
Aging Workforce Analysis

Northwest Pennsylvania
Workforce Investment Area

Clarion, Crawford, Erie, Forest,
Venango, and Warren Counties



Aging Workforce Analysis Northwest Pennsylvania Workforce Investment Area

Acknowledgements:

The *Aging Workforce Analysis: Northwest Pennsylvania Workforce Investment Area* was prepared by the Central Pennsylvania Workforce Development Corporation (CPWDC) for the Northwest Workforce Investment Area (WIA). Local employment dynamics, presented in this report as Quarterly Workforce Indicators (QWIs), were provided by the United States Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) program. Other population estimates were provided by Economic Modeling Specialists, Incorporated (EMSI) and DecisionData. The analysis presented in this report was conducted by the CPWDC on behalf of the Northwest WIA's Regional Center for Workforce Excellence as part of the Industry Cluster Research Initiative.

Disclaimer:

The Central Pennsylvania Workforce Development Corporation (CPWDC) cannot guarantee the accuracy of the Quarterly Workforce Indicators (QWIs) provided by the Census and the population estimates provided by EMSI and DecisionData. This analysis examines the presence and potential impact of an aging population on the local workforce in Northwest Pennsylvania and concludes by discussing the current situation in the local economy and how older workers affect various job-related measures.

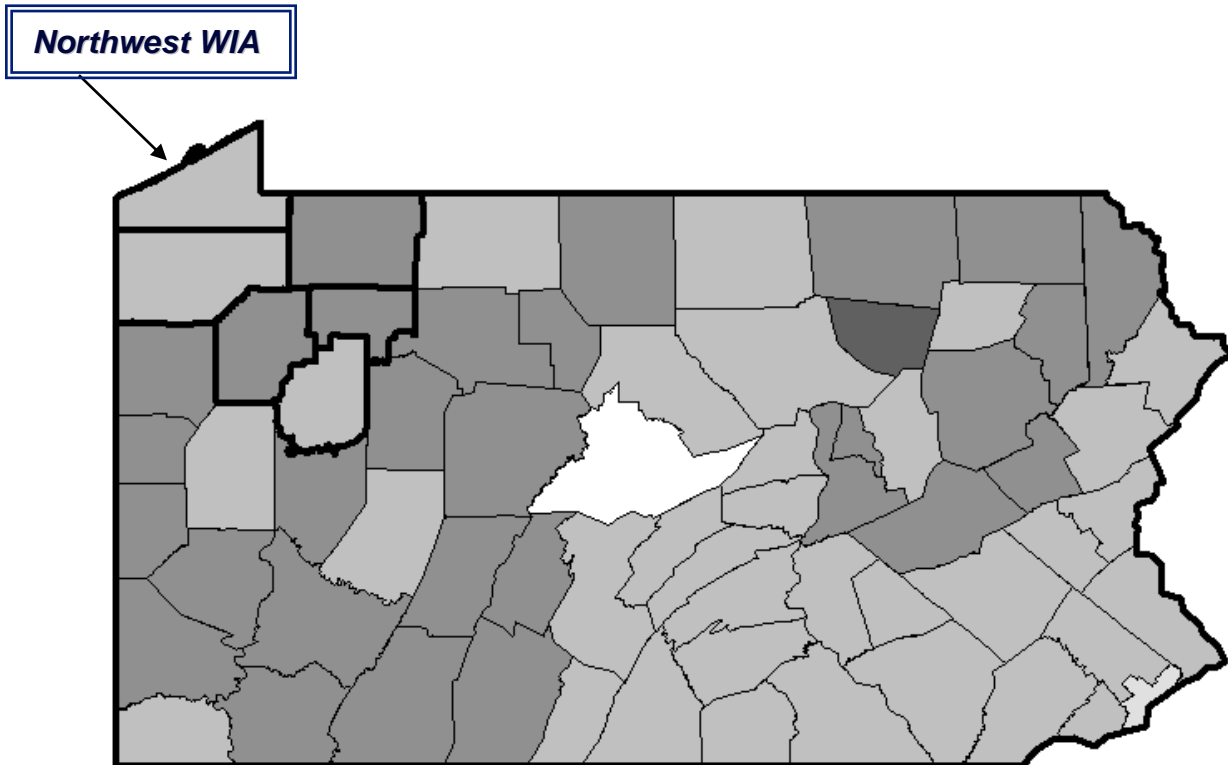
Introduction:

Across the country, firms are planning for the large wave of workers born during the Baby Boom of 1946 to 1964 who will be leaving the workforce within the fast-approaching decades, many of which may have already entered retirement. A baby dearth, which occurred following this time period, is undoubtedly the cause of much concern for both businesses and decision-makers alike. As baby-boomers retire, a sufficient pool of younger individuals may not be available to completely replace this significant loss in the workforce.

While reports on the aging workforce have been conducted statewide, this report focuses specifically on the Northwest Workforce Investment Area (WIA), which is comprised of Clarion, Crawford, Erie, Forest, Venango, and Warren Counties, and how an anticipated labor shortage may affect local industries. Specific employers can utilize information contained in this report to prepare more informed transition plans and to identify potential problem areas or even new opportunities for incumbent workers. Older workers who are considering working after retirement will become aware of what types of jobs are available, how flexible businesses may be about their working arrangements, and the level of earnings that can be anticipated. Younger workers will be able to anticipate which industries may offer job opportunities to replace retiring workers. Government officials can use the information for economic development planning and policy analysis of issues affected by an aging workforce.

As of 2007, the total population median age for the Northwest WIA is 39.44, slightly lower than the statewide median of 39.85. The following map identifies the median age

by county using thematic mapping, where a darker shade of gray indicates a higher median age for that county:



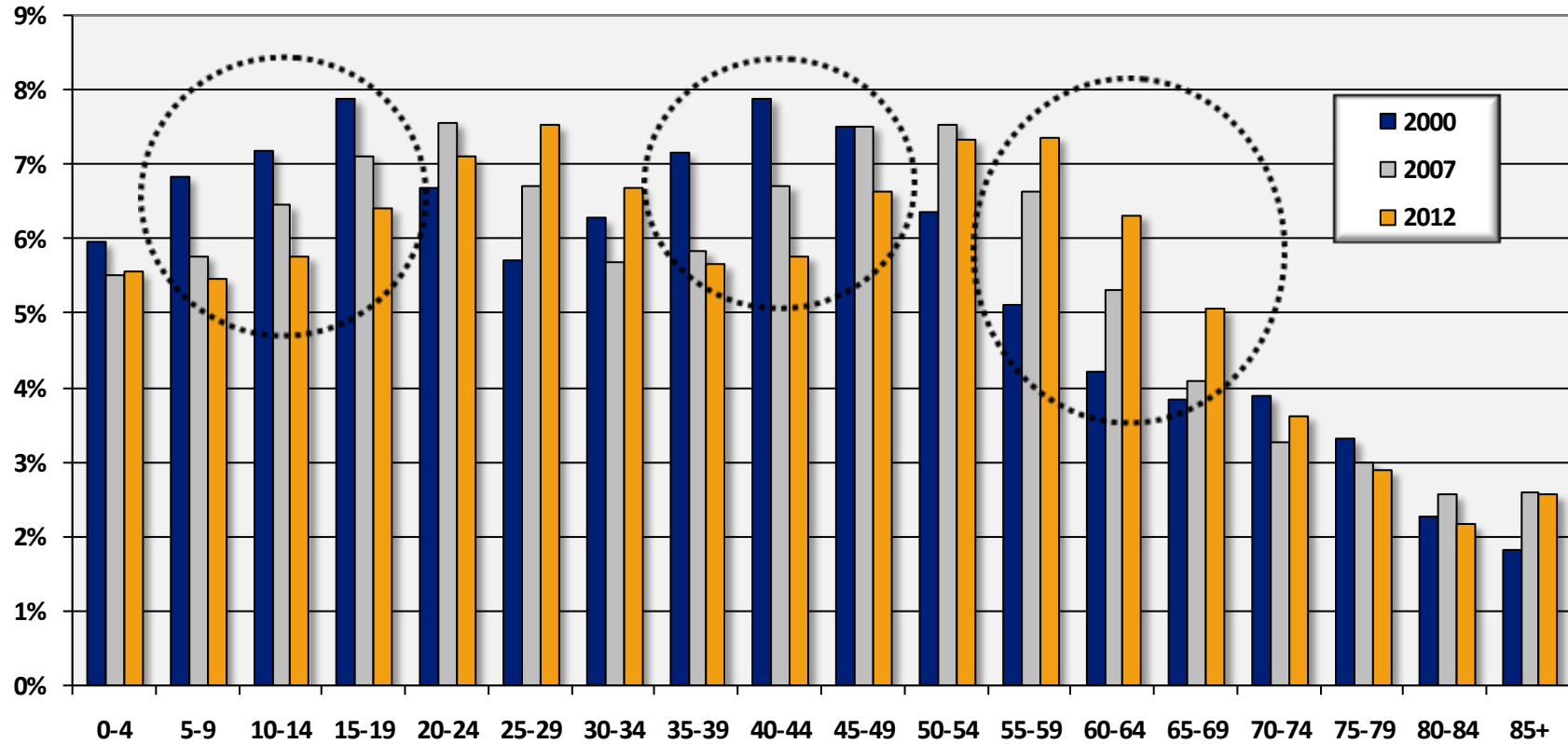
Source: DecisionData, July 2008. Based on 2007 estimates.

Forest (42.10), Venango (42.80), and Warren (43.86) Counties have the highest median ages in the Northwest WIA. These counties may be most affected by the aging workforce.

To demonstrate the pending population gaps that may exist in the Northwest WIA, the following chart compares the percent population within 18 unique age groups in the Northwest WIA for 2000 and 2007 and also projected values for 2012:

See Appendix A for population estimates and projections.

Percent Population by Age Group Northwest WIA



Source: DecisionData, July 2008

It is apparent that the population in the Northwest WIA is aging, as indicated by the circles on the chart. The percent of the total population comprised by younger individuals between the ages of 5 and 19 is projected to be lower than ever by 2012. Conversely, proportions are expected to reach new highs for older age groups, specifically individuals in the age groups falling between 55 and 69, within the same timeframe. Similar trends are seen across the state.

The population for younger age groups in the Northwest WIA is lower than ever, while for older age groups it is higher. These trends are similar statewide. Furthermore, the region is projected to have lower population proportions relative to the region as well as – and maybe more alarmingly – the state for individuals ages 35-39, 40-44, and 45-49, possibly indicating that the impact of an aging workforce may be realized at an earlier time period compared to the state overall. As of 2007, there were over 4,000 more individuals ages 15-39 than ages 40-64 in the Northwest WIA. By 2012, however, this difference is projected to drop to less than 500, which indicates that the population is aging in the Northwest WIA. As the population and thus the workforce ages, companies may struggle to meet hiring demands and may have to compete for younger workers. Better wages, more flexible schedules, and other incentives may have to be offered by businesses to attract new, potentially younger workers. This may lead to an increase in out-migration in the Northwest WIA, because workers may be more willing to travel a greater distance to work for such incentives.

According to other estimates provided by Economic Modeling Specialists, Incorporated, the ratio of the work-eligible population compared to the retirement-aged population (i.e. individuals ages 15-64 compared to people over the age of 65) in the Northwest WIA as of 2007 was approximately 4.3 to 1.0. By 2012, this ratio is projected to decrease to 4.1 to 1.0, and 3.5 to 1.0 by 2018, suggesting that the population over the age of 65 is increasing at a faster rate than the working population in the Northwest WIA.

Further evidence of an aging population is presented through anticipated changes in the population by various age groups in the Northwest WIA. Using the year 2002 as the base period, the population of individuals between the ages of 15 and 44 is expected to decrease by over 11% by 2018. Shockingly, there is a projected decrease of nearly 15% for people between 45 and 54 and an increase of nearly 19% for the retired population (over the age of 65). Most alarming, though, is the 44% projected increase for individuals ages 55-64. If these projections prove remotely accurate, the Northwest WIA will experience a relatively large increase in older age groups.

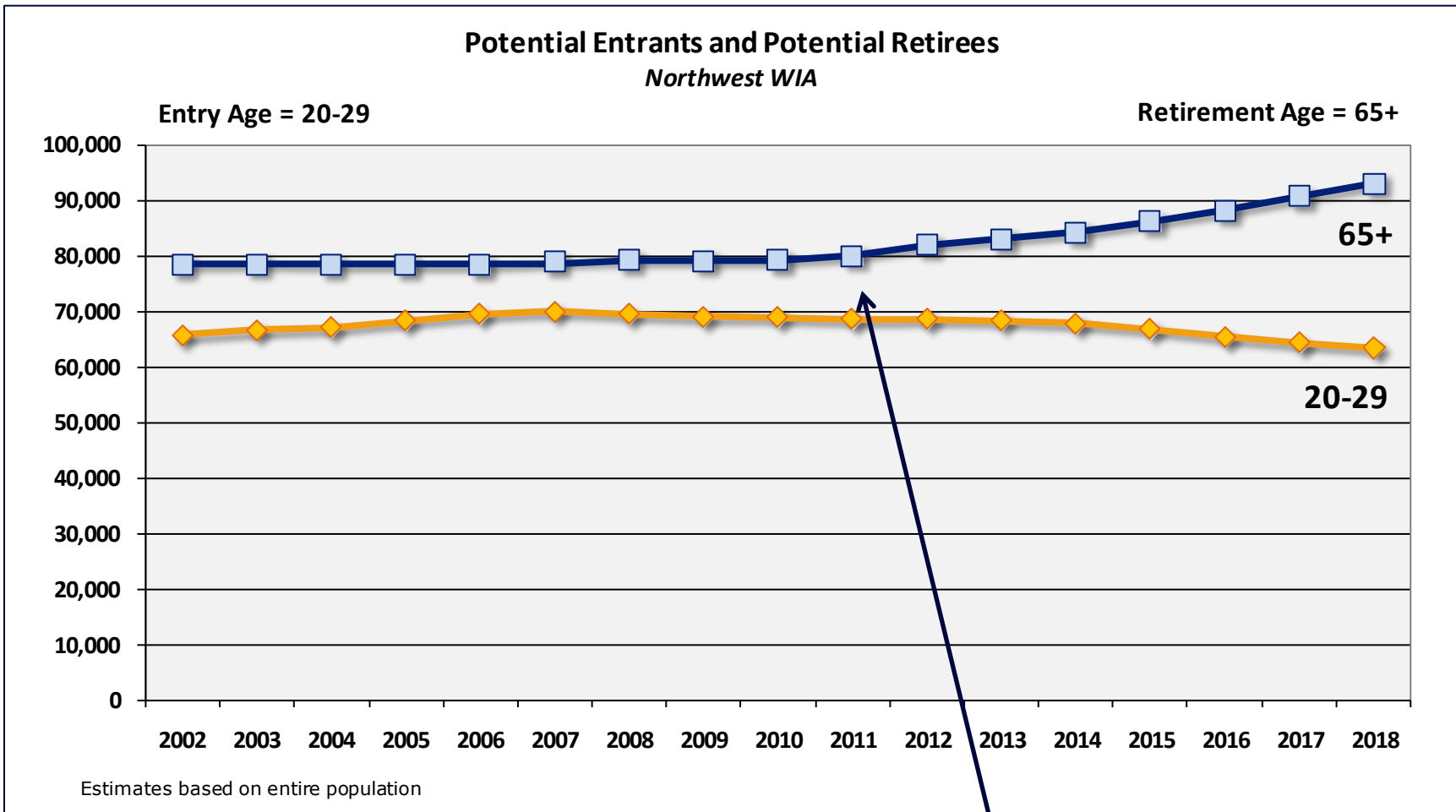
Projected to 2018, the older population in the Northwest WIA is expected to increase dramatically from 2002 estimates. Decreases of 11% for the 15-44 population and 15% for the 45-54 population harshly contrast the 44% projected increase for the 55-64 population and the 19% increase for the retired population (individuals over the age of 65).

These changes in population are quite drastic indeed, especially for older individuals in the Northwest WIA. It is certainly possible (based exclusively on provided population projections) that within the next decade the number of people leaving the workforce will exceed the number of people entering the workforce. Knowing that most jobs will require some type of postsecondary education, it is assumed that individuals will not start working until between the ages of 20 and 29. This assumption also considers that a lesser percentage of individuals in the 15 to 19 age bracket will participate in the labor market. Therefore, the population ages 20 to 29 will be considered potential entrants into the workforce, while the population over the age of 65 will be considered potential exits (retirements) from the workforce, even though individuals may retire before 65 or participate to some degree after age 65.

As evidenced by the following chart, it appears that after 2012 the number of potential retirees will increase at a faster pace than the potential number of new admissions to the workforce. This may indicate that any new job opening created in the Northwest WIA after 2012 will remain vacant without at least leaving another job unoccupied if that position is filled. There simply may not be enough workers to fill the existing jobs plus any new job opportunities. Of course, this does not take into consideration any unforeseen advancement in technology or productivity that may lead to workforce reductions, but the impact of the aging workforce is articulated nonetheless.

The following chart shows the population in the Northwest WIA for individuals projected to enter the workforce and those projected to retire from the workforce between 2002 and 2018:

See Appendix B for population estimates and projections.



Source: Economic Modeling Specialists, Inc., July 2008

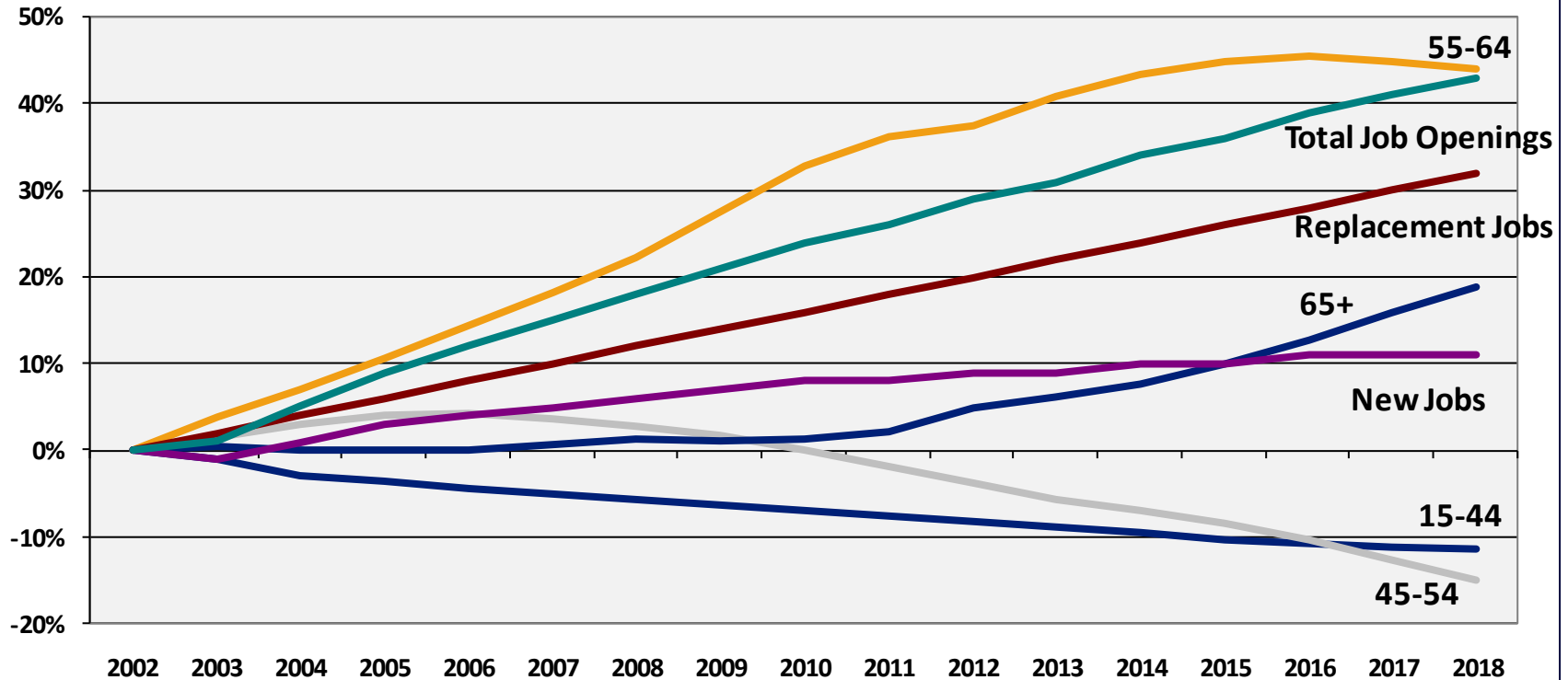
Note: This chart assumes constant flow, meaning it does not account for in- and out-migration, mortality rates, et cetera. It merely looks at the eligible workforce and not participation in the labor force.

After the year 2012, the number of potential retirees from the workforce may increase at a faster pace than the number of entrants into the workforce in the Northwest WIA.

By comparing percent increases in population with projected percent increases in job openings¹ in the Northwest WIA, it can be further emphasized why the aging population is of great concern. The following chart demonstrates the percent changes in the population in the Northwest WIA by age group and the percent increases in new jobs and replacement jobs from 2002 to 2018 (**Note: Using 2002 as the base year, each data point represents the percent change of the respective category for the appropriate year from its 2002 value**):

¹ Job openings can be broken down into two categories: jobs due to growth and jobs due to replacement. Jobs due to growth are a result of new businesses opening or existing businesses expanding, referred to as new jobs. Jobs due to replacement are a result of existing positions becoming available as former employees retire, are promoted, or leave the position for any other reason, referred to as replacement jobs. The total number of job openings is the number of new jobs and replacement jobs combined. Job openings estimates and projections are provided by Economic Modeling Specialists, Inc. (See Appendix B)

Potential Gaps in the Population and Job Openings
Percent Changes in the Population by Age Group and Job Openings (2002-2018)
Northwest WIA



Source: Economic Modeling Specialists, Inc., July 2008

From 2002 to 2018, the population in the 55-64 age group is expected to grow at a faster rate than the total number of job openings. However, the rest of the working-age population (ages 15-54) is expected to decrease between 2002 and 2018. Replacement jobs are expected to have a greater rate of increase than new jobs, possibly resulting from a potential increase in retirees within the next decade in the region.

From 2002 to 2018, new jobs are projected to increase by 11% and replacement jobs by 32% in the Northwest WIA. This equates to a 43% increase in total job openings within the next decade. The large increase in replacement jobs can be attributable to several factors, but one of the major possibilities may be retirement. This potential increase in the number of retirees may be in direct connection with the aging workforce. Based on these projections, the total number of job openings in the Northwest WIA is expected to grow at a faster rate than the available number of workers in the 14-54 age group. This may present a situation for the Northwest WIA, where there may be too many jobs available and not enough workers to fill them. With this potential gap looming in the face of the Northwest WIA's economy, it is critical for businesses to begin planning now for the aging workforce and how to counteract potential massive losses in older, skilled workers.

Methodology:

This report is based on data provided by the United States Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) program for the Northwest WIA. The LEHD program is designed to provide Quarterly Workforce Indicators (QWIs) which include employment, turnover rate, monthly earnings, job creations, job separations, net job flows, and new hires that can be gathered by time period, geography, gender, and by age group. Each Quarterly Workforce Indicator provides a critical measure of an area's economy, revealing changes in the performance of the local economy.

Quarterly Workforce Indicators (QWIs) analyzed in this report include: employment, turnover rate, monthly earnings, job creations, job separations, net job flows, and new hires.

The LEHD's database is built upon wage records in the Unemployment Insurance (UI) system and information from state ES-202 data. The universe of Quarterly Workforce Indicator data is UI-covered earnings. UI coverage is broad, covering over 90% of total private-sector jobs.

Certain exclusions apply to UI coverage. Exempted employment varies slightly from state to state due to variations in state unemployment laws, but generally the prime exclusions are agriculture and some parts of the public sector, particularly federal, military, and postal works. Other exclusions include domestic workers, self-employed non-agricultural workers, members of the Armed Services, some state and local government employees as well as certain types of nonprofit employers and religious organizations.

Three groups of older workers are emphasized in this report: the **retirement group** - those who are currently likely to be receiving pension income (age 65 and older); the **preretirement group** (age 55-64), and the **approaching-retirement group** (age 45-54). Workers in the preretirement group are likely to collect pensions within the next 10

years, and workers in the approaching-retirement group may begin collecting pensions within the next 15 to 20 years.

The three age groups of workers analyzed in this report include: 45-54 (approaching-retirement group), 55-64 (preretirement group), and 65+ (retirement group).

All analysis is based on industries at the two-digit North American Industry Classification System (NAICS) level. The time period is limited in this analysis due to the novelty of the LEHD program; statistics are provided as **average quarterly estimates** for both 2001 and 2006. Changes in the demographics of the workforce, however, are still apparent within the five-year time period.

Analysis is conducted for all two-digit NAICS (North American Industry Classification System) industries using average 2001 and 2006 Quarterly Workforce Indicator values.

Through the analysis of Quarterly Workforce Indicators (QWIs), these topics are addressed in the following report:

- *To what extent are age and each Quarterly Workforce Indicator (employment, turnover rate, monthly earnings, job creations, job separations, net job flows, and new hires) related?*
- *What changes are occurring in the age composition of the workforce in the Northwest WIA?*
- *Which industries will be the most affected by the aging of the workforce?*
- *In what industries do older workers tend to work beyond retirement?*
- *How stable is employment in the industries that employ retirement-aged workers?*
- *How much do older workers in the Northwest WIA earn in industries that employ retirees?*
- *Are there new job opportunities being created by industries with high levels of retirement-eligible workers?*
- *How many older workers leave industries that typically employ retirees?*
- *What are the net job flows for older workers in the Northwest WIA in industries with high levels of workers over the typical retirement age?*

- *How many new hires occur for older workers in industries where retirees hold employment?*

Please note that after identifying the industries that employ the highest proportion of retirement aged workers, all subsequent analysis is based on those industries.

By understanding current levels of various Quarterly Workforce Indicators, business executives, economic developers, decisionmakers, and workers themselves can gain insight into how the local economy in the Northwest WIA may be affected by an aging workforce.

Relationships between Age and Quarterly Workforce Indicators:

See Appendix C for the values of each QWI within each age group.

Age plays a crucial role in determining levels of various Quarterly Workforce Indicators (QWIs) for workers in an area. For example, turnover rates are often greater for younger workers than older workers because younger individuals often work at several jobs before finding their ideal career. Furthermore, as a result of more work experience, wages typically increase as age increases. These are just two examples of workers in different age groups having wide-ranging levels of QWIs, but differences are present with most QWIs. **The extent to which a change in age affects a change in a particular QWI is important because without even knowing the specific level of that QWI, industries can expect certain alterations to the dynamics of their workforce based solely on the age composition of their employees.**

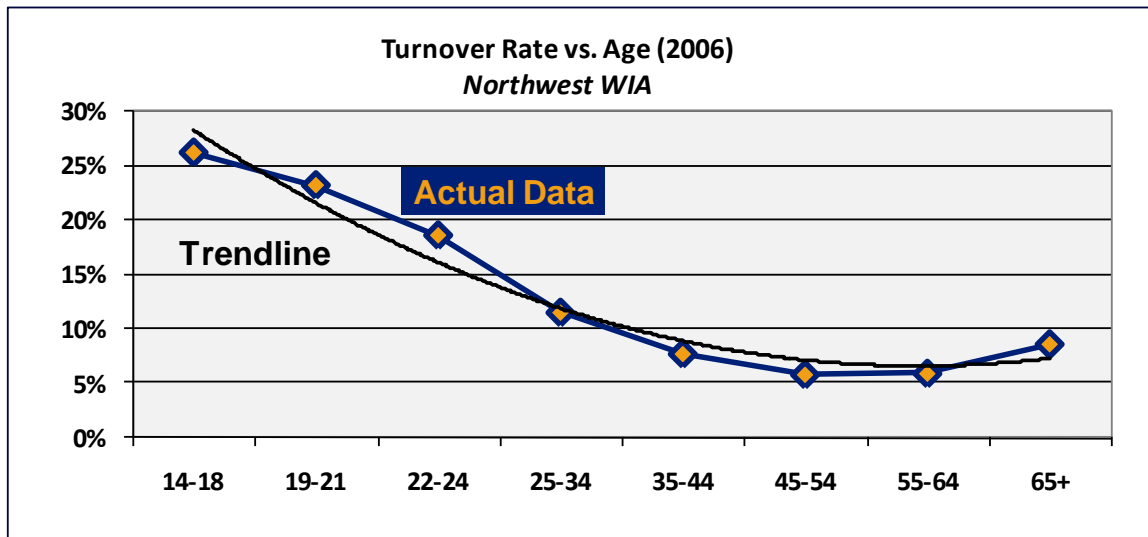
A technique known as regression² will help determine which Quarterly Workforce Indicators (QWIs) are greatly influenced by changes in age in the Northwest WIA. Basically, regression calculations identify which QWIs have strong relationships to age. Calculations are based on average 2006 data in the Northwest WIA. Using both linear and quadratic regression techniques, the following chart demonstrates the R² (coefficient of determination) values that determine the extent to which each Quarterly Workforce Indicator is related to age in the Northwest WIA for 2006:

Coefficient of Determination	Quarterly Workforce Indicator						
	Employment	Turnover Rate	Earnings	Job Creations	Job Separations	New Hires	Net Job Flows
R ² Value (Linear)	0.12	0.82	0.53	0.22	0.16	0.39	0.71
R ² Value (Quadratic)	0.68	0.96	0.86	0.72	0.81	0.80	0.76

As indicated by the regression calculations, turnover rate is most affected by a change in age. The value of 0.96, for example, indicates that 96% of the variability in turnover can be explained by the variability in age when using quadratic regression. This strong relationship is seen in the following chart, where turnover rates decrease to an extent and then increase as age increases, thus forming a parabolic curve:

² Certain limitations exist when using this method with the available data. First, the age groups are not uniform. The age groups included in the LED program are 14-18, 19-21, 22-24, 25-34, 35-44, 45-54, 55-64, and 65+. While disparities exist, a general relationship between age and a Quarterly Workforce Indicator (QWI) can still be determined because the age groups are increasing and do not overlap. Secondly, it will not be determined why there are stronger relationships between age and certain QWIs and weaker relationships between age and other QWIs. Regression calculations merely provide an indication of how changes in QWIs are the result of an aging workforce.

The value of interest when using regression is the coefficient of determination, symbolized by R². This value determines the proportion of variability in a Quarterly Workforce Indicator that can be explained by the variability in age (i.e. R² explains how much of the variability in the QWIs can be explained by the fact that they are related to age).



Average monthly earnings, job separations, and new hires also demonstrated relatively strong dependencies on changes in age. These relationships, however, were more visible with the quadratic calculations as opposed to the linear regressions. This means that the QWIs do not strictly increase or decrease as age increases (i.e. the graphs of these QWIs are not straight lines). These QWIs follow a similar pattern to turnover – the values will increase (or decrease) to an extent and then decrease (or increase) as age increases, resulting in a parabolic (quadratic) curve.

Turnover has the highest dependency on age in the Northwest WIA. Because turnover rates measure the stability of a workforce, this is not surprising. Younger individuals often work at several jobs before settling on a particular career, which causes a relatively higher turnover in younger age groups. Furthermore, turnover rate incorporates retirement, thus causing a workforce with a large number of retirees to have a relatively larger turnover value. Both of these factors heavily influence the dependency of turnover on age. Average monthly earnings, job separations, and new hires also demonstrate fairly strong dependencies on age.

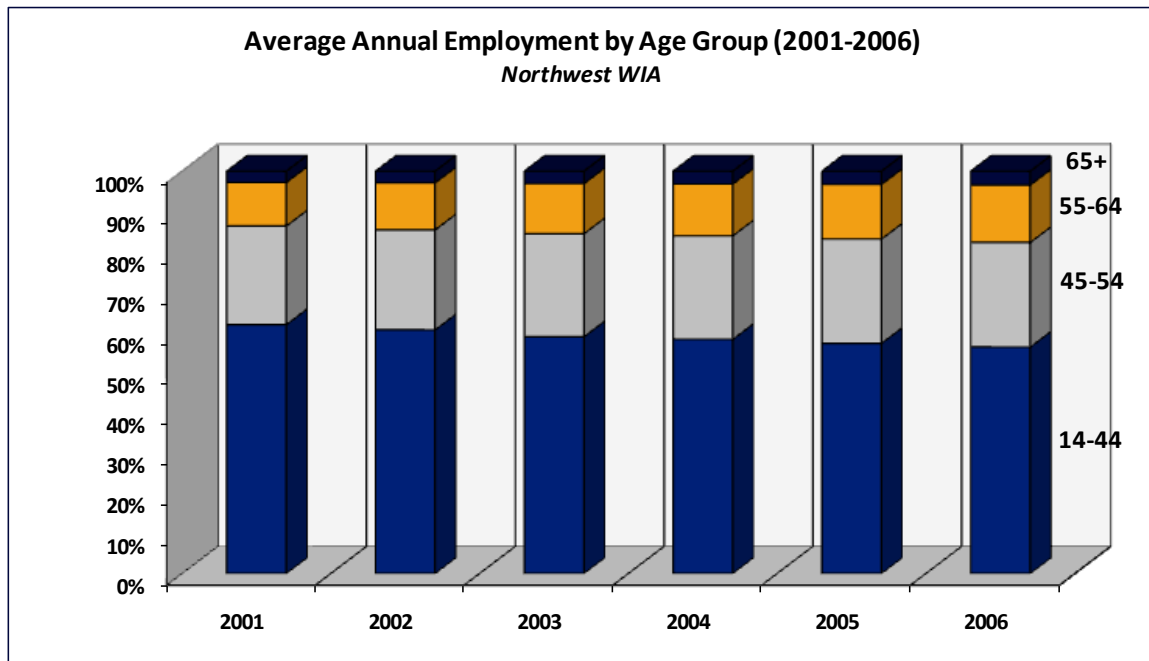
There is no guarantee that industries will experience the same patterns with respect to each Quarterly Workforce Indicator and age. The regression calculations are based on average quarterly estimates for the Northwest WIA across all industries. Each R^2 value merely determines the variability in the QWI that can be attributed to the variability in age (i.e. how dependent QWI is on age).

Changes Occurring in the Age Composition of the Workforce in the Northwest WIA:

See Appendix D for total employment by age group from Q1 of 2001 to Q4 of 2006.

The Northwest WIA can certainly expect to see significant changes in the demographic characteristics of its workforce in the next two decades. Consequently, many businesses will potentially lose a large number of skilled workers to retirement. The labor market will encounter never-before-seen transitional issues even though some workers may continue working past age 65, younger workers may fill many of the positions left vacant by retirees, and some jobs may be phased out with improved technology.

The first Quarterly Workforce Indicator that will be analyzed to clarify the looming effect of the aging workforce is employment, the most fundamental statistic used in labor market research. From quarter one (Q1) of 2001 to Q4 of 2006, the workforce in the Northwest WIA remained fairly consistent. Most employment in the Northwest WIA is comprised of workers of the age 14-44³, while relatively smaller proportions come from older workers. The following chart shows the percent employment by age group in the Northwest WIA over the same time period:

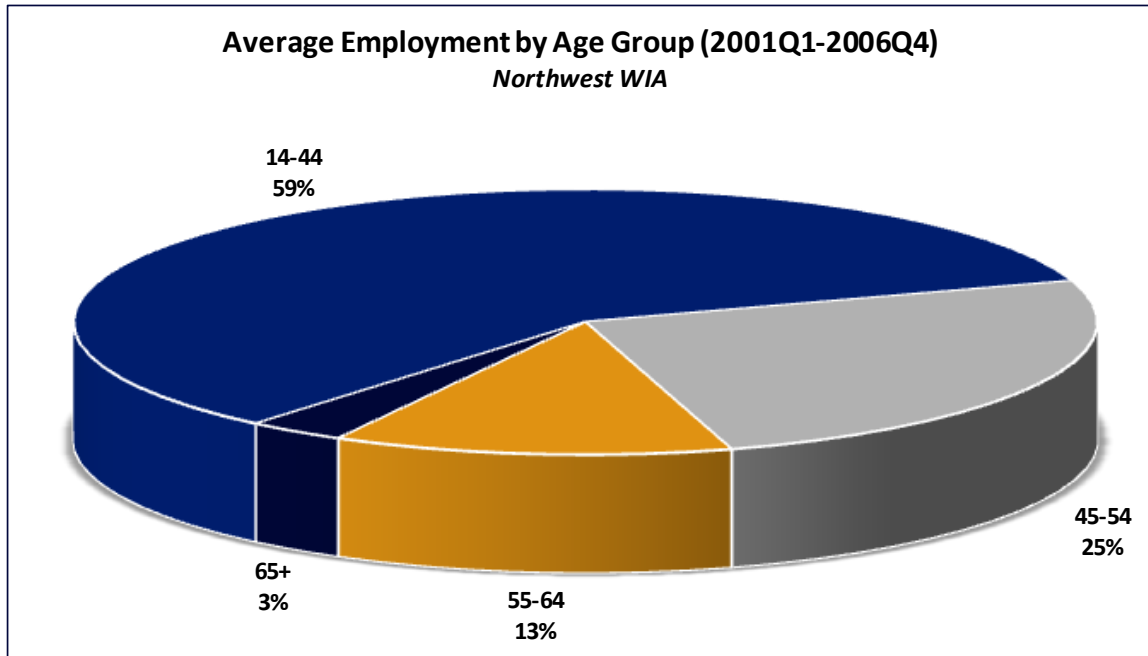


Source: U.S. Census LEHD Program, July 2008

Clearly, most employment in the Northwest WIA comes from workers of the age 14-44. As of 2006 Q4, workers over the age of 45 comprise about 44 percent of the workforce in the region, compared to 56 percent for workers 14-44. Significant employment, however, does come from the approaching-retirement group (age 45-54) whose workers are expected to retire within the next 15 to 20 years. The following chart shows the

³ The LEHD site provides data for workers ages 14-18, 19-21, 22-24, 25-34, and 35-44. Information for all of these workers was combined to include all workers who do not belong to the older age brackets (i.e. workers ages 14-44).

average employment for workers in the age groups 14-44, 45-54, 55-64, and 65+ in the Northwest WIA from Q1 of 2001 to Q4 of 2006:



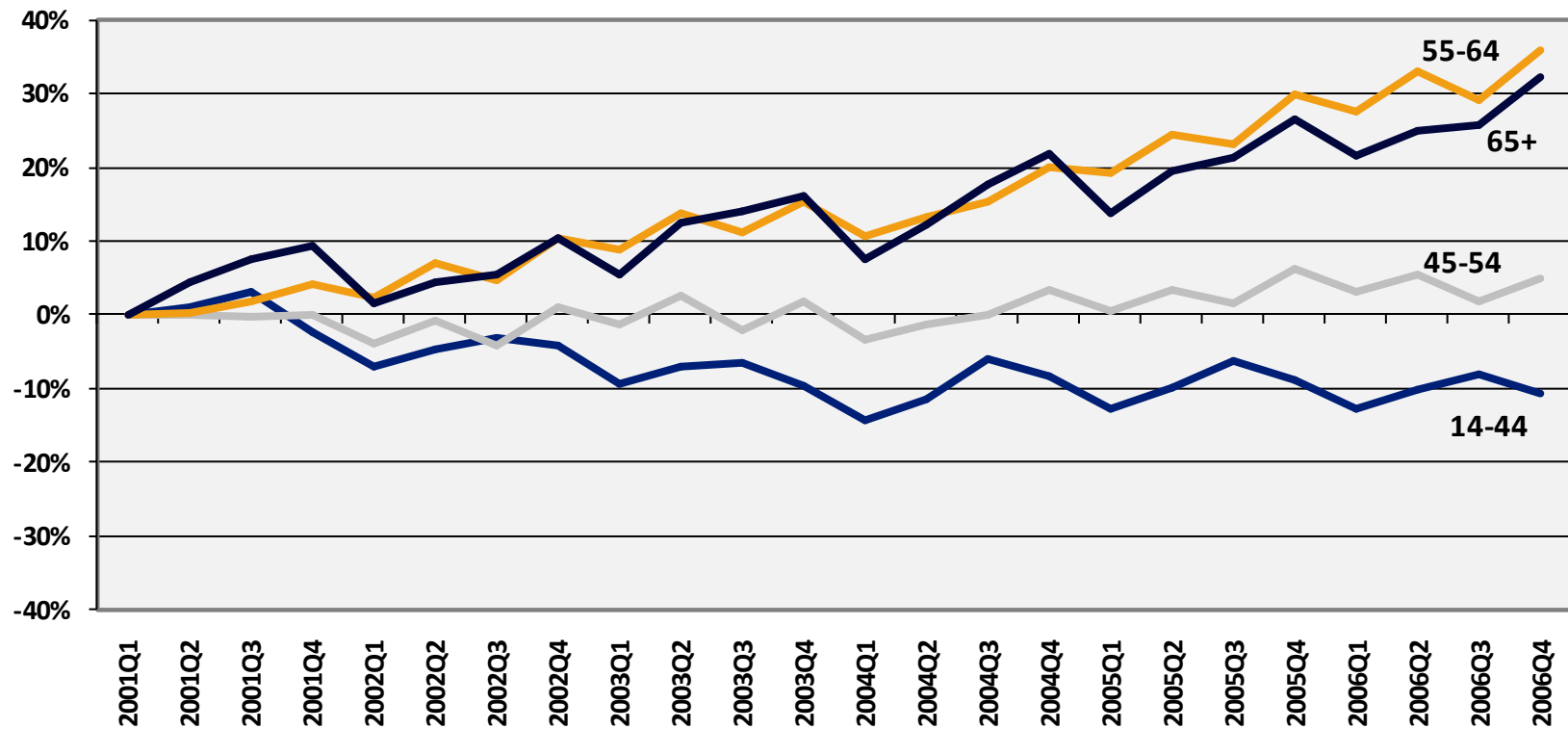
Source: U.S. Census LEHD Program, July 2008

It is obvious that relatively younger workers consistently comprise most of the employment in the Northwest WIA. A majority of the workers in the Northwest WIA (59 percent) were of the age 14-44 on average between Q1 of 2001 and Q4 of 2006.

What may not be apparent with these charts, however, is how the workforce has changed dramatically since the beginning of this time period in the Northwest WIA. While the proportion of employment contributed by workers of the age 14-44 has actually decreased from 62% to 56%, the older age groups have shown positive changes. In fact, between Q1 of 2001 and Q4 of 2006, the percent of employment for workers ages 45-54 and 65+ both increased by approximately 1%. Most importantly, though, the preretirement group (age 55-64) demonstrated the greatest increase of 4%.

Trends in recent history show that employment by older workers in the Northwest WIA is increasing. The 14-44 age group has decreased in total employment, while the older age groups have all increased employment between Q1 of 2001 and Q4 of 2006. Businesses need to begin preparing now for a large wave of potential retirees in the coming years. This is evidenced by the following chart, which demonstrates the percent increases in employment between Q1 of 2001 and Q4 of 2006 in the Northwest WIA (**Note: Each value is based on the percent change in employment from Q1 of 2001, meaning all percent increases or decreases in employment refer to the change in employment from Q1 of 2001**):

Percent Changes in Employment by Age Group from Q1 of 2001 Northwest WIA



Note: Values are based on employment totals for each age group

Note: All calculations are based on the percent change from Q1 of 2001

Source: U.S. Census LEHD Program, July 2008

Between Q1 of 2001 and Q4 of 2006, the number of workers over the age of 55 (age groups 55-64 and 65+) increased at a rate far exceeding the 45-54 age group in the Northwest WIA. More importantly, though, the younger age group (workers ages 14-44) experienced a decrease in the same time period. This clearly indicates the aging of the workforce in the Northwest WIA.

In the Northwest WIA, the number of older workers is increasing while the number of younger workers is decreasing. Many businesses may suffer large losses due to their employees retiring. The aging workforce is certainly a cause for concern in the local economy.

Industries Most Affected by the Aging of the Workforce:

According to estimates provided by the Bureau of Labor Statistics, the Labor Force Participation Rate⁴ (LFPR) in the United States is projected to increase for older age groups between 2005 and 2014, while a majority of the younger age groups are forecasting a decrease. For individuals over the age of 65, the labor force participation rate is projected to have the largest increase, indicating that people across the nation may be more willing to work beyond retirement for various reasons in the future, all while younger age groups may participate less in the labor force. A potential increase in postsecondary enrollment by younger individuals may delay participation in the labor force. The following chart identifies the Labor Force Participation Rates by age group in 2005 and 2014 for the United States:

Age Group	Year		Change
	2005	2014	
16-24	60.7%	59.1%	-1.6%
35-44	83.6%	83.0%	-0.6%
25-54	82.7%	83.5%	0.8%
45-54	81.4%	82.3%	0.9%
55-64	62.7%	65.2%	2.5%
65+	14.9%	19.7%	4.8%

Source: U.S. Department of Labor, Bureau of Labor Statistics

Nationally, labor force participation rates are projected to decrease for younger age groups and increase for older age groups. This may be an indication of individuals being more willing for various reasons to continue working past retirement age in the next decade.

Certain industries in the Northwest WIA will be affected to a greater extent than other industries when baby-boomers enter retirement. Unless this loss in workers is offset by new workers from outside the region, or from other local industries, industries with high proportions of older workers are most likely to be affected by the aging of the workforce. The following chart identifies which industries had the largest concentrations of employment by workers ages 55-64 as of 2006 in the Northwest WIA:

See Appendix E for employment values by age group and by industry.

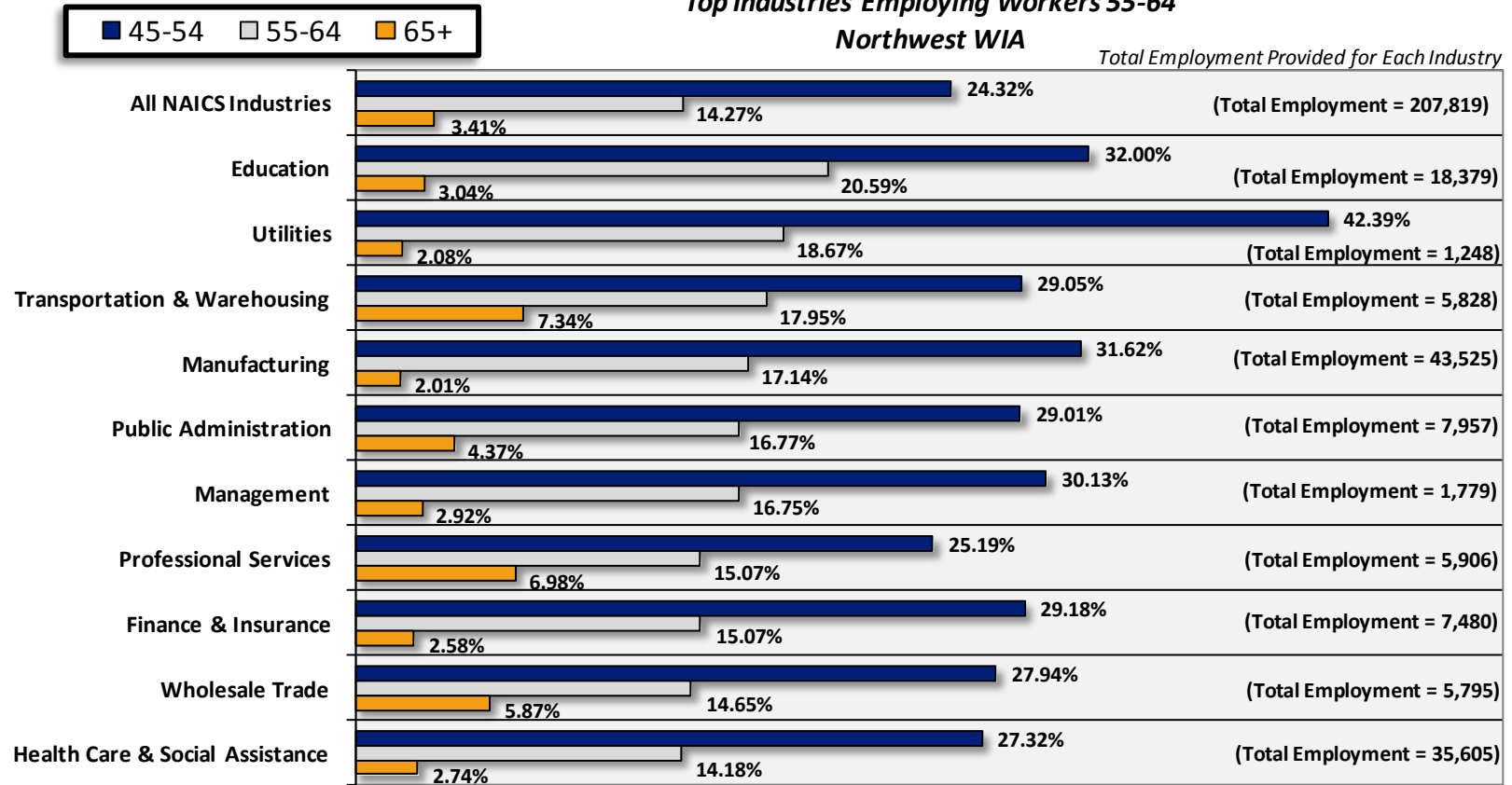
⁴ Labor force participation rate is defined as the proportion of people working plus the number of people looking for work divided by the total population in an area. While this rate does not distinguish between those who are employed and those who are unemployed (i.e. looking for work), it does give a baseline as to what proportion of individuals may be working – the higher the labor force participation rate the higher the chances for more employment.

Industries with a High Percentage of Older Workers (2006)

Top Industries Employing Workers 55-64

Northwest WIA

Total Employment Provided for Each Industry



Source: U.S. Census LEHD Program, July 2008

To put this in perspective, within the next decade, the education industry could expect to lose about 21% of workers slated for retirement, the manufacturing industry could expect to lose approximately 17% of employees preparing to retire, and health care & social assistance could lose 14%. Together, these industries are facing the potential loss of almost 16,000 workers in the next decade. Education, manufacturing, and health care & social assistance may be the most highly affected industries as a result of the aging workforce.

On average, about 14% of all workers in the Northwest WIA are between the ages of 55 and 64. All industries identified in the chart above have higher-than-average proportions for this age group, while other industries have lower percentages. These industries represent those that will likely be most affected by an aging workforce because of the high concentrations of preretirement workers (ages 55-64). In preparing for a large wave of workers retiring, companies must have in place appropriate transition plans to counteract any potential losses in their workforce.

Industries with high proportions of older workers will likely encounter the most problems due to an aging workforce. Employees may retire from the labor force completely or seek other jobs for various reasons, such as greater flexibility, higher wages, less physical demand, et cetera, and take with them their valuable knowledge and skills. Such industries must prepare for considerable losses through increased training of younger workers and other potential employees to replace future labor force deficits due to the aging workforce.

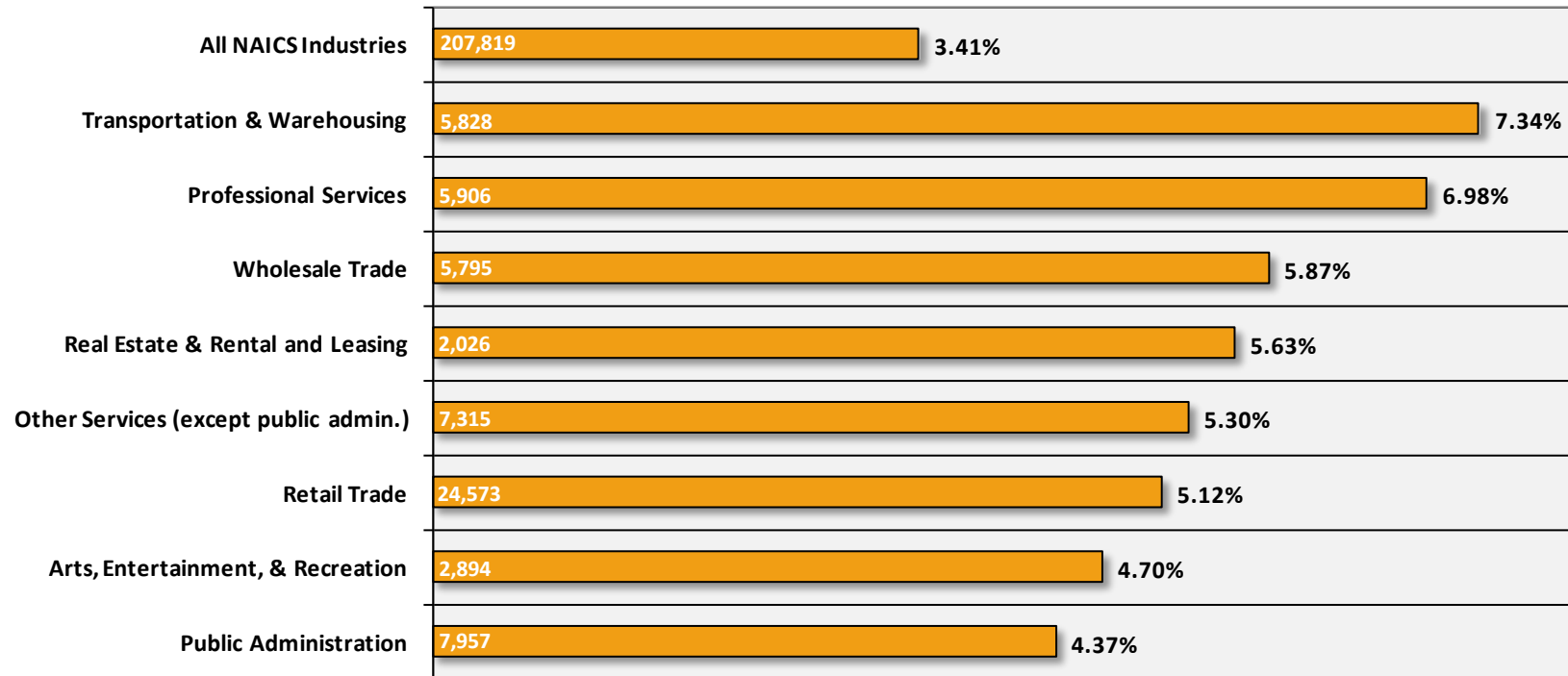
Many workers may choose to retire (ages 65+) but then seek part-time employment to supplement their pension incomes. These individuals may find opportunities in industries that employ relatively high proportions of the oldest workers. The following industries employed the greatest percentages of workers over the age of 65 in the Northwest WIA as of 2006:

Industries with a High Percentage of Older Workers (2006)

Top Industries Employing Workers 65+

Northwest WIA

Total Employment Provided for Each Industry



Source: U.S. Census LEHD Program, July 2008

Individuals who delay retirement or choose to supplement retirement with work may find the most job opportunities in industries that have high proportions of workers over the age of 65. The retail trade and other services industries employ high levels of workers beyond the age of 65. Combined, these two industries employ over 1,500 individuals age 65+ in the Northwest WIA. While it appears that older individuals may potentially find employment in these industries, the nature of the job must be considered.

All other industries' workforces are comprised of less than 4% of workers over the age of 64. This chart demonstrates that there is opportunity for workers who decide to work beyond retirement in the Northwest WIA. **Further analysis in this report will focus on these industries to illustrate how the labor market may be affected in the future with a large increase in workers ages 65 and over.** This information is vital to not only businesses but also to the workers themselves in deciding if they want to work and/or where they want to work beyond retirement (i.e. which industry). All industries will have to consider the need to employ older workers, whether pre- or post-retirement, whether part-time or full-time, as a strategy to meet employment demand.

Where Older Workers Tend to Work beyond Retirement:

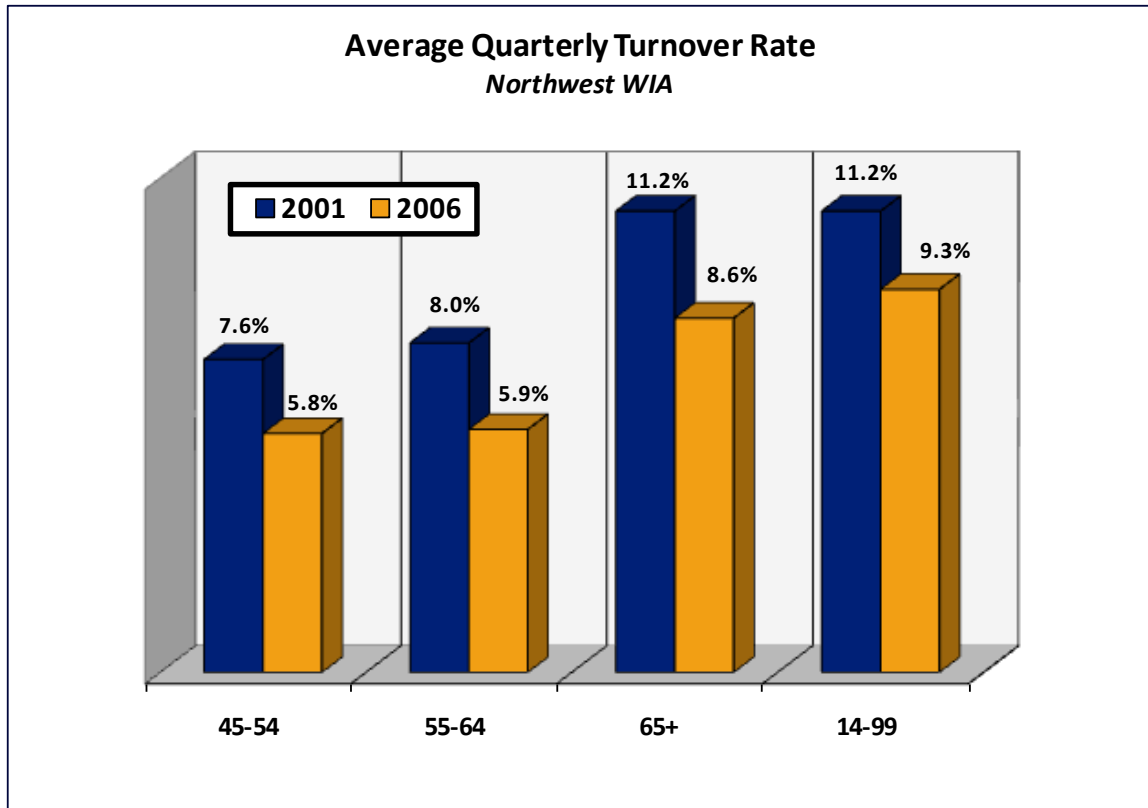
The next Quarterly Workforce Indicator of interest is the turnover rate. Turnover rates for older workers in the Northwest WIA indicate the degree to which local businesses need older workers within an industry. Turnover rate is defined mathematically as $(1/2) * (\text{accessions} + \text{separations}) / \text{employment stable jobs}$. Accessions, which are basically new hires, refer to the total number of workers who are employed by a business during the current time period but not the previous time period. Separations are the total number of workers who are employed in the current time period but not in the subsequent time period (i.e. employed in the previous time period but not the current time period). Employment stable jobs refer to the total number of jobs that are held for the entire quarter.

Conceptually, turnover rates identify how many workers in a particular workforce/industry are new over a certain time period. This QWI also describes the level of skills necessary for jobs in an industry. Industries with high turnover rates typically require little need for specialized skills and can often easily replace workers. These industries may also be more likely to offer lower wages. Low turnover rates in an industry indicate that workers are relatively skilled and/or not easily replaced. It is important to note that turnover rates include retirement, therefore the trendline of decreasing turnover as age increases will begin to reverse as individuals reach retirement age.

Stable Employment for Older Workers:

Turnover rates also measure the stability of jobs in an industry. By focusing on older workers in the Northwest WIA, turnover rates can help determine which industries tend to employ or retain older workers because of their specialized skill sets (often the result of experience) that may be difficult to replace. Older workers may also work beyond retirement age because of benefits and other advantages that are associated with the job. Stable employment for older workers is more likely present in industries with low turnover. The following chart shows the average turnover rate for workers in the Northwest WIA by age group in 2001 and 2006:

See Appendix F for turnover rate by age group and by industry



Source: U.S. Census LEHD Program, July 2008

Turnover helps determine the need for specific skills in an industry and measures job stability. Lower turnover may indicate a greater need for specialized skills due to on-the-job training and higher job stability. From 2001 to 2006, changes in the local economy caused the turnover to decrease for all workers. This decreasing trend was present for the 45-54 and 65+ age groups, compared to the 55-64 age group which remained the same.

The average turnover rate for all workers in the Northwest WIA decreased from 11.2% to 9.3% between 2001 and 2006. Similarly, older workers in the area also experienced decreases in turnover. Overall, because of decreases in turnover, the local economy may be leaning towards jobs that require specific skills, employment is becoming more stable, and/or a contracted economy offering fewer employment opportunities is causing people to stay in jobs from which they may have otherwise separated.

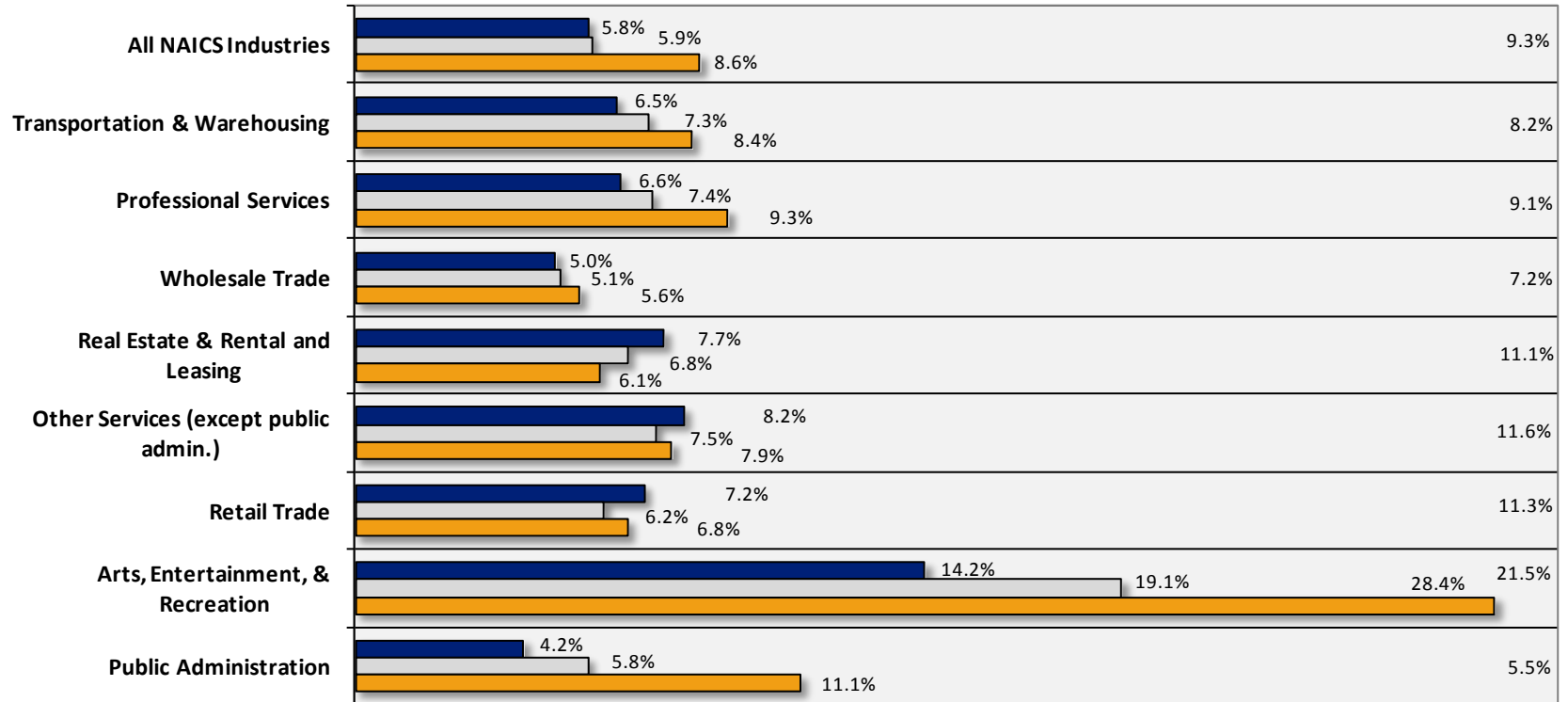
Because turnover includes retirement, it is expected for turnover to be higher for the 65+ age group. It is important to note, though, that this age group has a lower-than-average turnover rate in 2006 and experienced a significant decrease between 2001 and 2006.

The following chart identifies the average quarterly turnover rates for industries in the Northwest WIA that have the highest employment proportions for workers ages 65+ as of 2006:

Average Quarterly Turnover Rate (2006)
Top Industries Employing Workers 65+
Northwest WIA

■ 45-54 □ 55-64 ■ 65+

Average Turnover Rate Provided for Each Industry for All Workers



Source: U.S. Census LEHD Program, July 2008

Most industries with high proportions of workers over the age of 65 demonstrate lower-than-average turnover for older workers compared to all workers in that industry in the Northwest WIA.

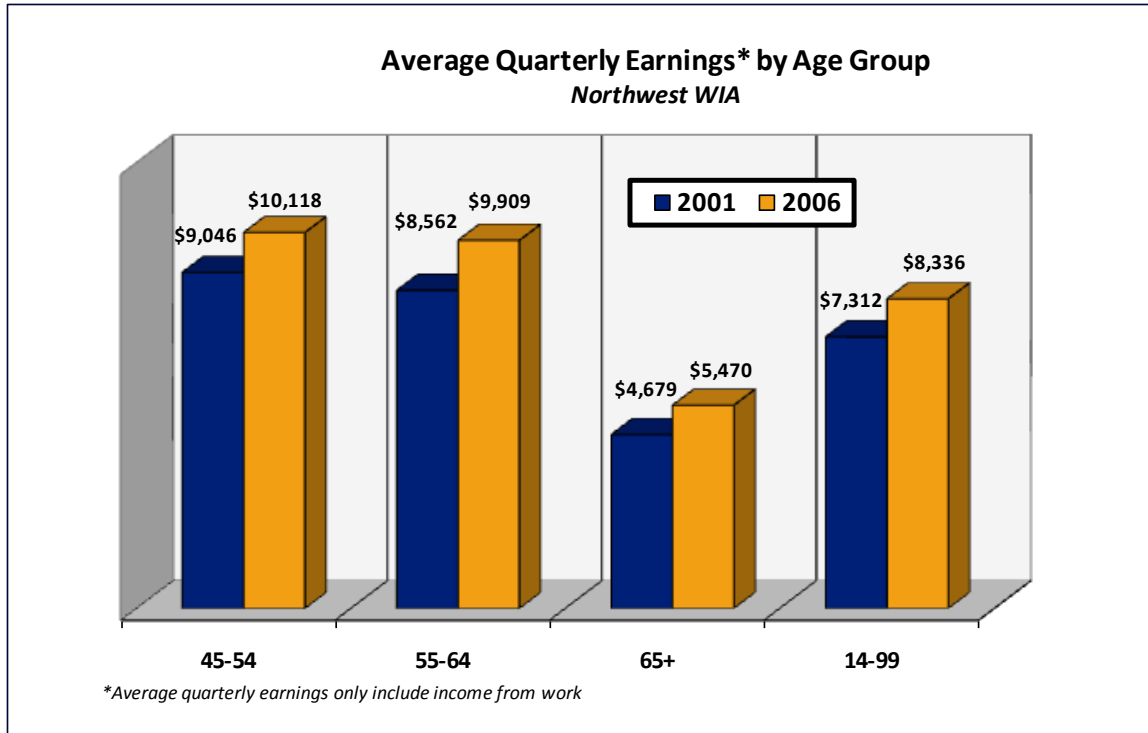
Most industries have higher-than-average turnover rates compared to all NAICS industries in the region for workers in each particular age group. Within each industry, though, the turnover rate for older workers is typically lower than the average turnover for all employees (ages 14-99). Because of this, older workers may not have to complete any additional training to retain employment in industries or look for another job. Lower turnover suggests that these industries offer fairly stable employment for older workers and the types of jobs held by these individuals may require skills that can only be attained through experience. Businesses with low turnover may choose to retain older workers longer because younger employees may not be fully prepared to replace those who retire or sever employment.

Low turnover is an important aspect to consider when analyzing the workforce within a company. **Businesses with low turnover rates, which may result from the relative complexity of certain jobs, may experience the most trouble in replacing older workers when they leave the labor force.** These companies with relatively lower turnover may provide the most stable work environments for older workers. (Refer to Appendix F for turnover values.)

Earnings for Older Workers:

Average quarterly earnings is an important Quarterly Workforce Indicator to consider when analyzing the aging workforce in the Northwest WIA. It has been suggested that in the coming decades older workers may “retire” in the sense of collecting pensions but continuing to work in another job in a less than full-time status. How much older workers in the Northwest WIA can expect to earn is revealed by simply comparing average monthly earnings across all industries. The following chart demonstrates the average monthly earnings for workers in the Northwest WIA by age group in 2001 and 2006:

See Appendix G for average monthly earnings by age group and by industry.



Source: U.S. Census LEHD Program, July 2008

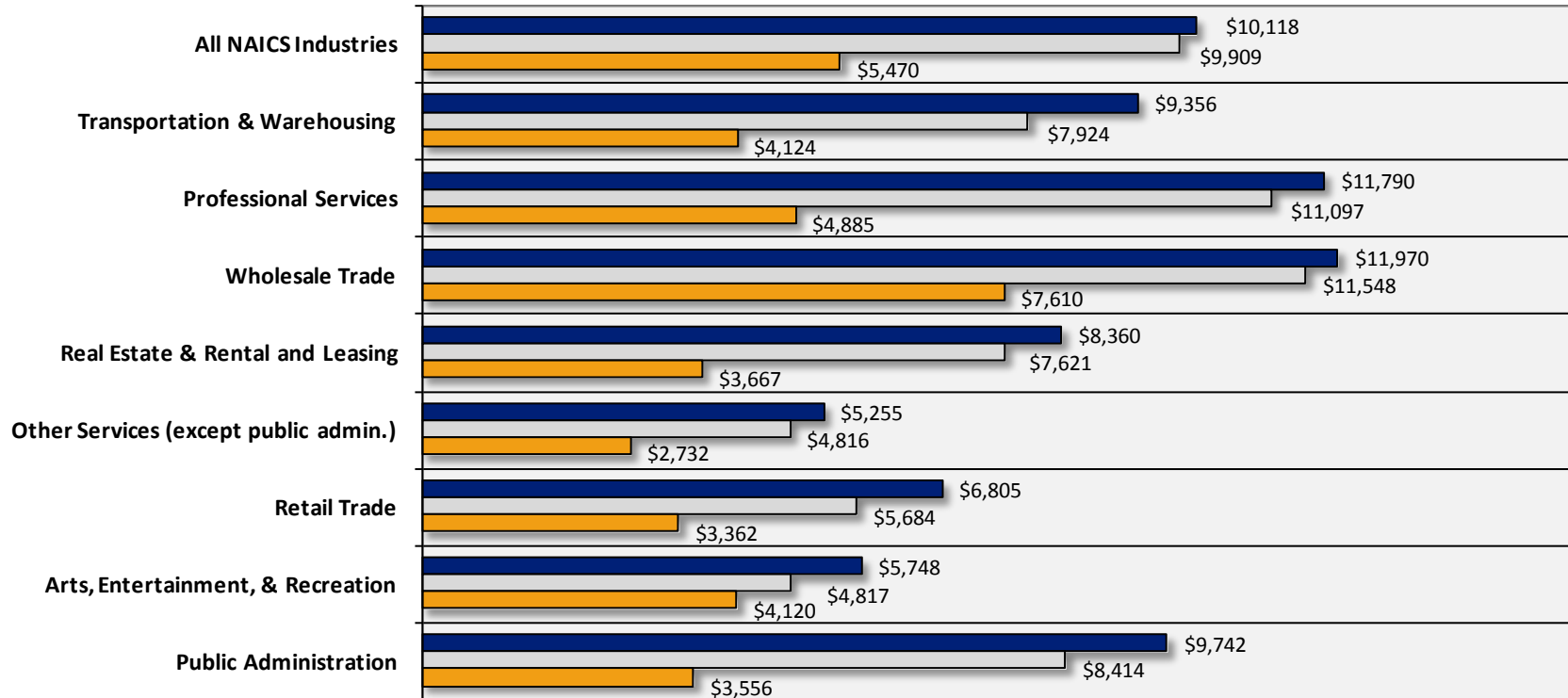
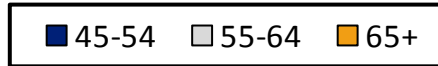
Average quarterly earnings increased in the Northwest WIA between 2001 and 2006. Workers of the age 45-54 and 55-64 receive higher-than-average quarterly earnings. NOTE: Average quarterly earnings only include income from work.

Due to inflation, it is not unusual to have increased earnings for all age groups between 2001 and 2006. Furthermore, workers in the 45-54 and 55-64 age groups receive higher-than-average quarterly earnings compared to all workers in the Northwest WIA. This also is not surprising, since workers who have more experience in a particular industry typically receive greater earnings than workers who have less experience. Workers of the age 45-54 earn about 21% more in average monthly earnings than all workers in the Northwest WIA, while the 55-64 age group receives approximately 19% more.

The important aspect of this chart is that workers of the age 65+ receive average monthly earnings of \$5,470 as of 2006, which is approximately 34% less than the average quarterly earnings for all workers in the Northwest WIA. This value may be a result of workers employed only part-time. Many of these individuals may already receive pension income but choose to work on a less than full-time basis to supplement their income.

In order to focus on specific industries, the following chart identifies the average quarterly earnings for industries in the Northwest WIA that have the highest proportions of the oldest workers as of 2006:

Average Quarterly Earnings for Older Workers (2006)
Top Industries Employing Workers 65+
Northwest WIA



Source: U.S. Census LEHD Program, July 2008

Individuals who choose to work beyond retirement receive significantly lower average quarterly earnings than workers of the age 55-64 in the Northwest WIA. Earnings amounts do not include pension or social security, only wages earned through employment. There is no distinction between part- and full-time workers.

For workers in the retirement group (ages 65+), the manufacturing industry has the highest average quarterly earnings of \$10,232, but this industry is not one of the top employing industries for this age group. About 2% of the manufacturing industry's employment comes from workers over the age of 64. This earnings value may be a result of unique high-paying occupations in the manufacturing industry (supervisors, mechanical engineers, etc.). The other services (except public administration) industry, which does have a high concentration of workers over the age of 65, has the lowest value of \$2,732. Of course, these statistics are for the entire industry, and individual companies may offer varying salary structures. Nonetheless, workers who continue to work beyond retirement might expect these levels of wages.

Employment Dynamics-Underlying Changes in the Workforce:

Job Creations:

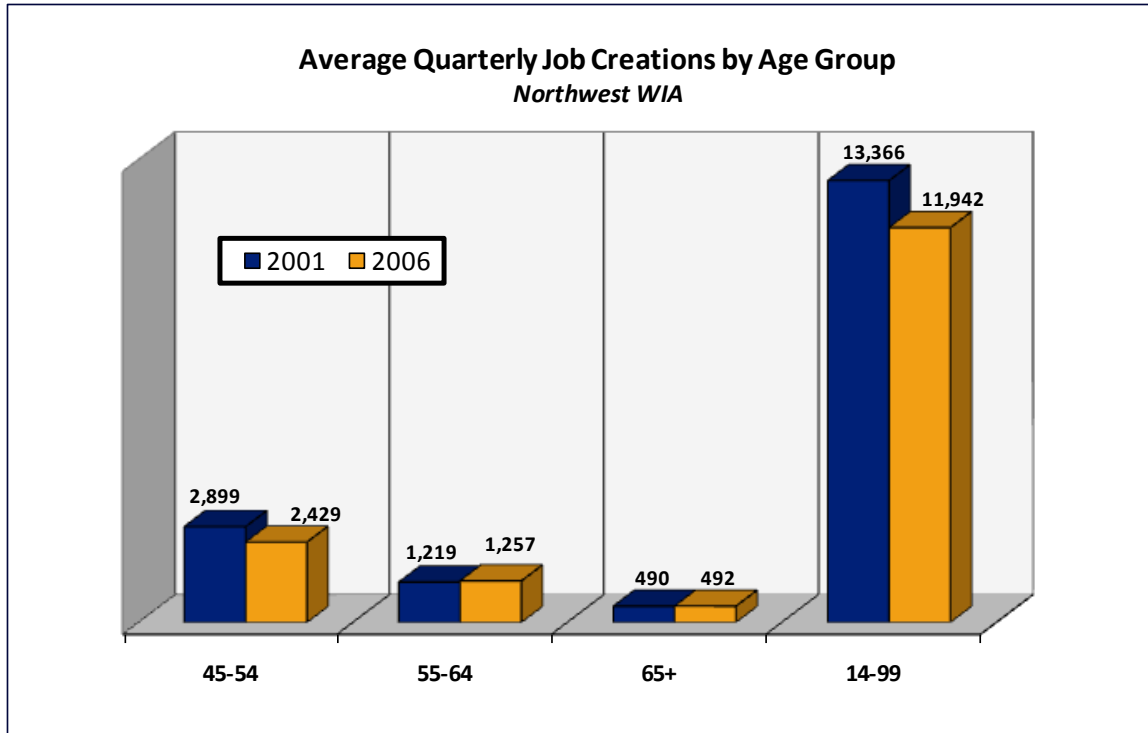
Economic developers need to look beyond employment levels to understand how the local economy is changing. The employment levels described earlier revealed only one aspect of the labor force in the Northwest WIA. There could be dynamic changes occurring in an individual company or across an industry even though employment has remained fairly stable. Company executives and policy-makers must be aware that enormous change can be taking place in the underlying numbers. These underlying changes are referred to as "job creations" and "job separations."

Job creations are new jobs created in the Northwest WIA either by new businesses opening or by existing firms adding new jobs. By focusing on this Quarterly Workforce Indicator, it can be determined which industries are creating job opportunities and how those jobs are being filled by different age groups, specifically the older age groups.

It is important to distinguish between jobs created for specific age groups and job creations filled by specific age groups. This analysis looks at the latter and in no way suggests that industries are engaged in any discriminatory practices by focusing on hiring certain age groups.

The following chart demonstrates the average number of jobs created for all workers in the Northwest WIA by age group:

See Appendix H for job creations by industry and by age group.



Source: U.S. Census LEHD Program, July 2008

Job creations are new jobs created either by new businesses opening or existing firms adding new jobs. The number of job creations in the Northwest WIA decreased between 2001 and 2006 for all workers. Job creations for workers ages 45-54 decreased during this time period while remaining stable for the 55-64 and 65+ age groups. Of the total reduction of 1,400 job creations, about 70% occurred for workers under the age of 45. Overall, the number of individuals hired for newly created jobs decreases as age increases.

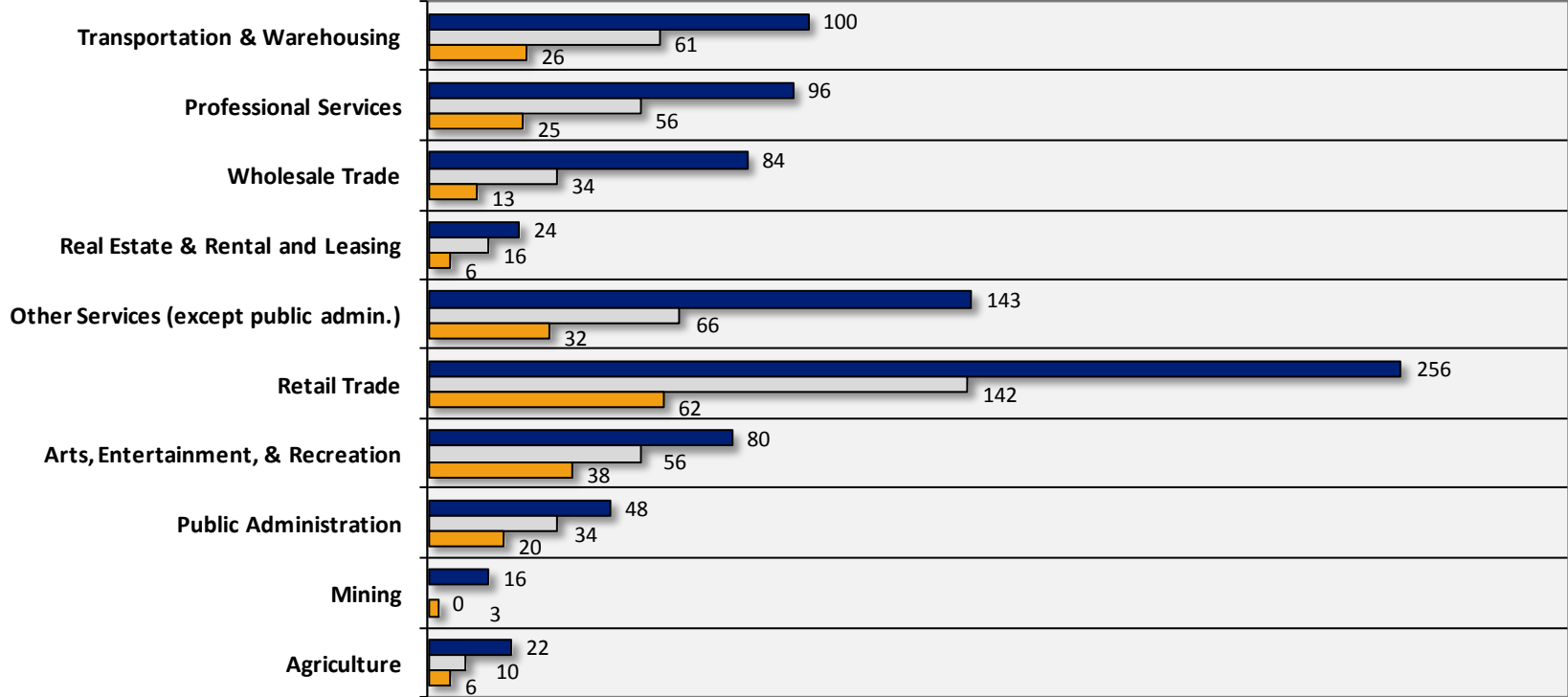
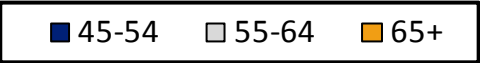
Overall, new jobs created in the Northwest WIA are filled by workers in each age group. It is evident, though, that it is less likely for a new job to be filled by workers in the older age groups. In 2006, about 20% of all job creations were filled by workers ages 45-54, 11% by the 55-64 age group, and only about 4% by the oldest workers. Who fills the new job may be a function of the type of job and what duties are necessary, the industry in which it is, pay, etc., as well as the interest, need and motivation of the individual to accept employment.

The following chart shows the average quarterly job creations for the industries employing the greatest proportions of older workers (65+) in the Northwest WIA as of 2006:

Average Quarterly Job Creations (2006)

Top Industries Employing Workers 65+

Northwest WIA



Source: U.S. Census LEHD Program, July 2008

Industries that have high proportions of employment by workers over the age of 65 and high levels of job creations may offer the most job opportunities for individuals who choose to work beyond retirement. Retail trade has the highest levels of job creations for each older age group.

Individuals who wish to work beyond retirement may consider these industries for employment. Not only do these industries already have a high proportion of workers beyond the typical retirement age, but they also have demonstrated high levels of new jobs being filled by older workers. This is most evident by the retail trade industry, which has the highest value for each age category.

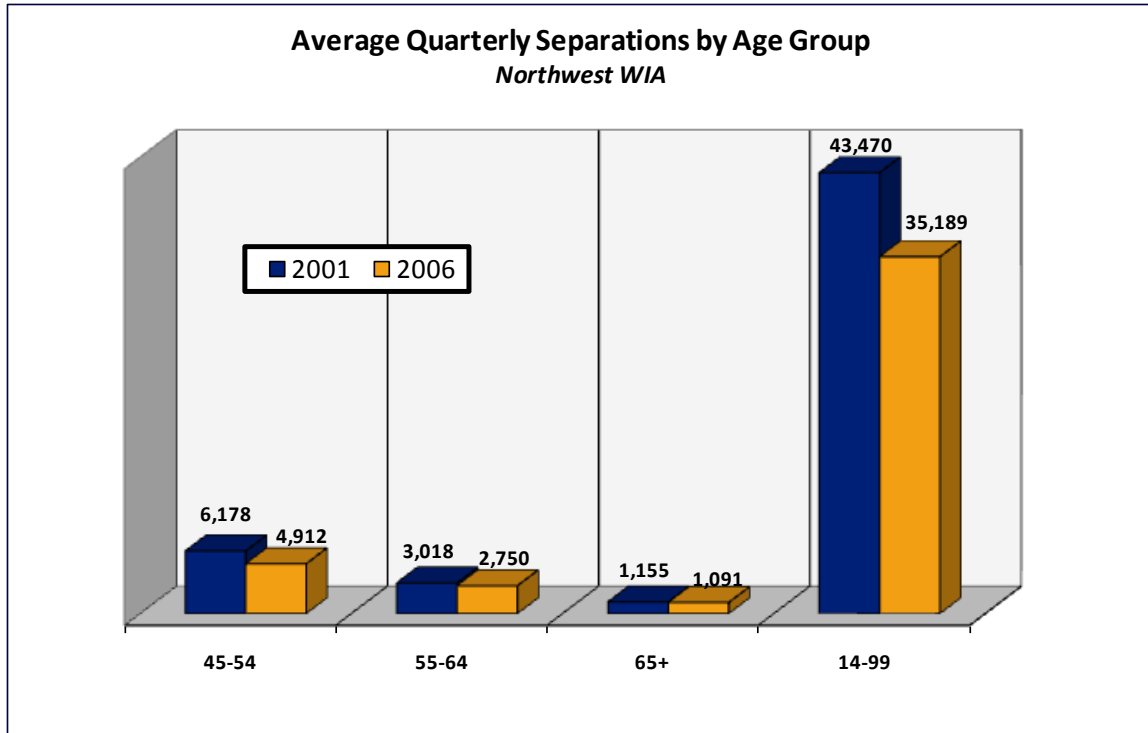
Job Separations:

Job separations represent the total number of workers employed by a company within an industry in the current quarter, but not in the following quarter. This Quarterly Workforce Indicator determines which workers (i.e., younger or older) are leaving jobs and which industries workers are leaving. Job separations may occur for a variety of reasons, including retirement, transition to other employment or the actual elimination of a job by a company within the specified industry.

This analysis looks at job separations in general, regardless of the cause, and in no way suggests that industries are engaged in any discriminatory practices by focusing on reducing employment for workers in certain age groups.

The following chart identifies the average number of job separations in the Northwest WIA for all workers by age group:

See Appendix I for separations by industry and by age group.



Source: U.S. Census LEHD Program, July 2008

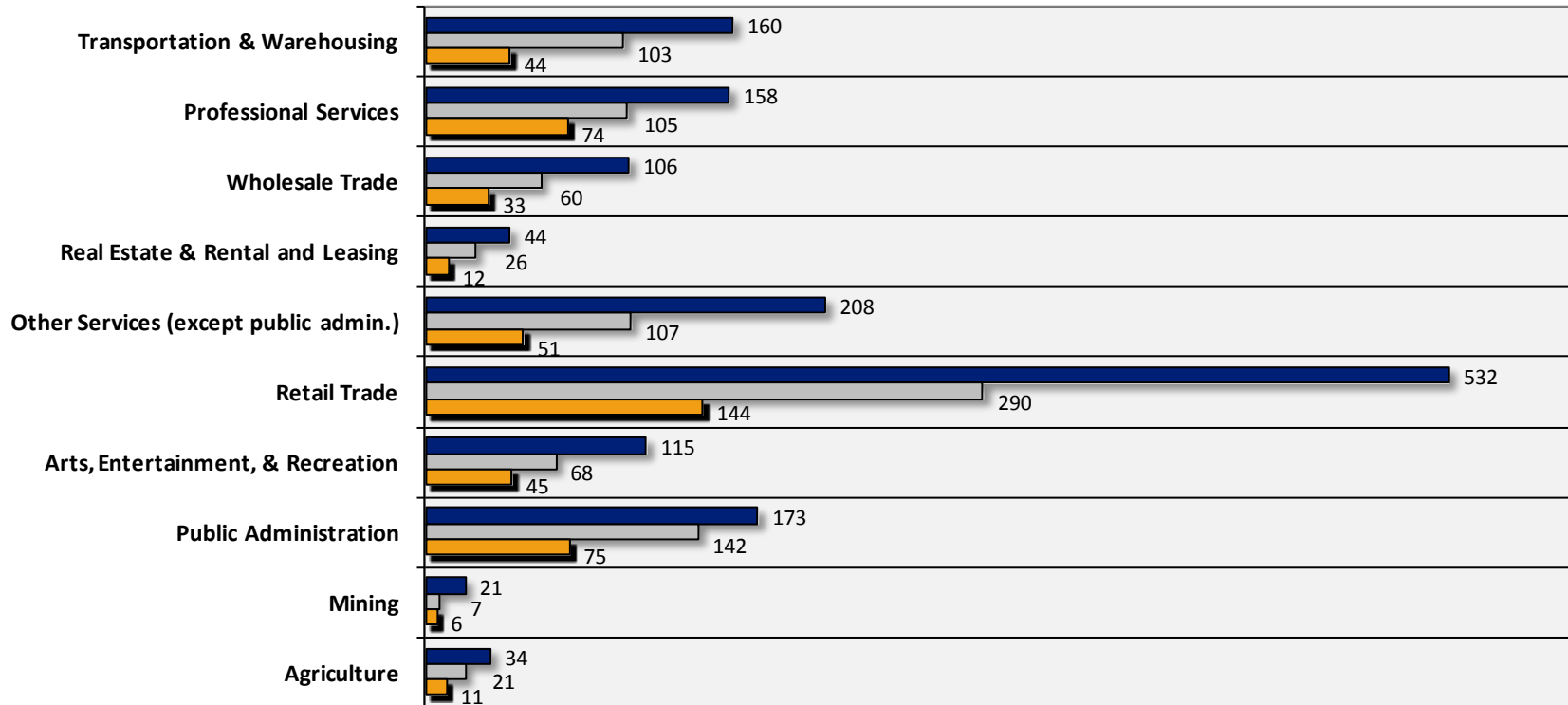
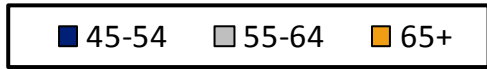
Job separations represent the total number of workers employed within an industry in the current quarter, but not in the following quarter. For all workers in the Northwest WIA, the number of job separations decreased between 2001 and 2006, a trend shared by each older age group, suggesting that a larger number of older workers are staying at their current jobs, employers are retaining more of these workers, or there are less job opportunities.

It is not surprising that the 45-54 group has higher job separation levels than the 55-64 and 65+ groups. Because this age group comprises a larger percentage of employment in the Northwest WIA, when a company decides to cut a job, there is a higher probability of that job being occupied by a person within the 45-54 age group than the other older age groups.

Similar to the job creations, the number of job separations decreases as age increases. For 2006, about 14% of all job separations were due to the 45-54 age group, 8% by workers ages 55-64, and about 3% by the oldest workers in the Northwest WIA.

The following chart identifies the average quarterly jobs separations for the industries that employ the greatest proportions of older workers (65+) in the Northwest WIA as of 2006:

Average Quarterly Separations (2006)
Top Industries Employing Workers 65+
Northwest WIA



Source: U.S. Census LEHD Program, July 2008

Retail trade has relatively high levels of job separations for older workers in the Northwest WIA. Many older individuals may supplement existing forms of income by working in this industry, especially during holiday seasons and other times of the year when extra money is needed. The fact that this industry has the highest nominal value of workers 65+ (1,188) also contributes to the high levels of job separations.

Among the industries that have the highest proportions of workers ages 65+, retail trade has the highest levels of job separations (and job creations) for older workers in the Northwest WIA. With the forthcoming shortage in workers, industries with high levels of job separations will struggle to maintain their current levels of employment. This is due to the fact that there will be an overall deficit in the workforce, and older workers have a tendency not to continue employment in industries with high levels of separations.

Net Job Flow:

Net job flow⁵ is another Quarterly Workforce Indicator that can be used to study the aging workforce. Net job flow is calculated as the difference between current and previous employment in an area and determines which industries are expanding or contracting employment. By looking at net job flows, it can be determined which industries in the Northwest WIA are creating new job opportunities or restricting job possibilities and how these activities influence various age groups, specifically older workers.

While net job flow is simply the change in employment, it cannot be distinguished if decreases in employment (i.e. negative net job flows) are due to companies reducing employment or workers leaving for various reasons (e.g. retirement, another job, et cetera), or if increases in employment (i.e. positive net job flows) are due to companies expanding employment or new individuals entering employment. It is important to note, though, which industries demonstrate positive net job flows, especially for individuals in older age groups. A positive net job flow for older workers indicates an increase in employment over a certain time period, which may be the result of incumbent workers advancing into a new age bracket or the industry hiring older workers. In either case, these industries may offer stable employment for older workers and/or possible job opportunities.

In the Northwest WIA for 2006, net job flows represented an average quarterly increase of 58 jobs for workers ages 45-54, an average loss of 344 jobs for workers ages 55-64, and an average loss of 170 jobs for workers ages 65+. These negative values could be solely a reflection of normal retirement activity, or older workers in the Northwest WIA may not possess the educational (especially technological and computer-based) skills necessary to compete for the types of new jobs being offered by various companies, thus causing negative net job flow for older individuals. Overall, net job flow represented an average increase of 1,440 jobs for all workers in the Northwest WIA.

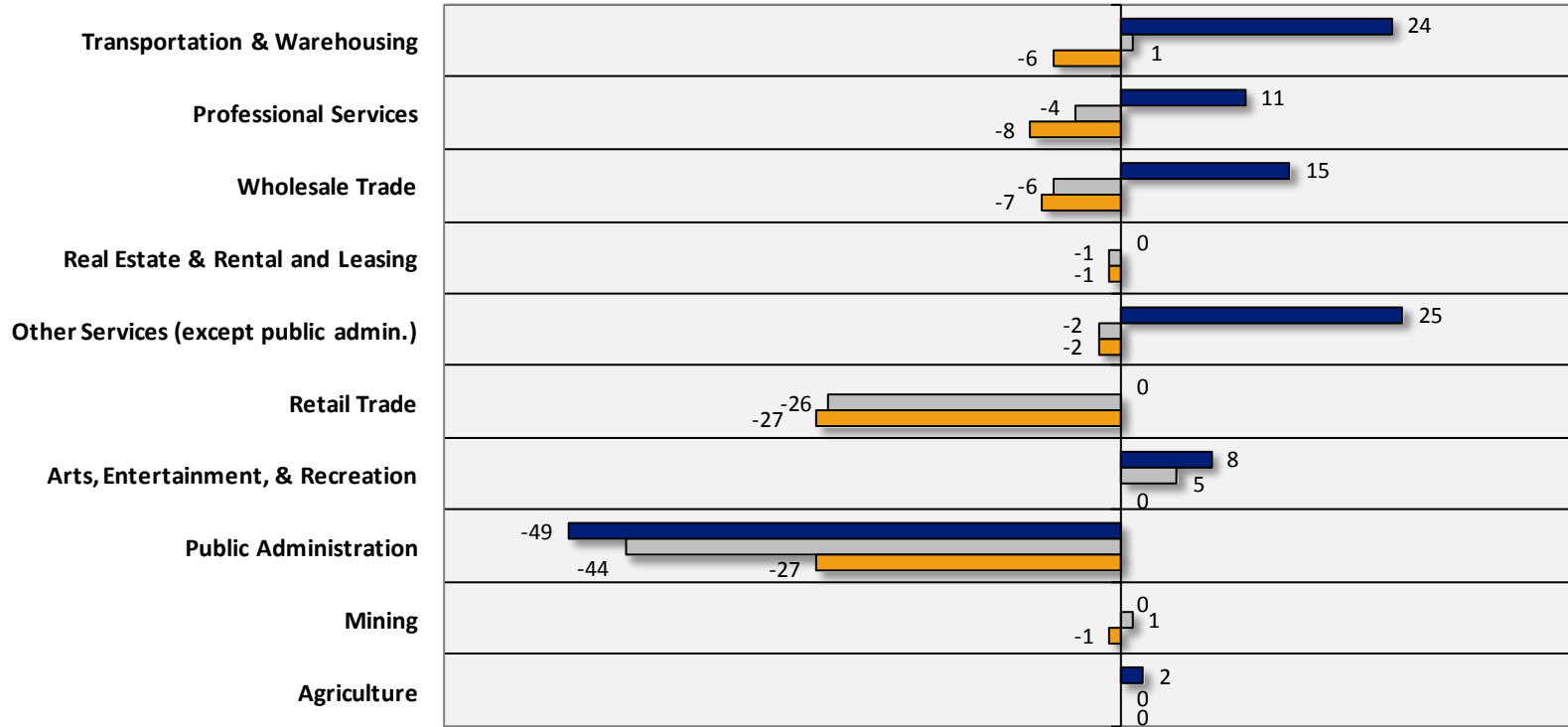
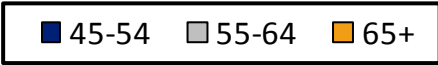
⁵ Because employment, job creations, and job separations are presented as average quarterly estimates, these values do not sum exactly to the value of the provided net job flow.

It is important to distinguish between net job flow resulting from individuals belonging to specific age groups and net job flow resulting from the nature of the job even if the job is typically held by individuals in certain age groups. This analysis looks at the latter and in no way suggests that industries are engaged in any discriminatory practices by focusing on hiring certain age groups.

The following chart identifies the average quarterly net job flows for industries that have the highest proportions of workers ages 65+ in 2006 in the Northwest WIA:

See Appendix J for net job flows by industry and by age group.

Average Quarterly Net Job Flows (2006)
Top Industries Employing Workers 65+
Northwest WIA



Source: U.S. Census LEHD Program, July 2008

While net job flow was positive for all workers in the Northwest WIA in 2006, it was negative for the 55-64 and 65+ age groups. This indicates that the region is restricting job opportunities for these older workers. The retail trade industry, which has demonstrated relatively higher levels of job creations and job separations, has negative net job flows for these age groups as well.

Retail trade, an industry shown to have high levels for both job creations and job destructions, exhibits a negative net job flow for the 55-64 and 65+ age groups. This indicates that this industry does not maintain its workforce for older workers (i.e. it restricts employment opportunities). It is important to consider the idea, though, that this industry may be seen merely as a transition between jobs for older workers or as a limited time supplemental employment and not as a permanent solution.

Industries Hiring Older Workers:

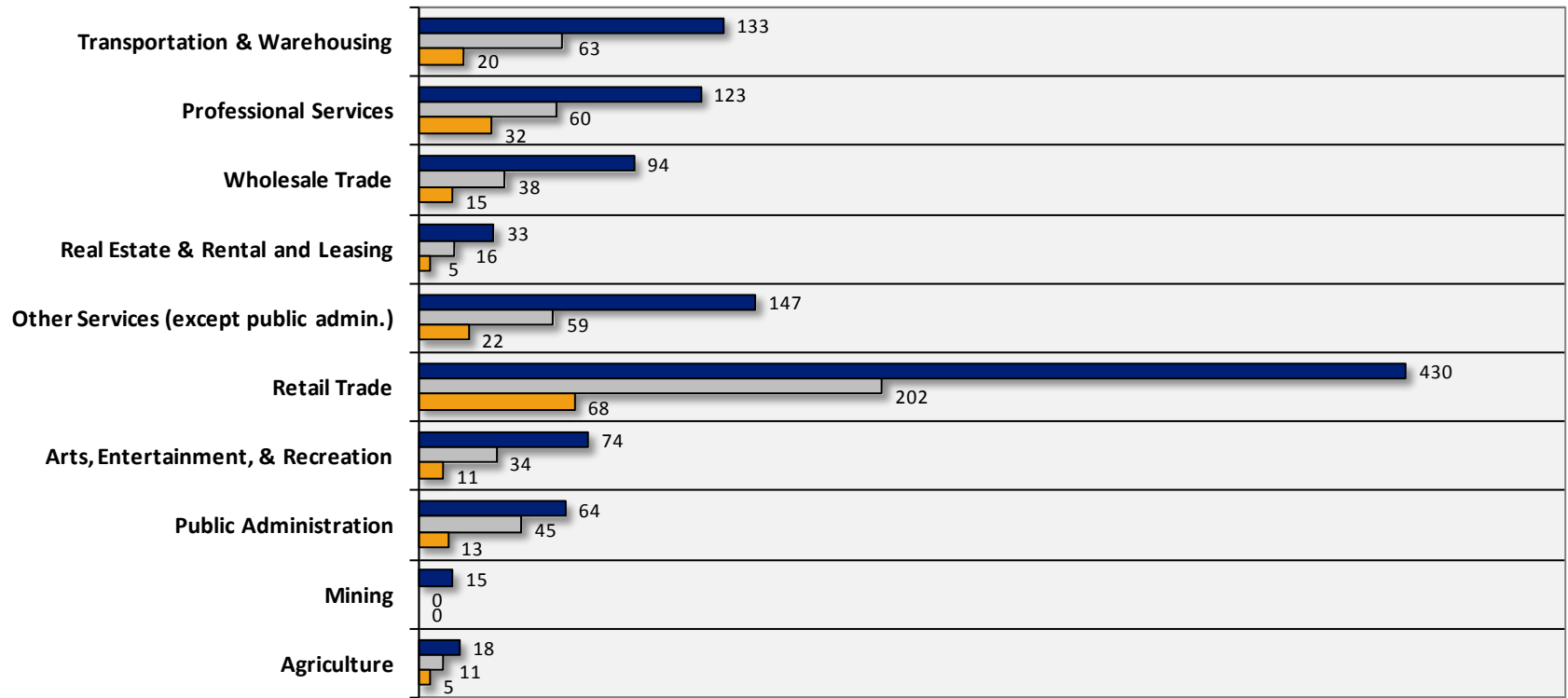
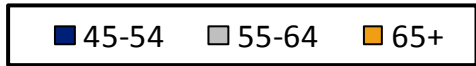
The final Quarterly Workforce Indicator that will be discussed is new hires. New hires represent the total number of workers in a company that were not employed by that employer during the previous four quarters. Of course, the value of this QWI is dependent on all employers reporting new hires promptly. By analyzing new hire data, it can be determined into which industries older workers are often hired. Industries that traditionally employ higher proportions of older workers may be forced to explore other options to meet hiring needs when the labor force drops in the future. Industries that do not traditionally hire younger workers may have to consider doing so as a mechanism for maintaining and expanding jobs.

In 2006 for the Northwest WIA, there was an average of 29,000 quarterly new hires. Approximately 12% was for workers 45-54, 5% for the 55-64 age group, and 2% for those over age 64. Age clearly impacts the number of new hires. This does not suggest that age prevents potential new hires from employment, but it may show that there are a lower number of older workers looking to be hired.

The following chart demonstrates the average number of quarterly new hires for industries that employ the greater percentage of workers ages 65 and over in the Northwest WIA for 2006:

See Appendix K for new hires by age group and by industry.

Quarterly New Hires (2006)
Top Industries Employing Workers 65+
Northwest WIA



Source: U.S. Census LEHD Program, July 2008

Industries with high proportions of employment by workers 65+ that have high levels of new hires may be another option for workers to consider when deciding to work beyond retirement. Retail trade has high levels of new hires for each older age group in the Northwest WIA, which may be a result of this industry offering temporary employment opportunities for older workers in the region.

Retail trade is an industry that hires a large proportion of older workers in the Northwest WIA. This is expected because of what has already been presented with job creations, job separations, and net job flows, which are influenced highly by the level of new hires.

Conclusion:

The aging workforce in the Northwest Workforce Investment Area (WIA) is one of great concern for business executives, decisionmakers, and older workers themselves. Through the analysis of Quarterly Workforce Indicators, data provided by the Longitudinal Employer-Household Dynamics (LEHD) program conducted by the Census Bureau, several issues have been resolved. These issues include analyzing the legitimacy of an aging workforce, determining which industries will be most likely affected by the aging workforce and demonstrating how older workers in the Northwest WIA could affect current and future aspects of the workforce. It is clear from the data that Northwest PA will not escape the consequences of an aging workforce. The factor that is unclear is when exactly the shortage will reach crisis proportions. With decreasing unemployment rates and tight labor markets, some industries are already experiencing difficulty in filling positions (e.g., nursing). It is estimated that the crisis will be upon the Northwest WIA around 2012.

Because of high proportions of workers ages 55-64, the education, manufacturing, and health care & social assistance industries may be the most affected by the aging workforce. Possibly 16,000 employees from these industries will retire within the next decade. These industries must begin preparing immediately to replace large losses in the workforce when these individuals retire. Possible solutions include training programs, increased recruiting efforts, et cetera to prepare younger workers and/or new employees for various jobs. While some vacancies will be filled by younger workers, it can be expected that many openings will remain vacant due to the pending shortage of workers.

The retail trade and other services (except public administration) industries demonstrated relatively large proportions of employment by workers over the retirement age (i.e. 65). As of 2006, over 1,500 employees in these industries were 65 or older. Individuals who decide to supplement their retirement or even delay retirement may look to these industries for employment.

Industries with large concentrations of employment by workers over the age of 65 were used to compare various levels of Quarterly Workforce Indicators (QWIs), including turnover, average monthly earnings, job creations, job separations, net job flows, and new hires. While these levels will certainly change over time, economic developers can use current levels of each measure to forecast future conditions in local businesses in creating transitional plans to counteract the aging workforce. Certainly, unforeseen

changes in the local economy, the labor market, technology, et cetera may affect these levels. Improvements in technology may cause many positions in companies to become obsolete, or the region may experience a large influx of younger workers. Such events will alter the workforce and the economy dramatically.

This analysis does not guarantee that historical trends in each Quarterly Workforce Indicator will continue into the future. This report merely provides a snapshot of the Northwest WIA's aging workforce using certain statistics to suggest the possibility of specified industries being more affected by retiring baby boomers than other industries.

Recommendations:

The pending crisis in the Northwest WIA mirrors the national trend. Edward Gordon, in his book *The 2010 Meltdown*, notes that by 2025, the United States will have 27 "Floridas". He stresses that by the decade following 2010, the "principal talent pool for managers and workers under age 45 will shrink by 6%" (page 13). By 2030 there will be two workers for every social security beneficiary (almost a 90% reduction since 1950). As data in this report suggests, the Northwest WIA could begin to see the early phases of this crisis by 2012, when it appears that the rate of retirement exceeds the rate of workforce entrance. There may not be enough new workers entering the labor pool to replace those retiring without even considering the new jobs to be created through business growth.

This report was intended to provide statistical analysis of the situation as a basis for future research and innovative approaches to most effectively using the available workforce. Issues that the Northwest Workforce Investment Board, along with its partners and stakeholders, may consider include:

1. **Retraining For Displaced Workers:** In an already tight labor market with low unemployment, it will be critical that workers displaced from jobs are quickly retrained in high demand occupations to return to the workforce.
2. **Flexible Work Schedules:** Gordon (2005) notes that 80% of all baby boomers plan to work part-time after retirement. Given that statistic, it will be important for employers to be educated on the benefits of hiring older workers. Additionally, employers may need to make significant personnel changes to accommodate job sharing and flexible scheduling to encourage as many people to work as possible.
3. **Short-Term Training:** As employers experience a demand for replacement workers, they will not be able to wait for traditional 2- and 4-year degree programs to be completed. The educational community will need to find ways to be more responsive by developing short-term (preferably one year or less) training programs that are industry-recognized, credentialed and articulated for further learning opportunities.
4. **Incumbent Worker Training:** One way to close the gap and minimize the lost knowledge of retirees is to increase opportunities for incumbent worker training. In-house training and mentoring programs can assist in ensuring that core business knowledge is transferred.

5. **Transition the Working Poor:** There is a significant pool of workers that juggle multiple jobs but continue to be below the poverty line. Resources that help these individuals increase their skills sets and eliminate barriers to family sustaining jobs will be important for advancement. At the same time, elevating their skill levels will open a pool of positions for new hires in unskilled and semi-skilled positions.
6. **Increase Innovative Practices:** To the extent possible, employers will need to explore and invest in emerging technologies to reduce their reliance on manpower if there will be a limited supply of labor. However, the reliance on technology increases the demand for high skill workers who can operate, maintain and troubleshoot.

These are only a sampling of the issues that must be considered as the Northwest WIA moves forward with an aging population. Those communities and employers that are able to develop creative solutions and respond with flexibility will be best poised to successfully transition in this changing workforce.

For further analysis (i.e. analyzing specific industries at higher NAICS levels), please contact the Central Pennsylvania Workforce Development Corporation.

Appendix A.
Population Estimates and Projections by Age Group
Data Provided by DecisionData, July 2008

Aging Workforce Analysis			
Northwest WIA			
Population by Age Group			
Age Group	Year		
	2000	2007	2012
0-4	30,999	28,296	28,413
5-9	35,536	29,663	27,978
10-14	37,283	33,152	29,490
15-19	41,003	36,551	32,805
20-24	34,706	38,800	36,310
25-29	29,744	34,514	38,476
30-34	32,625	29,200	34,179
35-39	37,209	29,937	28,929
40-44	41,008	34,515	29,497
45-49	38,991	38,586	33,971
50-54	33,071	38,761	37,514
55-59	26,606	34,149	37,690
60-64	21,969	27,339	32,340
65-69	19,955	21,022	25,898
70-74	20,217	16,798	18,538
75-79	17,241	15,391	14,828
80-84	11,765	13,170	11,090
85+	9,420	13,385	13,124
Total	519,348	513,206	511,058

Appendix B.
**Population Estimates and Projections, and Percent Changes in Job
Openings**

Data provided by Economic Modeling Specialists, Incorporated, July 2008

Aging Workforce Analysis

Northwest WIA

Population by Age Group (2002-2018)

Age Group	Year								
	2002	2003	2004	2005	2006	2007	2008	2009	2010
0-4	30,071	29,861	29,496	29,104	28,715	28,656	28,702	28,690	28,703
5-9	33,242	32,095	31,242	30,756	30,498	30,136	29,554	29,065	28,693
10-14	37,064	37,047	36,379	35,225	34,256	33,080	32,464	32,036	31,654
15-19	40,007	39,505	38,478	38,337	38,190	38,308	38,166	37,515	36,337
20-24	38,006	38,871	38,155	38,400	38,021	36,960	36,649	36,562	36,720
25-29	27,604	27,651	28,824	29,811	31,368	32,994	32,739	32,368	32,134
30-34	32,264	31,726	30,361	29,391	27,987	27,885	29,149	30,567	31,847
35-39	34,470	33,309	32,546	32,047	32,076	31,404	30,043	28,596	27,289
40-44	40,231	39,127	38,082	37,101	35,743	34,551	33,941	33,533	33,492
45-49	40,130	40,580	40,588	40,355	40,069	39,088	38,187	37,472	36,292
50-54	35,572	36,254	37,438	38,428	38,882	39,433	39,670	39,595	39,506
55-59	28,623	29,511	30,608	32,082	33,951	34,185	35,607	36,939	37,747
60-64	22,995	24,082	24,598	24,963	25,125	26,794	27,510	28,928	30,835
65-69	19,436	19,708	20,078	20,121	20,337	20,925	21,495	21,562	21,740
70-74	19,154	18,578	17,846	17,513	17,244	17,166	17,269	17,429	17,520
75-79	17,153	17,084	16,865	16,578	16,128	15,741	15,233	14,862	14,618
80-84	12,518	12,673	12,782	12,920	13,005	12,976	13,014	12,731	12,512
85+	10,226	10,662	10,947	11,346	11,730	12,217	12,410	12,716	12,985
Total	518,766	518,324	515,313	514,478	513,325	512,499	511,802	511,166	510,624

Age Group	Year							
	2011	2012	2013	2014	2015	2016	2017	2018
0-4	28,567	28,482	28,453	28,408	28,333	28,224	28,084	27,914
5-9	28,491	28,598	28,634	28,627	28,650	28,540	28,483	28,465
10-14	31,329	30,790	30,221	29,750	29,399	29,234	29,365	29,425
15-19	35,445	34,346	33,728	33,294	32,889	32,550	32,015	31,446
20-24	36,489	36,672	36,508	35,905	34,821	34,007	33,005	32,441
25-29	31,971	31,834	31,770	31,823	31,905	31,266	31,213	30,940
30-34	33,070	33,426	33,066	32,638	32,444	32,700	32,714	32,776
35-39	26,446	26,736	27,925	29,285	30,547	31,824	32,288	32,024
40-44	33,303	32,353	30,971	29,501	28,188	27,370	27,706	28,964
45-49	35,039	34,122	33,572	33,212	33,215	33,088	32,197	30,863
50-54	39,254	38,684	37,852	37,198	36,078	34,888	34,032	33,536
55-59	38,243	38,368	38,668	38,653	38,622	38,440	37,942	37,177
60-64	32,133	32,668	34,070	35,372	36,188	36,704	36,885	37,221
65-69	22,461	24,228	24,906	26,219	27,994	29,211	29,726	31,050
70-74	17,980	18,596	19,140	19,204	19,371	20,064	21,753	22,403
75-79	14,318	14,178	14,285	14,434	14,534	14,941	15,482	15,964
80-84	12,251	11,910	11,539	11,283	11,109	10,894	10,803	10,905
85+	13,150	13,283	13,362	13,322	13,329	13,250	13,121	12,946

Total	509,940	509,274	508,670	508,128	507,616	507,195	506,814	506,460
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Percent Change in New and Replacement Jobs

Jobs	Base Year 2002	Year							
		2003	2004	2005	2006	2007	2008	2009	2010
% New	-	-1%	1%	3%	4%	5%	6%	7%	8%
% Rep.	-	2%	4%	6%	8%	10%	12%	14%	16%

Total	-	1%	5%	9%	12%	15%	18%	21%	24%
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Jobs	Year							
	2011	2012	2013	2014	2015	2016	2017	2018
% New	8%	9%	9%	10%	10%	11%	11%	11%
% Rep.	18%	20%	22%	24%	26%	28%	30%	32%

Total	26%	29%	31%	34%	36%	39%	41%	43%
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Appendix C.
Quarterly Workforce Indicators for All NAICS Sectors by Age Group

Aging Workforce Analysis

Northwest WIA

Coefficient of Determination (R^2)

* Values are 2006 average quarterly estimates for all NAICS sectors

Age Group	Employment	Turnover Rate	Earnings	Job Creations	Job Separations	New Hires	Net Job Flows
14-18	6,907	26.2%	\$484	2,064	3,412	3,922	1,004
19-21	11,324	23.2%	\$952	2,143	5,248	4,636	324
22-24	12,377	18.6%	\$1,531	1,662	4,102	3,580	103
25-34	38,596	11.5%	\$2,398	3,018	7,619	6,540	205
35-44	47,824	7.7%	\$3,042	2,835	6,053	4,962	272
45-54	54,026	5.8%	\$3,373	2,429	4,912	3,625	58
55-64	29,665	5.9%	\$3,303	1,257	2,750	1,519	-344
65+	7,097	8.6%	\$1,823	492	1,091	488	-170
R² Value (Linear)	0.12	0.82	0.53	0.22	0.16	0.39	0.71
R² Value (Quadratic)	0.68	0.96	0.86	0.72	0.81	0.80	0.76

Appendix D.
Total Employment for All NAICS Sectors by Age Group (2001Q1-2006Q4)

Total Employment by Age Group								
Age Group	2001Q1	2001Q2	2001Q3	2001Q4	2002Q1	2002Q2	2002Q3	2002Q4
14-99	210,893	212,460	215,657	209,225	200,244	205,999	205,808	208,954
14-44	130,620	131,960	134,738	127,518	121,381	124,388	126,418	125,175
45-54	52,055	51,991	51,887	52,027	50,036	51,575	49,823	52,624
55-64	22,592	22,638	22,982	23,530	23,109	24,158	23,633	24,951
65+	5,625	5,871	6,051	6,150	5,717	5,876	5,933	6,204

Total Employment by Age Group (continued)								
Age Group	2003Q1	2003Q2	2003Q3	2003Q4	2004Q1	2004Q2	2004Q3	2004Q4
14-44	200,105	206,770	204,500	203,564	193,184	198,838	207,420	207,501
45-54	118,223	121,336	122,095	117,988	111,797	115,568	122,731	119,708
55-64	51,336	53,393	50,899	52,997	50,323	51,388	52,019	53,843
65+	24,610	25,716	25,088	26,044	25,016	25,571	26,045	27,102
14-99	5,935	6,324	6,417	6,536	6,048	6,312	6,624	6,847

Total Employment by Age Group (continued)								
Age Group	2005Q1	2005Q2	2005Q3	2005Q4	2006Q1	2006Q2	2006Q3	2006Q4
14-44	199,627	206,178	209,921	210,906	203,365	209,239	209,080	209,594
45-54	113,939	117,530	122,384	119,204	114,084	117,320	119,932	116,786
55-64	52,317	53,831	52,891	55,231	53,632	54,863	52,928	54,682
65+	26,965	28,097	27,826	29,354	28,806	30,027	29,148	30,681
14-99	6,407	6,719	6,818	7,116	6,843	7,030	7,072	7,445

Appendix E.
Average Employment by Age Group and by Industry, 2001 and 2006

Aging Workforce Analysis

Northwest WIA

Employment by Industry

** Note: Values are average quarterly estimates*

NAICS	Industry	Average Employment-2001				Average Employment-2006			
		45-54	55-64	65+	14-99	45-54	55-64	65+	14-99
All	All NAICS Industries	51,990	22,935	5,924	212,058	54,026	29,665	7,097	207,819
11	Agriculture	172	71	32	796	174	105	32	838
21	Mining	214	86	28	844	275	108	39	979
22	Utilities	496	129	16	1,214	529	233	26	1,248
23	Construction	1,580	612	163	7,296	1,828	770	191	6,866
31-33	Manufacturing	14,991	6,598	826	52,568	13,761	7,459	877	43,525
42	Wholesale Trade	1,372	686	281	5,738	1,619	849	340	5,795
44-45	Retail Trade	5,015	2,591	1,188	27,566	4,894	2,991	1,257	24,573
48-49	Transportation & Warehousing	1,237	698	309	5,009	1,693	1,046	428	5,828
51	Information	807	335	85	3,405	760	409	76	3,135
52	Finance & Insurance	1,895	817	183	7,144	2,183	1,127	193	7,480
53	Real Estate & Rental and Leasing	482	220	120	2,326	448	279	114	2,026
54	Professional Services	1,174	510	118	4,982	1,488	890	412	5,906
55	Management	263	101	15	964	536	298	52	1,779
56	Administrative Services	1,566	762	363	9,417	1,911	965	345	9,713
61	Education	6,393	2,597	437	17,571	5,881	3,785	559	18,379
62	Health Care & Social Assistance	8,528	3,396	625	31,624	9,729	5,050	977	35,605
71	Arts, Entertainment, & Recreation	349	173	116	2,626	460	284	136	2,894
72	Accommodation & Food Services	1,404	679	280	15,110	1,861	779	302	15,971
81	Other Services (except public admin.)	1,583	798	400	7,675	1,685	895	388	7,315
92	Public Administration	2,459	1,071	332	8,177	2,308	1,334	348	7,957

Appendix F.
Average Turnover Rate by Age Group and by Industry, 2001 and 2006

Aging Workforce Analysis

Northwest WIA

Average Quarterly Turnover Rate by Industry

** Note: Values are average quarterly estimates*

NAICS	Industry	Average Turnover Rate-2001				Average Turnover Rate-2006			
		45-54	55-64	65+	14-99	45-54	55-64	65+	14-99
All	All NAICS Industries	7.6%	8.0%	11.2%	11.2%	5.8%	5.9%	8.6%	9.3%
11	Agriculture	11.6%	10.0%	12.1%	14.2%	8.1%	7.1%	20.4%	12.2%
21	Mining	6.5%	8.6%	9.7%	9.6%	6.4%	6.1%	9.9%	8.7%
22	Utilities	2.2%	6.4%	10.4%	3.7%	1.9%	3.8%	7.1%	3.3%
23	Construction	10.3%	11.7%	13.9%	13.4%	8.5%	9.5%	9.2%	11.6%
31-33	Manufacturing	6.1%	6.6%	9.8%	8.1%	3.7%	3.5%	7.0%	5.9%
42	Wholesale Trade	8.5%	8.3%	9.0%	10.6%	5.0%	5.1%	5.6%	7.2%
44-45	Retail Trade	10.3%	9.6%	10.6%	14.5%	7.2%	6.2%	6.8%	11.3%
48-49	Transportation & Warehousing	8.5%	8.6%	10.5%	9.9%	6.5%	7.3%	8.4%	8.2%
51	Information	11.5%	10.6%	7.1%	14.0%	13.5%	12.7%	6.0%	14.3%
52	Finance & Insurance	13.5%	12.1%	8.5%	15.6%	2.4%	2.5%	6.0%	3.7%
53	Real Estate & Rental and Leasing	7.8%	8.3%	8.1%	11.8%	7.7%	6.8%	6.1%	11.1%
54	Professional Services	7.9%	8.2%	9.9%	10.9%	6.6%	7.4%	9.3%	9.1%
55	Management	9.2%	12.4%	13.1%	12.7%	4.1%	4.0%	5.0%	6.5%
56	Administrative Services	20.3%	17.2%	19.9%	26.7%	18.0%	15.0%	15.6%	24.1%
61	Education	6.9%	8.2%	11.9%	9.2%	3.7%	5.0%	9.5%	5.8%
62	Health Care & Social Assistance	5.1%	5.2%	8.0%	7.7%	6.1%	6.1%	8.0%	8.8%
71	Arts, Entertainment, & Recreation	14.2%	18.9%	27.6%	20.1%	14.2%	19.1%	28.4%	21.5%
72	Accommodation & Food Services	14.4%	13.1%	16.7%	20.2%	10.9%	11.0%	10.5%	18.2%
81	Other Services (except public admin.)	9.2%	8.2%	10.3%	12.5%	8.2%	7.5%	7.9%	11.6%
92	Public Administration	3.4%	4.6%	11.4%	5.0%	4.2%	5.8%	11.1%	5.5%

Appendix G.
Average Quarterly Earnings by Age Group and by Industry, 2001 and 2006

Aging Workforce Analysis

Northwest WIA

Average Quarterly Earnings by Industry

** Note: Values are average quarterly estimates*

NAICS	Industry	Average Quarterly Earnings-2001				Average Quarterly Earnings-2006			
		45-54	55-64	65+	14-99	45-54	55-64	65+	14-99
All	All NAICS Industries	\$9,046	\$8,562	\$4,679	\$7,312	\$10,118	\$9,909	\$5,470	\$8,336
11	Agriculture	\$6,039	\$5,195	\$2,936	\$4,831	\$6,872	\$5,950	\$3,671	\$6,129
21	Mining	\$9,909	\$8,408	\$5,156	\$8,746	\$13,679	\$10,967	\$5,372	\$11,253
22	Utilities	\$13,960	\$13,733	\$8,207	\$13,272	\$16,640	\$15,665	\$6,854	\$15,248
23	Construction	\$9,407	\$9,020	\$5,395	\$7,954	\$10,057	\$10,529	\$6,933	\$8,879
31-33	Manufacturing	\$10,480	\$10,628	\$8,408	\$9,215	\$12,074	\$12,664	\$10,232	\$10,885
42	Wholesale Trade	\$10,480	\$9,692	\$5,107	\$8,837	\$11,970	\$11,548	\$7,610	\$10,574
44-45	Retail Trade	\$6,054	\$5,288	\$2,863	\$4,911	\$6,805	\$5,684	\$3,362	\$5,424
48-49	Transportation & Warehousing	\$7,934	\$6,708	\$3,335	\$7,055	\$9,356	\$7,924	\$4,124	\$8,233
51	Information	\$10,134	\$10,236	\$4,543	\$8,070	\$10,310	\$10,333	\$5,581	\$8,924
52	Finance & Insurance	\$12,276	\$12,962	\$12,231	\$10,798	\$14,353	\$14,002	\$8,470	\$12,201
53	Real Estate & Rental and Leasing	\$6,476	\$5,275	\$3,836	\$5,662	\$8,360	\$7,621	\$3,667	\$6,920
54	Professional Services	\$10,312	\$10,145	\$6,548	\$8,796	\$11,790	\$11,097	\$4,885	\$9,968
55	Management	\$10,578	\$9,529	\$8,231	\$8,586	\$9,143	\$10,713	\$8,793	\$8,855
56	Administrative Services	\$5,027	\$4,549	\$2,713	\$3,937	\$6,787	\$6,332	\$4,240	\$5,373
61	Education	\$9,616	\$9,477	\$5,444	\$8,282	\$10,052	\$10,555	\$5,639	\$9,374
62	Health Care & Social Assistance	\$9,042	\$8,472	\$4,847	\$7,472	\$9,951	\$9,471	\$6,062	\$8,190
71	Arts, Entertainment, & Recreation	\$5,184	\$4,691	\$3,707	\$3,686	\$5,748	\$4,817	\$4,120	\$4,069
72	Accommodation & Food Services	\$3,359	\$3,198	\$2,341	\$2,546	\$3,725	\$3,484	\$2,909	\$2,794
81	Other Services (except public admin.)	\$4,346	\$4,106	\$2,122	\$3,927	\$5,255	\$4,816	\$2,732	\$4,542
92	Public Administration	\$8,524	\$7,250	\$3,695	\$7,799	\$9,742	\$8,414	\$3,556	\$8,905

Appendix H.
Average Job Creations by Age Group and by Industry, 2001 and 2006

Aging Workforce Analysis

Northwest WIA

Average Quarterly Job Creations by Industry

** Note: Values are average quarterly estimates*

NAICS	Industry	Average Job Creations-2001				Average Job Creations-2006			
		45-54	55-64	65+	14-99	45-54	55-64	65+	14-99
All	All NAICS Industries	2,899	1,219	490	13,366	2,429	1,257	492	11,942
11	Agriculture	17	7	2	109	22	10	6	125
21	Mining	11	5	3	60	16	N/A	3	69
22	Utilities	12	4	1	48	8	4	N/A	28
23	Construction	177	70	24	897	169	81	19	808
31-33	Manufacturing	752	265	45	2,166	358	155	41	1,412
42	Wholesale Trade	78	42	17	344	84	34	13	302
44-45	Retail Trade	338	157	86	1,823	256	142	62	1,318
48-49	Transportation & Warehousing	71	40	21	274	100	61	26	310
51	Information	185	61	6	576	26	12	3	129
52	Finance & Insurance	56	23	7	255	39	16	5	148
53	Real Estate & Rental and Leasing	32	19	8	161	24	16	6	136
54	Professional Services	82	38	12	371	96	56	25	447
55	Management	11	4	N/A	48	6	3	1	31
56	Administrative Services	145	65	48	891	208	105	53	1,082
61	Education	190	79	28	739	183	124	42	796
62	Health Care & Social Assistance	308	123	36	1,301	378	187	59	1,491
71	Arts, Entertainment, & Recreation	60	41	36	687	80	56	38	812
72	Accommodation & Food Services	160	77	36	1,596	179	85	31	1,531
81	Other Services (except public admin.)	133	62	35	685	143	66	32	729
92	Public Administration	64	28	33	333	48	34	20	259

Appendix I.
Average Separations by Age Group and by Industry, 2001 and 2006

Aging Workforce Analysis

Northwest WIA

Average Quarterly Separations by Industry

** Note: Values are average quarterly estimates*

NAICS	Industry	Average Separations-2001				Average Separations-2006			
		45-54	55-64	65+	14-99	45-54	55-64	65+	14-99
All	All NAICS Industries	6,178	3,018	1,155	43,470	4,912	2,750	1,091	35,189
11	Agriculture	45	13	10	292	34	21	11	258
21	Mining	19	10	4	136	21	7	6	119
22	Utilities	16	14	2	63	9	11	4	49
23	Construction	367	162	41	2,121	354	160	38	1,765
31-33	Manufacturing	1,241	724	143	6,788	615	349	99	3,505
42	Wholesale Trade	175	88	40	969	106	60	33	623
44-45	Retail Trade	633	328	181	6,282	532	290	144	4,781
48-49	Transportation & Warehousing	172	94	50	862	160	103	44	758
51	Information	79	39	15	585	46	37	11	378
52	Finance & Insurance	240	105	23	1,084	68	43	60	429
53	Real Estate & Rental and Leasing	58	29	16	480	44	26	12	352
54	Professional Services	150	68	22	951	158	105	74	939
55	Management	37	17	N/A	200	30	20	7	200
56	Administrative Services	604	241	125	5,681	697	265	91	5,300
61	Education	720	369	97	2,944	436	379	109	2,265
62	Health Care & Social Assistance	713	297	91	3,958	759	411	119	4,336
71	Arts, Entertainment, & Recreation	111	64	46	1,280	115	68	45	1,317
72	Accommodation & Food Services	380	149	84	6,168	341	140	52	5,487
81	Other Services (except public admin.)	270	107	77	1,838	208	107	51	1,480
92	Public Administration	140	95	76	782	173	142	75	840

Appendix J.
Average Net Job Flows by Age Group and by Industry, 2001 and 2006

Aging Workforce Analysis

Northwest WIA

Average Quarterly Net Job Flows by Industry

** Note: Values are average quarterly estimates*

NAICS	Industry	Average Net Job Flows-2001				Average Net Job Flows-2006			
		45-54	55-64	65+	14-99	45-54	55-64	65+	14-99
All	All NAICS Industries	-529	-649	-240	-2,269	58	-344	-170	1,440
11	Agriculture	-10	-1	-2	-14	2	N/A	N/A	19
21	Mining	-1	-2	N/A	-1	N/A	1	-1	21
22	Utilities	1	-7	N/A	13	6	-4	-2	9
23	Construction	-4	-14	-1	42	10	N/A	-5	126
31-33	Manufacturing	-67	-254	-61	-1,346	22	-78	-35	167
42	Wholesale Trade	-44	-22	-12	-145	15	-6	-7	66
44-45	Retail Trade	5	-27	-27	-44	N/A	-26	-27	84
48-49	Transportation & Warehousing	-18	-14	-8	-50	24	1	-6	45
51	Information	146	43	-1	397	1	-5	-2	9
52	Finance & Insurance	-142	-62	-11	-510	-8	-14	-8	-39
53	Real Estate & Rental and Leasing	4	3	N/A	11	N/A	-1	-1	2
54	Professional Services	-3	-8	-2	N/A	11	-4	-8	116
55	Management	-14	-8	-1	-55	-10	-6	-2	-30
56	Administrative Services	-50	-29	-14	-339	8	-4	-1	188
61	Education	-205	-137	-30	-505	28	-53	-9	142
62	Health Care & Social Assistance	-91	-75	-29	-36	-40	N/A	-20	41
71	Arts, Entertainment, & Recreation	-4	2	1	77	8	5	N/A	133
72	Accommodation & Food Services	-47	-22	-19	112	4	-8	-2	275
81	Other Services (except public admin.)	-3	3	-11	74	25	-2	-2	207
92	Public Administration	9	-16	-5	43	-49	-44	-27	-131

Appendix K.
Average New Hires by Age Group and by Industry, 2001 and 2006

Aging Workforce Analysis

Northwest WIA

Average Quarterly New Hires by Industry

** Note: Values are average quarterly estimates*

NAICS	Industry	Average New Hires-2001				Average New Hires-2006			
		45-54	55-64	65+	14-99	45-54	55-64	65+	14-99
All	All NAICS Industries	3,869	1,484	495	32,161	3,625	1,519	488	29,275
11	Agriculture	17	N/A	5	189	18	11	5	180
21	Mining	13	N/A	N/A	104	15	N/A	N/A	114
22	Utilities	9	3	1	48	11	N/A	N/A	46
23	Construction	240	85	20	1,554	267	101	18	1,417
31-33	Manufacturing	800	276	39	3,991	447	156	27	2,862
42	Wholesale Trade	91	39	14	632	94	38	15	563
44-45	Retail Trade	513	227	97	5,377	430	202	68	4,266
48-49	Transportation & Warehousing	98	50	18	576	133	63	20	615
51	Information	53	24	4	513	39	24	N/A	322
52	Finance & Insurance	68	23	4	421	49	16	45	328
53	Real Estate & Rental and Leasing	47	23	7	393	33	16	5	291
54	Professional Services	94	32	12	729	123	60	32	811
55	Management	18	6	N/A	122	18	9	2	152
56	Administrative Services	465	167	73	4,501	595	205	56	4,682
61	Education	298	128	35	1,613	222	131	34	1,371
62	Health Care & Social Assistance	480	159	42	3,261	556	242	66	3,605
71	Arts, Entertainment, & Recreation	50	30	12	838	74	34	11	960
72	Accommodation & Food Services	255	83	41	5,355	282	92	33	5,063
81	Other Services (except public admin.)	179	77	33	1,463	147	59	22	1,208
92	Public Administration	75	33	27	472	64	45	13	414