Wisconsin Clinical Laboratory Science Workforce Survey, 2010

Wisconsin
Clinical Laboratory Science Workforce Survey, 2010

Population Health Information Section
Division of Public Health
Wisconsin Department of Health Services

November 2010

Foreword

This report presents key statistical information about the Wisconsin clinical laboratory workforce.

The source of data for the information in this report is the 2010 Wisconsin Clinical Laboratory Science Workforce Survey. The Department of Health Services conducted this survey for the public health workforce component of the *Collaborative Response to a Growing Workforce Crisis* grant program. This program is funded by the Healthier Wisconsin Partnership Program, "Advancing a Healthier Wisconsin" endowment at the Medical College of Wisconsin.

The Division of Public Health would like to acknowledge and thank the personnel of all respondent laboratories in Wisconsin who completed the survey.

Yiwu Zhang and Karl Pearson in the Population Health Information Section of the Division of Public Health (DPH) prepared this report, in consultation with Nancy McKenney, Director of Workforce Development and Public Health Workforce Project Coordinator. Barbara Saar, Senior Quality Assurance Program Specialist in the Division of Quality Assurance, wrote the Introduction and provided technical advice and edits. Patricia Nametz edited the report. The report was prepared under the supervision of Christine Hill, Chief, Population Health Information Section, and the overall direction of Patricia Guhleman, Director, Office of Policy and Practice Alignment.

A copy of the survey instrument used to collect the data presented in this report is included in the Appendix. Copies of this report are available on the Department's website at: http://www.dhs.wisconsin.gov/health/workforce/index.htm. Suggestions and comments may be addressed to:

Population Health Information Section
Division of Public Health
Department of Health Services
P.O. Box 2659
Madison, WI 53701-2659
Telephone: (608) 267-0334
E-mail: Yiwu.Zhang@dhs.wisconsin.gov or
E-mail: Karl.Pearson@dhs.wisconsin.gov

Suggested Citation:
Wisconsin Department of Health Services, Division of Public Health, Population Health Information Section. ***Wisconsin Clinical Laboratory Science Workforce Survey, 2010*** (P-00233). November 2010.

Table of Contents

Introduction

This report presents the complete results of a survey of the clinical laboratory workforce in Wisconsin that was conducted in March and April, 2010. An earlier "At a Glance" publication gave preliminary results and is available at: http://www.dhs.wisconsin.gov/hw2020/infrastructure/workforce/clinicallabs.pdf

Laboratory science professionals are among the health disciplines that constitute the public health workforce. As demonstrated by the recent Novel Influenza A (H1N1) outbreak, laboratory science professionals address public health challenges. These professionals conduct testing to report results for certain infectious diseases (e.g. HIV, Influenza, and Lyme disease), emerging communicable diseases, and chronic diseases. Additionally, the results of the tests performed by laboratory science professionals are used to monitor individual health and wellness.

Due to a growing concern to develop a diverse, sufficient and competent health workforce to protect and promote the health of the public, the Division of Public Health (DPH) and the Division of Quality Assurance (DQA), both in the Wisconsin Department of Health Services, conducted this survey of primarily non-governmental clinical laboratories throughout Wisconsin.

Clinical laboratories in Wisconsin operate under the federal regulations known as the Clinical Laboratory Improvement Amendments (CLIA). (Wisconsin has no additional state regulations for clinical laboratories.) These federal regulations define a laboratory as a "facility for the biological, microbiological, serological, chemical, immunohematological, hematological, biophysical, cytological, pathological or other examination of materials derived from the human body for the purpose of providing information for the diagnosis, prevention, or treatment of a disease or impairment of, or the assessment of the health of, human beings." Facilities performing testing under this definition are required to maintain CLIA certification with the federal Centers for Medicare and Medicaid Services (CMS). There are four types of CLIA certification:

- Certificate of Waiver,
- Provider Performed Microscopy,
- Compliance, and
- Accreditation.

The type of CLIA certification a laboratory holds is based on several factors, including the complexity of testing performed, qualification of test personnel, and inspection/survey agency. Laboratories with a Certificate of Compliance or Accreditation are inspected every two years.

There were 3,374 CLIA-certified (Clinical Laboratory Improvement Amendments certification) laboratories in Wisconsin as of September 2, 2009. CLIA certification ranges from Certificate of Waiver (can perform only relatively simple tests) to Certificate of Compliance and Certificate of Accreditation (can perform tests of high complexity). A sample of 746 laboratories, stratified by CLIA type and DHS region, was drawn from the full list of laboratories. There was a 43% response rate, with 319 laboratories completing the survey. Results were weighted to represent all clinical laboratories in Wisconsin.

Additional information about survey design and results is included in Appendix A, Technical Notes, at the end of this report.

Who makes up Wisconsin's clinical laboratory workforce?

The clinical laboratory workforce includes professionals with clinical laboratory training and experience such as Pathologists, Medical Technologists, Histotechnologists, and Cytologists. Characteristics of this part of the laboratory workforce include college degrees and/or board certifications with an association specific to their discipline.

The workforce also includes staff such as Registered Nurses, Certified Medical Assistants and Certified Nursing Assistants. This staff primarily performs waived testing, but with the appropriate training can also perform testing of moderate complexity.

The survey results showed a significant part of the workforce listed as "Other," with no information about their clinical laboratory training and/or experience. The survey instrument was not designed to collect more information about staff in this category.

What are the laboratory workforce challenges in Wisconsin?

The first challenge Wisconsin faces is to assure a laboratory workforce that is sufficient, competent and diverse to provide all types of clinical laboratory testing. Whether the testing is simple waived methods or highly complex testing, which includes emerging technologies, the laboratory workforce will require initial and ongoing education and training.

A large majority of laboratories in Wisconsin hold a CLIA Certificate of Waiver. Laboratories with this certificate do not have routine oversight and there are no personnel requirements. Since 1992, when the current CLIA regulations were implemented, the number of tests allowed to be performed by Certificate of Waiver laboratories has increased from 9 to approximately 80 different tests. Screening tests such as the rapid influenza tests used in the recent H1N1 outbreak are an example of tests performed under a Certificate of Waiver.

In 2002, CMS authorized all states to conduct on-site surveys in a small percentage of laboratories with Certificates of Waiver. An initial CMS report of its 2002-2003 survey findings supported CMS's earlier concerns about the quality of testing practices and the need for education and training of testing personnel in Certificate of Waiver laboratories. This CMS report is available at:
http://www.cdc.gov/mmwr/PDF/rr/rr5413.pdf

A second challenge is to assure that the workforce has the education and training needed to perform highly complex methods such as those used to confirm H1N1 during the recent outbreak. In contrast to the Certificate of Waiver laboratories, only three laboratories in Wisconsin were authorized by the Centers for Disease Control and Prevention (CDC) to perform this confirmation testing during the recent outbreak. Methods used for confirmation testing included emerging technologies such as molecular biology-based assays, which can only be performed by personnel with highly specialized clinical laboratory training and experience. As new methods are continually being developed in response to new disease outbreaks, threats, and/or identification of new genetic markers for disease prediction, the potential exists for continued growth in demand for staff with this level of expertise.

A third challenge is to assure that all Wisconsin laboratories have emergency preparedness and response plans and workforce training in place to support their vital role in promoting and protecting the health of the public.

Selected Findings

- According to the Wisconsin Division of Quality Assurance, nearly two-thirds (64%) of all Wisconsin CLIA-certified laboratories have a Certificate of Waiver, meaning they can perform only relatively simple tests.

- According to the Division of Quality Assurance, only 23 percent of CLIA-certified laboratories in Wisconsin are routinely inspected or surveyed; these are laboratories with a Certificate of Compliance or Accreditation.

- In 2010, most laboratories in Wisconsin (91 percent) had 50 or fewer full-time equivalent employees.

- An estimated 29 percent of laboratories reported that all their employees were trained in emergency preparedness and response. Another 29 percent reported that none of their employees were trained in emergency preparedness and response.

- An estimated 64 percent of laboratories statewide had an established emergency preparedness and response plan.

- In 2010, clinical laboratories in Wisconsin had an estimated 51,337 total employees.

- Eighty percent of laboratory employees statewide were female.

- Statewide, 24 percent of laboratory employees were under age 30, 19 percent were between 30 and 39, 21 percent were between 40 and 49, 26 percent were between 50 and 59, and 10 percent were 60 years of age and older.

- In 2010, 89 percent of laboratory employees in Wisconsin were reported to be White; 5 percent Black or African American, 1 percent American Indian/Alaska Native, 1 percent Asian, and 2 percent other races. Three percent of employees were reported to be Hispanic/Latino. Each employee was counted only once in these groupings; therefore the race groups exclude Hispanics.

- Statewide, 49 percent of laboratory workers had a job title reflecting clinical laboratory professional education and training.

- In 2010, estimated FTE vacancies in laboratories statewide are:
    - Staff with clinical laboratory professional education and training: 756
    - Other professional staff who perform laboratory testing: 516
    - "Other staff": 454

- Fifteen percent of the employees of Certificate of Waiver and Provider Performed Microscopy certified laboratories had a job title reflecting clinical laboratory professional education and training.

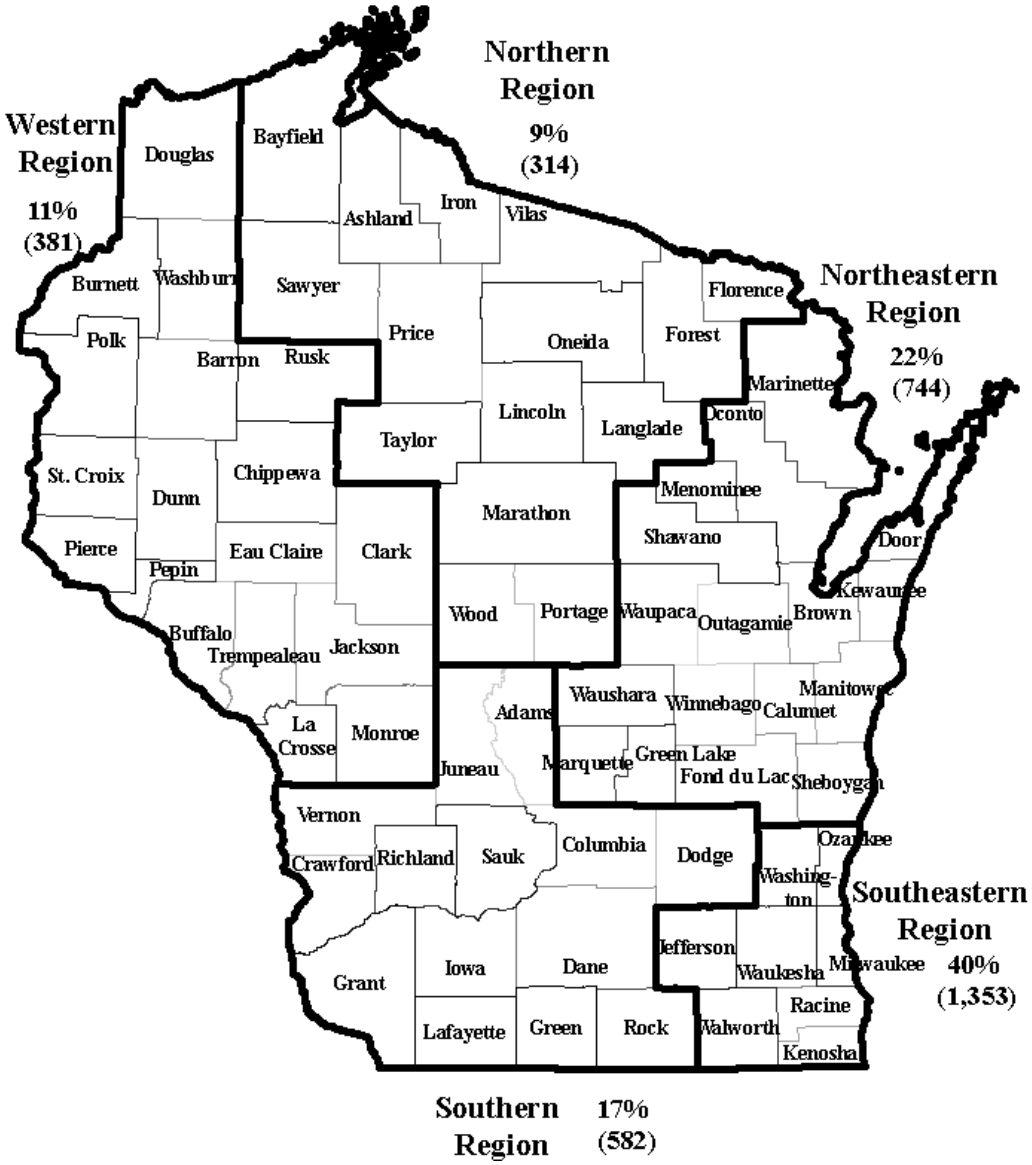
- Seventy-nine percent of the employees of Certificate of Compliance and Certificate of Accreditation certified laboratories had a job title reflecting clinical laboratory professional education and training.

Table 1. CLIA-Certified Laboratories by Department of Health Services (DHS) Region

Region	Number of Laboratories	Percent
Southern Region	582	17%
Southeastern Region	1,353	40
Northeastern Region	744	22
Western Region	381	11
Northern Region	314	9
Total	3,374	100%

Source: Wisconsin Division of Quality Assurance, Department of Health Services.

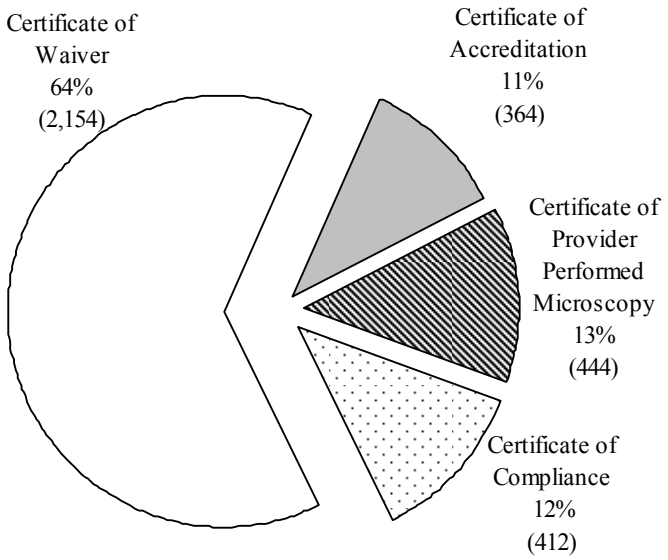
Figure 1. CLIA-Certified Laboratories by Department of Health Services (DHS) Region



- According to the Wisconsin Division of Quality Assurance, nearly two-thirds (64%) of all Wisconsin CLIA-certified laboratories have a Certificate of Waiver. Testing performed under this type of certificate is limited to methods which are determined by the U.S. Food and Drug Administration to be "so simple and accurate as to render the likelihood of erroneous results negligible or pose no reasonable risk of harm to the patient if the test is performed incorrectly" (Code of Federal Register CFR § 493.15 (a)). (For the details of CLIA certificate types, visit http://www.cms.gov/clia/.)

- According to the Division of Quality Assurance, only 23 percent of CLIA-certified laboratories are routinely inspected or surveyed; these are laboratories with a Certificate of Compliance or Accreditation.

Figure 2. CLIA-Certified Laboratories by Certificate Type



Source: Wisconsin Division of Quality Assurance, Department of Health Services.

Table 2. CLIA-Certified Laboratories by Certificate Type

CLIA Type	Number of Laboratories	Percent
Certificate of Waiver	2,154	64%
Certificate of Provider Performed Microscopy	444	13
Certificate of Compliance	412	12
Certificate of Accreditation	364	11
Total	3,374	100%

Source: Wisconsin Division of Quality Assurance, Department of Health Services.

Table 3. Estimated Number of Laboratories by Staff Size

Full-Time-Equivalent Employees (FTEs)	Number of Laboratories	Percent
50 or fewer	3,078	91%
51 - 100	159	5
101 - 200	106	3
201 or more	32	1
Total	3,374	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: Estimates are based on results from 319 responding laboratories; see Technical Notes.

Table 4. Estimated Number of Laboratories by Percent of Employees Trained in Emergency Preparedness and Response, Statewide

Percent of Employees Trained	Number of Laboratories	Percent
No employee had training	973	29%
1% - 50% of employees had training	740	22
51%-99% of employees had training	286	8
100% of employees had training	984	29
No response to this question	391	12
Total number of laboratories	3,374	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: Estimates are based on results from 282 responding laboratories; see Technical Notes.

Table 5. Estimated Number of Laboratories with an Established Emergency Preparedness and Response Plan, Statewide

Established Plan?	Number of Laboratories	Percent
Yes	2,147	64%
No	910	27
No response to this question	317	9
Total number of laboratories	3,374	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: Estimates are based on results from 289 responding laboratories; see Technical Notes.

- An estimated 29 percent of laboratories reported that all their employees were trained in emergency preparedness and response.
- Another estimated 29 percent of laboratories reported that none of their employees were trained in emergency preparedness and response.
- An estimated 64 percent of laboratories had an established emergency preparedness and response plan.

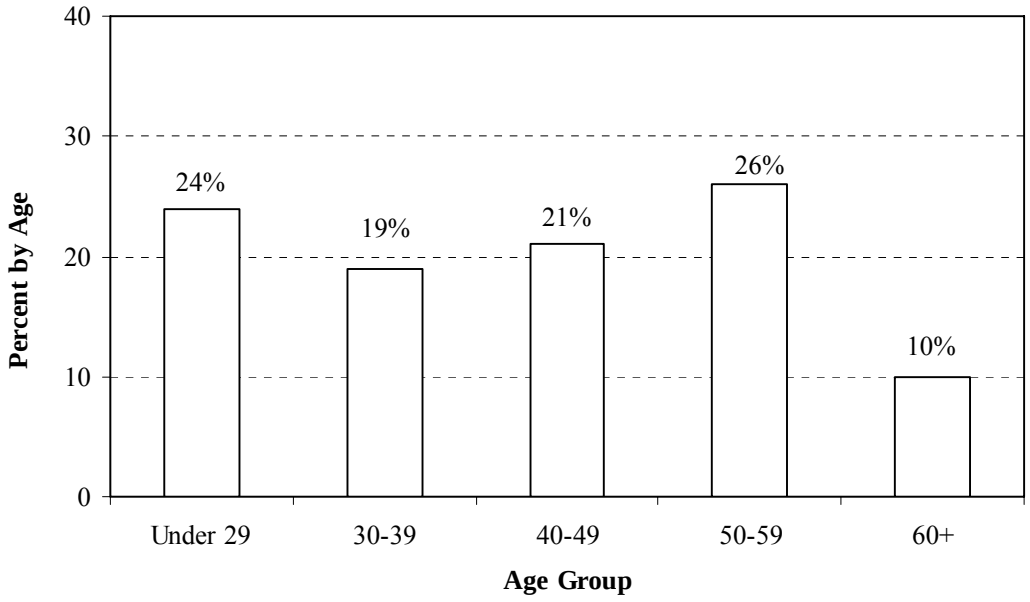
Table 6. Estimated Number of Laboratory Employees by Age and Gender, Statewide

	Total		Male		Female	
Age	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Under 25	6,349	12%	1,169	11%	5,180	13%
25-29	5,993	12	1,187	12	4,806	12
30-39	9,768	19	2,090	20	7,679	19
40-49	11,031	21	2,126	21	8,905	22
50-54	6,953	14	1,157	11	5,796	14
55-59	5,926	12	1,127	11	4,800	12
60+	5,316	10	1,441	14	3,876	9
Total	51,337	100%	10,296	100%	41,041	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: Percentages may not add to 100 percent due to rounding.
Estimates are based on the age and sex distribution of the 8,501 employees for whom age and gender were reported in the 319 laboratories that completed the survey; see Technical Notes.

Figure 3. Laboratory Employees by Age, Statewide



Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

- In 2010, clinical laboratories in Wisconsin had an estimated 51,337 total employees.
- Eighty percent of laboratory employees statewide were female.
- Statewide, 24 percent of laboratory employees were under age 30, 19 percent were between 30 and 39, 21 percent were between 40 and 49, 26 percent were between 50 and 59, and 10 percent were 60 years of age and older.

- In 2010, 89 percent of laboratory employees in Wisconsin were reported to be White; 5 percent Black or African American, 1 percent American Indian/Alaska Native, 1 percent Asian, and 2 percent other races. Three percent of employees were reported to be Hispanic/Latino. Each employee was counted only once in these groupings; therefore the race groups exclude Hispanics.

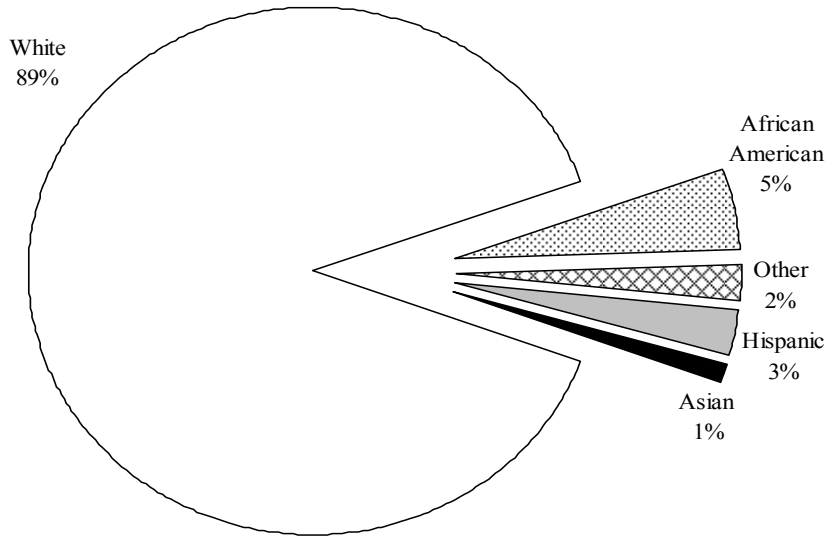
Table 7. Estimated Number of Laboratory Employees by Race and Ethnicity, Statewide

Race:	Number	Percent
White	45,430	89%
Black/African American	2,546	5
American Indian/Alaska Native	312	1
Native Hawaiian /Other Pacific Islander	132	0
Asian	689	1
Other	557	1
Ethnicity:		
Hispanic/Latino	1,671	3%
Total	51,337	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: Race and ethnicity groups are mutually exclusive.
Estimates are based on the race and ethnicity distribution of the 8,571 employees for whom race and ethnicity were reported in the 319 laboratories that completed the survey; see Technical Notes.

Figure 4. Laboratory Employees by Race and Ethnicity, Statewide



Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 8. Estimated Full-Time Equivalent (FTE) Laboratory Employees by Job Title, All Certificate Types, Statewide

Job Title/Discipline	Estimated FTEs Statewide	Estimated FTE Vacancies, Statewide
Staff with clinical laboratory professional education and training		
Pathologists	737	8
Pathology Assistants	76	0
Managers/Administrators*	2,917	38
Certified Medical Technologists – MT(ASCP), CLS(NCA), etc.	7,826	130
Medical Technologists (non-certified)	3,066	0
Certified Medical Laboratory Technicians – MLT(ASCP), CLT(NCA), etc.	2,981	277
Medical Laboratory Technicians (non-certified)	694	9
Phlebotomists	5,210	258
Histotechnologists (Bachelor of Science degree, B.S.)	303	0
Histotechnician	570	36
Cytologists	428	0
Cytogenetic Technologists	246	0
Molecular Biologists	47	0
Other professionals who perform laboratory testing		
Registered Nurses	4,571	108
Licensed Practical Nurses	2,986	100
CMA/MA	1,061	28
CNA/NA	8,198	280
Other	9,420	454
Total	**51,337**	**1,726**

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: Estimated statewide numbers of FTE laboratory employees by job title were based on FTEs reported by the respondent laboratories, and calculated using a multiplier of 9.5. These estimates assume that all Wisconsin laboratories have a distribution of employees by discipline similar to that of the 319 respondent laboratories that completed the survey. Formula used to calculate the multiplier: 319/3,374 x 100 = 9.5.

* This category assumes that laboratory managers have received clinical laboratory professional education and training.

- Statewide, 49 percent of laboratory workers had a job title reflecting clinical laboratory professional education and training.

- In 2010, estimated FTE vacancies in laboratories statewide are:

  - Staff with clinical laboratory professional education and training: 756
  - Other professional staff who perform laboratory testing: 516
  - "Other" staff: 454

Table 9. Estimated Full-Time Equivalent (FTE) Laboratory Employees by Job Title, Certificate of Waiver (COW) and Certificate of Provider Performed Microscopy (PPM) Laboratories, Statewide

Job Title/Discipline	Estimated FTEs Statewide	Estimated FTE Vacancies, Statewide
Staff with clinical laboratory professional education and training		
Pathologists	9	0
Pathology Assistants	0	0
Managers/Administrators*	1,034	19
Certified Medical Technologists – MT(ASCP), CLS(NCA), etc.	47	0
Medical Technologists (non-certified)	2,657	0
Certified Medical Laboratory Technicians – MLT(ASCP), CLT(NCA), etc.	28	9
Medical Laboratory Technicians (non-certified)	19	0
Phlebotomists	76	0
Histotechnologists (Bachelor of Science degree, B.S.)	0	0
Histotechnician	0	0
Cytologists	0	0
Cytogenetic Technologists	0	0
Molecular Biologists	0	0
Other professionals who perform laboratory testing		
Registered Nurses	4,231	108
Licensed Practical Nurses	2,834	100
CMA/MA	527	9
CNA/NA	7,773	251
Other	5,297	34
Total	**24,532**	**530**

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: Estimated statewide numbers of FTE laboratory employees by job title were based on FTEs reported by the respondent laboratories, and calculated using a multiplier of 9.5. These estimates assume that all Wisconsin laboratories have a distribution of employees by discipline similar to that of the 319 respondent laboratories that completed the survey. Formula used to calculate the multiplier: 319/3,374 x 100 = 9.5.

* This category assumes that laboratory managers have received clinical laboratory professional education and training.

- Fifteen percent of the employees of COW and PPM certified laboratories had a job title reflecting clinical laboratory professional education and training. COW laboratories can only perform waived tests. PPM laboratories, in addition to waived tests, may also perform certain microscopic examinations during the course of a patient visit using specimens that are not easily transportable.

Table 10. Estimated Full-Time Equivalent (FTE) Laboratory Employees by Job Title, Certificate of Compliance (COC) and Certificate of Accreditation (COA) Laboratories, Statewide

Job Title/Discipline	Estimated FTEs Statewide	Estimated FTE Vacancies, Statewide
Staff with clinical laboratory professional education and training		
Pathologists	727	8
Pathology Assistants	76	0
Managers/Administrators*	1,882	19
Certified Medical Technologists – MT(ASCP), CLS(NCA), etc.	7,778	130
Medical Technologists (non-certified)	409	0
Certified Medical Laboratory Technicians – MLT(ASCP), CLT(NCA), etc.	2,953	268
Medical Laboratory Technicians (non-certified)	675	9
Phlebotomists	5,133	258
Histotechnologists (Bachelor of Science degree, B.S.)	303	0
Histotechnician	570	36
Cytologists	428	0
Cytogenetic Technologists	246	0
Molecular Biologists	47	0
Other professionals who perform laboratory testing		
Registered Nurses	340	0
Licensed Practical Nurses	152	0
CMA/MA	535	19
CNA/NA	425	28
Other	4,123	420
Total	**26,802**	**1,195**

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: Estimated statewide numbers of FTE laboratory employees by job title were based on FTEs reported by the respondent laboratories, and calculated using a multiplier of 9.5. These estimates assume that all Wisconsin laboratories have a distribution of employees by discipline similar to that of the 319 respondent laboratories that completed the survey. Formula used to calculate the multiplier: 319/3,374 x 100 = 9.5.

* This category assumes that laboratory managers have received clinical laboratory professional education and training.

- Seventy-nine percent of the employees of COC and COA certified laboratories had a job title reflecting clinical laboratory professional education and training. COC and COA certified laboratories may perform tests of high complexity.

Laboratory Employees and Vacancies by Certificate Type

To examine the types of employee and vacancies by certificate type, the four CLIA laboratory types have been combined into two groups: Certificate of Compliance and Certificate of Accreditation; and Certificate of Waiver and Certificate of Provider Performed Microscopy.

Table 11. Estimated Percent of Laboratories with Pathologists and Pathologist Vacancies, by Certificate Type

Laboratory Type	Number of Laboratories	Percent with this Employee Type	(C.I. ±) Percent	Percent with Vacancies in this Employee Type	(C.I. ±) Percent
Compliance and Accreditation	776	19.7%	5.7%	0.5%	0.9%
Waiver and Provider Performed Microscopy	2,598	0.6	1.1	--	--
Total	3,374	5.0%	1.7%	0.1%	0.2%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 12. Estimated Percent of Laboratories with Pathology Assistants and Pathology Assistant Vacancies, by Certificate Type

Laboratory Type	Number of Laboratories	Percent with this Employee Type	(C.I. ±) Percent	Percent with Vacancies in this Employee Type	(C.I. ±) Percent
Compliance and Accreditation	776	3.2%	2.6%	--	--
Waiver and Provider Performed Microscopy	2,598	--	--	--	--
Total	3,374	0.7%	0.6%	--	--

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 13. Estimated Percent of Laboratories with Managers and Administrators and Manager and Administrator Vacancies, by Certificate Type

Laboratory Type	Number of Laboratories	Percent with this Employee Type	(C.I. ±) Percent	Percent with Vacancies in this Employee Type	(C.I. ±) Percent
Compliance and Accreditation	776	44.4%	7.3%	0.9%	1.3%
Waiver and Provider Performed Microscopy	2,598	33.4	8.5	1.7	2.4
Total	3,374	35.9%	6.7%	1.5%	1.8%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 14. Estimated Percent of Laboratories with Certified Medical Technologists and Certified Medical Technologist Vacancies, by Certificate Type

Laboratory Type	Number of Laboratories	Percent with this Employee Type	(C.I. ±) Percent	Percent with Vacancies in this Employee Type	(C.I. ±) Percent
Compliance and Accreditation	776	55.1%	7.4%	4.9%	3.2%
Waiver and Provider Performed Microscopy	2,598	2.6	2.6	--	--
Total	3,374	14.7%	3.4%	1.1%	0.8%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 15. Estimated Percent of Laboratories with Medical Technologists and Medical Technologist Vacancies, by Certificate Type

Laboratory Type	Number of Laboratories	Percent with this Employee Type	(C.I. ±) Percent	Percent with Vacancies in this Employee Type	(C.I. ±) Percent
Compliance and Accreditation	776	4.3%	3.0%	--	--
Waiver and Provider Performed Microscopy	2,598	0.5	1.0	--	--
Total	3,374	1.4%	1.0%	--	--

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 16. Estimated Percent of Laboratories with Certified Medical Laboratory Technicians and Certified Medical Laboratory Technician Vacancies, by Certificate Type

Laboratory Type	Number of Laboratories	Percent with this Employee Type	(C.I. ±) Percent	Percent with Vacancies in this Employee Type	(C.I. ±) Percent
Compliance and Accreditation	776	54.6%	7.4%	4.2%	2.9%
Waiver and Provider Performed Microscopy	2,598	0.6	1.1	0.8	1.5
Total	3,374	13.0%	2.9%	1.6%	1.4%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 17. Estimated Percent of Laboratories with Medical Laboratory Technicians and Medical Laboratory Technician Vacancies, by Certificate Type

Laboratory Type	Number of Laboratories	Percent with this Employee Type	(C.I. ±) Percent	Percent with Vacancies in this Employee Type	(C.I. ±) Percent
Compliance and Accreditation	776	10.9%	4.5%	0.5%	1.0%
Waiver and Provider Performed Microscopy	2,598	1.5	2.1	--	--
Total	3,374	3.6%	2.0%	0.1%	0.2%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 18. Estimated Percent of Laboratories with Phlebotomists and Phlebotomist Vacancies, by Certificate Type

Laboratory Type	Number of Laboratories	Percent with this Employee Type	(C.I. ±) Percent	Percent with Vacancies in this Employee Type	(C.I. ±) Percent
Compliance and Accreditation	776	43.2%	7.3%	6.4%	3.7%
Waiver and Provider Performed Microscopy	2,598	3.9	3.4	--	--
Total	3,374	13.0%	3.5%	1.5%	0.9%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 19. Estimated Percent of Laboratories with Histotechnologists and Histotechnologist Vacancies, by Certificate Type

Laboratory Type	Number of Laboratories	Percent with this Employee Type	(C.I. ±) Percent	Percent with Vacancies in this Employee Type	(C.I. ±) Percent
Compliance and Accreditation	776	5.2%	3.4%	--	--
Waiver and Provider Performed Microscopy	2,598	--	--	--	--
Total	3,374	1.2%	0.8%	--	--

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 20. Estimated Percent of Laboratories with Histotechnicians and Histotechnician Vacancies, by Certificate Type

Laboratory Type	Number of Laboratories	Percent with this Employee Type	(C.I. ±) Percent	Percent with Vacancies in this Employee Type	(C.I. ±) Percent
Compliance and Accreditation	776	7.8%	3.9%	1.9%	2.1%
Waiver and Provider Performed Microscopy	2,598	--	--	--	--
Total	3,374	1.8%	0.9%	0.4%	0.5%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 21. Estimated Percent of Laboratories with Cytologists and Cytologist Vacancies, by Certificate Type

Laboratory Type	Number of Laboratories	Percent with this Employee Type	(C.I. ±) Percent	Percent with Vacancies in this Employee Type	(C.I. ±) Percent
Compliance and Accreditation	776	5.7%	3.4%	--	--
Waiver and Provider Performed Microscopy	2,598	--	--	--	--
Total	3,374	1.3%	0.8%	--	--

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 22. Estimated Percent of Laboratories with Cytogenetic Technologists and Cytogenetic Technologist Vacancies, by Certificate Type

Laboratory Type	Number of Laboratories	Percent with this Employee Type	(C.I. ±) Percent	Percent with Vacancies in this Employee Type	(C.I. ±) Percent
Compliance and Accreditation	776	1.6%	1.8%	--	--
Waiver and Provider Performed Microscopy	2,598	--	--	--	--
Total	3,374	0.4%	0.4%	--	--

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 23. Estimated Percent of Laboratories with Molecular Biologists and Molecular Biologist Vacancies, by Certificate Type

Laboratory Type	Number of Laboratories	Percent with this Employee Type	(C.I. ±) Percent	Percent with Vacancies in this Employee Type	(C.I. ±) Percent
Compliance and Accreditation	776	1.4%	1.9%	--	--
Waiver and Provider Performed Microscopy	2,598	--	--	--	--
Total	3,374	0.3%	0.4%	--	--

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 24. Estimated Percent of Laboratories with Registered Nurses and Registered Nurse Vacancies, by Certificate Type

Laboratory Type	Number of Laboratories	Percent with this Employee Type	(C.I. ±) Percent	Percent with Vacancies in this Employee Type	(C.I. ±) Percent
Compliance and Accreditation	776	7.9%	4.1%	--	--
Waiver and Provider Performed Microscopy	2,598	50.6	8.8	6.6%	4.3%
Total	3,374	40.8%	7.1%	5.1%	3.3%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 25. Estimated Percent of Laboratories with Licensed Practical Nurses and Licensed Practical Nurse Vacancies, by Certificate Type

Laboratory Type	Number of Laboratories	Percent with this Employee Type	(C.I. ±) Percent	Percent with Vacancies in this Employee Type	(C.I. ±) Percent
Compliance and Accreditation	776	4.5%	3.1%	--	--
Waiver and Provider Performed Microscopy	2,598	30.9	8.1	6.2%	4.3%
Total	3,374	24.8%	6.4%	4.8%	3.4%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 26. Estimated Percent of Laboratories with Certified Medical Assistants and Certified Medical Assistant Vacancies, by Certificate Type

Laboratory Type	Number of Laboratories	Percent with this Employee Type	(C.I. ±) Percent	Percent with Vacancies in this Employee Type	(C.I. ±) Percent
Compliance and Accreditation	776	18.7%	5.8%	0.4%	0.8%
Waiver and Provider Performed Microscopy	2,598	14.7	7.0	0.5	1.0
Total	3,374	15.6%	5.6%	0.5%	0.8%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 27. Estimated Percent of Laboratories with Certified Nursing Assistants and Certified Nursing Assistant Vacancies, by Certificate Type

Laboratory Type	Number of Laboratories	Percent with this Employee Type	(C.I. ±) Percent	Percent with Vacancies in this Employee Type	(C.I. ±) Percent
Compliance and Accreditation	776	3.8%	2.8%	1.2%	1.7%
Waiver and Provider Performed Microscopy	2,598	28.7	7.8	5.9	3.9
Total	3,374	22.9%	6.1%	4.8%	3.0%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 28. Estimated Percent of Laboratories with "Other" Employees and "Other" Vacancies, by Certificate Type

Laboratory Type	Number of Laboratories	Percent with this Employee Type	(C.I. ±) Percent	Percent with Vacancies in this Employee Type	(C.I. ±) Percent
Compliance and Accreditation	776	13.8%	5.0%	2.3%	2.3%
Waiver and Provider Performed Microscopy	2,598	41.3	8.7	1.6	1.8
Total	3,374	35.0%	6.9%	1.8%	1.5%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

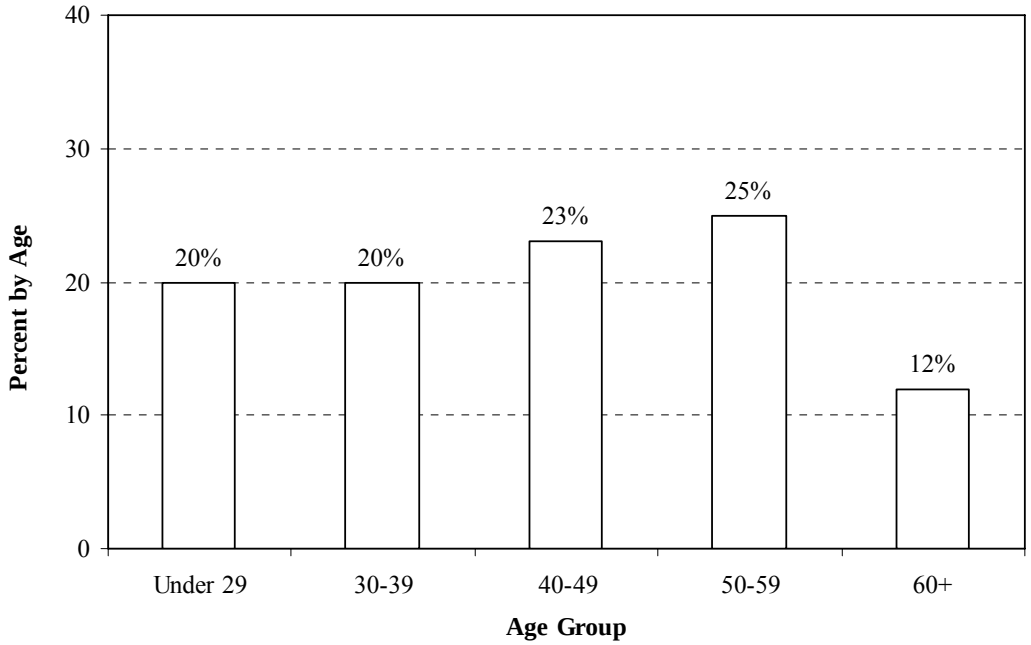
Table 29. Employees of Respondent Laboratories by Age and Gender, Southern Region

Age	Total	Male	Female
	Percent	Percent	Percent
Under 25	9%	5%	10%
25-29	11	8	12
30-39	20	18	21
40-49	23	25	22
50-54	13	12	13
55-59	12	13	12
60+	12	19	10
Total	100%	100%	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: There were 69 respondent laboratories (with 1,661 employees for whom age and sex were reported) in the Southern Region, which has a total of 582 laboratories.

Figure 5. Employees of Respondent Laboratories by Age, Southern Region



Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

- Thirty-seven percent of all respondent laboratory employees in the Southern Region were 50 years of age and older.

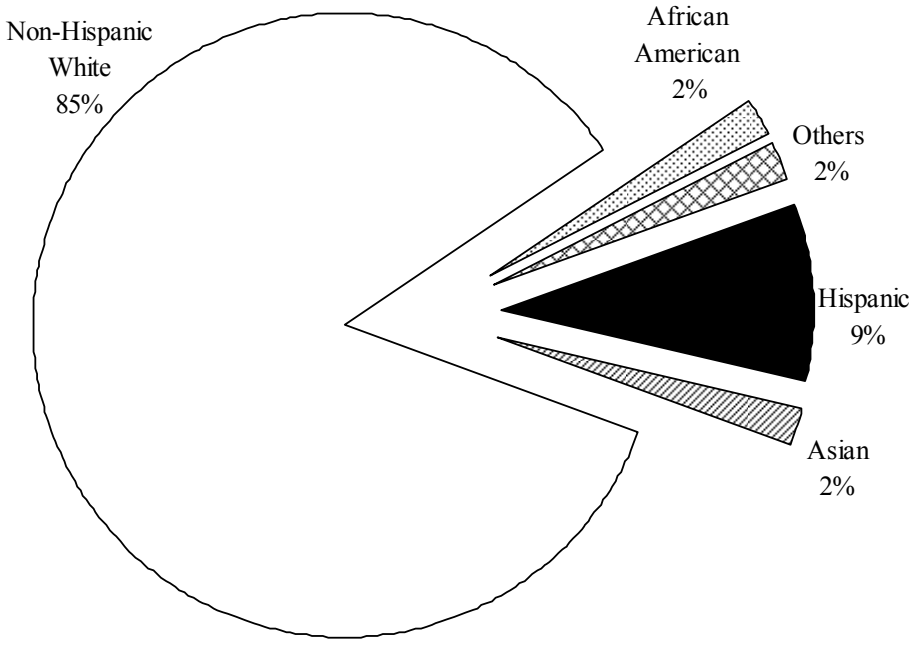
Table 30. Employees of Respondent Laboratories by Race and Ethnicity, Southern Region

Race:	Percent
White	85%
Black/African American	2
American Indian/Alaska Native	1
Native Hawaiian /Other Pacific Islander	0
Asian	2
Other	1
Ethnicity:	
Hispanic/Latino	9%
Total	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: Race and ethnicity groups are mutually exclusive.
There were 69 respondent laboratories (with 1,718 employees for whom race and ethnicity were reported) in the Southern Region, which has a total of 582 laboratories.

Figure 6. Employees of Respondent Laboratories by Race and Ethnicity, Southern Region



Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 31. Estimated Full-Time Equivalent (FTE) Laboratory Employees by Job Title, Southern Region

Job Title/Discipline	Estimated FTEs	Estimated FTE Vacancies
Staff with clinical laboratory professional education and training		
Pathologists	147	0
Pathology Assistants	9	0
Managers/Administrators*	833	19
Certified Medical Technologists – MT(ASCP), CLS(NCA), etc.	1,755	38
Medical Technologists (non-certified)	372	0
Certified Medical Laboratory Technicians – MLT(ASCP), CLT(NCA), etc.	905	47
Medical Laboratory Technicians (non-certified)	174	0
Phlebotomists	793	5
Histotechnologists (Bachelor of Science degree, B.S.)	28	0
Histotechnician	76	0
Cytologists	117	0
Cytogenetic Technologists	180	0
Molecular Biologists	0	0
Other professionals who perform laboratory testing		
Registered Nurses	810	2
Licensed Practical Nurses	427	0
CMA/MA	198	19
CNA/NA	1,139	28
Other	1,934	189
Total	**9,897**	**347**

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: Estimated numbers of FTE laboratory employees by job title were based on FTEs reported by the respondent laboratories, and calculated using a multiplier of 9.5. These estimates assume that all Wisconsin laboratories have a distribution of employees by discipline similar to that of the 319 respondent laboratories that completed the survey. Formula used to calculate the multiplier: 319/3,374 x 100 = 9.5.

* This category assumes that laboratory managers have received clinical laboratory professional education and training.

- In the Southern Region, 54 percent of the employees of CLIA-certified laboratories had a job title reflecting clinical laboratory professional education and training, versus 49 percent statewide.

Table 32. Respondent Laboratories by Percent of Employees Trained in Emergency Preparedness and Response, Southern Region

Percent of Employees Trained	Percent
No employee had training	26%
1% - 50% of employees had training	20
51%-99% of employees had training	9
100% of employees had training	35
No response to this question	10
Total respondent laboratories	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: In the Southern Region, 62 laboratories responded to this question.
Percentages may not add to 100 percent due to rounding.

Table 33. Respondent Laboratories with an Established Emergency Preparedness and Response Plan, Southern Region

Established Plan?	Percent
Yes	61%
No	30
No response to this question	9
Total respondent laboratories	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: In the Southern Region, 63 laboratories responded to this question.
Percentages may not add to 100 percent due to rounding.

- Thirty-five percent of respondent laboratories in the Southern Region reported that all their employees were trained in emergency preparedness and response.

- Sixty-one percent of respondent laboratories in the Southern Region had an established emergency preparedness and response plan.

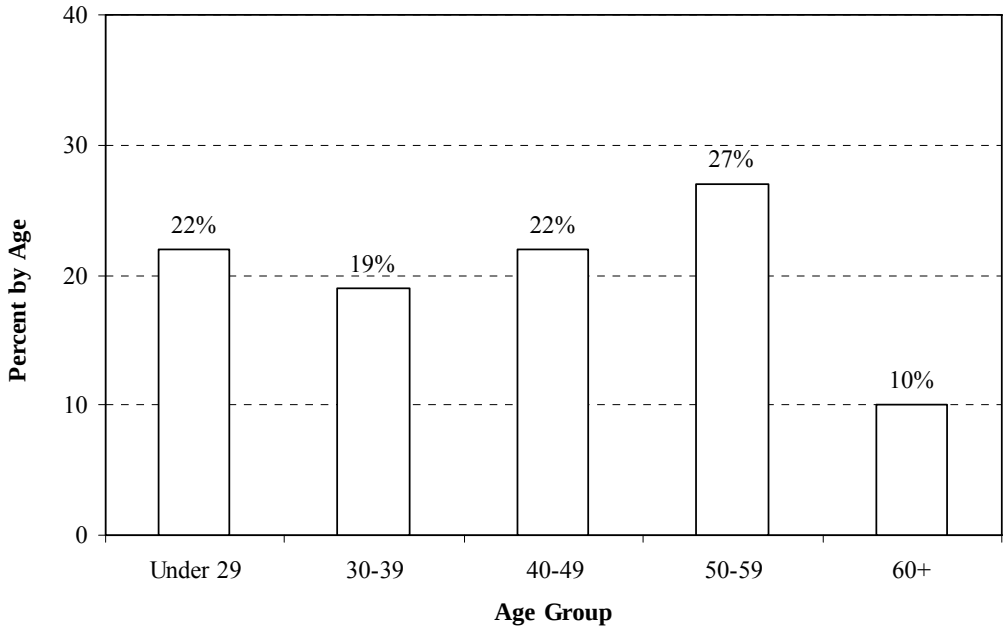
Table 34. Employees of Respondent Laboratories by Age and Gender, Southeastern Region

Age	Total Percent	Male Percent	Female Percent
Under 25	10%	13%	10%
25-29	12	11	12
30-39	19	20	19
40-49	22	23	22
50-54	15	12	16
55-59	12	10	12
60+	10	11	10
Total	100%	100%	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: There were 93 respondent laboratories (with 2,716 employees for whom age and sex were reported) in the Southeastern Region, which has a total of 1,353 laboratories. Percentages may not add to 100 percent due to rounding.

Figure 7. Employees of Respondent Laboratories by Age, Southeastern Region



Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

- Thirty-seven percent of employees of the respondent laboratories in the Southeastern Region were 50 years of age and older.

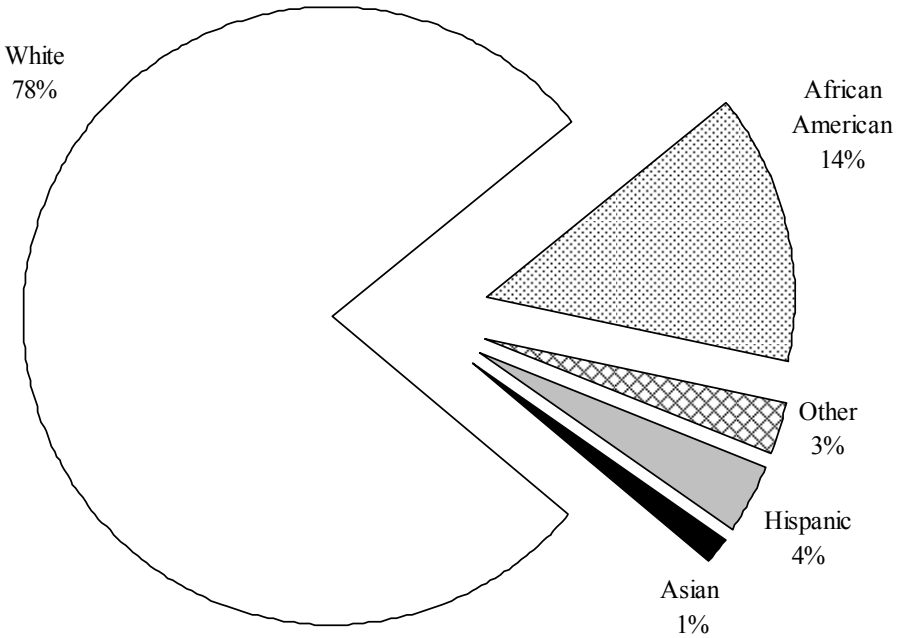
Table 35. Employees of Respondent Laboratories by Race and Ethnicity, Southeastern Region

Race:	Percent
White	78%
Black/African American	14
American Indian/Alaska Native	<1
Native Hawaiian /Other Pacific Islander	<1
Asian	1
Other	2
Ethnicity:	
Hispanic/Latino	4
Total	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: There were 93 respondent laboratories (with 2,634 employees for whom race and ethnicity were reported) in the Southeastern Region, which has a total of 1,353 laboratories.
Race and ethnicity groups are mutually exclusive.

Figure 8. Employees of Respondent Laboratories by Race and Ethnicity, Southeastern Region



Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 36. Estimated Full-Time Equivalent (FTE) Laboratory Employees by Job Title, Southeastern Region

Job Title/Discipline	Estimated FTEs	Estimated FTE Vacancies
Staff with clinical laboratory professional education and training		
Pathologists	123	0
Pathology Assistants	28	0
Managers/Administrators*	624	9
Certified Medical Technologists – MT(ASCP), CLS(NCA), etc.	2,643	22
Medical Technologists (non-certified)	28	0
Certified Medical Laboratory Technicians – MLT(ASCP), CLT(NCA), etc.	385	192
Medical Laboratory Technicians (non-certified)	161	0
Phlebotomists	1,693	232
Histotechnologists (Bachelor of Science degree, B.S.)	237	0
Histotechnician	170	15
Cytologists	107	0
Cytogenetic Technologists	9	0
Molecular Biologists	47	0
Other professionals who perform laboratory testing		
Registered Nurses	1,553	57
Licensed Practical Nurses	1,321	66
CMA/MA	473	0
CNA/NA	2,835	93
Other	1,992	183
Total	**14,429**	**869**

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: Estimated numbers of FTE laboratory employees by job title were based on FTEs reported by the respondent laboratories, and calculated using a multiplier of 9.5. These estimates assume that all Wisconsin laboratories have a distribution of employees by discipline similar to that of the 319 respondent laboratories that completed the survey. Formula used to calculate the multiplier: 319/3,374 x 100 = 9.5.

* This category assumes that laboratory managers have received clinical laboratory professional education and training.

- In the Southeastern Region, 43 percent of the employees of CLIA-certified laboratories had a job title reflecting clinical laboratory professional education and training, versus 49 percent statewide.

Table 37. Respondent Laboratories by Percent of Employees Trained in Emergency Preparedness and Response, Southeastern Region

Percent of Employees Trained	Percent
No employee had training	32%
1% - 50% of employees had training	25
51%-99% of employees had training	5
100% of employees had training	22
No response to this question	16
Total respondent laboratories	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: In the Southeastern Region, 78 laboratories responded to this question.

Table 38. Respondent Laboratories with an Established Emergency Preparedness and Response Plan, Southeastern Region

Established Plan?	Percent
Yes	57%
No	29
No response to this question	14
Total respondent laboratories	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: In the Southeastern Region, 80 laboratories responded to this question.

- Only 22 percent of respondent laboratories in the Southeastern Region reported that all their employees were trained in emergency preparedness and response, versus 33 percent statewide.
- Fifty-seven percent of respondent laboratories in the Southeastern Region had an established emergency preparedness and response plan, versus 64 percent statewide.

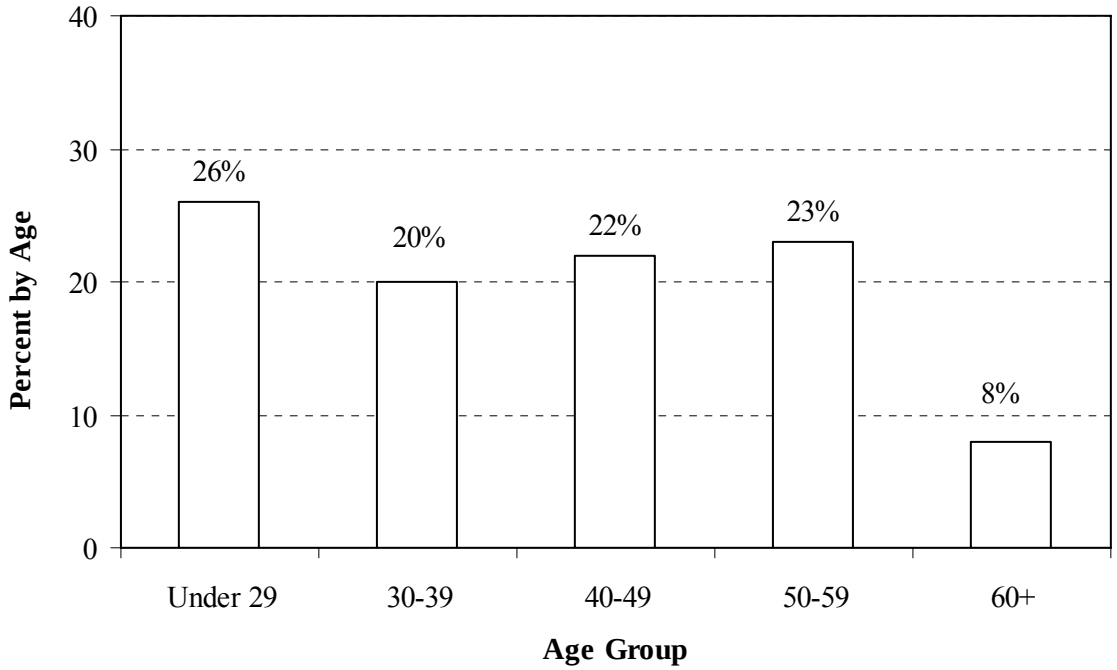
Table 39. Employees of Respondent Laboratories by Age and Gender, Northeastern Region

Age	Total Percent	Male Percent	Female Percent
Under 25	14%	11%	15%
25-29	12	15	12
30-39	20	23	20
40-49	22	15	23
50-54	13	13	13
55-59	10	10	10
60+	8	12	7
Total	100%	100%	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: There were 75 respondent laboratories (with 1,424 employees for whom age and sex were reported) in the Northeastern Region, which has a total of 744 laboratories.
Percentages may not add to 100 percent due to rounding.

Figure 9. Employees of Respondent Laboratories by Age, Northeastern Region



Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

- Thirty-one percent of all respondent laboratory employees in the Northeastern Region were 50 years of age and older.

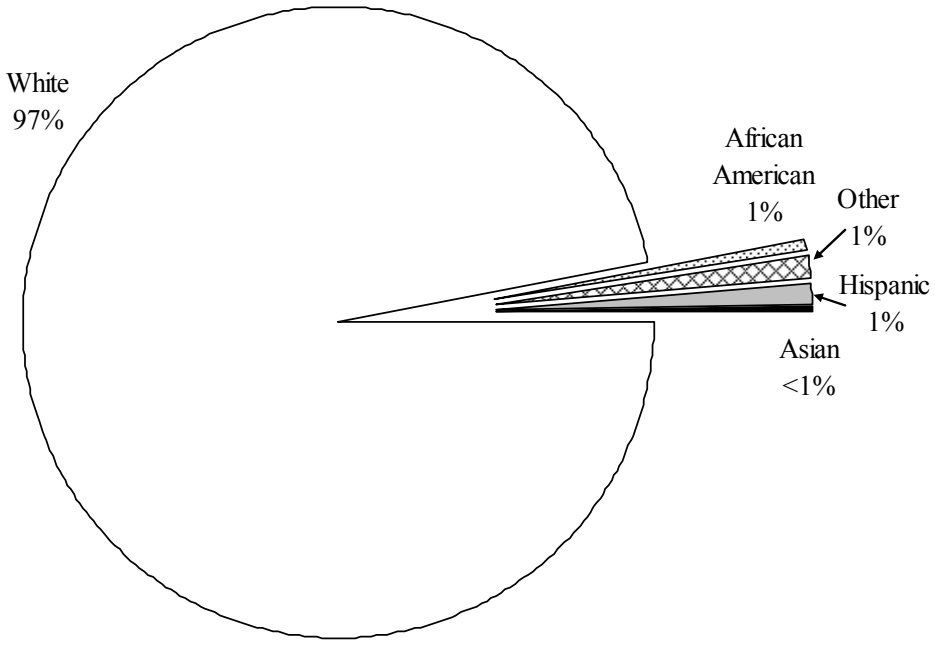
Table 40. Employees of Respondent Laboratories by Race and Ethnicity, Northeastern Region

Race:	Percent
White	97%
Black/African American	1
American Indian/Alaska Native	<1
Native Hawaiian /Other Pacific Islander	<1
Asian	<1
Other	<1
Ethnicity:	
Hispanic/Latino	1
Total	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: There were 75 respondent laboratories (with 1,567 employees for whom race and ethnicity were reported) in the Northeastern Region, which has a total of 744 laboratories.
Percentages may not add to 100 percent due to rounding.
Race and ethnicity groups are mutually exclusive.

Figure 10. Employees of Respondent Laboratories by Race and Ethnicity, Northeastern Region



Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 41. Estimated Full-Time Equivalent (FTE) Laboratory Employees by Job Title, Northeastern Region

Job Title/Discipline	Estimated FTEs	Estimated FTE Vacancies
Staff with clinical laboratory professional education and training		
Pathologists	135	0
Pathology Assistants	9	0
Managers/Administrators*	406	9
Certified Medical Technologists – MT(ASCP), CLS(NCA), etc.	1,123	0
Medical Technologists (non-certified)	0	0
Certified Medical Laboratory Technicians – MLT(ASCP), CLT(NCA), etc.	476	28
Medical Laboratory Technicians (non-certified)	86	0
Phlebotomists	1,300	9
Histotechnologists (Bachelor of Science degree, B.S.)	9	0
Histotechnician	81	0
Cytologists	62	0
Cytogenetic Technologists	0	0
Molecular Biologists	0	0
Other professionals who perform laboratory testing		
Registered Nurses	1,062	9
Licensed Practical Nurses	754	0
CMA/MA	147	0
CNA/NA	1,364	61
Other	1,700	0
Total	**8,714**	**116**

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: Estimated numbers of FTE laboratory employees by job title were based on FTEs reported by the respondent laboratories, and calculated using a multiplier of 9.5. These estimates assume that all Wisconsin laboratories have a distribution of employees by discipline similar to that of the 319 respondent laboratories that completed the survey. Formula used to calculate the multiplier: 319/3,374 x 100 = 9.5.

* This category assumes that laboratory managers have received clinical laboratory professional education and training.

- In the Northeastern Region, 42 percent of the employees of CLIA-certified laboratories had a job title reflecting clinical laboratory professional education and training, versus 49 percent statewide.

Table 42. Respondent Laboratories by Percent of Employees Trained in Emergency Preparedness and Response, Northeastern Region

Percent of Employees Trained	Percent
No employee had training	33%
1% - 50% of employees had training	21
51%-99% of employees had training	7
100% of employees had training	29
No response to this question	9
Total respondent laboratories	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: In the Northeastern Region, 68 laboratories responded to this question.
Percentages may not add to 100 percent due to rounding.

Table 43. Respondent Laboratories with an Established Emergency Preparedness and Response Plan, Northeastern Region

Established Plan?	Percent
Yes	67%
No	28
No response to this question	5
Total respondent laboratories	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: In the Northeastern Region, 71 laboratories responded to this question.
Percentages may not add to 100 percent due to rounding.

- Twenty-nine percent of respondent laboratories in the Northeastern Region reported that all their employees were trained in emergency preparedness and response.

- Sixty-seven percent of respondent laboratories in the Northeastern Region had an established emergency preparedness and response plan.

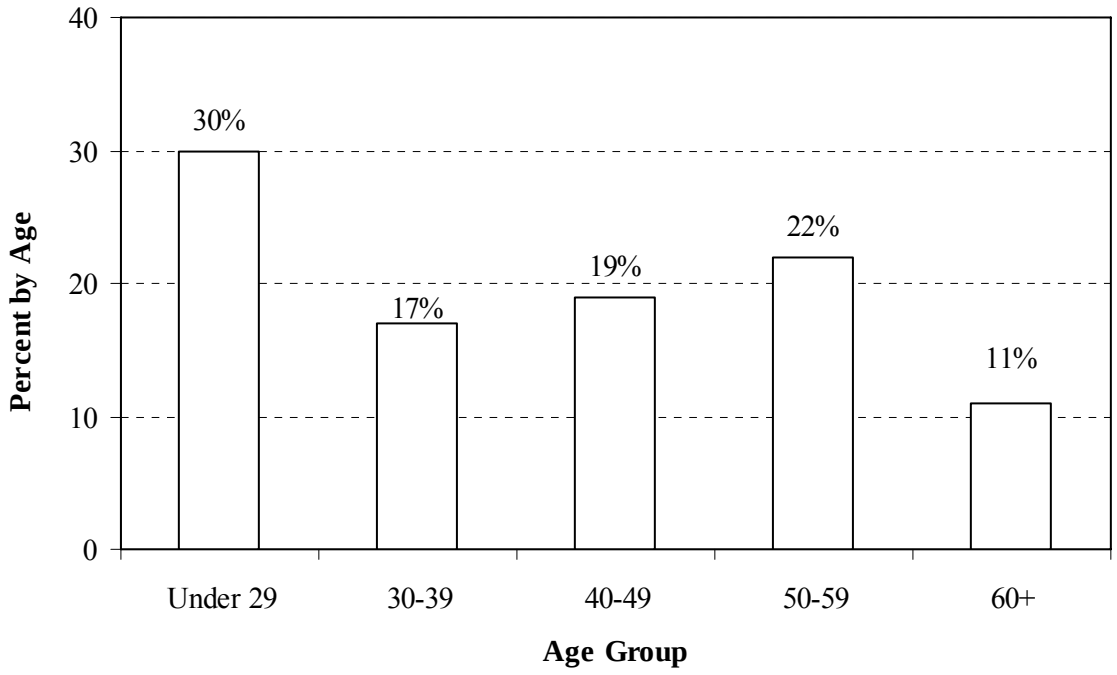
Table 44. Employees of Respondent Laboratories by Age and Gender, Western Region

Age	Total	Male	Female
	Percent	Percent	Percent
Under 25	18%	18%	18%
25-29	12	14	11
30-39	17	18	17
40-49	19	17	19
50-54	11	8	12
55-59	11	10	12
60+	11	14	11
Total	100%	100%	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: There were 47 respondent laboratories (with 1,477 employees for whom age and sex were reported) in the Western Region, which has a total of 381 laboratories.
Percentages may not add to 100 percent due to rounding.

Figure 11. Employees of Respondent Laboratories by Age, Western Region



Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

- Thirty-three percent of all respondent laboratory employees in the Western Region were 50 years of age and older.

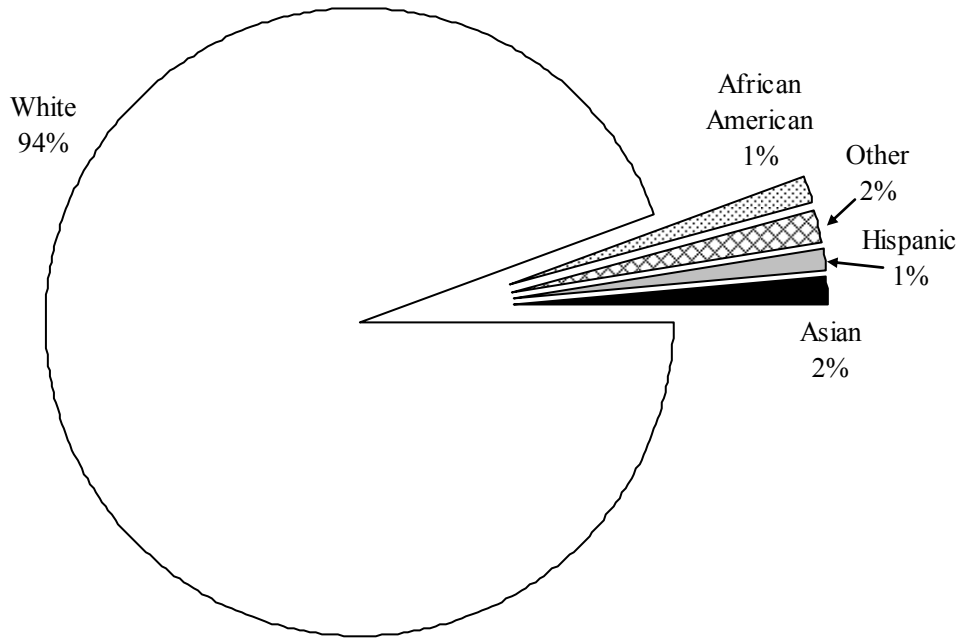
Table 45. Employees of Respondent Laboratories by Race and Ethnicity, Western Region

Race:	Percent
White	94%
Black/African American	1
American Indian/Alaska Native	1
Native Hawaiian /Other Pacific Islander	1
Asian	2
Other	<1
Ethnicity: Hispanic/Latino	1
Total	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: There were 47 respondent laboratories (with 1,457 employees for whom race and ethnicity were reported) in the Western Region, which has a total of 381 laboratories.
Percentages may not add to 100 percent due to rounding.
Race and ethnicity groups are mutually exclusive.

Figure 12. Employees of Respondent Laboratories by Race and Ethnicity, Western Region



Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 46. Estimated Full-Time Equivalent (FTE) Laboratory Employees by Job Title, Western Region

Job Title/Discipline	Estimated FTEs	Estimated FTE Vacancies
Staff with clinical laboratory professional education and training		
Pathologists	108	0
Pathology Assistants	19	0
Managers/Administrators*	600	0
Certified Medical Technologists – MT(ASCP), CLS(NCA), etc.	1,041	9
Medical Technologists (non-certified)	2,657	0
Certified Medical Laboratory Technicians – MLT(ASCP), CLT(NCA), etc.	722	9
Medical Laboratory Technicians (non-certified)	198	9
Phlebotomists	702	0
Histotechnologists (Bachelor of Science degree, B.S.)	0	0
Histotechnician	130	0
Cytologists	47	0
Cytogenetic Technologists	0	0
Molecular Biologists	0	0
Other professionals who perform laboratory testing		
Registered Nurses	683	9
Licensed Practical Nurses	318	20
CMA/MA	171	9
CNA/NA	1,549	34
Other	1,469	53
Total	**10,414**	**152**

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: Estimated numbers of FTE laboratory employees by job title were based on FTEs reported by the respondent laboratories, and calculated using a multiplier of 9.5. These estimates assume that all Wisconsin laboratories have a distribution of employees by discipline similar to that of the 319 respondent laboratories that completed the survey. Formula used to calculate the multiplier: 319/3,374 x 100 = 9.5.

* This category assumes that laboratory managers have received clinical laboratory professional education and training.

- In the Western Region, 59 percent of the employees of CLIA-certified laboratories had a job title reflecting clinical laboratory professional education and training, versus 49 percent statewide.

Table 47. Respondent Laboratories by Percent of Employees Trained in Emergency Preparedness and Response, Western Region

Percent of Employees Trained	Percent
No employee had training	19%
1% - 50% of employees had training	23
51%-99% of employees had training	11
100% of employees had training	36
No response to this question	11
Total respondent laboratories	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: In the Western Region, 42 laboratories responded to this question.
Percentages may not add to 100 percent due to rounding.

Table 48. Respondent Laboratories with an Established Emergency Preparedness and Response Plan, Western Region

Established Plan?	Percent
Yes	72%
No	19
No response to this question	9
Total respondent laboratories	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: In the Western Region, 43 laboratories responded to this question.
Percentages may not add to 100 percent due to rounding.

- Thirty-six percent of respondent laboratories in the Western Region reported that all their employees were trained in emergency preparedness and response, versus 33 percent statewide.

- In the Western Region, 72 percent of respondent laboratories had an established emergency preparedness and response plan, versus 64 percent statewide.

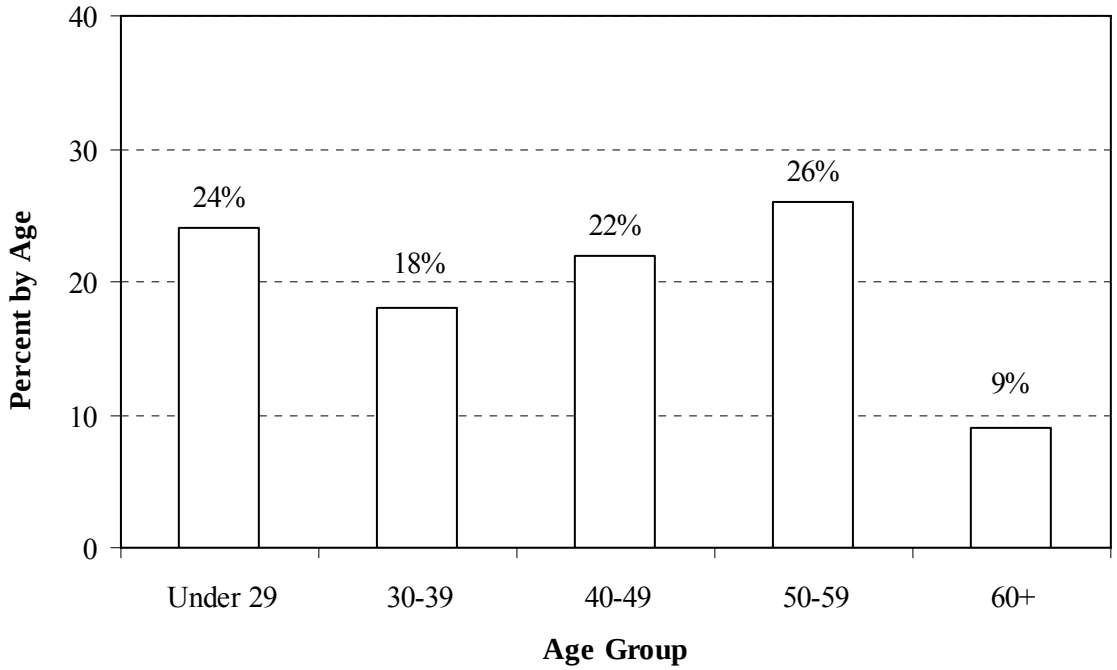
Table 49. Employees of Respondent Laboratories by Age and Gender, Northern Region

	Total	Male	Female
Age	**Percent**	**Percent**	**Percent**
Under 25	13%	10%	14%
25-29	11	11	11
30-39	18	23	17
40-49	22	20	22
50-54	14	10	15
55-59	12	11	12
60+	9	15	8
Total	100%	100%	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: There were 35 responding laboratories (with 1,223 employees for whom age and sex were reported) in the Northern Region, which has a total of 314 laboratories.
Percentages may not add to 100 percent due to rounding.

Figure 13. Employees of Respondent Laboratories by Age, Northern Region



Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

- Thirty-five percent of all respondent laboratory employees in the Northern Region were 50 years of age and older.

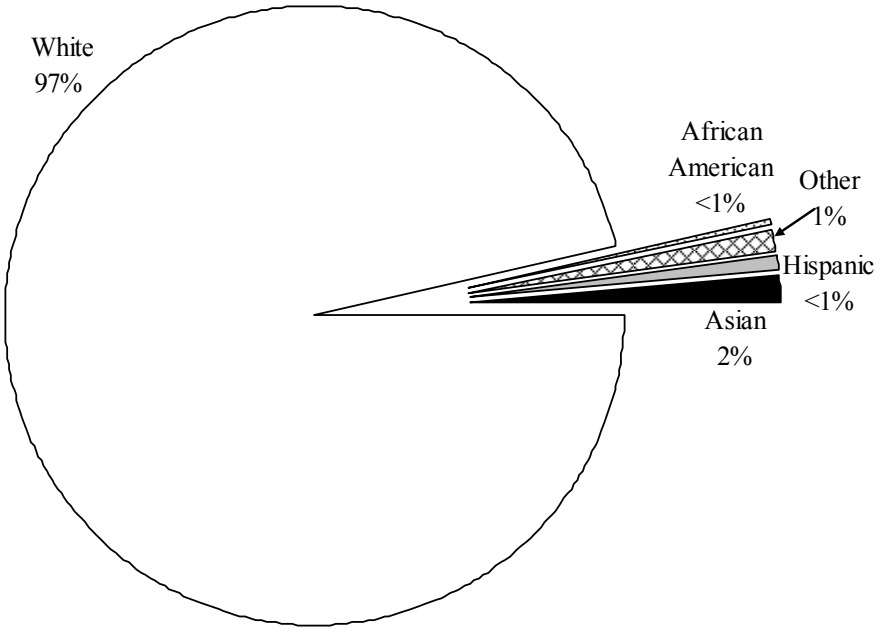
Table 50. Employees of Respondent Laboratories by Race and Ethnicity, Northern Region

Race:	Percent
White	97%
Black/African American	<1
American Indian/Alaska Native	<1
Native Hawaiian /Other Pacific Islander	<1
Asian	2
Other	1
Ethnicity:	
Hispanic/Latino	1
Total	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: There were 35 responding laboratories (with 1,195 employees for whom race and ethnicity were reported) in the Northern Region, which has a total of 314 laboratories.
Percentages may not add to 100 percent due to rounding.
Race and ethnicity groups are mutually exclusive.

Figure 14. Employees of Respondent Laboratories by Race and Ethnicity, Northern Region



Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Table 51. Estimated Full-Time Equivalent (FTE) Laboratory Employees by Job Title, Northern Region

Job Title/Discipline	Estimated FTEs	Estimated FTE Vacancies
Staff with clinical laboratory professional education and training		
Pathologists	222	8
Pathology Assistants	9	0
Managers/Administrators*	454	0
Certified Medical Technologists – MT(ASCP), CLS(NCA), etc.	1,264	61
Medical Technologists (non-certified)	9	0
Certified Medical Laboratory Technicians – MLT(ASCP), CLT(NCA), etc.	494	0
Medical Laboratory Technicians (non-certified)	76	0
Phlebotomists	721	13
Histotechnologists (Bachelor of Science degree, B.S.)	28	0
Histotechnician	113	21
Cytologists	95	0
Cytogenetic Technologists	57	0
Molecular Biologists	0	0
Other professionals who perform laboratory testing		
Registered Nurses	463	30
Licensed Practical Nurses	165	14
CMA/MA	74	0
CNA/NA	1,312	64
Other	2,325	28
Total	**7,881**	**239**

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: Estimated numbers of FTE laboratory employees by job title were based on FTEs reported by the respondent laboratories, and calculated using a multiplier of 9.5. These estimates assume that all Wisconsin laboratories have a distribution of employees by discipline similar to that of the 319 respondent laboratories that completed the survey. Formula used to calculate the multiplier: 319/3,374 x 100 = 9.5.

* This category assumes that laboratory managers have received clinical laboratory professional education and training.

- In the Northern Region, 45 percent of the employees of CLIA-certified laboratories had a job title reflecting clinical laboratory professional education and training, versus 49 percent statewide.

Table 52. Respondent Laboratories by Percent of Employees Trained in Emergency Preparedness and Response, Northern Region

Percent of Employees Trained	Percent
No employee had training	29%
1% - 50% of employees had training	17
51%-99% of employees had training	17
100% of employees had training	29
No response to this question	9
Total respondent laboratories	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: In the Northern Region, 32 laboratories responded to this question.
Percentages may not add to 100 percent due to rounding.

Table 53. Respondent Laboratories with an Established Emergency Preparedness and Response Plan, Northern Region

Established Plan?	Percent
Yes	69%
No	23
No response to this question	9
Total respondent laboratories	100%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010, Department of Health Services.

Note: In the Northern Region, 32 laboratories responded to this question.
Percentages may not add to 100 percent due to rounding.

- Twenty-nine percent of respondent laboratories in the Northern Region reported that all their employees were trained in emergency preparedness and response.

- Sixty-nine percent of respondent laboratories in the Northern Region had an established emergency preparedness and response plan, versus 64 percent statewide.

Appendix A. Technical Notes

Survey Methods

The survey universe consisted of 3,374 laboratories in Wisconsin that were CLIA-certified as of September 2, 2009. A sample of 746 laboratories stratified by CLIA type and DHS region was drawn from the universe list. In March 2010, laboratories in the sample were contacted by U.S. mail and asked to complete the survey on the Internet at the Wisconsin DHS, Division of Quality Assurance (DQA) Clinical Laboratory website. Two follow-up postcards were mailed to laboratories that did not respond to the initial request. This yielded a response rate of 43%, with 319 of 746 laboratories completing the survey. The data were adjusted by post-stratification weighting so the results conformed to the characteristics (CLIA certificate type and DHS region) of the survey universe. This survey does not include local health departments because their workforce is included in the Local Health Department Survey at http://dhs.wisconsin.gov/stats/index.htm.

Statewide Estimates for Laboratories (Tables 3, 4, and 5)

Estimated number of laboratories by staff size was calculated by assuming that the distribution of laboratories by staff size is similar to the distribution of the 319 laboratories that replied to this question in the survey.

Estimated number of laboratories to have employees trained in emergency preparedness and response was calculated by assuming that the distribution of laboratories which trained their employees is similar to the distribution of the 282 laboratories that replied to this question in the survey.

Estimated number of laboratories with an established emergency preparedness and response plan was calculated by assuming that the distribution of laboratories is similar to the distribution of the 289 laboratories that replied to this question in the survey.

Statewide Estimates for Employees (Tables 6, 7, 8, 9, and 10)

Estimates were calculated by applying reported percentages to the total estimated number of employees. The total estimated number of employees was calculated by applying a multiplier based on the number of responding laboratories divided by the total number of laboratories: (319/3,374)*100 = 9.5. The estimated number of employees by age and gender in Table 6 therefore assumes that the distribution of employees, both in total and by age and gender, is similar to the distribution of the 8,501 employees for whom age and gender were reported in the 319 laboratories that completed the survey. Similarly, the estimated number of employees by race and ethnicity in Table 7 assumes that the distribution of employees by race and ethnicity is similar to the distribution of the 8,571 employees for whom race and ethnicity were reported in the 319 laboratories that completed the survey.

Interpreting confidence intervals

Tables 11 through 28 in this report show 95 percent confidence intervals for each reported percentage. Add the confidence interval to the percentage to find the upper boundary of the interval and subtract it from the percentage to find the lower boundary. For example, Table 6 shows that 5.0 percent of all Wisconsin laboratories employ Pathologists, with a confidence interval of +/- 1.7 percent. Adding and subtracting the value of 1.7 yields a 95 percent confidence interval of 3.3 to 6.7 percent. This means that 95 out of 100 random surveys would estimate that between 3.3 and 6.7 percent of Wisconsin clinical laboratories employ Pathologists.

Appendix

Clinical Laboratory Improvement Amendments (CLIA) Certification

To ensure that laboratory testing is of a consistently high quality, the Centers for Medicare and Medicaid Services regulates all laboratory testing (except research) performed on humans in the U.S. through CLIA, as follows:

1. Certificate of Waiver (COW) laboratories can only perform waived tests;
2. Certificate of Provider Performed Microscopy (PPM) laboratories, in addition to waived tests, may also perform certain microscopic examinations during the course of a patient visit using specimens that are not easily transportable;
3. Certificate of Compliance (COC) laboratories and Certificate of Accreditation (COA) laboratories can perform waived tests, as well as tests of moderate and high complexity.

Laboratories subject to the Clinical Laboratory Improvement Amendments certification provisions must obtain and maintain a certificate based on the type and complexity of testing conducted as follows:

- Laboratories that have been issued a Certificate of Compliance or Certificate of Accreditation are subject to a routine on-site survey every two years.
- Laboratories issued a Certificate of Waiver or Certificate of Provider Performed Microscopy are exempt from routine on-site inspections.
- All certificates must be renewed every two years.

Certificate types are defined as follows:

- Certificate of Waiver (COW)
  This certificate is issued to a laboratory that performs only waived tests.

- Certificate of Provider Performed Microscopy (PPM)
  This certificate is issued to a laboratory in which a physician (MD or DO), podiatrist (DPM), dentist (DDM), or mid-level practitioner (Advanced Practice Nurse Practitioner, nurse midwife or physician's assistant) performs simple microscopy procedures. This certificate also allows waived testing to be performed.

- Certificate of Compliance
  This certificate is issued to a laboratory after a survey by the authorized state agency finds the laboratory is in compliance with all applicable CLIA requirements. This certificate permits the laboratory to perform testing of moderate and/or high complexity depending on the laboratory personnel qualifications and compliance with all other applicable CLIA requirements, and also to perform waived tests.

- Certificate of Accreditation
  This certificate is issued to a laboratory on the basis of the laboratory's accreditation by an accreditation organization approved by the Centers for Medicare and Medicaid Services. This certificate permits the laboratory to perform testing of moderate and/or high complexity depending on the laboratory personnel qualifications and compliance with all other applicable CLIA and organizational requirements, and also to perform waived tests.

- Certificate of Registration
  This certificate is issued to a laboratory that applies for a Certificate of Compliance or Certificate of Accreditation. A registration certificate enables the entity to conduct laboratory testing of moderate or high complexity or both until the entity is determined through on-site survey or verification of accreditation that all applicable requirements are met. This certificate also permits the laboratory to perform waived tests. A registration certificate is temporary and indicates only that the laboratory is registered with the Centers for Medicare and Medicaid Services and does not indicate approval or compliance with CLIA regulations. A registration certificate is valid until a survey takes place, or for two years, whichever is sooner.

Survey Response Rate

Table A1. Survey Response Rate by Wisconsin Department of Health Services (DHS) Region

DHS Region	Number of Laboratories	Number in Sample	Survey Responses	Survey Response Rate
Southern	582	137	69	50%
Southeastern	1,353	290	93	32
Northeastern	744	162	75	46
Western	381	87	47	54
Northern	314	70	35	50
Total	3,374	746	319	43%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010

Table A2. Survey Response Rate by Certificate Type

CLIA Types	Number of Laboratories	Number in Sample	Survey Responses	Survey Response Rate
Certificate of Waiver	2,154	357	117	33%
Certificate of Provider Performed Microscopy	444	72	19	26
Certificate of Compliance	412	168	89	53
Certificate of Accreditation	364	149	94	63
Total	3,374	746	319	43%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010

Table A3. Survey Response Rate by Certificate Type and by Wisconsin Department of Health Services (DHS) Region

CLIA Type	DHS Region	Number of Laboratories	Number in Sample	Survey Responses	Survey Response Rate
Certificate of Waiver	Southern	362	60	24	40%
	Southeastern	853	142	34	24
	Northeastern	475	78	25	32
	Western	249	41	19	46
	Northern	215	36	15	42
Certificate of Provider Performed Microscopy	Southern	59	10	1	10
	Southeastern	236	39	11	28
	Northeastern	101	16	5	31
	Western	24	3	1	33
	Northern	24	4	1	25
Certificate of Compliance	Southern	84	35	21	60
	Southeastern	175	72	31	43
	Northeastern	103	42	25	60
	Western	34	13	9	69
	Northern	16	6	3	50
Certificate of Accreditation	Southern	77	32	23	72
	Southeastern	89	37	17	46
	Northeastern	65	26	20	77
	Western	74	30	18	60
	Northern	59	24	16	67
Total	Statewide	3,374	746	319	43%

Source: Wisconsin Clinical Laboratory Science Workforce Survey, 2010

Wisconsin Population Estimates

Table A4. Wisconsin Population Estimates by Race and Ethnicity, Wisconsin Department of Health Services (DHS) Regions, 2008

DHS Region	Total Population	Non-Hispanic White	Non-Hispanic Black	Non-Hispanic American Indian	Non-Hispanic Asian	Hispanic
All Regions	5,672,297	4,865,281	346,308	53,358	121,549	285,801
	100.0%	85.8%	6.1%	0.9%	2.1%	5.0%
Southern	1,086,560	974,196	37,486	4,835	26,760	43,283
	19.2%	17.2%	0.7%	0.1%	0.5%	0.8%
Southeastern	2,080,085	1,555,782	282,633	10,907	49,707	181,056
	36.7%	27.4%	5.0%	0.2%	0.9%	3.2%
Northeastern	1,228,055	1,125,727	16,178	18,858	23,436	43,856
	21.7%	19.8%	0.3%	0.3%	0.4%	0.8%
Western	775,228	739,868	6,686	6,881	11,232	10,561
	13.7%	13.0%	0.1%	0.1%	0.2%	0.2%
Northern	502,369	469,708	3,325	11,878	10,413	7,045
	8.9%	8.3%	0.1%	0.2%	0.2%	0.1%

Source: 2008 bridged race population estimates, Population Health Information Section, Division of Public Health, Wisconsin Department of Health Services.

Note: Percentages refer to percent of total Wisconsin population.

Appendix B: Survey Instrument

Wisconsin Clinical Laboratory Science Workforce Survey 2010

Name of Agency/Organization	
Name of Person Completing Survey	
Position of Person Completing Survey	
Telephone of Person Completing Survey	
E-mail of Person Completing Survey	

Instructions: Please provide counts of employees by category for each of the three questions below. **The Total for Table 1 and Table 2 should be the same**, equal to the total number of persons employed by the laboratory. Table 3 asks for the number of **full-time equivalents (FTEs),** so the Total in Table 3 may be different from the Total in Table 1 and Table 2.

1. Age and gender of staff: Count each employee only once.

Age	**Number of Males**	**Number of Females**
Under 25		
25-29		
30-39		
40-49		
50-54		
55-59		
60+		
Total		

2. Race and Ethnicity: Count each employee only once.

Ethnicity:	**Number**
Hispanic/Latino	
Non-Hispanic/Latino	
Race:	
White	
Black/African American	
American Indian/Alaska Native	
Native Hawaiian /Other Pacific Islander	
Asian	
Other	
Total	

3. Employment status of laboratory administrative and test personnel: **Count each employee only once; classify each employee at his/her highest level of employment. Include staff on vacation or other paid leave. (Refer to the definitions below.)**

Job title/discipline	Number of FTEs per Week	Number of FTE Vacancies
Pathologists		
Pathology Assistants		
Managers/Administrators		
Certified Medical Technologists – MT(ASCP), CLS(NCA), etc.		
Medical Technologists (non-certified)		
Certified Medical Laboratory Technicians – MLT(ASCP), CLT(NCA), etc.		
Medical Laboratory Technicians (non-certified)		
Phlebotomists		
Histotechnologists (Bachelor of Science degree, B.S.)		
Histotechnician		
Cytologists		
Cytogenetic Technologists		
Molecular Biologists		
RN		
LPN		
CMA/MA		
CNA/NA		
Other		
Total		

Definitions:

MT (ASCP) = Medical Technologist certified by the American Society for Clinical Pathology.

CLS (NCA) = Clinical Laboratory Scientist certified by the National Credentialing Agency for Laboratory Personnel.

MLT (ASCP) = Medical Laboratory Technician certified by the American Society for Clinical Pathology.

CLT (NCA) = Clinical Laboratory Technician certified by the National Credentialing Agency for Laboratory Personnel.

LPN = Licensed Practical Nurse (met state licensure requirements as a licensed practical nurse).

RN = Registered Nurse (met state licensure requirements as a registered nurse).

CNA/NA = Nursing Assistant (received a Nursing Assistant Technical Diploma through a 120-hour program which included skill pre-work, lecture, lab and clinical experiences; may be certified).

CMA/MA = Medical Assistant (received a Medical Assistant Technical Diploma through a one-year, two-semester, plus three-week program; may be certified).

FTE = Full-time equivalent at 35+ hours/week.

4. How many employees in your laboratory are trained in the roles, expectations and operations of laboratories in emergency preparedness and response (bioterrorism, chemical emergencies, recent outbreaks and accidents)? The value must be greater than or equal to 0.

5. Does your laboratory have an established emergency preparedness and response plan describing potential roles and responsibilities? Yes - No

Appendix C: Clinical Laboratory Science Education Programs in Wisconsin

Four colleges or universities in Wisconsin offer a Bachelor's Degree in Clinical Laboratory Science and are approved by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS):

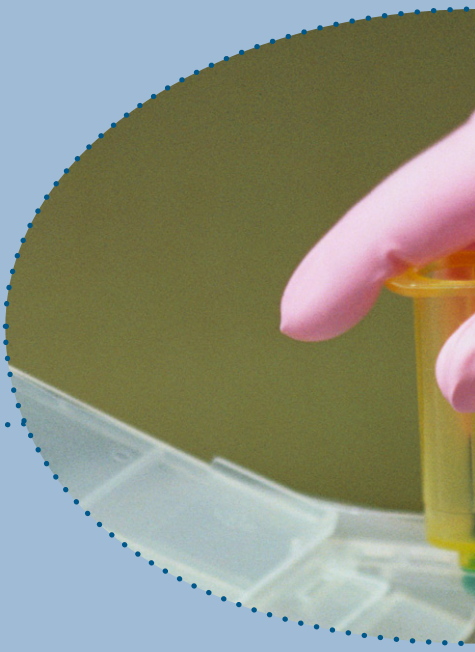
- University of Wisconsin - Madison *
- Marquette University
- University of Wisconsin - Milwaukee
- University of Wisconsin - Stevens Point

Seven technical colleges in Wisconsin offer an Associate's Degree in Clinical Laboratory Science and are approved by NAACLS:

- Chippewa Valley Technical College
- Moraine Park Technical College
- Northeast Wisconsin Technical College
- Western Technical College
- Madison Area Technical College (Madison College)
- Milwaukee Area Technical College
- Northcentral Technical College

*UW Madison's CLS program will close in 2012.

P-00233 (11/10)



Wisconsin Department of Health Services
Division of Public Health
P- 00233 (11/10)