The Hennepin County Aging Initiative

Research highlights: Aging and the workforce

This synopsis of published research about aging and the workforce was produced as part of Hennepin County's Aging Initiative. The Aging Initiative was created to help the county anticipate and understand the potential effects of changing age demographics for Hennepin County as an organization, and as a geographic and economic region, and to position the county to foster healthy aging for residents and clients through effective public policy.

More detailed discussion of the implications of retirement trends for asset development and retirement security can be found in the Aging Initiative report on aging, financial security and public finances.

Top research findings

The following summary highlights key findings from the research about aging and the workforce. A detailed discussion of the following 8 items is included in the complete report attached to this summary.

1. In Hennepin County, the Baby Boom generation has provided a major portion of workers over the past 30 years and successive generations have been smaller. Over the next 20 years, retirement rates will increase and labor force growth will slow
2. Workers have increasingly delayed retirement. There are many reasons for this trend, including the increasing Social Security full retirement age, replacement of defined benefit pension plans with defined contribution plans such as 401(k)s, less-physically demanding jobs and the emergence trends such as phased retirement options and encore careers.
3. During the most recent recession, there was an increase in early retirement. Unexpected late-career unemployment has forced more workers into early application for Social Security benefits, counteracting the long-term trend in the short-term.
4. Age 62 has long been an important retirement age, and has remained important through the most recent recession. At the same time, age 65 has decreased in importance for retirement over the years.
5. The retirement of the Baby Boom generation will slow labor force growth, though a general labor shortage is unlikely in Hennepin County. In the face of a slowing supply of workers, the economy will adjust through increases in technological growth and capital investment, or a decrease in output. The real danger of slower labor force growth is not too few workers, but rather, a sluggish economy.
6. Most studies indicate that individual worker productivity peaks sometime between age 30 and 50, with late-career workers proving both more productive and less cost-effective than the youngest workers. There is, however, some disagreement about whether an older workforce does in fact make a firm less productive. Some studies have found that workplaces with a larger share of older workers are, in fact, more productive than younger workplaces.
7. There is evidence that age discrimination takes place in today's workforce. At the same time, some research suggests that age discrimination legislation has inhibited the hiring of older workers.
8. Workers who lose their job late in their careers have few good options. Re-employment typically leads to lower wages. Early retirement means decreased Social Security benefits. Late-career workers may not have enough working years left to make re-training pay off. Rather than look for work, re-train or retire, some choose to start a business.

Prepared by:

Research, Planning & Development
Sherrie Simpson, *Director*

Principal contributors:

Peter J. Bodurtha, *Pr. Planning Analyst*
Robert Hagen, *Admin. Manager*
Constance Osterbaan, *Research Manager*

April 2012

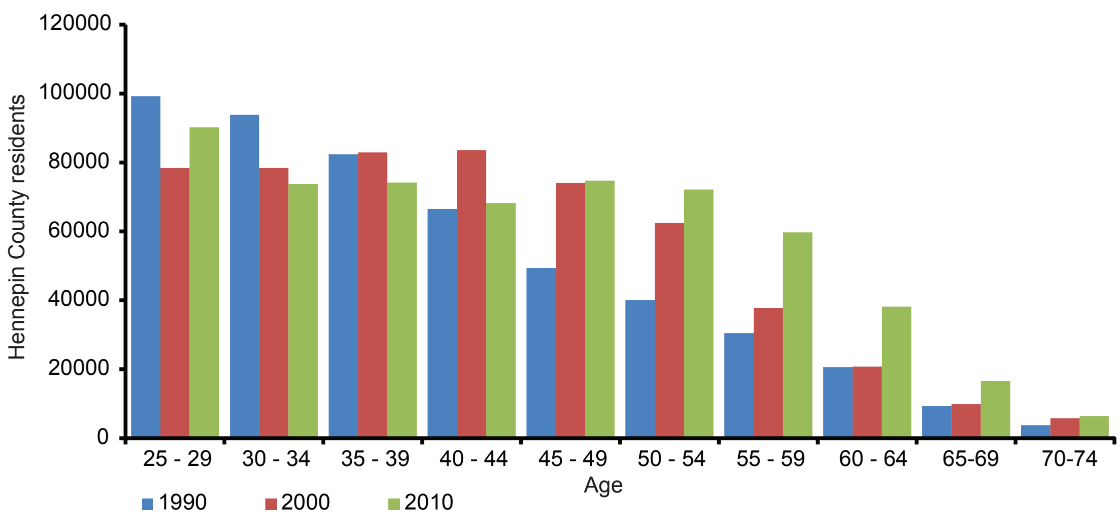
Introduction

The aging of the Baby Boom generation, those born between 1946 and 1964, will have a significant effect on the workforce in Hennepin County and nation-wide. In 2008, the first members of this cohort turned 62, the minimum age to qualify for Social Security benefits. As a growing number of Baby Boomers face retirement, employers will have to come up with innovative ways to adapt to the realities of an older workforce in an increasingly dynamic and competitive global economy.

Profile of the aging workforce

The workforce in Hennepin County is aging. In 1990, the youngest Baby Boomers had graduated from college and entered the work-force. Their entrance resulted in a huge surge of workers – Boomers made up over 60 percent of all workers in Hennepin County in 1990.[1] This surge in workers has persisted through to the present day. Despite aging and retirement, in 2010 there were still nearly as many 45 to 59 year olds in the labor force as 30 to 44 year olds.[2]

Figure 1. Hennepin County residents in the labor force – 1990, 2000 and 2010 by age



Source: 1990, 2000 Census, 2010 American Community Survey

Retirement

Retirement trends have important implications for the development of the workforce over the next 20 years. Understanding retirement is important because it shapes the workforce participation of late career workers, organizational succession patterns, aggregate demand, labor force growth and, by extension, the way the economy works.

Age 62 is the most common retirement age and has been for at least 20 years. [3, 4] This pattern has held for the leading edge of the Baby Boom Generation through 2010, despite an overall trend toward working later. Longitudinal panel data from the Health and Retire-ment Survey (HRS) shows that male leading edge Baby Boomers (b. 1943-1947) were only slightly less likely to retire at age 62 than workers born ten years earlier. At the same time, male leading edge Boomers were far less likely to retire at ages 63 to 65, suggesting that those that work past age 62 are increasingly working past age 65.[5]

Figure 2. Hazard rate of describing oneself as retired, men, 1933-37 and 1943-47 birth cohorts

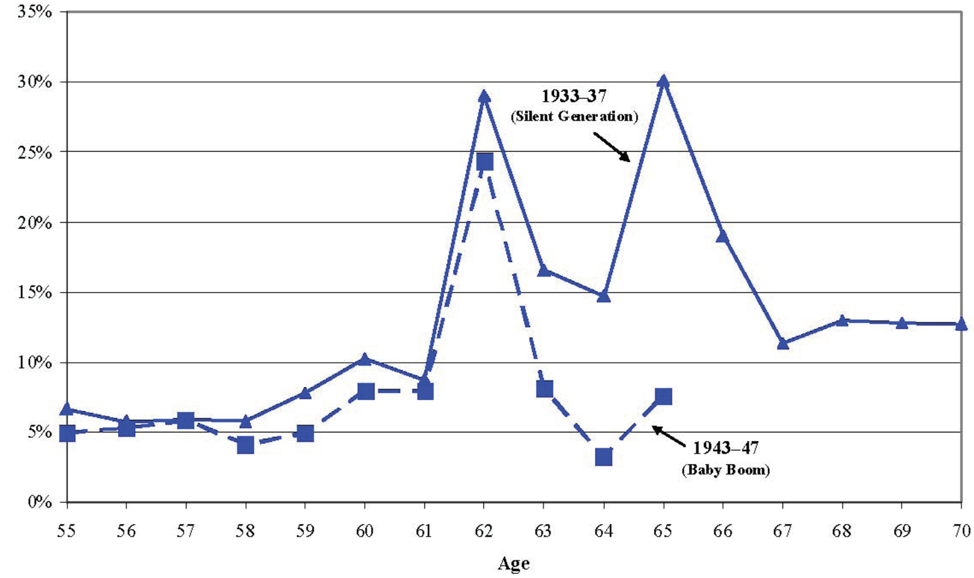


Figure source: Johnson, Butrica and Mommaerts (Oct 2010)
Data source: Health and Retirement Study (HRS)

This trend does not hold as rigidly for leading edge Baby Boomer women. The same study shows that Baby Boomer women were less likely to retire after age 60 than women in the preceding generation. However, while women were less likely than men to retire at age 61 and 62, they were more likely to retire at ages 63 to 65.[6]

Figure 3. Hazard rate of describing oneself as retired, women, 1933-37 and 1943-47 birth cohorts

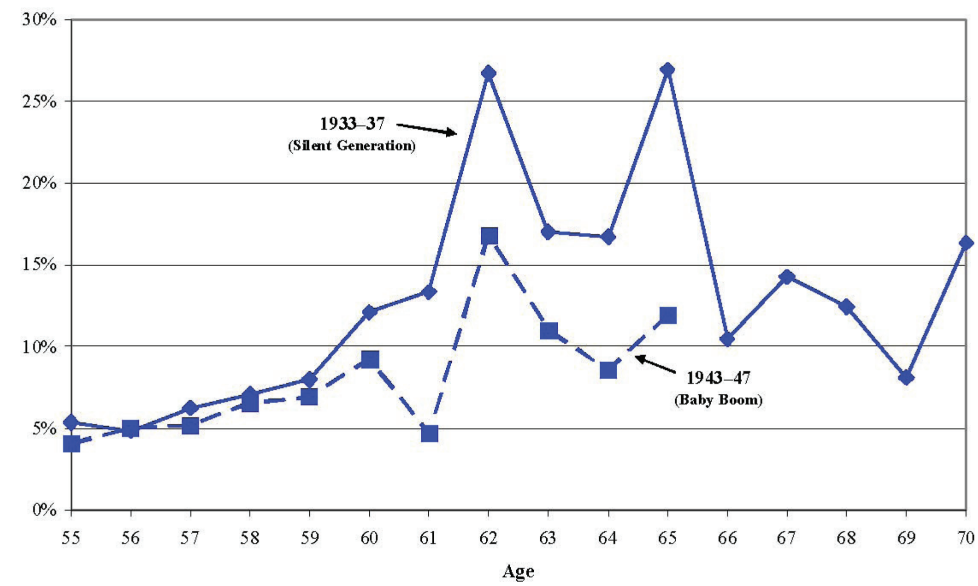


Figure source: Johnson, Butrica, and Mommaerts (Oct 2010).
Data source: Health and Retirement Study (HRS)

Despite the importance of age 62 for retirement, surveys of workers in their pre-retirement years show that most workers anticipate working until they are 66.[7] The dissonance between the actual and expected retirement age may be a consequence of countervailing retirement trends: a long-term trend to retire later and a short-term trend to retire early due to the recession.

Retiring later

The long-term trend is toward working longer. Between 2000 and 2010, the percentage of 65-74 year olds participating in the county workforce grew from 26 percent to 34 percent, a 30 percent increase.[8] By 2033, it is projected that the number of workers age 65 and older will nearly double in Hennepin County.[9] Nationwide, they are projected to make up nearly 20 percent of the workforce by 2030, compared with just 12.4 percent of the workforce in 2000.[10]

The reasons for this long-term trend are complex. It is important to note that this trend is concentrated among skilled, educated workers in the knowledge economy because these workers are more likely to have the incentive, ability and opportunity to delay retirement. Unlike manufacturing jobs where declining physical ability may limit productivity, the accumulated knowledge and experience of late-career workers in the knowledge economy may make some older workers more productive than their younger counterparts and make firms more likely to retain them.[11] Furthermore, jobs in the knowledge economy are typically less physically demanding, allowing workers to work well past their physical prime. At the same time, this type of employment is increasing among all age cohorts at the expense of jobs demanding physical labor, such as those in manufacturing.[12]

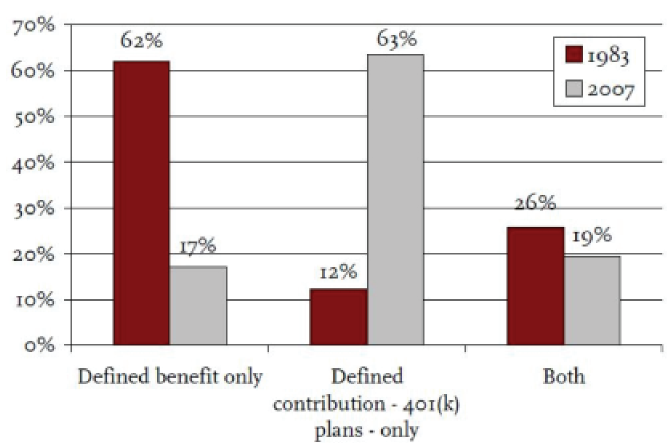
Another reason for delayed retirement is the changing nature of employee retirement benefits. As the Baby Boom generation has aged, their employers have moved away from defined benefit (DB) pension plans in favor of defined contribution (DC) pensions such as 401(k)s. The figure below shows that between 1983 and 2007, DC plans replaced DB plans as the dominant employer-provided retirement plan for most workers.[13] DB plans pay a fixed monthly amount in perpetuity, often penalizing participants who either work too long or leave the company before they can maximize their pension payments. DC plans, on the other hand, require employee control of contribution allocations and are portable from company to company. Employees with DC retirement plans have more incentive to work longer since additional contributions will increase the value of their retirement plan.[14]

DC plans also encourage later retirement through risk transfer from employers to employees. Under a DB plan, the employer is obligated to pay an agreed upon sum regardless of market conditions. If pension value declines, the employer must cover the losses and payments remain unchanged. Under DC plans, if the plan loses value the employee bears the loss. Thus, retirement account losses as a result of the stock market crash of 2008-2009 resulted in decreased likelihood to retire among workers with significant stock exposure.[15]

The implications of DC plans for retirement are important for all workers, though less so for the oldest boomers. In 2006, for instance, DB plans still made up about two-thirds of all pension holdings for older members of the Baby Boom Generation, those born between 1948 and 1953, who were still working.[16, 17]

The gradual increase of Social Security's full retirement age (FRA) to 67 and incentives to work to age 70 further encourage workers to delay retirement. Workers earn extra Social Security benefits for every month they delay retirement past 62. Extra benefits are differentiated by age cohort, with those born 1943-1954 eligible to receive 132 percent of FRA benefits if they delay retirement until age 70. The delayed retirement credit is now eight times higher than it was in the mid-1970s. These credits are actuarially fair, however, meaning that a retiree with an average lifespan will receive the same amount of Social Security payments during retirement whether they retire early or late. As a result, Social Security changes may only help

Figure 4. Percent of workers with pension coverage by type of plan, 1983 and 2007



Source: U.S. Board of Governors of the Federal Reserve System (2007) as cited in Munnell, Webb, and Golub-Sass (2009).

delay retirement for workers who need the extra benefits to afford to retire or who place relatively little value on their leisure time.[18]

Changing trends in employer-provided healthcare may also encourage later retirement. Employer-sponsored retiree health benefits, which generally provide health insurance to retirees before Medicare begins at age 65, are disappearing, making it more expensive for many workers to retire early.[19] Employees without employer-provided healthcare face a gap in health coverage before the worker and, when applicable, their spouse becomes eligible for Medicare at age 65.

Overall, as the number of highly skilled workers increases and an increasingly knowledge-based economy continues to favor the employment of retirement age workers, it is likely that many workers will increasingly delay retirement.[20]

Retiring earlier

Even during the recent recession, older workers suffered relatively low rates of unemployment. [21] However, they also have taken significantly longer to find a new job once unemployed. Studies of previous recessions predict that the unemployment rate of displaced older workers (between 50 and 64 years) two years after a job loss is 25 percentage points higher than that of similar non-displaced workers. Furthermore, recent data shows that workers age 55 and older stay unemployed an average of five weeks longer than younger workers.[22] This longer job search typically results in less income – about 20 percent less than workers who keep their jobs.[23]

For unemployed workers who have turned 62, applying for Social Security benefits is often preferable to a prolonged search for work. Studies estimate that, generally speaking, a one percent increase in the unemployment rate increases the annual retirement rate by 1.8 percentage points, even after accounting for financial incentives to delay retirement. [24] Accordingly, during the recession of 2007-2009, claims for Social Security benefits rose 9 percent, exceeding projections by 5 percent.[25,26] The decision to retire early is highly dependent upon income and education. Studies show that high school graduates are more likely to retire during weak labor market conditions than more highly educated workers.[27]

Assuming that employment rates trend toward full employment over the next five years, it is estimated that 378,000 Americans will have opted for early retirement because of unemployment between 2009 and 2014. [28] The combination of systemic late-career re-employment difficulties and high unemployment rates have increased early retirement rates for members of the Baby Boom generation in the short-term.

Partial and un-retirement

As systemic forces encourage workers to both retire either earlier or later, work during retirement years has changed, becoming increasingly intermittent and part-time. Workers are more likely to "unretired" today than in the past. About 26 percent of men and 29 percent of women born between 1933 and 1937 returned to full-time or nearly full-time employment after fully or partially retiring.[29] This same cohort also worked part-time far more than their forebears. About 45 percent of men born 1933-1937 partially retired after age 50, up from 33 percent of those born 1913-1917.[30]

Recent Federal Legislation makes partial retirement more attractive. The Senior Citizens' Freedom to Work act of 2000 allows retirees receiving Social Security benefits to earn income without a reduction in Social Security benefits if they are above their FRA. Working retirees who have not reached their FRA receive a $1 deduction in benefits for every $2 they earn above the exempt amount -- $14,160 in 2010. Working retirees who have reached their FRA receive a $1 reduction in benefits for every $3 they earn above a higher exemption threshold -- $37,680.[31] Those who work and are older than their FRA bear no reduction in benefits. Multiple studies have confirmed that workers have responded to these policies both by retiring earlier and working more in retirement.[32]

Overall retirement trend

Without any changes to laws permitting early application for Social Security at age 62, it is reasonable to expect that 62 will remain an important retirement age going forward even as workers work later on average. If true, then the first major wave of retiring Boomers already passed in 2008 when the first Boomers turned 62 and will begin to crest around 2017 as the largest cohort of the Baby Boom generation, those born in 1955, turns 62. The last members of the Baby Boom generation will turn 67 in 2031, at which point the vast majority of this generation will have retired from the workforce.[33]

Opportunities and challenges of an aging workforce

The projected labor shortage and economic growth

The aging of the Baby Boom generation is likely to result in the largest retirement wave in the history of the workforce, both in Hennepin County and across the nation. Indeed, as mentioned above, the retirement wave has already arrived and will only accelerate over the next ten years.

As a result, labor force growth is expected to slow. It is important to emphasize that, unlike some other developed nations, the U.S. labor force will continue to grow despite the retirement of the Baby Boom generation – it will just grow at a slower rate. Forecasts from the Minnesota State Demographer predict that by 2020, labor force growth will barely register above zero.[34] Furthermore, remaining labor force growth in Minnesota will come not from births exceeding deaths, but rather from net migration from other states and abroad. Migration, therefore, will be the essential to maintaining labor force growth in Minnesota over the long-term.[35]

Slowing labor force growth has led some to predict a national labor shortage by as early as 2015 as the supply of workers from the Generation X (b. 1965-1980) and Millennial (b. 1981-2000) generations fail to keep up with demand. For example, a 2003 National Association of Manufacturing study forecast a shortage of 5.3 million workers by 2010 and 21 million workers by 2020.[36]
However, many economists doubt a national labor shortage will occur. Some point out that predicted labor shortages in Japan and Germany in the 1990's and early 2000's failed to materialize.[37] Furthermore, predictions of shortages in the U.S. by 2010 have thus far proved inaccurate.[38]

Many labor shortage predictions assume that the long-term gross domestic product (GDP) growth rate will continue unchanged in the future. If so, the economy would have to produce as many workers in the future as it has in past years in order to support GDP growth. Since labor force growth is projected to slow as the Baby Boomers retire, there will not be enough new workers to reach the long-term GDP growth rate, leading to a projected shortage in labor.[39] However, the economy is far more adaptable than these projections imply.

For one, GDP and labor force growth are not always directly tied. For example, between the 4th Quarter of 2007 and 2011, U.S. non-farm payroll employment decreased by 5.9 million workers,[a] yet GDP still increased by $104 billion.[b, 40, 41] Productivity improvements have made such GDP growth possible without corresponding labor force growth. Even if higher productivity does not make up for slower labor force growth, the labor shortage problem could solve itself through economic adjustments such as slower GDP growth. Slower GDP growth is not inevitable, however, as there are many factors that could compensate for slower domestic labor force growth.

Global sourcing of labor may act as a release valve for employers having difficulty finding the labor they need. As communication and information technology have improved, employers have increasingly taken advantage of labor markets outside the United States where the workforce is younger. Therefore, employers may choose to supplement future labor needs with workers in other countries.[42] This is especially important given the business climate in Hennepin County and Minnesota. The local economy hosts an exceptionally large number of multi-national corporations per capita, meaning that the Hennepin County labor market may be well-positioned to fill its labor needs through global labor supplies.

Figura 6. The Minnesota labor force growth is about to slow sharply

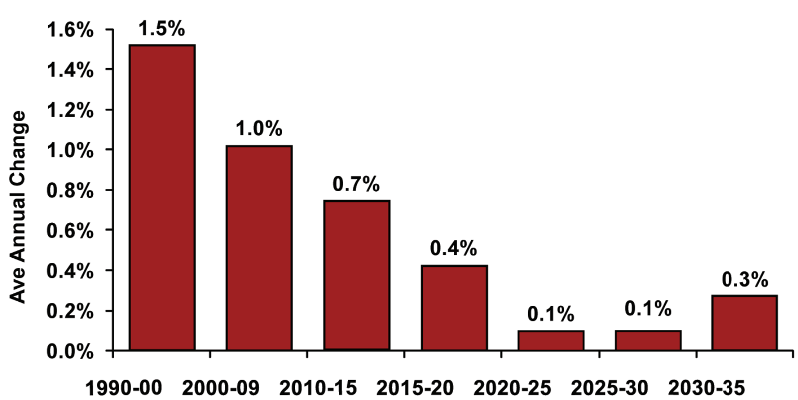


Figure source: Gillaspy (2009)

Technological change could also compensate for slower labor force growth. If slower labor force growth causes tighter labor markets, wages will be forced higher, resulting in higher labor costs for employers. In their search for solutions to higher labor costs, firms may invest more in technology. The resulting increase in technological change could make each worker more productive, thus requiring fewer workers to produce the same amount of output. Under such conditions, GDP growth could remain at or above the long-term rate even with slower labor force growth.

If future labor force growth is to come from migration, Hennepin County may face fewer labor force pressures than other regions. Hennepin County's large population of Millennials could result from advantages in regional migration, notably the location of the University of Minnesota, other higher education institutions and below average unemployment rates. These factors may make Hennepin County an attractive place for young workers in the region to start a career. Furthermore, Minnesota attracts immigrants at a relatively high rate – between 1990 and 2008, Minnesota's foreign-born population increased 201 percent – 14th most in the nation, and highest among neighboring states.[43]

If workforce participation among older workers increases more than projected, a real possibility, older workers could be part of the solution as well. Increased retention of older, experienced workers in the workforce could help maintain higher labor force growth and soften the impact of the retirement of the Baby Boom generation.

Age and productivity

Studies on age and productivity estimate that productivity peaks somewhere between age 30 and 50.[44] Productivity begins then to decline sometime between age 40 and 55 as knowledge and experience cease to fully compensate for the natural aging process.[45] Estimates vary widely about when this decline begins, how steep it is, and whether there is actually a decline at all.[46], [47], [48] In general, workers over age 55 appear to be far more productive than those under age 30, though less productive than workers in their prime working years. However, studies also find that, on average, even less productive younger workers are more cost effective for firms than older workers.[49]

In an economy where workers stay with one employer over their entire career, this type of cost curve may make sense – underpayment in the early years is balanced by overpayment near retirement.[50] In today's economy, however, workers are less likely to stay with their employer for their entire career, making it more likely that late career workers earn wages that match their relative productivity. Because older workers may be less productive than similar mid-career workers, this change puts them at risk for lower wages in the latter stages of their careers and may help to explain long bouts of unemployment and large wage losses among older unemployed workers.

Some of this productivity difference may be related to training. Older cohorts, on average, are less educated than their younger counterparts. Furthermore, because older workers have fewer years left in their career, incentives for both older workers and their employers to spend time in training diminish over time. Survey data from 2001 indicated that 37 percent of 25-34 year olds received an average of 14.5 hours of training per year compared to just 5.3 hours for only 9 percent of those 55 years of age and older.[51] Because productivity depends, in part, on a worker's skill-set, the combination of less education and diminishing rates of training among older workers may affect their productivity.

These findings on aging and productivity, however, are not necessarily a predictor of future labor market difficulties for workers over age 55. Most productivity studies look at blue-collar firms, sometimes at the factory level. This type of firm now makes up a relatively small part of an economy increasingly dominated by white-collar desk jobs where productivity declines due to age may be more difficult to measure. It is possible that observed overpayment of older workers in the literature does not hold uniformly across different sectors of the economy. Also, older workers may be more cost-effective in some sectors than the literature suggests.

Managing an aging workforce

As an increasing number of workers work past traditional

---

[a] Non-seasonally adjusted

[b] Inflation-adjusted to 2005 dollars

retirement ages, new approaches to workforce management will be necessary to meet the changing needs of an older workforce.

Phased retirement allows an impending retiree to work a reduced schedule while collecting all or part of pension benefits. A 2008 study of national employers found that only 25 percent of employers permit all or most of their workers to enroll in a phased retirement plan. PERA's coordinated plan offers a phased retirement option that is scheduled to sunset in 2014, though it has been extended in the past.[52] Phased retirement options have been shown to increase workforce participation among older workers and therefore may be a good tool for helping to extend the working lives of older workers.[53]

Another emerging trend among older workers is the "encore career," a second career at or near retirement. A recent study from Boston College's Sloan Center on Aging and Work estimates that 75 percent of workers age 50 and older expect to work during retirement. Research indicates a deep search for meaning in work is less important than other factors in pursuing an encore career. About half of workers 50 and older who were working in retirement in 2008 wanted to earn money to retire more comfortably, 31 percent wanted to avoid boredom, and most other responses centered around wanting to remain socially or physically active.[54] Whatever the reason, this desire to work during retirement represents a potential opportunity for many employers to take advantage of the skills and accumulated experience of retiring Baby Boomers.

Succession planning may be a major issue for many organizations with an aging workforce, but it is unlikely that the retirement of the Baby Boom generation will cause major chaos in this regard. Most organizations have a hierarchical structure shaped like a pyramid, meaning there are multiple workers within the organization set to replace any retiring managers. One study found that a 6 percentage point increase in retirement eligibility among upper management due to the Baby Boom would speed up succession by just 3 months.[55]

As the Baby Boom generation reaches their end-of-life years in the 2020s and 2030s, an increasing the number of workers may need to care for an older relative at home. Workforce management strategies may have to adapt to this reality. [c]

Age discrimination

Despite federal protections, age discrimination remains a major issue in the workplace. A 2002 study of workers age 47-74 found that about two-thirds of respondents reported having witnessed age discrimination in their workplace.[56] The Civil Service Reform Act of 1978 makes it illegal to discriminate against employees for a number of reasons, including age. Yet legal precedent demands a much higher burden of proof for age discrimination plaintiffs than for race or gender discrimination, making age discrimination cases more difficult to prove.[57]

Research into the effectiveness of age discrimination legislation in promoting the employment of older workers has produced mixed results. Studies appear to support the notion that the Age Discrimination and Employment Act of 1967 (ADEA) has benefitted workers age 60 and older, yet has had no significant benefit for the entire protected cohort – workers 40 and older.[58] Furthermore, two prominent studies found that age discrimination legislation has had a negative effect on hiring older workers, theorizing that employers fear legislation will make it more difficult to sever its relationship with an older worker than a younger worker.[59]

Displacement and retraining

Older workers are the least likely age group to lose their job, especially during recessions. In fact, in both the 2001 and 2007-2009 recessions, older workers increased their workforce participation even as younger workers fell out of the workforce. This trend is a reversal of a historical pattern where recessions would lure older workers out of the workplace and into retirement.[60]

When an older worker does lose their job, they typically pursue one of four options: look for work, re-train, start a business, or retire.

As mentioned earlier, older workers have much more trouble than other workers finding new work once they are unemployed and those that find a job often take such a large wage cut that they never reach their former earnings before retirement.[61, 62] For this reason, many older workers look for alternatives to simple re-employment.

[b] See the "Health" page of the Aging Initiative for more information on elder care.

Figure 7. Change in labor force participation rate, men aged 25-54 and 55+, recent recessions and today

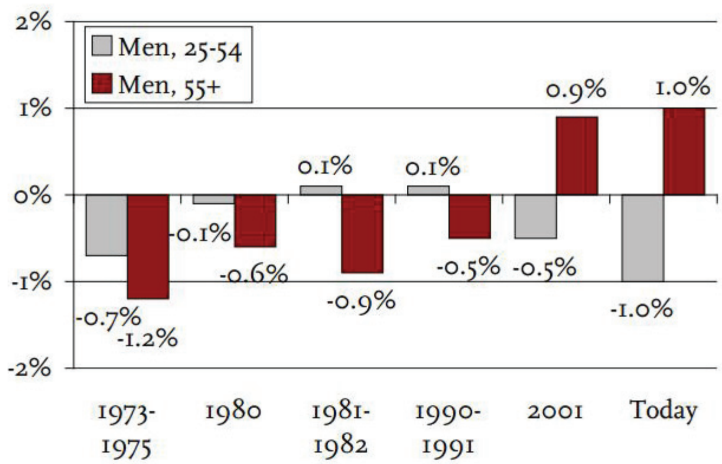


Figure source: Munnell, Muldoon and Sass (2009)

Re-training is one alternative. Further education and training can compensate for lost wages – one year of education is associated with an 12.2 percent increase in annual wages in Hennepin County, meaning that it would take about two years of education to make up for losses due to displacement.[63, 64] Yet for older workers, the value of re-training is diminished by the fact that they have fewer working years left in which to benefit. One study estimates that a 50-year old worker would need double the returns to education that a 30 year old would need to justify further education.[65]
For late career workers, starting a business may be a more attractive alternative than working for others or education. A 2005 study of entrepreneurial trends found that in the United States, 55 to 64 year olds start businesses at a rate 28 percent higher than the average adult – the highest rate of any age cohort.[66]

Displaced older workers who cannot find work and choose not to retrain or start a business have one remaining option – early retirement. Late career workers can access IRA and 401(k) funds at age 59 ½ and often can access pension funds even earlier. Older workers may also apply for social security benefits at age 62, though early enrollment decreases benefits by 7 to 8 percent for each year of benefit receipt before the full retirement age. For this reason, early retirees may face as much as a 25 to 30 percent reduction in their Social Security benefits.[67]

Rising rates of late-career displacement during the recession of 2007-2009 has consequences for public budgets and the U.S. economy. Lost wages and early retirements increase the likelihood of early application for Social Security benefits and negatively affect retirement security. When older workers leave the labor force earlier than expected, their income and expenditures drop, creating less demand for products and less economic activity. As the Baby Boom generation approaches retirement, the vitality of the County as a socioeconomic unit rests on the ability of the private, public, and non-profit sectors to adapt successfully to the emerging challenges and opportunities of an aging workforce.

Conclusion

There is much uncertainty about how the aging workforce will affect Hennepin County. Clearly many of the predictions are dire – slower GDP growth, a changing labor market and accelerated worker turnover. However, it is also clear that the aging workforce presents many opportunities for those who can attract and retain skilled older workers.

References

1 U.S. Census 1990, PUMS data. Author's calculations

2 American Community Survey 2010, PUMS data. Author's calculations.

3 Johnson, R., Butrica, B. and Mommaerts, C. (2010), "Working and Retirement Patterns for the G.I. Generation, Silent Generation, and Early Boomers: Thirty Years of Change", Urban Institute. Washington, D.C.: July 2010. Retrieved from http://www.urban.org/uploadedpdf/412175-work-and-retirement.pdf

4 Burtless, Gary. (November 2004). Social Norms, Rules of Thumb and Retirement: Evidence for Rationality in Retirement Planning. The Brookings Institution. CSED Working Paper No. 37. November 2004. Retrieved from http://www.brookings.edu/ES/dynamics/papers/CSED37.pdf

5 Johnson, R., Butrica, B. and Mommaerts, C. (2010). "Working and Retirement Patterns for the G.I. Generation, Silent Generation, and Early Boomers: Thirty Years of Change", Urban Institute. Washington, D.C.: July 2010. Retrieved from http://www.urban.org/uploadedpdf/412175-work-and-retirement.pdf

6 Johnson, R., Butrica, B. and Mommaerts, C. (2010). "Working and Retirement Patterns for the G.I. Generation, Silent Generation, and Early Boomers: Thirty Years of Change", Urban Institute. Washington, D.C.: July 2010. Retrieved from http://www.urban.org/uploadedpdf/412175-work-and-retirement.pdf

7 Morin, R. (2009). "Most Middle-Aged Adults are Rethinking Retirement Plans." Pew Research Center, May 28, 2009. Retrieved from http://pewresearch.org/pubs/1234/the-threshold-generation

8 U.S. Census 2000, American Community Survey 2005, 2006, 2007, 2008, 2009 and 2010. Author's calculations.

9 Minnesota State Demographic Center (June 2007). Projected Minnesota total population by county, region and metropolitan area. Population projections for 2005-2035. Minnesota Department of Administration. Geographic and Demographic Analysis Division. June 6, 2007. Retrieved from http://www.demography.state.mn.us/resource.html?Id=19171

10 U.S. Employment and Training Administration (2008). Report of the Taskforce on the Aging of the American Workforce. United States Department of Labor February 2008. Retrieved from http://www.doleta.gov/reports/FINAL_Taskforce_Report_2-11-08.pdf

11 Hursh, N., Lui, J., Pransky, G. (2006). Maintaining and enhancing older worker productivity. Journal of Vocational Rehabilitation 25 (2006) 45-55. Retrieved from ESCB host.

12 Adler, G. & Hilber, D. (2009). Industry Hiring Patterns of Older Workers. Research on Aging 2009 31:69. Retrieved from http://roa.sagepub.com/content/31/1/69

13 Munnell, A., Webb, A., Golub-Sass, F. (October 2009). "National Retirement Risk Index: After the Crash". Center for Retirement Research, Boston College. October 2009, number 9-22.

14 Johnson, R., Butrica, B. and Mommaerts, C. (2010). "Working and Retirement Patterns for the G.I. Generation, Silent Generation, and Early Boomers: Thirty Years of Change", Urban Institute. Washington, D.C.: July 2010. Retrieved from http://www.urban.org/uploadedpdf/412175-work-and-retirement.pdf

15 Coile, C. and Levine, P. (2009). The Market Crash and Mass Layoffs: How the Current Economic Crisis May Affect Retirement. National Bureau of Economic Research, Working Paper 15395. Retrieved from http://economics.missouri.edu/seminars/files/2010/102210b.pdf

16 Gustman, A., Steinmeier, T., Tabatabai, N. (2010). What the Stock Market Decline Means for the Financial Security and Retirement Choices of the Near-Retirement Population. Journal of Economic Perspectives, Vol . 24, no. 1, Winter 2010. Retrieved from http://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.24.1.161

17 Munnell, A., Webb, A., Golub-Sass, F. (October 2009). "National Retirement Risk Index: After the Crash". Center for Retirement Research, Boston College. October 2009, number 9-22.

18 Kingson, E. and Brown, M. (2009). Are Age-62/63 Retired Worker Beneficiaries at Risk? Center for Retirement Research at Boston College, Chestnut Hill, MA: 2009.

19 Jaffe, J. (2004), "Americans' Future Retirement Security: Implications of the EBRI-ERF Retirement Security Projection Model", Employee Benefit Research Institute, Issue Brief No. 266, February 2004, p. 5.

20 Jaffe, J. (2004). Americans' Future Retirement Security: Implications of the EBRI-ERF Retirement Security Projection Model, Employee Benefit Research Institute (EBRI), Issue Brief No. 266, February 2004, p. 5.

21 Transform 2010 (2010). Work - Framing the Issue for Minnesota. Minnesota Department of Human Services. Minnesota Board on Aging. July 2010.

22 Transform 2010 (2010). Work - Framing the Issue for Minnesota. Minnesota Department of Human Services. Minnesota Board on Aging. July 2010.

23 Chan, S. and Stevens, A. H. (1999). "Employment and Retirement Following a Late-Career Job Loss." American Economic Review, Vol. 89, No. 2, pp. 211-216, retrieved from Employment and Retirement Following a Late-Career Job Loss.

24 Coile, C. and Levine, P. (2009). The Market Crash and Mass Layoffs: How the Current Economic Crisis May Affect Retirement. National Bureau of Economic Research, Working Paper 15395. Retrieved from http://economics.missouri.edu/seminars/files/2010/102210b.pdf

25 Coile, C. and Levine, P. (2009). The Market Crash and Mass Layoffs: How the Current Economic Crisis May Affect Retirement. National Bureau of Economic Research, Working Paper 15395. Retrieved from http://economics.missouri.edu/seminars/files/2010/102210b.pdf

26 Carrns, A. (October 2010). Taking Stock (and coming up short). U.S. News and World Reports, Oct 2010, Vol. 147 Issue 9, p22-28.

27 Coile, C. and Levine, P. (2009). The Market Crash and Mass Layoffs: How the Current Economic Crisis May Affect Retirement. National Bureau of Economic Research, Working Paper 15395. Retrieved from http://economics.missouri.edu/seminars/files/2010/102210b.pdf

28 Coile, C. and Levine, P. (2009). The Market Crash and Mass Layoffs: How the Current Economic Crisis May Affect Retirement. National Bureau of Economic Research, Working Paper 15395. Retrieved from http://economics.missouri.edu/seminars/files/2010/102210b.pdf

29 Johnson, R., Butrica, B. and Mommaerts, C. (2010). "Working and Retirement Patterns for the G.I. Generation, Silent Generation, and Early Boomers: Thirty Years of Change", Urban Institute. Washington, D.C.: July 2010. Retrieved from http://www.urban.org/uploadedpdf/412175-work-and-retirement.pdf

30 Johnson, R., Butrica, B. and Mommaerts, C. (2010). "Working and Retirement Patterns for the G.I. Generation, Silent Generation, and Early Boomers: Thirty Years of Change", Urban Institute. Washington, D.C.: July 2010. Retrieved from http://www.urban.org/uploadedpdf/412175-work-and-retirement.pdf

31 Johnson, R., Butrica, B. and Mommaerts, C. (2010). "Working and Retirement Patterns for the G.I. Generation, Silent Generation, and Early Boomers: Thirty Years of Change", Urban Institute. Washington, D.C.: July 2010. Retrieved from http://www.urban.org/uploadedpdf/412175-work-and-retirement.pdf

32 Studies cited in Johnson, R., Butrica, B. and Mommaerts, C. (2010). "Working and Retirement Patterns for the G.I. Generation, Silent Generation, and Early Boomers: Thirty Years of Change", Urban Institute. Washington, D.C.: July 2010. Retrieved from http://www.urban.org/uploadedpdf/412175-work-and-retirement.pdf

33 Author's calculations.

34 Gillaspy, Tom (2009). The Long Run Has Become the Short Run: Budget Implications of Demographic Change. Minnesota State Demographic Center. Retrieved from http://www.demography.state.mn.us/documents/LongRun.pdf

35 Gillaspy, T. and Stinson, T. (2006). …But, What About Tomorrow? Minnesota Demographic Center.

36 National Association of Manufacturing, NAM. (2003). Keeping America Competitive. http://citizensleague.org/events/CA%20-%20Framing%20(Jennifer).pdf

http://www.nam.org/s_nam/bin.asp?TrackID=&SID=1&DID=226411&CID=84&VID=2 as cited in Freeman, R. B. (September 2006). Is a great labor shortage coming? Replacement demand in the global economy. NBER Working Paper Series. Retrieved from http://www.nber.org/papers/w12541

37 Freeman, R. B. (September 2006). Is a great labor shortage coming? Replacement demand in the global economy. NBER Working Paper Series. Retrieved from http://www.nber.org/papers/w12541

38 National Association of Manufacturing, NAM. (2003). Keeping America Competitive.

http://www.nam.org/s_nam/bin.asp?TrackID=&SID=1&DID=226411&CID=84&VID=2 as cited in Freeman, R. B. (September 2006). Is a great labor shortage coming? Replacement demand in the global economy. NBER Working Paper Series. Retrieved from http://www.nber.org/papers/w12541

39 Freeman, R. B. (September 2006). Is a great labor shortage coming? Replacement demand in the global economy. NBER Working Paper Series. Retrieved from http://www.nber.org/papers/w12541

40 United States Bureau of Labor Statistics (2012). Employment, Hours, and Earnings from the Current Employment Statistics Survey (National). Retrieved from http://www.bls.gov/ces/

41 United States Bureau of Economic Analysis (2012). Current-dollar and "real" GDP. Retrieved from http://www.bea.gov/national/xls/gdplev.xls

42 Freeman, R. B. (September 2006). Is a great labor shortage coming? Replacement demand in the global economy. NBER Working Paper Series. Retrieved from http://www.nber.org/papers/w12541

43 Kandel, W. A. (January 2011). The US. Foregn-Born Population: Trends and Selected Characteristics. Congressional Research Service. January 18, 2011. Retrieved from http://www.fas.org/sgp/crs/misc/R41592.pdf

44 Malmberg, Bo, Lindh, thomas, and Halvarsson, Max. (2005). Productivity Consequences of Workforce Ageing: Stagnation or a Horndal Effect? Institute for Futures Studies.

45 van Ours, J. and Stoeldraijer, L. (February 2010). Age, Wage, and Productivity. IZA Discussion Paper No. 4765. Retrieved from http://ftp.iza.org/dp4765.pdf

46 van Ours, J. and Stoeldraijer, L. (February 2010). Age, Wage, and Productivity. IZA Discussion Paper No. 4765. Retrieved from http://ftp.iza.org/dp4765.pdf

47 Skirbekk, V. (2003). Age and Individual Productivity: A Literature Survey. MPIDR Working Paper WP 2003-028. August 2003.

48 Malmberg, Bo, Lindh, thomas, and Halvarsson, Max. (2005). Productivity Consequences of Workforce Ageing: Stagnation or a Horndal Effect? Institute for Futures Studies. Retrieved from http://www.framtidsstudier.se/wp-content/uploads/2011/01/200512011351 40filZ2YlJ37v394UPNoN7AU8.pdf

49 van Ours, J. and Stoeldraijer, L. (February 2010). Age, Wage, and Productivity. IZA Discussion Paper No. 4765. Retrieved from http://ftp.iza.org/dp4765.pdf

50 van Ours, J. and Stoeldraijer, L. (February 2010). Age, Wage, and Productivity. IZA Discussion Paper No. 4765. Retrieved from http://ftp.iza.org/dp4765.pdf

51 Mikelson, K. and Nightengale, D. (2004). Estimating Public and Private Expenditures on Occupational Training in the United States. Unpublished paper prepared by the Urban Institute and Johns Hopkins University for the Employment and Training Administration, December 2004.

52 Phased Retirement Option. Public Employees Retirement Associate of MN. Last updated February 1, 2012. Retrieved from http://www.mnpera.org/index.asp?Type=B_BASIC&SEC={6CE0D75A-AB90-46D6-B252-D920E79A2F26}

53 Adler, G. & Hilber, D. (2009). Industry Hiring Patterns of Older Workers. Research on Aging 2009 31:69. Retrieved from http://roa.sagepub.com/content/31/1/69

54 Brown, M., Aumann, K., Pitt-Catsouphes, M., Galinsky, E., Bond, J. (July 2010). Working in Retirement: A 21st Century Phenomenon. Families and Work Institute 2008 National Study of the Changing Workforce. Sloan Center on Aging and Work at Boston College. Retrieved from http://familiesandwork.org/site/research/reports/workinginretirement.pdf

55 Cappelli, P. (2003). Will There Really Be a Labor Shortage? Organizational Dynamics, August 2003. Retrieved from http://aoaconsulting.com/yahoo_site_admin/assets/docs/Will_There_Really_Be_A_Labor_Shortage.190155250.pdf

56 U.S. Employment and Training Administration (2008). Report of the Taskforce on the Aging of the American Workforce. United States Department of Labor February 2008. Retrieved from http://www.doleta.gov/reports/FINAL_Taskforce_Report_2-11-08.pdf

57 Neumark, D. (October 2008). The Age Discrimination in Employment ct and the Challenge of Population Aging. Research on Aging 2009 31:41. retrieved from http://roa.sagepub.com/content/31/1/41

58 Neumark, D. (October 2008). The Age Discrimination in Employment Act and the Challenge of Population Aging. Research on Aging 2009 31:41. retrieved from http://roa.sagepub.com/content/31/1/41

59 Adams, Lahey, as cited in Neumark, D. (October 2008). The Age Discrimination in Employment Act and the Challenge of Population Aging. Research on Aging 2009 31:41. retrieved from http://roa.sagepub.com/content/31/1/41

60 Munnell, A., Muldoon, D. and Sass, S. (January 2009). Recession and Older Workers. Center for Retirement Research at Boston College. January 2009, Number 9-2. Retrieved from http://crr.bc.edu/briefs/recessions_and_older_workers.html

61 Jacobson, L. S., LaLonde, R., and Sullivan, D (2005). Is retraining displaced workers a good investment? The Federal Reserve of Chicago. Economic Perspectives 2nd Quarter, 2005. Retrieved from http://www.chicagofed.org/digital_assets/publications/economic_perspectives/2005/ep_2qtr2005_part5_jacobson_lalonde_sullivan.pdf

62 Hijzen, A., Upward, R. and Wright, P. (2008). The Income Losses of Displaced Workers. Leverhulme Centre for Research on Globalisation and Economic Policy. Nottingham School of Economics, October 10, 2008. Retrieved from http://jhr.uwpress.org/content/45/1/243.full.pdf+html

63 1990 Census, 2010 American Community Survey. Calculations by Robert Hagen, Hennepin County Research, Planning and Development

64 Jacobson, L. S., LaLonde, R., and Sullivan, D (2005). Is retraining displaced workers a good investment? The Federal Reserve of Chicago. Economic Perspectives 2nd Quarter, 2005. Retrieved from http://www.chicagofed.org/digital_assets/publications/economic_perspectives/2005/ep_2qtr2005_part5_jacobson_lalonde_sullivan.pdf

65 Jacobson, L. S., LaLonde, R., and Sullivan, D (2005). Is retraining displaced workers a good investment? The Federal Reserve of Chicago. Economic Perspectives 2nd Quarter, 2005. Retrieved from http://www.chicagofed.org/digital_assets/publications/economic_perspectives/2005/ep_2qtr2005_part5_jacobson_lalonde_sullivan.pdf

66 Fairlie, R.W. (2005). The Kauffman Index of Entrepreneurial Activity, 1996-2004. The Ewing Marion Kauffman Foundation, Kansas City, MO, 2005. As cited in U.S. Department of Labor (February 2008). Report of the Taskforce on the Aging of the American Workforce. Retrieved from http://www.doleta.gov/reports/FINAL_Taskforce_Report_2-11-08.pdf

67 Kingson, E. and Brown, M. (2009). Are Age-62/63 Retired Worker Beneficiaries at Risk? Center for Retirement Research at Boston College, Chestnut Hill, MA: 2009.