Washington State Department of Labor and Industries

The Aging Workforce in Washington State:

Impacts and Implications for Workers Compensation

Report of Research in Progress

Second Edition

Research and Data Services
Information for Informed Decisions
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Executive Summary: Aging Workforce research report

Research and Data Services was asked by Labor and Industries' (L&I) executive management to study the effects of aging workers on Workers Compensation. A study has thus far explored how an aging workforce affects the duration of claims, time loss and time loss costs. By request the effects of occupational disease on older workers was added. The literature review below was abstracted from a separate document completed December 19, 2005 and posted on the L&I Research and Data Services intranet and L&I internet websites. The Aging Workforce study continues as described in the next research steps.

Older workers are an increasing proportion of the workforce, and they are staying in the workforce longer, especially among ages 65-74. Older workers produce a greater proportion of claims and time loss (TL) days than younger workers especially among 45-64 year olds. Their costs per claim will be higher and the length of their claims will be longer. The number of older workers' will increase through 2030 and level off, followed by a gradual decrease. Compared with younger cohorts, ages 65 and older average time loss costs decreased even while their TL days increased.

Occupational disease claims get more expensive as workers get older, and are more expensive than injury claims, having almost double the TL days per claim. Occupational disease claims in younger cohorts show more rapid growth in time loss and medical costs than injury claims. Per claim and age cohort, the average medical paid-to date (PTD) for all occupational disease claims is much higher than for injury claims. Occupational disease medical-only costs average 30% of the total medical-only expenses for all workers above age 45. Surprisingly among time loss claims for ages 18-44 there was a higher rate of medical expense growth for occupational disease than for injury claims. This may offer opportunity for occupational disease prevention in age cohorts 18-34 and 35-44.

Supporting charts on demographics, labor force participation, claims, time loss, costs, growth estimates to 2015, and occupational disease are given. Appendix tables provide the original data used in all charts.

Introduction – Aging Workforce Study

The aging of the post WWII "baby boom" generation has drawn attention from demographers, economists, social scientists, government, business and labor, social service agencies, and advocates as they began to observe the effects on the workforce of changes in the population structure (Galizzi et al 1998; Bogyo and Victor 2000). As the proportion of older workers increases through demographic changes and an emerging trend among older workers to extend their working lives, changes are occurring in the worker and workplace that effect worker productivity and health (Burton and Speiler 2000).

Compared to younger workers the health of older workers can vary widely, based on normal effects of aging and the occurrence of occupational diseases or workplace injuries (Biddle et al 2001; 2003). Older workers' incentives to continue working also vary depending on health condition and health insurance, retirement benefits, workers' compensation, federal insurance programs, dependent family members and personal considerations (Mitchell 1988; Pransky et al

2005). Economic incentives are likely to influence claim filing and return to work decisions more strongly when an older worker is in poor health or has a disability (Gardner 1989).

These demographic and workplace trends are likely to have a significant impact on workers' compensation programs. What are the implications of Washington's aging workforce for its Workers Compensation programs? What are the increased costs likely to be? What are society's responses to older workers needs in the workplaces of the future?

Consideration of the effects of aging on workers' type, frequency and severity of injuries, medical costs, claims filing, claims management, time-loss payments, pensions, re-opened claims, re-injury and return to work can answer these questions. Chronic conditions, workplace accommodations for injured workers, vocational rehabilitation, retirement, economic incentives, social factors, the "work ethic," medical provider efficiency, Social Security, and unemployment rates are other factors affecting older workers.

The aging workforce literature was reviewed in the following context:

1. Aging worker demographics and projections,
2. Chronic conditions and predicted morbidity factors,
3. Disabled or injured worker cohorts, time loss, and recovery,
4. Expected impacts on workers' compensation costs; post-injury employability.

Research Question

In Washington, what effects does an aging workforce have on the frequency, duration and costs of workplace injuries and illnesses now and in the future?

Literature Review: Aging Workforce *

With demographic change, an increasing proportion of older workers are extending their working lives. Changes occurring in older workers and their workplaces affect their productivity and health. Compared with younger workers the health of older workers varies more widely due to the normal effects of aging, the occurrence of chronic and occupational diseases or workplace injuries. Incentives to continue working depend on health condition, insurance, retirement benefits, workers' compensation, federal insurance programs, dependents and personal considerations. Economic incentives can influence individual claim filing and return to work decisions more strongly for an older worker with poor health or a disability. These cumulative demographic and workplace trends have a significant impact on workers' compensation programs.

The implication of increasing labor force participation by workers aged 45 and over is a projected substantial increase in older workers for about the next 20 years. Washington's men and women over age 55- particularly those over 65- show current and forecast labor force participation rates greater than their share of the civilian non-institutional population. The state's expected demographic changes will probably be significant for workers compensation costs. The net effect of this large demographic shift may be mitigated by a proportional increase in younger workers following a dearth in the 25-34 cohort (Washington Office of Financial Management 2005; Toossi 2004).

* Note: Abstracted from "The Aging Workforce: Implications for Workers Compensation: Literature Review." 19p. completed 12/19/2005, available on the L&I intranet and internet at http://www.lni.wa.gov.ClaimsIns/Insurance/

Demographics

A snapshot of United States and Washington state workers aged 45 and over shows consensus between the national and Washington state data, with narrow variation in age cohort projections. **Tables 1 and 2** compare actual and projected labor force participation rates from 1992 to 2012 for the U.S. and Washington state by age cohort, based on the 2000 U.S. Census. Older workers aged 55-74 are an increasing proportion in relation to the overall population. The rate of change in labor force participation is greater for women than men, and is converging. From 1992-2002 an almost equal share of men and women (50.8% vs. 49.2%) were in the labor force (Toossi 2004).

Table 1

US civilian labor force participation rate (percent) by age and sex

	Age	1982	1992	2002	2012	20 year change 1992-2012
Total	45-54	75.9	81.5	82.1	84.1	3.2%
	55-64	55.1	56.2	61.9	65.1	15.8%
	65-74	16.2	16.3	20.4	23.6	44.8%
	75 and up	4.9	4.5	5.1	5.7	26.7%
Men	45-54	91.2	90.7	88.5	88.6	-2.3%
	55-64	70.2	67	69.2	69.9	4.3%
	65-74	22.5	21.1	25.5	29.1	37.9%
	75 and up	8.5	7.3	7.6	8.2	12.3%
Women	45-54	61.6	72.6	76	79.8	9.9%
	55-64	41.8	46.5	55.2	60.6	30.3%
	65-74	11.3	12.5	16.1	18.9	51.2%
	75 and up	2.8	2.8	3.5	4.1	46.4%

Source: Toossi M., Office of Occupational Statistics and Employment Projections, Bureau of Labor Statistics, 2004.

Washington's annual labor force growth between 1970 and 2004 was 2.4%, compared with 1.7% for the U.S. (OFM 2005). Between 2003 and 2030 Washington's annual population growth is expected to slow to 1.2% and labor force growth is expected to slow to 1.0% (OFM 2005). Ages 55-64 and 65-74 show substantial increases in labor force participation in the U.S. and Washington state labor forces based on 2000 U.S. Census data. For men aged 65-74 the 4.4% increase from 1992-2002 reversed a U.S. trend dating back to 1890 (Toossi 2004). Women aged 55-64 will have an annual growth rate of 0.9% in labor force participation between 2002 and 2012 and in 2012 are expected to participate at 60.6% (Toossi 2004).

In **Chart 1** the labor force participation rate of Washington workers age 65-74 is increasing faster than their share of the population, and after around 2030, the rate of increase will probably level off and begin a slight decline due to population aging, as suggested by other U.S. and Washington state data (OFM 2005; Toossi 2004, 2006). By 2030 the population increase of those aged 65 and over will dampen overall labor force growth because the elderly have much lower labor force participation rates (OFM 2005).

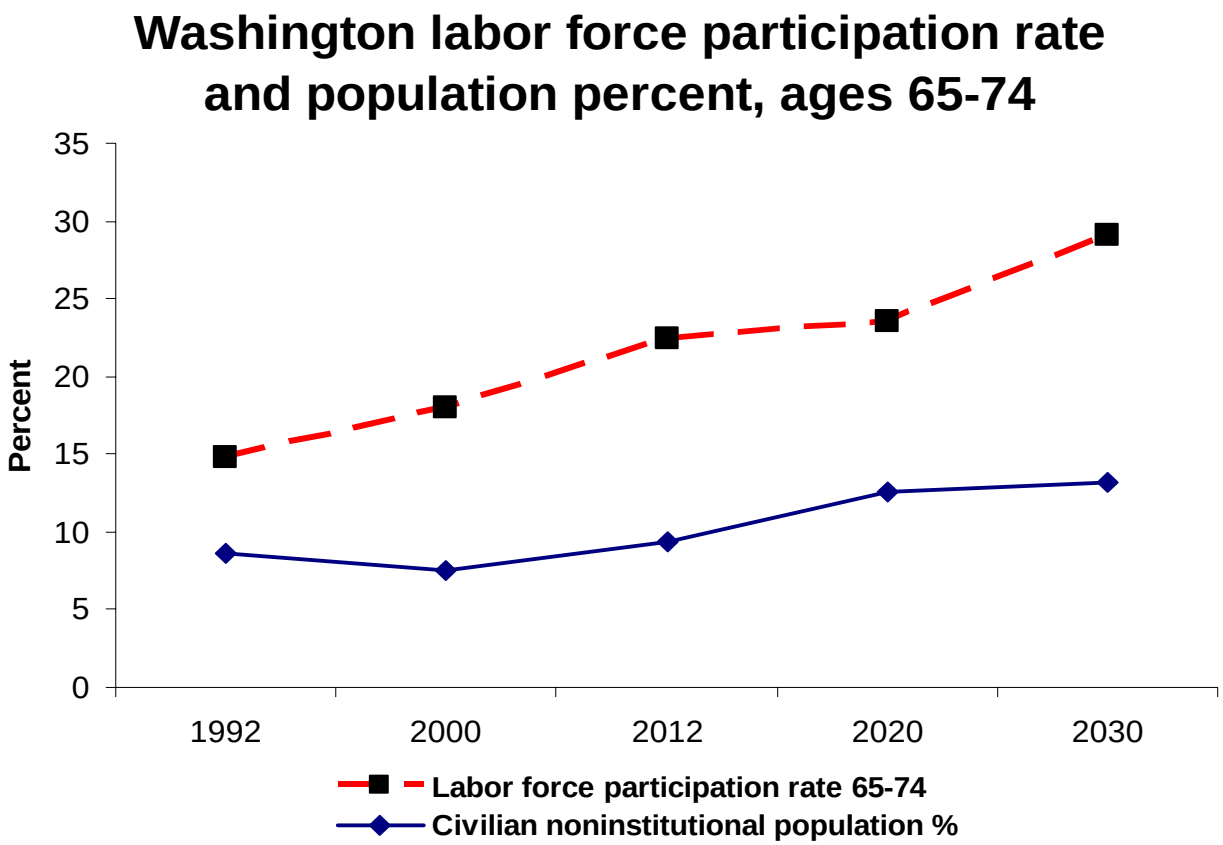
Table 2

Washington state civilian labor force participation rate (percent) by age and sex

	Age	1992	2000	2012	2020	20 year change 1992-2012
Total	45-54	85.0	83.9	84.5	85.0	-0.6%
	55-64	56.2	60.0	64.8	68.3	15.4%
	65-74	14.8	18.0	22.4	23.5	51.1%
	75 and up	4.0	6.1	5.5	5.6	39.9%
	Total all	69.3	68.4	67.4	65.7	-2.7%
Men	45-54	92.8	90.3	90.2	90.2	-2.9%
	55-64	66.0	67.4	70.6	73.1	7.0%
	65-74	19.0	22.5	27.3	28.9	43.5%
	75 and up	6.0	7.8	7.3	7.4	20.7%
	Total all	77.1	75.5	73.7	71.8	-4.5%
Women	45-54	77.0	77.6	78.8	79.8	2.3%
	55-64	46.7	52.8	59.2	63.7	26.7%
	65-74	11.2	14.1	17.9	18.7	59.8%
	75 and up	2.7	5.0	4.4	4.4	63.4%
	Total all	61.9	61.7	61.3	59.9	-2.9%

Source: Washington Office of Financial Management, Forecasting Division, April and September, 2005

Chart 1



Source: Washington Office of Financial Management, Forecasting Division, 2005

A national perspective on workers compensation and older workers posits three key relationships: The relationship between age and the prevalence of impairments or chronic conditions; the relationship between age and work disability; and the relationship between age and workers' compensation benefits paid (Burton and Spieler 2001).

Chronic conditions in the over-50 working population, such as cerebrovascular, cardiovascular, diabetes-related, pulmonary and arthritis-related diseases are more prevalent than previously thought. The Center for Disease Control (CDC) reviewed the top four actual causes of death in 1990 and 2000, ranking tobacco, poor diet and physical activity, alcohol consumption and microbial agents as accounting for nearly 40% of U.S. mortality (Mokdad et al 2004; 2005). The CDC emphasized that the morbidity risk and financial burden of these mortality causes on older workers was due to the cumulative effects of behavior. The interdependence of aging and chronic morbidity factors with work-related injuries has consequences for older workers, when compounded by aging effects on the "baby boomer" generation.

Workers compensation expenses for older workers are expected to rise with the higher prevalence of age-related conditions. A 2004 Washington state study of claims closed between 1/1/99 and 3/31/03 calculated a constant $36.45 added to the median cost of a closed claim for every year of a claimant's age, such that the age-related cost for a 50-year old worker is $1,822.50 (Higdon and Collins 2004). The impact of age on workers compensation insurance costs thus partially depends on the age distribution of the employer's work force.

In contrast a study of the post-injury effects of aging on workers' compensation shows a lack of age-related differences in injury outcomes. A survey of workers above and below age 55 found that most age-related outcomes in work-related injuries were quantitatively and qualitatively similar, despite more severe injuries in older workers (Pransky et al 2005). Although older workers had more co-morbidity, they reported no age-related differences in physical work limitations or other injuries prior to the reference injury. Workplace conditions were a relative advantage for older workers,' who reported higher satisfaction with the workers' compensation insurer, their pre-injury employment, the medical care they received for their injury, and the provider's return to work recommendations. Older workers were no more likely to be placed on light duty than younger workers, controlling for injury severity, problems upon return to work, and physical functional status (Pransky et al 2005). Gender was largely insignificant.

A 1987-89 random sample of 28,473 Washington state workers compensation disability claims (TL => 4 days) found that workers over age 45 were at risk of longer term disability, concluding that older age is the most important and consistent influence on duration of disability (Cheadle et al 1994). The "age effect" refers to older workers reduced ability to recover from injuries and reduced likelihood of finding employment after recovery (Cheadle et al 1994.) The study concluded that older workers were at greater risk for longer term disability. A 1993-1994 study of permanent partial disability and workers' earnings losses in Washington also found that older workers suffered proportionately more permanently disabling injuries and that their average income losses were greater than for younger workers (Biddle et al 2004).

A wage-loss study of Washington workers permanently disabled from July 1993 to June 1994 found that 27% of ages 35-54 and 39% of ages 55 and older received permanent disability benefits (Biddle et al 2001). The increase in permanent disability was largest in Washington compared with Wisconsin or California, supporting the conclusion that older injured workers were more likely than younger workers to receive benefits for permanent disability. In Washington,

injury-related non-employment ten quarters after injury was significantly longer for workers aged 55 and older, suggesting that a disabling injury may lead older workers to retire earlier than they would have otherwise. An L&I return to work study done by internal Research and Data Services staff shows a very similar pattern for all time-loss claims, that is- workers are increasingly likely to be out of work as time from injury increases (Rolle et al 2005).

Methods

Virtually all employees in Washington are covered by some form of workers' compensation insurance. Washington's "State Fund" insures about 2.4 million workers at approximately 165,000 employers, representing about 70% of the state's workforce. The other 30% are covered by companies that self-insure, or by federally-mandated programs that cover railroad, maritime, interstate transportation and harbor workers. Police and firefighters are generally entitled to additional coverage under the LEOFF Act.

Washington regulates companies that self insure. To qualify, companies must meet certain financial criteria and be able to post a surety bond to cover potential losses. In order to get a certificate to self insure, companies must also demonstrate a willingness and capability of maintaining workplace safety and claim management programs that meet the legal requirements of the Industrial Insurance Act. There are approximately 400 self-insured employers in Washington.

Some workers who are exempt from mandatory coverage include:

- Those who meet the legal definition of an independent contractor,
- Employees of Native American tribes and tribal-owned and reservation-based businesses,
- Domestic helpers, gardeners and casual laborers working for a household with no more than two workers employed at any given time,
- Sole owners, proprietors, partners and corporate officers of businesses,
- Minors employed on farms owned by their parents,
- Volunteers, though they may receive coverage only for medical care,
- Workers injured in Washington but working for out-of-state firms. Workers employed by Washington companies but working out-of-state may or may not be covered depending on the specific circumstances of the case, and Washington's reciprocal agreements with the states those workers are from or are working in (Redding, R. and Nelson, R. Personal Communication 2007).

Research and Data Services studied aging workers using the L&I administrative database for the period 7/1/1997 - 6/30/2005. The initial focus was on demographics, time loss claims and the expected impacts of injuries, disability, costs and occupational disease for aging workers. The sample was drawn from the claims database of workers in the State Fund and excluded self-insured. Other claims excluded from the initial analysis were those with occupational disease, fatalities or missing social security numbers. A separate analysis of occupational disease claims was done later.

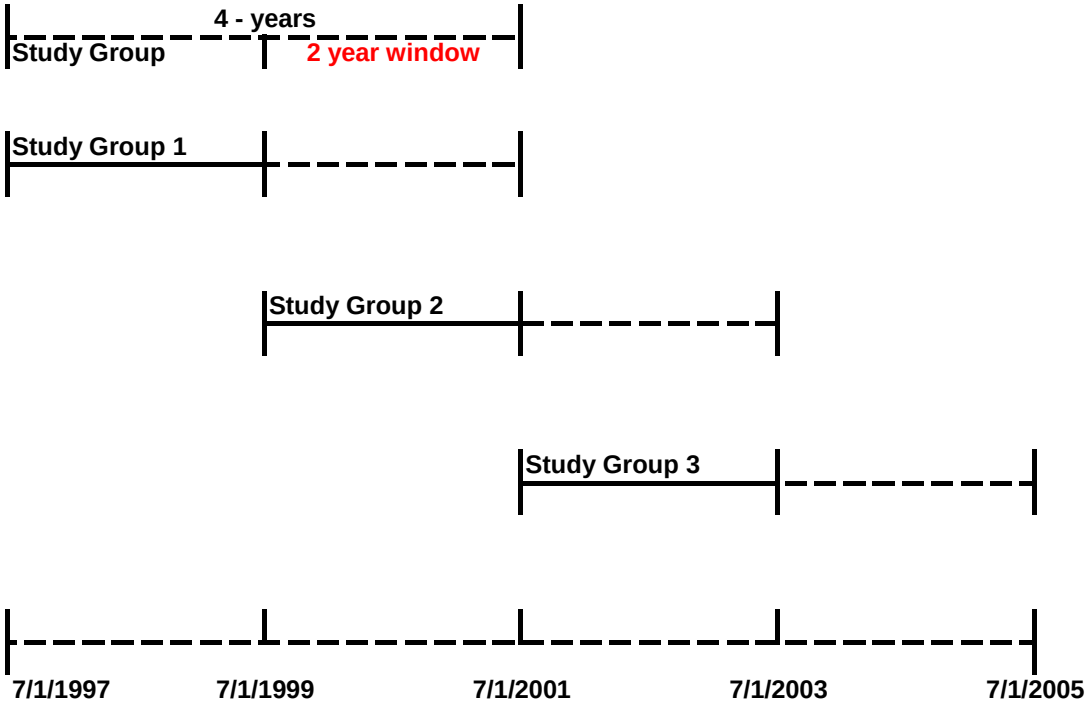
Based on the first medical treatment date, that defines when an injured worker first received the professional medical services of a doctor or hospital, a series of three study groups were selected. In **Table 3** the first medical treatment date plus two (2) years defined the period of interest for an individual claimant. This was intended to allow three comparison groups across time (7/1/1997-6/30/2005) to look at the same relative “window” of the initial 2 years for each claim. For example the third study group of the sample, with first medical treatment dates of 7/1/2001 -

6/30/2003 could have claims activity extending through 6/30/2005. This use of two-year comparison groups was based on actuarial data for 1997-2005 showing that at two years, 10.5% of TL claims remain open (Personal communication, L&I actuary 2006).

Table 3

Sample: Study Groups and the 2-yr.Window for Services

Two year window = First medical treatment date + 2 years



Aggregate Sample

Sample N = 170,151 TL claims of 821,178 total claims

The claims in Study Group One can be compared with Study Groups Two or Three, but a limitation was that TL claims duration often appeared longer than the two year "data window" provided for each Study Group. The "two-year window" design may undercount time loss and other costs especially for Study Group Three, in comparison with paid-to-date (PTD) data. The study groups and PTD methods included open and closed claims.

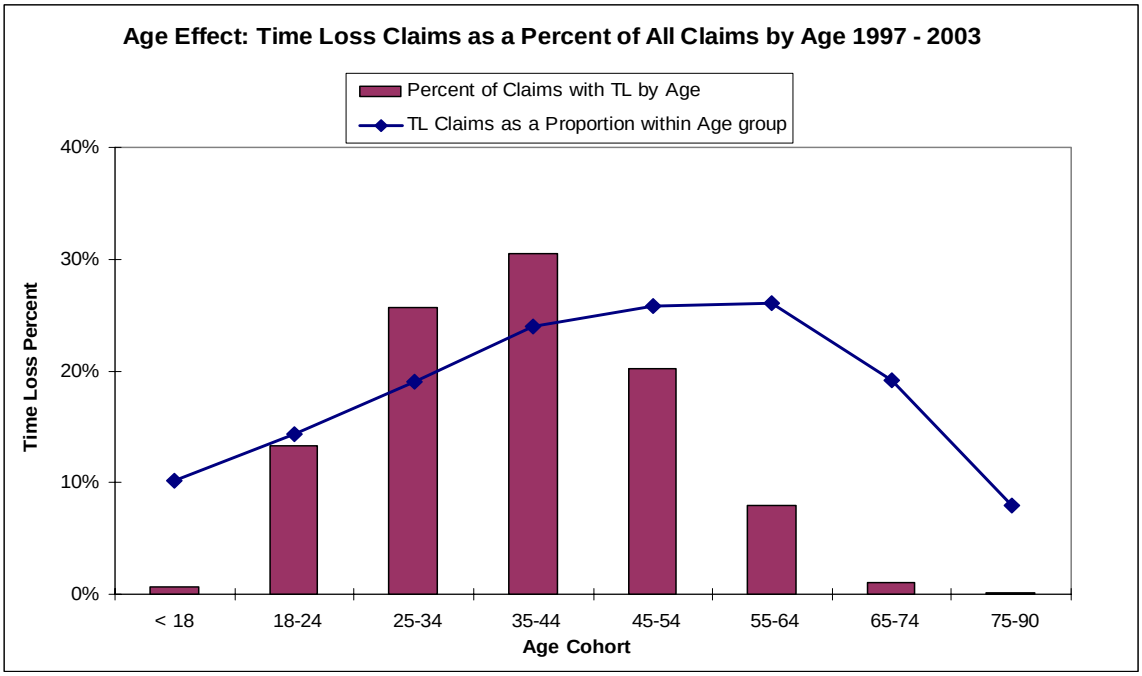
Paid-to-date data is more inclusive across the entire sample period but can also include closed and open claims. PTD data would not be comparable between Study Groups One and Three because of the limited period of PTD exposure in Group Three. Each approach has its value, whether for comparison or for measures of magnitude. The type of data used is noted for each chart in this report and for the appendix data tables.

Definitions of the data elements used and summary data tables of charts are in the Appendix.

Results: Claims Data

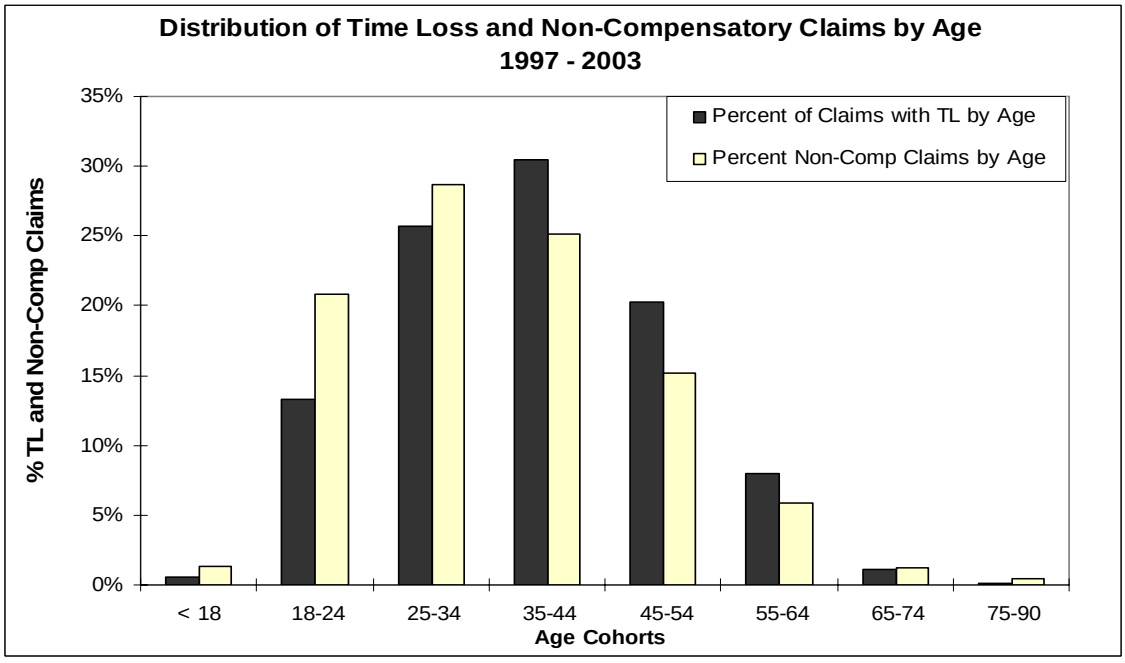
Chart 2 focused on discrete cohorts. As workers age an increasing proportion each age cohort's claims are time loss (TL). After age 65 the proportion of TL decreases.

Chart 2



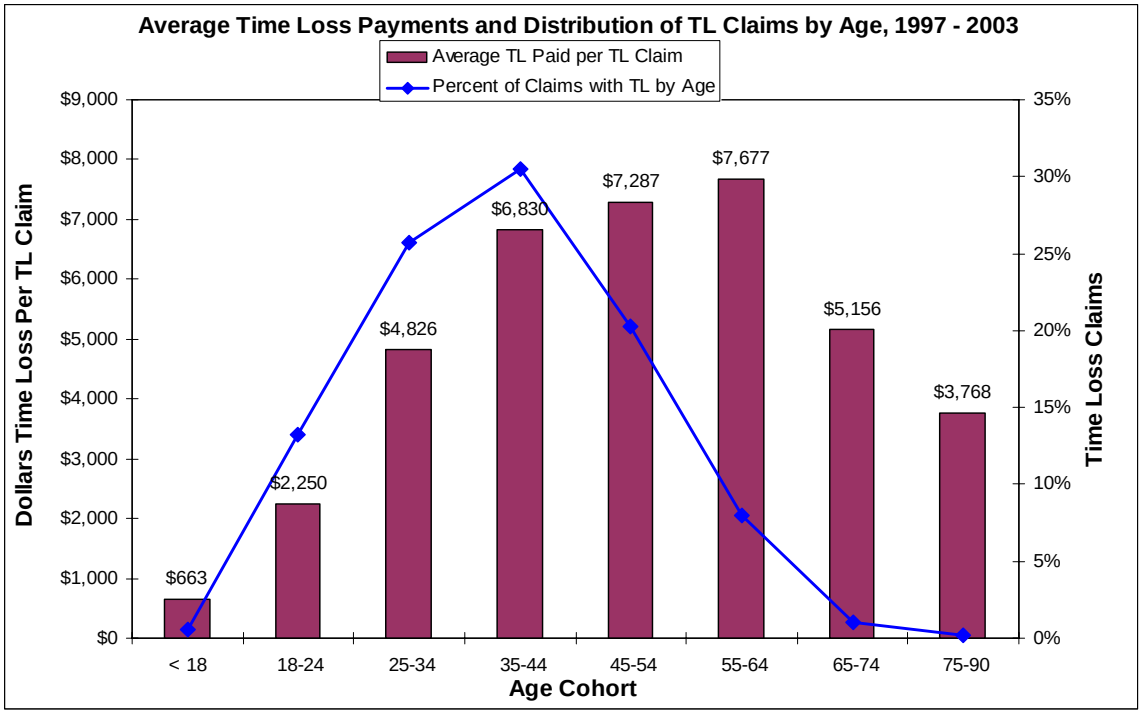
Focusing on discrete age cohorts in **Chart 3,** time loss (TL) claims occur in greater proportion as workers get older compared with medical-only (non-compensatory) claims for ages 35-64. Among ages 18-34 and 65-74 the inverse is true, that is, medical-only claims are a greater proportion of claims within the respective two age groups than TL.

Chart 3



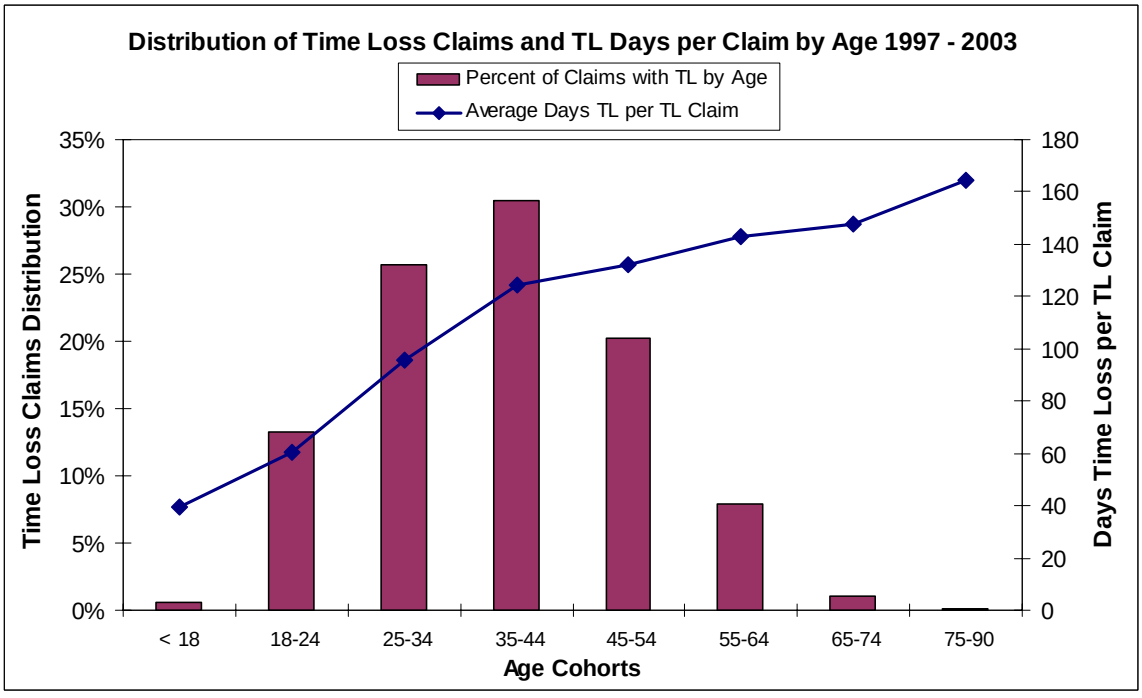
In **Chart 4** TL costs more per claim for workers over age 45 although their claims are fewer relative to those of younger workers. The average payment per injured worker is greatest for ages 45-64, and nearly as high for ages 35-44, a group not generally considered "aging workers."

Chart 4



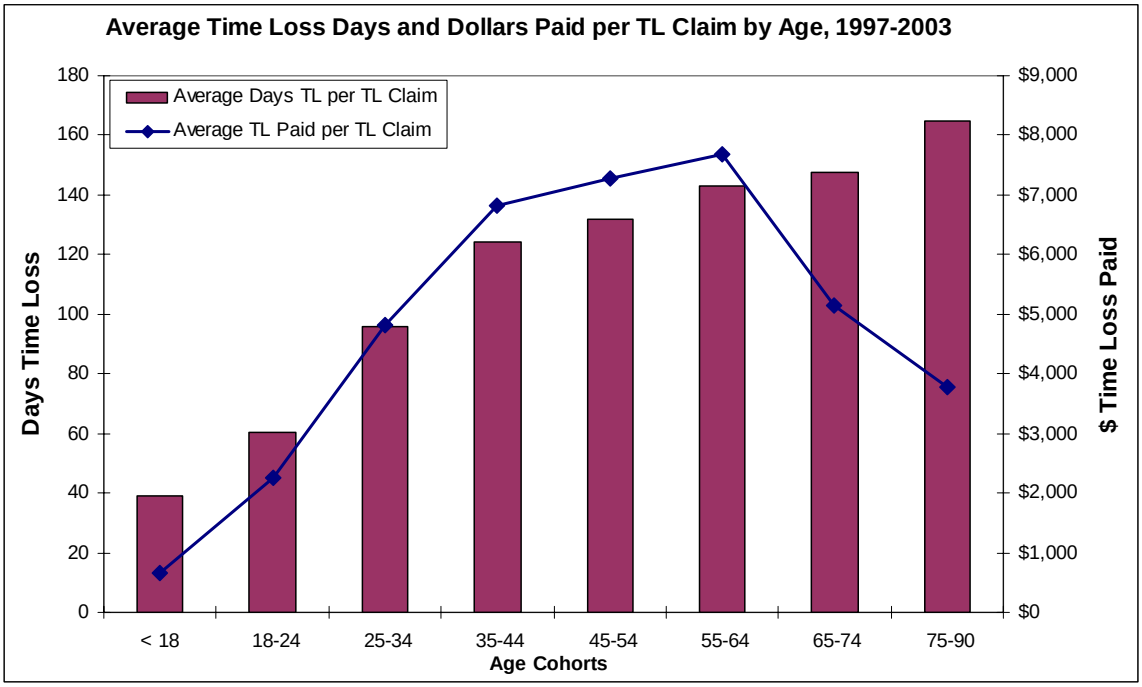
In **Chart 5** average TL days per claim increased as workers got older, but workers over 45 were less likely to have a TL claim. While TL duration will be greater for workers over age 45, risk to L&I is currently reduced by the declining percent of claims from older workers.

Chart 5



In **Chart 6** the average TL paid among age 65 and over cohorts is less ($5,156-$3,768, Chart 4), which is due to lower wages, apparently for lower paying post-retirement or part-time jobs. The highest average time loss paid is $7,677 for ages 55-64, followed closely by ages 45-54 ($7,287) and ages 35-44 ($6,830).

Chart 6



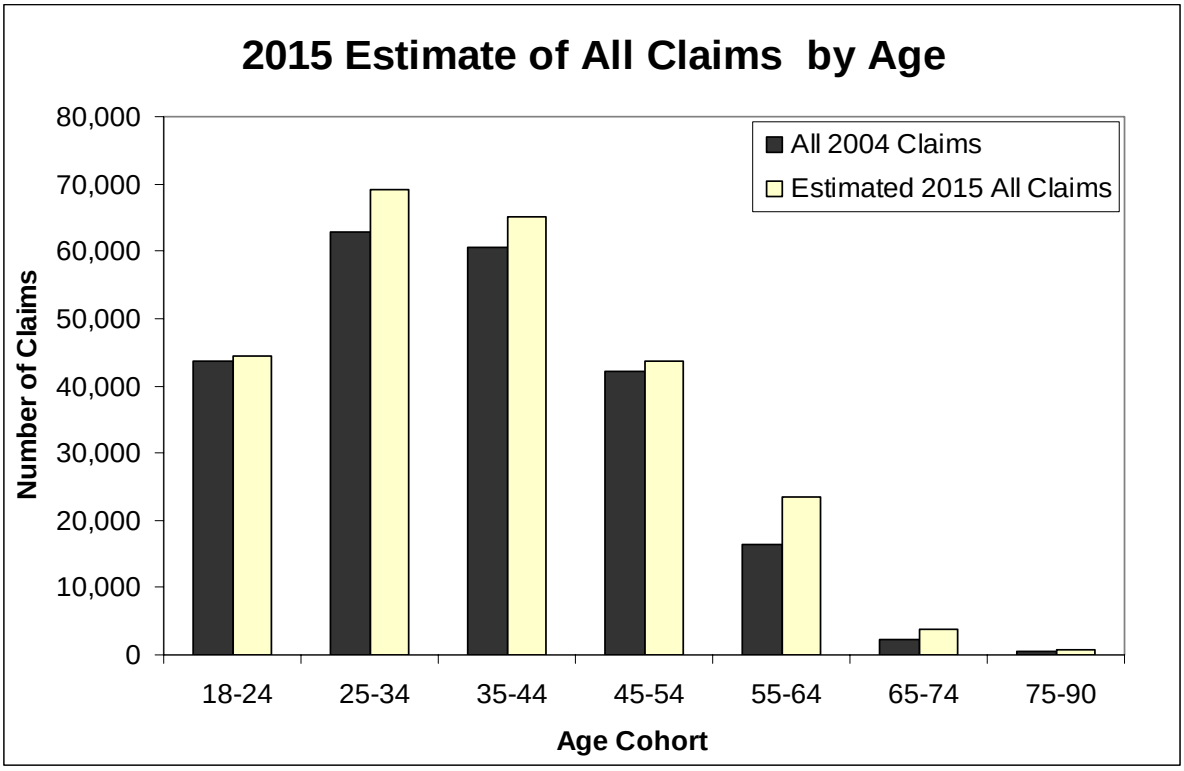
Estimates to 2015: Future Claims, Time Loss Days and Claim Costs

Estimates to 2015 of claims, days of TL and costs of TL were calculated to see what growth projections in the labor force could mean for workers compensation, as shown in **Charts 7-9**.

Federal Bureau of Labor Statistics (BLS) 2005 civilian labor force annual growth rates were used as multipliers of paid-to-date data from Study Group Three, occurring 7/1/2001-6/30/2003 for claims, TL days and costs (Toossi 2006). The assumption "all other things equal" was made in calculating 2015 estimates using BLS civilian labor force annual growth rates with L&I data, so that the estimates are indicative of the trends charts shown above.

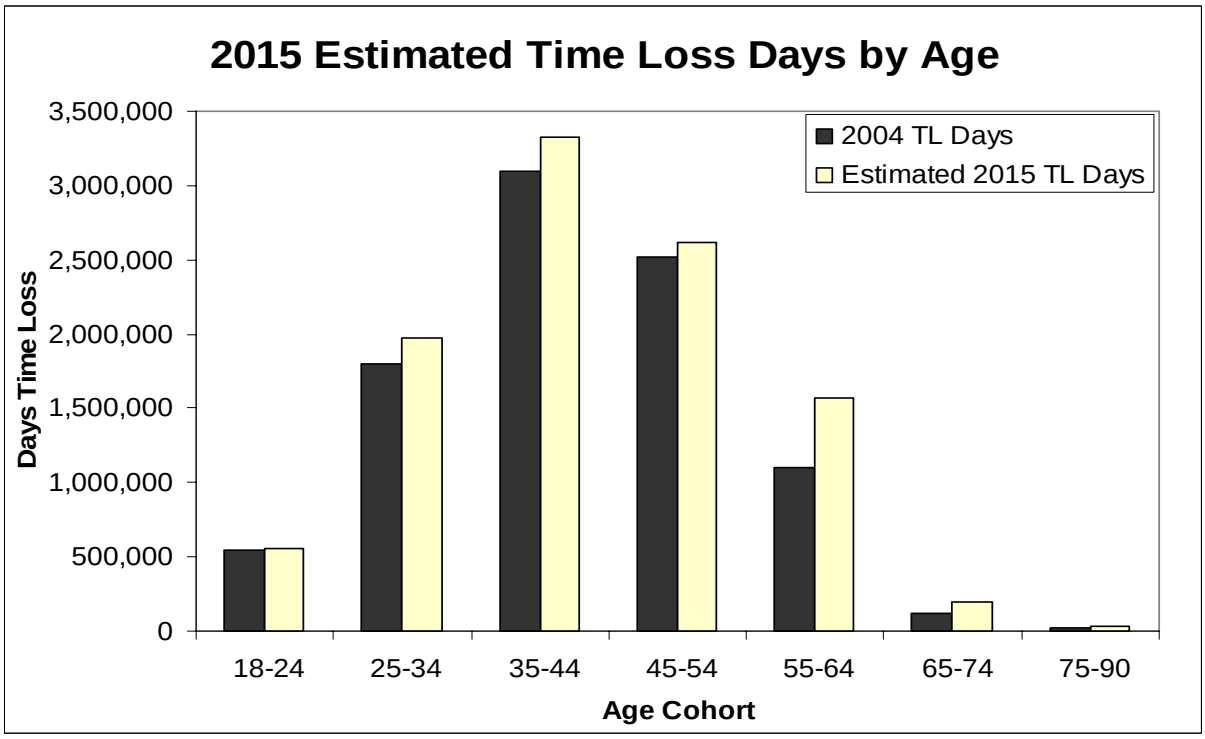
The claims data baseline multiplier for Paid-to-Date Claims activity is sample Study Group Three (7/1/2001-6/30/2003), times BLS annual growth rates for 2005-10 and 2010-20. In calculations of ages 18-24 the BLS growth rate used was based on 20-24 year olds, and ages 75-90 was based on BLS' growth rate for age 75 and older. BLS annual growth rate percents for the civilian labor force 2005-10 and 2010-20 are described by Toossi (2006). See the Appendix for data on change in estimated TL claims, days, and payments 2004-2015, and the percent growth rates used in calculations.

Chart 7



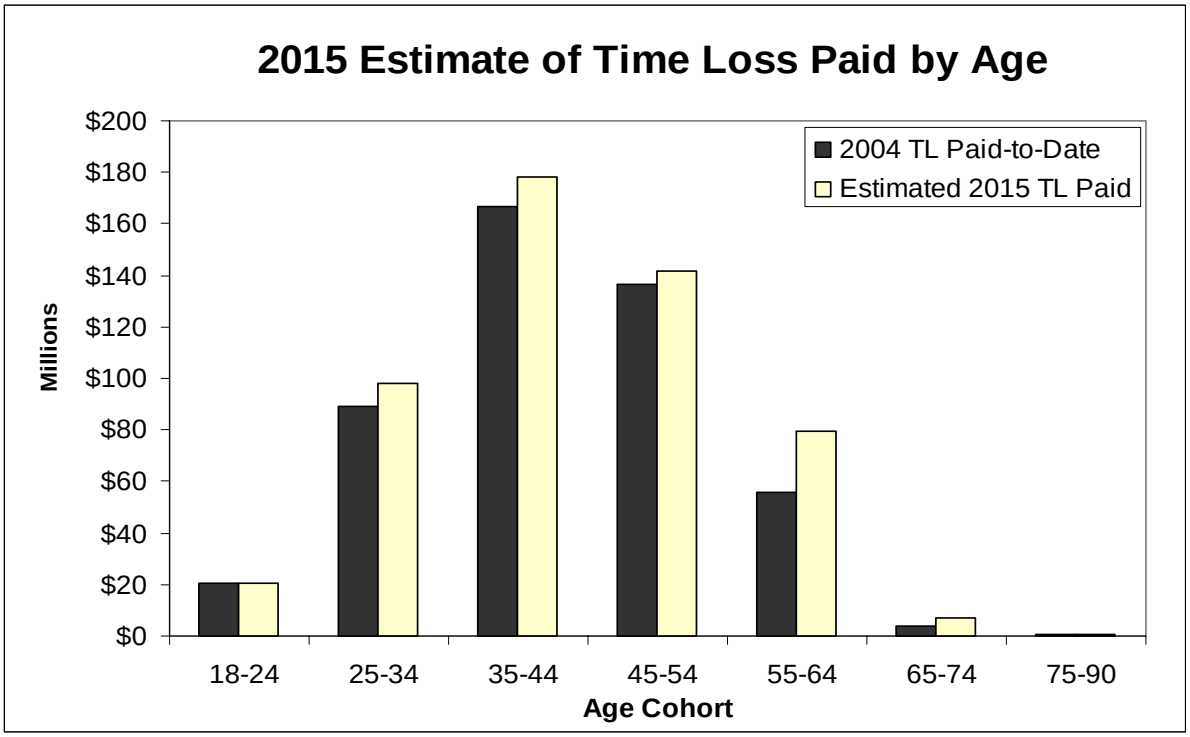
Estimated net increase is 21,752 claims including 5,142 time loss claims.

Chart 8



Estimated net effect is 1.06 million additional time loss days.

Chart 9



Estimated net effect of time loss is $52.9 million in 2005 dollars.

Occupational Disease

Agency management asked how aging workers' occupational disease claims compared with injury claims. An occupational disease is a disease or infection that arises naturally and proximately out of employment, such as carpal tunnel, asbestosis or exposure to toxics. After analyzing injury claims in the results above, the two year sample groups were combined into an aggregate sample, with a time loss claim defined as beginning with the first medical treatment date and including "paid-to-date" claim data.

Paid-to-date (PTD) data on time loss days and costs, and medical aid were used rather than the 2-year window time frame. PTD data is more valid for occupational disease analysis because of the long duration typical of occupational disease claims. Comparison of the three study groups showed a few very small differences within all age groups.

Analysis of the 32,815 occupational disease claims occurring between 7/1/1997 and 6/30/2003 was done, excluding eight fatalities and 29 missing social security numbers. An occupational disease was defined by the "order of notice" code. All open and closed claims were included. During the initial analysis occupational disease codes were not broken out by type of disease because of the variation in how L&I's occupational disease codes have been applied from 1997 to 2003. Aggregate occupational disease results are given in **Charts 10-17**.

The many occupational disease diagnoses in use by L&I were also classified into five major diagnosis categories for comparison. We used three independent raters with a sample of claims and achieved 97% agreement in classification of claims by an OIICS code method. Other, miscellaneous and unclassifiable claims numbering 4,718 were not reported because they were not clearly defined or had multiple diagnoses sufficiently inconsistent with a clear occupational disease diagnosis. The resulting five diagnosis categories are: exposure, hearing loss, lower musculoskeletal, peripheral nervous system condition, and upper musculoskeletal. The data reported are TL days and costs, and medical claims and costs as given in **Charts 18-21**.

Charts 10 and 11 compare the number of time loss claims and days for injury claims with occupational disease claims. The percentages of time loss claims generated by injury and occupational disease are quite similar, for example within 5-10% for age cohorts 35-44 and 45-54. Occupational disease time loss days are generally nearly double those of injury time loss days. Thus, occupational disease claims- though relatively few- result in approximately double the number of time loss days compared with injury claims.

Chart 10 shows that the proportion of occupational disease claims is slightly greater for age 35-65 than for injury claims, and slightly less than injury claims for ages 18-34. Occupational disease is manifest over time and tends to be diagnosed more in older workers.

Chart 10

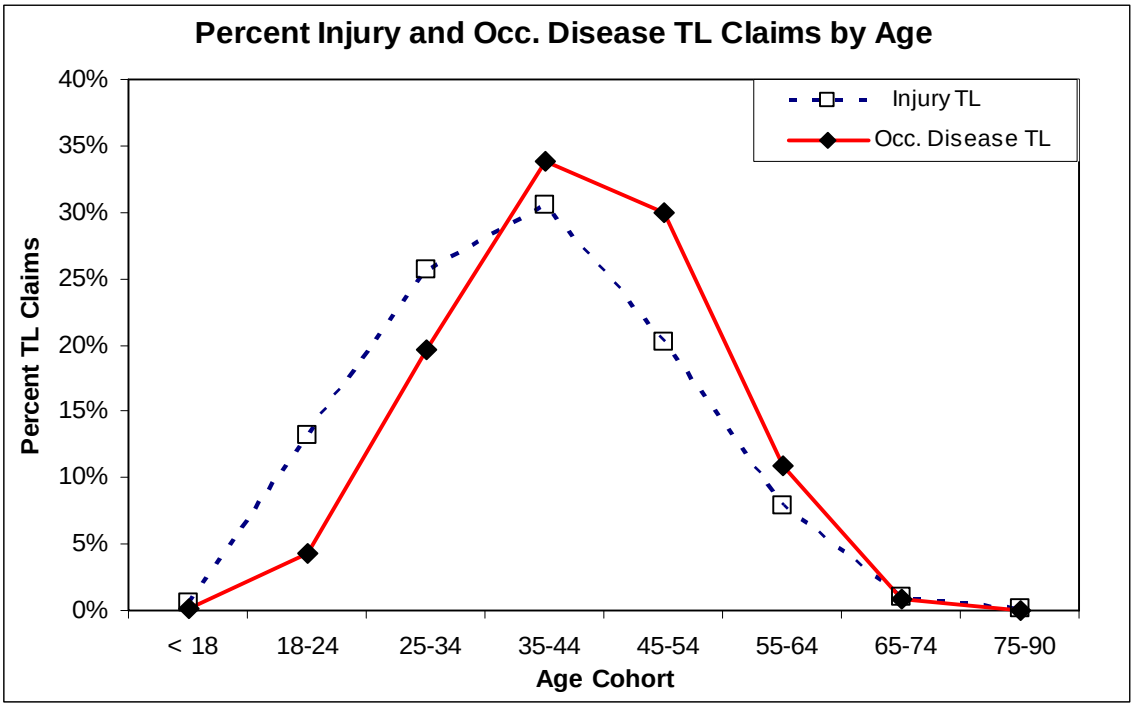
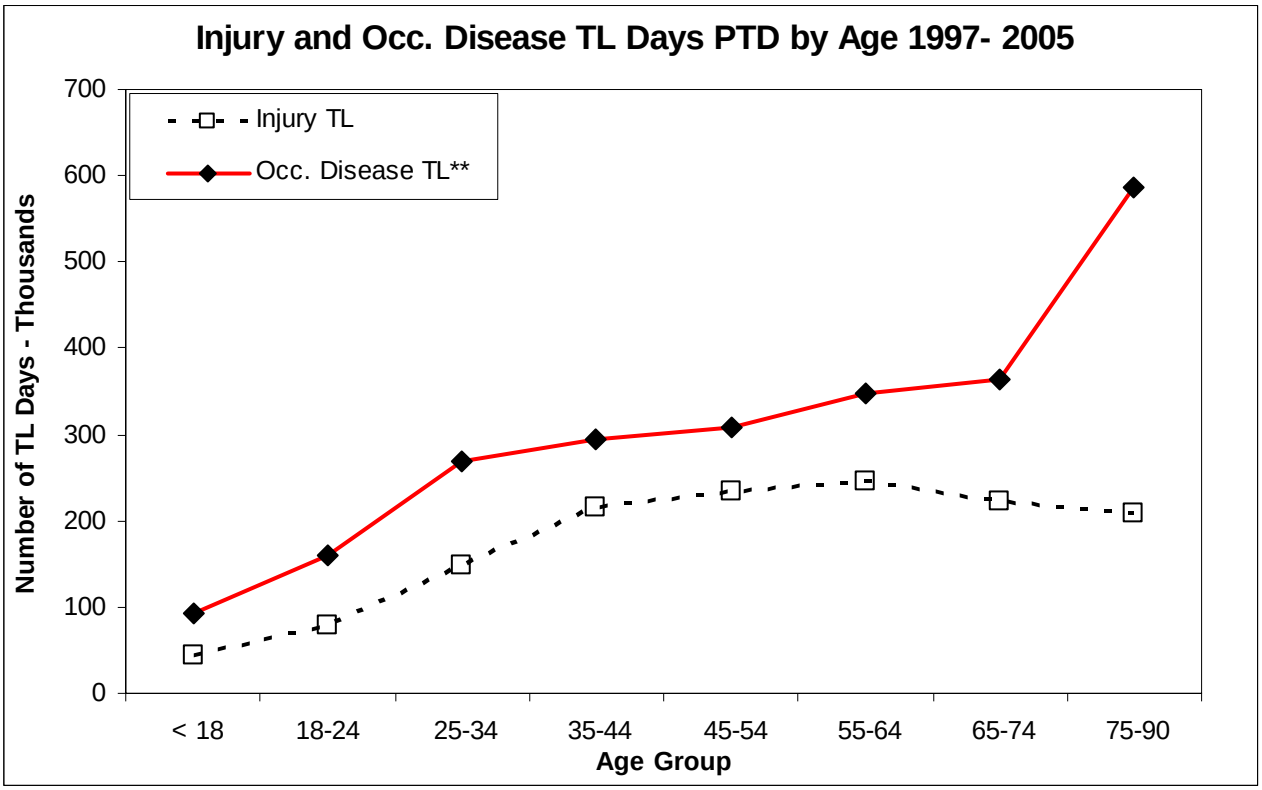


Chart 11 shows that across most age groups occupational disease generates approximately 100 more time loss days per claim than does injury claims. There is not a dramatic change occurring as people get older, except that the rise in TL days may be important over age 75 as worker numbers continue to increase in that age group.

Chart 11



**** Actual for age 75-90 based on two outlier claims.**

Chart 12 shows occupational disease producing disproportionate time loss days and costs PTD, and disproportionate medical costs for time loss and medical only claims. In this sample, although occupational disease time loss claims are only 6% of the total time loss claims, the occupational disease claims result in 9.5% of the time loss days and costs, 8% of the medical costs, and 11% of the loss of earning power costs.

Chart 12

Comparison of Occupational Disease and Injury Claims Paid-to-date 1997 - 2005

	Compen-sable claims	Non-compensable claims	PTD TL Days	PTD Medical	PTD Time Loss	PTD LEP
Occupational Disease	11,130	21,685	3,272,523	$178,444,118	$158,421,339	$7,674,818
Injury Claims	170,224	650,978	31,348,815	$1,996,376,467	$1,506,160,576	$59,532,187
Total	181,354	672,663	34,621,338	$2,174,820,585	$1,664,581,915	$67,207,005
Percent Occ. Disease	**6.1%**	**3.2%**	**9.5%**	**8.2%**	**9.5%**	**11.4%**

Occupational disease TL claims are 6% of the Total TL claims, and generate -

9.5% of the TL days,

8% of the medical costs,

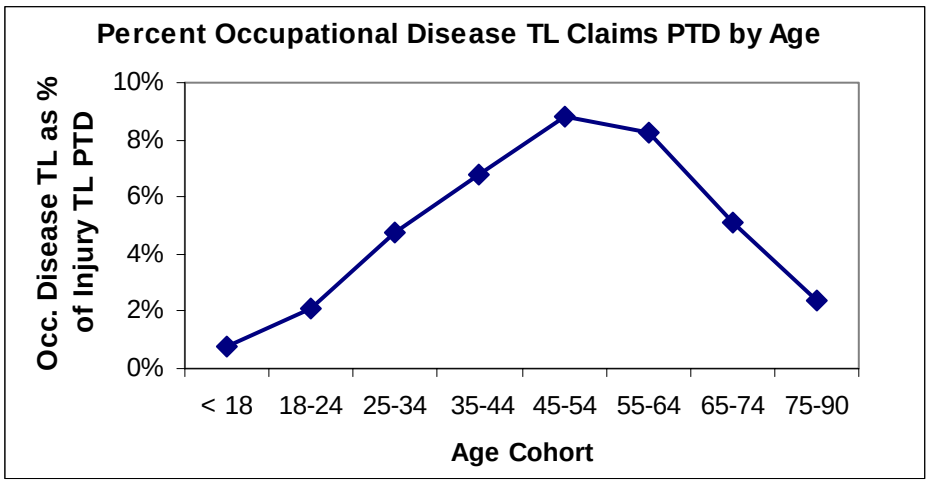
9.5% of the TL costs

and 11% of the loss of earning power costs.

Occupational disease medical-only claims are 3% of all medical-only claims and generate 30% of medical-only costs above age 45 when compared with Injury claims.

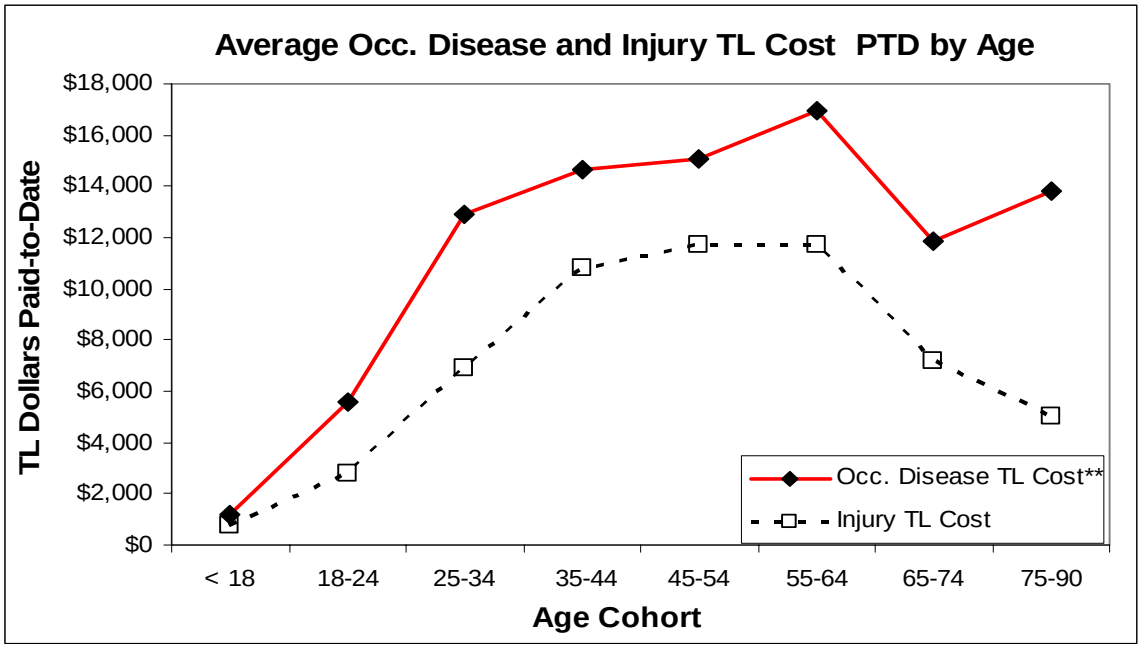
Chart 13 shows that occupational disease prevalence averages above 6.5% of all TL claims across workers aged 25-74 and is proportionally higher for the older age cohorts.

Chart 13



In **Chart 14** time loss costs per claim are about $4,000 - $5,000 higher for occupational disease claims than for injury claims for all ages over 25. The rise in TL costs may be important over age 75 as worker numbers continue to increase in that age group.

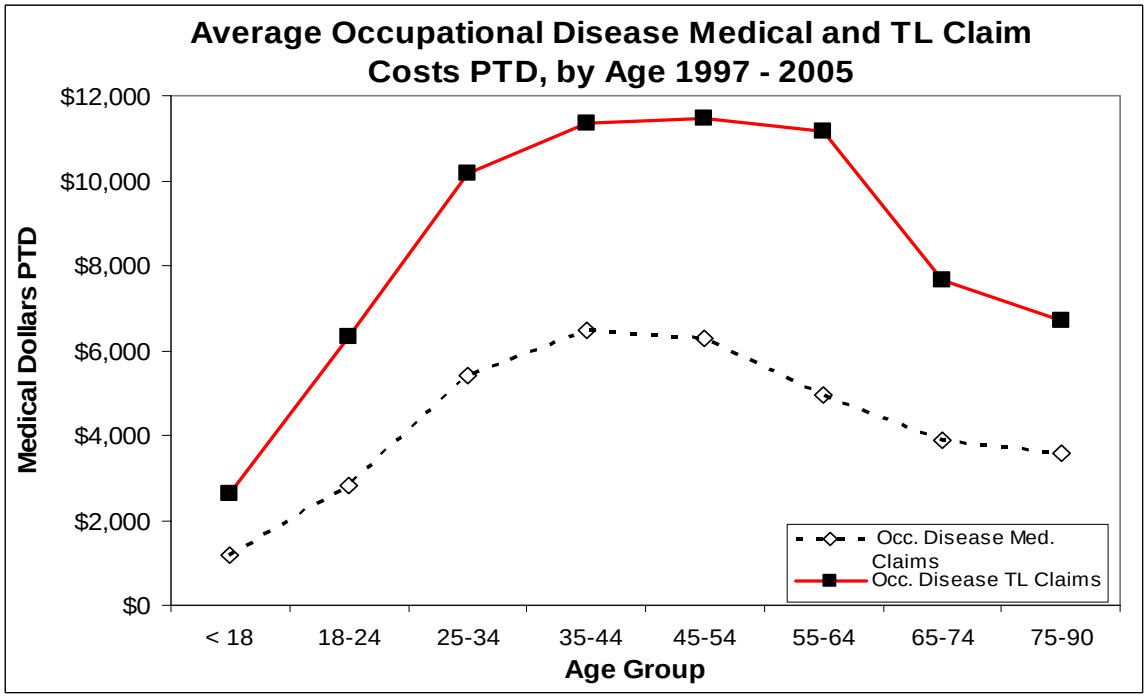
Chart 14



****Actual for age 75-90 is based on two outlier claims.**

In **Chart 15** occupational disease TL claim costs increase more rapidly than all occupational disease claim costs, especially for older workers. Among relatively young workers ages 18-34 occupational disease TL costs per claim are also rapidly increasing.

Chart 15



In **Chart 16** medical costs PTD are much higher for occupational disease than for injury costs for all claims except those over age 65. **Chart 17** shows more rapid growth of occupational disease medical TL for ages 18-34 than for injury medical TL claims, similar to Charts 14-16, showing that younger workers 18 and over are quite impacted by occupational disease.

.

Chart 16

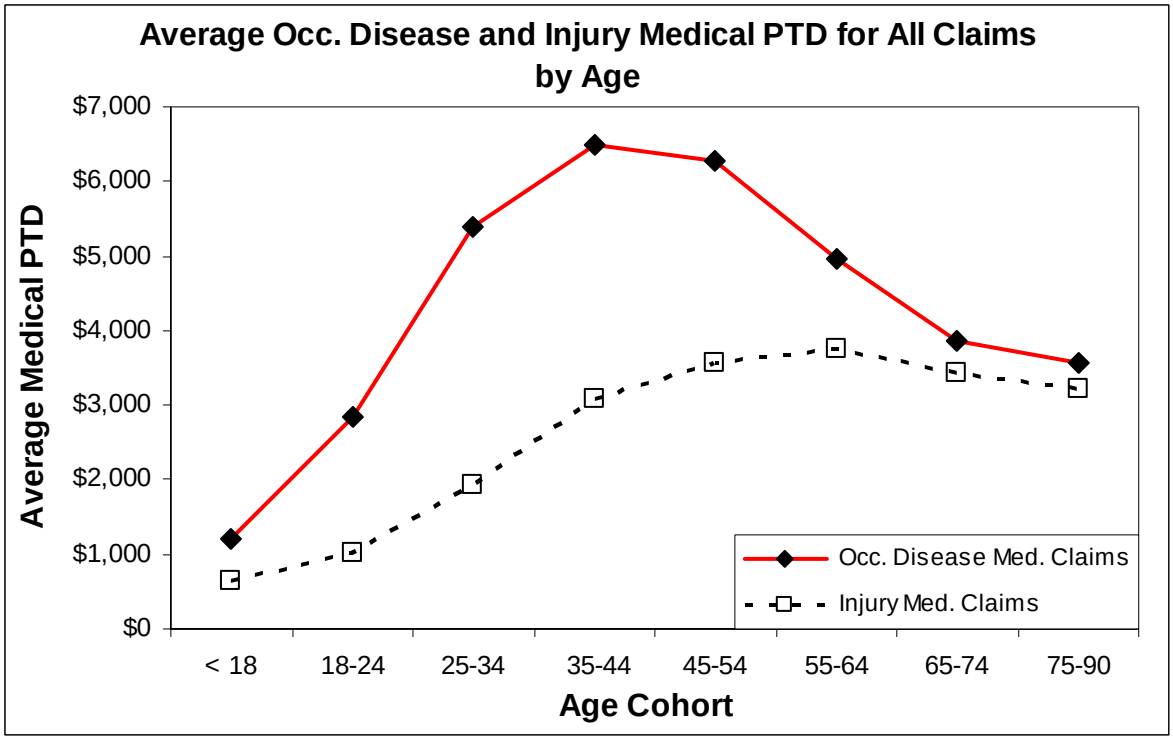


Chart 17

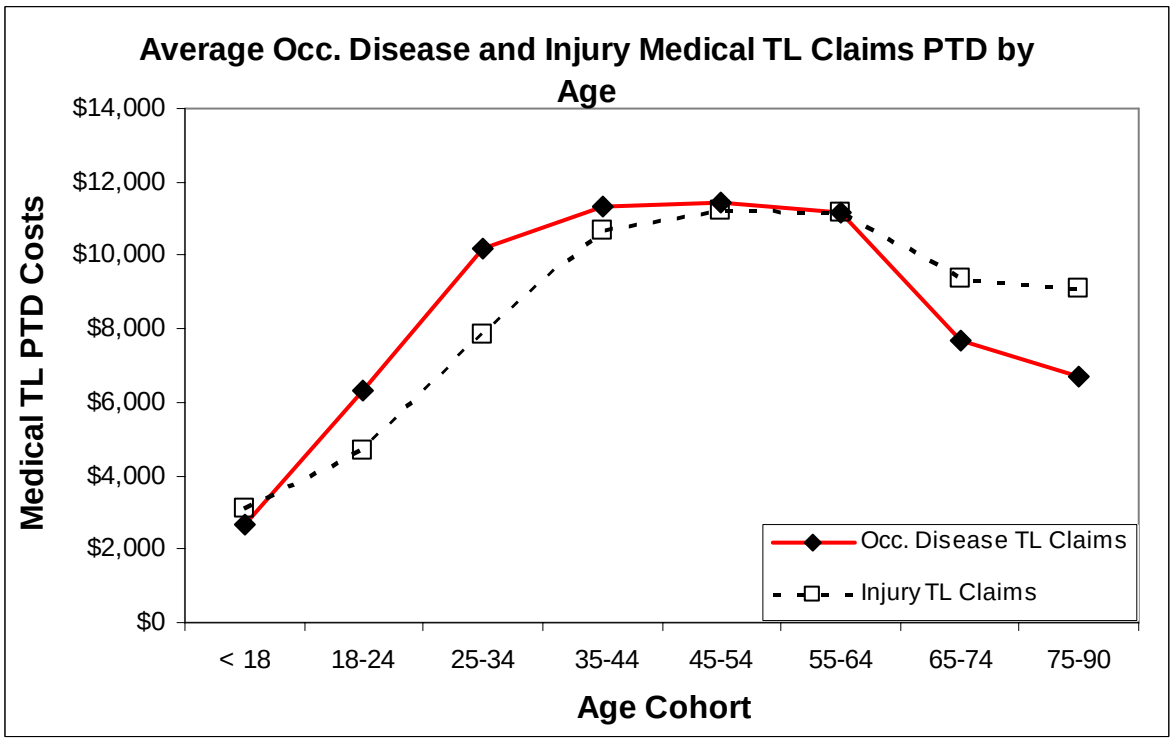
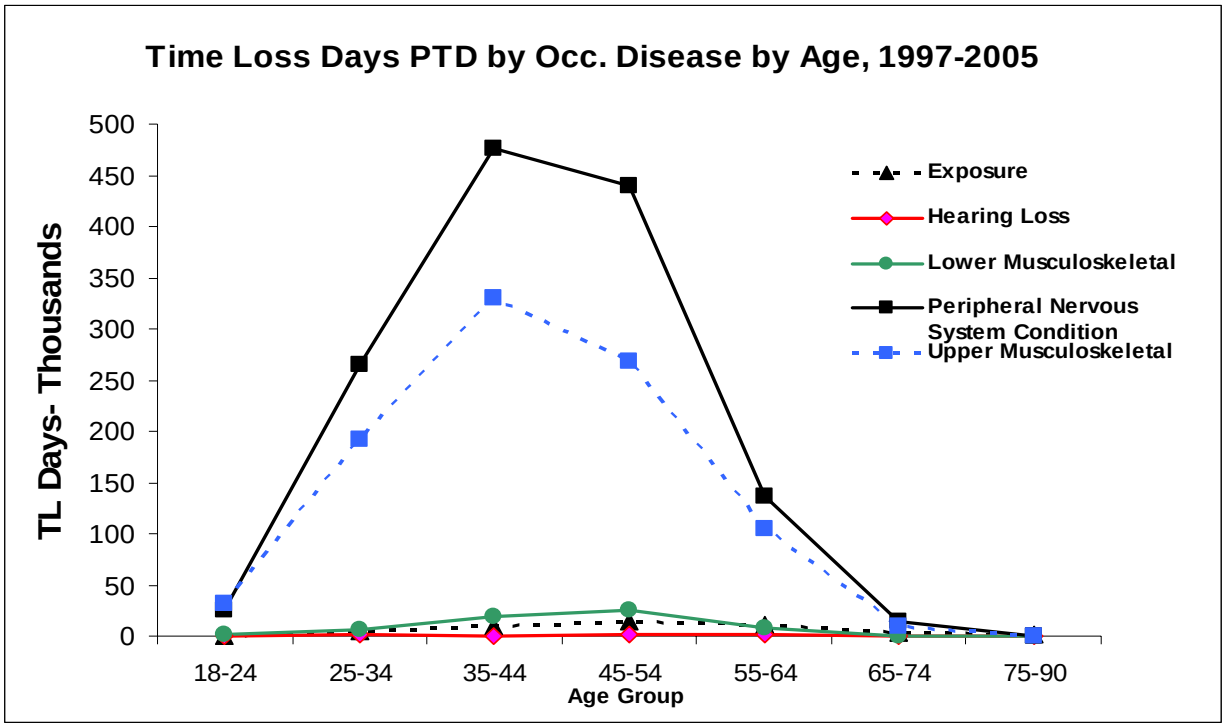


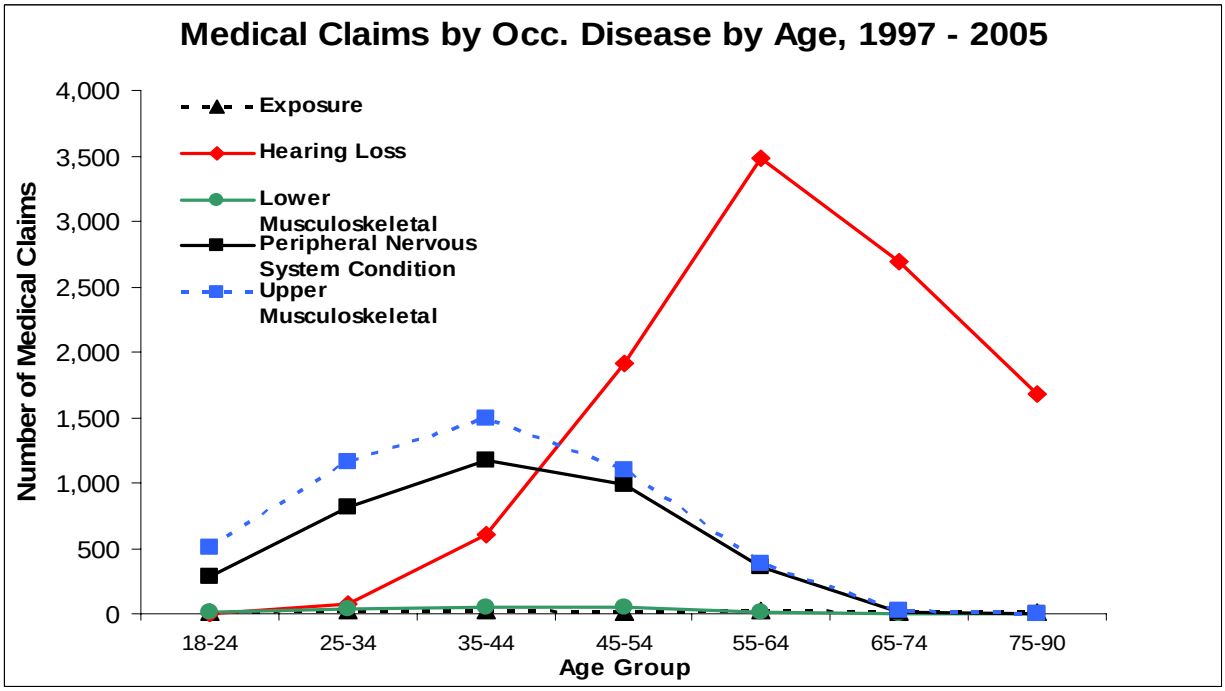
Chart 18 is based on age at first medical treatment, and shows that all age groups have occupational disease problems. Peripheral nervous system (carpal tunnel) and upper musculoskeletal conditions parallel the average number of claims for all age groups.

Chart 18



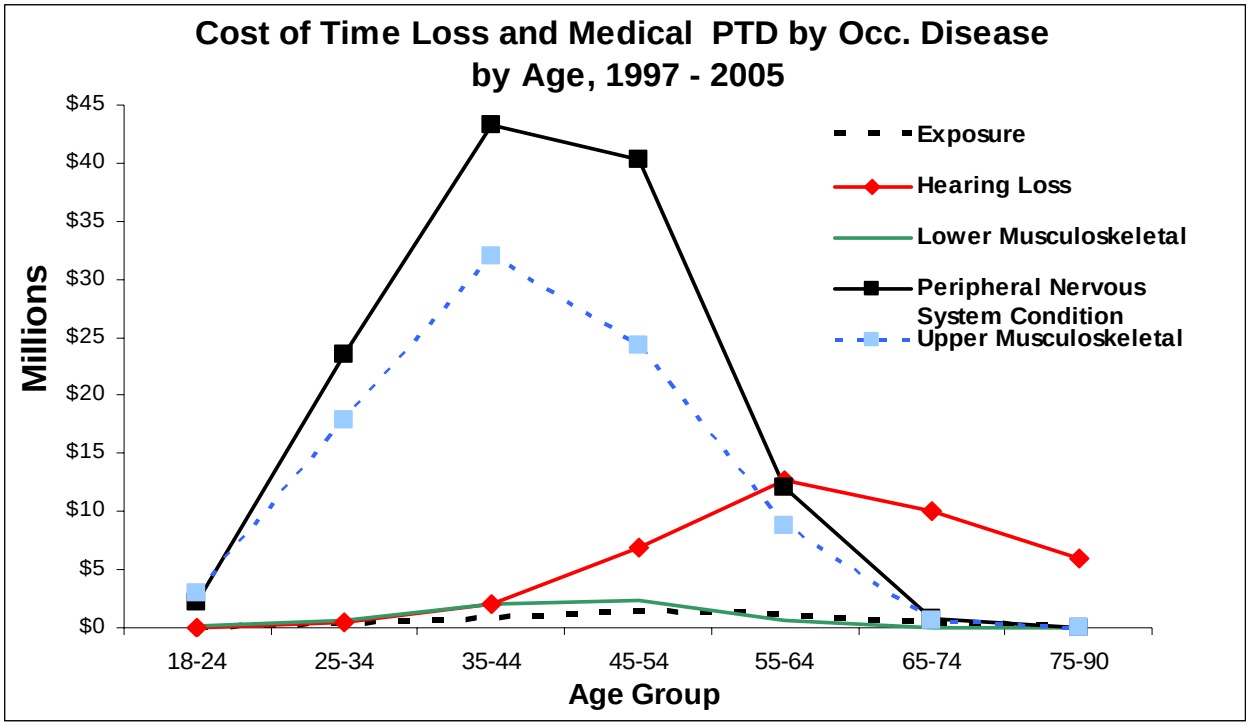
In **Chart 19** hearing loss dominates medical claims for older workers, due to hearing aids, which once eligible, are purchased for the life of the worker. For workers over age 65 this creates potential long-term hearing loss medical claims.

Chart 19



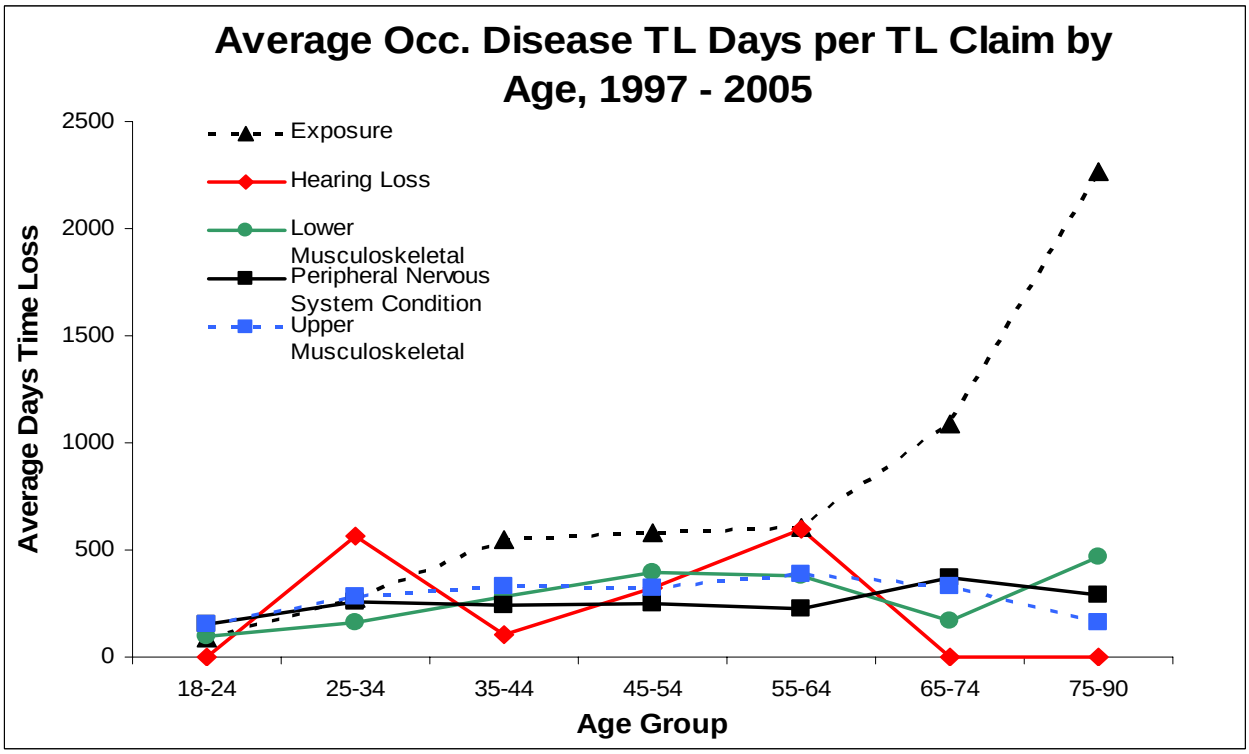
In **Chart 20** peripheral nervous system and upper musculoskeletal conditions are most costly paralleling the age distribution of all claims. Hearing loss costs are higher for older workers.

Chart 20



In **Chart 21** hearing loss TL days are bi-modal for younger and older workers. High exposure days for age 75-90 are due to one long-duration asbestosis claim.

Chart 21



Conclusions

Regarding the research question, "In Washington, what effects will an aging workforce have on the frequency and costs of workplace injuries and illnesses," the findings are as follows.

The number of older workers participating in the workforce will increase through 2020, and hold steady until 2030, then begin a gradual decline.

The rising number of older workers will result in increased claims, time loss days and costs, especially for 45-64 year-old workers.

For workers age 65 and older, average time loss days will increase while the time loss costs will decrease because of lower post-retirement wages at the time of injury.

Occupational disease claims are more expensive than injury claims and have almost double the time loss days per claim.

Occupational disease claims in younger groups show more rapid growth in time loss and medical costs than injury claims. The distribution of occupational disease across all age groups, with rapid growth of time loss among ages 18-24 shows that occupational diseases are not limited to older workers, even though time loss costs are especially high for ages 55-64.

The costs of hearing loss from medical-only claims are large for workers aged 45 and over.

Overall there will be more older workers staying in the workforce longer that will result in greater time loss days and overall costs, even though time loss will be at slightly lower cost over age 65. Occupational diseases are important among young workers with hearing loss medical costs a special concern among older workers.

Employers could rightly ask 'How does this affect my older workers? What effects will this have on my workers' compensation premium costs? Do I encourage older workers to work for me?' Other related questions would be 'What keeps older people working? Are some elders going back to work more than others? Where are they going back and with what employers? What employers are managing aging workers well and what are they doing?' These questions could be addressed in further research.

Next Research Steps

With reference to the research question, more questions grew out of the analysis to date than were initially asked. More analysis is planned on long duration claims, which appear likely for some aging workers, and comparison of closed and open claims. For example, long duration time loss claims, closed and open, for which older workers are likely to be prominent could clarify the comparison of two year study groups versus paid-to-date claims.

Factors other than age might be driving the trends charted, such as industry, union membership, or managerial versus other front-line types of work. For example, controlling for the

effects of age cohort size on the various measures could also allow testing of the apparent differences shown for older cohorts.

Analysis is continuing of severity of injury, by major industry for older workers. This would clarify impacts on older workers in different industries, and the unexpected development of occupational disease claims among younger age cohorts. A comparison of medical versus actuarial approaches to older workers could also clarify the impacts.

An important new research avenue for Washington state is the contribution of chronic disease(s) to injuries, time loss, longer duration claims, permanent disability, and pre-mature retirement among older workers. This topic is receiving increasing national attention, and a growing peer-reviewed literature describes significant worker compensation impacts.

Finally, how private industry responds to older workers with retirement options, various accommodation and retention strategies designed to extend the workers' careers is a recurring focus in the business literature. The ways workers respond to the incentives in these programs and the hoped-for reductions in workers compensation impacts are a final new research topic that offers information to policy makers. A policy analysis and summary of best managerial practices could be done as noted above.

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Appendix: Aging Workforce Report

Table 4–Aggregate sample of all claims 7/1/1997 – 6/30/2003, "2-year window data." Supports **Charts 2-6**.

Age	TL Days	TL Paid	LEP Paid	Number of Comp Claims	All Claims	Non-Comp Claims	Percent of All Claims by Age	Percent of Claims with TL by Age	Percent Non-Comp Claims by Age	TL Claims as a Proportion within Age group	Average Days TL per TL Claim	Average TL Paid per TL Claim
0- Miss	39,810	$1,708,661.44	$105,169.24	964	9,008	8,044	0.011	0.006	0.012	10.70%	41.3	$1,772
< 18	39,282	$663,902.36	$9,463.32	1,001	9,890	8,889	0.012	0.006	0.014	10.12%	39.2	$663
18-24	1,355,607	$50,730,606.96	$2,056,689.49	22,549	157,891	135,342	0.192	0.133	0.208	14.28%	60.1	$2,250
25-34	4,189,845	$211,015,744.43	$9,787,882.41	43,727	230,356	186,629	0.281	0.257	0.287	18.98%	95.8	$4,826
35-44	6,455,392	$354,398,203.75	$16,266,867.00	51,888	215,865	163,977	0.263	0.305	0.252	24.04%	124.4	$6,830
45-54	4,543,388	$250,920,501.11	$12,401,320.70	34,435	133,163	98,728	0.162	0.202	0.152	25.86%	131.9	$7,287
55-64	1,929,709	$103,614,366.90	$4,685,304.04	13,497	51,861	38,364	0.063	0.079	0.059	26.03%	143.0	$7,677
65-74	269,724	$9,420,891.51	$398,708.15	1,827	9,552	7,725	0.012	0.011	0.012	19.13%	147.6	$5,156
75-90	40,808	$934,587.91	$27,075.80	248	3,104	2,856	0.004	0.001	0.004	7.99%	164.5	$3,768
91+	371	$7,812.48	$439.92	15	488	473	0.001	0.000	0.001	3.07%	24.7	$521
Totals	18,863,936	983415278.8	45738920.07	170,151	821,178	651,027	1.00	1.00	1.00	1.60		

Table 5 – 2015 Estimates of Time Loss Days PTD and All Claims, Study Group 3, 7/1/2001 – 6/30/2003. Supports **Charts 7-8**.

Change in Estimated Paid-to-Date TL Days and All Claims 2004 to 2015

Age	2004 TL Days	Estimated 2015 TL Days	Estimated Difference	All 2004 Claims	Estimated 2015 All Claims	Estimated Difference
18-24	548,521	557,767	9,246	43,753	44,491	738
25-34	1,794,509	1,976,298	181,789	62,747	69,103	6,356
35-44	3,099,235	3,321,520	222,285	60,679	65,031	4,352
45-54	2,521,503	2,612,158	90,655	42,244	43,763	1,519
55-64	1,104,013	1,567,674	463,661	16,517	23,454	6,937
65-74	119,280	201,461	82,181	2,237	3,778	1,541
75-90	18,287	32,087	13,800	410	719	309
		Total Increased TL Days	**1,063,616**		**Total Increased Claims**	**21,752**

Note: In **Tables 5 and 6** the baseline multiplier for Paid-to-Date Claims activity is sample study group 3 (7/1/2001-6/30/2003), times BLS annual growth rates for 2005-10 and 2010-20. For ages 18-24, the percent growth rate change multiplier is based on BLS' 20-24 year olds and ages 75-90 is based on BLS' age 75 and older. BLS annual growth rate percents for the civilian labor force 2005-10 and 2010-20 are described by Toossi (2006).

Table 6 - 2015 Estimates of Time Loss Claims and TL Paid-to-Date, Study Group 3, 7/1/2001 – 6/30/2003. Supports **Chart 9**.

Change in Estimated Paid-to-Date TL Claims and TL Payments 2004 to 2015

Age	2004 TL Claims	Estimated 2015 TL Claims	Estimated Difference	Average TL Paid-to-Date per TL Claim 2004	Estimated 2015 TL Claims	Estimated 2015 TL Paid	2004 TL Paid-to-Date	Estimated Difference
18-24	6,397	6,505	108	$3,186	6,505	$20,726,570	$20,382,979	$343,591
25-34	12,019	13,237	1,218	$7,392	13,237	$97,848,427	$88,847,882	$9,000,545
35-44	14,548	15,591	1,043	$11,449	15,591	$178,499,866	$166,554,176	$11,945,691
45-54	11,053	11,450	397	$12,378	11,450	$141,734,833	$136,815,945	$4,918,888
55-64	4,574	6,495	1,921	$12,234	6,495	$79,457,625	$55,956,964	$23,500,661
65-74	574	969	395	$7,166	969	$6,947,206	$4,113,275	$2,833,932
75-90	79	139	60	$6,342	139	$879,133	$501,039	$378,094
	Total Increased TL Claims		**5,142**				**Total Increased TL Cost**	**$52,921,402**

Table 7 – Aggregate Occupational disease claims 7/1/1997 – 6/30/2003, paid-to-date and 2-year window. Supports **Charts 10-17**.

	Number of Claims			Medical Aid		Time loss		Loss of Earning Power		Timeloss Days	
Age_Cohort	Comp	Non-Comp	Grand Total	PTD	Window	PTD	Window	PTD	Window	PTD	Window
0- Miss	29	138	167	$431,357.02	$386,201.68	$219,018.52	$161,163.49	$9,655.06	$9,759.43	3,599	2,433
1- < 18	8	19	27	$32,312.59	$31,272.98	$9,452.71	$9,961.19	$0.00		742	741
2- 18-24	486	963	1,449	$4,108,906.79	$3,482,527.19	$2,710,316.99	$2,240,976.91	$166,157.85	$156,020.07	77,166	56,643
3- 25-34	2,191	2,661	4,852	$26,187,994.99	$20,846,789.11	$28,279,078.01	$20,389,362.81	$1,870,632.99	$1,419,704.34	590,772	384,808
4- 35-44	3,771	4,124	7,895	$51,241,079.89	$39,440,555.31	$55,161,357.80	$37,508,155.12	$2,571,275.67	$2,009,236.61	1,114,261	685,635
5- 45-54	3,331	4,792	8,123	$50,912,681.04	$39,776,288.78	$50,294,839.82	$32,612,805.76	$2,215,507.33	$1,665,796.70	1,026,676	584,511
6- 55-64	1,210	4,483	5,693	$28,238,560.59	$22,765,933.13	$20,499,251.94	$12,745,408.87	$743,377.71	$536,611.12	420,222	223,876
7- 65-74	98	2,772	2,870	$11,111,232.68	$8,930,579.34	$1,165,184.23	$794,188.60	$21,702.51	$22,349.91	35,567	22,645
8- 75-90	6	1,700	1,706	$6,077,142.21	$4,900,163.71	$82,838.83	$34,545.03	$76,508.75	$56,161.97	3,518	1,215
9- 91+	0	33	33	$102,849.74	$93,616.25	$0.00		$0.00		0	
Grand Total	11,130	21,685	32,815	$178,444,117.54	$140,653,927.48	$158,421,338.85	$106,496,567.78	$7,674,817.87	$5,875,640.16	3,272,523	1,962,507

Table 8 – Occupational disease calculations, Study Group 3, 6/30/2001 – 6/30/2004. Supports **Charts 10-17**.

Age	Percent of All Claims by Age	Percent of Claims with TL by Age	TL Claims as a Proportion within Age group **	Average Days TL Paid-to-Date per TL Claim	Average TL Paid-to-Date per TL Claim	Average Medical Paid-to-Date for All Claims	Average Medical Paid-to-Date for TL Claims		Aggregate Sample Medical Aid Only COMP-PTD
0- Miss	0.011	0.006	0.107	57.7	$2,261.21	$726.03	$2,837.23		$2,726,578.87
< 18	0.012	0.006	0.101	44.8	$738.11	$635.96	$3,086.81		$3,086,811.59
18-24	0.192	0.133	0.143	78.3	$2,767.89	$1,023.56	$4,683.38		$105,699,271.99
25-34	0.281	0.257	0.190	148.1	$6,912.76	$1,925.89	$7,859.28		$343,702,010.61
35-44	0.263	0.305	0.240	214.6	$10,837.47	$3,092.05	$10,683.58		$554,542,047.15
45-54	0.162	0.202	0.259	234.4	$11,689.56	$3,556.78	$11,247.58		$387,568,974.23
55-64	0.063	0.079	0.260	246.3	$11,750.05	$3,745.32	$11,141.57		$150,478,032.49
65-74	0.012	0.011	0.191	222.5	$7,215.22	$3,424.29	$9,344.34		$17,081,462.13
75-90	0.004	0.001	0.080	209.5	$5,019.97	$3,212.78	$9,089.22		$2,263,215.51
91+	0.001	0.000	0.031	24.6	$512.84	$424.77	$992.82		$14,892.26
Totals	1.000	1.000	1.603						$1,567,163,296.83

Table 9 - Aggregate Samples- Injury Claims comparing 2-yr window with Paid-to-Date 1997 – 2003.

Age	Average Days TL per TL Claim 2-yr. Window	Average Days TL Paid-to-Date per TL Claim	Average TL Paid per TL Claim 2-yr. Window	Average TL Paid-to-Date per TL Claim	Difference in TL Paid per TL Claim of 2 yrs vs. PTD	Average Medical Paid-to-Date for TL Claims	Total TL and Medical Payments to Date
0- Miss	41.3	57.7	$1,772	$2,261	27.6%	$2,837	$5,098
< 18	39.2	44.8	$663	$738	11.3%	$3,087	$3,825
18-24	60.1	78.3	$2,250	$2,768	23.0%	$4,683	$7,451
25-34	95.8	148.1	$4,826	$6,913	43.2%	$7,859	$14,772
35-44	124.4	214.6	$6,830	$10,837	58.7%	$10,684	$21,521
45-54	131.9	234.4	$7,287	$11,690	60.4%	$11,248	$22,937
55-64	143.0	246.3	$7,677	$11,750	53.1%	$11,142	$22,892
65-74	147.6	222.5	$5,156	$7,215	39.9%	$9,344	$16,560
75-90	164.5	209.5	$3,768	$5,020	33.2%	$9,089	$14,109
91+	24.7	24.6	$521	$513	-1.5%	$993	$1,506

Table 10 –Occupational Disease Time Loss Claims, TL Cost-per-Claim, and Paid-to-Date, 1997 – 2005.

Occupational Disease TL Claims Paid-to-Date 1997 - 2005

Age	Number of Occ. Disease Claims *	Average Days Occ. DiseaseTL PTD	Avg TL PTD per Occ. Disease TL Claim	Avg. Med. PTD for Occ. Diease. TL Claims	Avg Med PTD for All Occ. Disease Claims
< 18	8	92.8	$1,182	$2,644	$1,197
18-24	486	158.8	$5,577	$6,314	$2,836
25-34	2,191	269.6	$12,907	$10,183	$5,397
35-44	3,771	295.5	$14,628	$11,349	$6,490
45-54	3,331	308.2	$15,099	$11,457	$6,268
55-64	1,210	347.3	$16,942	$11,151	$4,960
65-74	98	362.9	$11,890	$7,666	$3,872
75-90	6	586.3	$13,806	$6,715	$3,562
Total	11,101				

N = 11,130 TL of 32,815 occupational disease claims*

* 29 additional claims with Age = 0 or missing.

* Occupational Disease TL claims are 6.5% of all TL claims.

Table 11- Aggregate Injury Claims Paid-to-Date and Cost per Age Cohort, 1997-2005.

Injury TL Claims Paid-to-Date 1997 - 2005

Age	Number of Claims *	Average Days TL PTD	Avg. Injury TL PTD	Avg. Medical PTD for TL Claims	Avg. Medical PTD for Injury only Med. Claims
< 18	1,000	44.8	$738	$3,087	$636
18-24	22,569	78.3	$2,768	$4,683	$1,024
25-34	43,732	148.1	$6,913	$7,859	$1,926
35-44	51,906	214.6	$10,837	$10,684	$3,092
45-54	34,458	234.4	$11,690	$11,248	$3,557
55-64	13,506	246.3	$11,750	$11,142	$3,745
65-74	1,828	222.5	$7,215	$9,344	$3,424
75-90	249	209.5	$5,020	$9,089	$3,213
Total	169,248				

N= 170,224 TL of 821,202 claims *

* Additional 961 claims with Age = 0 or missing, and 15 claims age 91+

Table 12

Injury and Occupational Disease TL Days Paid-to-Date 1997-2005

Age	Injury TL Days	Occ. Disease TL Days	% Occ. Disease TL Days
< 18	44,755	742	1.6%
18-24	1,767,550	77,166	4.2%
25-34	6,477,691	590,772	8.4%
35-44	11,139,528	1,114,261	9.1%
45-54	8,077,601	1,026,676	11.3%
55-64	3,326,895	420,222	11.2%
65-74	406,777	35,567	8.0%
75-90	52,155	3,518	6.3%

Table 13

Injury And Occupational Disease TL Dollars Paid-to-Date 1997-2005

Age	Injury TL PTD	Occ. Disease TL PTD	% Occ. Disease $
< 18	$738,114	$9,453	1.3%
18-24	$62,468,446	$2,710,317	4.2%
25-34	$302,308,995	$28,279,078	8.6%
35-44	$562,529,804	$55,161,358	8.9%
45-54	$402,798,957	$50,294,840	11.1%
55-64	$158,696,151	$20,499,252	11.4%
65-74	$13,189,420	$1,165,184	8.1%
75-90	$1,249,973	$82,839	6.2%

Table 14

Compensable Claims Medical Costs PTD 1997-2005

Age	Injury Claims	Occ. Disease Claims	% Occ. Compensable Claims $
< 18	$3,086,812	$21,155	0.7%
18-24	$105,699,272	$3,068,469	2.8%
25-34	$343,702,011	$22,311,225	6.1%
35-44	$554,542,047	$42,798,504	7.2%
45-54	$387,568,974	$38,164,202	9.0%
55-64	$150,478,032	$13,492,153	8.2%
65-74	$17,081,462	$751,290	4.2%
75-90	$2,263,216	$40,290	1.7%

Table 15

Medical-Only Claims Medical Costs PTD 1997-2005

Age	Injury Claims	Occ. Disease Claims	% Occ. Med.-Only Claims $
< 18	$3,206,049	$11,158	0.3%
18-24	$55,944,697	$1,040,438	1.8%
25-34	$99,945,016	$3,876,770	3.7%
35-44	$112,910,435	$8,442,576	7.0%
45-54	$86,087,661	$12,748,479	12.9%
55-64	$43,795,240	$14,746,408	25.2%
65-74	$15,627,338	$10,359,943	39.9%
75-90	$7,712,471	$6,036,853	43.9%

Table 16
Occupational Disease Claim Categories, PTD, parts A-I

Data Extract Date: September 2006

16-A: Occupational Disease- Number of Compensatory Claims

	Occupational Disease Categories						
Age Cohort	Exposure	Hearing Loss	Lower Musculoskeletal	Other	Peripheral Nervous System Condition	Upper Musculoskeletal	Total
Missing Age	0	0	0	6	11	12	29
< 18	0	0	0	0	2	6	8
18-24	5	0	16	88	161	216	486
25-34	19	4	43	418	1,023	684	2,191
35-44	18	2	68	738	1,937	1,008	3,771
45-54	25	4	64	666	1,733	839	3,331
55-64	19	4	21	299	600	267	1,210
65-74	3	0	4	23	40	28	98
75-90	1	0	1	0	1	3	6
91+	0	0	0	0	0	0	0
Total	90	14	217	2,238	5,508	3,063	11,130

16-B: Occupational Disease- Number of Non-Compensatory Claims

	Occupational Disease Categories						
Age Cohort	Exposure	Hearing Loss	Lower Musculoskeletal	Other	Peripheral Nervous System Condition	Upper Musculoskeletal	Total
Missing Age	0	39	4	25	28	42	138
< 18	0	0	1	3	3	12	19
18-24	9	1	18	140	289	506	963
25-34	27	68	43	549	815	1,159	2,661
35-44	26	608	54	768	1,173	1,495	4,124
45-54	18	1,916	44	729	987	1,098	4,792
55-64	25	3,485	18	226	352	377	4,483
65-74	11	2,689	1	27	18	26	2,772
75-90	9	1,675	0	13	0	3	1,700
91+	0	32	0	0	0	0	32
Total	125	10,513	183	2,480	3,665	4,718	21,684

16-C: Occupational Disease- Total Number of Claims

	Occupational Disease Categories						
Age Cohort	Exposure	Hearing Loss	Lower Musculoskeletal	Other	Peripheral Nervous System Condition	Upper Musculoskeletal	Total
Missing Age	0	39	4	31	39	54	167
< 18	0	0	1	3	5	18	27
18-24	14	1	34	228	450	722	1,449
25-34	46	72	86	967	1,838	1,843	4,852
35-44	44	610	122	1,506	3,110	2,503	7,895
45-54	43	1,920	108	1,395	2,720	1,937	8,123
55-64	44	3,489	39	525	952	644	5,693
65-74	14	2,689	5	50	58	54	2,870
75-90	10	1,675	1	13	1	6	1,706
91+	0	32	0	0	0	0	32
Total	215	10,527	400	4,718	9,173	7,781	32,814

16-D: Occupational Disease- Medical Aid Paid-to-date

Occupational Disease Categories

Age Cohort	Exposure	Hearing Loss	Lower Musculoskeletal	Other	Peripheral Nervous System Condition	Upper Musculoskeletal	Total
Missing Age	$0	$148,186	$2,551	$69,500	$120,626	$90,494	$431,357
< 18	$0	$0	$342	$1,252	$3,024	$27,694	$32,313
18-24	$19,647	$3,334	$85,181	$809,790	$1,384,193	$1,806,762	$4,108,907
25-34	$135,568	$337,275	$349,200	$5,550,880	$11,030,464	$8,784,609	$26,187,995
35-44	$291,234	$2,067,464	$959,055	$11,880,303	$20,294,404	$15,748,620	$51,241,080
45-54	$513,000	$6,814,065	$1,044,117	$12,028,473	$18,401,038	$12,111,988	$50,912,681
55-64	$394,122	$12,604,498	$339,077	$5,090,703	$5,767,364	$4,042,797	$28,238,561
65-74	$94,607	$10,090,117	$24,701	$324,989	$300,903	$275,916	$11,111,233
75-90	$32,724	$5,990,844	$6,895	$31,942	$4,139	$10,598	$6,077,142
91+	$0	$102,850	$0	$0	$0	$0	$102,850
Total	$1,480,901	$38,158,632	$2,811,121	$35,787,832	$57,306,155	$42,899,476	$178,444,118

16-E: Occupational Disease- Timeloss Paid-to-date

Occupational Disease Categories

Age Cohort	Exposure	Hearing Loss	Lower Musculoskeletal	Other	Peripheral Nervous System Condition	Upper Musculoskeletal	Total
Missing Age	$0	$0	$0	$13,103	$122,073	$83,842	$219,019
< 18	$0	$0	$0	$0	$313	$9,140	$9,453
18-24	$14,008	$0	$78,751	$563,303	$821,331	$1,232,924	$2,710,317
25-34	$194,181	$139,227	$304,190	$6,022,305	$12,483,198	$9,135,978	$28,279,078
35-44	$557,364	$991	$1,131,666	$14,261,942	$22,991,936	$16,217,457	$55,161,358
45-54	$838,181	$75,139	$1,353,951	$13,925,633	$21,848,399	$12,253,537	$50,294,840
55-64	$692,682	$101,853	$365,560	$8,189,244	$6,377,186	$4,772,727	$20,499,252
65-74	$183,400	$0	$17,177	$253,583	$428,510	$282,514	$1,165,184
75-90	$52,939	$0	$8,502	$0	$2,914	$18,484	$82,839
91+	$0	$0	$0	$0	$0	$0	$0
Total	$2,532,757	$317,209	$3,259,796	$43,229,112	$65,075,861	$44,006,603	$158,421,339

16F: Occupational Disease- Loss of Earning Power Paid-to-date

Occupational Disease Categories

Age Cohort	Exposure	Hearing Loss	Lower Musculoskeletal	Other	Peripheral Nervous System Condition	Upper Musculoskeletal	Total
Missing Age	$0	$0	$0	$5,420	$1,119	$3,116	$9,655
< 18	$0	$0	$0	$0	$0	$0	$0
18-24	$0	$0	$0	$53,235	$65,535	$47,388	$166,158
25-34	$4,459	$2,808	$17,136	$416,411	$769,430	$660,389	$1,870,633
35-44	$12,351	$7,369	$6,438	$625,728	$1,043,095	$876,294	$2,571,276
45-54	$177,258	$0	$25,530	$586,755	$630,763	$795,200	$2,215,507
55-64	$3,766	$0	$12,015	$277,631	$187,011	$262,955	$743,378
65-74	$0	$0	$814	$6,170	$4,113	$10,606	$21,703
75-90	$75,908	$0	$0	$0	$0	$601	$76,509
91+	$0	$0	$0	$0	$0	$0	$0
Total	$273,743	$10,177	$61,933	$1,971,350	$2,701,066	$2,656,550	$7,674,818

16G: Occupational Disease- (Derived) Timeloss Days To-date

Occupational Disease Categories

Age Cohort	Exposure	Hearing Loss	Lower Musculoskeletal	Other	Peripheral Nervous System Condition	Upper Musculoskeletal	Total
Missing Age	0	0	0	575	1,567	1,457	3,599
< 18	0	0	0	0	38	704	742
18-24	458	0	1,491	18,191	24,657	32,369	77,166
25-34	5,135	2,272	7,074	118,476	265,016	192,799	590,772
35-44	9,903	214	19,131	278,237	476,183	330,593	1,114,261
45-54	14,450	1,280	25,091	278,288	439,144	268,423	1,026,676
55-64	11,562	2,373	7,938	157,613	136,346	104,390	420,222
65-74	3,255	0	668	7,669	14,683	9,292	35,567
75-90	2,268	0	467	0	290	493	3,518
91+	0	0	0	0	0	0	0
Total	47,031	6,139	61,860	859,049	1,357,924	940,520	3,272,523

16H: Occupational Disease- Total Permanent Partial Disability Award

Occupational Disease Categories

Age Cohort	Exposure	Hearing Loss	Lower Musculoskeletal	Other	Peripheral Nervous System Condition	Upper Musculoskeletal	Total
Missing Age	$0	$359,312	$0	$14,175	$1,683	$8,947	$384,117
< 18	$0	$0	$0	$0	$0	$0	$0
18-24	$34,386	$7,191	$12,620	$225,066	$221,726	$229,220	$730,209
25-34	$217,309	$442,531	$65,042	$1,598,811	$2,630,136	$1,779,720	$6,733,549
35-44	$171,098	$4,028,971	$293,986	$3,998,736	$6,651,759	$4,258,616	$19,403,165
45-54	$199,440	$14,422,302	$453,855	$3,946,428	$5,927,826	$3,785,601	$28,735,452
55-64	$183,170	$29,820,880	$238,077	$2,169,334	$1,911,312	$1,455,409	$35,778,183
65-74	$302,153	$24,858,136	$110,223	$394,444	$215,915	$100,847	$25,981,717
75-90	$79,090	$13,516,328	$0	$169,977	$15,678	$22,678	$13,803,751
91+	$0	$190,677	$0	$0	$0	$0	$190,677
Total	$1,186,645	$87,646,327	$1,173,803	$12,516,971	$17,576,035	$11,641,037	$131,740,819

16I: Number of Claims with a Permanent Partial Disability Award

Occupational Disease Categories

Age Cohort	Exposure	Hearing Loss	Lower Musculoskeletal	Other	Peripheral Nervous System Condition	Upper Musculoskeletal	Total
Missing Age	0	39	0	3	1	1	44
< 18	0	0	0	0	0	0	0
18-24	4	1	2	28	36	27	98
25-34	18	55	11	174	331	202	791
35-44	14	477	31	360	741	430	2,053
45-54	13	1,620	38	369	717	389	3,146
55-64	12	3,155	15	149	234	154	3,719
65-74	5	2,496	3	27	22	9	2,562
75-90	2	1,618	0	7	1	2	1,630
91+	0	31	0	0	0	0	31
Total	68	9,492	100	1,117	2,083	1,214	14,074

Table 17- Definitions of Data Elements: Aging Workforce Demographics Dataset

The results are based on 921,227 observations. Based on the first medical treatment date, that defines when an injured worker first received the professional medical services of a doctor or hospital, a series of three study groups were selected (see Table 3 in text). This allowed three comparison groups across 7/1/1997- 6/30/2005 with the same relative "window" of the initial two years for each claim. Paid-to-date data includes all data (time loss days, charges) current as of the date the data was extracted. There is potential for slight errors because past payments can be reversed by changes made to the claim, as in the case of overpayments. Time loss is time lost from work while convalescing from an occupational injury or disease, and time loss days are the number of days for which time-loss compensation has been paid**.** An occupational disease claim is a claim filed because the injured worker has developed a disease or infection that arose naturally and proximately out of employment. Additional details are available on request.

1 **CLAIM_ID**
Definition: Department unique identifier for an injury incident, that is preprinted on the Report of Accident (ROA).

2 **CLMT_BIRTH_DATE**
Comment: ROA may be corrected by claims manager.

3 **CLM_MED_AID_PTD_AMT**
Definition: Updated monthly - based on cumulative medical benefits paid on a claim.

4 **CLM_TL_PTD_AMT**
Definition: Time loss paid-to-date amount.

5 **CLM_TL_DAY_PD_DRVD_QTY**
Comment: Derived from actuarial tables.

6 **CLM_LEP_PTD_AMT**
Definition: Loss of earning power amount paid.
Comment: See related item #19, **Total_LEP_Paid**.

7 **CLM_1ST_MED_VISIT_DATE**
Comment: Infrequently subject to being overwritten with a later date, following a new medical visit.

8 **ACTUARY_CLM_STAT_CODE**
Definition: Used to define Derived Fatal Flag (**D_Fatal_Flag**) in item #17.

9 **NTFN_EFCTIV_DATE**
Definition: The earliest date an "Occupational Disease Notification/Order" was sent to worker; it is a legal notification date for binding determinations.

10 **End_Window**
Definition: 2 years minus 1 day, from the "minimum 1st date of service;" in item #11-**Min_1ST_DOS**.

11 **MIN_1ST_DOS**
Definition: Earliest (minimum) date of service by either a medical professional or a hospital.
Comment: Was used as a selection criterion -- where claims needed to have a Min_1st_DOS between 7/1/1997 and 6/30/2003. Pharmacies were not included because it was assumed a worker would see a doctor that billed L&I before the worker received an Rx. No actual screening on provider types was done, so it is possible that the data might include a non-medical provider, such as a taxi service.

12 **D_Occ_Dis_Flag**
Definition: Occupational Disease sample group.
Comment: "Y" is an Occupational Disease Order Issued before "**End_Window**," and "N" is an Occupational Disease Order not issued before "**End_Window**."

13 **Study_Group**
Definition: Original window timeframes for study groups one, two and three:
1 - 7/1/1997 - 6/30/1999
2 - 7/1/1999 - 6/30/2001
3 - 7/1/2001 - 6/30/2003

14 **Study_Group_2**
Definition: Shifts Study_Group forward six months:
1 - 1/1/1998 - 12/31/1999
2 - 1/1/2000 - 12/31/2001
3 - 1/1/2002 - 12/31/2003
Comment: Used to evaluate changes over time. Data was refreshed 9/22/2006 and study groups were kept as indicated.

15 **Age_at_Tx**
Definition: Age at 1st Medical Treatment
Comment: Age at 1st Medical Treatment is based on item #7, **CLM_1ST_MED_VISIT_DATE**.

16 **Age_Cohort**
Definition: Groups of age ranges used in the analysis.
1- < 18
2- 18-24
3- 25-34
4- 35-44
5- 45-54
6- 55-64
7- 65-74
8- 75-90
9- 91+
Comment: Age groupings match frequently used Bureau of Labor Statistics categories.

17 **D_Fatal_Flag**
Definition: Derived Fatal Flag, using data from item #8, D_Fatal_Flag = "Y" if **ACTUARY_CLM_STAT_CODE** = 1.

18 **Sum_Allowed**
Definition: Sum of all allowed charges for services pertaining to a claim; includes medical services, transportation, medical equipment, certain claim management charges, hospital and pharmacy charges occurring from item # 11, **MIN_1st_DOS** through item #10, **End_Window**, two years later.

19 **Total_LEP_Paid**
Definition LEP is Loss-of-earning Power paid during a two year window.
Comment: See related item #6, **CLM_LEP_PTD_AMT.** Loss of earning power is a percentage of regular time-loss compensation paid for wages lost when workers, whose medical conditions are not fixed and stable, earn at least 5% less than their pre-injury wages while doing light-duty or modified work or are enrolled in an approved vocational program.

20 **Total_Days**
Definition: Time loss days only- accrued during a two-year window.

21 **Total_TL_Paid**
Definition: Time loss paid during a two-year window.