

**Delaware Health Education Pipeline  
2006**

**prepared for**

**Delaware Health Care Commission**

**by**

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**April 2007**

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## **ACKNOWLEDGEMENT**

This report was primarily funded by the Delaware Health Care Commission. The author would like to acknowledge Dr. Betty Paulanka, Dean of the College of Health Sciences at the University of Delaware and Dr. Lucille Gambardella, Chair of the Department of Nursing at Wesley College for participating in the pre-test of the survey instrument and their valuable feedback. The author would also like to thank Dr. Judith Caldwell for providing a support letter encouraging program directors from the Delaware Technical & Community College to participate in the survey. Special thanks go to Katie Macklin who interned at the Delaware Health Care Commission and prepared the original list of health education programs in Delaware.

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## Key Findings

This study of health education programs is in its first year and is intended to provide the baseline information that will be useful to policymakers in Delaware. Given the almost 90% response rate the observations about the Delaware health education pipeline presented and analyzed in this study are statistically sound, and a number of findings can be drawn from the data:

- Over 20 institutions offer a total of 104 health education programs in Delaware. Most numerous are programs offering associate's degrees (28), followed by certificate programs (26), diploma programs (23), bachelor's degree programs (15) and graduate programs (12).
- A total of 5,700 applications were received for health education programs for fall 2006. The total number of new students entering health related programs is 2,539.
- In terms of total enrollment, 7,106 students were enrolled in health education programs across Delaware. Fewest (467) are enrolled in graduate programs, and the most are enrolled in diploma and associate's degree programs (2,000 respectively).
- Compared to five years ago, the average enrollment in all program types has increased. Average enrollment in diploma programs has increased the most (from 58 in 2001 to 93 in 2006); about a 60% increase.
- A higher proportion of minority students is enrolled in certificate programs (37%) and graduate (32%) programs than would be expected given Delaware's population characteristics (25% minority).
- Cross tabulation of survey results with Bureau of Labor Statistics data revealed that health education programs in Delaware educate for the 2/3 of lowest paying health occupations in the state.
- Diploma programs are most likely (50%) to indicate facing a shortage of classroom facilities. Bachelor's degree programs are most likely (44%) to indicate a shortage of clinical placements.
- Almost 80% of bachelor's degree programs are facing a shortage of faculty. Associate's degree programs are least likely (18%) to indicate a shortage of faculty. The average age of faculty, in diploma, certificate and associate's degree programs is basically the same at around 46 years. While the average age of faculty teaching in bachelor's and graduate degree programs is significantly higher (around 53 years).
- Almost 70% of bachelor's degree programs indicated that they have plans to expand the capacity/reach. Diploma programs are least likely (35%) to have similar plans.

## Overview

The State of Delaware, through the Delaware Health Care Commission and the Division of Public Health, has monitored and published periodic reports on the number and spatial distribution of health professionals (allied health professionals, primary care physicians, dentists, non-physician clinicians). This report focuses attention on the supply side - educational pipeline of health professionals in Delaware. The study provides a snapshot in time of health education programs in the State. It is intended to add to the State's planning tools and aid policymakers and others who are committed to achieving and maintaining a health care provider workforce that matches the health care needs of the State's patient population.

Through collaboration with the Delaware Health Care Commission, all health education programs in Delaware were surveyed. All institutions offering health education programs in Delaware were identified and contact information for each program was assembled. Included in the list were programs at secondary and post secondary institutions along with programs at institutions offering continuing education for adults. In terms of program level, certificate, diploma, associate's degree, bachelor's degree, master's degree, post master's degree (certificate and diploma) and doctoral level programs were included.

The survey instrument was developed through a collaborative effort with the Delaware Health Care Commission and the University of Delaware. A variety of questions was considered. Given the objective of the study only questions were incorporated that would provide policy makers the tools needed to ascertain program composition, current enrollment levels and characteristics, graduation levels, occupation characteristics of graduates, barriers to growth, and future challenges and opportunities of health education programs in Delaware. Special attention was paid to minimize the burden on the respondents. Once the instrument was complete, it was pre-tested and adjusted to ensure accuracy of questions and thus responses. During the last stage, data collection, data processing, verification and analysis was performed.

Participation in the survey was voluntary. After the initial contact letter, the respondents were sent the survey instrument along with a letter from the Delaware Health Care Commission to encourage participation. All contacts were with the program director/coordinator. Only in one case was a support letter obtained from the chief academic officer of the institution to

encourage participation in the study. After the initial mailing, several replacement surveys were mailed to non respondents along with phone calls and e-mail reminders. Responses were confidential but not anonymous, thus accommodating follow-up contacts with non respondents. Data from the returned questionnaires was processed in a manner that prevented identification of individual responses. The results presented in the report are in aggregate form only. All precautions were taken to maintain the confidentiality of all respondents.

A total of 111 health education programs in Delaware were identified. Initial contact with program directors/coordinators indicated that 104 programs were actively accepting applications and/or currently enrolling students. A total of 89 responses were received, the overall response rate was 86%.

The data presented in this report is un-weighted. No adjustments were made to account for program enrollment, number of applicants or number of graduates.

The report is organized in four sections and an appendix. The first section provides an overview of aggregated general characteristics such as length of time required to complete the program along with estimated current and future demand. The second section provides an analysis of application, enrollment and graduation rates along with an analysis of occupation characteristics of Delaware's health education programs. Section three presents the results of the survey as they pertain to opportunities and challenges faced by health education programs in the state. The last section presents observations of the study in a form of a summary.

## General Program Characteristics

The results of the survey revealed that health education programs in Delaware are offered at 23 institutions. To allow for meaningful comparisons of programs, coordinators were asked to identify the program level. These responses were then re-grouped to identify the following program categories: certificate program, diploma program, associate's degree, bachelor's degree, and graduate degree. The category graduate degree summarizes responses for programs beyond bachelor's degree. The above categories are used throughout the report to compare program characteristics.

Most numerous among health education programs are programs offering associate's degrees and certificates (28 and 26 respectively), followed by programs offering diplomas, bachelor's degrees and graduate degrees (23, 15 and 12). Also, most institutions (13 and 9) are offering certificate and diploma programs (Table 1.1, below). For more details on response counts by institution and program level or program name and program level see Appendix I and Appendix II.

**Table 1.1**  
**Number of programs and responses**

<b>Level</b>	<b>Institutions</b>	<b>Number of Programs</b>	<b>Number of Active Programs</b>	<b>Responses Received</b>
Certificate	13	27	26	22
Diploma	9	25	23	23
Associate's	4	32	28	28
Bachelor's	4	15	15	9
Graduate	4	12	12	7
<b>Total</b>	<b>23*</b>	<b>111</b>	<b>104</b>	<b>89</b>

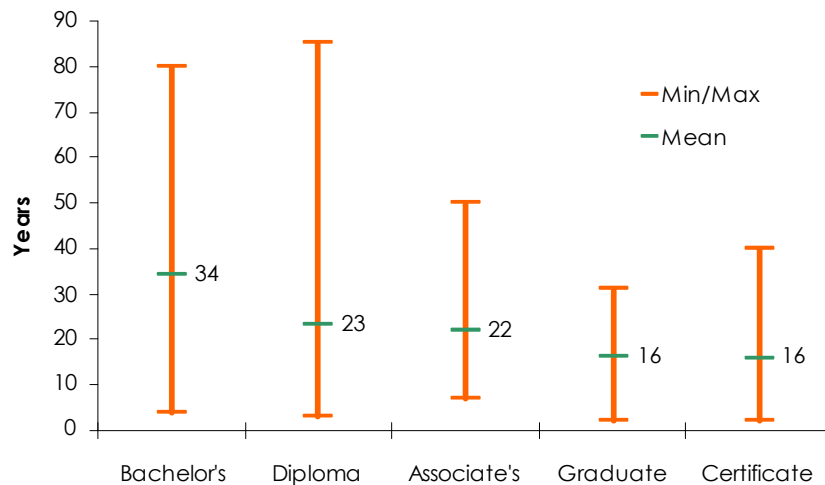
**Source:** Center for Applied Demography & Survey Research, University of Delaware

**Note:** \*This represents the number of individual institutions offering programs

Delaware's health education programs vary by the number of years they have been in existence (Figure 1.1, below). On average, the bachelor's programs have been around the longest (34 years on average) while certificate programs and graduate programs are relatively youngest (16 years). Only one bachelor's program and three graduate programs have been around 10 years or less. There are seven programs offering associate's degrees that have been established within

the last 10 years. Eight diploma programs and eight certificate programs have been in existence for 10 years or less. Interestingly, there is one diploma program in the state that has been around for 85 years and one program offering a bachelor's degree that has been around for 80 years.

**Figure 1.1**  
**Average Length in Existence**

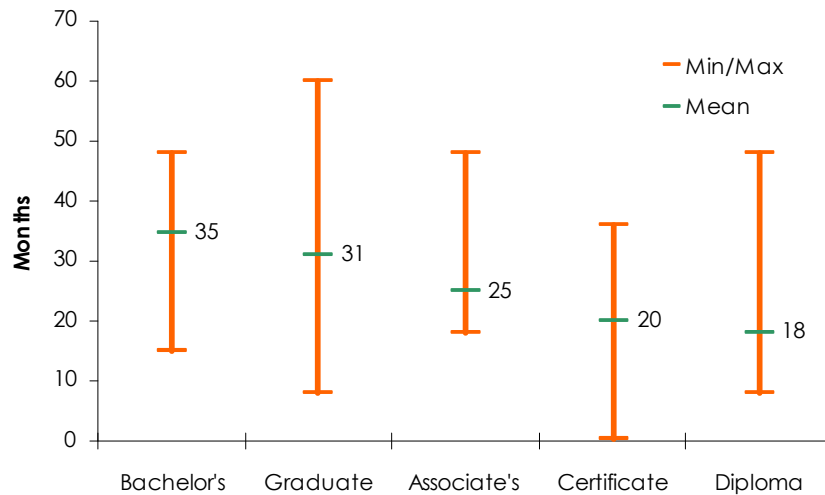


Source: Center for Applied Demography & Survey Research, University of Delaware

As expected, Delaware's health education programs differ significantly on the dimension of the average length required to complete the program (Figure 1.2, below). The program length varies from 18 to 35 months (diploma programs vs. bachelor's programs). However, significant variability also exists within program categories. For example, bachelor's degree programs indicate 15 to 48 (min and max) months required to complete the program. Similarly, graduate programs report time requirements between eight to 60 months. In the case of some bachelor's degree programs surveyed, students entering the program must hold an associate's degree in the selected field, thus time requirements to complete the bachelor's level program are lower. The spread in the time requirement for graduate programs is caused by the actual level of these graduate degrees. The time requirement for a doctorate requiring significant amount of time devoted to research is different than the time requirement for a master's degree or a post master's certificate with a heavy component in clinical placement. Likewise, certificate programs are also

very dissimilar - requiring 10 days to 36 months to complete, they range from certificates offered at high schools to certificates offered for adults already in the labor force.

**Figure 1.2**  
**Average Time Required to Complete the Program**

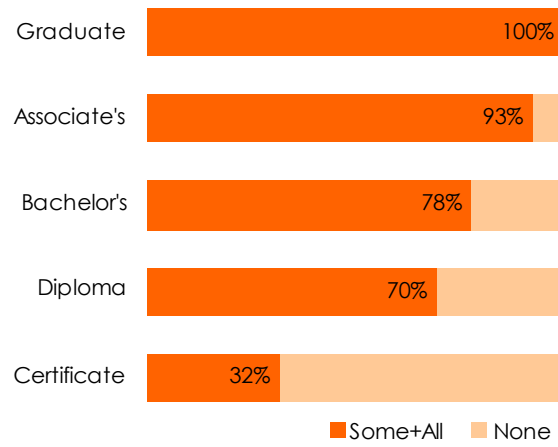


Source: Center for Applied Demography & Survey Research, University of Delaware

To decipher the potential for growth within existing programs, coordinators were asked to indicate if courses are offered using alternative methods of delivery or at times more suitable to those who are already active in the labor force.

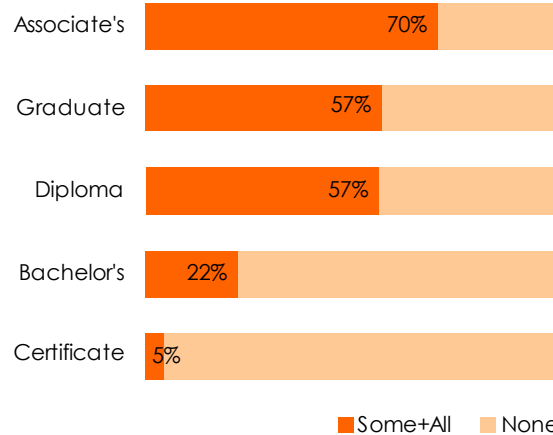
Program coordinators were asked to indicate if courses are offered in the evening (Figure 1.3, below). One hundred percent of graduate programs and 93% of programs offering associate's degrees indicated that at least some of their courses are offered in the evening. Certificate level programs are least likely (32%) to offer courses in the evening. About 57% of graduate programs, 29% of associate's level programs and about 27% of certificate level programs offer all of their courses in the evening (not pictured here).

**Figure 1.3**  
**Courses Offered in the Evening**



Source: Center for Applied Demography & Survey Research, University of Delaware

**Figure 1.4**  
**Courses Offered on the Weekend**



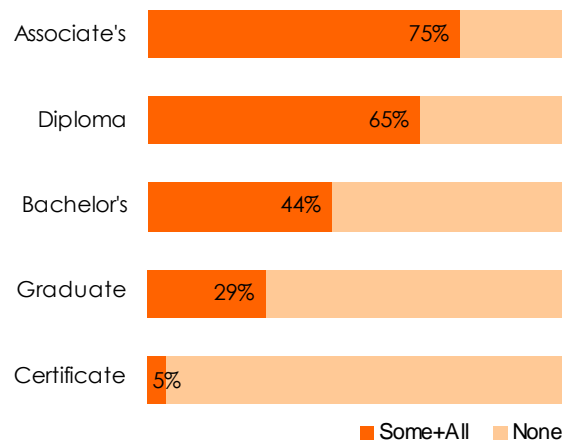
Source: Center for Applied Demography & Survey Research, University of Delaware

Offering courses during weekends might also be a way to expand capacity or reach of existing programs. Coordinators were asked to indicate if courses are offered during the weekend (Figure 1.4, above). In general, associate level programs are most likely to offer some or all courses during the weekend (70%). Around 60% of graduate and diploma programs offer

course during the weekend. Certificate programs are least likely (5%) to offer courses during the weekend. From all the programs that responded to the survey, only one program offers all courses during the weekend – this was an associate’s degree program.

Program coordinators were asked to indicate if courses were offered online (Figure 1.5, below). In general, associate level programs are most likely to offer some or all courses using the online teaching method (75%). Certificate level programs are least likely (5%) to offer courses online. No programs indicated the ability to offer all courses online.

**Figure 1.5**  
**Courses Offered Online**



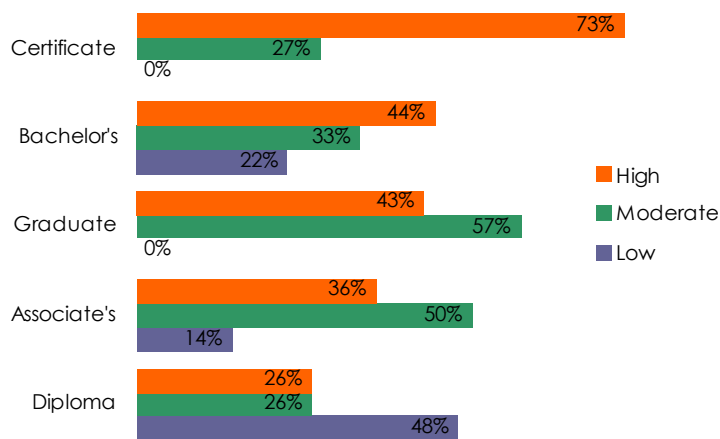
Source: Center for Applied Demography & Survey Research, University of Delaware

Figures 1.6 and 1.7 summarize the current and future demand for programs. Coordinators were asked to rate current demand and demand five years from now. Even though these are subjective opinions, they provide an insight into how program coordinators perceive the demand for their programs. In general, certificate programs are most likely (73%) to rate the demand for their programs to be high, compared to about 40% of bachelor’s, graduate and associate’s degree programs. Interestingly, almost 60% of graduate programs indicate only a moderate demand for their programs. Almost 50% of diploma programs evaluate the demand for their programs to be low.

As far as the demand five years from now is concerned (Figure 1.7, below), graduate programs are most likely (71%) to identify demand to be higher than it is today. The demand for

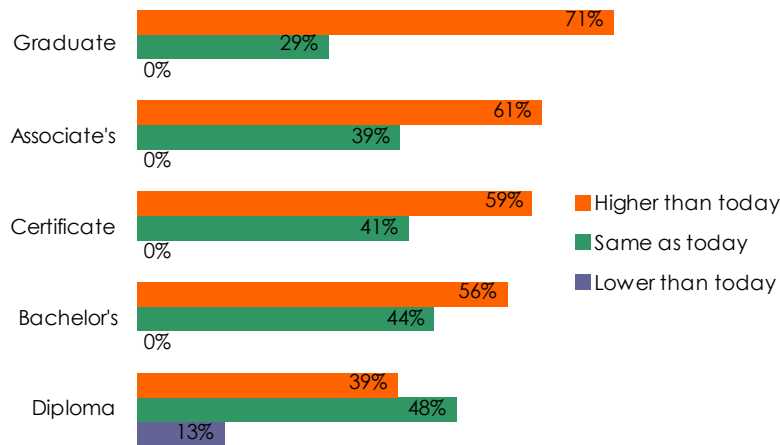
certificate programs is already highest today, but 60% of programs expect that the demand will be even higher in the future. Similar expectations exist among programs offering associate's, certificate and bachelor's degrees. Comparatively lower proportion (40%) of diploma programs indicate demand to be higher in five years. Diploma programs are also the only one category of programs indicating any decrease in demand five years from now. Around 13% of diploma programs indicated this expectation of a lower demand in the future.

**Figure 1.6**  
**Demand for Program Today (Self identified)**



Source: Center for Applied Demography & Survey Research, University of Delaware

**Figure 1.7**  
**Demand for Program Five Years from Today (Self identified)**

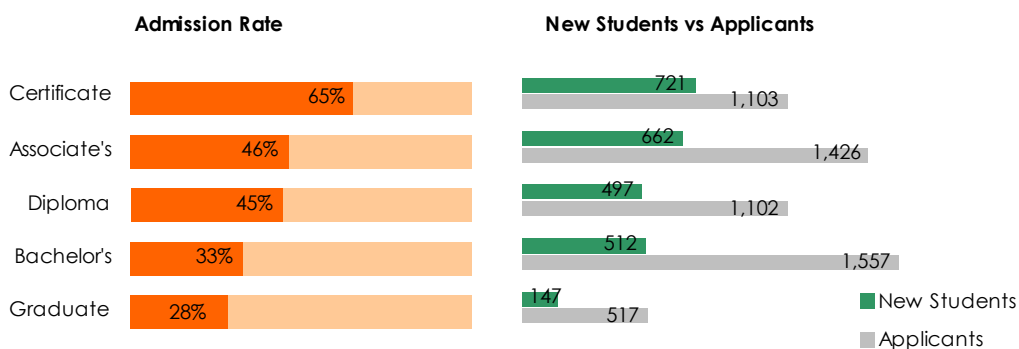


Source: Center for Applied Demography & Survey Research, University of Delaware

## Enrollment Characteristics

The enrollment capacity of programs along with demand among applicants influences the supply of health care professionals in the state. Survey respondents were asked to identify the number of applicants for the fall term of 2006 along with the number of new students who entered the program. Programs that do not take applications in the fall term were asked to indicate the above measures for the term closest to fall 2006. Given the statistics provided by the participating institutions, admissions rates were calculated for each program group (Figure 2.1, below).

**Figure 2.1**  
**Admissions Rate and Number of Applicants**



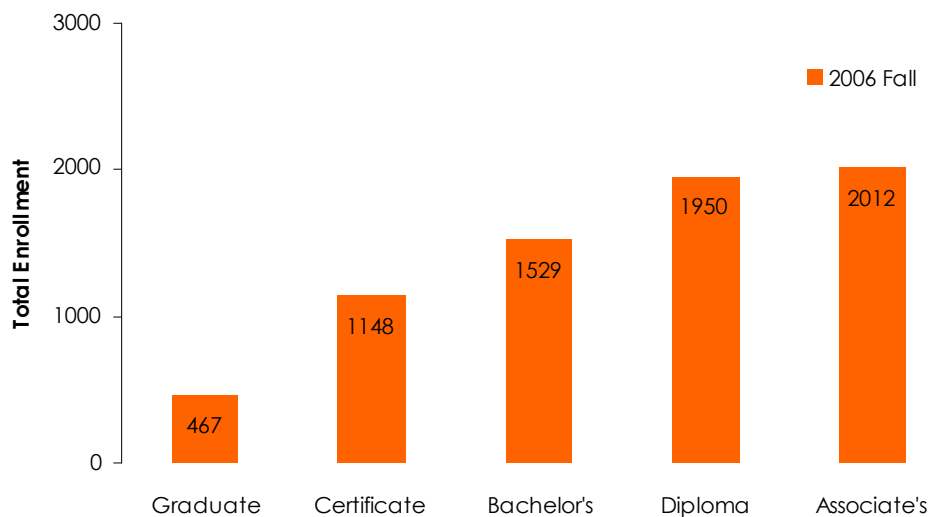
**Source: Center for Applied Demography & Survey Research, University of Delaware**

In general, graduate programs along with programs offering bachelor's degrees are most selective in their admissions decisions as measured by the ration of applicants to new students (28% and 33% respectively). On the other end of the spectrum are certificate programs with an admissions rate of 65%. As reported by the participating programs, a total of 5,700 applications were received for fall 2006. Most applications were received for bachelor's degree programs, followed by associate's degree programs. Certificate and diploma programs have received virtually the same number of applicants (1,100 each). Graduate programs received about 1/3 as many applicants as bachelor's degree programs (517).

The total number of new students entering health related programs (for those who participated in the survey) is 2,539. Most numerous are new students in certificate programs, while graduate programs admit fewest new students – reflecting the overall selectiveness across program categories. In general, the higher the level of program the higher the selectiveness and lower the total number of new students enrolled.

Program coordinators were asked to indicate the number of currently enrolled students along with the estimated percentage increase/decrease in enrollment compared to five years ago. The total enrollment per program category is depicted in Figure 2.2, below. Respondents have indicated that a total of 7,106 students were enrolled in health education programs across Delaware. Out of these, fewer than 500 were enrolled in graduate programs. Diploma programs and associate's degree programs enrolled about 2,000 students each.

**Figure 2.2**  
**Total Enrollment (Fall 2006)**

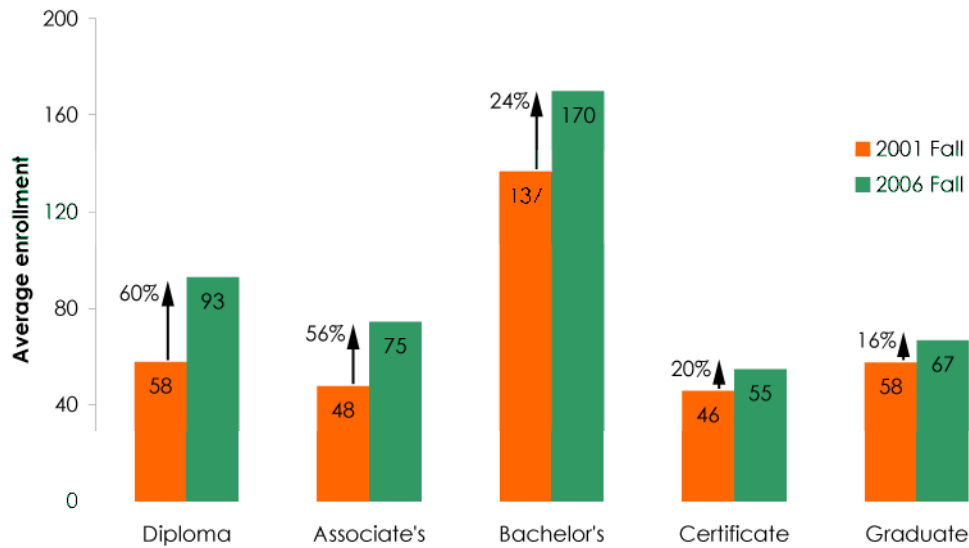


**Source: Center for Applied Demography & Survey Research, University of Delaware**

The average enrollment varies across program categories (Figure 2.3, below). In 2006, the average enrollment in programs leading to a bachelor's degree is the highest (170 students) while the average certificate program enrollment is the lowest and stands at 55. When compared

to enrollment five years ago, the average enrollment in diploma program has increased the most (from 58 in 2001 to 93 in 2006); about a 60% increase. During the same period graduate program enrollment has increased slower, from 58 to 67 (16%). However, it is important to point out that all surveyed graduate programs indicated either a positive change or no change in enrollment, while programs in the other categories indicated at least one program where the change was negative.

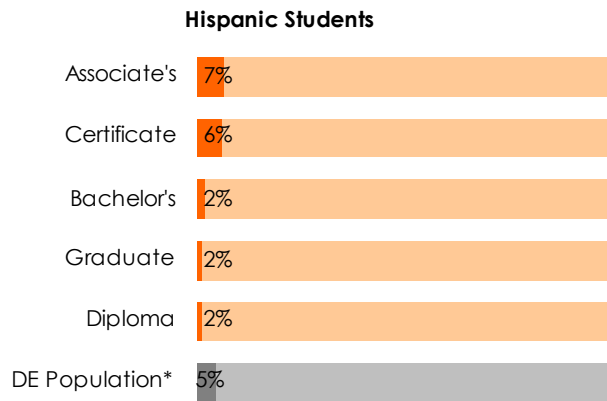
**Figure 2.3**  
**Average Enrollment (Fall 2006 vs. Fall 2001)**



Source: Center for Applied Demography & Survey Research, University of Delaware

Survey respondents were asked to provide demographic details for students enrolled in fall 2006. The percentage of students by race and ethnicity for each program's category is shown in Figure 2.4 and 2.5, below. The distribution of students by Hispanic background basically follows the Delaware general population. With bachelor's degree programs, graduate programs and diploma programs having marginally lower proportion of Hispanics.

**Figure 2.4**  
**Hispanic Background of Enrolled Students (Average)**

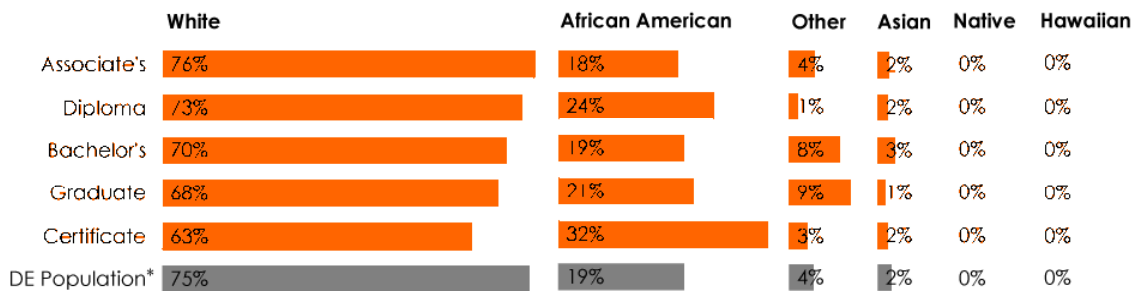


**Source:** Center for Applied Demography & Survey Research, University of Delaware

**Note:** \*Profiles of General Demographic Characteristics – Delaware, 2000 Census

The general Delaware population is about 75% Caucasian. Results of the survey indicate that associate's and diploma programs' enrollment of Caucasian students basically mirrors that of the general population (Figure 2.5, below). The proportion of Caucasian students enrolled in bachelor's and graduate programs (around 70%) is marginally lower than the general population. Certificate program enrollment of Caucasian students (63%) is significantly lower than their proportion among the general population. This indicates a higher proportion of minority students enrolled in certificate programs and graduate programs than would be expected based on general population characteristics only. While there is room for improvement, this is good news for minority enrollment in graduate programs. However, the result is disconcerting for certificate programs. These programs, in general offering the lowest level of education, seem to attract a higher proportion of minority students. The proportion of African-American students enrolled in certificate programs stands at 32%. This is more than a third higher than the proportion of African-American students enrolled in programs at the post secondary level (associate's, bachelor's, graduate). It is important to point out the comparatively higher proportion of students in graduate programs and bachelor's programs with ethnicity indicated as "Other". This very likely indicates the enrollment of international students in these programs. In official university statistics they are often classified as "Other" rather than listing them with US students and within their proper racial groups.

**Figure 2.5**  
**Race of Enrolled Students (Average)**



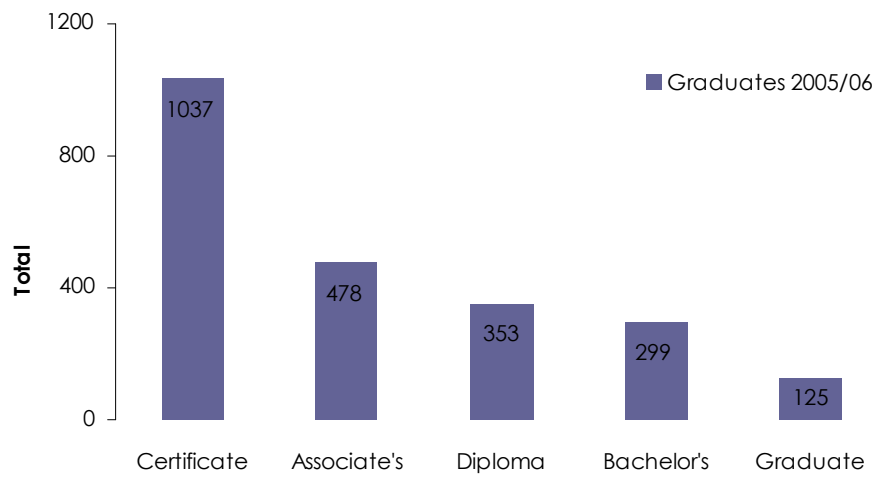
Source: Center for Applied Demography & Survey Research, University of Delaware

Note: \*Profiles of General Demographic Characteristics – Delaware, 2000 Census

Enrollment is just one side of program capacity. The real capacity of a program is determined by the number of students who complete the program (graduation rate) who can then in turn enter the labor force. Program coordinators were asked to indicate the number of students who successfully completed the program in the academic year 2005/2006 along with an estimate of change compared to five years ago. Based on these two characteristics, the total and the average number of graduates per program category for academic years 2000/01 and 2005/06 were calculated. Survey respondents were also asked to provide the graduation rate for the last graduating class. These statistics are tabulated in Figure 2.6 and 2.7, below.

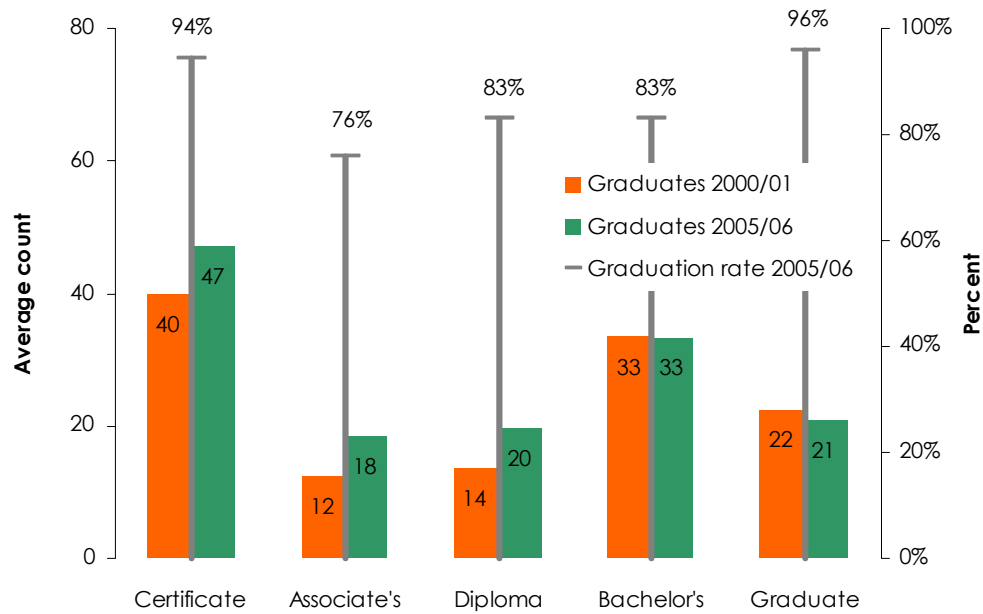
In the academic year 2005/06 about 2,300 students graduated from programs that responded to the survey. Over 1,030 students graduated from certificate programs, followed by associate's degree programs where half as many (478) students graduated. Comparatively, fewest students (125) completed graduate programs. Interestingly, certificate and graduate programs are at the opposite end in terms of number of students they graduated. However, their reported average graduation rates are virtually the same (96% and 94%). The graduation rates of bachelor's and diploma programs are significantly lower (around 83%). Associate's degree programs indicated the lowest graduation rates (76%) on average.

**Figure 2.6**  
**Total Number of Graduates (2005/06)**



Source: Center for Applied Demography & Survey Research, University of Delaware

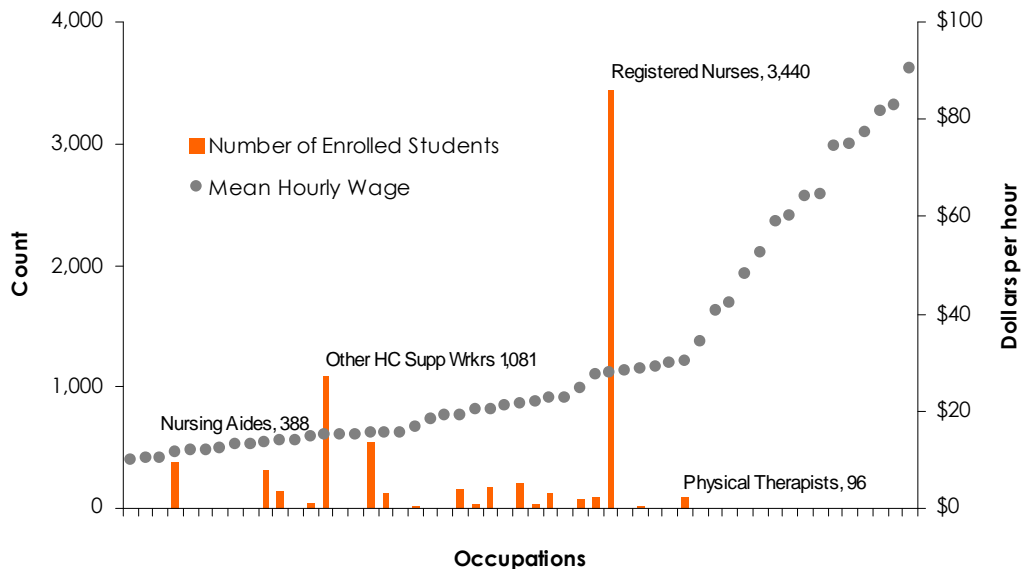
**Figure 2.7**  
**Average Number of Graduates (2000/01 vs. 2005/06)**  
**and Average Graduation Rates**



Source: Center for Applied Demography & Survey Research, University of Delaware

Looking at the average size of graduating class, certificate programs stand out with 47 students graduating per program during the academic year 2005/2006. Associate's degree programs have the lowest average graduating class size (18 students per program). However, it is associate's degree programs that are reporting the largest increase in average size of a graduating class over the last five years, from 12 to 18 (50%). This increase is closely followed by diploma programs (43%) and then by certificate programs (18%). The average graduating class size of bachelor's degree programs has not changed and decreased 6% for graduate programs.

**Figure 2.8**  
**Number of Enrolled Students and Mean Hourly Wage (BLS)**  
**by Occupation**



Source: Center for Applied Demography & Survey Research, University of Delaware, BLS Occupational Employment Statistics

To understand the linkage between the labor market and the educational pipeline, respondents were provided with a list of standard Bureau of Labor Statistics (BLS) Occupation

Codes<sup>1</sup> and asked to identify the occupation their graduates are most likely to obtain after graduating from the program. This allowed for a cross tabulation of data from the Occupational Employment Statistics<sup>2</sup> published by the BLS for Delaware with the data collected through this survey. An interesting result of this cross referencing is depicted in Figure 2.8, above (for a more detailed view of this data see Appendix III.). Health occupations (53 health occupations defined by BLS in 2005) are graphed on the horizontal axis in an ascending order from the lowest paying occupation (mean hourly wage) on the left and the highest paying occupation on the right. Mean hourly wage is depicted by the grey points. Total enrollment in education programs leading to employment in a specific health related occupation (20 occupations identified by survey respondents) is indicated by vertical bars. Interestingly health education programs in Delaware educate for the 2/3 of lowest paying occupations in the state. The highest paying occupation for which training is provided in Delaware is the occupation of Physical Therapists – a result that is expected since there is no medical school in Delaware. As reported by the respondents of the survey, there are 96 students currently enrolled in programs training Physical Therapists. What is also noticeable from the chart is that the most numerous of the occupations for which training is provided in Delaware, is the occupation of Registered Nurse. As reported by the respondents of the survey, there are about 3,400 students currently enrolled in programs whose graduates are most likely to obtain an occupation as a Registered Nurse.

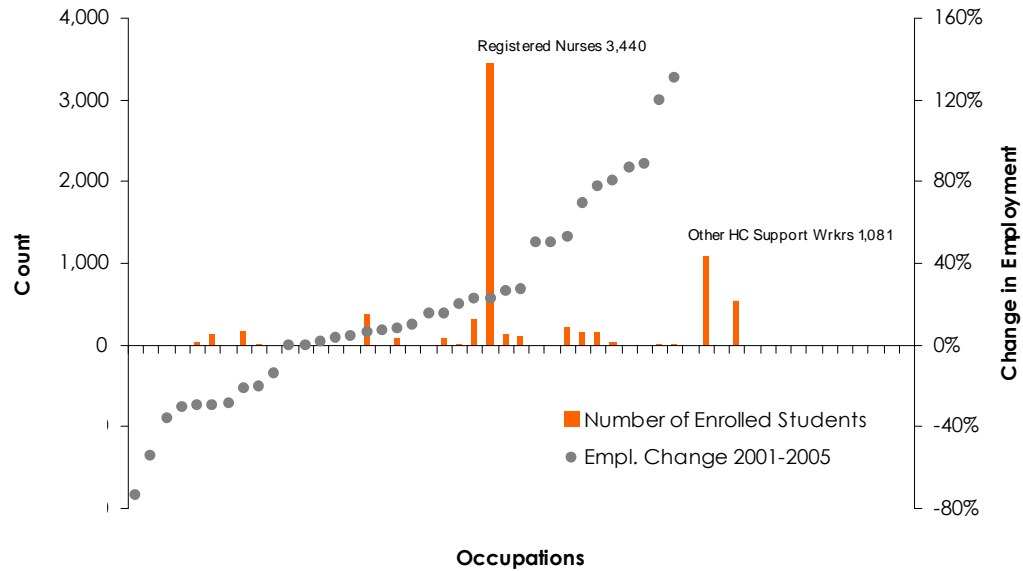
Figure 2.9 below depicts the employment growth from 2001 to 2005 for health occupations as reported by BLS and enrollment in programs leading to employment in these occupations (on the horizontal axis). The data series are in an ascending order from smallest growth (decline) on the left to highest growth on the right. The graph indicates that there are four programs that enroll students earning qualifications for occupations where the employment change over the last five years has been negative. Eight programs enroll students earning credentials for occupations where the employment growth from 2001 to 2005 was between 5-30%. Six programs enroll students earning credentials for occupations where the growth was between 51-130%. There are occupations for which growth could not be calculated given the changes in occupation codes (occupations are either no longer listed, or reported or they did not exist or were not reported in 2001); they are positioned on the right side of the chart.

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<sup>1</sup> [http://www.bls.gov/oes/current/oes\\_stru.htm](http://www.bls.gov/oes/current/oes_stru.htm)

<sup>2</sup> <http://www.bls.gov/oes/>

**Figure 2.9**  
**Number of Enrolled Students and Employment Change (BLS)**  
**by Occupation**



Source: Center for Applied Demography & Survey Research, University of Delaware, BLS Occupational Employment Statistics

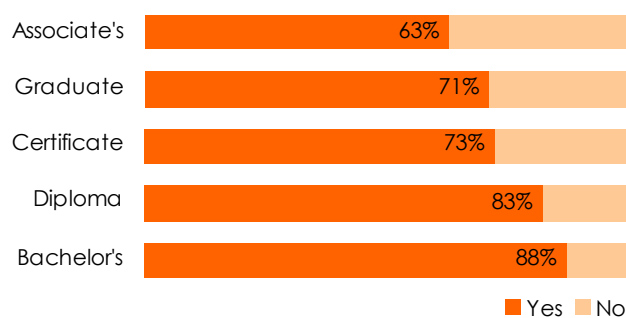
## Risk Factors

What percentage of programs is able to accommodate all qualified applicants? What is the proportion of programs that experience a shortage of applicants? What about class room facilities? Are programs facing a shortage of clinical placements? Are programs facing a shortage of faculty?

In trying to answer these questions, program coordinators were asked to identify if their programs are facing these specific challenges. Figures 3.1 through 3.5, summarize their responses.

In general, programs offering bachelor's degrees are most likely (88%) to indicate that they are able to accommodate all qualified applicants (Figure 3.1, below). Associate's degree programs (they receive about 1,500 applicants out of 5,500 in 2006, and enroll 2,000 out of 7,100 students in health education) are least likely (63%) to indicate that they can accommodate all qualified applicants.

**Figure 3.1**  
**Able to Accommodate All Qualified Applicants?**

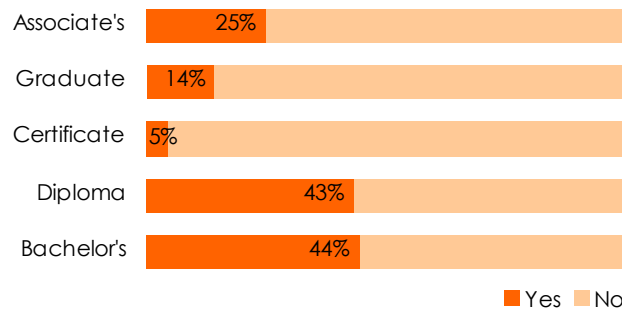


Source: Center for Applied Demography & Survey Research, University of Delaware

A sufficient supply of health professionals in the labor force requires an adequate program capacity connected to an adequate supply of applicants for health professional programs. Program coordinators were asked to indicate if their programs are facing a shortage of qualified applicants. Figure 3.2, below shows their responses. The order of program categories

matches that of the previous figure to allow for meaningful comparisons. Bachelor's degree programs (88% of which are able to accommodate all qualified applicants) still face the highest shortage of qualified applicants (44%). Even though 63% of associate's degrees programs (smallest proportion from all program levels) indicate an ability to accommodate all qualified applicants, a quarter of all associate degree programs indicate a shortage of applicants. Certificate programs are least likely (5%) to indicate a shortage of applicants followed by graduate degree programs (14%).

**Figure 3.2**  
**Risk Factor: Experiencing a Shortage of Qualified Applicants?**



Source: Center for Applied Demography & Survey Research, University of Delaware

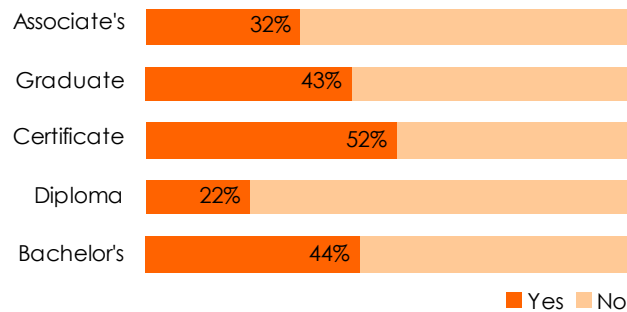
Even though some programs are offering online courses, adequate space in physical facilities is required to accommodate hands on and face to face instruction. Program coordinators were asked to indicate if they are experiencing shortage of classroom facilities or a shortage of clinical placements. Their responses are tabulated in Figure 3.3 and 3.4, below.

Certificate degree programs are most likely (52%) to indicate a shortage of classroom facilities while diploma programs are least likely (22%) to indicate this limitation. Graduate degree programs and bachelor's degree programs also indicate a comparatively high shortage of classroom facilities (43 and 44% respectively).

Bachelor's degree programs are most likely (44%) to identify a shortage of clinical placements. The shortage of clinical placements among the other program categories is virtually the same, at around 30%.

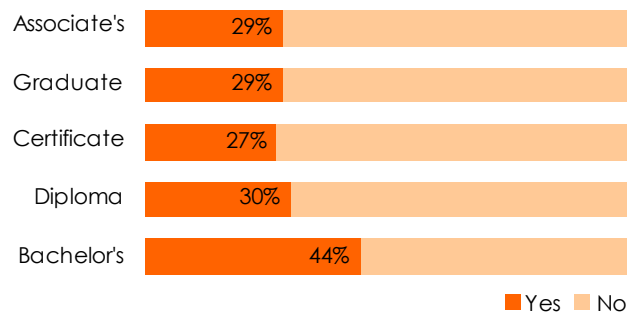
In general 36% of all programs who responded indicated a shortage of classroom facilities and 30% of all programs responding indicated a shortage of clinical placements.

**Figure 3.3**  
**Risk Factor: Facing a Shortage of Classroom Facilities?**



Source: Center for Applied Demography & Survey Research, University of Delaware

**Figure 3.4**  
**Risk Factor: Facing a Shortage of Clinical Placements?**

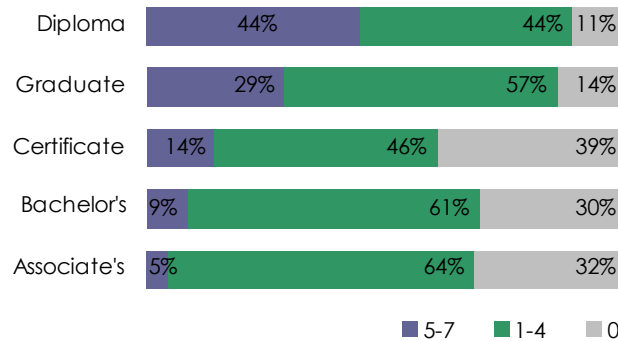


Source: Center for Applied Demography & Survey Research, University of Delaware

In addition to the shortage of qualified applicants, shortage of classroom facilities and clinical placements, program coordinators were asked to identify if they face other risk factors that might influence their ability to accommodate applicants. Given the responses, a cumulative variable was constructed that counts the number of risk factors for each program. In addition to the three factors listed above, the following four were included in the aggregate variable: facing

a shortage of funding, facing a shortage of faculty, facing a difficulty in filling faculty positions, experiences challenges due to the aging of faculty. The number of risk factors was counted for each program and then cross tabulated by program level. The results are presented in Figure 3.5, below.

**Figure 3.5**  
**Risk Factors Combined**



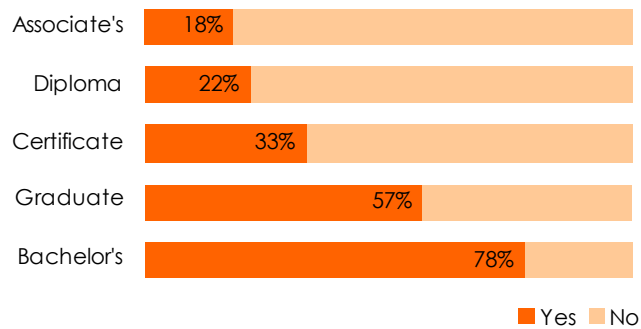
Source: Center for Applied Demography & Survey Research, University of Delaware

Diploma programs are most likely (44%) to indicate the highest number (5-7) of risk factors, while programs offering associate's degree programs are least likely (5%) to indicate this number of risk factors. Associate's degree programs (which are least likely to be able to accommodate all qualified applicants) are most likely (64%) to indicate between 1-4 risk factors, while diploma programs are least likely to report facing 1-4 risk factors. Diploma programs are also least likely (11%) to report 0 risk factors. On the other hand, almost 40% of certificate programs indicated 0 risk factors.

Two of the risk factors considered in the aggregate variable in Figure 3.5, above are centered on the shortage of faculty. Program coordinators were asked to identify if their programs are facing a shortage of faculty. Answers are tabulated in Figure 3.6, below. The results by program categories vary significantly. Programs offering associate's degrees are least likely (18%) to indicate a shortage of faculty, closely followed diploma programs (22%). Almost 60% of graduate programs indicated a shortage of faculty, while almost 80% of bachelor's degree programs are currently facing this shortage. However, this shortage does not seem to be

an overwhelming factor limiting their ability to admit all qualified applicants (88% of bachelor's and 71% of graduate programs have indicated that they are able to admit all qualified applicants).

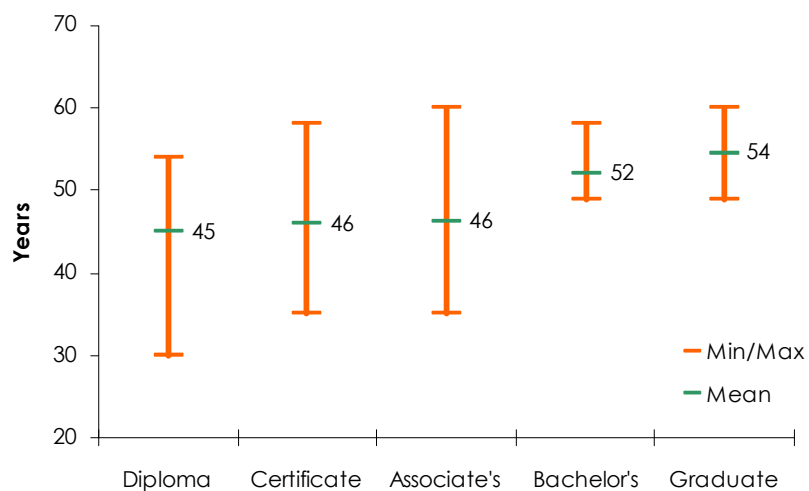
**Figure 3.6**  
**Risk Factor: Facing a Shortage of Faculty?**



Source: Center for Applied Demography & Survey Research, University of Delaware

Program coordinators were asked two more questions related to the current and potential shortage of faculty. They were asked to indicate the average age of faculty teaching in the program. Program coordinators were also asked to report the percentage of faculty that would retire within the next five years.

**Figure 3.7**  
**Average Age of Faculty**

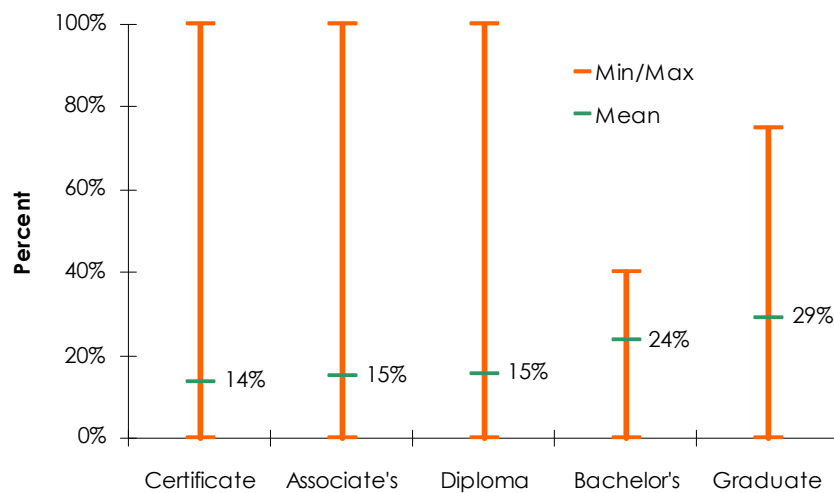


Source: Center for Applied Demography & Survey Research, University of Delaware

It is important to note that the results presented here might be skewed. First, faculty can teach in more than one program – making reporting difficult. Second, the person reporting the proportion of faculty retiring in five years might not be involved in the management of human resources for the program thus their estimate might not be accurate. However, the results suggest consistency in responses.

Figure 3.7, above tabulates the average age of faculty across program categories. The average age of faculty, in diploma, certificate and associate's degree programs is basically the same, 46 years. While the average age of faculty teaching in bachelor's and graduate degree programs is significantly higher (around 53 years).

**Figure 3.8**  
**Average Proportion of Faculty Retiring within 5 Years**



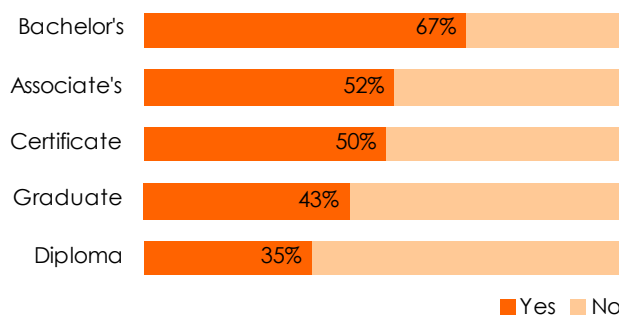
**Source: Center for Applied Demography & Survey Research, University of Delaware**

Figure 3.8, above presents the answers of program coordinators who were asked to indicate the proportion of faculty teaching in their program who will be retiring in the next five years. The results presented here are averages tabulated across program categories. Even though at least one certificate, one diploma and one associate's degree program reported that 100% of their faculty will retire within the next five years, their average percentage retiring in five years is around 15%. For graduate programs and bachelor's degree programs, where the average age is

reported higher than in the other programs, a significantly higher percentage (24% for bachelor's and 29% of graduate programs) of faculty will retire within the next five years. Two other observations are in order here. No bachelor's and no graduate level programs indicated that 100% of their faculty will retire within the next five years. Also, each program category has at least one program where 0% of their faculty will retire in the next five years.

Program coordinators were asked to indicate if they have any plans to expand either the reach or the capacity of their program (Figure 3.9, below). They were also asked to explain their plans. Almost 70% of bachelor's degree programs have indicated that they have plans to expand capacity or the reach of their program. On the opposite end of the spectrum are diploma programs of which only 35% are considering similar plans.

**Figure 3.9**  
**Have Plans to Expand Capacity/Reach of Program?**



Source: Center for Applied Demography & Survey Research, University of Delaware

The descriptions of plans for capacity expansion and outreach were most often centered on developing student outreach partnership, increasing marketing in high schools and other feeding institutions. Increasing the quality and reach (beyond New Castle County) of recruitment efforts was also mentioned. Next were efforts to increase enrollment. Joint programs between institutions were mentioned in a number of cases and also offering non credit courses. Plans were mentioned to reach out to Hispanic students or attracting students from abroad.

## Observations

This study of health education programs is in its first year and is intended to provide the baseline information that will be useful to policymakers in Delaware. Given the almost 90% response rate the observations about the Delaware health education pipeline presented and analyzed in this study are statistically sound, and a number of findings can be drawn from the data:

- Over 20 institutions offer a total of 104 health education programs in Delaware. Most numerous are programs offering associate's degrees (28), followed by certificate programs (26), diploma programs (23), bachelor's degree programs (15) and graduate programs (12).
- Graduate programs are most likely (100%), while certificate programs are least likely (32%) to offer at least some courses in the evening. Associate's degree programs are most likely (70%), while certificate programs are least likely (5%) to offer at least some courses during the weekend. Associate's degree programs are most likely (75%), while certificate programs are least likely (5%) to offer at least some courses online.
- Certificate programs are most likely (73%) to rate the demand for their programs to be high today. Almost 50% of diploma programs evaluate the demand for their programs to be low.
- Looking at the demand five years from now, graduate programs are most likely (71%) to identify the demand for their programs to be higher five years from now than today.
- A total of 5,700 applications were received for health education programs for fall 2006. The total number of new students entering health related programs is 2,539.
- In general, graduate programs along with programs offering bachelor's degrees are most selective in their admission decisions as measured by the ratio of applications to new students (28% and 33% respectively).
- In terms of total enrollment, 7,106 students were enrolled in health education programs across Delaware. Fewest (467) are enrolled in graduate programs, and the most are enrolled in diploma and associate's degree programs (2,000 respectively).
- When compared to enrollment five years ago, the average enrollment in a diploma program has increased the most (from 58 in 2001 to 93 in 2006); about a 60% increase.
- A higher proportion of minority students is enrolled in certificate programs (37%) and graduate (32%) programs than would be expected given Delaware's population characteristics (25% minority).

- Cross tabulation of survey results with Bureau of Labor Statistics data revealed that health education programs in Delaware educate for the 2/3 of lowest paying health occupations in the state.
- Programs offering bachelor's degrees are most likely (88%) able to accommodate all qualified applicants. Associate's degree programs are least likely (63%) to indicate that they can accommodate all qualified applicants.
- Diploma programs are most likely (50%) to indicate facing a shortage of classroom facilities. Bachelor's degree programs are most likely (44%) to indicate a shortage of clinical placements.
- Diploma programs are most likely (44%) to indicate an increased number (5-7) of risk factors that influence their ability to admit all qualified applicants.
- Almost 80% of bachelor's degree programs are facing a shortage of faculty. Associate's degree programs are least likely (18%) to indicate a shortage of faculty.
- The average age of faculty, in diploma, certificate and associate's degree programs is basically the same at around 46 years. While the average age of faculty teaching in bachelor's and graduate degree programs is significantly higher (around 53 years).
- Almost 70% of bachelor's degree programs indicated that they have plans to expand the capacity/reach. Diploma programs are least likely (35%) to have similar plans.

## **APPENDICES**

## APPENDIX I – Number of Responses by Institution and Program Level

	CERTIFICATE	DIPLOMA	ASSOCIATE'S	BACHELOR'S	GRADUATE
Beebe School of Nursing		•			
Del Castle Technical High School	• •	• •			
Del Tech - Owens		• • • • •	• • • • • • • •		
Del Tech - Stanton		•	•		
Del Tech - Terry	•	• • • • •	• • • • •		
Del Tech - Wilmington		• • • • •	• • • • • • • • • • • • •		
Delaware Skills Center	• • • •				
Delaware State University				•	•
Hodgson Vo-Tech High School	• • •				
Howard High School of Technology	• •				
NCC Vo-Tech High School	• •				
Polytech Adult Education	• •				
Polytech High School	• •	• •			
Star Technical Institute		•			
Sussex Technical High School	• •				
Sussex Technical School District Adult Education	• •				
University of Delaware				• • • • •	• • • •
Wesley College				• •	•
Wilmington College				•	•
TOTAL	22	23	28	9	7

Source: Center for Applied Demography & Survey Research, University of Delaware

## APPENDIX II – Number of Responses by Program Name and Program Level

### CERTIFICATE

Allied Health Certificate Training	•
Athletic Health Care	•
(Basic Phlebotomy Basic Medical Billing and Coding)	•
Certified Nursing Assistant	• • • • •
Dental Assisting	• • • • •
Dental Lab Technology	•
Emergency Medical Technology	•
(Home Care Assistant, Medical Admin Tech, Medical Assisting, Nurse's Aide, Pharm Tech)	•
Medical Assisting	•
Medical Billing/Coding	•
Nursing	•
Nursing Technology	• • •
Practical Nursing	•
TOTAL	22

## APPENDIX II – Number of Responses by Program Name and Program Level - Continued

### DIPLOMA

Dental Assisting	•
Exercise Science Studies	•
Health Career Studies	• • • •
Healthcare and Rehabilitation	•
Human Services Studies	• • •
Medical Assisting	• • • •
Medical Coding	• •
Medical Transcriptionist	• •
(Pharm Tech, Med Assistant, Comp Medical Office Assist, EKG Tech, Phlebotomist, Surgical Tech)	•
Practical Nursing	• • •
RN Diploma Nursing	•
TOTAL	23

## APPENDIX II – Number of Responses by Program Name and Program Level - Continued

### ASSOCIATE'S

Dental Hygiene Technology	•
Diagnostic Medical Sonography	•
Drug and Alcohol Counseling	• •
Echocardiography Technology	•
Emergency Medical Technology	•
Exercise Science Technology	•
Histotechnician Technology	•
Human Services	•
Human Services Technology	• •
Medical Assistant	• •
Medical Assistant Technology	•
Medical Laboratory Technician	•
Nuclear Medicine Technology	•
Nursing	• • •
Occupational Therapy Assistant	• •
Physical Therapist Assistant	•
Physical Therapist Assistant Technology	•
Radiologic Technology	• •
Respiratory Care Technology	• •
Vascular Technology	•
TOTAL	28

**APPENDIX II – Number of Responses by Program Name and Program Level - Continued**

**BACHELOR'S**

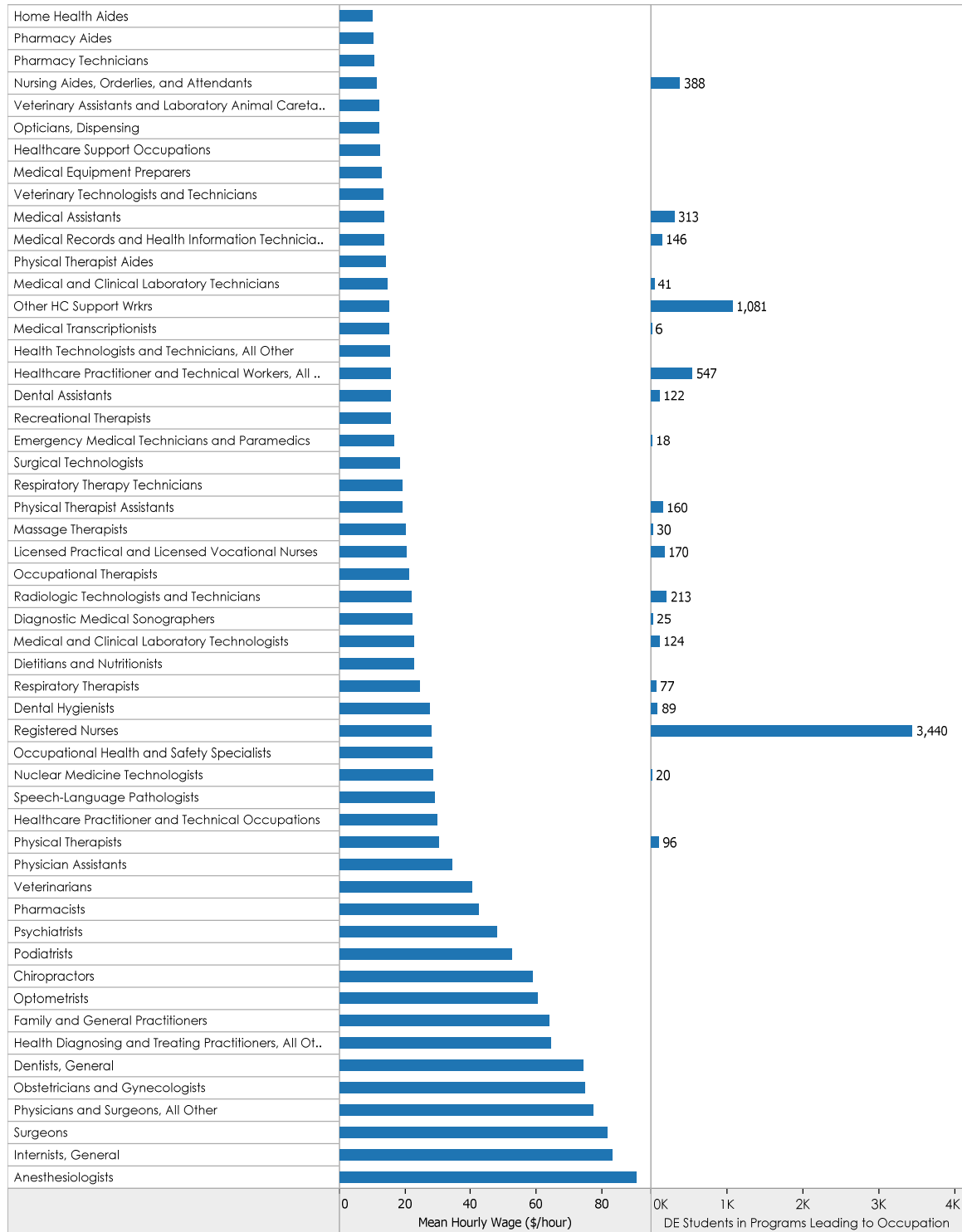
Accelerated Nursing	•
BSN for the RN	•
Dietetics	•
Medical Technology	• •
Nursing	• • •
RN to BSN Program	•
TOTAL	9

**GRADUATE**

Nursing	• • • •
Physical Therapy	•
Post Master's Certificate	•
Psychology	•
TOTAL	7

Source: Center for Applied Demography & Survey Research, University of Delaware

### APPENDIX III – Number of Enrolled Students and Mean Hourly Wage (BLS) by Occupation – Detailed view



Source: Center for Applied Demography & Survey Research, University of Delaware, BLS Occupational Employment Statistics

## **APPENDIX IV – Survey Instrument**

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## DELAWARE HEALTH EDUCATION PIPELINE SURVEY 2006

---

**Institution:** \_\_\_\_\_

**Program name:** \_\_\_\_\_

<b>PLEASE COMPLETE THIS QUESTIONNAIRE</b>
---

**1. Indicate the program level (please check one only).**

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Certificate        | <input type="checkbox"/> Post graduate certificate | <input type="checkbox"/> Post Master's diploma |
| <input type="checkbox"/> Diploma            | <input type="checkbox"/> Post graduate diploma     | <input type="checkbox"/> Doctoral degree       |
| <input type="checkbox"/> Associate's degree | <input type="checkbox"/> Master's degree           |  |
| <input type="checkbox"/> Bachelor's degree  | <input type="checkbox"/> Post Master's certificate |  |

**2. How many years has this program been in existence?** \_\_\_\_\_

**3. What is the average time required to complete the program (months)?** \_\_\_\_\_

**4. Are courses offered online?** ☐ All ☐ Some ☐ None

**5. Are courses offered in the evening?** ☐ All ☐ Some ☐ None

**6. Are courses offered during the weekend?** ☐ All ☐ Some ☐ None

**7. How would you rate the current demand for this program among applicants?**

☐ Low ☐ Moderate ☐ High

**8. Compared to today, do you expect the demand among applicants for this program in 5 years to be?**

☐ Lower ☐ Same ☐ Higher

**9. Number of applications received for the Fall 2006 term:** \_\_\_\_\_

**10. Number of new enrolled students in the Fall 2006 term:** \_\_\_\_\_

**11. Number of all (new + returning) enrolled students in the Fall 2006 term:** \_\_\_\_\_

**A.** This is a \_\_\_\_\_ % increase / decrease (circle one) compared to 5 years ago.

**B.** Please estimate the ethnicity of your enrolled students:

- |   |            |
|---|------------|
| a. Hispanic or Latino (may be any race) | _____ %    |
| b. Not Hispanic or Latino               | _____ %    |
|   | Total=100% |

**C.** Please estimate the race of your enrolled students:

- |  |            |
|--|------------|
| a. American Indian or Alaskan Native   | _____ %    |
| b. Asian                               | _____ %    |
| c. Black or African American           | _____ %    |
| d. Native Hawaiian or Pacific Islander | _____ %    |
| e. White or Caucasian                  | _____ %    |
| f. Some other race                     | _____ %    |
|  | Total=100% |

**12. Number of students who graduated from the program in the academic year 2005/2006?** \_\_\_\_\_

**A.** This is a \_\_\_\_\_ % increase / decrease (circle one) compared to 5 years ago.

**13. What was the graduation rate for the cohort that graduated in the academic year 2005/2006:** \_\_\_\_\_ %

---

14. Using the occupation codes found on page 3, please indicate the occupation your graduates are most likely to obtain after completing your program. \_\_\_\_\_

15. Are graduates of this program required to complete further training before practicing in this occupation?

[ ] Yes [ ] No

16. If clinical placements are required where do students go for clinical placements? Indicate the institution name.

_____	_____
_____	_____
_____	_____

17. Is this program able to accommodate all qualified applicants? [ ] Yes [ ] No

18. Is this program currently facing a shortage of qualified applicants? [ ] Yes [ ] No

19. Is this program currently facing a shortage of classroom facilities? [ ] Yes [ ] No

20. Is this program currently facing a shortage of clinical placements? [ ] Yes [ ] No

21. Is this program currently facing a shortage of funding? [ ] Yes [ ] No

22. Is this program currently facing a shortage of faculty? [ ] Yes [ ] No

23. Is this program currently facing a difficulty in filling faculty positions? [ ] Yes [ ] No

24. Is this program currently facing challenges related to the aging of faculty? [ ] Yes [ ] No

25. What is the average age (estimate) of faculty teaching in this program? \_\_\_\_\_

26. What percentage (estimate) of faculty in this program is expected to retire within 5 years? \_\_\_\_\_%

27. Do you have plans to expand the capacity or the reach of your program? [ ] Yes [ ] No  
Please explain.

_____	_____
_____	_____
_____	_____

28. What are some of the challenges your program is facing? What (if any) are the limitations for your program's growth? Please explain.

_____	_____
_____	_____
_____	_____

THANK YOU FOR COMPLETING THE SURVEY
-------------------------------------

# U.S. Department of Labor – Bureau of Labor Statistics Occupation Codes

## Healthcare Practitioner and Technical Occupations

29-1011 Chiropractors	29-2061 Licensed Practical and Licensed Vocational Nurses
29-1021 Dentists, General	29-2071 Medical Records and Health Information Technicians
29-1022 Oral and Maxillofacial Surgeons	29-2081 Opticians, Dispensing
29-1023 Orthodontists	29-2091 Orthotists and Prosthetists
29-1024 Prosthodontists	29-2099 Health Technologists and Technicians, All Other
29-1029 Dentists, All Other Specialists	
29-1031 Dietitians and Nutritionists	29-9011 Occupational Health and Safety Specialists
29-1041 Optometrists	29-9012 Occupational Health and Safety Technicians
29-1051 Pharmacists	29-9091 Athletic Trainers
29-1061 Anesthesiologists	29-9099 Healthcare Practitioner and Tech. Workers, All Other
29-1062 Family and General Practitioners	
29-1063 Internists, General	
29-1064 Obstetricians and Gynecologists	
29-1065 Pediatricians, General	
29-1066 Psychiatrists	
29-1067 Surgeons	
29-1069 Physicians and Surgeons, All Other	
29-1071 Physician Assistants	
29-1081 Podiatrists	
29-1111 Registered Nurses	
29-1121 Audiologists	
29-1122 Occupational Therapists	
29-1123 Physical Therapists	
29-1124 Radiation Therapists	
29-1125 Recreational Therapists	
29-1126 Respiratory Therapists	
29-1127 Speech-Language Pathologists	
29-1129 Therapists, All Other	
29-1131 Veterinarians	
29-1199 Health Diagnosing and Treating Practitioners, All Other	
29-2011 Medical and Clinical Laboratory Technologists	
29-2012 Medical and Clinical Laboratory Technicians	
29-2021 Dental Hygienists	
29-2031 Cardiovascular Technologists and Technicians	
29-2032 Diagnostic Medical Sonographers	
29-2033 Nuclear Medicine Technologists	
29-2034 Radiologic Technologists and Technicians	
29-2041 Emergency Medical Technicians and Paramedics	
29-2051 Dietetic Technicians	
29-2052 Pharmacy Technicians	
29-2053 Psychiatric Technicians	
29-2054 Respiratory Therapy Technicians	
29-2055 Surgical Technologists	
29-2056 Veterinary Technologists and Technicians	

## Healthcare Support Occupations

31-1011 Home Health Aides
31-1012 Nursing Aides, Orderlies, and Attendants
31-1013 Psychiatric Aides
31-2011 Occupational Therapist Assistants
31-2012 Occupational Therapist Aides
31-2021 Physical Therapist Assistants
31-2022 Physical Therapist Aides
31-9011 Massage Therapists
31-9091 Dental Assistants
31-9092 Medical Assistants
31-9093 Medical Equipment Preparers
31-9094 Medical Transcriptionists
31-9095 Pharmacy Aides
31-9096 Veterinary Assistants and Laboratory Animal Caretakers
31-9099 Healthcare Support Workers, All Other

For specific descriptions of occupations see the source at:  
[http://www.bls.gov/oes/current/oes\\_stru.htm](http://www.bls.gov/oes/current/oes_stru.htm)