

# Low-to-Middle Skill Jobs in Boston

## (Openings and Skills Needed – 2012-2016)

BRA Research Division  
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- Boston's economy is projected to produce 270,452 job openings between 2012 and 2016 representing an annual average of 67,613 openings

Employment, 2012 1,699,142

Employment, 2016 1,812,846

- Net new jobs, 2012-2016 113,704

- Replacement openings, 2012-2016 (22.72 rate) 156,748

**Total Openings, 2012-2016 270,452**

**Average Annual Openings 67,613**

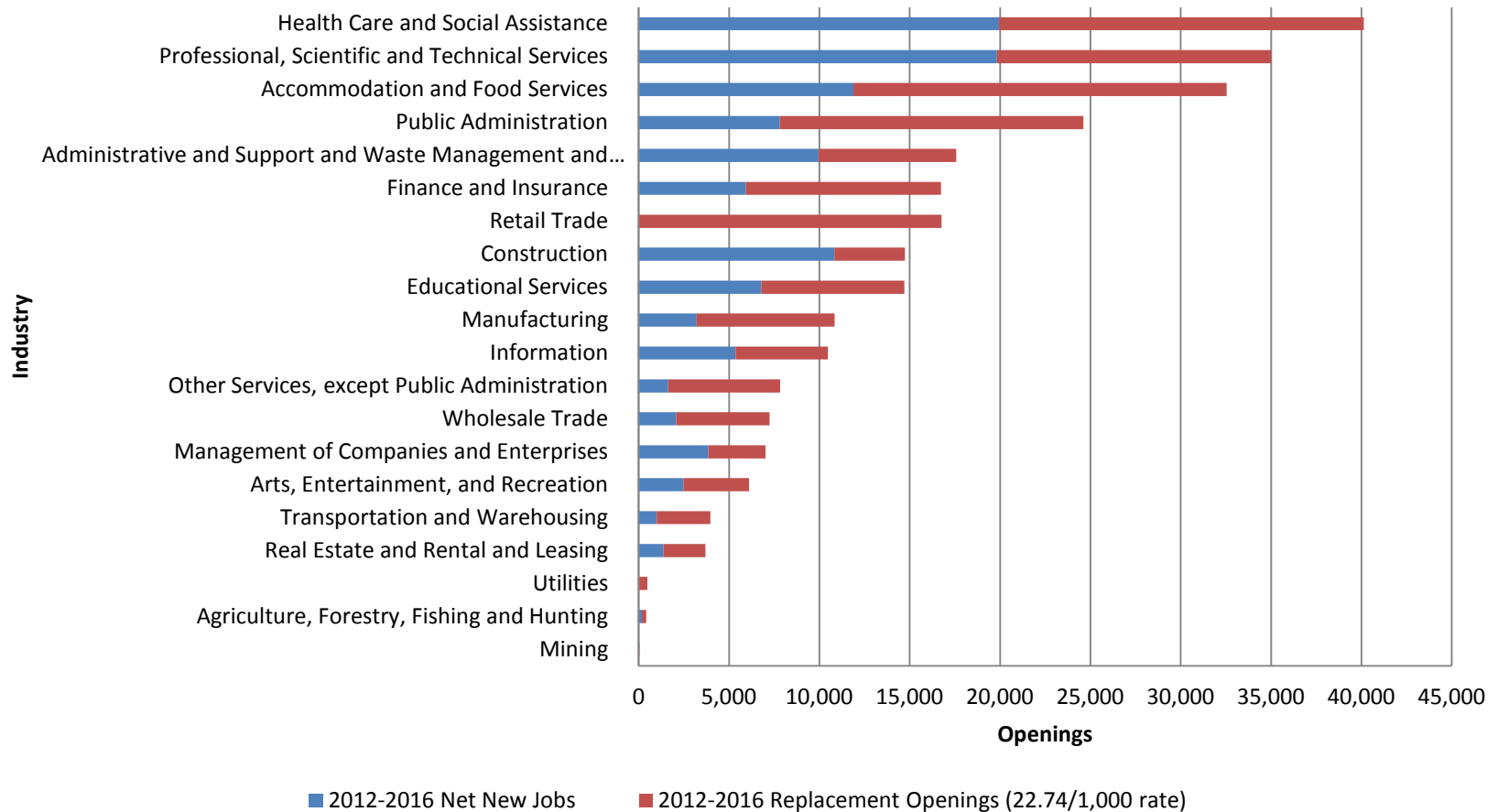
- More than 48% of these job openings are concentrated in four industries with more than a 1/3 of the openings concentrated in Health Care and Social Assistance, Professional, Scientific and Technical Services, and Accommodation and Food Services

### New, Replacement, and Total Job Openings by Industry

2-digit NAICS	Industry	2012 Employment		2016 Employment		2012-2016 Net New Jobs	2012-2016 Replacement Openings (22.72/1,000 rate)	2012-2016 Total Openings		
		Estimate	%	Estimate	%			Estimate	Average Annual Openings	%
62	Health Care and Social Assistance	267,880	15.8%	287,826	15.9%	19,946	20,183	<b>40,129</b>	10,032	<b>14.8%</b>
54	Professional, Scientific and Technical Services	188,599	11.1%	208,424	11.5%	19,825	15,180	<b>35,005</b>	8,751	<b>12.9%</b>
72	Accommodation and Food Services	145,196	8.5%	157,074	8.7%	11,878	20,661	<b>32,539</b>	8,135	<b>12.0%</b>
91-93	Public Administration	179,953	10.6%	187,767	10.4%	7,814	16,800	<b>24,614</b>	6,153	<b>9.1%</b>
56	Administrative and Support and Waste Management and Remediation Services	94,724	5.6%	104,680	5.8%	9,955	7,626	<b>17,582</b>	4,395	<b>6.5%</b>
52	Finance and Insurance	117,799	6.9%	123,728	6.8%	5,929	10,802	<b>16,731</b>	4,183	<b>6.2%</b>
44-45	Retail Trade	145,207	8.5%	144,734	8.0%	-473	16,761	<b>16,288</b>	4,072	<b>6.0%</b>
23	Construction	55,071	3.2%	65,893	3.6%	10,822	3,907	<b>14,729</b>	3,682	<b>5.4%</b>
61	Educational Services	91,104	5.4%	97,888	5.4%	6,784	7,921	<b>14,705</b>	3,676	<b>5.4%</b>
31-33	Manufacturing	92,025	5.4%	95,231	5.3%	3,206	7,643	<b>10,849</b>	2,712	<b>4.0%</b>
51	Information	60,002	3.5%	65,368	3.6%	5,366	5,112	<b>10,478</b>	2,620	<b>3.9%</b>
81	Other Services, except Public Administration	68,834	4.1%	70,475	3.9%	1,641	6,184	<b>7,825</b>	1,956	<b>2.9%</b>
42	Wholesale Trade	57,124	3.4%	59,197	3.3%	2,073	5,171	<b>7,244</b>	1,811	<b>2.7%</b>
55	Management of Companies and Enterprises	36,646	2.2%	40,498	2.2%	3,852	3,160	<b>7,012</b>	1,753	<b>2.6%</b>
71	Arts, Entertainment, and Recreation	30,288	1.8%	32,766	1.8%	2,478	3,632	<b>6,110</b>	1,528	<b>2.3%</b>
48-49	Transportation and Warehousing	33,388	2.0%	34,388	1.9%	1,000	2,978	<b>3,978</b>	994	<b>1.5%</b>
53	Real Estate and Rental and Leasing	27,362	1.6%	28,739	1.6%	1,377	2,321	<b>3,698</b>	924	<b>1.4%</b>
22	Utilities	4,711	0.3%	4,746	0.3%	35	441	<b>476</b>	119	<b>0.2%</b>
11	Agriculture, Forestry, Fishing and Hunting	2,935	0.2%	3,113	0.2%	178	240	<b>418</b>	104	<b>0.2%</b>
21	Mining	294	0.0%	312	0.0%	18	24	<b>42</b>	10	<b>0.0%</b>
	<b>Total</b>	<b>1,699,142</b>	<b>100.0%</b>	<b>1,812,846</b>	<b>100.0%</b>	<b>113,704</b>	<b>156,748</b>	<b>270,452</b>	<b>67,613</b>	<b>100.0%</b>

- Replacement openings represent 58% of total openings

## New and Replacement Job Openings by Industry, 2012-2016



- 54% of the job openings are concentrated in six occupations with more than a 1/4 of the openings concentrated in Office and Administrative Support Occupations and Food Preparation and Serving Related Occupations

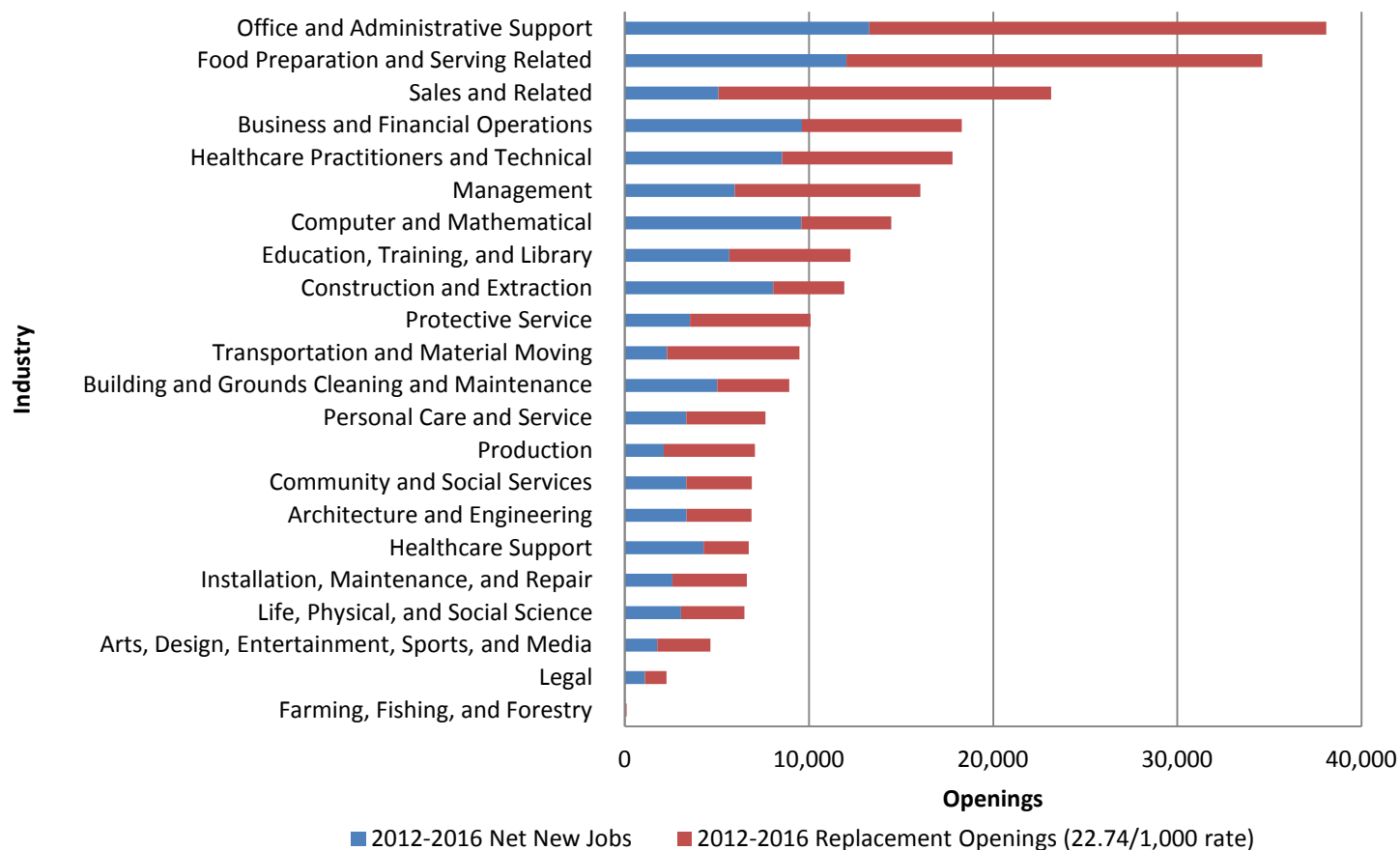
### New, Replacement, and Total Job Openings by Occupations

2-digit SOC	SOC Grouping	2012 Employment		2016 Employment		2012-2016 Net New Jobs	2012-2016 Replacement Openings (22.74/1,000 rate)	2012-2016 Total Openings		
		Estimate	%	Estimate	%			Estimate	Average Annual Openings	%
43	Office and Administrative Support Occupations	300,320	17.7%	313,592	17.3%	13,272	24,819	<b>38,091</b>	9,523	<b>14.1%</b>
35	Food Preparation and Serving Related Occupations	149,918	8.8%	161,952	8.9%	12,034	22,568	<b>34,602</b>	8,650	<b>12.8%</b>
41	Sales and Related Occupations	152,670	9.0%	157,753	8.7%	5,083	18,063	<b>23,146</b>	5,786	<b>8.6%</b>
13	Business and Financial Operations Occupations	107,687	6.3%	117,314	6.5%	9,627	8,663	<b>18,290</b>	4,573	<b>6.8%</b>
29	Healthcare Practitioners and Technical Occupations	115,001	6.8%	123,553	6.8%	8,551	9,233	<b>17,785</b>	4,446	<b>6.6%</b>
11	Management Occupations	106,587	6.3%	112,566	6.2%	5,978	10,063	<b>16,041</b>	4,010	<b>5.9%</b>
15	Computer and Mathematical Occupations	74,647	4.4%	84,227	4.6%	9,580	4,887	<b>14,467</b>	3,617	<b>5.3%</b>
25	Education, Training, and Library Occupations	72,021	4.2%	77,700	4.3%	5,678	6,567	<b>12,245</b>	3,061	<b>4.5%</b>
47	Construction and Extraction Occupations	54,220	3.2%	62,282	3.4%	8,062	3,853	<b>11,915</b>	2,979	<b>4.4%</b>
33	Protective Service Occupations	57,008	3.4%	60,549	3.3%	3,541	6,548	<b>10,089</b>	2,522	<b>3.7%</b>
53	Transportation and Material Moving Occupations	76,366	4.5%	78,661	4.3%	2,295	7,185	<b>9,480</b>	2,370	<b>3.5%</b>
37	Building and Grounds Cleaning and Maintenance Occupations	58,463	3.4%	63,490	3.5%	5,026	3,903	<b>8,929</b>	2,232	<b>3.3%</b>
39	Personal Care and Service Occupations	44,155	2.6%	47,491	2.6%	3,337	4,309	<b>7,645</b>	1,911	<b>2.8%</b>
51	Production Occupations	64,824	3.8%	66,941	3.7%	2,117	4,958	<b>7,075</b>	1,769	<b>2.6%</b>
21	Community and Social Services Occupations	40,662	2.4%	43,996	2.4%	3,334	3,560	<b>6,894</b>	1,723	<b>2.5%</b>
17	Architecture and Engineering Occupations	41,271	2.4%	44,621	2.5%	3,351	3,532	<b>6,883</b>	1,721	<b>2.5%</b>
31	Healthcare Support Occupations	55,516	3.3%	59,800	3.3%	4,285	2,447	<b>6,732</b>	1,683	<b>2.5%</b>
49	Installation, Maintenance, and Repair Occupations	51,005	3.0%	53,591	3.0%	2,586	4,047	<b>6,633</b>	1,658	<b>2.5%</b>
19	Life, Physical, and Social Science Occupations	29,757	1.8%	32,821	1.8%	3,064	3,425	<b>6,489</b>	1,622	<b>2.4%</b>
27	Arts, Design, Entertainment, Sports, and Media Occupations	28,135	1.7%	29,897	1.6%	1,762	2,893	<b>4,655</b>	1,164	<b>1.7%</b>
23	Legal Occupations	18,352	1.1%	19,452	1.1%	1,100	1,172	<b>2,272</b>	568	<b>0.8%</b>
45	Farming, Fishing, and Forestry Occupations	555	0.0%	598	0.0%	43	53	<b>96</b>	24	<b>0.0%</b>
55	Military Specific Occupations	0	0.0%	0	0.0%	0	0	<b>0</b>	0	<b>0.0%</b>
	<b>Total</b>	<b>1,699,142</b>	<b>100.0%</b>	<b>1,812,846</b>	<b>100.0%</b>	<b>113,704</b>	<b>156,748</b>	<b>270,452</b>	<b>67,613</b>	<b>100.0%</b>

Source: Massachusetts Department of Workforce Development, ES-202, Labor Market Assessment Tool (LMAT), New England Economic Partnership (NEEP) forecasts, Bureau of Labor Statistics (BLS), 2007-2011 American Community Survey (ACS) Public Use Microdata Sample (PUMS), Boston Redevelopment Authority Research Division Analysis.

- Office and Administrative Support and Food Preparation and Serving Related occupational groupings have twice as many replacement openings as net new jobs. This trend is even more clear for Sales and Related occupations. Some groupings, like Computer and Mathematical, have more net new jobs than replacement openings.

## New and Replacement Job Openings by Occupational Grouping , 2012-2016

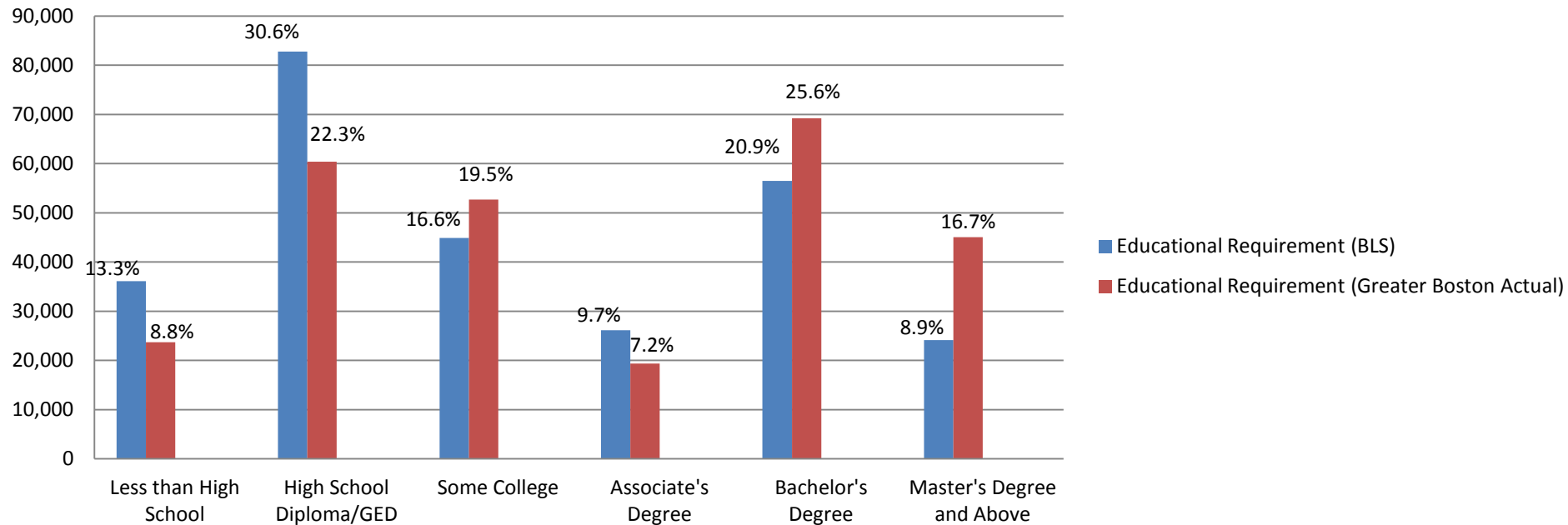


- When comparing openings by educational requirements, there is a discrepancy between what is required according to the Bureau of Labor Statistics (BLS) and what is actually required in our regional labor market.

### Educational Requirement, 2012-2016

	Less than High School		High School Diploma/GED		Some College		Associate's Degree		Bachelor's Degree		Master's Degree and Above		Total	
Educational Requirement (BLS)	36,087	13.3%	82,788	30.6%	44,867	16.6%	26,118	9.7%	56,474	20.9%	24,118	8.9%	270,452	100.0%
Educational Requirement (Greater Boston Actual*)	23,729	8.8%	60,372	22.3%	52,673	19.5%	19,355	7.2%	69,252	25.6%	45,071	16.7%	270,452	100.0%

### Educational Requirement, 2012-2016



\* "Greater Boston Actual" is based on the actual educational attainment of workers in the Greater Boston region, according to the 2007-2011 American Community Survey.

Source: Massachusetts Department of Workforce Development, ES-202, Labor Market Assessment Tool (LMAT), New England Economic Partnership (NEEP) forecasts, Bureau of Labor Statistics (BLS), 2007-2011 American Community Survey (ACS) Public Use Microdata Sample (PUMS), Boston Redevelopment Authority Research Division Analysis.

- Of the 270,452 projected openings, 23% are net new jobs requiring an Associate's degree or less, while 35% are replacement openings requiring an Associate's degree or less.

# Low-to-Middle Skill Openings

## Overview, Educational Requirement

### Openings requiring Associate's degree or less

	Less than High School	High School Diploma/GED	Some College	Associate's Degree	Total	% Total Openings
Net New Jobs	8,624	23,937	20,725	8,174	61,461	22.7%
Replacement Openings	15,104	36,435	31,948	11,181	94,668	35.0%
<b>Total</b>	<b>23,729</b>	<b>60,372</b>	<b>52,673</b>	<b>19,355</b>	<b>156,129</b>	<b>57.7%</b>

### Of all openings requiring Associate's degree or less, % by educational attainment

	Less than High School	High School Diploma/GED	Some College	Associate's Degree	Total
Net New Jobs	14.0%	38.9%	33.7%	13.2%	100%
Replacement Openings	15.9%	38.5%	33.7%	11.8%	100%

- The educational requirement for net new jobs is generally greater than for replacement openings.**



# Skills

## Low-to-Middle Skill Openings vs. Total Economy

Skill	Skills, Importance in Openings Requiring Associate's or Less	Skills, Importance in Total Economy	Rank Difference
	Rank	Rank	
Active Listening	1	1	0
Reading Comprehension	2	2	0
Speaking	3	3	0
Critical Thinking	4	4	0
Social Perceptiveness	5	8	3
Coordination	6	6	0
Active Learning	7	5	-2
Instructing	8	9	1
Learning Strategies	9	10	1
Time Management	10	7	-3
Service Orientation	11	13	2
Writing	12	11	-1
Monitoring	13	12	-1
Judgment and Decision Making	14	14	0
Mathematics	15	16	1
Persuasion	16	17	1
Complex Problem Solving	17	15	-2
Equipment Selection	18	20	2
Negotiation	19	18	-1
Troubleshooting	20	21	1
Management of Personnel Resources	21	19	-2
Equipment Maintenance	22	30	8
Operation and Control	23	27	4
Quality Control Analysis	24	23	-1
Systems Evaluation	25	22	-3
Operation Monitoring	26	29	3
Systems Analysis	27	24	-3
Operations Analysis	28	25	-3
Management of Material Resources	29	28	-1
Repairing	30	34	4
Management of Financial Resources	31	26	-5
Installation	32	32	0
Technology Design	33	31	-2
Science	34	33	-1
Programming	35	35	0

• There is little difference in the skills rankings, except for:

- Equipment Maintenance
- Operation and Control
- Repairing
- Management of Financial Resources

• This changes, though, when we look at skills needed in specific occupational groupings, instead of across all openings

- 80% of all low-to-middle skill openings are concentrated in 10 occupational groupings

## Low-to-Middle Skill Openings | Occupational Grouping

Occupational Grouping		Wage	Openings	
SOC (2)	SOC (2) Title	Average Wage (low-to-middle skill openings)	Total	
			Openings	% of all openings for associate's or less
35-0000	Food Preparation and Serving Related Occupations	\$24,244	29,881	19.1%
43-0000	Office and Administrative Support Occupations	\$36,196	28,121	18.0%
41-0000	Sales and Related Occupations	\$37,717	14,034	9.0%
47-0000	Construction and Extraction Occupations	\$54,811	10,654	6.8%
53-0000	Transportation and Material Moving Occupations	\$32,326	8,414	5.4%
37-0000	Building and Grounds Cleaning and Maintenance Occupations	\$28,412	8,288	5.3%
29-0000	Healthcare Practitioners and Technical Occupations	\$61,060	6,428	4.1%
51-0000	Production Occupations	\$33,994	6,248	4.0%
33-0000	Protective Service Occupations	\$46,303	6,113	3.9%
39-0000	Personal Care and Service Occupations	\$27,733	5,882	3.8%
49-0000	Installation, Maintenance, and Repair Occupations	\$46,646	5,798	3.7%
31-0000	Healthcare Support Occupations	\$29,714	5,777	3.7%
11-0000	Management Occupations	\$119,940*	4,504	2.9%
13-0000	Business and Financial Operations Occupations	\$76,078	4,172	2.7%
15-0000	Computer and Mathematical Occupations	\$89,272	3,074	2.0%
25-0000	Education, Training, and Library Occupations	\$42,012	2,370	1.5%
21-0000	Community and Social Services Occupations	\$39,767	1,886	1.2%
17-0000	Architecture and Engineering Occupations	\$70,973	1,871	1.2%
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	\$54,036	1,292	0.8%
19-0000	Life, Physical, and Social Science Occupations	\$55,474	863	0.6%
23-0000	Legal Occupations	\$55,996	383	0.3%
45-0000	Farming, Fishing, and Forestry Occupations	\$22,759	76	0.1%
<b>Averages/Totals</b>		<b>\$41,225</b>	<b>156,129</b>	<b>100.0%</b>

\* The average wage for management occupations requiring an associate's degree or less is relatively high; however, the average is skewed upward by chief executive and general operations occupations, which make up 30% of the openings in the occupational grouping

Source: Massachusetts Department of Workforce Development, ES-202, Labor Market Assessment Tool (LMAT), New England Economic Partnership (NEEP) forecasts, Bureau of Labor Statistics (BLS), 2007-2011 American Community Survey (ACS) Public Use Microdata Sample (PUMS), Boston Redevelopment Authority Research Division Analysis.

# Food Preparation and Serving Related Occupations

## For Low-to-Middle Skill Openings

Number of Low-to-Middle Skill Openings

**29,881**

Average Wage

**\$24,244**

### Top 10 Skills

- 1 Speaking
- 2 Active Listening
- 3 Social Perceptiveness
- 4 **Service Orientation**
- 5 Instructing
- 6 Reading Comprehension
- 7 Learning Strategies
- 8 Coordination
- 9 Critical Thinking
- 10 Active Learning

### % of Occupational Grouping Openings by Education

Less than High School	26.9%
High School Diploma/GED	37.6%
Some College	29.9%
Associate's Degree	5.6%

### % Occupational Grouping Openings by Industry

Arts, Entertainment, and Recreation / Accommodation and Food Services	84.6%
Educational Services / Health Care and Social Assistance	6.2%
Information / Finance and Insurance / Real Estate and Rental and Leasing / Other Professional	3.5%
Wholesale Trade/ Retail Trade/ Transportation & Warehousing	3.2%
Other Services, Except Public Administration	1.3%
Manufacturing	0.9%
Public Administration	0.2%
Mining, Utilities, Construction	0.1%
Agriculture, Forestry, Fishing and Hunting	0.1%

# Office and Administrative Support Occupations

## For Low-to-Middle Skill Openings

Number of Low-to-Middle Skill Openings

**28,121**

Average Wage

**\$36,196**

### Top 10 Skills

- 1 Active Listening
- 2 Reading Comprehension
- 3 Speaking
- 4 Time Management
- 5 **Writing**
- 6 Critical Thinking
- 7 Active Learning
- 8 Service Orientation
- 9 Social Perceptiveness
- 10 Learning Strategies

### % of Occupational Grouping Openings by Education

Less than High School	6.3%
High School Diploma/GED	38.6%
Some College	40.5%
Associate's Degree	14.6%

### % Occupational Grouping Openings by Industry

Information / Finance and Insurance / Real Estate and Rental and Leasing / Other Professional	50.3%
Educational Services / Health Care and Social Assistance	15.1%
Public Administration	10.9%
Wholesale Trade/ Retail Trade/ Transportation & Warehousing	10.1%
Mining, Utilities, Construction	4.0%
Arts, Entertainment, and Recreation / Accommodation and Food Services	3.5%
Manufacturing	3.2%
Other Services, except Public Administration	2.8%
Agriculture, Forestry, Fishing and Hunting	0.2%

# Sales and Related Occupations

## For Low-to-Middle Skill Openings

Number of Low-to-Middle Skill Openings

**14,034**

Average Wage

**\$37,717**

### Top 10 Skills

1 Active Listening

2 Speaking

3 Social Perceptiveness

4 Critical Thinking

5 Reading Comprehension

6 Writing

7 **Mathematics**

8 Instructing

9 Service Orientation

10 Learning Strategies

### % of Occupational Grouping Openings by Education

Less than High School	18.5%
High School Diploma/GED	34.1%
Some College	38.0%
Associate's Degree	9.5%

### % Occupational Grouping Openings by Industry

Wholesale Trade/ Retail Trade/ Transportation & Warehousing	66.5%
Information / Finance and Insurance / Real Estate and Rental and Leasing / Other Professional	21.3%
Arts, Entertainment, and Recreation / Accommodation and Food Services	6.2%
Other Services, Except Public Administration	2.0%
Manufacturing	1.9%
Mining, Utilities, Construction	1.1%
Educational Services / Health Care and Social Assistance	0.6%
Public Administration	0.3%
Agriculture, Forestry, Fishing and Hunting	0.1%

# Construction and Extraction Occupations

## For Low-to-Middle Skill Openings

Number of Low-to-Middle Skill Openings

**10,654**

Average Wage

**\$54,811**

### Top 10 Skills

- 1 Coordination
- 2 Active Listening
- 3 Mathematics
- 4 Equipment Selection
- 5 Critical Thinking
- 6 Instructing
- 7 Speaking
- 8 Equipment Maintenance
- 9 Time Management
- 10 Installation

### % of Occupational Grouping Openings by Education

Less than High School	15.2%
High School Diploma/GED	55.6%
Some College	23.1%
Associate's Degree	6.1%

### % Occupational Grouping Openings by Industry

Mining, Utilities, Construction	78.0%
Public Administration	11.9%
Information / Finance and Insurance / Real Estate and Rental and Leasing / Other Professional	6.5%
Manufacturing	1.3%
Educational Services / Health Care and Social Assistance	0.9%
Wholesale Trade/ Retail Trade/ Transportation & Warehousing	0.6%
Agriculture, Forestry, Fishing and Hunting	0.5%
Arts, Entertainment, and Recreation / Accommodation and Food Services	0.2%
Other Services, Except Public Administration	0.2%

# Transportation and Material Moving Occupations

## For Low-to-Middle Skill Openings

Number of Low-to-Middle Skill Openings

**8,414**

Average Wage

**\$32,326**

### Top 10 Skills

- 1 Active Listening
- 2 Coordination
- 3 Reading Comprehension
- 4 Time Management
- 5 **Equipment Maintenance**
- 6 Critical Thinking
- 7 Learning Strategies
- 8 Instructing
- 9 Social Perceptiveness
- 10 Speaking

### % of Occupational Grouping Openings by Education

Less than High School	23.3%
High School Diploma/GED	48.7%
Some College	21.6%
Associate's Degree	6.4%

### % Occupational Grouping Openings by Industry

Wholesale Trade/ Retail Trade/ Transportation & Warehousing	41.7%
Information / Finance and Insurance / Real Estate and Rental and Leasing / Other Professional	26.1%
Other Services, Except Public Administration	6.5%
Mining, Utilities, Construction	5.7%
Manufacturing	5.5%
Public Administration	4.5%
Arts, Entertainment, and Recreation / Accommodation and Food Services	4.4%
Educational Services / Health Care and Social Assistance	3.9%
Agriculture, Forestry, Fishing and Hunting	1.7%

# Buildings & Grounds, Cleaning, & Maintenance Occupations

## For Low-to-Middle Skill Openings

Number of Low-to-Middle Skill Openings

**8,288**

Average Wage

**\$28,412**

### Top 10 Skills

- 1 Reading Comprehension
- 2 Active Listening
- 3 **Equipment Maintenance**
- 4 Speaking
- 5 Time Management
- 6 **Equipment Selection**
- 7 Coordination
- 8 Instructing
- 9 Social Perceptiveness
- 10 Learning Strategies

### % of Occupational Grouping Openings by Education

Less than High School	<b>34.7%</b>
High School Diploma/GED	<b>45.9%</b>
Some College	<b>15.7%</b>
Associate's Degree	<b>3.7%</b>

### % Occupational Grouping Openings by Industry

Information / Finance and Insurance / Real Estate and Rental and Leasing / Other Professional	<b>55.8%</b>
Arts, Entertainment, and Recreation / Accommodation and Food Services	<b>19.1%</b>
Educational Services / Health Care and Social Assistance	<b>14.5%</b>
Public Administration	<b>5.1%</b>
Other Services, Except Public Administration	<b>2.7%</b>
Wholesale Trade/ Retail Trade/ Transportation & Warehousing	<b>1.2%</b>
Mining, Utilities, Construction	<b>0.9%</b>
Manufacturing	<b>0.7%</b>
Agriculture, Forestry, Fishing and Hunting	<b>0.1%</b>



# Healthcare Practitioners and Technical Occupations

## For Low-to-Middle Skill Openings

Number of Low-to-Middle Skill Openings

**6,428**

Average Wage

**\$61,060**

### Top 10 Skills

- 1 Active Listening
- 2 Reading Comprehension
- 3 Speaking
- 4 Critical Thinking
- 5 Social Perceptiveness
- 6 **Service Orientation**
- 7 Active Learning
- 8 Coordination
- 9 Monitoring
- 10 Instructing

### % of Occupational Grouping Openings by Education

Less than High School	3.4%
High School Diploma/GED	18.3%
Some College	38.3%
Associate's Degree	40.1%

### % Occupational Grouping Openings by Industry

Educational Services / Health Care and Social Assistance	76.4%
Information / Finance and Insurance / Real Estate and Rental and Leasing / Other Professional	10.8%
Wholesale Trade/ Retail Trade/ Transportation & Warehousing	6.3%
Public Administration	5.4%
Manufacturing	0.6%
Arts, Entertainment, and Recreation / Accommodation and Food Services	0.3%
Other Services, Except Public Administration	0.3%
Mining, Utilities, Construction	0.1%
Agriculture, Forestry, Fishing and Hunting	0.1%

# Production Occupations

## For Low-to-Middle Skill Openings

Number of Low-to-Middle Skill Openings

**6,248**

Average Wage

**\$33,994**

### Top 10 Skills

1 **Quality Control Analysis**

2 Instructing

3 Learning Strategies

4 Active Listening

5 **Operation Monitoring**

6 Reading Comprehension

7 **Operation and Control**

8 Coordination

9 Active Learning

10 Monitoring

### % of Occupational Grouping Openings by Education

Less than High School	21.4%
High School Diploma/GED	53.4%
Some College	19.1%
Associate's Degree	6.2%

### % Occupational Grouping Openings by Industry

Manufacturing	53.3%
Information / Finance and Insurance / Real Estate and Rental and Leasing / Other Professional	20.1%
Wholesale Trade/ Retail Trade/ Transportation & Warehousing	10.0%
Public Administration	4.9%
Mining, Utilities, Construction	4.5%
Arts, Entertainment, and Recreation / Accommodation and Food Services	3.2%
Educational Services / Health Care and Social Assistance	2.3%
Other Services, Except Public Administration	0.9%
Agriculture, Forestry, Fishing and Hunting	0.8%

# Protective Service Occupations

## For Low-to-Middle Skill Openings

Number of Low-to-Middle Skill Openings

**6,113**

Average Wage

**\$46,303**

### Top 10 Skills

- 1 Active Listening
- 2 Coordination
- 3 Critical Thinking
- 4 Social Perceptiveness
- 5 **Service Orientation**
- 6 Speaking
- 7 Reading Comprehension
- 8 Monitoring
- 9 **Judgment and Decision Making**
- 10 Instructing

### % of Occupational Grouping Openings by Education

Less than High School	5.2%
High School Diploma/GED	32.3%
Some College	40.9%
Associate's Degree	21.7%

### % Occupational Grouping Openings by Industry

Public Administration	68.6%
Information / Finance and Insurance / Real Estate and Rental and Leasing / Other Professional	20.0%
Arts, Entertainment, and Recreation / Accommodation and Food Services	4.4%
Educational Services / Health Care and Social Assistance	3.2%
Other Services, Except Public Administration	2.9%
Wholesale Trade/ Retail Trade/ Transportation & Warehousing	0.8%
Manufacturing	0.1%
Mining, Utilities, Construction	0.1%
Agriculture, Forestry, Fishing and Hunting	0.1%

# Personal Care and Services Occupations

## For Low-to-Middle Skill Openings

Number of Low-to-Middle Skill Openings

**5,882**

Average Wage

**\$27,733**

### Top 10 Skills

- |    |                       |
|----|-----------------------|
| 1  | Active Listening      |
| 2  | Social Perceptiveness |
| 3  | Speaking              |
| 4  | Learning Strategies   |
| 5  | Time Management       |
| 6  | Reading Comprehension |
| 7  | Coordination          |
| 8  | Service Orientation   |
| 9  | Instructing           |
| 10 | Critical Thinking     |

### % of Occupational Grouping Openings by Education

Less than High School	14.7%
High School Diploma/GED	40.3%
Some College	36.2%
Associate's Degree	8.8%

### % Occupational Grouping Openings by Industry

Educational Services / Health Care and Social Assistance	36.8%
Arts, Entertainment, and Recreation / Accommodation and Food Services	25.0%
Other Services, Except Public Administration	22.9%
Information / Finance and Insurance / Real Estate and Rental and Leasing / Other Professional	5.7%
Public Administration	5.4%
Wholesale Trade/ Retail Trade/ Transportation & Warehousing	4.1%
Mining, Utilities, Construction	0.1%
Agriculture, Forestry, Fishing and Hunting	0.1%
Manufacturing	0.1%

# Skills

## Definitions

Skill	Definition
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.
Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.
Coordination	Adjusting actions in relation to others' actions.
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.
Equipment Selection	Determining the kind of tools and equipment needed to do a job.
Installation	Installing equipment, machines, wiring, or programs to meet specifications.
Instructing	Teaching others how to do something.
Judgment and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.
Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.
Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.
Management of Personnel Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.
Mathematics	Using mathematics to solve problems.
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.
Negotiation	Bringing others together and trying to reconcile differences.
Operation and Control	Controlling operations of equipment or systems.
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.
Operations Analysis	Analyzing needs and product requirements to create a design.
Persuasion	Persuading others to change their minds or behavior.
Programming	Writing computer programs for various purposes.
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.
Repairing	Repairing machines or systems using the needed tools.
Science	Using scientific rules and methods to solve problems.
Service Orientation	Actively looking for ways to help people.
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.
Speaking	Talking to others to convey information effectively.
Systems Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.
Systems Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.
Technology Design	Generating or adapting equipment and technology to serve user needs.
Time Management	Managing one's own time and the time of others.
Troubleshooting	Determining causes of operating errors and deciding what to do about it.
Writing	Communicating effectively in writing as appropriate for the needs of the audience.

# Occupational Groupings

## Example Occupations

Occupational Grouping	Example Occupations (with highest number of openings requiring Associate's or less)
Food Preparation and Serving Related	Waiters and Waitresses, Food Preparation Workers, Counter Attendants, Dishwashers, Bartenders
Office and Administrative Support	Customer Service Representatives, Office Clerks, Executive Administrative Assistants, Receptionists, Tellers, Bookkeeping Clerks
Sales and Related	Retail Salespersons, Cashiers, Sales Representatives
Construction and Extraction	Carpenters, Laborers, Electricians, Plumbers
Transportation and Material Moving	Truck Drivers, Laborers, School Bus Drivers, Vehicle and Equipment Cleaners
Buildings & Grounds, Cleaning, & Maintenance	Janitors and Cleaners, Maids and Housekeepers, Landscaping and Groundskeeping Workers
Healthcare Practitioners and Technical	Registered Nurses, Licensed Practical and Vocational Nurses, Pharmacy Technicians, Dental Hygienists
Production	Team Assemblers, Machinists, Welders and Cutters, Printing Machine Operators, Waster Treatment Plant Operators
Protective Service Occupations	Fire Fighters, Security Guards, Police Officers
Personal Care and Services	Nursing Aides, Home Health Aides, Medical Assistants, Dental Assistants

# Industries

## Definitions

### 1 - Agriculture, Forestry, Fishing and Hunting

- The Agriculture, Forestry, Fishing and Hunting sector comprises establishments primarily engaged in growing crops, raising animals, harvesting timber, and harvesting fish and other animals from a farm, ranch, or their natural habitats. The establishments in this sector are often described as farms, ranches, dairies, greenhouses, nurseries, orchards, or hatcheries

### 2- Mining, Utilities, Construction

- The Mining sector comprises establishments that extract naturally occurring mineral solids, such as coal and ores; liquid minerals, such as crude petroleum; and gases, such as natural gas.
- The Utilities sector comprises establishments engaged in the provision of the following utility services: electric power, natural gas, steam supply, water supply, and sewage removal.
- The Construction sector comprises establishments primarily engaged in the construction of buildings or engineering projects (e.g., highways and utility systems). Establishments primarily engaged in the preparation of sites for new construction and establishments primarily engaged in subdividing land for sale as building sites also are included in this sector.

### 3- Manufacturing

- The Manufacturing sector comprises establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products. Establishments in the Manufacturing sector are often described as plants, factories, or mills and characteristically use power-driven machines and materials-handling equipment

# Industries

## Definitions

### 4 - Wholesale Trade/ Retail Trade/ Transportation & Warehousing

- The Wholesale Trade sector comprises establishments engaged in wholesaling merchandise, generally without transformation, and rendering services incidental to the sale of merchandise. The merchandise described in this sector includes the outputs of agriculture, mining, manufacturing, and certain information industries, such as publishing.
- The Retail Trade sector comprises establishments engaged in retailing merchandise, generally without transformation, and rendering services incidental to the sale of merchandise. The retailing process is the final step in the distribution of merchandise; retailers are, therefore, organized to sell merchandise in small quantities to the general public.
- The Transportation and Warehousing sector includes industries providing transportation of passengers and cargo, warehousing and storage for goods, scenic and sightseeing transportation, and support activities related to modes of transportation. The modes include transportation are air, rail, water, road, and pipeline.

### 5- Information / Finance and Insurance / Real Estate and Rental and Leasing / Other Professional

- The Information sector comprises establishments primarily in publishing, including software publishing, and both traditional publishing and publishing exclusively on the Internet; the motion picture and sound recording industries; the broadcasting industries, including traditional broadcasting and those broadcasting exclusively over the Internet; the telecommunications industries; Web search portals, data processing industries, and the information services industries.
- The Finance and Insurance sector comprises establishments primarily engaged in financial transactions (transactions involving the creation, liquidation, or change in ownership of financial assets) and/or in facilitating financial transactions.
- The Real Estate and Rental and Leasing sector comprises establishments primarily engaged in renting, leasing, or otherwise allowing the use of tangible or intangible assets, and establishments providing related services. The major portion of this sector comprises establishments that rent, lease, or otherwise allow the use of their own assets by others. The assets may be tangible, as is the case of real estate and equipment, or intangible, as is the case with patents and trademarks. This sector also includes establishments primarily engaged in managing real estate for others, selling, renting and/or buying real estate for others, and appraising real estate.
- The Professional, Scientific, and Technical Services sector comprises establishments that specialize in performing professional, scientific, and technical activities for others. These activities require a high degree of expertise and training. The establishments in this sector specialize according to expertise and provide these services to clients in a variety of industries and, in some cases, to households. Activities performed include: legal advice and representation; accounting, bookkeeping, and payroll services; architectural, engineering, and specialized design services; computer services; consulting services; research services; advertising services; photographic services; translation and interpretation services; veterinary services; and other professional, scientific, and technical services.
- The Management of Companies and Enterprises sector comprises (1) establishments that hold the securities of (or other equity interests in) companies and enterprises for the purpose of owning a controlling interest or influencing management decisions or (2) establishments (except government establishments) that administer, oversee, and manage establishments of the company or enterprise and that normally undertake the strategic or organizational planning and decision making role of the company or enterprise.
- The Administrative and Support and Waste Management and Remediation Services sector comprises establishments performing routine support activities for the day-to-day operations of other organizations. These essential activities are often undertaken in-house by establishments in many sectors of the economy. The establishments in this sector specialize in one or more of these support activities and provide these services to clients in a variety of industries and, in some cases, to households. Activities performed include: office administration, hiring and placing of personnel, document preparation and similar clerical services, solicitation, collection, security and surveillance services, cleaning, and waste disposal services.



# Industries

## Definitions

### 6 - Educational Services / Health Care and Social Assistance

- The Educational Services sector comprises establishments that provide instruction and training in a wide variety of subjects. This instruction and training is provided by specialized establishments, such as schools, colleges, universities, and training centers. These establishments may be privately owned and operated for profit or not for profit, or they may be publicly owned and operated. They may also offer food and/or accommodation services to their students.
- The Health Care and Social Assistance sector comprises establishments providing health care and social assistance for individuals. The sector includes both health care and social assistance because it is sometimes difficult to distinguish between the boundaries of these two activities. The industries in this sector are arranged on a continuum starting with those establishments providing medical care exclusively, continuing with those providing health care and social assistance, and finally finishing with those providing only social assistance. The services provided by establishments in this sector are delivered by trained professionals. All industries in the sector share this commonality of process, namely, labor inputs of health practitioners or social workers with the requisite expertise. Many of the industries in the sector are defined based on the educational degree held by the practitioners included in the industry.

### 7 - Arts, Entertainment, and Recreation / Accommodation and Food Services

- The Arts, Entertainment, and Recreation sector includes a wide range of establishments that operate facilities or provide services to meet varied cultural, entertainment, and recreational interests of their patrons. This sector comprises (1) establishments that are involved in producing, promoting, or participating in live performances, events, or exhibits intended for public viewing; (2) establishments that preserve and exhibit objects and sites of historical, cultural, or educational interest; and (3) establishments that operate facilities or provide services that enable patrons to participate in recreational activities or pursue amusement, hobby, and leisure-time interests.
- The Accommodation and Food Services sector comprises establishments providing customers with lodging and/or preparing meals, snacks, and beverages for immediate consumption. The sector includes both accommodation and food services establishments because the two activities are often combined at the same establishment.

### 8 - Other Services, Except Public Administration

- The Other Services (except Public Administration) sector comprises establishments engaged in providing services not specifically provided for elsewhere in the classification system. Establishments in this sector are primarily engaged in activities such as equipment and machinery repairing, promoting or administering religious activities, grantmaking, advocacy, and providing drycleaning and laundry services, personal care services, death care services, pet care services, photofinishing services, temporary parking services, and dating services. Private households that engage in employing workers on or about the premises in activities primarily concerned with the operation of the household are included in this sector.

### 9 - Public Administration

- The Public Administration sector consists of establishments of federal, state, and local government agencies that administer, oversee, and manage public programs and have executive, legislative, or judicial authority over other institutions within a given area. These agencies also set policy, create laws, adjudicate civil and criminal legal cases, provide for public safety and for national defense. In general, government establishments in the Public Administration sector oversee governmental programs and activities that are not performed by private establishments. Establishments in this sector typically are engaged in the organization and financing of the production of public goods and services, most of which are provided for free or at prices that are not economically significant.

# Methodology

In order to estimate occupational characteristics in the regional labor market we used the Labor Market Assessment Tool (LMAT), a computer program developed by the Dukakis Center for Urban and Regional Policy at Northeastern University and the Research Division at the Boston Redevelopment Authority (BRA). We also used data from the Massachusetts Department of Workforce Development, the American Community Survey (ACS), New England Economic Partnership (NEEP), and the Bureau of Labor Statistics (BLS).

LMAT is a program with a set of industry/occupation (I/O) matrices linked with occupational characteristic data, including wages, education, and skill requirements. An I/O matrix can basically be understood as a distribution of occupations within an industry or set of industries. LMAT has different occupational distributions built into the program depending on the industry (or set of industries) and year queried. The I/O matrices come from the Massachusetts Department of Workforce Development and are for the Commonwealth of Massachusetts. A primary assumption of this research is that the industry-based occupational distributions in the state are similar to what you would see at the metro level.

First, we entered into LMAT the two digit North American Industrial Classification (NAICS) employment data from Massachusetts Department of Workforce Development's ES-202 for Metro Boston (defined as the NECTA) in 2012. We estimated job growth for the region by applying New England Economic Partnership (NEEP) 2016 projections to 2012 base employment. The difference between the estimated employment by occupation between the 2012 and 2016 would indicate job growth or loss for the particular occupation. The aggregate of these changes would equal "net new" job creation for Greater Boston between 2012 and 2016. However, there are other jobs that become available in the economy. In order to estimate "replacement openings", we took 10 year replacement rate estimates from BLS. Each occupation has an estimate of the percent of jobs that become available due to a person permanently leaving a position (typically through retirement). We estimated the number of replacement openings for each occupational title over a four year period. Adding the number of replacement openings to net new job openings would equal the total number of job openings in Greater Boston between 2012 and 2016.

Our previous research using LMAT shows, however, that the occupational education requirement data from the BLS tends to be lower than the actual educational attainment of workers holding these jobs in Greater Boston. In order to account for this in estimating educational requirements in the region, we assumed the requirements for jobs in Greater Boston are the same as the educational distribution of incumbent workers currently in the occupation. To do this, we used data from the 2007-2011 American Community Survey (ACS) Public Use Microdata Sample (PUMS). We applied the education distribution within a group of occupations to the estimated total number of openings. This distribution was used to classify the number of jobs at each level of education.