



Age As A Driver of Frequency and Severity of Workers Comp Claims

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Key Findings

- Age is a factor in explaining trends in frequency and severity
- The significance of age on frequency has diminished.
- The significance of age on severity is essentially unchanged.
- Differences in severity by age can be explained by differences in
 - wages
 - claim durations
 - lump sum payments
 - injury diagnoses, and
 - number of medical treatments
- Workers compensation claims of baby boomers made an impact on loss costs historically, but
- The major impact of an aging workforce has likely already occurred

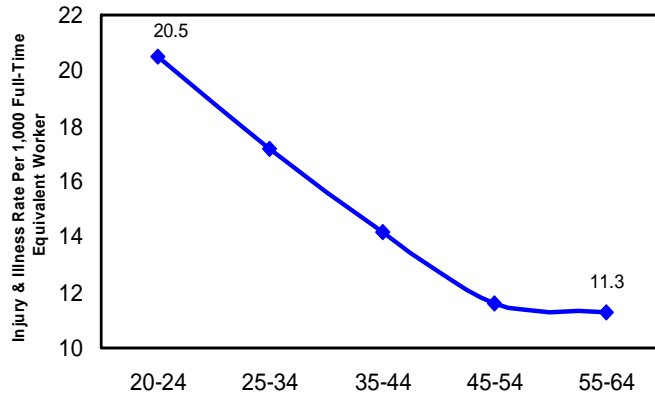
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Frequency is Inversely Related to Age of Worker

Non-Fatal Injury and Illness Rates By Age of Worker, Calendar Years 1994-2002



Source: BLS

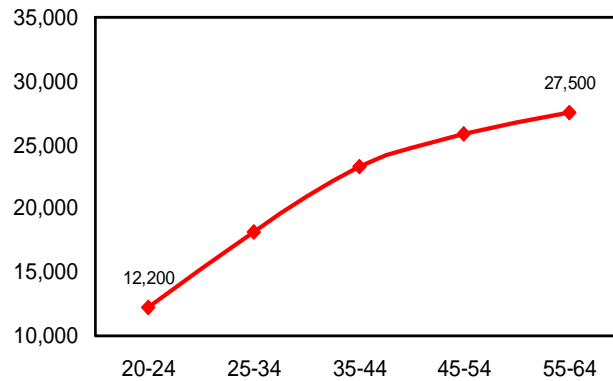
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Severity Is Directly Related to Age of Worker

Total Indemnity and Medical Paid+Case Severities on Lost-Time Claims Reported at 18 months, Accident Years 1996-2003



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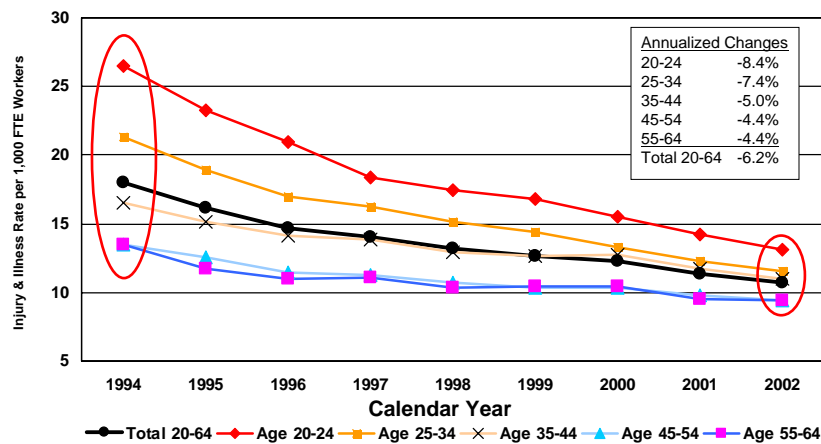
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Impact of Age on Frequency



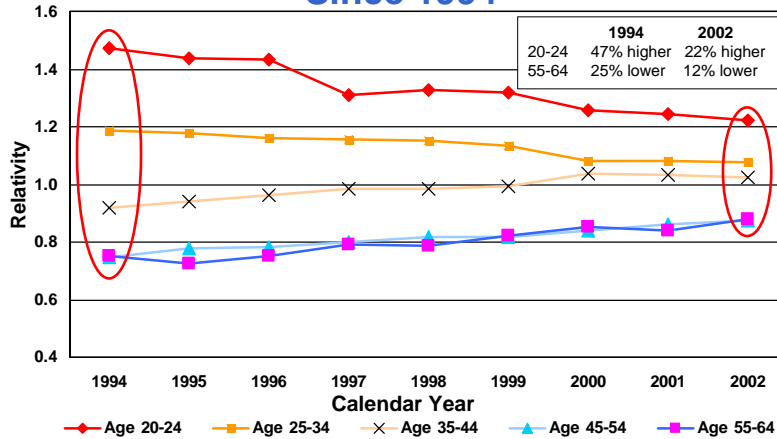
Non-Fatal Incidence Rates Involving Days Away from Work by Age Show Relationships Narrowing



Source: BLS



Non-Fatal Incidence Rate Relativities Within Each Year Show Differences By Age Narrowing Since 1994



Source: BLS

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Impact of Age on Frequency Trends

- Occupational mix/shift explains a portion
 - Younger workers < 30% managerial
 - Older workers ~35% managerial
 - General shift toward managerial
- Suggests that age is not as significant going forward
- Suggests that as the baby boomers retire, younger workforce may not exert as much upward pressure on frequency trends

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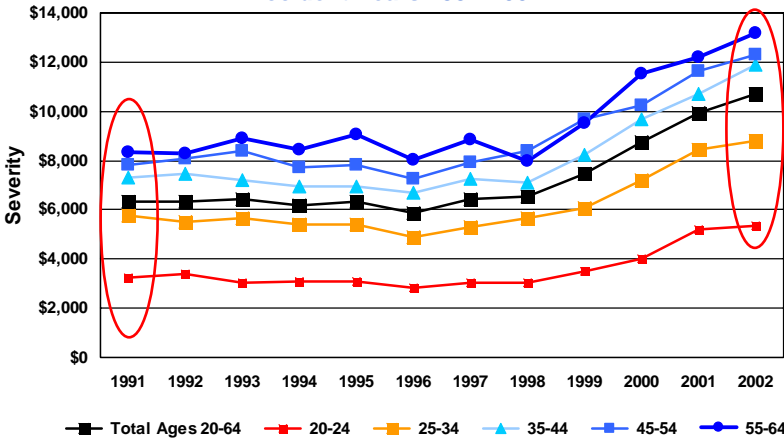


Impact of Age on Indemnity Severity



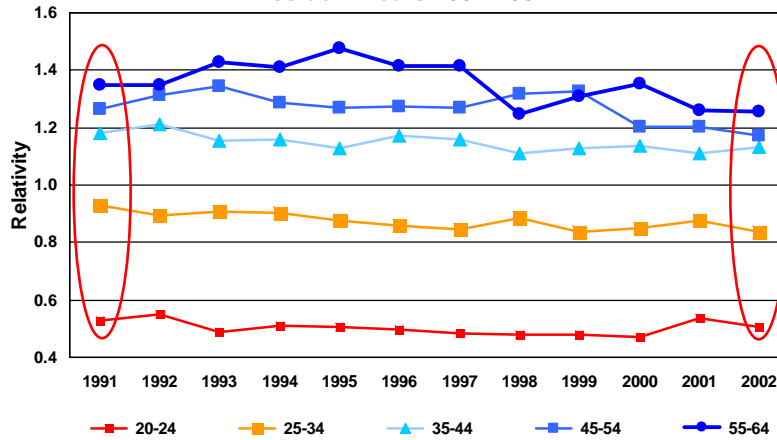
Average Paid+Case Indemnity Severities Reported at 18 Months By Age & Accident Year

Accident Years 1991-2002



Average Paid+Case Indemnity Severity Relativities Show Relationships Maintained

Accident Years 1991-2002



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A "Model" of Claims Costs

Cost = Price x Utilization

Utilization = Quantity and Mix

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Impact of Age on Indemnity Severity

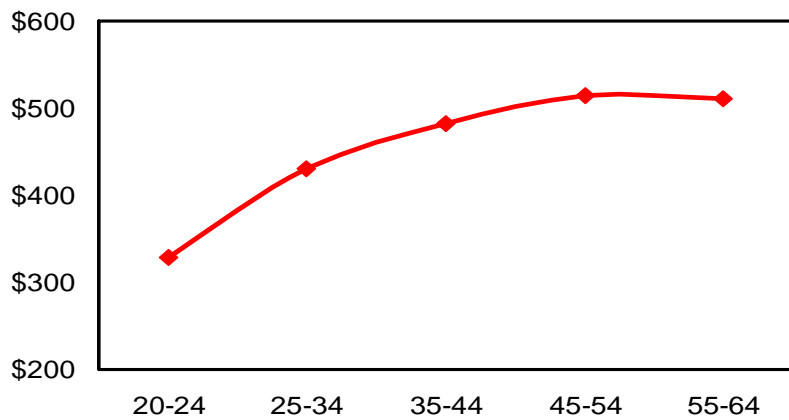
Control for:

- "Price" – Differences in average weekly wage
- "Quantity and Mix" – Differences in duration and the percentage of claims receiving lump sum payments



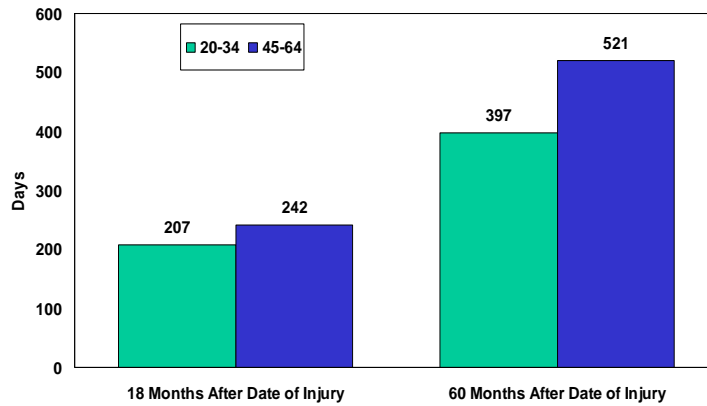
Average Weekly Wage Increases With Age

Average Weekly Wage of Injured Workers,
Closed Claims at 60 Months, Accident Years 1996-1999

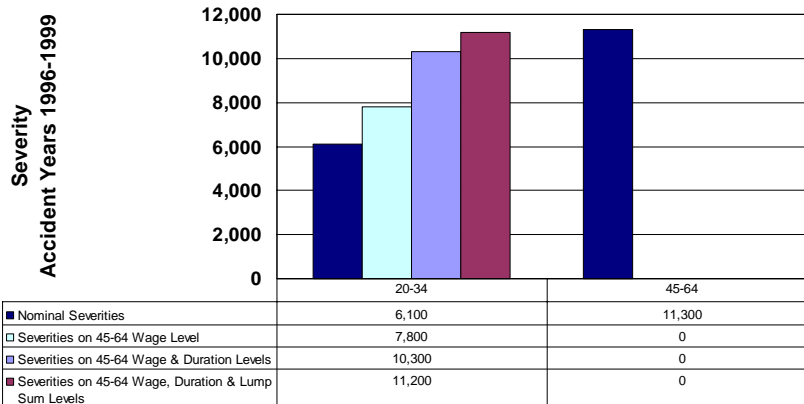


Average Duration Is Longer for Older Workers

Average Days from Date of Injury to Closure, Closed Claims, Accident Years 1996-2003



Paid Indemnity Severities at 60 Months After Adjusting for Wage, Duration, and Lump Sum Differences



Paid Indemnity Severities at 60 Months After Adjusting for Wage, Duration, and Lump Sum Differences

	Accident Years 1996-1999		% Diff
	20-34	45-64	20-34 vs. 45-64
Unadjusted Indemnity Severities	6,100	11,300	85%
Controlled for Wage Differences <i>Portion Due to Wage Differences</i>	7,800	11,300	44% 33%
Controlled for Wage Differences & Duration <i>Portion Due to Duration Differences</i>	10,300	11,300	10% 47%
Controlled for Wage, Duration & Lump Sum Differences <i>Portion Due to Lump Sum Differences</i>	11,200	11,300	1% 17%
Total Portion Due to Wage, Duration & Lump Sum Differences Remaining Portion Due to Age & Other Factors			97% 3%

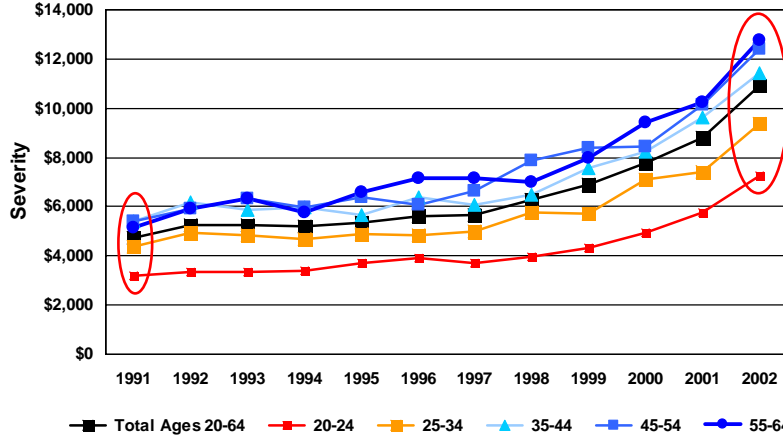


Impact of Age on Medical Severity



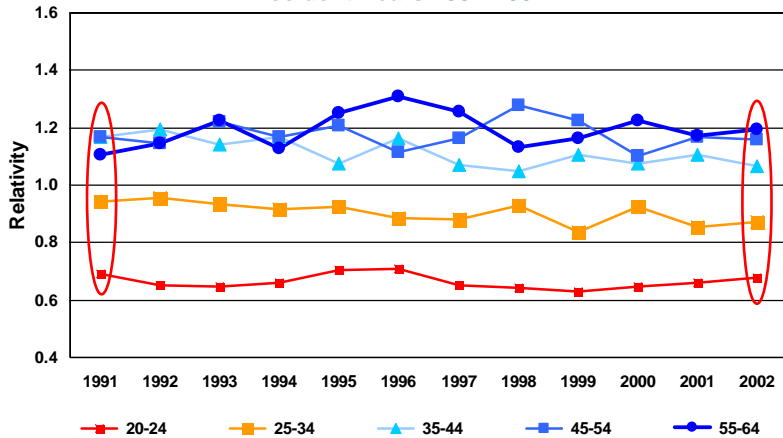
Average Paid+Case Medical Severities Reported at 18 Months By Age & Accident Year

Accident Years 1991-2002



Average Paid+Case Medical Severity Relativities Show Relationships Maintained

Accident Years 1991-2002



Impact of Age on Medical Severity

Control for:

- "Mix" - Differences in diagnosis mix
- "Quantity" - Differences in number of treatments
- "Price" - Differences in price of medical services



Impact of Age on Medical Severity

Differences in Diagnosis Mix



Rankings of Top 10 Lost-Time Claim Diagnoses

1996-2003

Ages 20-34	Ages 45-64
1 SPRAIN LUMBAR REGION	1 CARPAL TUNNEL SYNDROME
2 LUMBAR DISC DISPLACEMENT	2 LUMBAR DISC DISPLACEMENT
3 CARPAL TUNNEL SYNDROME	3 SPRAIN ROTATOR CUFF
4 LUMBAGO	4 TEAR MED MENISC KNEE-CUR
5 CERVICALGIA	5 CERVICALGIA
6 LOWER LEG INJURY NOS	6 SPRAIN LUMBAR REGION
7 SPRAIN OF ANKLE NOS	7 ROTATOR CUFF SYND NOS
8 SPRAIN OF NECK	8 LUMBOSACRAL NEURITIS NOS
9 LUMBOSACRAL NEURITIS NOS	9 LUMBAGO
10 SPRAIN LUMBOSACRAL	10 LOWER LEG INJURY NOS



Top 10 Diagnoses—7 in Common Lost-Time Claims

1996-2003

Ages 20-34	Ages 45-64
1 SPRAIN LUMBAR REGION	1 CARPAL TUNNEL SYNDROME
2 LUMBAR DISC DISPLACEMENT	2 LUMBAR DISC DISPLACEMENT
3 CARPAL TUNNEL SYNDROME	3
4 LUMBAGO	4
5 CERVICALGIA	5 CERVICALGIA
6 LOWER LEG INJURY NOS	6 SPRAIN LUMBAR REGION
7	7
8	8 LUMBOSACRAL NEURITIS NOS
9 LUMBOSACRAL NEURITIS NOS	9 LUMBAGO
10	10 LOWER LEG INJURY NOS



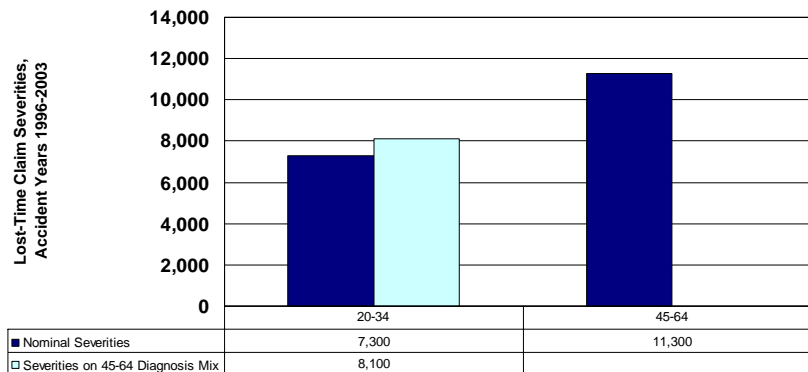
Top 10 Diagnoses—3 Different Minor Sprains vs. Repetitive Motion Lost-Time Claims

Ages 20-34	1996-2003	Ages 45-64
1		1
2		2
3		3
4		4
5		5
6		6
7	SPRAIN OF ANKLE NOS	7
8	SPRAIN OF NECK	8
9		9
10	SPRAIN LUMBOSACRAL	10
		3
		4
		7
		SPRAIN ROTATOR CUFF
		TEAR MED MENISC KNEE-CUR
		ROTATOR CUFF SYND NOS



Paid Medical Severities After Adjusting for Diagnosis Mix

Cumulative Paid Medical Severities Through Latest Evaluation



Paid Medical Severities After Adjusting for Diagnosis Mix

**Cumulative Paid Medical Severities Through Latest Evaluation
Lost-Time Claims, Accident Years 1996-2003**

	20-34	45-64	% Diff 20-34 vs. 45-64
Unadjusted Medical Severities on Lost-Time Claims	7,300	11,300	55%
Controlled for Diagnosis Mix	8,100	11,300	39%
Portion Due to Diagnosis Mix			20% - 24%



Impact of Age on Medical Severity

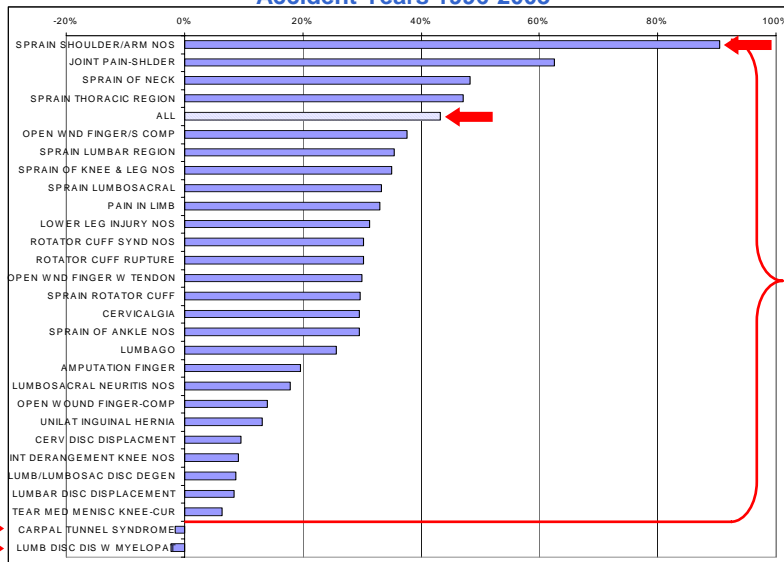
Differences in Number of Treatments



Average Treatments & % Price Differences Per Treatment, Accident Years 1996-2003				
All Diagnoses				
Overall Medical Severity % Difference Older Over Younger: 55%	Average Treatments Per Claim		Average Price Per Treatment	
	20-34	45-64	% Difference Older Over Younger	% Difference Older Over Younger
Treatment Service Group				
Pathology	1.6	3.0		90%
Complex Surgery and Anesthesia	1.6	2.7		65%
Hospital Services	1.3	2.1		60%
Surgical Treatments	0.9	1.4		55%
Drugs, Supplies and DME	10.4	15.4		48%
Other	7.7	11.2		45%
Physical Therapy	34.9	49.9		43%
Complex Diagnostic Testing	0.8	1.1		42%
Diagnostic Radiology	3.3	4.7		40%
Office Visits	7.8	9.8		26%
Emergency Services	1.0	0.8		-15%
Total Treatments	71.3	102.1		43%

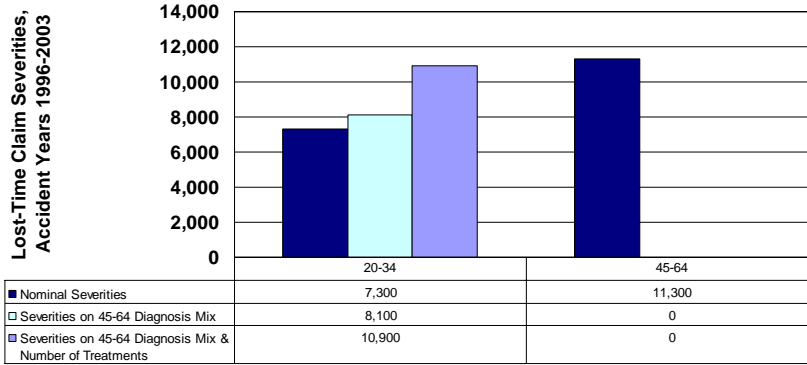


Total Number of Treatments By Diagnosis Accident Years 1996-2003



Paid Medical Severities After Adjusting for Diagnosis Mix & Number of Treatments

Cumulative Paid Medical Severities on Lost-Time Claims Through Latest Evaluation




Paid Medical Severities After Adjusting for Diagnosis Mix & Number of Treatments

Cumulative Paid Medical Severities on Lost-Time Claims Through Latest Evaluation, Accident Years 1996-2003

	20-34	45-64	% Diff 20-34 vs. 45-64
Unadjusted Medical Severities on Lost-Time Claims	7,300	11,300	55%
Controlled for Diagnosis Mix <i>Portion Due to Diagnosis Mix</i>	8,100	11,300	39% 20% - 24%
Controlled for Diagnosis Mix & Number of Treatments <i>Portion Due to Number of Treatments</i>	10,900	11,300	3% 70%
Total Portion Due to Diagnosis Mix & Number of Treatments			91% - 94%
Remaining Portion Due to Age & Other Factors			6% - 9%



Average Treatments & % Price Differences Per Treatment, Accident Years 1996-2003				
All Diagnoses				
Overall Medical Severity % Difference Older Over Younger: 55%	Average Treatments Per Claim			Average Price Per Treatment
	20-34	45-64	% Difference Older Over Younger	% Difference Older Over Younger
Treatment Service Group				
Pathology	1.6	3.0	90%	-1%
Complex Surgery and Anesthesia	1.6	2.7	65%	7%
Hospital Services	1.3	2.1	60%	0%
Surgical Treatments	0.9	1.4	55%	-2%
Drugs, Supplies and DME	10.4	15.4	48%	17%
Other	7.7	11.2	45%	0%
Physical Therapy	34.9	49.9	43%	0%
Complex Diagnostic Testing	0.8	1.1	42%	1%
Diagnostic Radiology	3.3	4.7	40%	4%
Office Visits	7.8	9.8	26%	2%
Emergency Services	1.0	0.8	-15%	27%
Total Treatments	71.3	102.1	43%	8%

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Why Aging Boomers Matter to Workers Compensation

Age is a factor in claims costs:

Indemnity


- Differences in **average weekly wage** and **duration** of claims account for most of the difference in indemnity severity across age cohorts

Medical

- Differences in **type of injury account** for a modest portion of the difference in medical severity
- The key driver is markedly higher differences in the **number of treatments** within a diagnosis

They're Related

- Greater levels of **treatment** undoubtedly account for the **longer duration** of indemnity payments for older workers

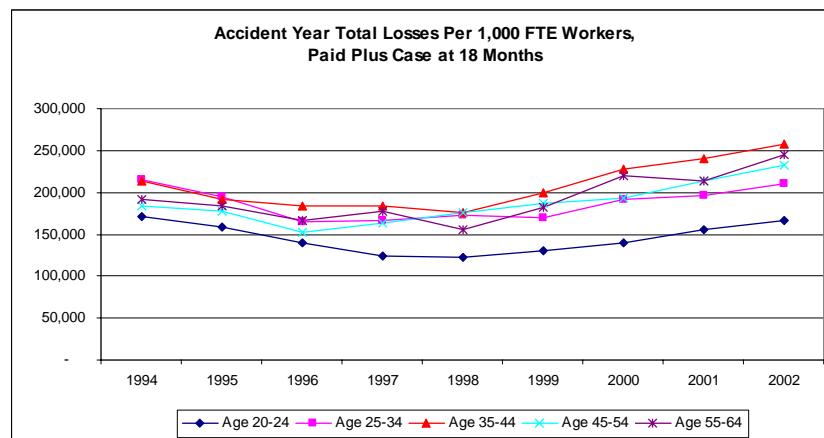
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Tracking Trends In Loss Costs

In terms of loss costs—
Higher severity of claims by older workers tends to
offset at least some benefits of lower frequency



Differences By Age for Total Loss Costs— Highest for Ages 35-44 In Latest Years



Tracking Age Weighted Trends in Loss Costs

Historically

Boomers Made a Difference



Tracking Age Weighted Trends in Loss Costs

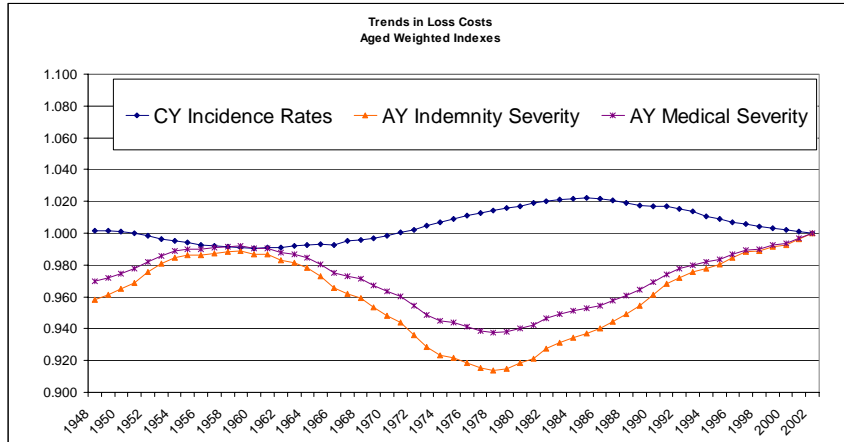
Clarification

- The following are not actual measures of frequency, severity, or loss costs
- They are indexes based on estimated age-related differences observed in 2002
- Technically they indicate how loss costs in 2002 would change if the age composition of the labor force matched the indicated year
- They are a rough indication of the likely impact of the baby boomers on WC loss costs over time



Age Related Trends in Loss Costs Frequency & Severity Indexes

(2002=1.000)



Severities based on paid plus case at 18 months.

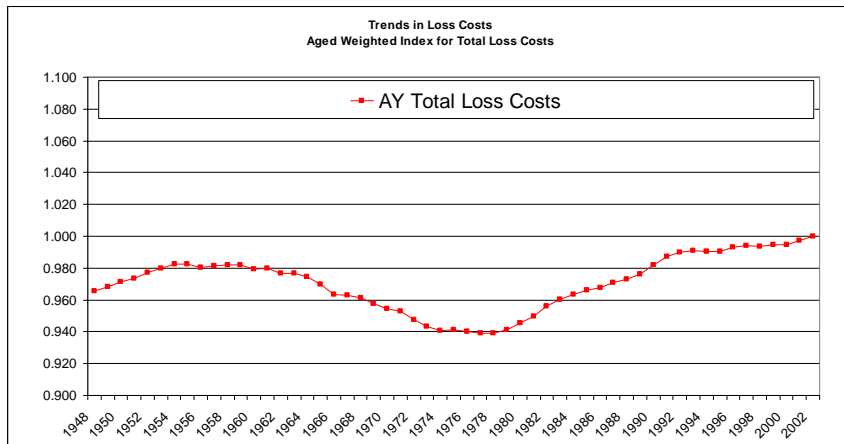
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Age Related Trends in Loss Costs Total Loss Cost Index

(2002=1.000)



Severities based on paid plus case at 18 months.

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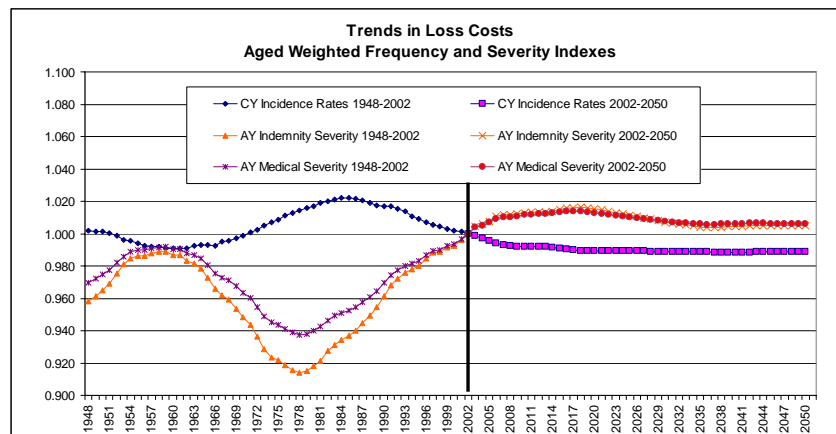
Tracking Age Weighted Trends in Loss Costs

Boomers Made a Difference Historically
 Will They Continue to Make a Difference?
 Estimates for 2003–2050



Age Related Trends in Loss Costs Frequency and Severity Indexes

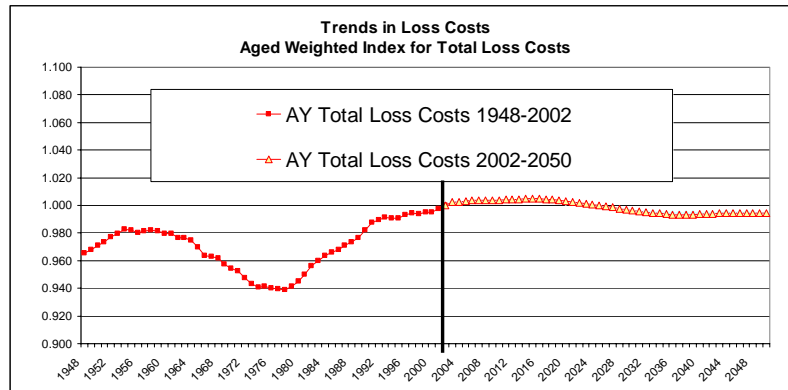
(2002=1.000)



Severities based on paid plus case at 18 months.



Age Related Trends in Loss Costs Total Loss Cost Index



Severities based on paid plus case at 18 months.

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Tracking Age Related Trends In Loss Costs

The major impact of an aging workforce is likely behind us for two reasons:

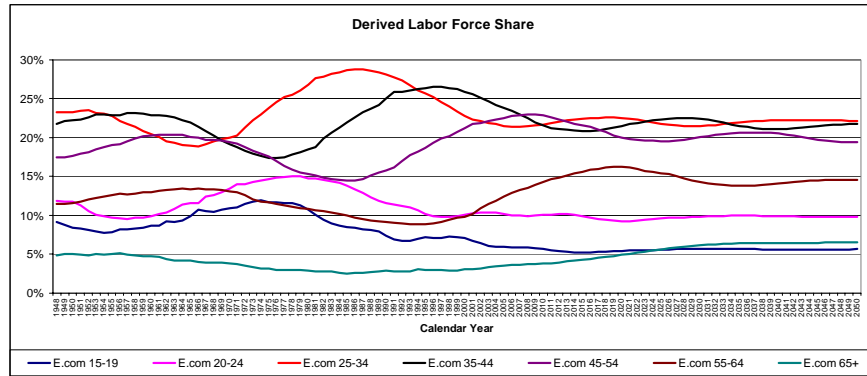
1. Forecasts for the age distribution of the labor force show only small changes in the future.

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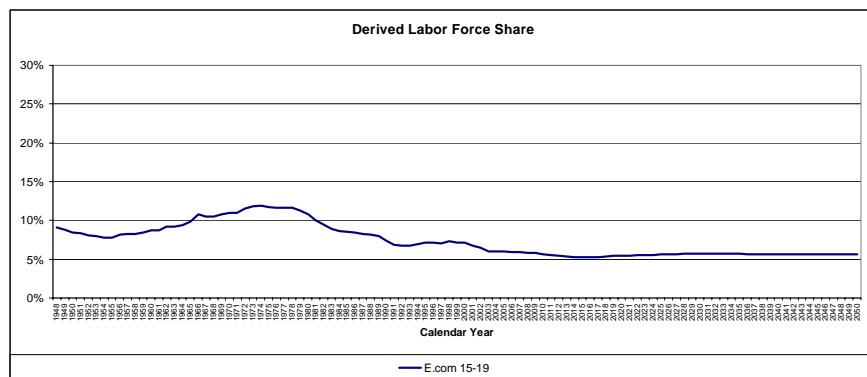
Derived Labor Force Share—Smaller Changes in the Future



Labor force share by age was derived by multiplying labor force participation rates for each age cohort by population for each age cohort. Forecasts of population are from Economy.com. Labor force participation rates by age were only available through 2006, so the 2006 values were used for future years.



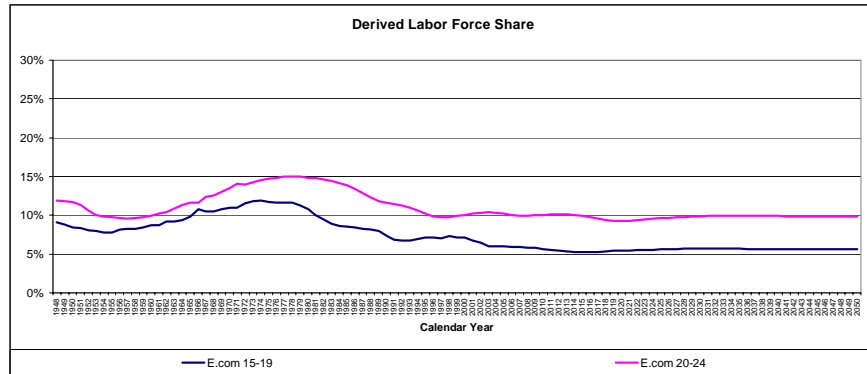
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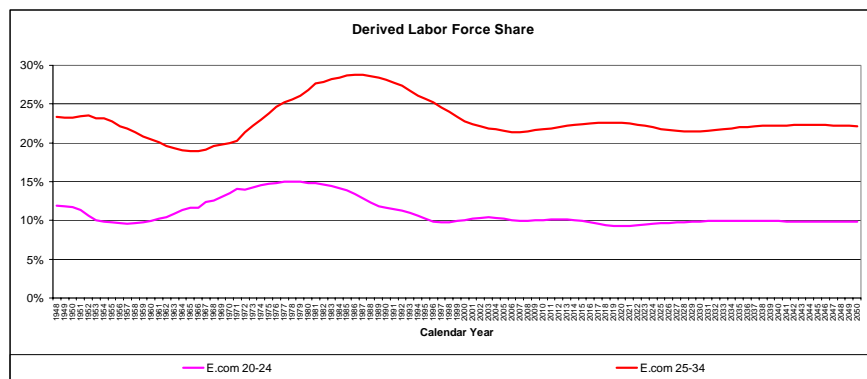
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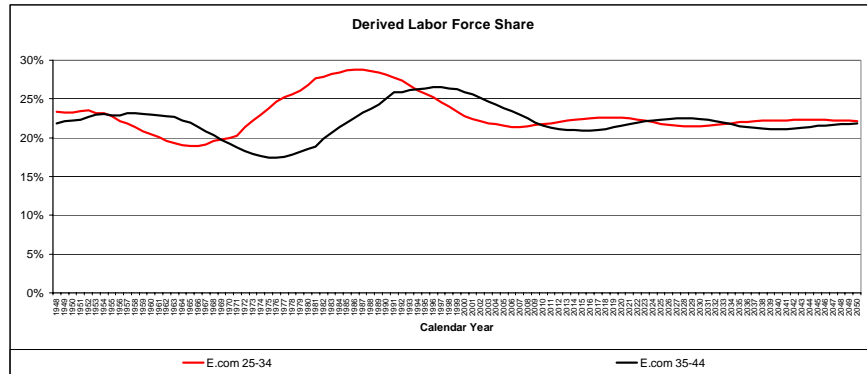
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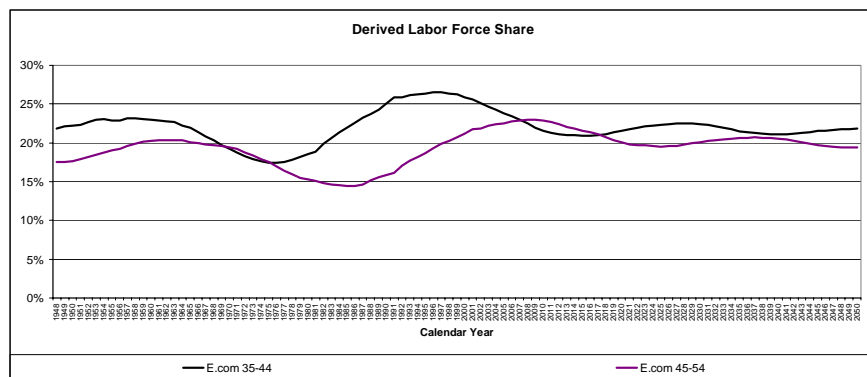
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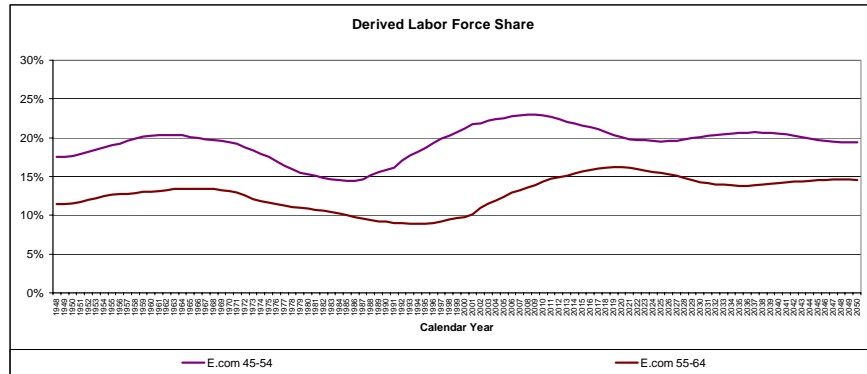
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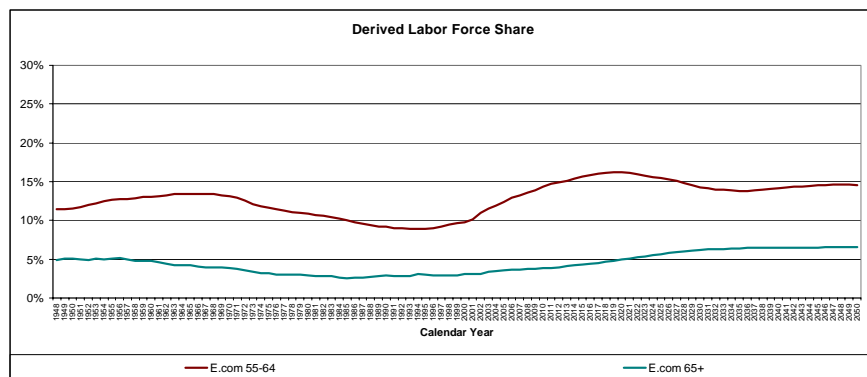
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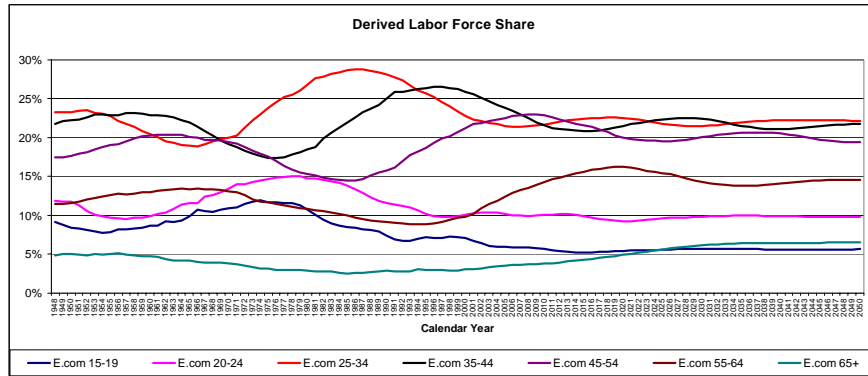
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Derived Labor Force Share—Smaller Changes in the Future



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Tracking Age Related Trends In Loss Costs

The major impact of an aging workforce is likely behind us for two reasons:

1. Forecasts for the age distribution of the labor force show only small changes in the future.
2. There is very little difference in the frequency and severity levels of the 45-54 and 55-64 age cohorts. Currently baby boomers are 42-60 years old, so for the most part have already entered these age groups.

Key Findings

- Age is a factor in explaining trends in frequency and severity
- The significance of age on frequency has diminished; significance on severity has been maintained
- Differences in severity by age can be explained by differences in
 - wages
 - claim durations
 - lump sum payments
 - injury diagnoses, and
 - number of medical treatments
- Workers compensation claims of baby boomers made an impact on loss costs historically, but the major impact of an aging workforce has likely already occurred



To review NCCI Research...

The screenshot shows the NCCI website homepage. The main navigation bar includes links for My Preferences, About NCCI, Careers, Contact Us, and Help. A search bar is located on the right. The left sidebar contains a 'Log In' section with fields for User ID and Password, and a 'Sign In' button. Below this is a 'Who We Are' section describing NCCI as the oldest and largest provider of workers compensation and employee injury data. The main content area features a banner for the '2007 Data Reporting Workshop' and a 'WHAT'S NEW' section. The first article in 'WHAT'S NEW' is '08/31 NCCI Reports Workers Compensation Claim Frequency Down Again, Including Larger Claims', which is circled in red. Other articles include '08/29 2007 Data Reporting Workshop--Save the Date', '08/25 Riskworkstation Unveils New Test Mod Features', and '08/21 2006 Annual Statistical Bulletin Hard Copy to Be Released in September'. The right sidebar contains sections for 'TERRORISM AND WORKERS COMP.', 'RESEARCH AND OUTLOOK', 'HAZARD GROUP UPDATE', and 'CLASSIFICATION UPDATES'.



Discussion/Questions?

