

## Gauging the labor force effects of retiring baby-boomers

*As aging baby-boomers begin retiring, the effects on the overall economy and on certain occupations and industries will be substantial, creating a need for younger workers to fill the vacated jobs, many of which require relatively high levels of skill*

Arlene Dohm

As the oldest baby-boomers begin retiring in the next several years, the implications for the workforce could be enormous. The current tight labor market situation could be exacerbated, hindering prospects for economic growth and putting a greater burden on those remaining in the workforce, perhaps forcing them to work longer hours. Especially in occupations with functions less conducive to technology-driven productivity innovations—many of the jobs in health services and educational services, for example—service may suffer and needs could go unmet unless older workers can be retained or other sources of workers can be found. Even in occupations where technological innovations have produced relatively large productivity gains—many of the more complex machining jobs in manufacturing, for example—the learning curves often are steep, meaning that new workers need to enter these occupations soon, so they can become proficient in the necessary skills by the time the baby-boomers begin leaving the labor force. This article looks at the occupations and industries likely to be most affected when the oldest baby-boomers begin retiring.

### The aging labor force

The baby boom began in 1946 and continued through 1964. During those 19 years, 76 million people were born. The sheer magnitude of the

number of births during this period has had a major impact on many aspects of our economy over the last 50 years. It also has largely determined the size and age composition of the labor force for the past 30 years. In 1978, when baby-boomers were aged 15 to 32, they made up approximately 45 percent of the labor force. Now, in large part reflecting the aging of the baby-boomers, the percentage of workers aged 45 and older will increase from 33 percent of the labor force in 1998 to 40 percent in 2008, adding nearly 17 million workers to this age group. Over the same period, those aged 25 to 44 will decline as a percentage of the labor force—from 51 percent to 44 percent, resulting in 3 million fewer workers in this age bracket. Consequently, the median age of the labor force will rise from 38.7 in 1998 to 40.7 in 2008.<sup>1</sup>

As the age of the labor force increases, a greater number of people will leave the labor force due to death, disability, or retirement. Of the 25 million people projected by the Bureau of Labor Statistics to leave the labor force between 1998 and 2008, 22 million will be aged 45 years or older and thus will be leaving mostly to retire. The total number of people who left the labor force the previous decade was 19 million. Over the 1998–2008 period, the oldest baby-boomers will be aged 52 to 62. After 2008, as more and more baby-boomers reach retirement age, the impact of their retirements will continue to grow.

Three methods are often cited for determining the average age of retirement. The first method uses

Arlene Dohm is an economist in the Office of Employment Projections, Bureau of Labor Statistics.

a simple model to estimate the average annual number of net exits or withdrawals occurring over a given period within a particular age cohort. Using this “cohort method,” Murray Gendell concluded that, from 1990 to 1995, the average age of retirement in the United States was 62.2 years for men and 62.7 years for women.<sup>2</sup> The second method relies on determining the average age for first withdrawal of a Social Security pension check. The Social Security Administration states that in 1998 the average age for first withdrawal of a pension check was 63.8 years for men and 64.0 years for women. However, about 50 percent of men and 53 percent of women made their initial claims at age 62.<sup>3</sup> Finally, a third method of estimating the average age of exit from the labor force involves examining labor force participation rates among older workers by single years of age. With this method, the average age of exit is defined as the age at which half the population is in the labor force and half is not in the labor force. In 1999, the average age at exit from the labor force was between 61 and 62 years. (At age 61, about 47 percent of the population was not in the labor force; at age 62, about 55 percent of the population was not in the labor force.)<sup>4</sup>

The “retirement” age, as calculated using these methods, has remained fairly stable over the last 20 years, although there are signs that it may be starting to increase. BLS projects that labor force participation rates for those aged 55 years and older will increase by 5.5 percentage points from 1998 to 2008.<sup>5</sup> For a number of reasons, including changes to Social Security, this trend should continue. By congressional mandate, beginning in 2000, the normal retirement age for collecting a *full* Social Security pension will increase by gradual increments from its current level of 65 years and 2 months to 67 years in 2022. At the same time, the amount of reduced pension benefits one can collect at age 62 also will be lowered. In addition, Congress recently eliminated the earnings limit on the amount that Social Security recipients between the ages of 65 and 69 can earn before having to forfeit part of their Social Security benefits. Together, these rule changes should keep people in the workforce longer.

Another reason the retirement age is likely to rise in the future is the trend toward companies offering *defined contribution* pension plans instead of *defined benefit* plans. A BLS survey of medium to large employers showed that, among full-time employees, participation in defined benefit pension plans declined from 59 percent in 1991 to 50 percent in 1997.<sup>6</sup> Defined benefit plans provide the maximum benefits when taken at the earliest possible age of eligibility. In contrast, under defined contribution plans (such as 401(k)s), the amount of benefits accrued depends on the amount contributed to the plan by employers and employees, as well as on the rate of growth of the investments in the retirement fund.

A study by the American Association of Retired Persons (AARP) provides further evidence of prolonged labor force participation, finding that 8 in 10 baby-boomers plan to work

during their “retirement years,” although not necessarily at the same job and not necessarily full time.<sup>7</sup> Declining age discrimination and increasing labor force participation among women also should contribute to raising the retirement age in the future. To the extent that these changes occur and the retirement age rises, the BLS estimates may overstate the number of retirements occurring over the 1998–2008 period.

Evidence from the BLS Current Population Survey (CPS) reveals a number of interesting details about the gender composition of older workers.<sup>8</sup> For example, men’s labor force participation rates peak at 94 percent, while those of women peak at only 79 percent. At age 55, when many government and some union workers are eligible to receive pensions, participation rates were 83 percent for men in 1999, and 66 percent for women. At age 62, 53 percent of men were still in the labor force, compared with only 38 percent of women. Finally, at age 65, only 29 percent of the population was still in the workforce—36 percent of men and 22 percent of women. These statistics suggest that women leave the workforce after age 55 more rapidly than men. As a result, occupations employing large numbers of women can expect to have, on average, higher retirement rates at earlier ages than predominately male occupations.

## The data

This study examines CPS data on occupation and age from 1998 and 1999; it also uses BLS projections data to estimate the number of retirements expected to occur over the 1998–2008 period. Of the approximately 500 occupations included in the CPS, only those that had a greater-than-average proportion of workers aged 45 and older were included in the study. Because in the average occupation, slightly less than 34 percent of its employees are aged 45 years and older, only occupations with 34 percent or more workers aged 45 years and older were considered. This age group was selected because persons aged 45 in 1998 will be 55 in 2008, and thus will be eligible for retirement under a number of plans.

Only occupations with more than 50,000 total employees are described, because the data for occupations with fewer employees were deemed less reliable. This last criterion eliminated approximately 30 occupations with older-than-average workforces. Some of the more common occupations deleted from the analysis because of their size include tailors, firefighting occupations, funeral directors, actuaries, telephone line installers, geologists, purchasing managers, optometrists, veterinarians, podiatrists, stevedores, urban planners, petroleum engineers, boilermakers, aircraft mechanics, a variety of repairers, and some metalworking machine operators. A number of other occupations that would not have met the size requirement on their own, but that were homogeneous enough to be considered as a group, were combined into five aggregated occupations: rail transportation

occupations; water transportation occupations; teachers, college and university; fishers, hunters, and trappers; and supervisors, construction occupations. The aggregate group rail transport occupations, for example, comprises locomotive operating occupations and railroad conductors and yardmasters. In addition, college and university teachers, normally listed by 30 different specialty occupations, here are included under the combined group teachers, college and university. An additional 20 occupations were excluded because replacement data are not available for them. Finally, a number of nonspecific or miscellaneous occupations were excluded. After these restrictions, 102 occupations were researched for this study.

Table 1 lists the occupations having the largest percentage of workers aged 45 years and older, along with the median age for each occupation. There are a number of reasons that these occupations have older workforces. Many of them are made up of supervisory or managerial employees, who normally are older than frontline employees. Within executive, administrative, and managerial occupations, for example, 41 percent of employees are 45 or older. Another reason is that, due to obsolescence, productivity improvements within the occupation, or difficulty in hiring and recruiting, many of the occupations listed in the table are declining in employment—which means fewer younger workers coming into the occupations, leaving a workforce that is older than average. Many of the clerical and manufacturing jobs on the list fall

into this category. As workers retire from these declining occupations, many will not be replaced. Such occupations include farmers, millwrights, dressmakers, rail transportation occupations, and tool and die makers.

Professional occupations also have a disproportionate number of older workers, particularly those requiring postgraduate degrees. The opportunity costs for these high-wage earners leaving the labor force is greater than for most other occupations. Also, many of them are self-employed and thus are better able to control their schedules as they get older. In a study that looked at the labor force withdrawal patterns of a group of older workers, Joseph Quinn and his coauthors found a strong positive correlation between self-employment and delayed retirement, and a slightly positive correlation between education and delayed employment.<sup>9</sup> Self-employed workers often retire later because they lack pension plans. More educated workers also have a tendency to stay in their careers longer, due to greater job satisfaction and the costs of lost income in leaving the job, as well as other factors. At the same time, however, these workers often have better pension and health benefits than other workers, enabling them to retire younger. Occupations falling into this category include dentists and psychologists.

Some of the occupations listed in table 1—such as real estate sales occupations, bus drivers, and taxi drivers—have a large number of part-time workers. Older workers often take part-time jobs to supplement their retirement earnings or as a

**Table 1. Occupations in 1998 with the highest percentage of workers aged 45 years and older**

Occupation	Total employed (in thousands)	Percent of employed 45 years and older	Median age
Total, all employees .....	131,995	33.7	39
Farmers, except horticultural .....	946	68.5	53
Construction inspectors .....	71	60.6	49
Real estate sales occupations .....	753	59.8	49
Administrators and officials, public administration .....	632	58.7	47
Clergy .....	327	56.9	48
Millwrights .....	83	56.6	46
Librarians .....	209	56.5	47
Administrators, education and related fields .....	754	56.1	47
Bus drivers .....	474	54.2	47
Dressmakers .....	68	52.9	46
Dentists .....	156	51.3	45
Stationary engineers .....	130	50.8	45
Teachers, secondary school .....	1,228	50.3	45
Counselors, educational and vocational .....	231	50.2	45
Managers, properties and real estate .....	521	49.9	45
Psychologists .....	233	49.4	45
Crane and tower operators .....	67	49.3	45
Management analysts .....	443	49.0	45
Telephone installers and repairers .....	232	48.7	45
Authors .....	130	48.5	45
Private household cleaners and servants .....	555	48.3	44
Inspectors and compliance officers, ex. construc. ....	238	47.5	44
Tool and die makers .....	135	46.7	44
Taxi cab drivers and chauffeurs .....	275	46.5	44

**Table 2.** Occupations with the greatest replacement needs for those retiring, 1998–2008

[In thousands]

Occupation	Retiree replacement needs
Total, all employees .....	22,205
Secretaries .....	519
Truck drivers, heavy .....	425
Teachers, elementary school .....	418
Janitors and cleaners .....	408
Teachers, secondary school .....	378
Registered nurses .....	331
Bookkeepers, accounting and auditing clerks .....	330
Teachers, college and university .....	195
Administrators, education and related fields .....	178
Farmers, except horticultural .....	175
Supervisors, construction occupations .....	165
Administrators and officials, public administration .....	143
Real estate sales occupations .....	144
Insurance sales occupations .....	135
Industrial machinery repairers .....	125
Maids and housekeeping cleaners .....	122
Private household cleaners and servants .....	112
Physicians .....	108
Financial managers .....	102
Lawyers .....	99

way of staying productive in their older years without the stress of a full-time job. Other occupations listed in the table have a large percentage of older workers due to a lack of hiring in the recent past, resulting from downsizing or a temporary oversupply—in some cases, even when the occupation is projected to grow in the coming period. Teachers are an example of an occupation for which the demand tapered off in the 1980s (due to a declining birth rate during the 1970s), leaving a workforce that is older than average.

Some occupations have more older workers because they are highly unionized and thus favor seniority and generally have lower turnover rates due to higher wages and better benefits than nonunion jobs. Airline pilots and rail transportation occupations are examples of occupations with large proportions of unionized workers. Some occupations are simply less attractive to younger workers—even though jobs are available and demand for workers may be high. An example of an occupation experiencing difficulty attracting young qualified workers is that of tool and die makers.

### Affected occupations and industries

How many job openings will retirements generate, and in which occupations and industries? BLS calculates net separations for each occupation in developing data on replacement needs. The number of net separations approximates the number of people permanently leaving an occupation and is measured by examining the net flow of individuals entering and exiting the occupation. For occupations that are growing or maintaining their employment level, replacement needs are equal to the number

of workers leaving an occupation. For occupations that are declining, replacement needs are equal to the number of workers leaving the occupation less those that will not be replaced.<sup>10</sup> This study examines replacement needs or job openings generated by those who are projected to permanently leave an occupation over the 1998–2008 period.

The investigation focuses only on those aged 45 years and older and assumes that the vast majority of these workers will leave the occupation to retire. Although persons aged 45 and older occasionally change jobs or leave and reenter the workforce at a later time, for this article, it is assumed that the number is quite small. In the future, with the increasing portability of pension plans, movement into and out of occupations may become more common among older workers. At this time, however, with defined benefit pension plans still prevalent, movement between jobs generally is not voluntary and workers retire at the earliest possible time.

Table 2 lists the top 20 occupations that will have the greatest replacement needs due to persons aged 45 and older leaving the occupation from 1998 to 2008. Because the majority will be leaving the labor force to retire, they are referred to here as retirees. The occupations listed in the table are large occupations with workforces that are older than average. Among these occupations, five are in the education field, including three teaching occupations, as well as janitors and cleaners (most of whom work in schools), and education administrators. The reason for this is that many public education workers, like most workers in government, can retire

**Table 3.** Occupations with the greatest percentage of workers aged 45 and older permanently leaving the occupation, 1998–2008

Occupation	Percentage of workers permanently leaving occupation
Total, all employees .....	53.8
Fishers, hunters, and trappers .....	80.5
Water transportation occupations .....	76.7
Operations and systems researchers and analysts .....	74.2
Supervisors, police and detective .....	70.9
Telephone installers and repairers .....	69.6
Insurance underwriters .....	68.6
Supervisors, mechanics and repairers .....	68.3
Laundering and dry cleaning machine operators .....	67.7
Teachers, secondary school .....	66.8
Supervisors, construction workers .....	65.9
Mail carriers, postal service .....	65.8
Rail transportation occupations .....	65.2
Welfare service aides .....	65.1
Winding and twisting machine operators .....	64.9
Dental laboratory and medical appliance technicians .....	64.7
Public relations specialists .....	63.7
Telephone operators .....	62.4
Industrial machine repairers .....	60.4
Rail transportation occupations .....	60.6
Licensed practical nurses .....	59.1

earlier than those in the private sector. According to BLS, two-thirds of all State and local employees in 1994 were covered by pension plans that allow a person to retire at age 55 or earlier, as long as they have met a years-of-service requirement (usually 30 years).<sup>11</sup> This standard also applies to Federal employees. It is also the case that most government employees are covered under defined benefit pension plans that provide the maximum economic benefits to those who retire at the earliest possible age of pension eligibility. People under these plans tend to retire earlier than those under other plans or with no pension coverage.<sup>12</sup> For these reasons, government occupations will be among the first to experience the effects of the surge in retirements by baby-boomers.

In contrast, table 3 lists the occupations that will have the most replacement needs due to persons aged 45 and older leaving the occupation as a percentage of the occupation's workforce that was 45 and older in 1998. What makes these occupations unique is not the percentage of persons 45 and older leaving them; rather, these occupations already have a workforce that is older than average. It is this combination of older-than-average workforces and greater-than-average percentage of people aged 45 and older leaving that makes these occupations stand out, because even in occupations with workforces younger than average, those aged 45 and older typically leave in large numbers. On average, 54 percent of workers aged 45 and older will leave the workforce in the next 10 years. Interestingly, secondary school teachers is the only occupation to appear in tables 1 and 2, having both a large num-

ber of people leaving the labor force and a very large percentage of those aged 45 and older leaving the profession.

Table 4 shows the top 20 occupations most affected by baby-boomer retirement. It is assumed that the effect will be stronger in the later years when the baby-boomers are older. By looking at the replacement-needs data over a 15-year period, using 5-year cohort data, if an occupation is projected to have much greater replacement needs in the 2003–08 period than in the 1993–98 period, it was assumed to be attributable mostly to the baby-boomers retiring. Under this assumption, most job openings or replacement needs occurring during the 1993–98 period were attributable mostly to non-baby-boomers. By 2008, however, the oldest baby-boomers will be age 62—at or near the average retirement age for the population—and thus the 2003–08 period will include baby-boomers aged 45 to 62. On average, for all employees, replacement needs during the 2003–08 period are projected to be about 25 percent greater than during the 1993–98 period, confirming the significant impact of baby-boomer retirements. The occupations listed in the table employ a large number of baby-boomers, and early retirements are prevalent. Airline pilots fall into this category, as well as most public administration and teaching occupations.

Table 5 lists all the occupations in this study ranked by percentage of workers aged 45 years and older, along with total replacement needs for the occupation and an estimate of the percentage of workers aged 45 and older that will leave by 2008. It also shows the industries that employ approxi-

**Table 4.** Occupations most affected by baby-boomer retirements, 1993–2008

[Numbers in thousands]

Occupation	Retiree replacement needs, 1993–98 <sup>1</sup>	Retiree replacement needs, 1998–2003 <sup>1</sup>	Retiree replacement needs, 2003–08 <sup>1</sup>	Percent change, 1993–98 to 2003–08 <sup>2</sup>
Total, all employees .....	9,419	10,411	11,794	25.2
Airline pilots and navigators .....	5	9	14	172.7
Management analysts .....	6	11	16	152.0
Teachers, special education .....	8	11	19	135.4
Photographers .....	3	4	5	94.8
Teachers aides .....	27	38	52	91.8
Industrial engineers .....	11	15	21	87.6
Eligibility clerks, social welfare .....	5	6	9	85.0
Personnel and labor relations managers .....	7	9	13	83.6
Postal clerks, except mail carriers .....	16	20	30	81.0
Supervisors, police and detectives .....	9	14	17	80.2
Plumbers, pipefitters, and steamfitters .....	21	28	36	73.6
Financial managers .....	34	44	58	73.1
Psychologists .....	15	17	26	73.0
Social workers .....	32	40	54	72.0
Lawyers .....	33	42	57	71.6
Administrators, education and related fields .....	59	78	101	70.6
Teachers, elementary school .....	141	181	237	68.8
Registered nurses .....	116	143	188	62.6
Administrators and officials, public admin. ....	50	62	81	60.3
Chemists .....	7	7	11	57.6

<sup>1</sup> Numbers based on 5-year average, not equivalent to total employed.

<sup>2</sup> Calculated percentage uses unrounded numbers.

**Table 5. Occupations with a greater-than-average number of workers aged 45 years and older, 1998–2008**

[Numbers in thousands]

Occupation	Total employed, 1998	Percent employed, 45 and older, 1998	Retiree replacement needs, 1998–2008	Percent workers 45 and older leaving occupation, 1998–2008	Industries employing more than 20 percent of occupation
Total, all employees .....	131,995	34	22,205	53.8	
Farmers, except horticultural .....	946	69	175	24.3	Agriculture
Construction inspectors .....	71	61	17	45.9	Construction; public administration
Real estate sales occupations .....	753	60	144	33.8	Real estate
Administrators and officials, public administration .....	632	59	143	41.7	Public administration
Clergy .....	327	57	69	36.6	Religious organizations
Millwrights .....	83	57	22	53.3	Manufacturing
Librarians .....	209	57	50	46.4	Libraries; education
Administrators, education and related fields .....	754	56	178	47.1	Education
Bus drivers .....	474	54	89	34.9	Bus service and urban transit; education
Dressmakers .....	68	53	14	28.4	Dressmaking shops; retail trade
Dentists .....	156	51	29	40.3	Offices of dentists
Stationary engineers .....	130	51	27	47.7	Manufacturing; real estate
Teachers, secondary school .....	1,228	50	378	66.8	Education
Counselors, educational and vocational .....	231	50	56	48.4	Education
Managers, properties and real estate .....	521	50	70	26.3	Real estate
Psychologists .....	233	49	43	36.9	Health services, not elsewhere classified (n.e.c.); offices of health practitioners, n.e.c.
Crane and tower operators .....	67	49	16	54.2	Metal industries mfg.; construction; blast furnaces
Management analysts .....	443	49	28	15.7	Management and public relations
Telephone installers and repairers .....	232	49	60	69.6	Telephone communications
Authors .....	130	49	17	29.5	Miscellaneous professional services
Private household workers .....	555	48	112	45.8	Private households
Inspectors and compliance officers, excluding construction .....	238	48	42	39.4	Public administration
Rail transportation occupations .....	105	47	33	60.6	Railroads
Tool and die makers .....	135	47	24	42.4	Manufacturing
Taxi cab drivers and chauffeurs .....	275	47	39	38.9	Taxicab service; bus and urban transit
Upholsterers .....	71	47	12	53.1	Furniture and fixtures manufacturing; miscellaneous repair services.; retail trade
Welfare service aides .....	92	46	24	65.1	Social services, n.e.c.
Insurance sales occupations .....	595	46	135	52.1	Insurance
Physicians .....	743	46	108	37.2	Offices of physicians; hospitals
Supervisors, cleaning and building service workers .....	165	46	40	52.3	Services to dwellings and other buildings; hotels and motels
Teachers, college and university .....	922	45	195	50.1	Education
Supervisors, police and detectives .....	118	45	31	70.9	Public administration
Managers, farms, except horticultural .....	170	45	22	32.6	Agriculture
Lawyers .....	955	44	99	27.7	Legal services; public administration
Mail carriers, postal service .....	334	44	87	65.8	Postal service
Personnel and labor relations managers .....	163	44	22	40.3	Manufacturing
Postal clerks, except mail carriers .....	320	43	50	39.1	Postal service
Bookkeepers, accounting and auditing clerks .....	1,735	43	330	46.4	Retail trade
Architects .....	158	43	19	34.7	Engineering and architectural services
Secretaries .....	2,925	43	519	41.9	No concentration
Airplane pilots and navigators .....	113	43	24	47.9	Air transportation
Teachers, elementary school .....	1,957	43	418	54.4	Education
Barbers .....	67	42	24	58.5	Barber shops
Supervisors, mechanics and repairers .....	259	42	69	68.3	Manufacturing; retail trade
Janitors and cleaners .....	2,247	42	408	47.8	Building services; education
Winding and twisting machine operators .....	53	42	12	55.2	Textile mill products manufacturing
Sales workers, furniture and home furnishings .....	153	41	27	46.3	Retail trade
Teachers aides .....	635	41	90	38.1	Education
Painters, sculptors, craft-artists, and printmakers .....	242	41	39	42.5	Miscellaneous professional services; manufacturing
Guards and police, except public service .....	759	40	96	34.3	Detective and protective services

**Table 5. Continued—Occupations with a greater-than-average number of workers aged 45 years and older, 1998–2008**

[Numbers in thousands]

Occupation	Total employed, 1998	Percent employed, 45 and older, 1998	Retiree replacement needs, 1998–2008	Percent workers 45 and older leaving occupation, 1998–2008	Industries employing more than 20 percent of occupation
Operating engineers .....	245	40	44	50.7	Construction
Miscellaneous electrical and electronic equipment repair .....	83	40	14	44.0	Motor vehicle and equipment manufacturing
Electrical and electronic equipment assemblers .....	343	40	58	54.7	Elec. mach., equip., and supplies manufacturing
Fishers, hunters, and trappers .....	53	40	10	57.2	Fishing, hunting, and trapping
Eligibility clerks, social welfare .....	94	39	14	34.7	Public admin.; social serv., n.e.c.; offices of physicians
Supervisors, general office .....	398	39	79	48.2	Public administration; banking
Personnel clerks, excluding payroll and timekeeping .....	74	39	13	53.4	Public administration
Production inspectors, checkers, and examiners .....	524	39	96	47.6	Manufacturing
Civil engineers .....	297	39	42	43.5	Construction; public administration
Supervisors, motor vehicle operators .....	88	39	14	55.7	Trucking; wholesale trade
Registered nurses .....	2,039	39	331	47.2	Hospitals
Grader, dozer, and scraper operators .....	76	38	6	19.4	Construction
Pressing machine operators .....	92	38	18	48.3	Laundry and garment serv.; apparel products mfg.
Supervisors, construction workers .....	756	38	165	65.9	Construction
Teachers, special education .....	382	38	29	22.6	Education
Textile sewing machine operators .....	514	38	81	39.2	Apparel and textile products manufacturing
Sheriffs, bailiffs, other law enforcement officers .....	162	38	13	25.7	Public administration
Maids and housekeeping cleaners .....	657	38	122	51.5	Hotels and motels; hospitals; nursing facilities
News vendors .....	101	38	12	30.5	Printing and publishing; retail trade
Brickmasons and stonemasons .....	192	38	29	56.7	Construction
Telephone operators .....	160	38	36	62.4	Telephone communications
Records clerks .....	206	37	23	37.1	Education
Dietitians .....	91	37	18	57.3	Hospitals; nursing facilities
Messengers .....	156	37	17	33.0	Trucking services
Musicians and composers .....	183	37	25	42.4	Entertainment and rec. services; religious organizations
Technical writers .....	73	37	12	59.0	Manufacturing; computer and data processing services
Industrial engineers .....	262	37	36	38.8	Manufacturing
Library clerks .....	174	37	22	39.4	Libraries; education
Operations and systems researchers and analysts .....	212	37	54	74.2	Manufacturing; public administration
Plumbers, pipefitters, and steamfitters .....	516	37	65	38.1	Construction
Industrial machinery repairers .....	563	37	125	60.4	Manufacturing
Water transportation occupations .....	63	37	16	76.7	Water transportation
Interviewers .....	167	37	22	43.9	Hospitals; research and development
Payroll and timekeeping clerks .....	147	36	31	54.2	No concentration
Surveying and mapping technicians .....	72	36	8	34.5	Engineering and architectural services
Truck drivers .....	3,023	36	425	43.1	Trucking; retail trade
Office machine repairers .....	62	36	9	46.3	Wholesale trade; electrical repair shops
Dental laboratory and medical appliance technicians .....	54	35	11	64.7	Health services n.e.c.; offices of dentists
Chemists, excluding biochemists .....	134	35	18	38.7	Chem. and allied prod. mfg. research and development
Financial managers .....	707	35	102	51.6	Banking
Underwriters .....	117	35	19	68.6	Insurance
Aerospace engineers .....	86	35	13	43.0	Guided missiles, space vehicles mfg.; aircraft and parts manufacturing
Machinists .....	532	35	89	53.8	Mach. and computer equip. mfg.; metal industries mfg.
Sales workers, motor vehicles .....	310	35	41	37.5	Retail trade
Photographers .....	155	35	9	20.4	Miscellaneous personal services
Public relations specialists .....	170	35	28	56.8	Management and public relations
Mail clerks, except postal .....	179	35	20	35.5	No concentration
Licensed practical nurses .....	382	35	85	59.1	Hospitals; nursing facilities
Laundering and dry cleaning machine operators .....	200	35	44	67.7	Laundry, cleaning, and garment services
Social workers .....	751	34	95	39.1	Social services n.e.c.; public administration
Production coordinators .....	256	34	37	51.8	Manufacturing
Dispatchers .....	235	34	39	55.4	Public administration; trucking

mately 20 percent or more of the occupation. It can be assumed that these industries will be at least moderately affected by the aging of workers in the occupation. How severe the impact will be largely depends on how critical the occupation is to the industry and whether the industry is trying to add or reduce workers in the field. Due to the large number of individual manufacturing industries, it is rare for one to employ more than 20 percent of an occupation. In most cases, therefore, only the aggregate industry manufacturing was listed. However, when a particular manufacturing industry did dominate a profession, it was listed separately.

Although much of the industry information is intuitive—such as teachers tending to work in the education industry—the table does point out industries that will be affected by retirements in multiple occupations. Although manufacturing leads the list of affected industries—with 12 occupations and another 14 manufacturing industries listed separately—it is difficult to measure the effect because of the size of the manufacturing sector and the number of occupations included within it. Several of the occupations in the manufacturing sector are managerial or highly skilled jobs, normally held by older, more experienced workers. It is the experience and skill that many manufacturing companies will miss most, because of the length of time it takes to train new workers.<sup>13</sup> However, the manufacturing sector includes industries in decline as well as industries that are growing; therefore, the reasons that some of the occupations have a higher concentration of older workers may vary between industries. One detailed manufacturing industry that appears three times in the table is apparel and textile mill products. As an industry widely known to be in decline and projected by BLS to have negative job growth through 2008, the lack of new hiring in this industry has created a workforce whose average age is unusually high.

The public administration industry appears 13 times in table 5, and it includes Federal, State and local government workers employed in the administrative, executive, legislative, judicial, regulatory, and international areas of government. Other industries employing a relatively large number of government workers include educational services, hospitals, and urban transit. Again, it is hard to measure the effect of retirements on this industry, because of the wide variety of jobs and differing growth trends among the three branches of government, with employment projected to decline in Federal government and to grow in State and local government. However, one occupation that makes up a large proportion of government employment will soon lose significant numbers to retirement—officials and administrators, public administration. In this occupational group, 59 percent of its workers are aged 45 and older, with 42 percent projected to leave by 2008. Clearly, upcoming retirements will dramatically affect this important government occupation.

The industry that will be most affected by baby-boomer retirements is educational services. Nearly all the major occupations that make up this industry are included in table 5,

many near the top of the list. People in this industry retire earlier, in general, because of pensions that often provide full coverage for qualified employees after 30 years of service. Also, a slowdown in hiring in the 1980s and early 1990s raised the average age of the teaching professions and left fewer workers to move into vacant slots.

Almost all the transportation industries are on the list, including railroads, bus service, urban transit, taxicab service, air transportation, trucking, and water transportation. The reasons for this include the relatively high age requirements for operating vehicles and other modes of transportation, high wages and low turnover rates in the highly unionized railroad and airline industries, and a large number of part-time workers, especially in bus and taxicab services, occupations often preferred by older workers.

The health services industry (especially hospitals) and the construction industry are two other sectors that have at least eight occupations listed in table 5. In particular, registered nurses (RNs) and licensed practical nurses (LPNs) are expected to leave the hospital industry in large numbers. Currently, 62 percent of RNs and 32 percent of LPNs work in hospitals. A number of other healthcare occupations are on the list, including physicians, dentists, and psychologists. Construction industry occupations listed in the table tend to be senior or skilled positions, where one would expect to find more older workers. On the whole, though, the average age in the construction industry is much lower than average.

The data show that the impact on occupations and industries from the retirements of the oldest baby-boomers will vary, even among those occupations with a greater-than-average number of workers aged 45 years and older. The impact will be felt more prominently in some occupations (particularly those in education and public administration) than in others (such as farming, where replacement needs equal about a quarter of the workforce aged 45 and older). Among the broad occupational groups, the executive, administrative, and managerial occupations will experience the greatest turnover. Those 45 and older make up 41 percent of this group, and 42 percent of these older workers are expected to leave by 2008. That is equal to nearly 3 million job openings in this field due to retirements, resulting in a significant loss of managerial skills and experience.

For a number of occupations, however, the attrition generated by the upcoming retirements may be the preferred mechanism to reduce the size of the occupation in the face of declining demand. Farmers, bookkeepers, sewing machine operators, among others, all face declining prospects due to productivity improvements or declining U.S. production.

## Beyond 2008

The effect of baby-boomer retirements will be more dramatic in the decade following 2008. By 2018, all but the youngest

baby-boomers will be of retirement age. Aggravating the situation is a much smaller pool of workers immediately following the baby-boomers. Nevertheless, there are encouraging signs that the labor force will not collapse in 20 years. Recent changes to Social Security will probably cause some to delay retirement. The increased use of defined contribution pension plans, such as 401(k)s, which do not have an age or length-of-service component, may motivate some to stay in

the workforce longer. A healthier older population and one that sees work as beneficial may also keep people working longer. Finally, the supply of workers may be on the upswing. Immigration, for example, is projected to continue increasing in the coming years, and the birth rate increased over the 1979–94 period, the so-called “baby-boom echo.”<sup>14</sup> These phenomena will help provide more workers for a dwindling labor force. □

## Notes

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<sup>1</sup> Howard N Fullerton, Jr., “Labor force projections to 2008: steady growth and changing composition,” *Monthly Labor Review*, November 1999, pp. 19–32; see table 5, p. 27; for age of labor force, see p. 30.

<sup>2</sup> Murray Gendell, “Trends in retirement age in four countries, 1965–95,” *Monthly Labor Review*, August 1998, pp. 20–30; for methodology, see p. 21 and sources cited; for study results, see pp. 22–25.

<sup>3</sup> *Social Security Bulletin, Annual Statistical Supplement, 1999* (Social Security Administration, 1999), p. 265.

<sup>4</sup> Bureau of Labor Statistics, unpublished tabulations from the Current Population Survey, 1999 annual averages.

<sup>5</sup> Howard N Fullerton, Jr., “Labor force projections to 2008,” table 3, p. 24.

<sup>6</sup> *Employee benefits in medium and large private establishments, 1997*, USDL 99–02 (U.S. Department of Labor), Jan. 7, 1999.

<sup>7</sup> “Baby Boomers Envision Their Retirement: An AARP Segmentation Analysis” (American Association of Retired Persons, February 1999), on the Internet at <http://www.aarp.org> (visited June 2000).

<sup>8</sup> The Current Population Survey (CPS), conducted for BLS by the Bureau of the Census, is a monthly survey of about 50,000 scientifically selected households, chosen to be representative of the civilian noninstitutional population of the United States. Each month, using CPS data, BLS analyzes and publishes statistics on the labor force, employment, and unemployment, classified by a variety of demographic, social, and economic characteristics. For more information on the CPS, see *BLS Handbook of Methods*, Bulletin 2490 (Bureau of Labor Statistics, April 1997), pp. 4–14. All of the data cited in

this paragraph are from unpublished tabulations from the Current Population Survey, 1999 annual averages.

<sup>9</sup> Joseph Quinn, Richard Burkhauser, Kevin Cahill and Robert Weathers, “Microeconomic Analysis of the Retirement Decision: United States,” Economics Department Working Papers No. 203 (Organisation for Economic Co-operation and Development, July 1, 1998), pp. 18–19; also, see OECD’s Economics Department website on the Internet at <http://www.oecd.org/eco/eco>.

<sup>10</sup> BLS uses age-specific employment data from the CPS for two discrete points in time to estimate net separations. The same birth cohort is followed over the course of 5 years as it enters the next older age cohort. The resulting employment change for that cohort determines if there is a net decline in the occupation or net growth for that particular age group. This is repeated for all birth cohorts. The sum of net separations across all age groups determines the number of net separations for the occupation. Permanent exits from the occupation are totaled and reported as net separations and go into the calculation of future replacement needs for each occupation after employment changes are taken into account. For more information on how separation rates and replacement-needs data are calculated, see “Estimating Occupational Replacement Needs,” in *Occupational Projections and Training Data*, Bulletin 2521 (Bureau of Labor Statistics, May 2000), pp. 71–90.

<sup>11</sup> *BLS reports on employee benefits in State and local governments, 1994*, USDL 95–368 (U.S. Department of Labor), Sept. 14, 1995.

<sup>12</sup> Quinn, Burkhauser, Cahill, and Weathers, “Microeconomic Analysis of the Retirement Decision,” p. 19

<sup>13</sup> “Ageing Workers,” *The Economist*, Sept. 4, 1999, p. 65.

<sup>14</sup> Frederick W. Hollman, Tammany J. Mulder, and Jeffrey E. Kallan, “Population Projections of the United States, 1999 to 2100: Methodology and Assumptions,” Working Paper No. 38 (U.S. Bureau of the Census, 1999).