

Massachusetts Skills Gap Project

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Highlights

1. There is **no worker gap** in Massachusetts currently: there are a large number of people available to work (those unemployed, underemployed or in the labor force reserve)
2. There are, however, **persistent vacancies or shortages** – a skill mismatch or skill gap -- for selected occupations.

Research Team

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***Do We Have Enough Workers Now?
Will We Have Enough Workers in the
future?***

Do We Have Enough Workers Now?

The economy is recovering

Many people are seeking work

In Nov '05, 171,000 fewer employed than at peak Feb '01

From Dec '00 to Dec '04:

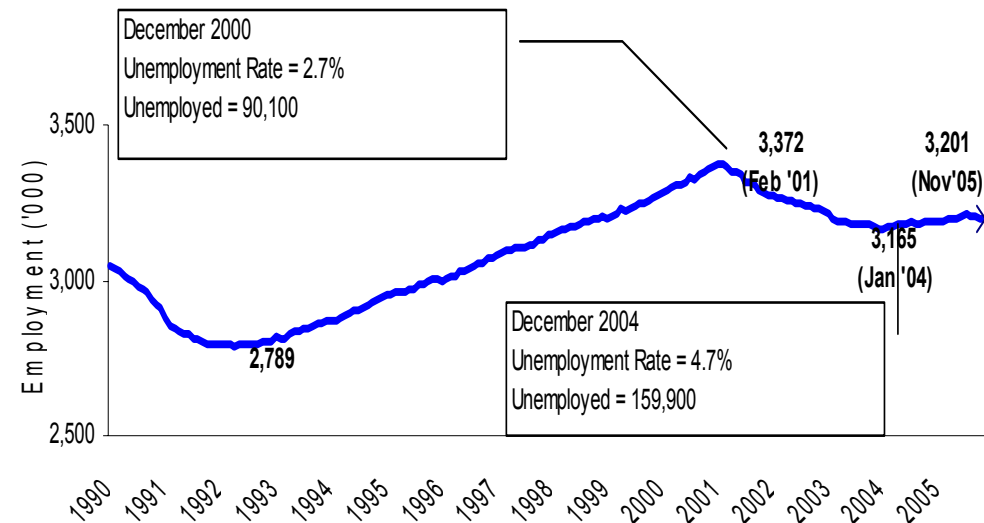
● 69,800 more “unemployed”

From 2000 to 2004

● 26,500 more working part-time as they could not find full-time work

● 13,900 more not currently looking for (1) family or transportation reasons or (2) because “discouraged”

Massachusetts Non-Farm Employment 1990-2005

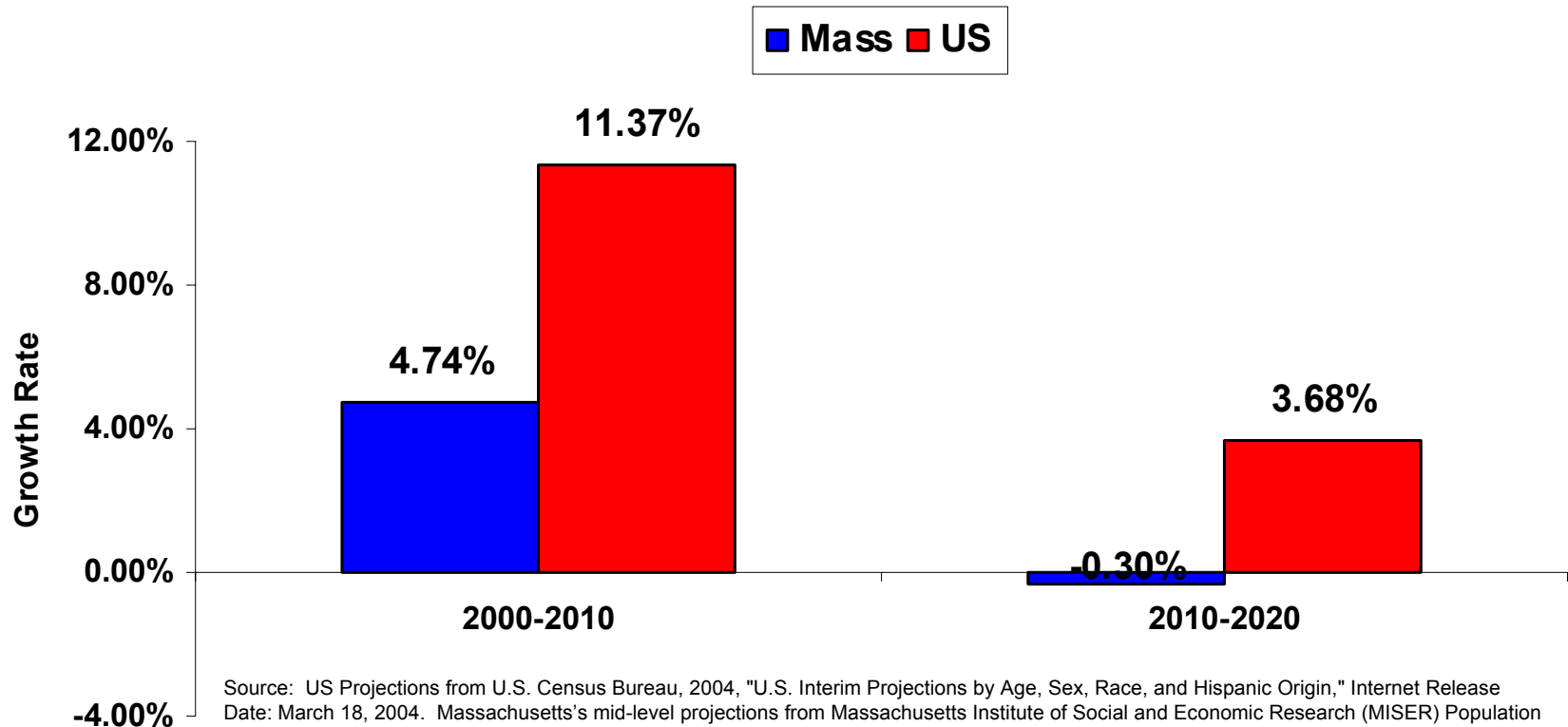


Source: Current Employment Statistics (CES-790), Current Population Survey (CPS)

Will We Have Enough Workers?

Population is Growing Slowly

Growth Rate of Working Age Population (Ages 20-64)



Will We Have Enough Workers?

Population and Labor Force Are Aging Plus Growing Slowly

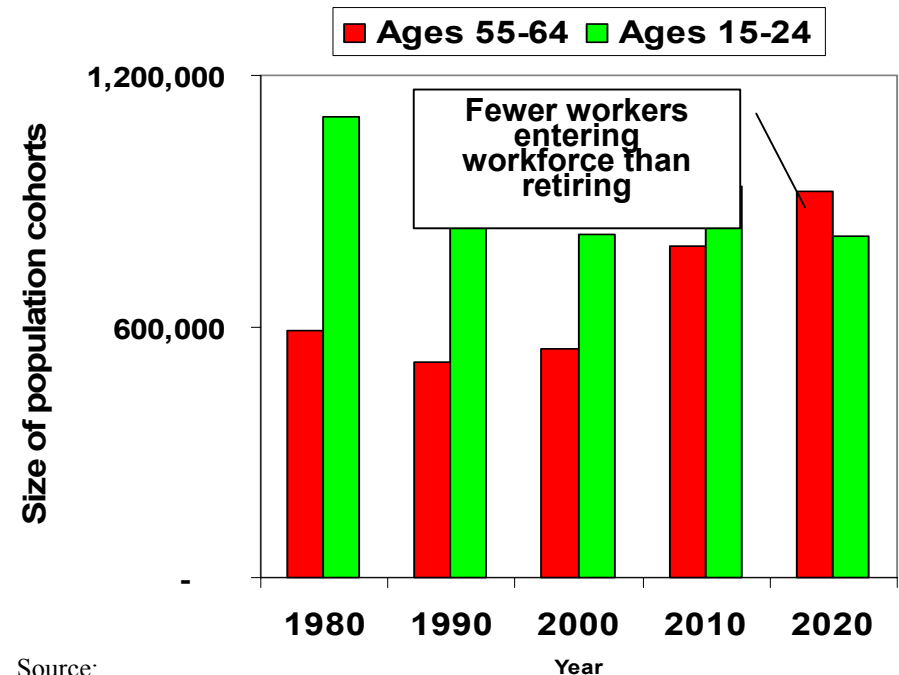
Concerns

- Aging population
- Net out-migration
- Slow growth in population
- Slow growth in labor force
- Dependence on immigration
- Discouraged workers
- Keep “human capital advantage”

Opportunities

- In-depth demographic study

Cohorts of working age populations entering and leaving the workforce



Source:
CommCorp analysis of Mass. State Data Center (MISER) Population projections

Will We Have Enough Workers?

Potential Sources of Labor Force Growth

More women in the labor force:

- Women's participation stable for last 10 yrs=58.8-60%

Delayed Retirement of Older Workers:

- More workers older than 55% are working since 2000

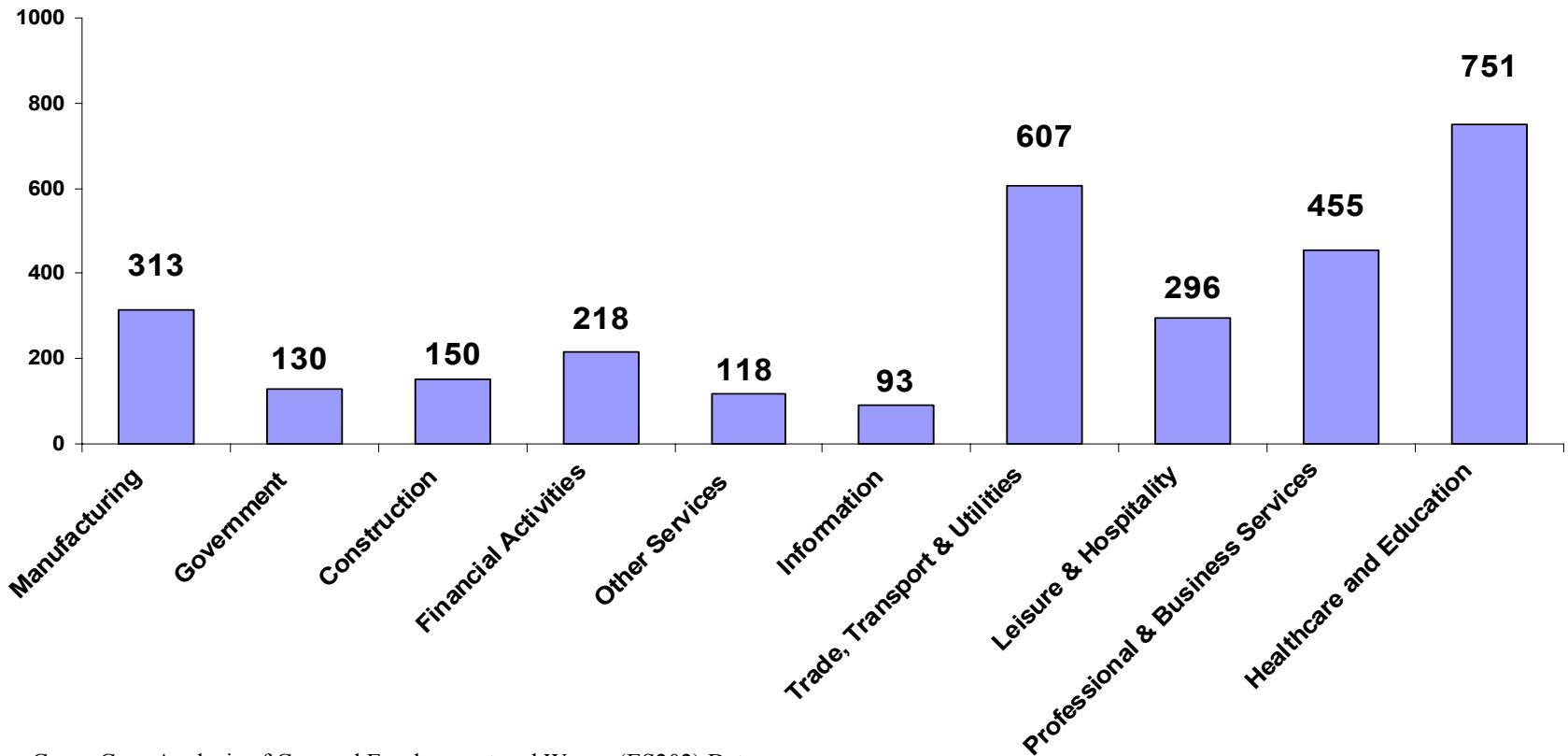
Increase in educational attainment

Increase in Immigration

***Do these workers have the skills
our employers need?
Can we expect a skills shortage?***

Where Do People Work Now?

Massachusetts 2004 Employment by Industry ('000)



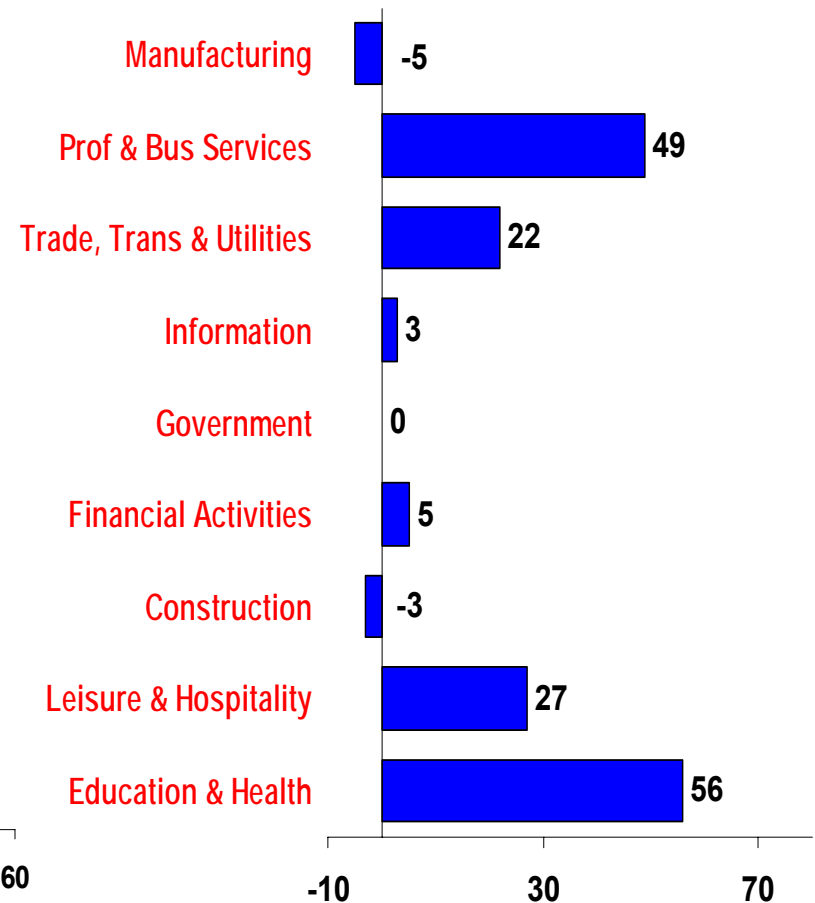
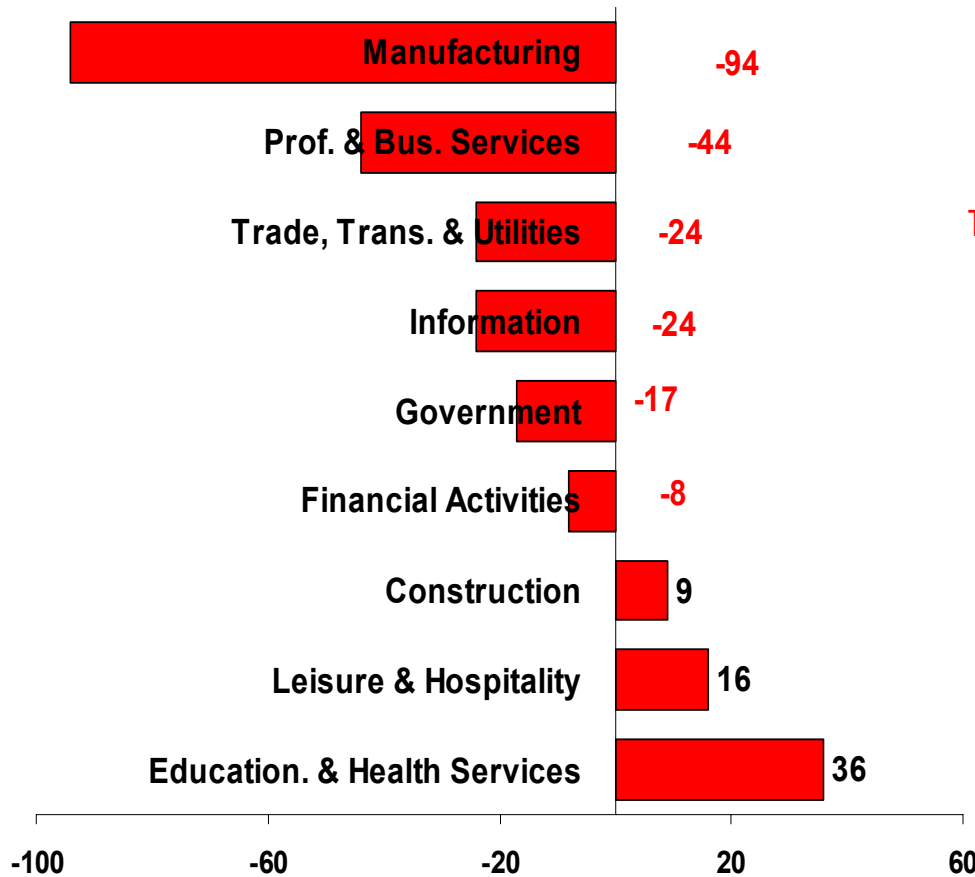
Source: CommCorp Analysis of Covered Employment and Wages (ES202) Data

Can We Expect a Shortage?

Many Jobs Lost, Some Forever

Jobs lost in recession 2000-2004 ('000)

Growth projected 2004-2009 ('000)



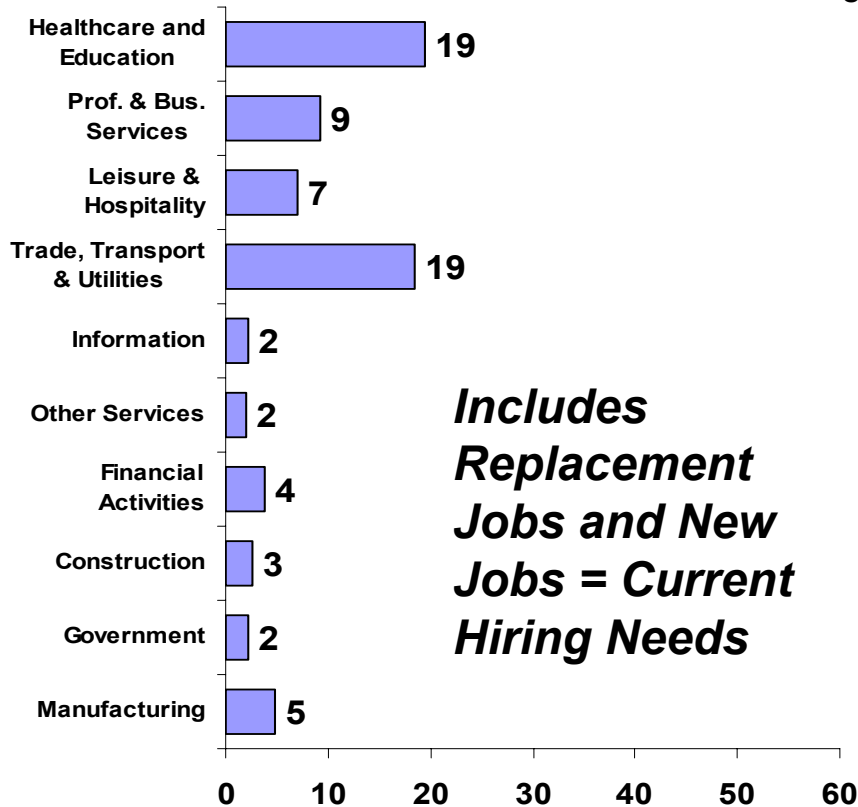
Can We Expect a Shortage?

Where is current demand?

Where is future growth projected?

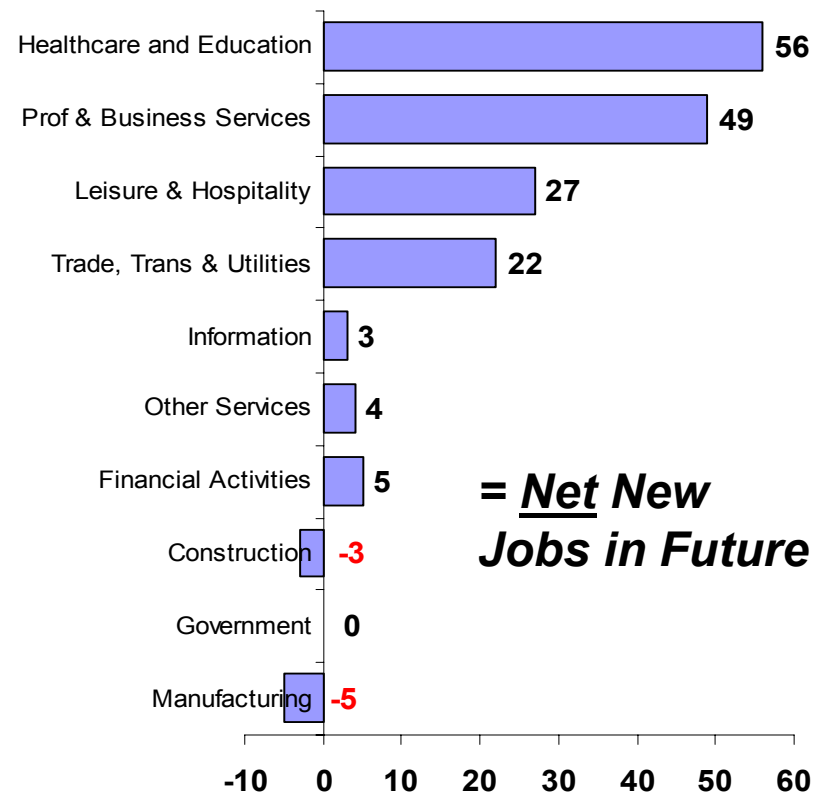
**Job Vacancies by Industry Sector
2004Q4 ('000)**

Source: Mass. Job Vacancy Survey 2004Q4



**Projected Job Growth 2004-2009
('000 jobs)**

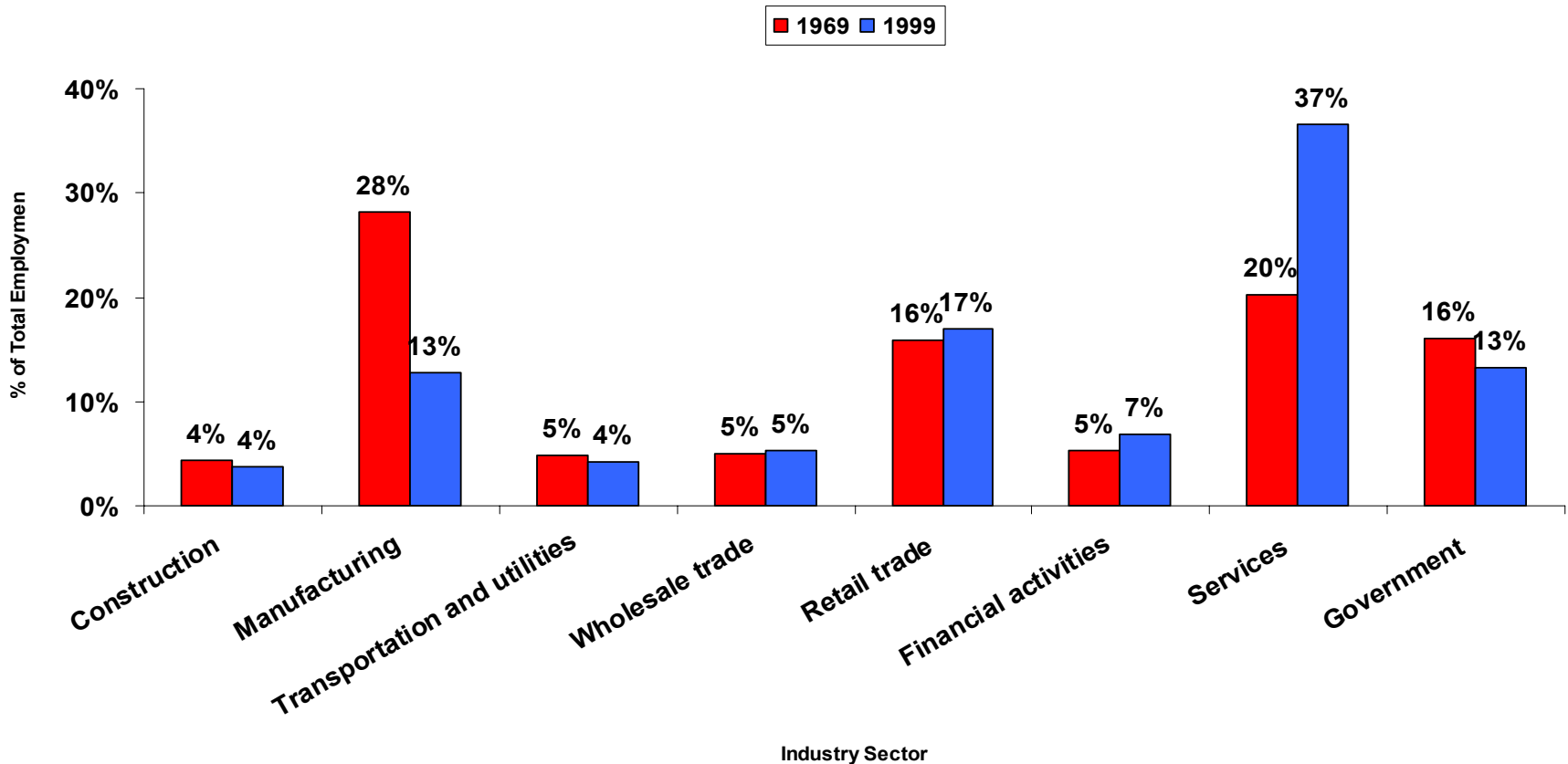
Source: CommCorp analysis of data from New England Economic Project



Changes in Where People Work

Decline in manufacturing; growth of services

Massachusetts Non-farm Employment 1969-1999

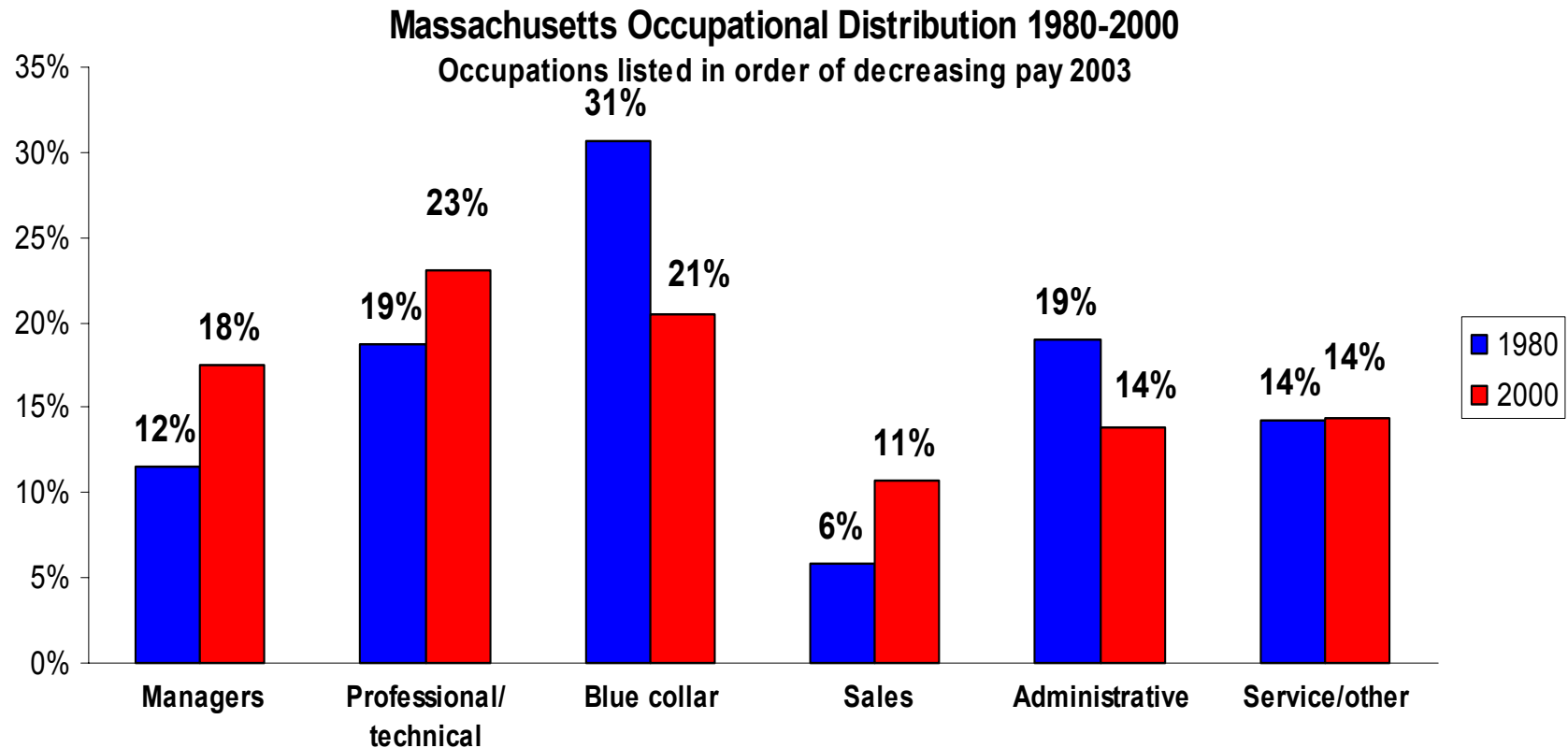


Note: Based on chart from Richard Murnane and Frank Levy in "The New Division of Labor." We have used Massachusetts industry data.

Source: Bureau of Economic Analysis Regional Economic Accounts, Income and Employment Tables by SIC, 1969-2001, <http://www.bea.gov/bea/regional/spi/default.cfm>

Changes in What People Do

Increase in managers, professional/technical and sales jobs; decline of blue collar and admin. jobs



Note: Reproduction of chart from Richard Murnane and Frank Levy, from "The New Division of Labor," using Massachusetts data from Geographic Profiles of Employment and Unemployment, Bureau of Labor Statistics and Occupational Employment Statistics

Where are the critical job shortages?

Massachusetts Job Vacancy Survey (JVS)

Provides data on vacancies every 6 months

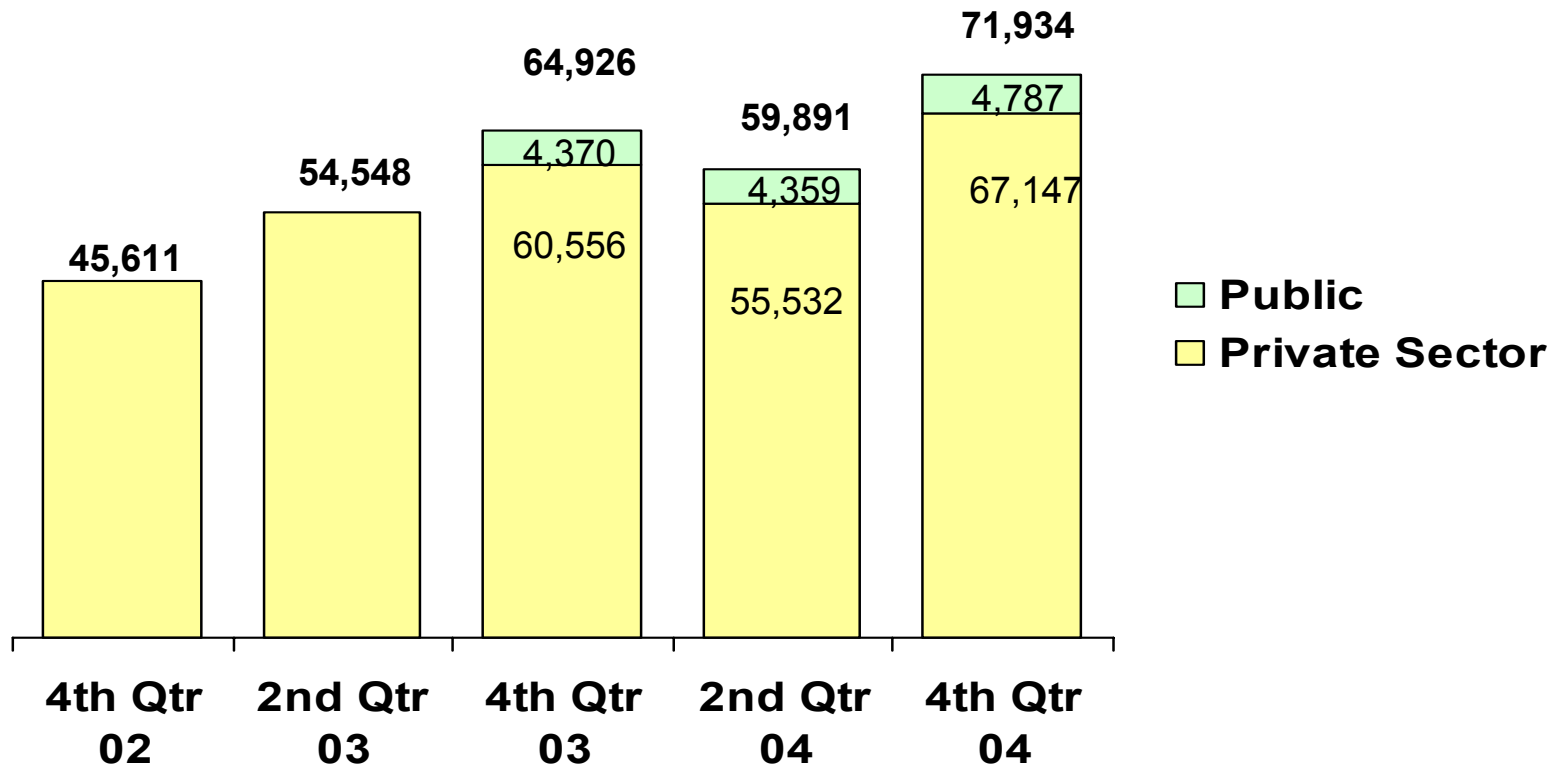
- Numbers
- Education/training requirements
- Pay and benefits
- Hiring expectations

Benefits:

- Helps policy makers identify demand-supply gaps
- Helps businesses develop recruiting strategies
- Helps job seekers identify the industries and occupations with jobs available

Job Openings Since 2002

- 67,147 private sector job openings in 4Q 2004 up 21% from 2Q 2004 and 11 % from 4Q 2003



**Not seasonally adjusted*

Highlights: JVS 4Q 2004

- 71,934 positions –vacancy rate of 2.5%
- Healthcare -15,695 openings, 3.6% rate
- Retail 13,968 vacancies --but 62 % seasonal
- Professional, Scientific and Technical Svcs.
5,724 vacancies
 - 40% are for computer scientists, engineers, life/physical scientists, and technicians
- Fastest growth for Life/Physical/Social Scientists (54%); Management; Business and Financial occupations

Which Industries and Occupations have vacancies?

(2004 Q4)

Top Industries:

Healthcare	15,695
Retail	13,968
Accommodation & Food Services	5,928
Professional/Tech. Services	5,724
Manufacturing	4,850
Education	3,713

Top Occupational Groups

Sales	12,335
Office and Administrative	11,763
Healthcare Practitioner & Technical	7,618
Food Preparation & Serving	4,753
Transportation	4,361
Management Occupations	3,838

Industries Sectors, Occupations,...

2 digit
"Industry Sector"

North American Industry Classification System or
"NAIKES"

3 digit
"Industry"

NAICS	Industry Sector Industry	Employment Monthly Average
62	Health Care and Social Assistance	451,464
621	Ambulatory Health Care Services	127,122
622	Hospitals	170,619
623	Nursing and Residential Care Facilities	91,348
624	Social Assistance	62,375

Major Occupational Group
"2 digit"

Standard Occupational Code
or "SOCK"

SOC	Major Occupational Group Occupation	Employment Estimate
29-0000	Healthcare practitioners and technical occupations	
29-1051	Pharmacists	
29-1069	Physicians and surgeons, all other	
29-1111	Registered nurses	
29-2061	Licensed practical and licensed vocational nurses	

Occupation
"6 digit"

...Vacancies for Major Occupational Groups...

Healthcare Practitioners....(Major Occupational Group) vacancies for ALL industries..data also available for regions

		SOC ->		27	29
Industries		Total, All Occupations		Arts, Design, Entertainment, Sports, and Media Occ	Healthcare Practitioner and Technical Occupations
NAICS	Total, All Industries->	71,934		688	7,618
61	Educational Services	3,713		85	220
62	Healthcare	15,695		59	6,959
71	Arts & Entertainment	1,009		4	4

All Occupations....vacancies for Healthcare sector

Healthcare Practitioners.. ..vacancies for Healthcare sector

.....vacancies for each occupation!!

Healthcare Practitioners & Technical		Mass
29-1111	Registered nurses	2004
29-2061	Licensed practical and licensed vocational nurses	Q 4
		3797
		974

Occupation “6 digit” ...in Job Vacancy survey data available only for occupations with largest number of vacancies

Vacancy data only available for ‘Total, all industries’ and for entire state

Critical Occupational Vacancies

“Critical” defined as:

- Last two surveys counts > 200, or Vacancy Rate > 5%, or average vacancies > 300
- Median Salary > \$22,000/year
- Grouped by 2-digit Std. Occupational Code

Low-skilled, low-paid, “high turnover” jobs drop out

What types of job vacancies are critical?

Office & Administration	7,278
Health Care Practitioner, Technical	6,323
Transportation, Material Moving	3,045
Management	2,443
Business & Finance Operations	2,000
Computer & Mathematical	1,963
Community and Social Services	1,795
Healthcare Support	1,741
Construction	1,716
Sales (Representatives, Telemarketers)	1,319
Installation & Maintenance Repair	1,282
Life, Physical and Social Scientists	1,109
Protective Services	919
Education, Training	866
Engineering (Industrial, Electrical, other)	749
Building Grounds, Maintenance, Cleaning	377
Production (Assemblers, Machinists etc)	340

Industry 1: Healthcare and Social Assistance

Employment and Pay in 2004:

- Doctors offices and hospitals employ the most, and pay the highest

NAICS	Industry	# Establishments	Average Monthly Employment	Average Annual Pay	Average Employment per Establishment
62	Health Care and Social Assistance	16,353	451,464	\$41,638	28
621	Ambulatory Health Care Services	10,644	127,122	\$49,571	12
622	Hospitals	227	170,619	\$48,896	752
623	Nursing and Residential Care Facilities	1,963	91,348	\$28,403	47
624	Social Assistance	3,519	62,375	\$24,998	18

Source: Massachusetts ES 202 Data, 2004

Note: Ambulatory Health Care establishments provide health care services directly or indirectly to ambulatory patients and do not usually provide inpatient services

Industry 1: Healthcare and Social Assistance – Major Occupations

52% employment and 58% of vacancies (total=13,787) in healthcare occupations

SOC	Top 5 Occupational Categories/ Occupations	% of US Employment in Industry (2003)	% of MASS Employment in Industry (2003)	MA Vacancies 2004 Q4	
				Number	% of total in industry
29-0000	Healthcare practitioners and technical occupations	33%	36%	6,959	44%
29-1111	Registered nurses	13%	17%	n/a	n/a
29-2061	Licensed practical and licensed vocational nurses	4%	3%	n/a	n/a
31-0000	Healthcare support occupations	19%	16%	2,153	14%
31-1012	Nursing aides, orderlies, and attendants	8%	9%	n/a	n/a
31-1011	Home health aides	4%	<	n/a	n/a
43-0000	Office and administrative support occupations	17%	16%	1,342	9%
43-6013	Medical Secretaries	*	4%	n/a	n/a
11-0000	Management Occupations	@	5%	557	4%
25-0000	Education, training, and library occupations	@	4%	389	2%
25-2011	Pre-school Teachers	*	3%	n/a	n/a
39-0000	Personal care and service occupations	6%	4%	679	4%
39-9021	Personal and home care aides	3%	<	n/a	n/a
21-0000	Community and social services occupations	5%	6%	2,103	13%
	Industry Total	100%	100%	15,695	100%

Source: US/Mass OES Data Nov 2003 and Mass. Job Vacancy Survey 2004 Q4

Notes: * less than 3%; @ less than 5%; < less than 3%

Industry 4: Professional & Technical Services

Employment and pay 2004:

- Computer, Arch/Eng, R&D, Legal and Mgmt/Tech Services each employ 14-19%
- All pay very well

NAICS	Industry	# Establishments	Average Monthly Employment	Average Annual Pay	Average Employment per Establishment
54	Professional and Technical Services	28,234	227,554	\$79,804	8
5411	Legal Services	5,299	31,081	\$74,096	6
5412	Accounting and Bookkeeping Services	2,551	19,285	\$59,725	8
5413	Architectural and Engineering Services	3,288	38,495	\$71,950	12
5414	Specialized Design Services	926	3,172	\$56,153	3
5415	Computer Systems Design and Rel Servic	5,851	42,940	\$96,317	7
5416	Management & Technical Consulting Svc	6,515	31,432	\$91,591	5
5417	Scientific Research and Development Svc	1,240	39,551	\$88,722	32
5418	Advertising and Related Services	1,246	11,333	\$71,766	9
5419	Other Professional & Technical Services	1,318	10,265	\$40,910	8

Industry 4: Professional & Technical Services–Occupations

- Importance of Computer/Math, Engineering, Financial occupations

SOC	Top 5 Occupational Categories/ Occupations	% of US Employment in Industry (2003)	% of MASS Employment in Industry (2003)	MA Vacancies 2004 Q4	
				Number	% of total in industry
43-0000	Office and administrative support occupations	27%	22%	1,009	18%
43-6012	Legal secretaries	4%	4%	n/a	n/a
43-9061	Office clerks, general	3%	<	n/a	n/a
43-6014	Secretaries, except legal, medical, and executive	3%	<	n/a	n/a
43-3031	Bookkeeping, accounting, and auditing clerks	3%	<	n/a	n/a
43-6011	Executive secretaries and administrative assistants	3%	<	n/a	n/a
15-0000	Computer and mathematical occupations	13%	19%	828	14%
15-1031	Computer software engineers, applications	3%	<	n/a	n/a
15-1051	Computer Systems Analysts	*	5%	n/a	n/a
15-1032	Computer Software Engineers, Systems Software	*	3%	n/a	n/a
17-0000	Architecture and engineering occupations	12%	5%	550	10%
13-0000	Business and financial operations occupations	11%	12%	1,032	18%
13-2011	Accountants and auditors	4%	4%	n/a	n/a
13-1111	Management analysts	3%	4%	n/a	n/a
23-0000	Legal occupations	8%	11%	104	2%
23-1011	Lawyers	5%	8%	n/a	n/a
11-0000	Management occupations	8%	12%	806	14%
19-0000	Life, physical, and social science occupations	4%	5%	777	14%
Total	Professional/Technical Services Total	100%	100%	5,724	100%

Source: US OES Data Nov 2003 and Mass. Job Vacancy Survey 2004 Q4

Notes: '*' less than 3%; '<' less than 3%

Industry 5: Manufacturing

NAICS	Industry	# Establishments	Average Monthly Employment	Average Annual Pay	Average Employment per Establishment
31-33	Manufacturing	8,897	313,291	\$60,876	35
311	Food Manufacturing	800	22,471	\$36,720	28
312	Beverage & Tobacco Product Manufacturing	61	2,715	\$47,287	45
313	Textile Mills	186	8,810	\$40,727	47
314	Textile Product Mills	183	2,814	\$31,581	15
315	Apparel Manufacturing	146	4,172	\$28,370	29
316	Leather and Allied Product Manufacturing	57	2,087	\$45,826	37
321	Wood Product Manufacturing	249	3,423	\$38,556	14
322	Paper Manufacturing	208	14,125	\$49,128	68
323	Printing and Related Support Activities	1,007	16,373	\$44,855	16
324	Petroleum & Coal Products Manufacturing	47	1,239	\$70,495	26
325	Chemical Manufacturing	351	16,392	\$81,645	47
3254	Pharmaceutical & Medicine Manufacturing	86	6,977	\$100,946	81
326	Plastics & Rubber Products Manufacturing	357	16,760	\$45,504	47
3261	Plastics Product Manufacturing	317	15,002	\$45,791	47
327	Nonmetallic Mineral Product Mfg	276	6,584	\$50,597	24
331	Primary Metal Manufacturing	140	5,678	\$47,923	41
332	Fabricated Metal Product Manufacturing	1,668	36,326	\$53,990	22
333	Machinery Manufacturing	700	21,910	\$62,785	31
334	Computer and Electronic Product Mfg	916	73,989	\$86,124	81
335	Electrical Equipment and Appliances	221	11,263	\$58,983	51
336	Transportation Equipment Manufacturing	154	14,188	\$75,869	92
337	Furniture and Related Product Mfg	445	5,703	\$42,429	13
339	Miscellaneous Manufacturing	725	26,271	\$53,705	36

Industry 5: Manufacturing – Occupations

- 43% employment, 28% vacancies (4,850) in production occupations
- Higher share of vacancies for transportation workers, engineers and managers

SOC	Top 5 Occupational Categories/ Occupations	% of US Employment in Industry (2003)	% of MASS Employment in Industry (2003)	MA Vacancies 2004 Q4	
				Number	% of total in industry
51-0000	Production occupations	52%	43%	1,338	28%
51-2092	Team assemblers	7%	5%	n/a	n/a
51-1011	First-line supervisors/managers of production and oper	4%	3%	n/a	n/a
51-9061	Inspectors, testers, sorters, samplers, and weighers	2%	2%	n/a	n/a
51-9198	Helpers--production workers	2%	<	n/a	n/a
51-4041	Machinists	2%	<	n/a	n/a
51-2022	Electrical and Electronic Equipment Assemblers	*	3%	n/a	n/a
43-0000	Office and administrative support occupations	10%	12%	497	10%
53-0000	Transportation and material moving occupations	10%	6%	630	13%
53-7062	Laborers and freight, stock, and material movers, hand	2%	<	n/a	n/a
17-0000	Architecture and engineering occupations	6%	10%	639	13%
11-0000	Management occupations	5%	9%	523	11%
11-1021	General and Operations Managers	*	2%	n/a	n/a
	Manufacturing Total	100%	100%	4,850	100%

Source: US OES Data Nov 2003 and Mass. Job Vacancy Survey 2004 Q4

Notes: * less than 2%; < less than 2%

Detailed Spreadsheet on Vacancies

Example 1: Critical occupations in “transportation and material moving occupations”

Laborers and freight, stock, and material movers, hand	1,073
Truck drivers, heavy and tractor trailer	776
Truck drivers, light and delivery services	491
Bus drivers, school	227
Ambulance drivers and attendants, except EMTs	152
Cleaners of vehicles and equipment	116
Bus drivers, transit and inter-city	78
<i>Sub-total Transportation and Material Moving Occupations</i>	3,045

Example 2: Critical occupations in “computer and mathematical occupations”

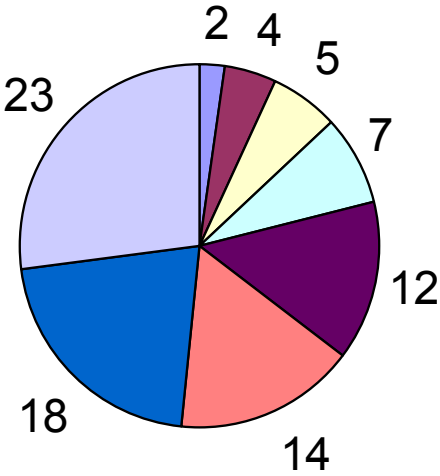
Computer software engineers, applications	1,065
Computer systems analysts	403
Computer software engineers, systems software	298
Network and computer systems administrators	197
<i>Sub-total for computer and mathematical occupations</i>	1,963

Example 3: Critical occupations in “construction occupations”

Plumbers, pipe-fitters, and steamfitters	385
Carpenters	337
Construction laborers	252
Electricians	251
Roofers	202
Painters, construction and maintenance	170
Helpers—carpenters	119
<i>Sub-total construction occupations</i>	1,716

Cluster of Education and Training Requirements for Critical Job Vacancies

Required Education/Training by Count of Critical Job Vacancy Categories



- Doctorate Degree
- Master's or Professional Degree (legal etc)
- Work experience in related job
- Long-term on the job training (trades - electrician, plumber, carpenter, HVAC, police, machinist etc.)
- Post-secondary Vocation or Associate's degree
- Moderate on the job training (office assistants, customer service reps, heavy tractor-trailor truck driver, painter, human service assistant, assembler etc)
- Short-term on the job training (telemarketers, nursing aide, office assistants, material movers, light transportation driver,
- Bachelor & Bachelor + Experience

Take Away Points

1. No “worker” gap today, but we do have a skills gap or mismatch.
2. A worker gap is possible in the future, but to be “certain” a more comprehensive analysis of the impact of demographic changes would be useful.
3. Maintaining our human capital advantage is critical to filling current vacancies in MA.
4. Majority of “critical” job vacancies require on-the-job training and some post-secondary education.
 - *Indicates career growth opportunity from lower levels with proper short to moderate ed/training. Typical focus of public funding.*
5. Strategic “critical” job vacancies on top 20 list requiring intense science/engineer focus – categories on slide 19 of *Computer & Mathematical, Life, Physical and Social Scientists and Engineering*.
 - *Long-term focus and solutions! K-12, college grad retention etc.*

What can be done?

Government

- Employer collaboration for skill development of new and incumbent workers
- Focus workforce funding for training on career ladder opportunities
- Ensure K-12 and post-secondary understand the “need” around strategic vacancies (e.g. STEM curricula)
- Others?

Employer

- Increase labor force participation through various steps, including flexible work arrangements
- Deferred or phased retirement of incumbent workers
- Extend educational and training opportunities for low-skilled workers—provide growth opportunities
- Others?

Questions for Discussion

How can this information be useful to your region?

- *Workshops? Technical Assistance for WIBs/OSCCs for Strategic planning or resource allocation?*

What do the data say to you and your region's experience?

How can the WFD system play a role related to both:

- Low to mid skilled job vacancies
- Strategic, highly skilled job vacancies (STEM)