

Narrative on how to use this table:

All of the occupations on the following tables are critical occupations, listed within their major occupational category in order of critical vacancies by that category, from largest to smallest. Within each category, they are listed in order of number of vacancies by occupation also from largest to smallest.

For example, Office and Administrative Support Occupations has a total of 5,271 critical vacancies and is listed (1) because it has 402 more critical vacancies than the 4,869 Management Occupations, which is second (2). Within Office and Administrative Support Occupations, Customer Service Representatives are listed first (1) with 1,157 vacancies followed by Tellers with 1,066 vacancies and so on in order of number of vacancies, from largest to smallest.

Note: Sales and Related Occupations does have more total vacancies than Office and Administrative Support Occupations (9,640 to 8,456, respectively), but not more critical vacancies, which this document is focusing on.

Major occupational groups and the sub-totals of critical occupations are shaded in gray on each sheet. For each major occupational group we present estimated vacancies, vacancy rate, and Massachusetts employment. With the exception of the column detailing Massachusetts employment (which is total employment in Massachusetts for each occupational category), these data points reflect information for all vacancies for each major occupational category, not just critical.

The sub-total for each major occupational category is also shaded in gray. These data points total the number critical vacancies and the number employed in these critical occupations for each occupational category.

Comments on the origin of these sources and method for deriving the information is described in detail in the “sources and method” section at the end of this document, but below is a brief description of each variable and how it should be used, from left to right:

1) Educational attainment

This is a national dataset that details the average educational attainment required for each occupation. Massachusetts’s employers may require a higher or lower credential by occupation and within Massachusetts, urban employers may require different credentials than suburban or rural ones. Because of these nuances, this particular data point should be used as a guide to think about what type of education a given occupation may need, but may or may not be an absolute requirement.

2) Median salary

As the Bureau of Labor Statistics states, this is, “the estimated 50th percentile of the distribution of wages based on data collected from employers in all industries; 50 percent of workers in an occupation earn less than the median wage, and 50 percent earn more than the median wage.”

3) Estimated vacancies

A job vacancy is the number of positions by occupation listed by employers for immediate hire.

4) Vacancy rate

The job vacancy rate is calculated by dividing the number of job openings by the total employment for that particular occupation during its reference year. Unfortunately, due to data release constraints this is not always possible. For example, Q2, 2008 vacancy data is used in conjunction with 2007 occupational data because it is the latest that is available.

5) Massachusetts employment

As the Bureau of Labor Statistics states, this is, “the estimated total occupational employment (not including self-employed).”

6) Occupational-industry crosswalk

For each occupation, this is the sub-sector that employs the largest number of that occupation. A sub-sector is a detail category beneath sector. For example, a sector is the manufacturing sector, a sub-sector beneath the Manufacturing sector would be the Computer and Electronic Product sub-sector. A sector is referred to by its 2-digit North American Industry Classification System (NAICS) code while a sub-sector is referred to by its 3-digit code. Maintaining the example, Manufacturing is NAICS code 31-33 while the Computer and Electronic Product sub-sector is NAICS code 334.

There are four columns within this category, they are:

- 1) The North American Industry Classification System (NAICS) code for the largest sub-sector employing each occupation.

- 2) The NAICS code description or name of that sub-sector
- 3) The number of individuals that sub-sector employs for each given occupation in 2005
- 4) The percentage (%) of individuals employed in that occupation for that sub-sector in 2005.

For some occupations, a very high proportion of individuals in an occupation are employed within one sub-sector; for others, this proportion is quite small. For example, 74% of all medical secretaries are employed in the Ambulatory Care sub-sector (NAICS code 621). However, 16% of computer support specialists work within the Profession, Scientific, and Technical Services sub-sector (NAICS code 541). This variance is indicative of the amount of employment distribution by sub-sector for both of those occupations. For some occupations, the majority of workers might be employed in sub-sectors other than what is listed.

7) Projections

The latest occupational forecasts for Massachusetts were released in 2006 and refer to the time period 2004 – 2014. There are two columns within this category, they are:

- 1) The total number of jobs through 2014 indicates both the number of new jobs created as well as the number of openings created through turnover and retirement.
- 2) The growth rate is the number of jobs in 2014 subtracted by the jobs in 2004 and then divided by that same number.

There are several instances in the document where an occupation is projected to decline through 2014; however, there are still job openings. The reason for this is that even if an occupation is projected to decline, openings are still created through turnover and retirement.

These projections are not and cannot be precise forecasts. Instead, they are indicators of the relative size, general direction and likely future impact of industrial and occupational changes within the state economy.”

8) Persistent or critical occupations

All of the occupations listed in this file are critical occupations organized by occupational category. A critical occupation is an occupation that meets the following characteristics in the most recent job vacancy survey:

Massachusetts Critical Vacancies 2nd Quarter, 2008
Ordered by Major Occupational Groups with the largest number of Critical Vacancies

- (1) Median Annual salary \geq \$25,000; and
- (2) Occupational Employment \geq 1,000; and
- (3) Excludes Occupations with "all other " in occupational names (ex. Engineers, All other); and
- (4) Number of Vacancies \geq 200 in the latest survey; or
- (5) Vacancy rate \geq 5% in the latest survey; or
- (6) Average No. of Vacancies since Q4, 2004 \geq 300.

A persistent occupation is an occupation that is critical in the previous three (3) job vacancy surveys, including the most recent, or year and a half (1.5 years).

A constant occupation is an occupation that is critical for the previous six (6) job vacancy surveys, including the most recent, or three years (3 years).

Massachusetts Critical Vacancies 2nd Quarter, 2008

| SOC-Code | Source of Data> | OES | OES | JVS | OES | JVS | DWD Occupational-Industry Crosswalk | | | | DWD Projections | | JVS | JVS |
|----------|---|---|----------------------|---------------------|------------------|--------------|--------------------------------------|---|------------|------------------------------|-------------------------|-------------------------|------------|----------|
| | Year> | 2006 | 2007 | 2008 | 2007 | 2008 | Largest 3- digit NAICS Code Industry | | | | 2004 - 2014 | | 2008 | 2008 |
| | Quarter or Month> | | May | Q2 | May | Q2 | May 2005 | | | | | | Q2 | Q2 |
| SOC_Code | SOC_Description | Educational Attainment | Median Annual Salary | Estimated Vacancies | Mass. Employment | Vacancy Rate | NAICS Code | NAICS Description | Employment | % of Occupational Employment | Total Jobs through 2014 | 2004 - 2014 Growth Rate | Persistent | Constant |
| 43-0000 | Office and Administrative Support | | | 8,456 | 547,940 | 1.5% | | | | | | | | |
| 43-4051 | Customer Service Representatives | Moderate-term on-the-job training | \$ 35,180 | 1,157 | 54,200 | 2.1% | 524 | Insurance Carriers and Related Activities | 8,690 | 16% | 13,930 | 13% | TRUE | TRUE |
| 43-3071 | Tellers | Short-term on-the-job training | \$ 26,270 | 1,066 | 14,880 | 7.2% | 522 | Credit Intermediation and Related Activities | 12,560 | 84% | 7,070 | 4% | TRUE | TRUE |
| 43-9061 | Office Clerks, General | Short-term on-the-job training | \$ 28,710 | 714 | 65,640 | 1.1% | 611 | Educational Services | 8,720 | 13% | 13,960 | 0% | TRUE | TRUE |
| 43-6011 | Executive Secretaries and Administrative Assistants | Work experience in a related occupation | \$ 45,120 | 645 | 43,790 | 1.5% | 611 | Educational Services | 6,180 | 14% | 11,660 | 6% | TRUE | TRUE |
| 43-4171 | Receptionists and Information Clerks | Short-term on-the-job training | \$ 25,760 | 578 | 24,450 | 2.4% | 621 | Ambulatory Health Care Services | 4,160 | 17% | 8,540 | 12% | TRUE | |
| 43-6013 | Medical Secretaries | Moderate-term on-the-job training | \$ 33,820 | 460 | 18,100 | 2.5% | 621 | Ambulatory Health Care Services | 13,310 | 74% | 4,680 | 4% | TRUE | TRUE |
| 43-1011 | FirstLine Supervisors/Managers of Office and Administrative Support Workers | Work experience in a related occupation | \$ 50,250 | 349 | 33,220 | 1.1% | 522 | Credit Intermediation and Related Activities | 2,680 | 8% | 6,400 | 0% | TRUE | TRUE |
| 43-3031 | Bookkeeping, Accounting, and Auditing Clerks | Moderate-term on-the-job training | \$ 36,830 | 302 | 48,210 | 0.6% | 541 | Professional, Scientific, and Technical Services | 4,710 | 10% | 9,610 | 1% | TRUE | TRUE |
| 43-9999 | Office and Administrative Support | | | 5,271 | | | | | | | | | | |
| 11-0000 | Management Occupations | | | 6,418 | 181,900 | 3.5% | | | | | | | | |
| 11-3031 | Financial Managers | Bachelor's or higher degree, plus work experience | \$ 99,510 | 645 | 18,750 | 3.4% | 523 | Securities, Commodity Contracts, and Other Financial Investments and Related Activities | 2,680 | 14% | 5,160 | 10% | TRUE | TRUE |
| 11-9111 | Medical and Health Services Managers | Bachelor's or higher degree, plus work experience | \$ 88,840 | 643 | 7,930 | 8.1% | 622 | Hospitals | 3,210 | 40% | 2,550 | 15% | TRUE | TRUE |
| 11-2021 | Marketing Managers | Bachelor's or higher degree, plus work experience | \$ 115,430 | 575 | 6,560 | 8.8% | 541 | Professional, Scientific, and Technical Services | 1,650 | 25% | 2,950 | 18% | TRUE | TRUE |
| 11-2022 | Sales Managers | Bachelor's or higher degree, plus work experience | \$ 112,040 | 565 | 9,310 | 6.1% | 541 | Professional, Scientific, and Technical Services | 1,400 | 15% | 3,760 | 14% | TRUE | TRUE |
| 11-1021 | General and Operations Managers | Bachelor's or higher degree, plus work experience | \$ 98,830 | 489 | 40,820 | 1.2% | 541 | Professional, Scientific, and Technical Services | 4,810 | 12% | 14,890 | 10% | | |
| 11-3021 | Computer and Information Systems Managers | Bachelor's or higher degree, plus work experience | \$ 118,220 | 334 | 11,070 | 3.0% | 541 | Professional, Scientific, and Technical Services | 1,960 | 18% | 4,250 | 18% | TRUE | TRUE |
| 11-9151 | Social and Community Service Managers | Bachelor's degree | \$ 54,120 | 327 | 4,510 | 7.3% | 624 | Social Assistance | 1,220 | 27% | 1,640 | 16% | | |

Massachusetts Critical Vacancies 2nd Quarter, 2008

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|---------|---|---|------------|-------|---------|-------|-----|--|--------|------|--------|-----|------|------|
| 11-9033 | Education Administrators, Postsecondary | Bachelor's or higher degree, plus work experience | \$ 86,300 | 300 | 4,870 | 6.2% | 611 | Educational Services | 5,460 | 112% | 2,340 | 9% | | |
| 11-9021 | Construction Managers | Bachelor's degree | \$ 92,380 | 250 | 4,430 | 5.6% | 236 | Construction of Buildings | 1,820 | 41% | 2,440 | 6% | | |
| 11-2031 | Public Relations Managers | Bachelor's or higher degree, plus work experience | \$ 102,170 | 227 | 1,830 | 12.4% | 611 | Educational Services | 390 | 21% | 650 | 14% | | |
| 11-9051 | Food Service Managers | Work experience in a related occupation | \$ 49,600 | 212 | 5,500 | 3.9% | 722 | Food Services and Drinking Places | 4,970 | 90% | 3,270 | 10% | | |
| 11-1011 | Chief Executives | Bachelor's or higher degree, plus work experience | \$ 999,999 | 207 | 19,680 | 1.1% | 541 | Professional, Scientific, and Technical Services | 3,060 | 16% | 7,560 | 11% | | |
| 11-2011 | Advertising and Promotions Managers | Bachelor's or higher degree, plus work experience | \$ 97,980 | 95 | 1,010 | 9.4% | 541 | Professional, Scientific, and Technical Services | 330 | 33% | 610 | 15% | | |
| 11-9999 | Management Occupations | | | 4,869 | | | | | | | | | | |
| 29-0000 | Healthcare Practitioner and Technical | | | 6,746 | 206,410 | 3.3% | | | | | | | | |
| 29-1111 | Registered Nurses | Associate degree | \$ 71,970 | 3,251 | 78,280 | 4.2% | 622 | Hospitals | 44,400 | 57% | 32,940 | 22% | TRUE | TRUE |
| 29-1123 | Physical Therapists | Master's degree | \$ 68,180 | 449 | 5,970 | 7.5% | 621 | Ambulatory Health Care Services | 2,260 | 38% | 1,830 | 21% | TRUE | TRUE |
| 29-2061 | Licensed Practical and Licensed Vocational Nurses | Postsecondary vocational award | \$ 48,500 | 297 | 17,420 | 1.7% | 623 | Nursing and Residential Care Facilities | 7,470 | 43% | 5,500 | 10% | TRUE | TRUE |
| 29-2011 | Medical and Clinical Laboratory Technologists | Bachelor's degree | \$ 54,020 | 276 | 7,470 | 3.7% | 622 | Hospitals | 3,830 | 51% | 2,240 | 16% | TRUE | TRUE |
| 29-1122 | Occupational Therapists | Master's degree | \$ 64,210 | 221 | 3,960 | 5.6% | 622 | Hospitals | 1,070 | 27% | 1,320 | 19% | | |
| 29-1071 | Physician Assistants | Master's degree | \$ 82,110 | 165 | 2,460 | 6.7% | 621 | Ambulatory Health Care Services | 1,060 | 43% | 690 | 29% | | |
| 29-2032 | Diagnostic Medical Sonographers | Associate degree | \$ 69,570 | 75 | 1,170 | 6.4% | 622 | Hospitals | 600 | 51% | 440 | 25% | TRUE | TRUE |
| 29-9999 | Healthcare Practitioner and Technical | | | 4,734 | | | | | | | | | | |
| 15-0000 | Computer and Mathematical | | | 3,621 | 116,270 | 3.1% | | | | | | | | |
| 15-1051 | Computer Systems Analysts | Bachelor's degree | \$ 81,520 | 658 | 15,170 | 4.3% | 541 | Professional, Scientific, and Technical Services | 5,990 | 39% | 6,080 | 22% | TRUE | TRUE |
| 15-1031 | Computer Software Engineers, Applications | Bachelor's degree | \$ 91,900 | 646 | 23,140 | 2.8% | 541 | Professional, Scientific, and Technical Services | 6,470 | 28% | 10,980 | 39% | TRUE | TRUE |
| 15-1021 | Computer Programmers | Bachelor's degree | \$ 73,140 | 435 | 10,010 | 4.3% | 541 | Professional, Scientific, and Technical Services | 5,470 | 55% | 2,790 | -4% | | |
| 15-1041 | Computer Support Specialists | Associate degree | \$ 52,490 | 432 | 16,760 | 2.6% | 541 | Professional, Scientific, and Technical Services | 2,650 | 16% | 3,640 | 11% | TRUE | |
| 15-1032 | Computer Software Engineers, Systems Software | Bachelor's degree | \$ 93,350 | 388 | 23,750 | 1.6% | 541 | Professional, Scientific, and Technical Services | 5,700 | 24% | 9,290 | 39% | TRUE | |
| 15-1071 | Network and Computer Systems Administrators | Bachelor's degree | \$ 74,120 | 236 | 9,400 | 2.5% | 541 | Professional, Scientific, and Technical Services | 1,850 | 20% | 3,550 | 29% | TRUE | TRUE |
| 15-9999 | Computer and Mathematical | | | 2,795 | | | | | | | | | | |

Massachusetts Critical Vacancies 2nd Quarter, 2008

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|---------|--|---|-----------|-------|---------|------|-----|---|--------|-----|--------|-----|------|------|
| 25-0000 | Education, Training and Library | | | 4,771 | 216,100 | 2.2% | | | | | | | | |
| 25-2011 | Preschool Teachers, Except Special Education | Postsecondary vocational award | \$ 27,700 | 807 | 14,660 | 5.5% | 624 | Social Assistance | 10,900 | 74% | 4,990 | 25% | TRUE | TRUE |
| 25-2031 | Secondary School Teachers, Except Special and Vocational Education | Bachelor's degree | \$ 56,970 | 739 | 26,720 | 2.8% | 611 | Educational Services | 24,610 | 92% | 8,220 | 5% | TRUE | |
| 25-2021 | Elementary School Teachers, Except Special Education | Bachelor's degree | \$ 57,270 | 379 | 32,710 | 1.2% | 611 | Educational Services | 31,270 | 96% | 9,670 | 7% | | |
| 25-2022 | Middle School Teachers, Except Special and Vocational Education | Bachelor's degree | \$ 55,960 | 377 | 19,090 | 2.0% | 611 | Educational Services | 17,510 | 92% | 4,310 | 3% | | |
| 25-9999 | Education, Training and Library | | | 2,302 | | | | | | | | | | |
| 31-0000 | Healthcare Support | | | 3,096 | 97,660 | 3.2% | | | | | | | | |
| 31-1012 | Nursing Aides, Orderlies, and Attendants | Postsecondary vocational award | \$ 27,570 | 1,573 | 40,950 | 3.8% | 623 | Nursing and Residential Care Facilities | 24,650 | 60% | 12,090 | 15% | TRUE | TRUE |
| 31-9092 | Medical Assistants | Moderate-term on-the-job training | \$ 31,770 | 264 | 10,230 | 2.6% | 621 | Ambulatory Health Care Services | 5,800 | 57% | 3,580 | 32% | | |
| 31-2021 | Physical Therapist Assistants | Associate degree | \$ 46,720 | 132 | 1,900 | 6.9% | 621 | Ambulatory Health Care Services | 690 | 36% | 760 | 26% | | |
| 31-9096 | Veterinary Assistants and Laboratory Animal Caretakers | Short-term on-the-job training | \$ 27,750 | 96 | 1,610 | 6.0% | 541 | Professional, Scientific, and Technical Services | 1,500 | 93% | 780 | 14% | TRUE | |
| 31-9999 | Healthcare Support | | | 2,065 | | | | | | | | | | |
| 13-0000 | Business and Financial Operations | | | 3,492 | 170,680 | 2.1% | | | | | | | | |
| 13-2011 | Accountants and Auditors | Bachelor's degree | \$ 61,490 | 769 | 31,150 | 2.5% | 541 | Professional, Scientific, and Technical Services | 7,900 | 25% | 10,130 | 14% | TRUE | TRUE |
| 13-2051 | Financial Analysts | Bachelor's degree | \$ 76,480 | 455 | 12,830 | 3.5% | 523 | Securities, Commodity Contracts, and Other Financial Investments and Related Activities | 2,900 | 23% | 2,350 | 12% | TRUE | TRUE |
| 13-1111 | Management Analysts | Bachelor's or higher degree, plus work experience | \$ 84,150 | 423 | 18,500 | 2.3% | 541 | Professional, Scientific, and Technical Services | 8,750 | 47% | 7,620 | 20% | TRUE | TRUE |
| 13-9999 | Business and Financial Operations | | | 1,647 | | | | | | | | | | |
| 37-0000 | Building and Grounds Cleaning and Maintenance | | | 2,339 | 105,940 | 2.2% | | | | | | | | |
| 37-3011 | Landscaping and Groundskeeping Workers | Short-term on-the-job training | \$ 28,690 | 1,181 | 21,650 | 5.5% | 561 | Administrative and Support Services | 12,650 | 58% | 8,840 | 17% | TRUE | |
| 37-2011 | Janitors and Cleaners, Except Maids and Housekeeping Cleaners | Short-term on-the-job training | \$ 25,880 | 386 | 54,590 | 0.7% | 561 | Administrative and Support Services | 22,980 | 42% | 18,810 | 13% | TRUE | |
| 37-9999 | Building and Grounds Cleaning and Maintenance | | | 1,567 | | | | | | | | | | |
| 41-0000 | Sales and Related | | | 9,640 | 333,870 | 2.9% | | | | | | | | |
| 41-1011 | FirstLine Supervisors/Managers of Retail Sales Workers | Work experience in a related occupation | \$ 37,210 | 743 | 26,550 | 2.8% | 448 | Clothing and Clothing Accessories Stores | 4,280 | 16% | 8,070 | 4% | TRUE | TRUE |

Massachusetts Critical Vacancies 2nd Quarter, 2008

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|---------|--|---|-----------|-------|---------|-------|-----|--|--------|-----|--------|-----|------|------|
| 41-4012 | Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products | Work experience in a related occupation | \$ 59,840 | 382 | 30,710 | 1.2% | 423 | Merchant Wholesalers, Durable Goods | 6,360 | 21% | 12,250 | 9% | TRUE | TRUE |
| 41-9031 | Sales Engineers | Bachelor's degree | \$ 86,200 | 201 | 3,820 | 5.3% | 541 | Professional, Scientific, and Technical Services | 620 | 16% | 1,320 | 12% | | |
| 41-9999 | Sales and Related | | | 1,326 | | | | | | | | | | |
| 21-0000 | Community and Social Services | | | 2,076 | 62,100 | 3.3% | | | | | | | | |
| 21-1093 | Social and Human Service Assistants | Moderate-term on-the-job training | \$ 28,300 | 638 | 14,980 | 4.3% | 624 | Social Assistance | 4,830 | 32% | 4,960 | 19% | TRUE | TRUE |
| 21-1011 | Substance Abuse and Behavioral Disorder Counselors | Bachelor's degree | \$ 39,080 | 250 | 1,530 | 16.3% | 621 | Ambulatory Health Care Services | 690 | 45% | 860 | 18% | | |
| 21-1014 | Mental Health Counselors | Master's degree | \$ 35,060 | 238 | 5,650 | 4.2% | 621 | Ambulatory Health Care Services | 1,680 | 30% | 1,930 | 15% | | |
| 21-9999 | Community and Social Services | | | 1,126 | | | | | | | | | | |
| 35-0000 | Food Preparation and Serving Related | | | 8,301 | 264,840 | 3.1% | | | | | | | | |
| 35-2014 | Cooks, Restaurant | Long-term on-the-job training | \$ 25,740 | 805 | 19,370 | 4.2% | 722 | Food Services and Drinking Places | 14,860 | 77% | 7,030 | 11% | TRUE | |
| 35-1012 | FirstLine Supervisors/Managers of Food Preparation and Serving Workers | Work experience in a related occupation | \$ 33,200 | 276 | 16,320 | 1.7% | 722 | Food Services and Drinking Places | 10,560 | 65% | | | | |
| 35-9999 | Food Preparation and Serving Related | | | 1,081 | | | | | | | | | | |
| 53-0000 | Transportation and Material Moving | | | 2,153 | 162,490 | 1.3% | | | | | | | | |
| 53-7062 | Laborers and Freight, Stock, and Material Movers, Hand | Short-term on-the-job training | \$ 26,110 | 438 | 38,180 | 1.1% | 561 | Administrative and Support Services | 7,210 | 19% | 14,100 | 2% | TRUE | |
| 53-3031 | Driver/Sales Workers | Short-term on-the-job training | \$ 32,290 | 238 | 5,960 | 4.0% | 424 | Merchant Wholesalers, Nondurable Goods | 2,170 | 36% | 1,900 | 10% | | |
| 53-3033 | Truck Drivers, Light or Delivery Services | Short-term on-the-job training | \$ 31,100 | 238 | 19,770 | 1.2% | 492 | Couriers and Messengers | 3,700 | 19% | 4,160 | 10% | TRUE | TRUE |
| 53-3032 | Truck Drivers, Heavy and TractorTrailer | Moderate-term on-the-job training | \$ 40,550 | 137 | 24,880 | 0.6% | 484 | Truck Transportation | 6,430 | 26% | 6,750 | 8% | TRUE | TRUE |
| 53-9999 | Transportation and Material Moving | | | 1,051 | | | | | | | | | | |
| 19-0000 | Life, Physical, and Social Services | | | 1,901 | 48,960 | 3.9% | | | | | | | | |
| 19-1042 | Medical Scientists, Except Epidemiologists | Doctoral degree | \$ 83,340 | 314 | 5,700 | 5.5% | 541 | Professional, Scientific, and Technical Services | 1,730 | 30% | 2,660 | 32% | TRUE | TRUE |
| 19-3021 | Market Research Analysts | Bachelor's degree | \$ 67,910 | 289 | 8,850 | 3.3% | | | | | | | TRUE | |
| 19-1021 | Biochemists and Biophysicists | Doctoral degree | \$ 86,180 | 159 | 2,790 | 5.7% | 541 | Professional, Scientific, and Technical Services | 1,180 | 42% | 740 | 32% | | |
| 19-9999 | Life, Physical, and Social Services | | | 762 | | | | | | | | | | |
| 17-0000 | Architecture and Engineering | | | 2,140 | 76,140 | 2.8% | | | | | | | | |
| 17-2112 | Industrial Engineers | Bachelor's degree | \$ 79,870 | 271 | 6,260 | 4.3% | 334 | Computer and Electronic Product Manufacturing | 1,780 | 28% | 2,360 | 13% | TRUE | TRUE |
| 17-2141 | Mechanical Engineers | Bachelor's degree | \$ 80,610 | 262 | 7,230 | 3.6% | 541 | Professional, Scientific, and Technical Services | 1,960 | 27% | 2,490 | 6% | TRUE | |

Sources and Method

1. Job Vacancy Data

Source: Massachusetts Department of Workforce Development, Job Vacancy Survey (JVS), 2nd Quarter, 2008

Date Data Downloaded: data provided to Commonwealth Corporation on an ongoing basis since 2004

Website: <http://www.lmi2.detma.org/Lmi/LMIjobvacancy.asp>

Definitions and Considerations Specific to This Dataset:

The JVS is an ongoing semi-annual survey that provides information about the number and types of positions open for immediate hire. The survey collects data about education and training requirements and the average pay and benefits offered. 10,000 employers across the state were surveyed.

2. Occupational employment and wage data

Data source: United States Bureau of Labor Statistics (BLS), Occupational Employment Statistics (OES)

Date Data Downloaded: May 21, 2007

Website: <http://www.bls.gov/oes>

Definitions and Considerations Specific to This Dataset:

According to the BLS, “the OES program produces estimates of the number of people employed and estimates of the wages paid to them for 824 occupations placed in 22 major occupational categories.

The BLS reports that the “The May 2007 employment and wage estimates were calculated using data collected in the May 2007 and May 2006 annual panels as well as the November 2005, May 2005, November 2004, and May 2004 semi-annual

panels. The November 2005, May 2005, November 2004, May 2004, and wage data have been adjusted to the May 2007 reference period using the over-the-year wage change in the most applicable Employment Cost Index series.”

According to the BLS, “Significant reductions in sampling error can be achieved by taking advantage of a full three years of data, covering 1.2 million establishments and over 70 percent of the employment in the United States. This feature is particularly important in improving the reliability of estimates for detailed occupations in small geographical areas. Combining multiple years of data is also necessary to obtain full coverage of establishments with 250 or more workers. In order to reduce respondent burden, the OES survey samples them only once every three years. While there are significant advantages, there are also limitations associated with this estimation procedure in that it requires “updating” for the earlier years of data.”

For more information about this data source, see website: http://www.bls.gov/oes/current/oes_tec.htm

3. Educational attainment, 2006

Source: The Office of Occupational Statistics and Employment Projections, also operated by the U.S. Department of Labor, Bureau of Labor Statistics provided data on occupational training and educational requirements.

Date Data Downloaded: December, 2007

Website: <http://www.bls.gov/emp/empeted1.htm>

According to the Bureau of Labor Statistics (BLS):

“Information on 2006 and projected 2016 occupational employment was developed by the Bureau of Labor Statistics as part of its ongoing Occupational Employment Projections Program. These data, derived from the 2006-2016 National Employment Matrix, will underlie information on occupational employment growth presented in the 2008-2009 edition of the *Occupational Outlook Handbook*. Occupations are classified into one of eleven postsecondary-education or training categories (listed below) based on analysis of the occupation's most significant source of postsecondary-education or training according to these principles:

1. An occupation is placed into the category that best describes the postsecondary-education or training needed by most workers to become fully qualified.
2. Postsecondary awards, if generally needed for entry into the occupation, take precedence over work-related training even though additional skills or experience may be needed for a worker to become fully qualified.
3. The length of time an average worker generally needs to become fully qualified through a combination of on-the-job training and experience is used to categorize occupations in which a postsecondary award generally is not needed for entry.

Types of Postsecondary awards

- **First professional degree.** Completion of the degree usually requires at least 3 years of full-time academic study beyond a bachelor's degree.
- **Doctoral degree.** Completion of a Ph.D. or other doctoral degree usually requires at least 3 years of full-time academic study beyond a bachelor's degree.
- **Master's degree.** Completion of the degree usually requires 1 or 2 years of full-time academic study beyond a bachelor's degree.
- **Bachelor's or higher degree, plus work experience.** Most occupations in this category are management occupations. All require experience in a related non-management position for which a bachelor's or higher degree is usually required.
- **Bachelor's degree.** Completion of the degree generally requires at least 4 years, but not more than 5 years, of full-time academic study.
- **Associate degree.** Completion of the degree usually requires at least 2 years of full-time academic study.
- **Postsecondary vocational award.** Some programs last only a few weeks while others may last more than a year. Programs lead to a certificate or other award but not a degree.

For more information about this data source, see website:

<http://www.bls.gov/emp/noeted/empnumb.htm>

4. Massachusetts sector employment by occupation, 2005

Source: Massachusetts Department of Workforce Development (DWD), Occupational Employment and Wage Industry Staffing Patterns, May 2005

Date Data Downloaded: provided to Commonwealth Corporation March, 2007 by the Division of Unemployment Assistance, DWD

Website: <http://lmi2.detma.org/Lmi/FPlmiforms1.asp>

Definitions and Considerations Specific to This Dataset:

This dataset describes the industry staffing patterns and the occupational employment distribution by industry as well as the respective median and average annual wages for stated occupations for Massachusetts and each of its 16 workforce investment areas. BLS determines data definitions and methods, but DWD collects and reports state and regional data, which is then sent to BLS and aggregated for the whole country.

According to the Bureau of Labor Statistics (BLS):

“Cross-industry estimates are calculated with data collected from establishments in all the industries in which a particular occupation is reported. (Not every occupation is surveyed in every industry.) For example, the cross-industry occupational employment estimate for mechanical engineers is the sum of all the industry specific estimates for mechanical engineers. Likewise, cross-industry occupational wage estimates for mechanical engineers are calculated from data collected from establishments in all the industries where mechanical engineers are reported. Industry-specific estimates are calculated with data collected from establishments in a particular industry. Industry-specific occupational employment estimates estimate the number of people employed in that occupation in a particular industry. Similarly, the industry-specific occupational wage estimates are calculated with data from establishments in one particular industry.”

5. Occupational Projections

Source: Massachusetts Department of Workforce Development (DWD), Occupational Employment Projected Job Openings, 2006

Date Data Downloaded: provided to Commonwealth Corporation in 2006 by the Division of Unemployment Assistance, DWD

According to the Department of Workforce Development (DWD):

Massachusetts Critical Vacancies 2nd Quarter, 2008
Ordered by Major Occupational Groups with the largest number of Critical Vacancies

“This report provides detailed employment projections for more than 400 occupations and the education and training generally required for employment. Base year estimates are derived from the 2003 Occupational Employment Statistics (OES) Survey, a federal-state cooperative program conducted by the U.S. Bureau of Labor Statistics and State Employment Security Agencies. Employers included both part-time and full-time workers for the payroll periods that included the 12th of April, May and June. Individuals who hold more than one job are counted in each place they work.

The projected 2014 employment levels are derived from Massachusetts industry projections and U.S. occupational change factors that estimate changes in technology, productivity and consumer tastes within industries. Change factors are developed by the U.S. Bureau of Labor Statistics.

These projections are not and cannot be precise forecasts. Instead, they are indicators of the relative size, general direction and likely future impact of industrial and occupational changes within the state economy.”