

Meeting Minnesota's Workforce Needs:

Health Care Occupations in Minnesota

April, 2012



Minnesota
STATE COLLEGES
& UNIVERSITIES

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HEALTH CARE OCCUPATIONS IN MINNESOTA

INTRODUCTION

This report provides context for conversations about alignment of Minnesota State College and University system academic programs with workforce needs. The concept of workforce alignment includes four distinct dimensions:

- (1) **Understanding** of the workforce needs of business and industry.
- (2) **Supply and demand alignment:** Is there currently (or is there likely to be in the future) a substantial difference between the supply and demand for program graduates? Supply/demand also considers:
 - *Geography:* Are programs offered in the appropriate locations?
 - *Educational Level:* Are graduates prepared with the appropriate degree (certificate, associate, baccalaureate, or graduate)?
- (3) **Skill and knowledge alignment:** Does curriculum (e.g., learning outcomes, soft skills, tools and technology) meet industry needs? Are program graduates adequately prepared for jobs related to their training?
- (4) **Market and occupational awareness:** Are current and prospective students aware of market demand and occupational requirements?

This report provides background on the supply and demand (dimension #2). Regional meetings will review supply/demand data and collect information on industry needs, as well as skill and knowledge gaps (dimensions #1 and #3). The system office has other initiatives aimed at increasing student awareness (dimension #4).

EXECUTIVE SUMMARY

GROUP #1: REGISTERED NURSING

- The new graduate supply of registered nurses (3,642) greatly exceeds average annual projected demand (2,384). This oversupply (1,258) is about 2.2 percent of the 56,010 estimated 2011 employment level.
- Most graduates are being prepared with an associate degree (53 percent) or a bachelor's degree (38 percent).
- Minnesota's capacity to produce registered nurses is very high. For these occupations, 42 colleges and universities each graduate an average of 86 students annually.

GROUP #2: ADVANCED PRACTICE/SPECIALTY NURSING

- There is a supply of 343 new graduates for Advanced Practice/Specialty Nursing. There are no demand data available for Advanced Practice/Specialty Nursing occupations.
- All graduates are being prepared with an advanced degree.
- Minnesota's capacity to produce advanced practice/specialty nurses is adequate. For these occupations, 11 colleges and universities each graduate an average of 31 students annually.

GROUP #3: PRACTICAL NURSING

- The new graduate supply of practical nurses (1,965) greatly exceeds average annual projected demand (979). This oversupply (986) is about 5.2 percent of the 18,870 estimated 2011 employment level.
- Most graduates are being prepared with a certificate (67 percent) or an associate degree (33 percent).
- Minnesota's capacity to produce practical nurses is very high. For this occupation, 22 colleges each graduate an average of 89 students annually.

GROUP #4: NURSING ASSISTANTS/AIDES/SUPPORT

- The average annual projected demand (5,313) of nurse assistants/aides/support worker greatly exceeds the new graduate supply (2,370). This undersupply (2,943) is about 3 percent of the

reportable 2011 employment level (No estimated employment was available for one occupational title: nursing aides, orderlies and attendants.).

- Nearly all graduates are being prepared with a certificate (99.7 percent).
- Minnesota's capacity to produce nursing assistants/aides/support workers is high. For these occupations, 20 colleges each produce an average of 119 graduates.

GROUP #5: DENTAL HYGIENE/DENTAL ASSISTANTS

- The new graduate supply of dental assistants (420) slightly exceeds average annual projected demand (264). This oversupply (156) is about 2.9 percent of the 5,320 estimated 2011 employment level.
- The new graduate supply of dental hygienists (250) is balanced with the average annual projected demand (211). Total estimated employment for 2011 is 4,130.
- Dental assistants are being prepared with a certificate (62 percent) or an associate degree (38 percent). Most dental hygienists are being prepared with an associate degree (64 percent) or a bachelor's degree (30 percent).
- Minnesota's capacity to produce Dental Hygiene/Dental Assistants is high. For these occupations, 19 colleges each graduate an average of 35 students annually.

GROUP #6: CLINICAL LABORATORY

- The new graduate supply of clinical laboratory technicians (306) is balanced with average annual projected demand (257). Total estimated employment for 2011 is 6,990.
- The majority of graduates are being prepared with an associate degree (46.1 percent) or a certificate (35.6 percent).
- Minnesota's capacity to produce clinical laboratory personnel is adequate. For this occupational area, 22 colleges and universities each graduate an average of 14 students annually.

GROUP #7: RESPIRATORY THERAPY

- The new graduate supply of respiratory therapists (70) is balanced with average annual projected demand (66). Total estimated employment for 2011 is 1,620.

- Graduates are being prepared with associate degrees (71 percent) and bachelor's degrees (29 percent).
- Minnesota's capacity to produce Respiratory Therapists is adequate. For this occupation, five colleges and universities each graduate an average of 14 students annually.

GROUP #8: RADIOLOGY

- The new graduate supply of radiologists (422) greatly exceeds average annual projected demand (67). This oversupply (355) is about 19.8 percent of the 1,790 estimated 2011 employment level.
- Most graduates are being prepared with a certificate (13 percent) or an associate degree (87 percent).
- Minnesota's capacity to produce radiology personnel far exceeds demand. For this occupation, 18 colleges and universities each graduate an average of 23 students annually.

A DESCRIPTION OF SUPPLY AND DEMAND MEASURES

SUPPLY. The supply of workers for a particular occupation in a region is measured as the *number of recent program graduates from related training programs in the region*. This includes graduates from all private and public postsecondary institutions in the state. When applicable, graduates from neighboring states' border counties are also included. This measure includes only one source of supply: recent program graduates in the region.

There are other sources of supply not included here: (1) recent program graduates from other regions or states, (2) people employed in related occupations in the current region, other regions or other states, (3) part-time employees who switch to full-time employment, (4) returning veterans, (5) apprentices, (6) high school graduates, (7) customized training students, and (8) self-employed. Using recent program graduates may underestimate the true supply of workers. In other words, if the number of recent program graduates is less than the estimated number of job openings for the same time period, it does not guarantee that there will be a job for every graduate. On the other hand, if the number of graduates exceeds the number of estimated openings, there is reasonably strong evidence that the market is being "oversupplied."

DEMAND. Demand for workers in a particular occupation and region can be measured as both *current* and *future* demand. Current demand is measured with the Occupations In Demand (OID) indicator (see the Appendix for a detailed description). OID ranges from 1 to 5, with 1 indicating low current demand and 5 indicating high current demand. Job vacancy rates are another way to measure current demand. The job vacancy rate is the number of openings relative to the total employment in the occupation. Future demand is measured by the 2009-2019 occupational projections. Included are (1) growth rate for the occupation over the 2009-2019 time period, and (2) projected number of annual openings over the same time period.

For more information on these data sources, please refer to the Appendix of this report.

DESCRIPTION OF OCCUPATION/PROGRAM GROUPS

Industry experts have selected and grouped critical occupations (on the demand side) with related training programs (on the supply side) to represent supply and demand for targeted sets of labor market activity.

These groups were developed for study during the spring 2012 regional meetings. Future work will add new occupation-training groups and build upon processes developed through these meetings. Eventually, all occupation-training groups will be analyzed to inform program planning by the Minnesota State College and University system. Tables below summarize the occupations and programs included in each group for the health care industry.

GROUP #1: REGISTERED NURSING

SOC Code	Occupation Title
29-1111	Registered Nurses

CIP Code	Program Title
51.3801	Registered Nursing/Registered Nurse
51.3899	Registered Nursing, Nursing Administration, Nursing Research and Clinical Nursing, Other

GROUP #2: ADVANCED PRACTICE/SPECIALTY NURSING

SOC Code	Occupation Title
29-1151	Nurse Anesthetists
29-1161	Nurse Midwives
29-1171	Nurse Practitioners

CIP Code	Program Title
51.3802	Nursing Administration
51.3804	Nurse Anesthetist
51.3805	Family Practice Nurse/Nursing
51.3806	Maternal/Child Health and Neonatal Nurse/Nursing
51.3807	Nurse Midwife/Nursing Midwifery
51.3808	Nursing Science
51.3809	Pediatric Nurse/Nursing
51.3810	Psychiatric/Mental Health Nurse/Nursing
51.3811	Public Health/Community Nurse/Nursing
51.3812	Perioperative/Operating Room and Surgical Nurse/Nursing
51.3813	Clinical Nurse Specialist
51.3814	Critical Care Nursing
51.3816	Emergency Room/Trauma Nursing
51.3817	Nursing Education
51.3818	Nursing Practice
51.3819	Palliative Care Nursing
51.3820	Clinical Nurse Leader
51.3821	Geriatric Nurse/Nursing
51.3822	Women's Health Nurse/Nursing
51.3803	Adult Health Nurse/Nursing
51.3815	Occupational and Environmental Health Nursing

GROUP #3: PRACTICAL NURSING

SOC Code	Occupation Title
29-2061	Licensed Practical and Licensed Vocational Nurses

CIP Code	Program Title
51.3901	Licensed Practical/Vocational Nurse Training

GROUP #4: NURSING ASSISTANTS/AIDES/SUPPORT

SOC Code	Occupation Title
31-1011	Home Health Aides
31-1012	Nursing Aides, Orderlies and Attendants
31-1013	Psychiatric Aides
31-1014	Nursing Assistants
39-9021	Personal Care Aides

CIP Code	Program Title
51.2601	Health Aide
51.2602	Home Health Aide/Home Attendant
51.2603	Medication Aide
51.2604	Rehabilitation Aide
51.2699	Health Aides/Attendants/Orderlies, Other
51.3902	Nursing Assistant/Aide and Patient Care Assistant/Aide
51.3999	Practical Nursing, Vocational Nursing and Nursing Assistants, Other

GROUP #5: DENTAL HYGIENE/DENTAL ASSISTANTS

SOC Code	Occupation Title
292021	Dental Hygienists
319091	Dental Assistants

CIP Code	Program Title
51.0601	Dental Assisting/Assistant
51.0602	Dental Hygiene/Hygienist

GROUP #6: CLINICAL LABORATORY

SOC Code	Occupation Title
29-2011	Medical and Clinical Laboratory Technologists
29-2012	Medical and Clinical Laboratory Technicians

CIP Code	Program Title
51.1001	Blood Bank Technology Specialist
51.1002	Cytotechnology/Cytotechnologist
51.1003	Hematology Technology/Technician
51.1004	Clinical/Medical Laboratory Technician
51.1005	Clinical Laboratory Science/Medical Technology/Technologist
51.1007	Histologic Technology/Histotechnologist
51.1008	Histologic Technician
51.1009	Phlebotomy Technician/Phlebotomist
51.1010	Cytogenetics/Genetics/Clinical Genetics Technology/Technologist

GROUP #7: RESPIRATORY THERAPY

SOC Code	Occupation Title
29-1126	Respiratory Therapists
29-2054	Respiratory Therapy Technicians

CIP Code	Program Title
51.0812	Respiratory Therapy Technician/Assistant
51.0908	Respiratory Care Therapy/Therapist

GROUP #8: RADIOLOGY

SOC Code	Occupation Title
29-1124	Radiation Therapists
29-2032	Diagnostic Medical Sonographers
29-2033	Nuclear Medicine Technologists
29-2034	Radiologic Technologists
29-2035	Magnetic Resonance Imaging Technologists
29-2034	Radiologic Technologists and Technicians

CIP Code	Program Title
51.0814	Radiologist Assistant
51.0907	Medical Radiologic Technology/Science - Radiation Therapist
51.0910	Diagnostic Medical Sonography/Sonographer and Ultrasound Technician
51.0911	Radiologic Technology/Science - Radiographer
51.0916	Radiation Protection/Health Physics Technician
51.0917	Polysomnography
51.0919	Mammography Technician/Technology
51.0920	Magnetic Resonance Imaging (MRI) Technology/Technician

STATEWIDE SUPPLY AND DEMAND FINDINGS

GROUP #1: REGISTERED NURSING

TABLE 1A. EDUCATION AND WAGES FOR REGISTERED NURSING

Occupation Title	Education Level	Median Wage
Registered Nurses*	Associate degree	\$35.50
Statewide Average, All Occupations		\$17.73

* Wage data for Registered Nurses also includes advance practice nurses such as: nurse practitioners, certified nurse midwives, and certified registered nurse anesthetists.

- Education and Wages.** As shown in Table 1A, the median wage (\$35.50) for Registered Nurses is double the statewide average. An associate degree is required to gain entry into the Registered Nurse occupation nationally. (Education levels for any occupation may differ by industry sector, employer or market conditions.)

WORKFORCE DEMAND

TABLE 1B. CURRENT AND FUTURE LABOR DEMAND FOR REGISTERED NURSING

Occupation Title	Current			Future	
	2011 Estimated Employment	Current Occupations in Demand Indicator (5=high)*	Job Vacancy Rate	2009-2019 Percent Growth	2009-2019 Average Annual Openings
Registered Nurses*	56,010	5		23.8%	2,384
Statewide Total, All Occupations	2,562,450		2.0%	8.7%	88,558

* See the Appendix for more information about Occupations in Demand and all other data cited in this report.

** Employment, current and future demand data for Registered Nurses also includes advance practice nurses such as nurse practitioners, certified nurse midwives, and certified registered nurse anesthetists.

- Current Demand.** The current demand indicator for Registered Nurses is very high, as indicated by the Occupations in Demand (OID) score of 5.

- **Future Demand.** Registered Nurses are projected to grow much faster (23.8 percent) than the overall statewide growth rate of 8.7 percent across all occupations. There will be an estimated 2,384 annual openings for Registered Nurses between 2009 and 2019.

WORKFORCE SUPPLY

TABLE 1C. NUMBER OF PROGRAM COMPLETERS BY AWARD LEVEL, 2009-2010,
FOR REGISTERED NURSING

Program Title	Certificate (< 2 Years)	Associate	Bachelor's	Advanced Degree	Total
Registered Nursing/Registered Nurse	84	1,936	1,376	246	3,642

- **Number of Completers.** In 2009-2010, there were 3,642 total completers in Registered Nursing programs in Minnesota (see Table 1C).

TABLE 1D. PERCENTAGE OF PROGRAM COMPLETERS BY AWARD LEVEL, 2009-2010,
FOR REGISTERED NURSING

Program Title	Certificate (< 2 Years)	Associate	Bachelor's	Advanced Degree	Total
Registered Nursing/Registered Nurse	2.3%	53.2%	37.8%	6.8%	100.0%

- **Percentage of Completers.** Slightly more than half—53.2 percent—of completers in Registered Nursing programs obtained associate degrees, 37.8 percent obtained bachelor’s degrees and 6.8 percent obtained advanced degrees (see Table 1D). Nationally, an associate degree is minimally required, but educational requirements may vary. A bachelor’s or advanced degree may make graduates more marketable.

TABLE 1E. RELATED EMPLOYMENT RATE, BY PROGRAM, 2010
FOR REGISTERED NURSING*

Program	Number of Awards Conferred	Share of Available Graduates Who Found Employment Related to Major
Registered Nursing/Registered Nurse	2,366	89.9%
Statewide Total, Health Care	7,644	87.1%

* Includes only graduates of Minnesota State Colleges and Universities system.

** Too few awards to report.

- Related Employment Rates.** Recent graduates of Registered Nursing programs from Minnesota State Colleges and Universities had a related employment rate of 89.9 percent, compared to 87.1 percent for all program completers in health care (see Table 5). This may indicate that in spite of the oversupply, graduates from nursing programs are relatively successful finding related employment.

TABLE 1F. NUMBER OF AWARDS CONFERRED BY INSTITUTION, 2009-2010
FOR REGISTERED NURSING

	Number of Awards Conferred	Percentage of Awards Conferred
St. Catherine University	298	8.2%
University of Minnesota-Twin Cities	277	7.6%
The College of Saint Scholastica	204	5.6%
Winona State University	176	4.8%
Bethel University	164	4.5%
Inver Hills Community College	140	3.8%
Minnesota State University, Mankato	138	3.8%
Minnesota State Community and Technical College	124	3.4%
Century College	121	3.3%
Minneapolis Community and Technical College	117	3.2%
North Hennepin Community College	118	3.2%
Lake Superior College	109	3.0%
Rochester Community and Technical College	109	3.0%
Anoka-Ramsey Community College	107	2.9%
Metropolitan State University	101	2.8%
Minnesota State College - Southeast Technical	99	2.7%
Northland Community and Technical College	94	2.6%

TABLE 1F. NUMBER OF AWARDS CONFERRED BY INSTITUTION, 2009-2010
FOR REGISTERED NURSING

	Number of Awards Conferred	Percentage of Awards Conferred
Ridgewater College	96	2.6%
Normandale Community College	82	2.3%
South Central College	84	2.3%
Central Lakes College	79	2.2%
Minnesota West Community and Technical College	76	2.1%
Hibbing Community College	72	2.0%
Minnesota State University Moorhead	73	2.0%
Alexandria Technical and Community College	70	1.9%
Augsburg College	65	1.8%
Fond du Lac Tribal and Community College	67	1.8%
Northwest Technical College - Bemidji	61	1.7%
Riverland Community College	59	1.6%
St. Cloud State University	55	1.5%
College of Saint Benedict	44	1.2%
Concordia College at Moorhead	30	0.8%
Crown College	28	0.8%
Gustavus Adolphus College	24	0.7%
Minnesota School of Business-Richfield	27	0.7%
St. Olaf College	22	0.6%
Bemidji State University	18	0.5%
University of Phoenix-Minneapolis/St. Paul Campus	8	0.2%
Rasmussen College-Minnesota	2	0.1%
Saint John's University	2	0.1%
National American University-Brooklyn Center	1	0.0%
National American University-Roseville	1	0.0%
Statewide Total, Registered Nurses	3,642	100.0%

- Completers at All Institutions.** Of the 3,642 nursing graduates in 2009-2010, St. Catherine University (8.2 percent) and the University of Minnesota-Twin Cities (7.6 percent) accounted for the largest percent of conferred degrees (see Table 1F).
- Completers at Minnesota State Colleges and University Institutions.** Minnesota State Colleges and University completers accounted for 67.1 percent of the nursing graduates in 2010 in Minnesota (see Table 1F).

GROUP #2: ADVANCED PRACTICE/SPECIALTY NURSING

WORKFORCE DEMAND

Note: there are no demand data available for Advanced Practice/Specialty Nursing occupations.

WORKFORCE SUPPLY

**TABLE 2C. NUMBER OF PROGRAM COMPLETERS BY AWARD LEVEL, 2009-2010,
FOR ADVANCED PRACTICE/SPECIALTY NURSING**

Program Title	Certificate (< 2 Years)	Associate	Bachelor's	Advanced Degree	Total
Adult Health Nurse/Nursing				32	32
Clinical Nurse Leader				8	8
Clinical Nurse Specialist				7	7
Family Practice Nurse/Nursing				32	32
Geriatric Nurse/Nursing				5	5
Maternal/Child Health and Neonatal Nurse/Nursing				29	29
Nurse Anesthetist				82	82
Nursing Administration				35	35
Nursing Practice				2	2
Nursing Science				70	70
Pediatric Nurse/Nursing				9	9
Perioperative/Operating Room and Surgical Nurse/Nursing				1	1
Psychiatric/Mental Health Nurse/Nursing				12	12
Public Health/Community Nurse/Nursing				19	19
Statewide Total, Advanced Practice/Specialty Nursing				343	343

- **Number of Completers.** In 2009-2010, there were 343 total completers in Advanced Practice/Specialty Nursing programs in Minnesota. (see Table 2C).

TABLE 2D. PERCENTAGE OF PROGRAM COMPLETERS BY AWARD LEVEL, 2009-2010,
FOR **ADVANCED PRACTICE/SPECIALTY NURSING**

Program Title	Certificate (< 2 Years)	Associate	Bachelor's	Advanced Degree	Total
Adult Health Nurse/Nursing				100.0%	100.0%
Clinical Nurse Leader				100.0%	100.0%
Clinical Nurse Specialist				100.0%	100.0%
Family Practice Nurse/Nursing				100.0%	100.0%
Geriatric Nurse/Nursing				100.0%	100.0%
Maternal/Child Health and Neonatal Nurse/Nursing				100.0%	100.0%
Nurse Anesthetist				100.0%	100.0%
Nursing Administration				100.0%	100.0%
Nursing Practice				100.0%	100.0%
Nursing Science				100.0%	100.0%
Pediatric Nurse/Nursing				100.0%	100.0%
Perioperative/Operating Room and Surgical Nurse/Nursing				100.0%	100.0%
Psychiatric/Mental Health Nurse/Nursing				100.0%	100.0%
Public Health/Community Nurse/Nursing				100.0%	100.0%
Statewide Total, Advanced Practice/Specialty Nursing				100.0%	100.0%

- **Percentage of Completers.** All in Advanced Practice/Specialty Nursing completers obtained advanced degrees (see Table 2D).

TABLE 2E. RELATED EMPLOYMENT RATE, BY PROGRAM, 2010
FOR **ADVANCED PRACTICE/SPECIALTY NURSING***

Program	Number of Awards Conferred	Share of Available Graduates Who Found Employment Related to Major
Family Practice Nurse/Nursing	**	**
Nursing Education	**	**
Nursing Science	55	90.0%
Statewide Total, Advanced Practice/Specialty Nursing	63	90.6%
Statewide Total, Health Care	7,644	87.1%

* Includes only graduates of Minnesota State Colleges and Universities system.

** Too few awards to report.

- **Related Employment Rates.** Recent graduates of Advanced Practice/Specialty Nursing programs from Minnesota State Colleges and Universities had a related employment rate of 90.6 percent, compared to 87.1 percent for all health care program completers (see Table 2E). This provides some evidence that the market for Advance Practice/Specialty Nursing is not oversupplied.

TABLE 2F. NUMBER OF AWARDS CONFERRED BY INSTITUTION, 2009-2010
FOR **ADVANCED PRACTICE/SPECIALTY NURSING**

Institution	Number of Awards Conferred	Percentage of Awards Conferred
Saint Mary's University of Minnesota	57	16.6%
The College of Saint Scholastica	54	15.7%
University of Minnesota-Twin Cities	47	13.7%
Winona State University	43	12.5%
Metropolitan State University	32	9.3%
St. Catherine University	31	9.0%
Mayo School of Health Sciences	26	7.6%
Augsburg College	19	5.5%
Minnesota State University, Mankato	19	5.5%
Bethel University	11	3.2%
Minnesota State University Moorhead	4	1.2%
Statewide Total, Advanced Practice/Specialty Nursing	343	100.0%

- **Completers at All Institutions.** Of the 343 Advanced Practice/Specialty Nursing awards conferred in 2010, Saint Mary's University of Minnesota (16.6 percent) and The College of Saint Scholastica (15.7 percent) accounted for the largest percent of conferred degrees (see Table 2F).
- **Completers at Minnesota State Colleges and University Institutions.** Minnesota State Colleges and University completers accounted for 28.5 percent of the Advanced Practice/Specialty Nursing awards conferred in 2010 in Minnesota (see Table 2F).

GROUP #3: PRACTICAL NURSING

TABLE 3A. EDUCATION AND WAGES FOR
PRACTICAL NURSING

Occupation Title	Education Level	Median Wage
Licensed Practical and Licensed Vocational Nurses	Postsecondary non-degree award	\$19.05
Statewide Average, All Occupations		\$17.73

- Education and Wages.** The median wage for Licensed Practice and Licensed Vocational Nurses is slightly above statewide average for all occupations (see Table 3A). A postsecondary non-degree award is required to gain entry into the Licensed Practice and Licensed Vocational Nurses occupation nationally.

WORKFORCE DEMAND

TABLE 3B. CURRENT AND FUTURE LABOR DEMAND
FOR PRACTICAL NURSING

Occupation Title	Current			Future	
	2011 Estimated Employment	Current Occupations in Demand Indicator (5=high)*	Job Vacancy Rate	2009- 2019 Percent Growth	2009- 2019 Average Annual Openings
Licensed Practical and Licensed Vocational Nurses	18,870	5	3.2%	19.1%	979
Statewide Total, Practical Nurses	18,870			19.1%	979
Statewide Total, All Occupations	2,562,450		2.0%	8.7%	88,558

* See the Appendix for more information about Occupations in Demand and all other data cited in this report.

- Current Demand.** The current demand indicator for Licensed Practical and Licensed Vocational Nurses is very high.
- Future Demand.** Licensed Practical and Licensed Vocational Nurses are projected to grow much faster (19.1 percent) than the overall statewide growth rate of 8.7 percent across all occupations. There will be an estimated 979 annual openings for Licensed Practical and Licensed Vocational Nurses between 2009 and 2019.

TABLE 3C. NUMBER OF PROGRAM COMPLETERS BY AWARD LEVEL, 2009-2010,
FOR **PRACTICAL NURSING**

Program Title	Certificate (< 2 Years)	Associate	Bachelor's	Advanced Degree	Total
Licensed Practical/Vocational Nurse Training	1,320	645			1,965

- **Number of Completers.** In 2009-2010, there were 1,965 total completers in Practical Nursing programs in Minnesota (see Table 3C).

TABLE 3D. PERCENTAGE OF PROGRAM COMPLETERS BY AWARD LEVEL, 2009-2010,
FOR **PRACTICAL NURSING**

Program Title	Certificate (< 2 Years)	Associate	Bachelor's	Advanced Degree	Total
Licensed Practical/Vocational Nurse Training	67.2%	32.8%			100.0%

- **Percentage of Completers.** Slightly more than two-thirds (67.2 percent) of Practical Nursing completers obtained a certificate, while 32.8 percent obtained an associate degree (see Table 3D).

TABLE 3E. RELATED EMPLOYMENT RATE, BY PROGRAM, 2010
FOR **PRACTICAL NURSING***

Program	Number of Awards Conferred	Share of Available Graduates Who Found Employment Related to Major
Licensed Practical/Vocational Nurse Training	1,727	90.9%
Statewide Total, Health Care	7,644	87.1%

* Includes only graduates of Minnesota State Colleges and Universities system.

- **Related Employment Rates.** Recent graduates of Practical Nursing programs from Minnesota State Colleges and Universities had a related employment rate of 90.9 percent, compared to 87.1 percent for all healthcare program completers (see Table 3E). In spite of the evident oversupply of new graduates relative to projected growth, this suggests that recent graduates are having a high degree of success in finding employment related to their training.

TABLE 3F. NUMBER OF AWARDS CONFERRED BY INSTITUTION, 2009-2010
FOR PRACTICAL NURSING

Institution	Number of Awards Conferred	Percentage of Awards Conferred
Northland Community and Technical College	308	15.7%
Hennepin Technical College	209	10.6%
Minnesota State Community and Technical College	152	7.7%
Central Lakes College	117	6.0%
St. Cloud Technical and Community College	114	5.8%
Minnesota State College - Southeast Technical	112	5.7%
Ridgewater College	92	4.7%
Rasmussen College-Minnesota	84	4.3%
Minneapolis Community and Technical College	83	4.2%
South Central College	78	4.0%
Northwest Technical College - Bemidji	77	3.9%
Saint Paul College	72	3.7%
Anoka Technical College	62	3.2%
Minnesota West Community and Technical College	62	3.2%
Pine Technical College	59	3.0%
Dakota County Technical College	54	2.7%
Riverland Community College	49	2.5%
Rainy River Community College	44	2.2%
Itasca Community College	38	1.9%
Lake Superior College	34	1.7%
Mesabi Range Community and Technical College	33	1.7%
Rochester Community and Technical College	32	1.6%
Statewide Total, Practical Nurses	1,965	100.0%

- **Completers at All Institutions.** Of the 1,965 Practical Nursing awards conferred in 2010, Northland Community and Technical College (15.7 percent) and Hennepin Technical College (10.6 percent) accounted for the largest percent of conferred degrees (see Table 3F).

- **Completers at Minnesota State Colleges and University Institutions.** Minnesota State Colleges and University completers accounted for 95.7 percent of the Practical Nursing awards conferred in 2010 in Minnesota (see Table 3F).

GROUP #4: NURSING ASSISTANTS/AIDES/SUPPORT

TABLE 4A. EDUCATION AND WAGES FOR NURSING ASSISTANTS/AIDES/SUPPORT

Occupation Title	Education Level	Median Wage
Home Health Aides	Less than high school	\$11.20
Nursing Aides, Orderlies, and Attendants	Postsecondary non-degree award	\$12.76
Personal Care Aides	Less than high school	\$11.15
Statewide Average, All Occupations		\$17.73

- Education and Wages.** The median wages for Nursing Assistants/Aides/Support occupations are below the statewide average (\$17.73) (see Table 4A). Nursing Aides, Orderlies, and Attendants have the highest median wage (\$12.76) in this group. A postsecondary non-degree award is required to gain entry into the Nursing Aides, Orderlies, and Attendants occupation nationally. Home Health Aides and Personal Care Aides require no high school diploma to gain entry into these professions. Education levels for any occupation may differ by industry sector, employer, or market conditions.

WORKFORCE DEMAND

TABLE 4B. CURRENT AND FUTURE LABOR DEMAND FOR NURSING ASSISTANTS/AIDES/SUPPORT

Occupation Title	Current			Future	
	2011 Estimated Employment	Current Occupations in Demand Indicator (5=high)*	Job Vacancy Rate	2009-2019 Percent Growth	2009-2019 Average Annual Openings
Home Health Aides	36,920	5	2.5%	42.0%	1,970
Nursing Aides, Orderlies, and Attendants	N/A	5		13.8%	743
Personal Care Aides	41,600	5	2.7%	55.7%	2,601
Statewide Total, Nursing Assistant/Aide/Support	N/A			38.6%	5,313
Statewide Total, All Occupations	2,562,450		2.0%	8.7%	88,558

* See the Appendix for more information about Occupations in Demand and all other data cited in this report.

- **Current Demand.** The current demand indicators for Nursing Assistants/Aides/Support occupations are very high.
- **Future Demand.** Nursing Assistants/Aides/Support occupations are projected to grow much faster (38.6 percent) than the overall statewide growth rate of 8.7 percent across all occupations. There will be an estimated 5,313 annual openings for Nursing Assistants/Aides/Support occupations between 2009 and 2019.

WORKFORCE SUPPLY

TABLE 4C. NUMBER OF PROGRAM COMPLETERS BY AWARD LEVEL, 2009-2010,
FOR NURSING ASSISTANTS/AIDES/SUPPORT

Program Title	Certificate (< 2 Years)	Associate	Bachelor's	Advanced Degree	Total
Health Aide	3				3
Home Health Aide/Home Attendant	62	6			68
Nursing Assistant/Aide and Patient Care Assistant/Aide	2,299				2,299
Statewide Total, Nursing Assistants/Aides/Support	2,364	6			2,370

- **Number of Completers.** In 2009-2010, there were 2,370 total completers in Nursing Assistant/Aides/Support programs in Minnesota (see Table 4C). Since many of these occupations do not require postsecondary training, the data in Table 4C may understate the total supply of workers in this category.

TABLE 4D. PERCENTAGE OF PROGRAM COMPLETERS BY AWARD LEVEL, 2009-2010,
FOR NURSING ASSISTANTS/AIDES/SUPPORT

Program Title	Certificate (< 2 Years)	Associate	Bachelor's	Advanced Degree	Total
Health Aide	100.0%				100.0%
Home Health Aide/Home Attendant	91.2%	8.8%			100.0%
Nursing Assistant/Aide and Patient Care	100.0%				100.0%
Statewide Total, Nursing Assistants/Aides/Support	99.7%	0.3%			100.0%

- **Percentage of Completers.** Nearly all (99.7 percent) of Nursing Assistants/Aides/Support completers obtained a certificate, while 0.3 percent obtained associate degrees (see Table 4D).

This suggests that these students are being trained at the appropriate level, given the education requirements shown in Table 4A.

TABLE 4E. RELATED EMPLOYMENT RATE, BY PROGRAM, 2010
FOR NURSING ASSISTANTS/AIDES/SUPPORT*

Program	Number of Awards Conferred	Share of Available Graduates Who Found Employment Related to Major
Health Aide	**	**
Nursing Assistant/Aide and Patient Care Assistant/Aide	2,545	79.4%
Statewide Total, Nursing Assistant/Aide/Support	2,548	79.5%
Statewide Total, Health Care	7,644	87.1%

* Includes only graduates of Minnesota State Colleges and Universities system.

** Too few awards to report.

- Related Employment Rates.** Recent graduates of Nursing Assistants/Aides/Support programs from Minnesota State Colleges and Universities had a related employment rate of 79.5 percent, compared to 87.1 percent for all healthcare program completers (see Table 4E).

TABLE 4F. NUMBER OF AWARDS CONFERRED BY INSTITUTION, 2009-2010
FOR NURSING ASSISTANTS/AIDES/SUPPORT

Institution	Number of Awards Conferred	Percentage of Awards Conferred
Minnesota West Community and Technical College	453	19.1%
Minneapolis Community and Technical College	367	15.5%
Lake Superior College	300	12.7%
Dakota County Technical College	216	9.1%
Inver Hills Community College	210	8.9%
Normandale Community College	139	5.9%
American Indian OIC Inc.	101	4.3%
Saint Paul College	95	4.0%
Northwest Technical College - Bemidji	93	3.9%
Itasca Community College	73	3.1%
Ridgewater College	72	3.0%

TABLE 4F., CONTINUED. NUMBER OF AWARDS CONFERRED BY INSTITUTION, 2009-2010
FOR **NURSING ASSISTANTS/AIDES/SUPPORT**

Institution	Number of Awards Conferred	Percentage of Awards Conferred
Fond du Lac Tribal and Community College	64	2.7%
Pine Technical College	61	2.6%
Hibbing Community College	56	2.4%
Century College	50	2.1%
Rainy River Community College	12	0.5%
Anoka Technical College	4	0.2%
Rochester Community and Technical College	2	0.1%
Minnesota State College - Southeast Technical	1	0.0%
Summit Academy Opportunities Industrialization Center	1	0.0%
Statewide Total, Nursing Assistants/Aides/Support	2,370	100.0%

- **Completers at All Institutions.** Of the 2,370 Nursing Assistants/Aide/ Support awards conferred in 2010, Minnesota West Community and Technical College (19.1 percent) and Minneapolis Community and Technical College (15.5 percent) accounted for the largest percent of conferred degrees (see Table 4F).
- **Completers at Minnesota State Colleges and University Institutions.** Minnesota State Colleges and University completers accounted for 95.7 percent of the Nursing Assistants/Aide/ Support awards conferred in 2010 in Minnesota (see Table 4F).

GROUP #5: DENTAL HYGIENE/DENTAL ASSISTANTS

TABLE 5A. EDUCATION AND WAGES FOR
DENTAL HYGIENE/DENTAL ASSISTANTS

Occupation Title	Education Level	Median Wage
Dental Assistants	Postsecondary non-degree award	\$20.12
Dental Hygienists	Associate degree	\$35.21
Statewide Average, All Occupations		\$17.73

- Education and Wages.** The median wage for Dental Hygiene/Dental Assistants occupations are above the statewide average. Dental Hygienists have a wage (\$35.21) that is double the state average (\$17.73). A postsecondary non-degree award is required to gain entry into the Dental Assistants occupation nationally, while an associate degree is required to gain entry into the Dental Hygienists occupation nationally.

WORKFORCE DEMAND

TABLE 5B. CURRENT AND FUTURE LABOR DEMAND
FOR DENTAL HYGIENE/DENTAL ASSISTANTS

Occupation Title	Current			Future	
	2011 Estimated Employment	Current Occupations in Demand Indicator (5=high)*	Job Vacancy Rate	2009- 2019 Percent Growth	2009- 2019 Average Annual Openings
Dental Assistants	5,320	5	0.9%	30.7%	264
Dental Hygienists	4,130	4	0.7%	31.2%	211
Statewide Total, Dental Hygiene/Dental Assistants	9,450			31.0%	475
Statewide Total, All Occupations	2,562,450		2.0%	8.7%	88,558

* See the Appendix for more information about Occupations in Demand and all other data cited in this report.

- Current demand.** The first three columns in Table 5B represent current demand indicators. The Occupations In Demand (OID) indicators for Dental Hygiene/Dental Assistants occupations are high (the Dental Assistant OID score is 5; Dental Hygienist is 4). However, the job vacancy rate for both these occupations is lower than the statewide average, indicating relatively low hiring demand. Therefore, the overall demand picture for these occupations is mixed.

- **Future demand.** As a group, Dental Hygiene/Dental Assistants occupations are projected to grow much faster (31.0 percent) than the overall statewide growth rate of 8.7 percent across all occupations. There will be an estimated 475 annual openings for Dental Hygiene/Dental Assistants occupations between 2009 and 2019 (see the last two columns in Table 5B).

WORKFORCE SUPPLY

TABLE 5C. NUMBER OF PROGRAM COMPLETERS BY AWARD LEVEL, 2009-2010,
FOR DENTAL HYGIENE/DENTAL ASSISTANTS

Program Title	Certificate (< 2 Years)	Associate	Bachelor's	Advanced Degree	Total
Dental Assisting/Assistant	262	158			420
Dental Hygiene/Hygienist	1	171	75	3	250
Statewide Total, Dental Hygiene/Dental Assistants	263	329	75	3	670

- **Number of Completers.** In 2009-2010, there were 670 total completers in Dental Hygiene/Dental Assistants programs in Minnesota (see Table 3), with 420 completing Dental Assistant programs and 250 completing Dental Hygiene programs. Compared to the projected openings for each of these occupations shown in Table 5B, this indicates that there may be an oversupply of new Dental Assistant graduates in the coming years. The supply of new Dental Hygienists should be balanced with demand.

TABLE 5D. PERCENTAGE OF PROGRAM COMPLETERS BY AWARD LEVEL, 2009-2010,
FOR DENTAL HYGIENE/DENTAL ASSISTANTS

Program Title	Certificate (< 2 Years)	Associate	Bachelor's	Advanced Degree	Total
Dental Assisting/Assistant	62.4%	37.6%			100.0%
Dental Hygiene/Hygienist	0.4%	68.4%	30.0%	1.2%	100.0%
Statewide Total, Dental Hygiene/Dental Assistants	39.3%	49.1%	11.2%	0.4%	100.0%

- **Percentage of Completers.** As shown in Table 5D, Dental Assistant graduates exclusively earned certificates (62.4 percent) and associate degrees (37.6 percent), and Dental Hygiene graduates earned primarily associate (68.4 percent) and bachelor's degrees (30 percent). Given the educational requirements shown in Table 5A, this level of preparation is appropriate for these fields.

TABLE 5E. RELATED EMPLOYMENT RATE, BY PROGRAM, 2010
FOR **DENTAL HYGIENE/DENTAL ASSISTANTS***

Program	Number of Awards Conferred	Share of Available Graduates Who Found Employment Related to Major
Dental Assisting/Assistant	358	88.6%
Dental Hygiene/Hygienist	159	75.0%
Statewide Total, Dental Hygiene/Dental Assistants	517	83.9%
Statewide Total, Health Care	7,644	87.1%

- **Related Employment Rates.** Minnesota State Colleges and Universities recent graduates had a related employment rate of 75 percent for Dental Hygiene programs and 88.6 percent for Dental Assistants programs (see Table 5E).

TABLE 5F. NUMBER OF AWARDS CONFERRED BY INSTITUTION, 2009-2010
FOR **DENTAL HYGIENE/DENTAL ASSISTANTS**

Institution	Number of Awards Conferred	Percentage of Awards Conferred
Herzing University-Minneapolis	95	14.2%
Century College	86	12.8%
Hennepin Technical College	51	7.6%
Minnesota State University, Mankato	47	7.0%
Minnesota State Community and Technical College	44	6.6%
St. Cloud Technical and Community College	42	6.3%
Dakota County Technical College	37	5.5%
Argosy University-Twin Cities	32	4.8%
Rochester Community and Technical College	32	4.8%
Hibbing Community College	28	4.2%
Northwest Technical College - Bemidji	27	4.0%
University of Minnesota-Twin Cities	27	4.0%
Normandale Community College	24	3.6%

TABLE 5F, CONTINUED. NUMBER OF AWARDS CONFERRED BY INSTITUTION, 2009-2010
FOR DENTAL HYGIENE/DENTAL ASSISTANTS

Institution	Number of Awards Conferred	Percentage of Awards Conferred
Central Lakes College	21	3.1%
Minneapolis Community and Technical College	20	3.0%
Lake Superior College	18	2.7%
South Central College	18	2.7%
Minnesota West Community and Technical College	16	2.4%
Metropolitan State University	5	0.7%
Statewide Total, Dental Hygiene/Dental Assistants	670	100.0%

- **Completers at All Institutions.** Of the 670 Dental Hygiene/Dental Assistants awards conferred in 2010, Herzing University-Minneapolis (14.2 percent) and Century College (12.8 percent) accounted for the largest share of conferred degrees (see Table 5F).
- **Completers at Minnesota State Colleges and University Institutions.** Minnesota State Colleges and University completers accounted for 77.0 percent of the Dental Hygiene/Dental Assistants awards conferred in 2010 in Minnesota (see Table 5F).

GROUP #6: CLINICAL LABORATORY

TABLE 6A. EDUCATION AND WAGES FOR CLINICAL LABORATORY

Occupation Title	Education Level	Median Wage
Medical and Clinical Laboratory Technicians	Associate degree	\$21.06
Medical and Clinical Laboratory Technologists	Bachelor's degree	\$29.11
Statewide Average, All Occupations		\$17.73

- Education and Wages.** The median wage for Clinical Laboratory occupations are above the statewide average (see Table 6A). Medical and Clinical Laboratory Technologists have the highest median wage in this group. An associate degree is required to gain entry into the Medical and Clinical Laboratory Technicians occupation nationally, while a bachelor's degree is required to gain entry into the Medical and Clinical Laboratory Technologists occupation nationally. Education levels for any occupation may differ by industry sector, employer or market conditions.

WORKFORCE DEMAND

TABLE 6B. CURRENT AND FUTURE LABOR DEMAND FOR CLINICAL LABORATORY

Occupation Title	Current			Future	
	2011 Estimated Employment	Current Occupations in Demand Indicator (5=high)*	Job Vacancy Rate	2009-2019 Percent Growth	2009-2019 Average Annual Openings
Medical and Clinical Laboratory Technicians	3,010	5	2.8%	17.6%	114
Medical and Clinical Laboratory Technologists	3,980	5	0.8%	17.3%	143
Statewide Total, Clinical Laboratory	6,990			17.4%	257
Statewide Total, All Occupations	2,562,450		2.0%	8.7%	88,558

* See the Appendix for more information about Occupations in Demand and all other data cited in this report.

- **Current demand.** The current demand indicators for Clinical Laboratory occupations are high. The Occupations in Demand (OID) score for both specialties is 5, and the job vacancy rate for Medical and Clinical Laboratory Technicians is higher than the statewide average of 2.0 percent (see the first three columns of Table 6B).
- **Future demand.** Clinical Laboratory occupations are projected to grow faster (17.4 percent) than the overall statewide growth rate of 8.7 percent across all occupations. There will be an estimated 257 annual openings for Clinical Laboratory occupations between 2009 and 2019 (see the last two columns of Table 6B).

WORKFORCE SUPPLY

TABLE 6C. NUMBER OF PROGRAM COMPLETERS BY AWARD LEVEL, 2009-2010,
FOR **CLINICAL LABORATORY***

Program Title	Certificate (< 2 Years)	Associate	Bachelor's	Advanced Degree	Total
Clinical Laboratory Science/Medical Technology/Technologist			20		20
Clinical/Medical Laboratory Technician	6	125		30	161
Cytogenetics/Genetics/Clinical Genetics Technology/Technologists	20		5		25
Cytotechnology/Cytotechnologist			1		1
Hematology Technology/Technician	20				20
Histologic Technology/Histotechnologist	5	16			21
Phlebotomy Technician/Phlebotomist	58				58
Statewide Total, Clinical Laboratory	109	141	26	30	306

* Note that the supply of completers in Clinical Laboratory may be understated due to a program coding error.

- **Number of Completers.** In 2009-2010, there were 306 total completers in Clinical Laboratory programs in Minnesota (see Table 6C).

TABLE 6D. PERCENTAGE OF PROGRAM COMPLETERS BY AWARD LEVEL, 2009-2010,
FOR **CLINICAL LABORATORY***

Program Title	Certificate (< 2 Years)	Associate	Bachelor's	Advanced Degree	Total
Clinical Laboratory Science/Medical Technology/Technologist			100.0%		100.0%
Clinical/Medical Laboratory Technician	3.7%	77.6%		18.6%	100.0%
Cytogenetics/Genetics/Clinical Genetics Technology/Technologist	80.0%		20.0%		100.0%
Cytotechnology/Cytotechnologist			100.0%		100.0%
Hematology Technology/Technician	100.0%				100.0%
Histologic Technology/Histotechnologist	23.8%	76.2%			100.0%
Phlebotomy Technician/Phlebotomist	100.0%				100.0%
Statewide Total, Clinical Laboratory	35.6%	46.1%	8.5%	9.8%	100.0%

* Note that the share of completers by Award Level in Clinical Laboratory may be off to a program coding error.

- **Share of Completers by Award Level.** Almost half (46.1 percent) of Clinical Laboratory completers obtained an associate degree; 35.6 percent obtained a certificate; 8.5 percent obtained a bachelor's degree; and 9.8 percent obtained an advanced degree (see Table 6D).

TABLE 6E. RELATED EMPLOYMENT RATE, BY PROGRAM, 2010
FOR **CLINICAL LABORATORY***

Program	Number of Awards Conferred	Share of Available Graduates Who Found Employment Related to Major
Clinical Laboratory Science/Medical Technology/Technologist	18	100.0%
Clinical/Medical Laboratory Technician	87	92.3%
Histologic Technician	**	**
Phlebotomy Technician/Phlebotomist	62	75.0%
Statewide Total, Clinical Laboratory	169	91.4%
Statewide Total, Health Care	7,644	87.1%

* Includes only graduates of Minnesota State Colleges and Universities system.

** Too few awards to report.

- **Related Employment Rates.** Recent graduates of Clinical Laboratory programs from Minnesota State Colleges and Universities had a related employment rate of 91.4 percent, compared to 87.1 percent for all program completers (see Table 6E). Related employment rates varied by specialty within this group.

TABLE 6F. NUMBER OF AWARDS CONFERRED BY INSTITUTION, 2009-2010
FOR CLINICAL LABORATORY*

Institution	Number of Awards Conferred	Percentage of Awards Conferred
Mayo School of Health Sciences	55	18.0%
Argosy University-Twin Cities	36	11.8%
Lake Superior College	30	9.8%
Alexandria Technical and Community College	26	8.5%
South Central College	21	6.9%
St Catherine University	20	6.5%
Saint Paul College	18	5.9%
Rasmussen College-Minnesota	16	5.2%
Hibbing Community College	15	4.9%
North Hennepin Community College	15	4.9%
Minnesota West Community and Technical College	9	2.9%
Saint Mary's University of Minnesota	8	2.6%
Winona State University	8	2.6%
Minneapolis Community and Technical College	7	2.3%
Minnesota State Community and Technical College	7	2.3%
Minnesota State University, Mankato	5	1.6%
Northland Community and Technical College	3	1.0%
Bemidji State University	2	0.7%
Duluth Business University	2	0.7%
Minnesota State University Moorhead	1	0.3%
St. Cloud State University	1	0.3%
University of Minnesota-Twin Cities	1	0.3%
Statewide Total, Clinical Laboratory	306	100.0%

* Note that the supply of completers in Clinical Laboratory may be understated due to a program coding error.

- Completers at All Institutions.** Of the 306 Clinical Laboratory awards conferred in 2010, Mayo School of Health Sciences (18.0 percent) and Argosy University-Twin Cities (11.8 percent) accounted for the largest percent of conferred degrees (see Table 6F).
- Completers at Minnesota State Colleges and University Institutions.** Minnesota State Colleges and University completers accounted for 54.9 percent of the Clinical Laboratory awards conferred in 2010 in Minnesota (see Table 6F).

GROUP #7: RESPIRATORY THERAPY

**TABLE 7A. EDUCATION AND WAGES FOR
RESPIRATORY THERAPY**

Occupation Title	Education Level	Median Wage
Respiratory Therapists	Associate degree	\$29.76
Respiratory Therapy Technicians	Associate degree	\$25.91
Statewide Average, All Occupations		\$17.73

- Education and Wages.** Median wages for Respiratory Therapy occupations are above the statewide average. An associate degree is required to gain entry into both the Therapist and Therapy Technician occupation nationally. Education levels for any occupation may differ by industry sector, employer or market conditions.

WORKFORCE DEMAND

**TABLE 7B. CURRENT AND FUTURE LABOR DEMAND
FOR RESPIRATORY THERAPY**

	Current			Future	
	2011 Estimated Employment	Current Occupations in Demand Indicator (5=high)*	Job Vacancy Rate	2009- 2019 Percent Growth	2009- 2019 Average Annual Openings
Respiratory Therapists	1,550	3	1.4%	26.5%	63
Respiratory Therapy Technicians	70			1.4%	2
Statewide Total, Respiratory Therapy	1,620			25.3%	66
Statewide Total, All Occupations	2,562,450		2.0%	8.7%	88,558

* See the Appendix for more information about Occupations in Demand and all other data cited in this report.

- Current demand.** The data in Table 7B suggests that the demand for Respiratory Therapists is moderate. The Occupations in Demand (OID) indicator is 3 and the job vacancy rate for this occupation is 1.4 percent, slightly below the statewide average. There are no current demand data available for Respiratory Therapy Technicians
- Future demand.** As a group, Respiratory Therapy occupations are projected to grow much faster (25.3 percent) than the overall statewide growth rate of 8.7 percent. This demand is being

driven by the Respiratory Therapist specialty, which is projected to grow much faster than the statewide average—26.5 percent—and will have an estimated 63 openings annually between 2009 and 2019. The Respiratory Therapy Technicians specialty is growing at a much slower rate and will have very few annual openings.

WORKFORCE SUPPLY

TABLE 7C. NUMBER OF PROGRAM COMPLETERS BY AWARD LEVEL, 2009-2010, FOR RESPIRATORY THERAPY

Program Title	Certificate (< 2 Years)	Associate	Bachelor's	Advanced Degree	Total
Respiratory Care Therapy/Therapist		50	20		70
Statewide Total, Respiratory Therapy		50	20		70

- Number of Completers.** In 2009-2010, there were 70 completers in Respiratory Therapy programs in Minnesota (see Table 3). Note that all the graduates were in Respiratory Therapy Care/Therapist programs; there were no completers in Respiratory Therapy Technician programs. Given the annual demand shown in Table 7B, the data suggest that the supply of new Respiratory Therapists graduates will be aligned with the demand through 2019.

TABLE 7D. PERCENTAGE OF PROGRAM COMPLETERS BY AWARD LEVEL, 2009-2010, FOR RESPIRATORY THERAPY

Program Title	Certificate (< 2 Years)	Associate	Bachelor's	Advanced Degree	Total
Respiratory Care Therapy/Therapist		71.4%	28.6%		100.0%
Statewide Total, Respiratory Therapy		71.4%	28.6%		100.0%

- Percentage of Completers.** Seven out of 10 (71.4 percent) Respiratory Therapy completers obtained an associate degree, while 28.6 percent obtained a bachelor's degree (see Table 7D). This indicates that students are being prepared with an appropriate level of education compared to the educational requirements shown in Table 7A.

TABLE 7E. RELATED EMPLOYMENT RATE, BY PROGRAM, 2010
FOR RESPIRATORY THERAPY*

Program	Number of Awards Conferred	Share of Available Graduates Who Found Employment Related to Major
Respiratory Care Therapy/Therapist	50	93.1%
Statewide Total, Respiratory Therapy	50	93.1%
Statewide Total, Health Care	7,644	87.1%

* Includes only graduates of Minnesota State Colleges and Universities system.

** Too few awards to report.

- Related Employment Rates.** Recent graduates of Respiratory Therapy programs from Minnesota State Colleges and Universities had a related employment rate of 93.1 percent, compared to 87.1 percent for all health care program completers (see Table 7E).

TABLE 7F. NUMBER OF AWARDS CONFERRED BY INSTITUTION, 2009-2010
FOR RESPIRATORY THERAPY

Institution	Number of Awards Conferred	Percentage of Awards Conferred
Lake Superior College	19	27.1%
Saint Paul College	19	27.1%
Northland Community and Technical College	12	17.1%
St Catherine University	8	11.4%
University of Minnesota-Twin Cities	12	17.1%
Statewide Total, Respiratory Therapy	70	100.0%

- Completers at All Institutions.** Of the 70 Respiratory Therapy awards conferred in 2010, Lake Superior College (27.1 percent) and Saint Paul College (27.1 percent) accounted for the largest percent of conferred degrees (see Table 7F).
- Completers at Minnesota State Colleges and University Institutions.** Minnesota State Colleges and University completers accounted for 71.4 percent of the Respiratory Therapy awards conferred in 2010 in Minnesota.

GROUP #8: RADIOLOGY

TABLE 8A. EDUCATION AND WAGES FOR RADIOLOGY

Occupation Title	Education Level	Median Wage
Diagnostic Medical Sonographers	Associate degree	\$33.79
Nuclear Medicine Technologists	Associate degree	\$36.41
Radiation Therapists	Associate degree	\$32.77
Statewide Average, All Occupations		\$17.73

- **Education and Wages.** The median wage for Radiology occupations is above the statewide average. Nuclear Medicine Technologists have the highest median wage in this group at \$36.41. An associate degree is required to gain entry into the Radiology occupation nationally.

WORKFORCE DEMAND

TABLE 8B. CURRENT AND FUTURE LABOR DEMAND FOR RADIOLOGY

Occupation Title	Current			Future	
	2011 Estimated Employment	Current Occupations in Demand Indicator (5=high)*	Job Vacancy Rate	2009-2019 Percent Growth	2009-2019 Average Annual Openings
Diagnostic Medical Sonographers	1,240	4	0.6%	23.0%	45
Nuclear Medicine Technologists	300	4		26.5%	12
Radiation Therapists	250	4		32.5%	10
Statewide Total, Radiology	1,790			24.7%	67
Statewide Total, All Occupations	2,562,450		2.0%	8.7%	88,558

* See the Appendix for more information about Occupations in Demand and all other data cited in this report.

- **Current Demand.** The data indicate that Radiology occupations have above average demand with Occupations in Demand scores of 4 (see Table 8B). Job vacancy data are not available for two out of three of these occupations. However, the vacancy rate for Diagnostic Medical Sonographers was 0.6 percent—below the statewide vacancy rate for all occupations.
- **Future Demand.** As a group, Radiology occupations are projected to grow much faster (24.7 percent) than the overall statewide growth rate of 8.7 percent across all occupations. However, these occupations are small, so high growth rates will translate into an estimated 67 annual openings between 2009 and 2019.

TABLE 8C. NUMBER OF PROGRAM COMPLETERS BY AWARD LEVEL, 2009-2010,
FOR RADIOLOGY

Program Title	Certificate (< 2 Years)	Associate	Bachelor's	Advanced Degree	Total
Diagnostic Medical Sonography/Sonographer and Ultrasound Tech	19	84			103
Medical Radiologic Technology/Science - Radiation Therapist	25	94	1		120
Polysomnography		6			6
Radiologic Technology/Science - Radiographer	9	184			193
Statewide Total, Radiology	53	368	1		422

- Number of Completers.** In 2009-2010, there were 432 total completers in Radiology programs in Minnesota (see Table 8C). This represents a substantial oversupply of new graduates, relative to the annual demand shown in Table 8B.

TABLE 8D. PERCENTAGE OF PROGRAM COMPLETERS BY AWARD LEVEL, 2009-2010,
FOR RADIOLOGY

Program Title	Certificate (< 2 Years)	Associate	Bachelor's	Advanced Degree	Total
Diagnostic Medical Sonography/Sonographer and Ultrasound	18.4%	81.6%			100.0%
Medical Radiologic Technology/Science - Radiation Therapist	20.8%	78.3%	0.8%		100.0%
Polysomnography		100.0%			100.0%
Radiologic Technology/Science – Radiographer	4.7%	95.3%			100.0%
Statewide Total, Radiology	12.6%	87.2%	0.2%		100.0%

- Share of Completers by Award Level.** The vast majority (87.2 percent) of Radiology completers obtained an associate degree, 12.6 percent obtained a certificate and 0.2 percent obtained a bachelor’s degree (see Table 8B). Compared to the educational requirements shown in Table 8A, this indicates that graduates are being prepared with the appropriate level of training.

TABLE 8E. RELATED EMPLOYMENT RATE, BY PROGRAM, 2010
FOR RADIOLOGY*

Program	Number of Awards Conferred	Share of Available Graduates Who Found Employment Related to Major
Diagnostic Medical Sonography/Sonographer	21	92.9%
Medical Radiologic Technology/Science - Radiation Therapist	**	**
Polysomnography	**	**
Radiologic Technology/Science - Radiographer	176	75.2%
Statewide Total, Radiology	204	77.2%
Statewide Total, Health Care	7,644	87.1%

* Includes only graduates of Minnesota State Colleges and Universities system.

** Too few awards to report.

- Related Employment Rates.** Recent graduates of Radiology programs from Minnesota State Colleges and Universities had a related employment rate of 77.2 percent, compared to 87.1 percent for all health care program completers (see Table 8E). This somewhat lower related employment rate might reflect the oversupply of new graduates in this category.

TABLE 8F. NUMBER OF AWARDS CONFERRED BY INSTITUTION, 2009-2010
FOR RADIOLOGY

Institution	Number of Awards Conferred	Percentage of Awards Conferred
Argosy University-Twin Cities	127	30.1%
Century College	40	9.5%
Mayo School of Health Sciences	33	7.8%
Lake Superior College	30	7.1%
St Catherine University	29	6.9%
Northland Community and Technical College	28	6.6%
Rochester Community and Technical College	28	6.6%
Anthem College-Minnesota	22	5.2%
Normandale Community College	15	3.6%
Riverland Community College	15	3.6%
Minnesota State Community and Technical College	14	3.3%
St. Cloud Technical and Community College	9	2.1%
Dunwoody College of Technology	7	1.7%
Ridgewater College	7	1.7%

TABLE 8F, CONTINUED. NUMBER OF AWARDS CONFERRED BY INSTITUTION, 2009-2010
FOR **RADIOLOGY**

Institution	Number of Awards Conferred	Percentage of Awards Conferred
Minneapolis Community and Technical College	6	1.4%
Minnesota West Community and Technical College	6	1.4%
North Hennepin Community College	5	1.2%
St. Cloud State University	1	0.2%
Statewide Total, Radiology	422	100.0%

- **Completers at All Institutions.** Of the 422 Radiology awards conferred in 2010, Argosy University-Twin Cities (30.1 percent) and Century College (9.5 percent) accounted for the largest percent of conferred degrees (see Table 8F).
- **Completers at Minnesota State Colleges and University Institutions.** Minnesota State Colleges and University completers accounted for 48.3 percent of the Radiology awards conferred in 2010 in Minnesota (see Table 8F).

Data Sources

This report quantifies current and projected worker supply and demand. Demand data come from the Labor Market Information Office at the Minnesota Department of Employment and Economic Development (DEED). Supply data come from the Integrated Postsecondary Educational Data System (IPEDS). The Graduate Follow-Up Survey conducted by the Research and Planning unit of the Minnesota State College and Universities system (MnSCU) provides an indicator of both supply and demand. The survey's Related Employment Rate reflects employer demand for completers of a particular program who are available for employment, or the supply, during the year after their graduation.

Occupation-Program Groups

Occupation-program groups reflect the connections between occupations and instructional programs. Each group is a combination of occupations (Standard Occupational Classification codes and titles) and programs (Current Instructional Program codes and titles). Industry experts created these groups to facilitate data analysis and presentation. Each grouping is designed to reflect real-world movement of people in a defined set of occupations and instructional programs.

Demand Data

Demand data in this report are from the Labor Market Information Office at the Minnesota Department of Employment and Economic Development.

1. Education Level – The level of education information presented in this report is a national indicator of the education that is typically needed in each occupation. This indicator is developed by the U.S. Bureau of Labor Statistics Employment Projections program.
2. Employment and Wages – Occupational Employment Statistics is a federal-state program between the Bureau of Labor Statistics and state agencies. Employment and wage estimates for 800 occupation classifications come from a semiannual survey of 6,000 employers in Minnesota, drawn from the universe of nonfarm employers covered by the state's unemployment insurance program. Employment estimates are produced annually, while wages are updated quarterly. Data included in this report include 2011 employment and fourth quarter 2011 wages.
3. Employment Projections – Employment projections are developed based on a national trend analysis model. Minnesota's industry and occupational mix are accounted for in the development of projections using Minnesota's Current Employment Statistics data and Occupational Employment Statistics staffing pattern data. Projections compiled by both occupation and industry for the state and for six regional planning areas. These 10-year forecasts are updated every other year: state projections in even number years, and regional projections in odd number years. Data included in this report cover 2009 to 2019.

4. Occupations in Demand – Occupations in Demand lists current career opportunities in a region as determined by regularly updated local labor market demand. The Occupations in Demand list for a region is the group of occupations that ranks highest on a Current Demand Indicator, which measures short-term demand for jobs locally and is calculated on the basis of the Job Vacancy Survey, Occupational Employment Statistics and unemployment data. Occupations in Demand lists are updated semi-annually. Data included in this report were released in November 2011.

Demand Data Limitations

While demand data in this report represent the best and most current information available, they have limitations:

1. Demand data is presented at the occupational level, not the job level. Occupational data rely on the Standard Occupational Classification coding structure, which may miss more detailed nuances, trends and skill needs at the level of the job. They may also omit newly emerging fields that are not yet captured in the classification coding structure.
2. Occupational Employment Statistics data reflect wage and salary workers on payrolls of Minnesota establishments. They do not capture self-employment or micro-businesses, which may not be subject to Minnesota's unemployment insurance system.
3. The reliability of projections for individual occupations is subject to error due to the assumptions of the trend analysis method. It should be noted that the national employment projections model for 2008-2018, upon which the Minnesota forecast was produced, was created at the early stages of the latest recession.
4. The reliability of projections also can vary depending on the employment size of the occupation and the geographic area. Projections for large occupations and geographic areas are generally more accurate than for small occupations and small geographic areas.
5. Projected job openings are limited to new jobs created and the replacement openings created when workers die, retire or otherwise permanently leave the occupation. They do not include openings created by employee turnover – when a worker leaves a job at Company A to take a similar job at Company B.
6. A job vacancy is a position that is currently open for hire at the time of the survey. The Job Vacancy Survey excludes vacancies reserved for contract consultants, employees of contractors and others not considered employees of surveyed firms.

Supply Data

1. Program completers data are from the annual completions component of the Integrated Postsecondary Education Data System, conducted by the National Center for Education Statistics. All postsecondary institutions that have a Program Participation Agreement with the Office of Postsecondary Education in the U.S. Department of Education are required to report

data using a web-based data collection system. Unique identification numbers are assigned to postsecondary institutions surveyed. The annual completions component of IPEDS collects number of degrees and other formal awards, such as certificates, conferred. These data are reported by level (associate, bachelor's, master's, doctorate and first professional), as well as by length of program for some, using the 2010 Classification of Instructional Programs code. Institutions report all degrees and other awards conferred during an entire academic year from July 1 of one calendar year through June 30 of the following year. In this report, data are for completers from July 1, 2009 through June 30, 2010.

Supply Data Limitations

The supply of labor available for job openings is rather difficult to measure because of mobility and skill transferability. The potential supply of labor includes new graduates from related training programs in the labor market or those who could relocate; experienced unemployed workers in the occupation who live in the labor market or who could relocate; employed workers in the occupation who might switch employers; and those who are qualified but currently out of the labor force who could re-enter. Some specific limitations to keep in mind include:

1. This report uses just recent completers of related academic programs in the state of Minnesota. Minnesota may not contain a college or university with the specific related programs within its boundaries, but completers may relocate from a nearby region or a bordering state. While there may appear to be a surplus of supply, only some of the completers will stay in the region while others will move to other states to seek employment.
2. The supply of workers for some occupations may be trained by apprenticeships or alternative training programs, rather than academic programs.
3. In some cases, such as registered nurses, individuals may begin working with an associate degree but then earn a bachelor's degree. The IPEDS data do not identify the supply of new entrants to the occupation. Other data, such as that compiled by the Board of Nursing, is helpful in counting the number of individuals preparing for first-time licensure.
4. An associate degree can include both those who have completed the first two years of coursework and will transfer to a university to complete a bachelor's degree, as well as those who have completed a program with technical and general education that prepares them to enter the workforce for some occupations.
5. Completer data only measure part of the quantity of the labor supply for an occupation or group of occupations. It does not measure the quality of those applying for the openings. Employers may be looking for experience or additional skills that the new entrants do not have. So what might appear to be a plentiful supply of labor is actually reduced.
6. Completions data for multi-campus institutions are reported for a single institution address.

7. The IPEDS completions data include second majors. A person who graduates with a double-major will be counted as a completer in both programs.

Related Employment Rate

The related employment rate is based on data collected through the Minnesota State Colleges and Universities (MnSCU) Graduate Follow-Up Survey, conducted annually.

The related employment rate is calculated as the number of survey respondents (MnSCU graduates) who reported working either full-time or part-time in job that was related to their major, divided by the total number of program graduates who were available for employment. "Available graduates" includes those who were employed in a related job, available for work but unemployed, and those who were working in a field unrelated to their major and seeking a related job. It does not include those who were out of the labor force, continuing their education, or whose status was unknown.

The related employment rate gives an indication of the alignment of supply and demand. A low related employment rate could indicate that the market is oversupplied with graduates in a particular major. A high related employment rate could indicate that the demand for these majors is high, and the market is undersupplied or balanced.