total completions in 2013. African Americans and Hispanics are large minorities, comprising 19% and 11% of all completions, respectively. (Figure 11.)

Figure 11. LPN Program Completions by Race/Ethnicity, 2013^{i,ii}



ⁱ Students whose race/ethnicity was unknown (either unreported or reported as nonresident alien) were excluded.

ⁱⁱ "Other" includes American Indian or Alaska Native, Native Hawaiian/Pacific Islander, and 2 or more races.

Between 1998 and 2013, rates of growth in LPN program completions varied substantially across the different racial and ethnic groups. (Table 2.) Although completers remain predominantly White, Whites had the lowest rate of growth during this period. In contrast, the number completions awarded to Hispanic or Latino students more than tripled between 1998 and 2013, a growth rate of 244%. Total completions by other non-White groups also grew dramatically during this period.

Table 2. by Race/Ethnicity, 1998 and 2013^{i, ii, iii}

Race/Ethnicity	1998	2013	% Change
White	22,948	34,177	49%
African American	5,394	10,367	92%
Hispanic	1,661	5,713	244%
Asian/Pacific Islander	913	2,591	184%
Other	345	1,327	285%

ⁱ Prior to 2008, Asian and Native Hawaiian/Pacific Islander were combined as a reporting category. Currently they are required to be reported separately. For the sake of historical comparison, they are combined in the 2013 data reported in Table 2.

ⁱⁱ "Other" includes American Indian or Alaska Native in the 1998 data, and both American Indian or Alaska Native and 2 or more races in 2013 data. (The reporting category for 2 or more races was added in 2008.)

ⁱⁱⁱ Students whose race/ethnicity was unknown (either unreported or reported as nonresident alien) were excluded.

There are also differences in the racial/ethnic composition of LPN completions across institutional sector (Table 3.). For-profit LPN education programs play an important role in training students of color. African American, Hispanic or Latino, and Asian graduates of LPN programs are much more likely to have completed their education at a for-profit program, compared with Whites.

Table 3. /Ethnicity and Sector, 2013^{i, ii}

Race/Ethnicity	% Public	% Not-for-Profit	% For-Profit
White	84%	2%	14%
African American	57%	6%	37%
Hispanic	44%	6%	40%
Asian	39%	9%	47%
Other	71%	3%	26%

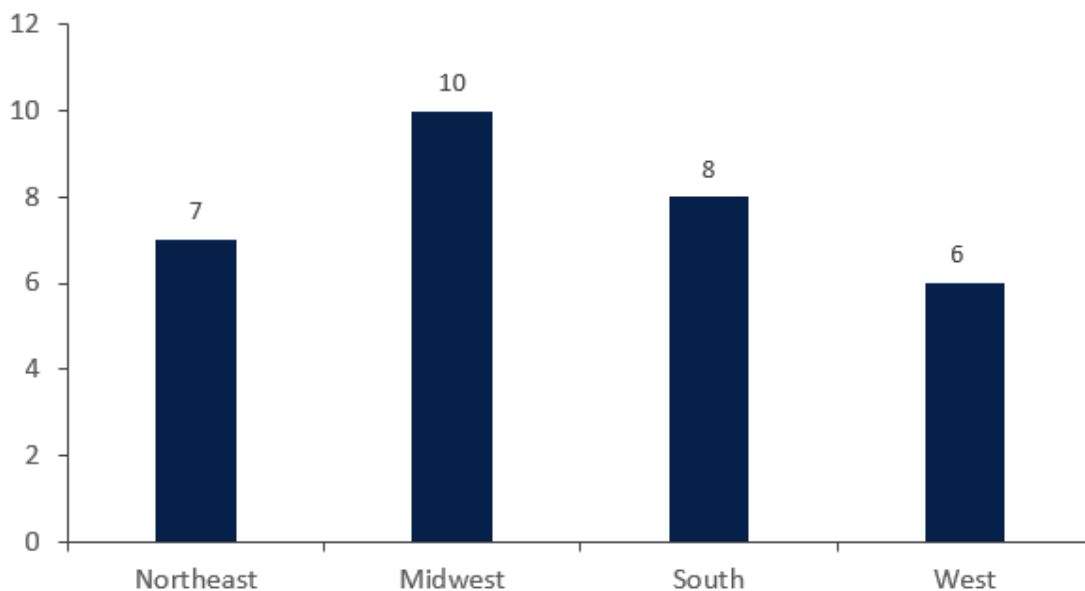
ⁱ Students whose race/ethnicity was unknown (either unreported or reported as nonresident alien) were excluded.

ⁱⁱ "Other" includes American Indian or Alaska Native, Native Hawaiian/Pacific Islander, and 2 or more races.

Regional Characteristics

The ratio of LPN completions to population differs across the 4 Census regions of the United States. (Figure 12.) In 2013 the number of LPN completions per 100,000 persons ranged from a high of 10 per 100,000 persons in the Midwest region to a low of 6 per 100,000 persons in the West region.

Figure 12. LPN Completions per 100,000 Persons by Region, 2013ⁱ

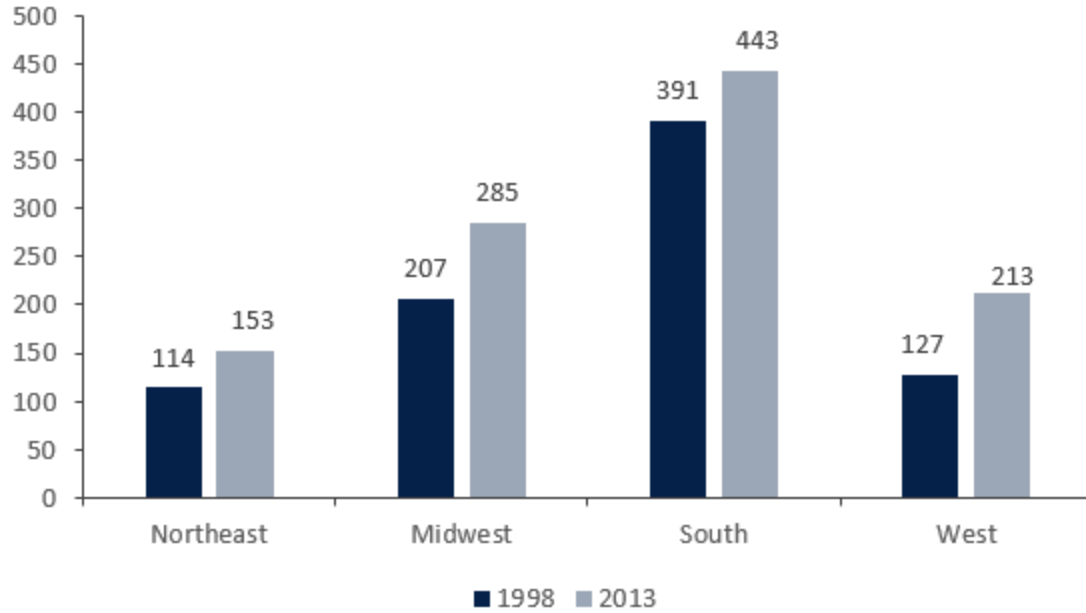


ⁱ Estimates of the population of each region were obtained from the US Census Bureau's Vintage 2014 population estimates.

<https://www.census.gov/popest/data/state/totals/2014/index.html>

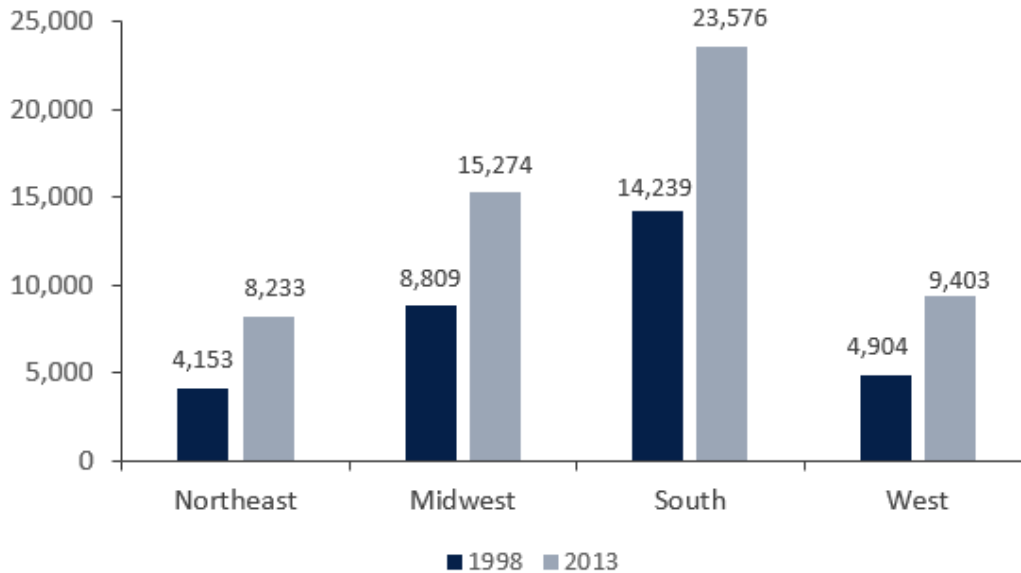
There are substantial differences in the number of LPN programs among the different Census regions. (Figure 13.) In 2013 there were nearly 3 times as many programs in the South region by comparison with the Northeast region. The total number of LPN education programs grew in all 4 Census regions between 1998 and 2013. However, the largest relative increase was in the West region, where the number of LPN education programs increased by 67%, from 127 to 213 programs. The South region, which has by far the greatest number of programs, experienced the least amount of program growth during this period (13%).

Figure 13. LPN Programs by Region, 1998-2013



Consistent with the increase in LPN education programs, the number of LPN completions also grew between 1998 and 2013 across all regions. (Figure 14.) The South region experienced the largest absolute increase in the number of program completions (9,337 completions). Relative growth in total completions was strongest in the Northeast (98%) and West regions (92%).

Figure 14. LPN Program Completions by Region, 1998-2013



As noted, the number of persons completing their LPN education at for-profit institutions was an important factor driving growth in LPN program completions between 1998 and 2013. This trend was evident in all 4 Census regions, although the magnitude of the increase differed. The largest absolute increase in the number of completions at for-profit LPN programs occurred in the West region, where the total number increased by 3,755 completions. Relative growth in total completions awarded by for-profit programs during this period ranged from 335% in the South region to over 10,000% in the Northeast region. (Table 4.)

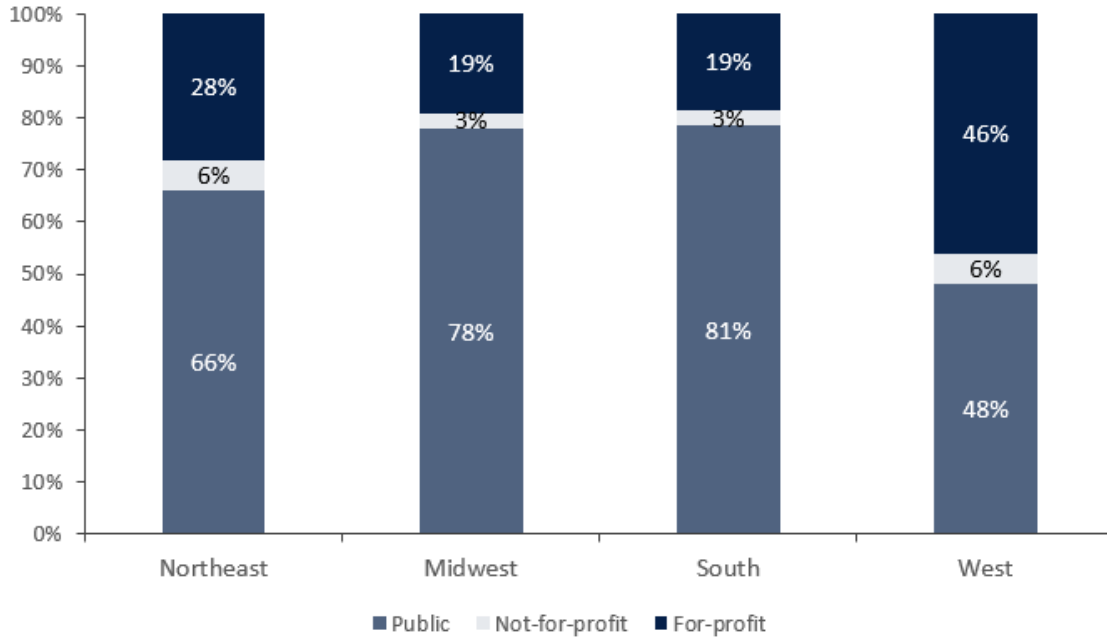
The growth in LPN program completions occurring between 1998 and 2013 at public institutions also varied across regions. The South region stands out for experiencing both the largest absolute increase in total program completions (6,119) at public institutions, and the largest relative growth rate (47%). It is also notable how little total output from public institutions changed in the West region during this period. The total number of program completions increased by only 352, an increase of 8%.

Table 4. LPN Completions by Region and Sector, 1998 and 2013

	Northeast	Midwest	South	West
Public				
1998	3,896	8,357	12,988	4,188
2013	5,400	11,946	19,107	4,540
Growth rate	39%	43%	47%	8%
Not-for-profit				
1998	236	144	361	150
2013	496	407	590	542
Growth rate	110%	183%	63%	261%
For-profit				
1998	21	308	890	566
2013	2,337	2,921	3,879	4,321
Growth rate	11029%	848%	336%	663%

The combination of experiencing the largest absolute increase in completions awarded by for-profit programs and the smallest absolute increase in completions awarded by public programs between 1998 and 2013 led to a dramatic shift in the distribution of program completions across institutional sectors in the West region. In 2013, for-profit programs accounted for nearly one-half (46%) of all completions awarded by LPN programs. (Figure 15.)

Figure 15. LPN Completions by Region and Sector, 2013



The racial/ethnic distribution of persons completing LPN education programs also varies substantially across the 4 Census regions. (Table 5.) Although Whites constituted 61% of completions nationwide in 2013, they accounted for only 55% of completions in the Northeast region and only 41% of completions in the West region. The Northeast and the South regions had the largest percentages of African American graduates. The West region had the largest percentages of graduates who were Hispanic, Asian, or belonged to other racial/ethnic groups.

Table 5. LPN Completions by Race/Ethnicity and Region, 2013^{i, ii, iii}

Race/Ethnicity	Northeast	Midwest	South	West
White	55%	75%	61%	41%
African American	27%	14%	22%	9%
Hispanic	8%	3%	10%	24%
Asian	2%	3%	1%	15%
Other	1%	2%	2%	5%

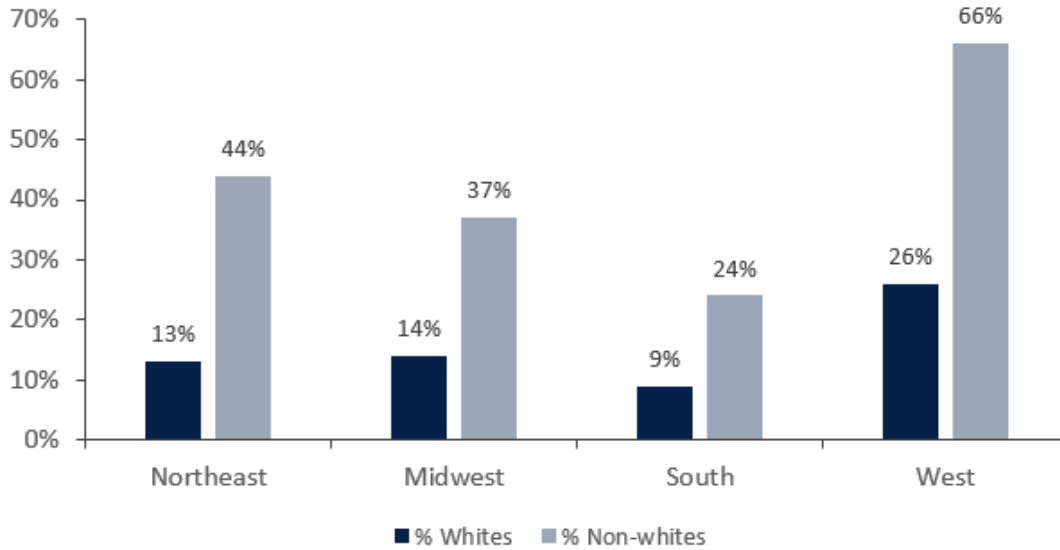
ⁱStudents whose race/ethnicity was unknown (either unreported or reported as nonresident alien) were excluded.

ⁱⁱ “Other” includes American Indian or Alaska Native, Native Hawaiian/Pacific Islander, and two or more races.

ⁱⁱⁱ Includes African Americans, Hispanics, Asians, American Indians or Alaska Natives, Native Hawaiian/Pacific Islanders, and 2 or more races.

As noted above, nationwide, African Americans, Hispanics, Asians, and other racial/ethnic groups are more likely to complete for-profit LPN education programs than were Whites. This pattern is evident in all 4 Census regions, not just in the West where there is a confluence of high proportions of Hispanic and Asian students and a large for-profit LPN education sector relative to the public sector. (Figure 16.)

Figure 16. Share of For-profit LPN Education Graduations for Whites and Non-Whites, 2013ⁱ



ⁱ Includes African Americans, Hispanics, Asians, American Indians or Alaska Natives, Native Hawaiian/Pacific Islanders, and 2 or more races.

LPN Licensure Examinations

The number of persons passing the NCLEX-PN exam is another important indicator of the future supply of LPNs in the United States. Passage of the NCLEX-PN is required by all states to obtain licensure as an LPN. The National Council of State Boards of Nursing (NCSBN) administers this exam.

A total of 73,731 candidates attempted the NCLEX-PN examination in 2014. (Table 6.) Approximately three-quarters (77%) of these candidates were attempting the exam for the first time. Almost all of the exam candidates (97%) completed their LPN education in the United States.

Pass rates for the 2014 administration of NCLEX-PN varied substantially between first-time exam takers and repeat takers, and between candidates who completed their LPN education in the US versus another country (Table 6.). Among exam takers educated in the US, the first-time pass rate was 82% compared with a 31% pass rate for repeat exam takers. Among candidates educated outside the US, the first-time pass rate was 50% compared with 17% for repeat exam takers. These findings suggest that

most persons who are unable to pass the NCLEX-PN on their first attempt are unlikely to pass if they take the exam again.

Using the NCSBN data describing total NCLEX-PN exam candidates and pass rates, we estimate that 51,457 persons passed the NCLEX-PN examination in 2014. As indicated in Table 6, we estimate that 70% of all exam takers passed the exam. These persons would be ready to enter the LPN workforce if they met all other requirements for licensure in the states to which they applied.

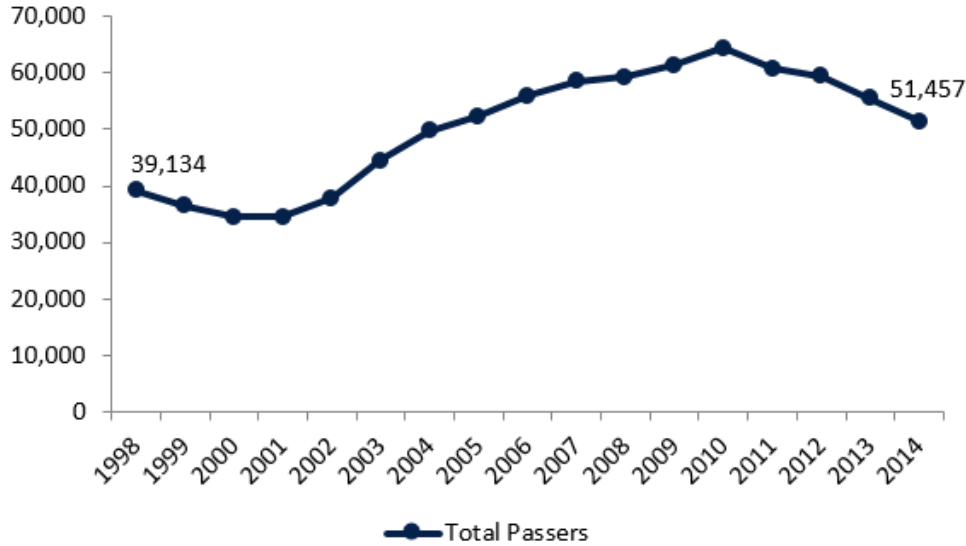
Table 6. LPN Exam Pass Rates by Country of Education and by Status, 2014

Status	Number	Pass Rate	Number Passed
US First-Time	55,489	82%	45,590
US Repeat	15,680	31%	4,902
International First-Time	1,623	50%	810
International Repeat	939	17%	155
Total	73,731	70%	51,457

The overall pass rate for all exam candidates taking the NCLEX-PN declined by 8 percentage points over the past decade, from 78% to 70%. The first-time pass rate among candidates who completed their LPN education in the US declined by 5 percentage points during this period, from 87% to 82%.

Despite the decrease in the NCLEX-PN pass rate, the number of candidates passing the exam increased substantially due to a large increase in the number of candidates taking the exam. The total number of persons passing the exam increased from 39,134 to 51,547 persons between 1998 and 2014, an increase of 32%. The large increase in NCLEX-PN exam takers and passers reflects the substantial increase in completions of LPN education programs during this time period.

Figure 17. LPN Exam Pass Numbers, 1998-2014



Conclusions

LPN education has expanded dramatically over the past 15 years. The number of programs grew by approximately 30% between 1998 and 2013, while the number of awards granted to students completing an LPN program increased by 64%, from 32,105 to 56,486 persons. Completions peaked at 60,799 in 2011. The sizeable increase in completions of LPN education programs led to a large increase in the numbers of persons taking and passing the NCLEX-PN, the LPN licensure examination.

This growth in LPN education has been driven by 2 factors. First, public programs have experienced an increase in the average number of completions per program. Second, for-profit programs, which have historically awarded a high number of completions per program relative to public programs, have proliferated. In 2013, for-profit programs represented 17% of the total number of programs reporting LPN program completions (compared to just 3% of all programs in 1998). These for-profit programs awarded one-quarter of all degrees and certificates granted in 2013. This constitutes a substantial shift in the distribution of LPN education across institutional sectors.

Every region experienced growth in the number of private for-profit LPN programs over the past 15 years. However, there are important differences

across Census regions. Only in the West region did the dramatic growth of for-profit LPN education coincide with almost no growth in the number of awards granted by public institutions. Public programs located in the West region awarded just 350 more degrees and certificates in 2013 than they did in 1998, a growth rate of only 8%. In contrast, the growth rates for public programs in the other 3 regions during this period ranged from 39% to 47%. The result of this phenomenon is that, in the West region, the for-profit sector now educates nearly as many students as the public sector, with fewer than half as many LPN education programs. These findings about for-profit LPN education in the West region are consistent with findings from a previous study of health professions education in California, the most populous state in the West.⁶

Students completing LPN education programs continue to be predominantly White, representing 63% all completers in 2013. However, this represents a decline of 10 percentage points over the past 15 years. Most of the shift in racial and ethnic composition has been driven by an increase in Hispanic or Latino students, although the numbers of Asian, African American, and other non-White students also increased during this period. In all regions, non-Whites were more likely than Whites to complete for-profit LPN education programs.

Limitations

The analyses presented in this report have several important limitations. First, we relied on data reported on the IPEDS surveys and could not independently verify the accuracy and completeness of the data. This inability to verify the data may have affected our results. For example, some LPN education programs did not report any completions for some years. We do not know whether these programs were too new to have graduated any students or if the programs failed to report data on completions.

Second, our analyses of the race/ethnicity of persons completing LPN education programs may not be completely accurate for several reasons. Programs reported that the race/ethnicity of some students is unknown. In addition, IPEDS does not require programs to report the race/ethnicity of students who are not US citizens. Finally, IPEDS expanded the number of categories used to report race/ethnicity in 2008. Although we attempted to minimize the impact of the change in categorizes by standardizing the

categories we used to report trends over time, the change may have distorted our estimates for certain racial/ethnic groups.

Recommendations

The large increase in the number of persons completing LPN education programs between 1998 and 2013 bodes well for the profession's ability to meet future demand. However, the small decrease in completions between 2011 and 2013 suggests a need to continuously monitor annual completions to determine whether this is just a small adjustment that reflects improvement in the US economy versus the start of a downward trend in completions.

Monitoring trends in for-profit LPN education programs is especially important because the numbers of persons completing these programs has grown substantially over the past 15 years. Recently, the federal government has established new "gainful employment" rules for participation in federal financial aid programs due to complaints that graduates are unable to obtain jobs in their fields of study. Graduates of for-profit colleges also often face substantial student loan debt because they charge substantially higher tuition than public colleges.⁷ In April 2015, the US Department of Education fined Corinthian Colleges, Inc., a large for-profit educational institution \$30 million for misrepresenting job placement rates and altering grades and attendance records.⁸ In response, Corinthian sold some many of its campuses but abruptly closed others. Similar fines may be levied against additional for-profit institutions. There is a need to track whether these fines affect for-profit colleges that provide LPN education and whether any of these programs close.

Policymakers also need to understand why non-White LPNs are more likely to complete for-profit LPN education programs than Whites. This pattern is evident in all Census regions, not just in the West where it is due in part to the confluence of large numbers of Hispanic and Asian students and a large for-profit sector relative to the public sector. Non-White LPN students' disproportionate reliance on for-profit programs raises concerns because for-profit programs are more expensive than public programs and because African Americans, Hispanics, and some Asian ethnic groups have lower average incomes than Whites. Research is needed to learn whether students who enroll in for-profit LPN education programs are aware of public programs

and, if so, why they choose to enroll in for-profit programs instead of public programs. Specifically, such research could determine: 1) whether public LPN education programs turn away qualified applicants or have long waiting lists relative to for-profit programs, and 2) whether for-profit programs deliver LPN education in a manner that is more attractive to students (e.g., online instruction, evening or weekend classes).

Acronyms Used in this Report

IPEDS: Integrated Postsecondary Education Data System

LPN: Licensed Practical Nurse

LVN: Licensed Vocational Nurse

NCLEX-PN: National Council Licensure Examination-Practical Nurse

NCLEX-RN: National Council Licensure Examination-Registered Nurse

NCSBN: National Council of State Board of Nursing

References

1. Spetz, J., L. Trupin, T. Bates, and J.M. Coffman. 2015. Future Demand for Long-term Care Workers Will Be Influenced by Demographic and Utilization Changes. *Health Affairs (Millwood)*, 34 (6): 936-945.
2. National Center for Health Workforce Analysis. 2013. *The U.S. Nursing Workforce: Trends in Supply and Education*. Rockville, MD: Health Resources and Services Administration.
3. Seago, J.A., J. Spetz, S. Chapman, W. Dyer, and K. Grumbach. 2004. *Supply, Demand, and Use of Licensed Practical Nurses*. Rockville, MD: Health Resources and Services Administration.
4. Coffman, J.M., K. Chan, and T. Bates. Profile of the Licensed Practical Nurse/Licensed Vocational Nurse Workforce, 2008 and 2013. San Francisco, CA: UCSF Health Workforce Research Center on Long-Term Care.
http://healthworkforce.ucsf.edu/sites/healthworkforce.ucsf.edu/files/Report-Profile_of_the_Licensed_Practical_Nurse_Licensed_Vocational_Nurse_Workforce_2008_and_2013.pdf
5. Long, B.T. 2014. "The Financial Crisis and College Enrollment: How have Students and Their Families Responded?" *How the Financial Crisis and Great Recession Affected Higher Education*. Jeffrey Brown and Caroline Hoxby, Eds.. Chicago, IL: University of Chicago Press.
6. Bates T., C. Dower, and S. Chapman. 2014. *Non-White Students Make up the Majority of Californians Pursuing Healthcare Education*. San Francisco, CA: UCSF Center for the Health Professions.
7. United States General Accounting Office. Testimony of Gregory D. Kutz, Managing Director, Forensic Audits and Special Investigations, before the United States Senate Committee on Health, Education and Labor: For-profit Colleges: Undercover Testing Finds Colleges Encouraged Fraud and Engaged in Deceptive and Questionable Marketing Practices, August 4, 2010.
<http://www.gao.gov/new.items/d10948t.pdf>
8. C. Zillman. 2015. After Corinthian, Two More For-profit College Chains Announce Closings. *Fortune*. <http://fortune.com/2015/05/07/corinthian-college-chain-closings/>

Appendix A. Methods

Data

The data used to describe LPN/LVN program completions come from the Integrated Postsecondary Education Data System (IPEDS).¹ IPEDS is a collection of interrelated surveys conducted annually by the National Center for Education Statistics, which is an agency of the US Department of Education. IPEDS is the most comprehensive source of data describing postsecondary education in the United States. Completion of IEPDS surveys is mandatory for any institution that participates in (or applies to participate in) federal student financial aid programs. Institutions surveyed include 4-year universities and colleges, 2-year community and technical colleges, and non-degree granting schools.

Program completions data are collected by the IPEDS Completions survey. These data are organized according to the Classification of Instructional Programs (CIP), which is a taxonomic scheme that defines distinct fields of study.² Variables in the program completions data include program award level, first or second major, gender, and racial and ethnic identity. These data were combined with information from the Institutional Characteristics survey to identify programs' geographic location, financial control, and institutional sector.

Race and Ethnicity

The racial and ethnic identity of students completing postsecondary education programs was first reported in 1995. These data have always distinguished racial identity from Hispanic ethnicity; in other words, race and Hispanic ethnicity are mutually exclusive. Initially, the reporting categories were White, Black or African American, American Indian or Alaska Native, Asian/Native Hawaiian or Other Pacific Islander, and Hispanic³ (as well as

¹ For more information on IPEDS see <http://nces.ed.gov/ipeds/>

² For more information on CIP codes see <http://nces.ed.gov/ipeds/cipcode/Default.aspx?y=55>

³ In 2010, Hispanic was changed to Hispanic or Latino.

categories used to report students whose race or ethnicity was unknown, and students who were not US citizens.) Beginning in 2008, the number of race categories expanded to include “two or more races”, and “Asian/Native Hawaiian or Other Pacific Islander” was disaggregated so that the 2 groups became distinct reporting categories.

IPEDS currently uses the following categories to report racial and ethnic identity:

Hispanic or Latino

American Indian or Alaska Native

Asian

Black or African American

Native Hawaiian or Other Pacific Islander

White

Two or more races

Race/ethnicity unknown

Nonresident alien

Determining Racial and Ethnic Composition of LPN Graduates

In the figures or tables presenting racial and ethnic composition of students who completed an LPN program, those students whose race or ethnicity is unreported were excluded. The excluded group consists of any student who was reported as “race/ethnicity unknown” or as “nonresident alien.” (IPEDS does not report the race/ethnicity of students who are not US citizens).

Table 2 in the Report shows how the racial and ethnic composition of students who completed an LPN program has changed over time (1998 versus 2013). As noted, prior to 2008, Asian students and Native Hawaiian or Other Pacific Islander students were reported as a single group; beginning with the 2008 data, they have been reported as distinct groups. In order to make the comparison of racial and ethnic composition over time consistent,

Asian and Native Hawaiian or Other Pacific Islander students were recombined in the 2013 data.

Completions per Program

Programs that did not report any completions in a given year were excluded from the calculation of average number of completions per program. The most likely explanation for why an existing program would not have any completions to report is that the program is too new to have graduated any students. In most cases, an LPN program takes between 18 and 24 months to complete. Because of the data collection schedule for the different IPEDS surveys, it is possible that a new LPN program would be identified and included in the Completions Survey data file before the program had actually graduated any students.