Age As A Driver of Workers Compensation Frequency and Severity

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Key Drivers of Workers Compensation Costs—Economic Perspectives
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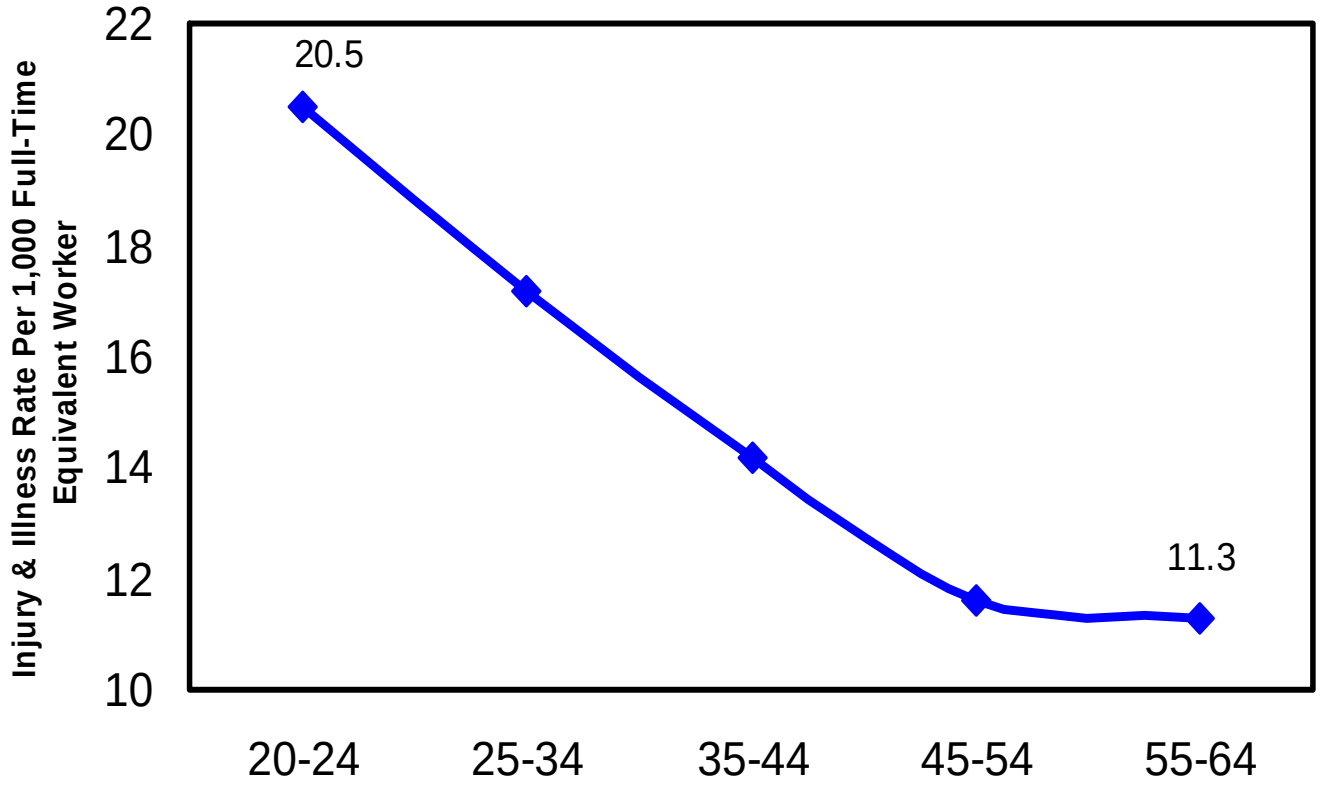
Key Findings

- Age is a factor in explaining trends in frequency and severity
- The significance of age on frequency has diminished; 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

Frequency is Inversely Related to Age of Worker

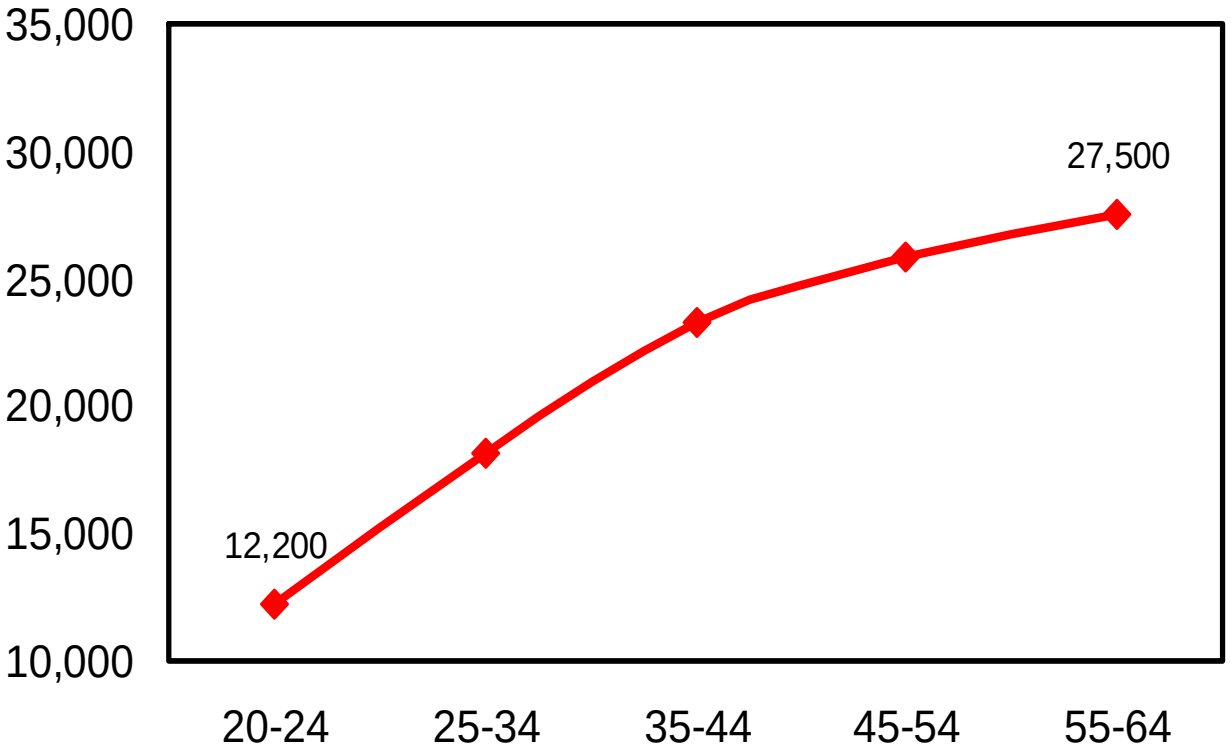
Non-Fatal Injury and Illness Rates By Age of Worker, Calendar Years 1994-2002



Source: BLS

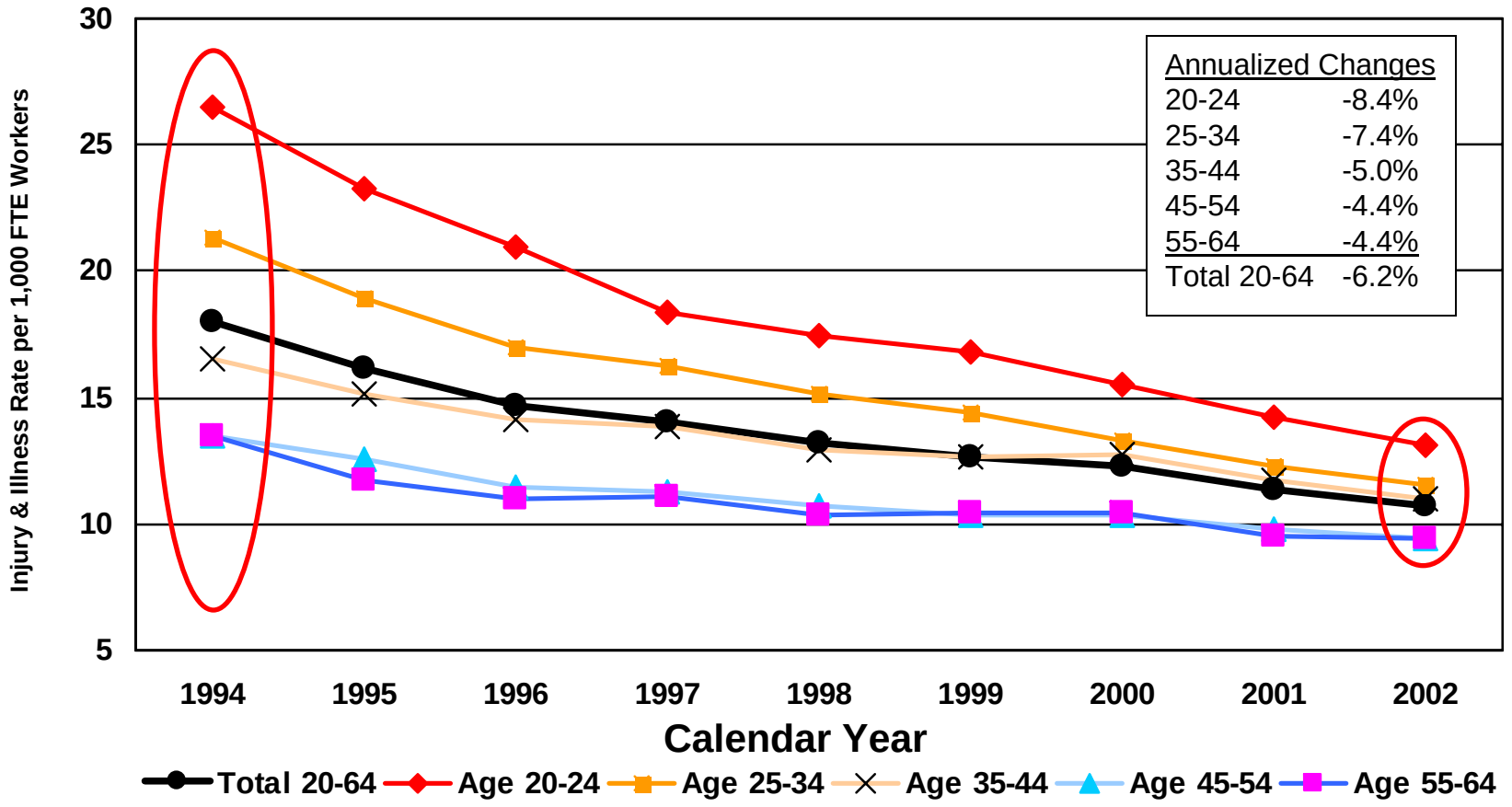
Severity Is Directly Related to Age of Worker

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



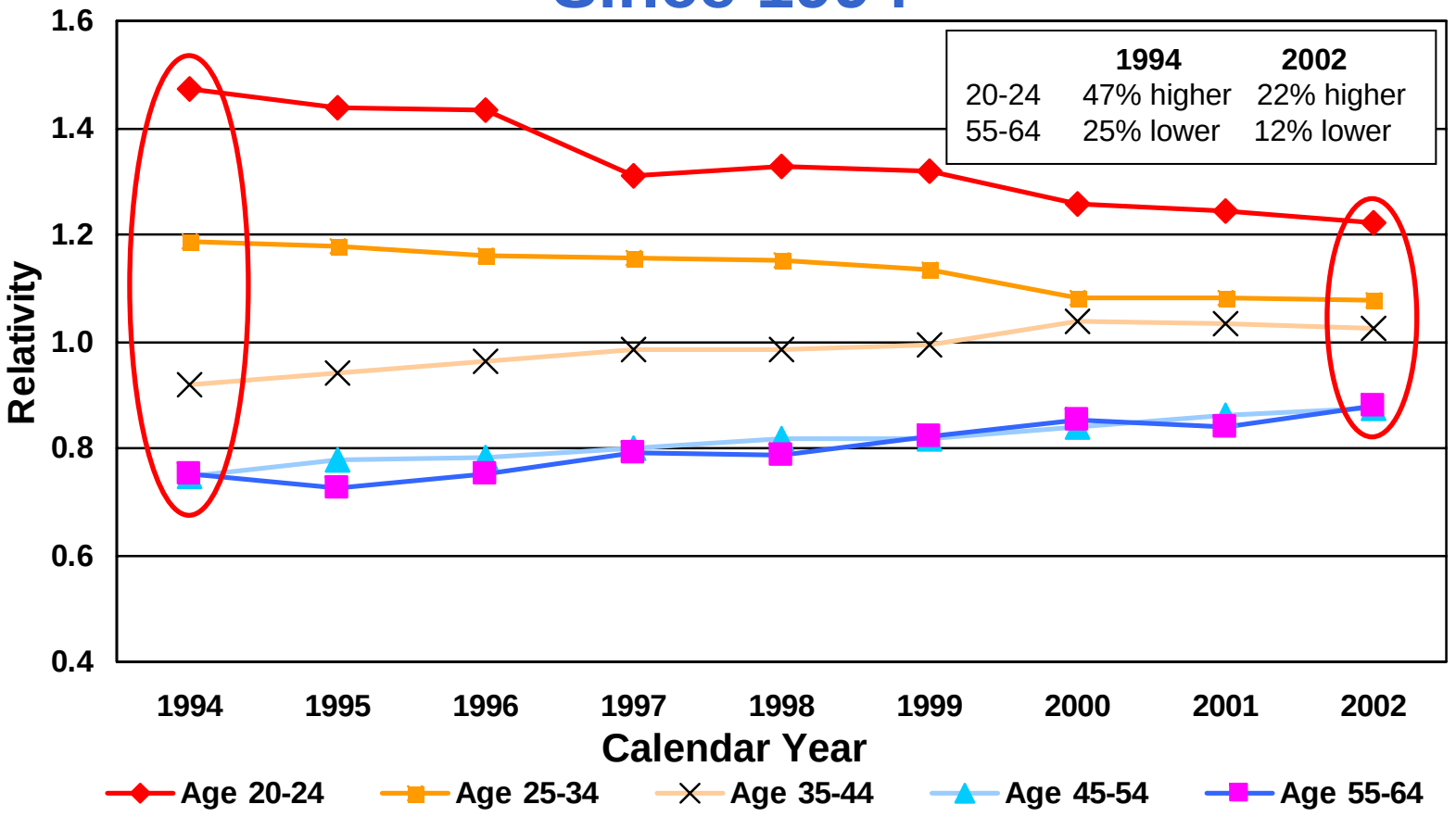
Impact of Age on Frequency

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

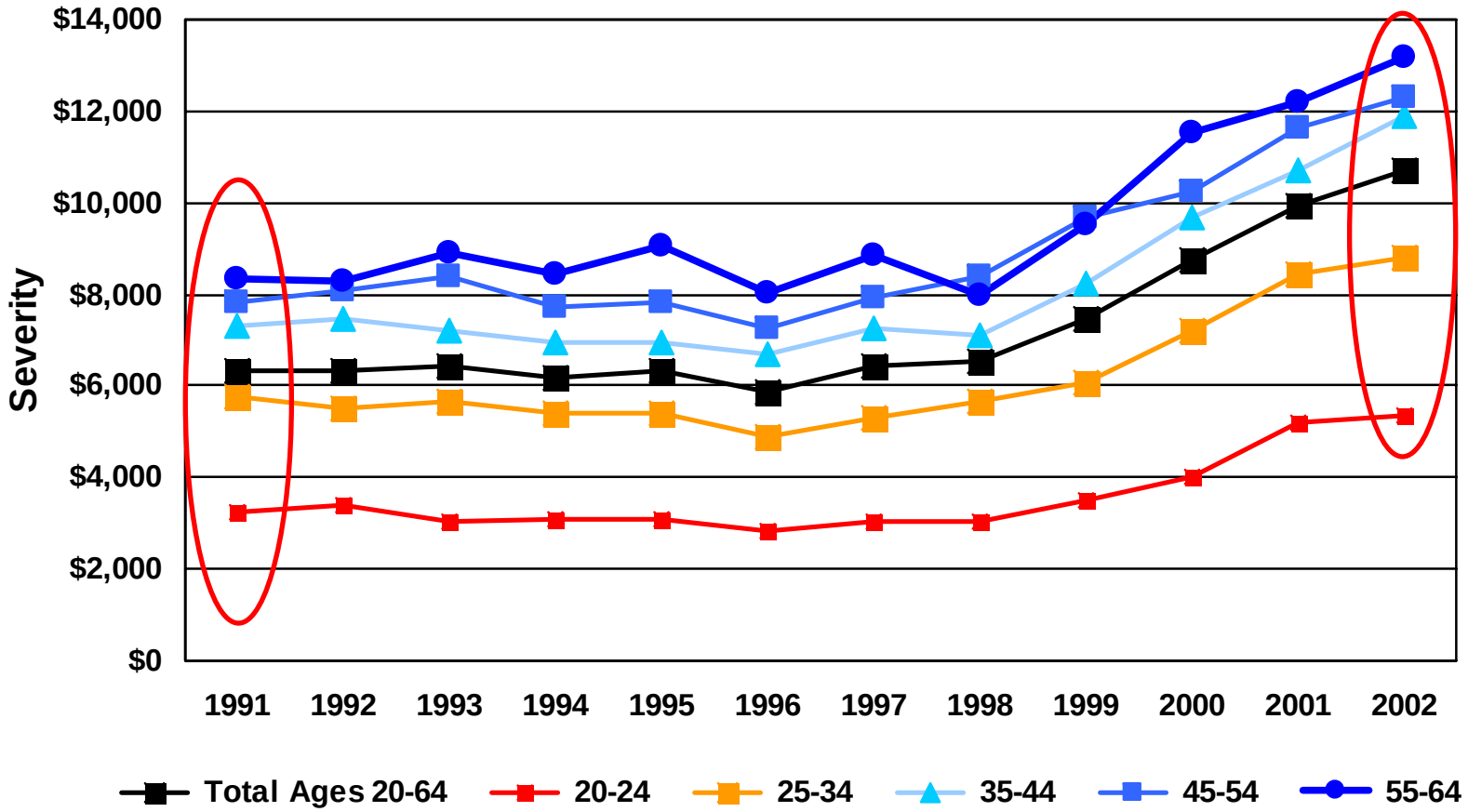
Impact of Age on Frequency Trends

- 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

Impact of Age on Indemnity Severity

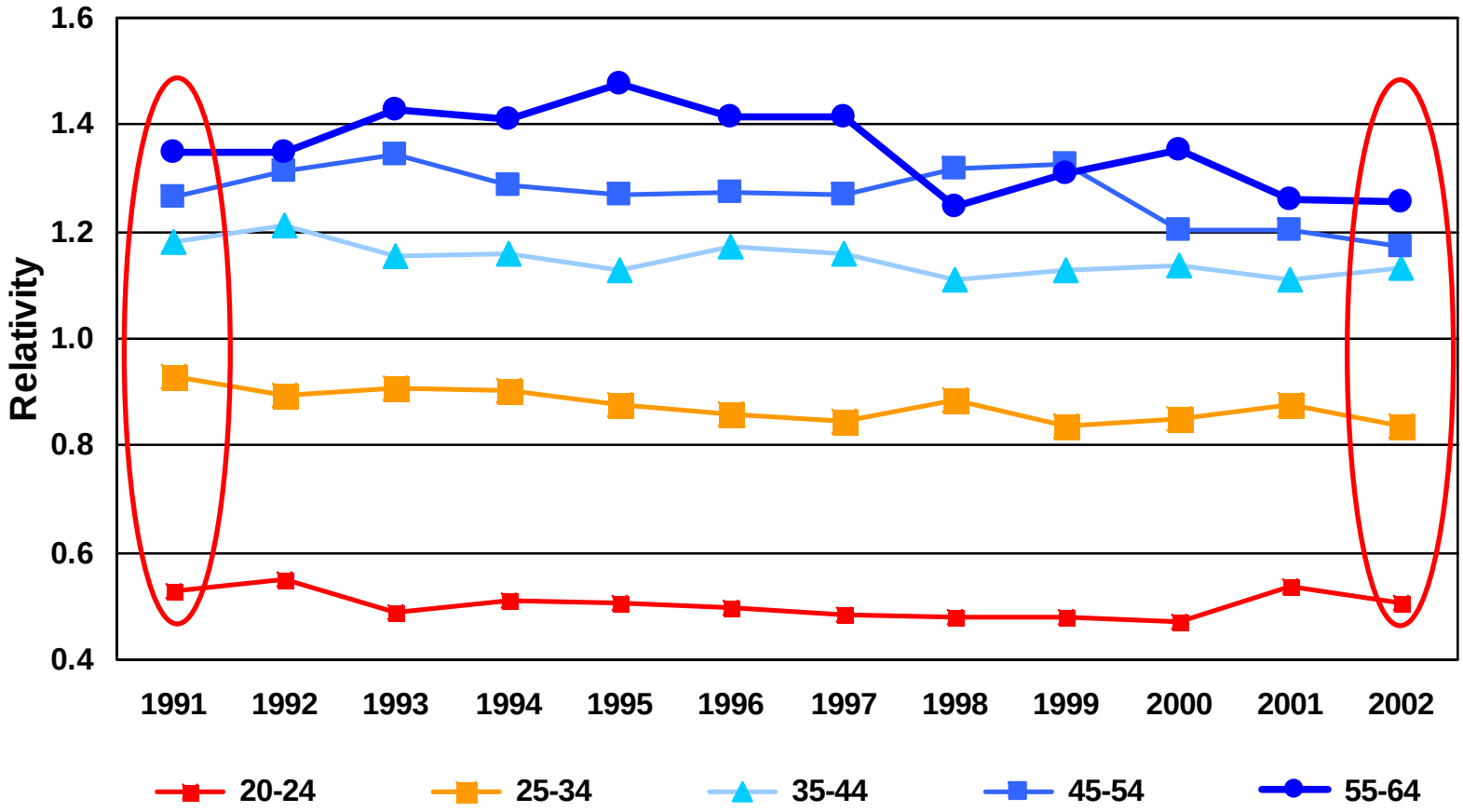
Average Paid+Case Indemnity Severities Reported at 18 Months By Age & Accident Year

Accident Years 1991-2002



Average Paid+Case Indemnity Severity Relativities Show Relationships Maintained

Accident Years 1991-2002



A “Model” of Claims Costs

Cost = Price x Utilization

Utilization = Quantity and Mix

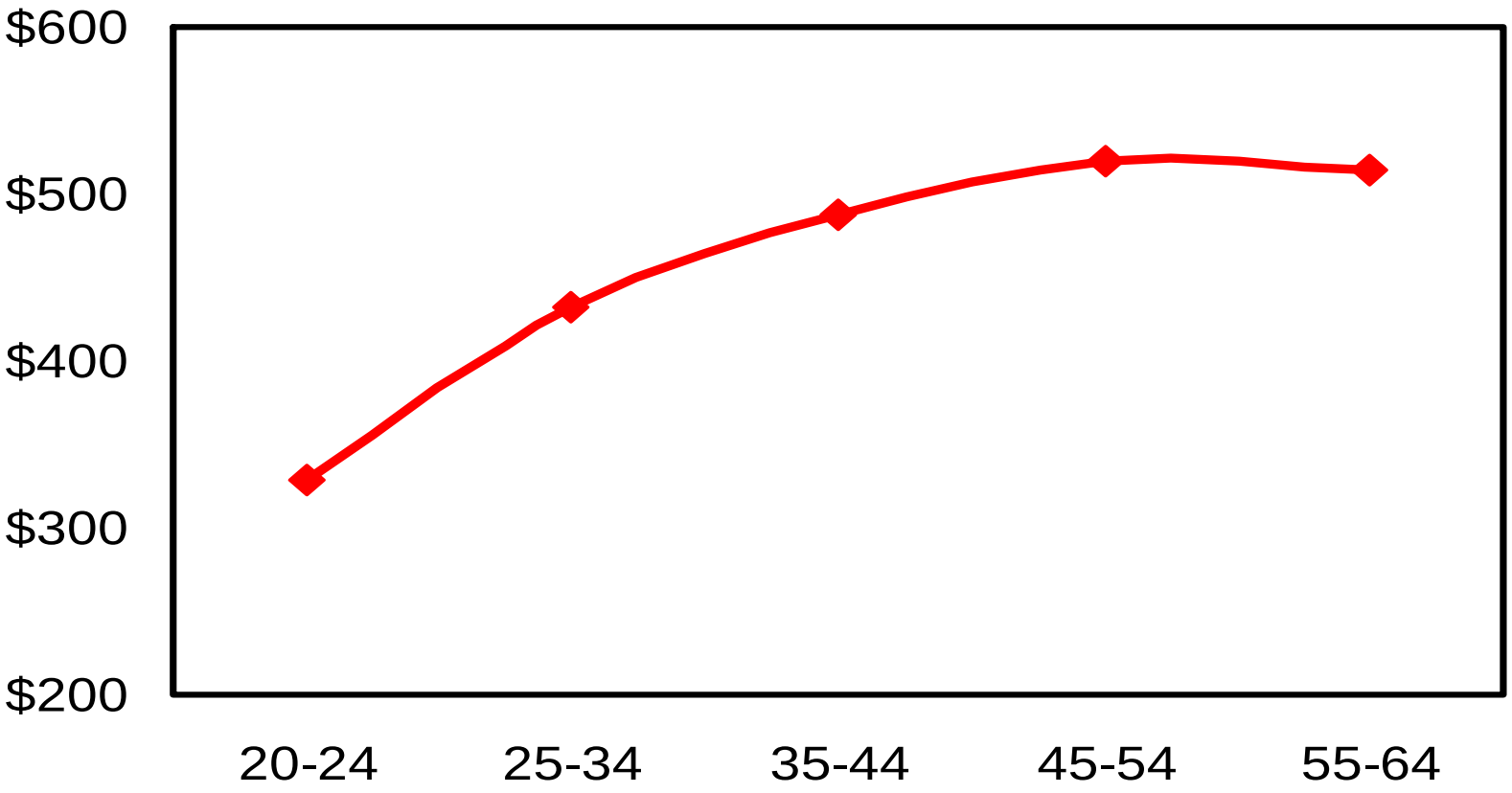
Impact of Age on Indemnity Severity

Control for:

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

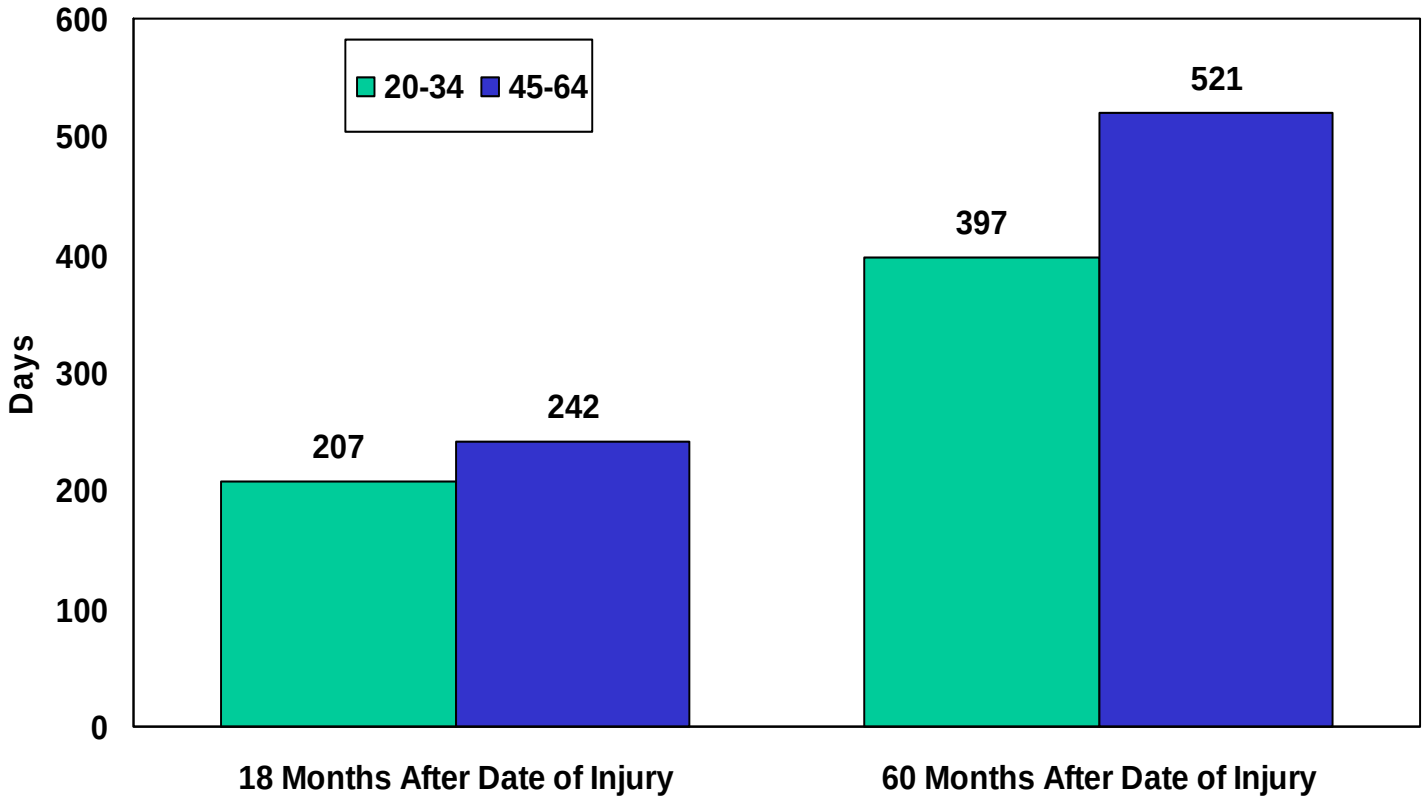
Average Weekly Wage Increases With Age

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

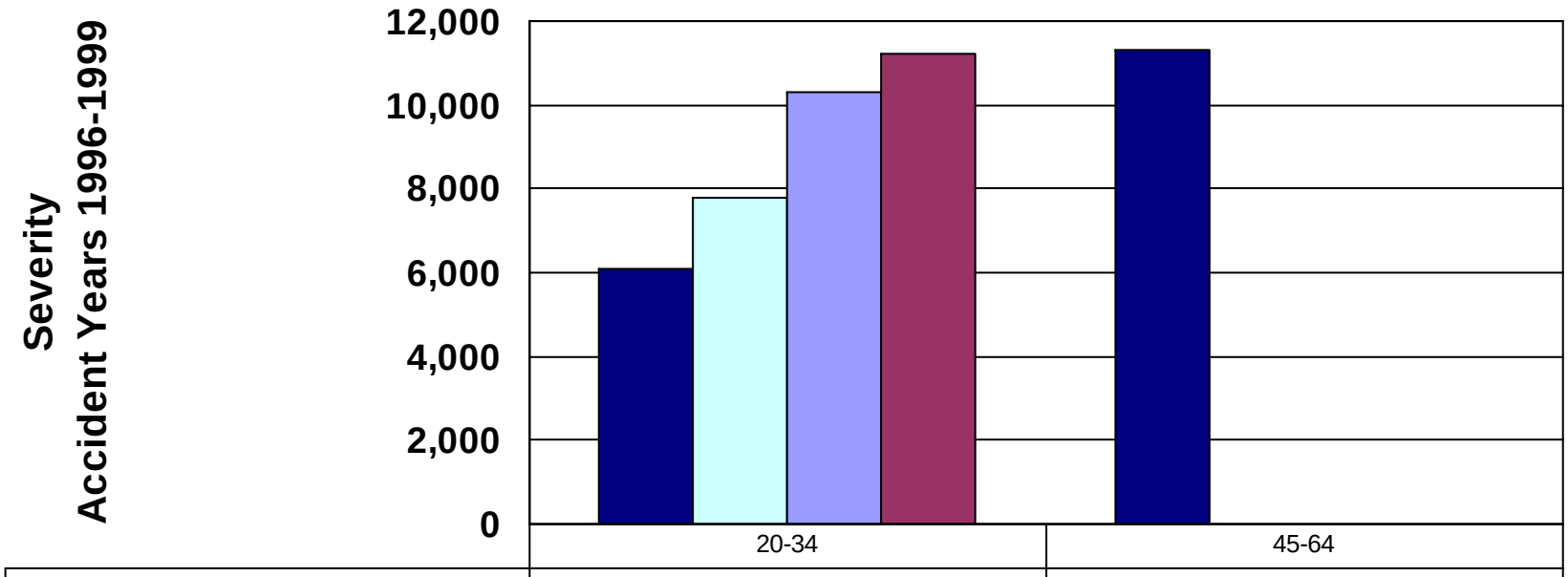


Average Duration Is Longer for Older Workers

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



	20-34	45-64
Nominal Severities	6,100	11,300
Severities on 45-64 Wage Level	7,800	
Severities on 45-64 Wage & Duration Levels	10,300	
Severities on 45-64 Wage, Duration & Lump Sum Levels	11,200	

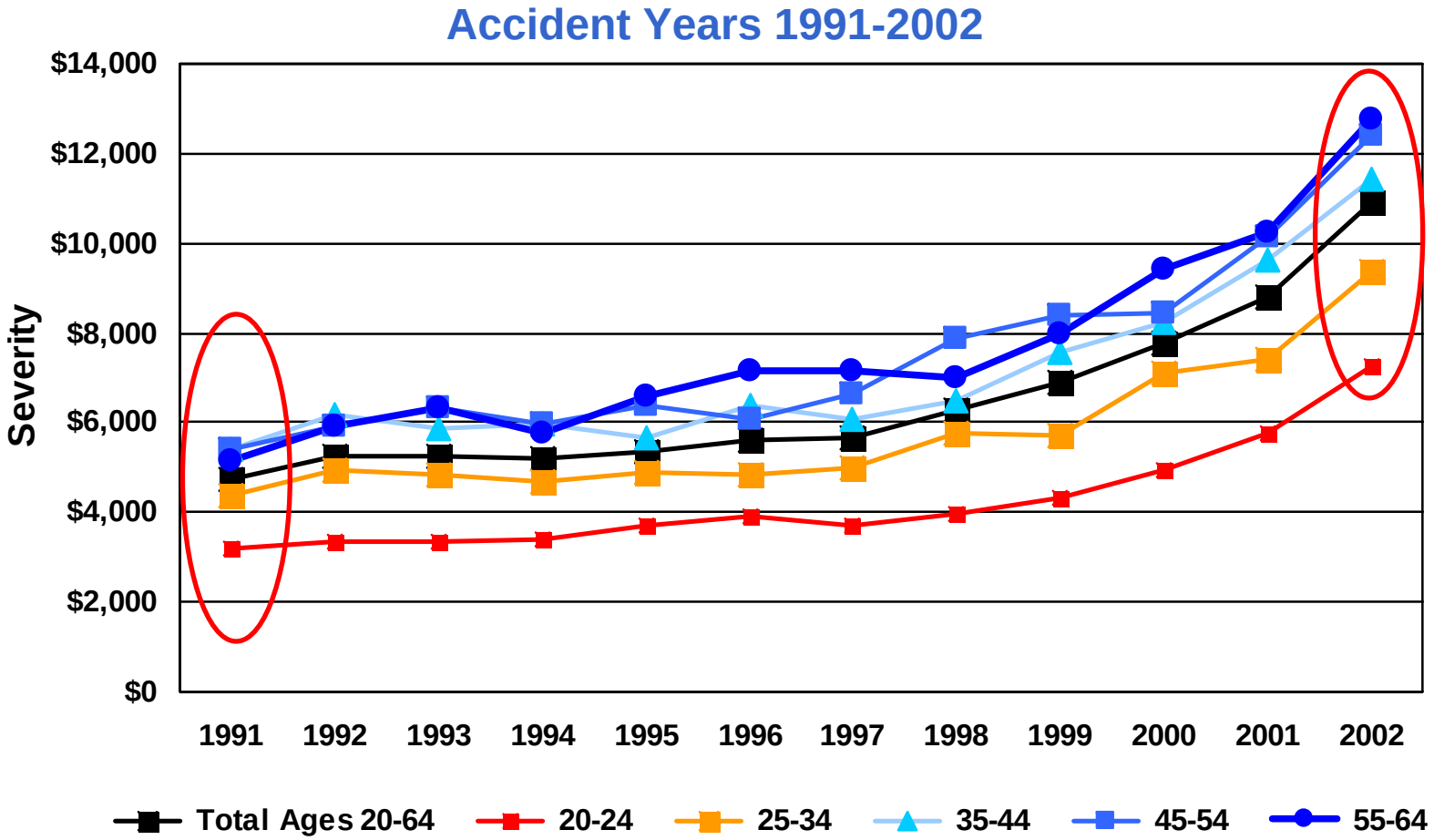
Paid Indemnity Severities at 60 Months After Adjusting for Wage, Duration, and Lump Sum Differences

Accident Years 1996-1999

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

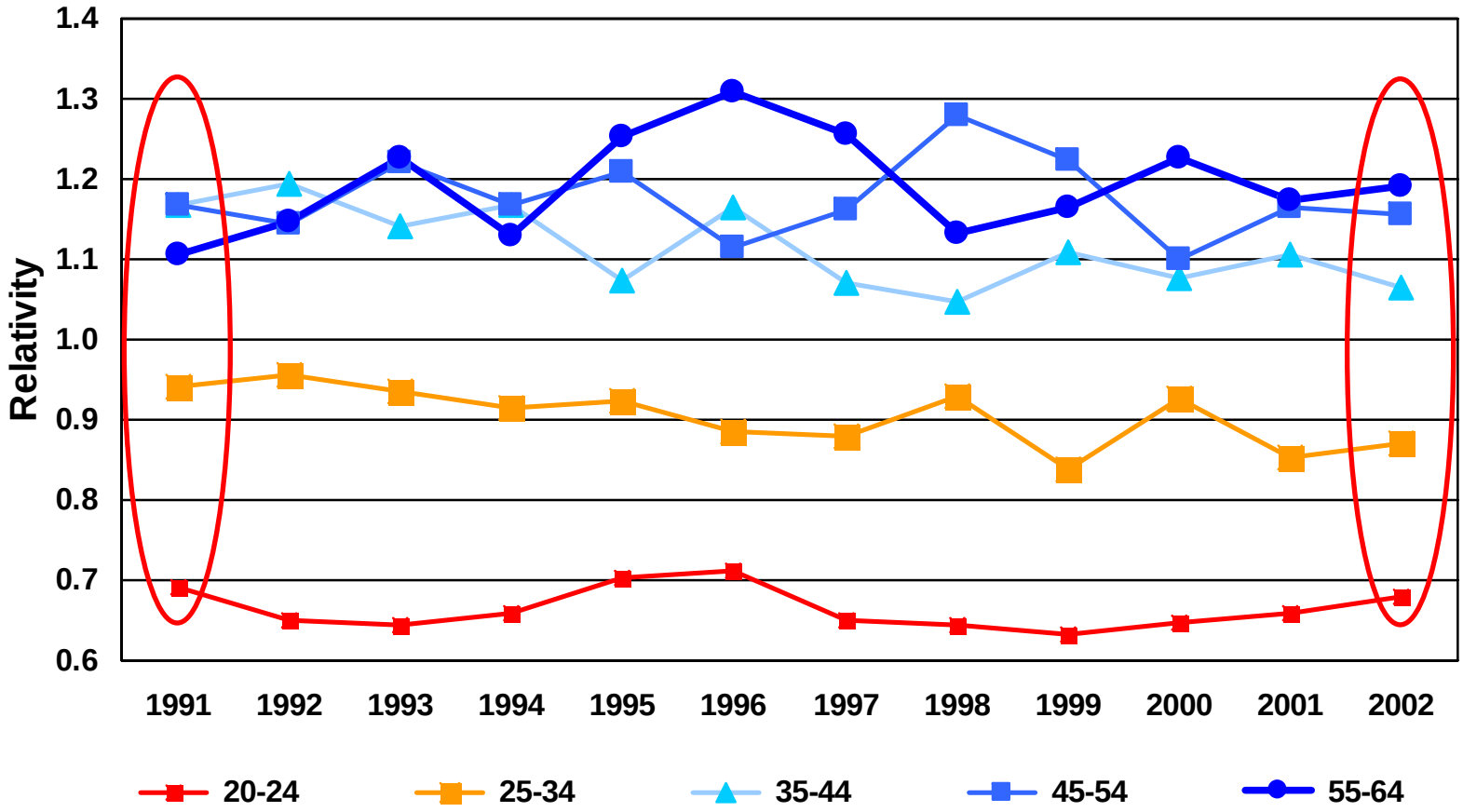
Impact of Age on Medical Severity

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



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

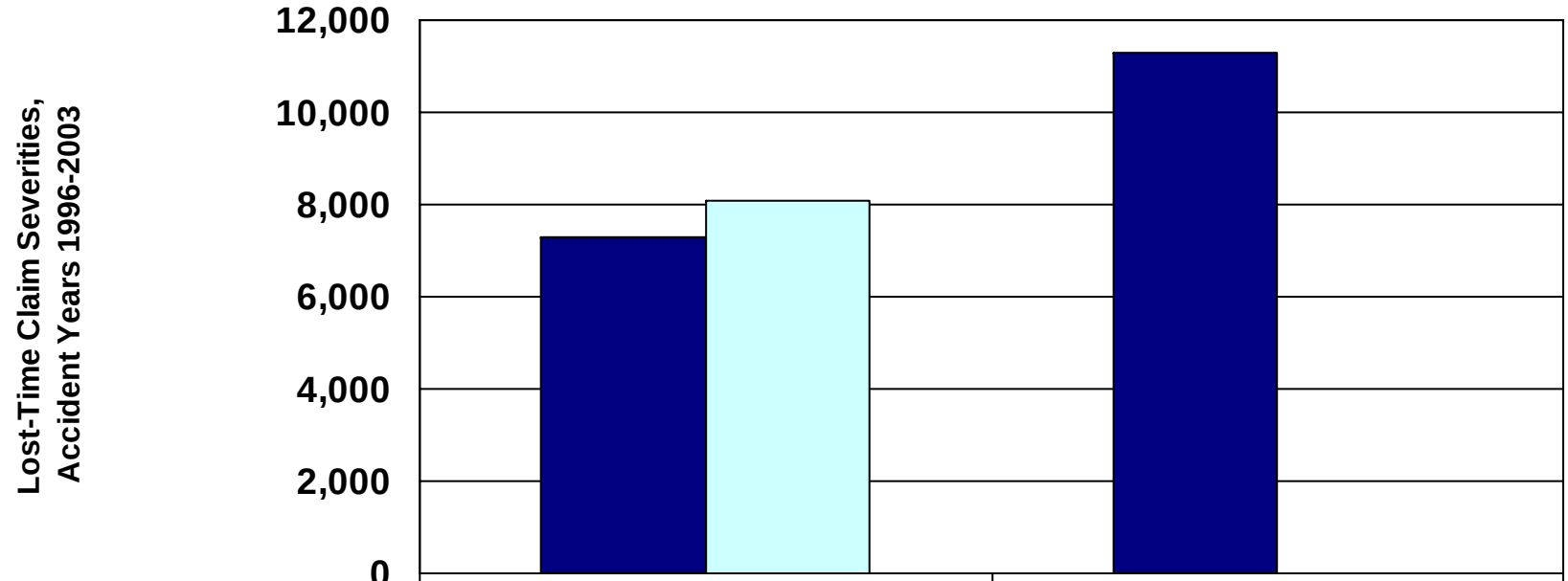
Lost-Time Claims

1996-2003

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

Paid Medical Severities After Adjusting for Diagnosis Mix

Cumulative Paid Medical Severities Through Latest Evaluation



	20-34	45-64
Nominal Severities	7,300	11,300
Severities on 45-64 Diagnosis Mix	8,100	

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%**

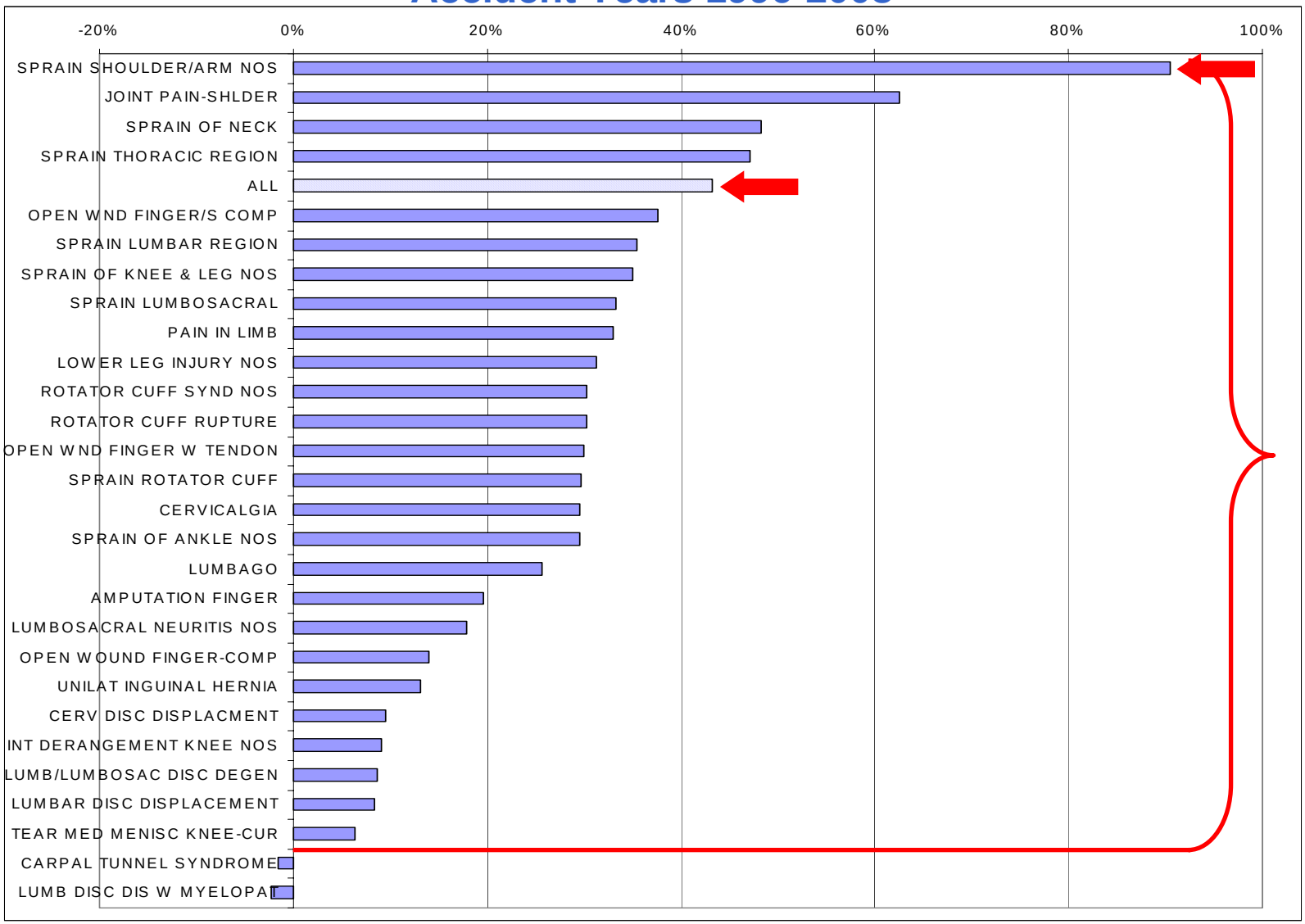
Impact of Age on Medical Severity

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**
Treatment Service Group	**20-34**	**45-64**	**% Difference Older Over Younger**	**% Difference Older Over Younger**
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

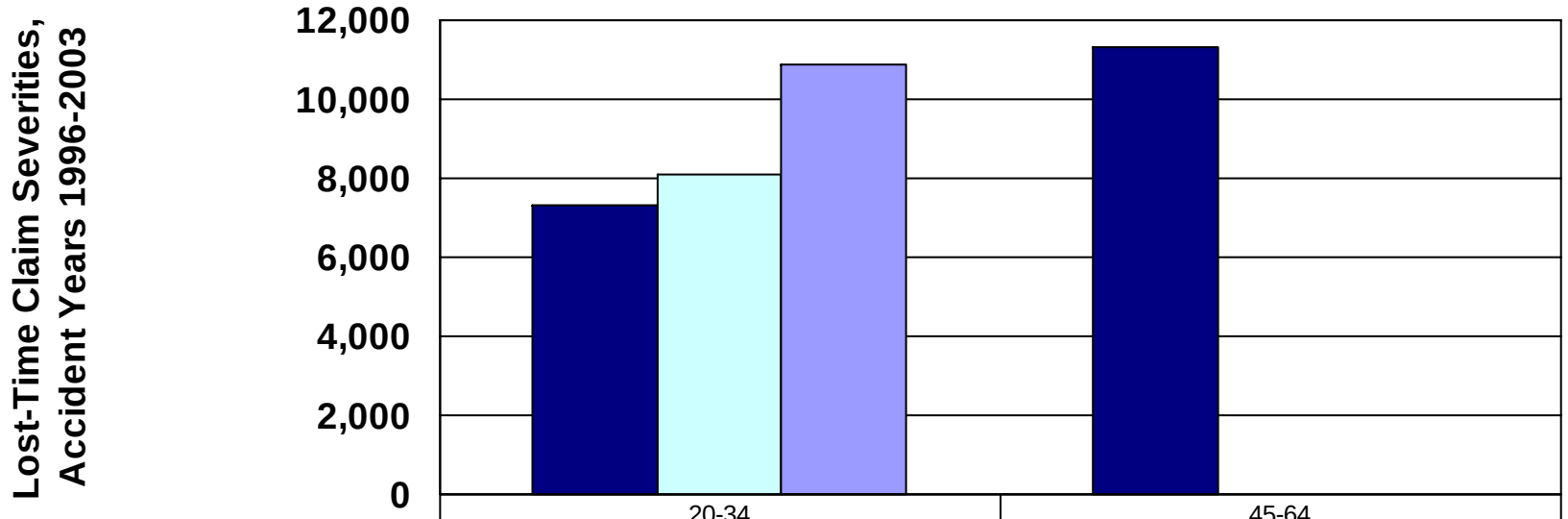
Accident Years 1996-2003



% Difference in Number of Treatments – Older Over Younger

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

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



	20-34	45-64
Nominal Severities	7,300	11,300
Severities on 45-64 Diagnosis Mix	8,100	
Severities on 45-64 Diagnosis Mix & Number of Treatments	10,900	

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	8,100	11,300	39%
Portion Due to Diagnosis Mix			**20% - 24%**
Controlled for Diagnosis Mix & Number of Treatments	10,900	11,300	3%
Portion Due to Number of Treatments			**70%**
Total Portion Due to Diagnosis Mix & Number of Treatments			**91% - 94%**
Remaining Portion Due to Age & Other Factors			6% - 9%

Overall Medical Severity % Difference Older Over Younger: 55%	Average Treatments & % Price Differences Per Treatment, Accident Years 1996-2003 All Diagnoses			
	Average Treatments Per Claim			Average Price Per Treatment
Treatment Service Group	20-34	45-64	% Difference Older Over Younger	% Difference Older Over Younger
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%**

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

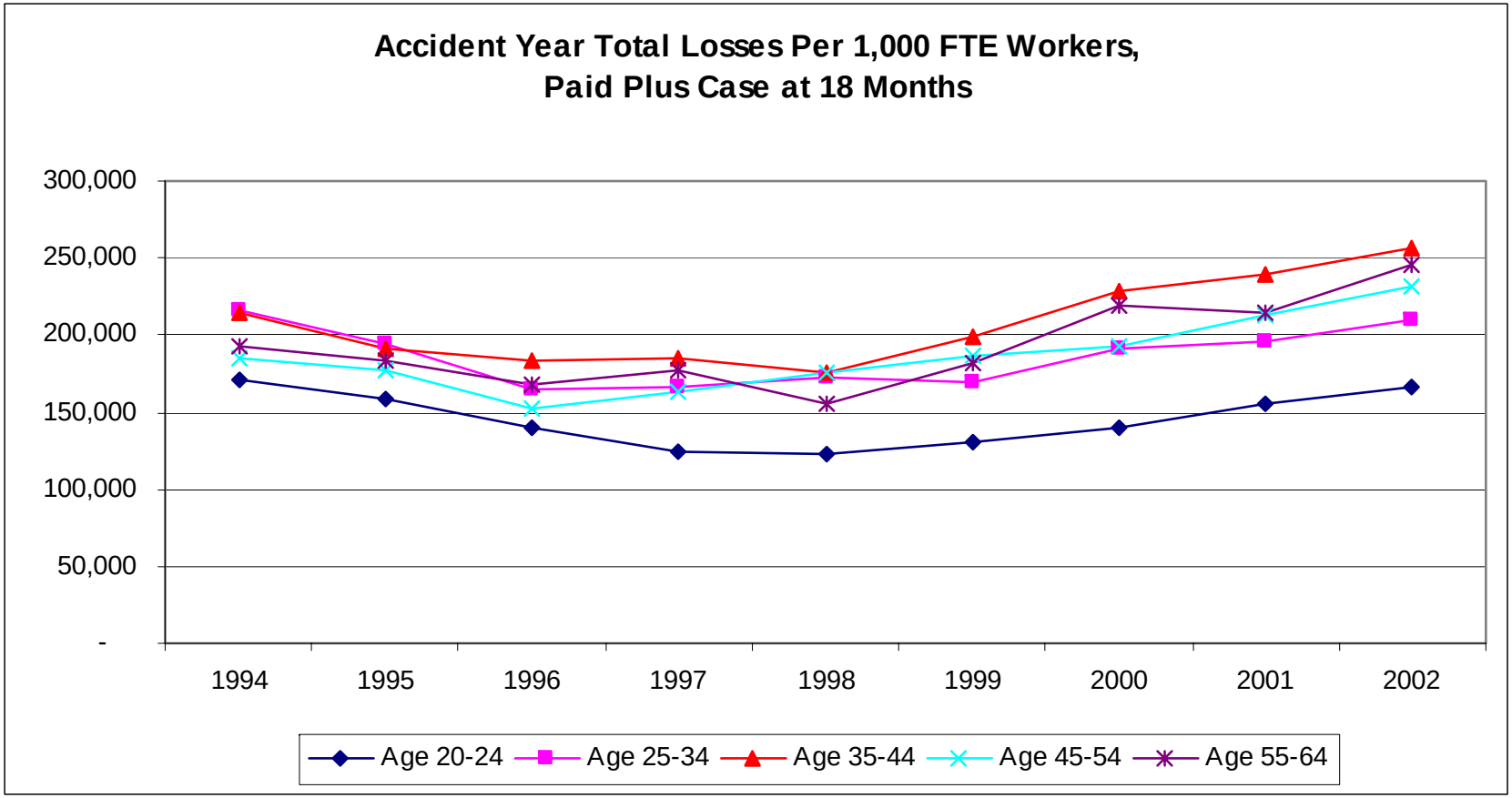
- Greater levels of treatment undoubtedly account for the longer duration of indemnity payments for older workers

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

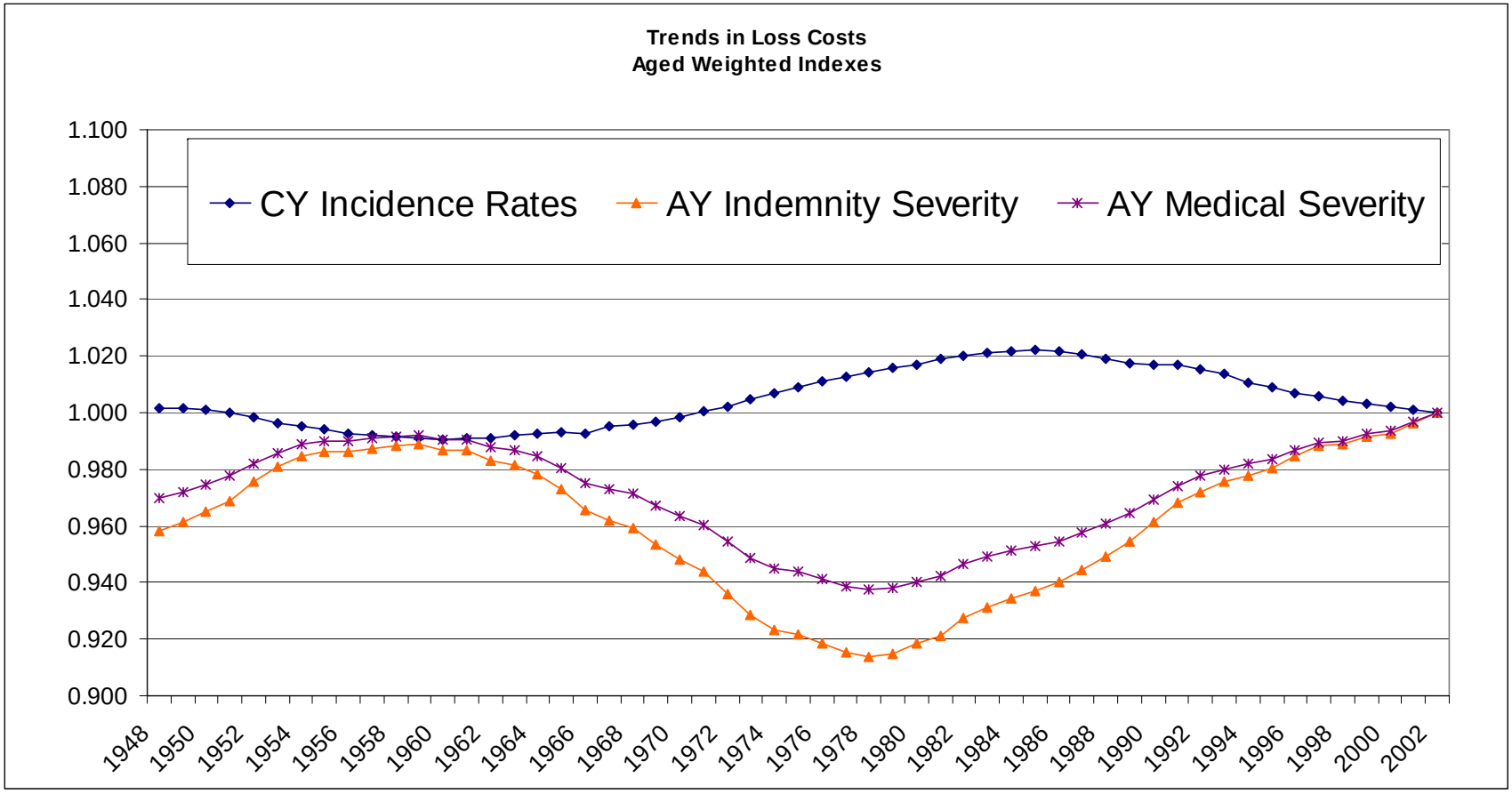
Tracking Age Weighted Trends in Loss Costs

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

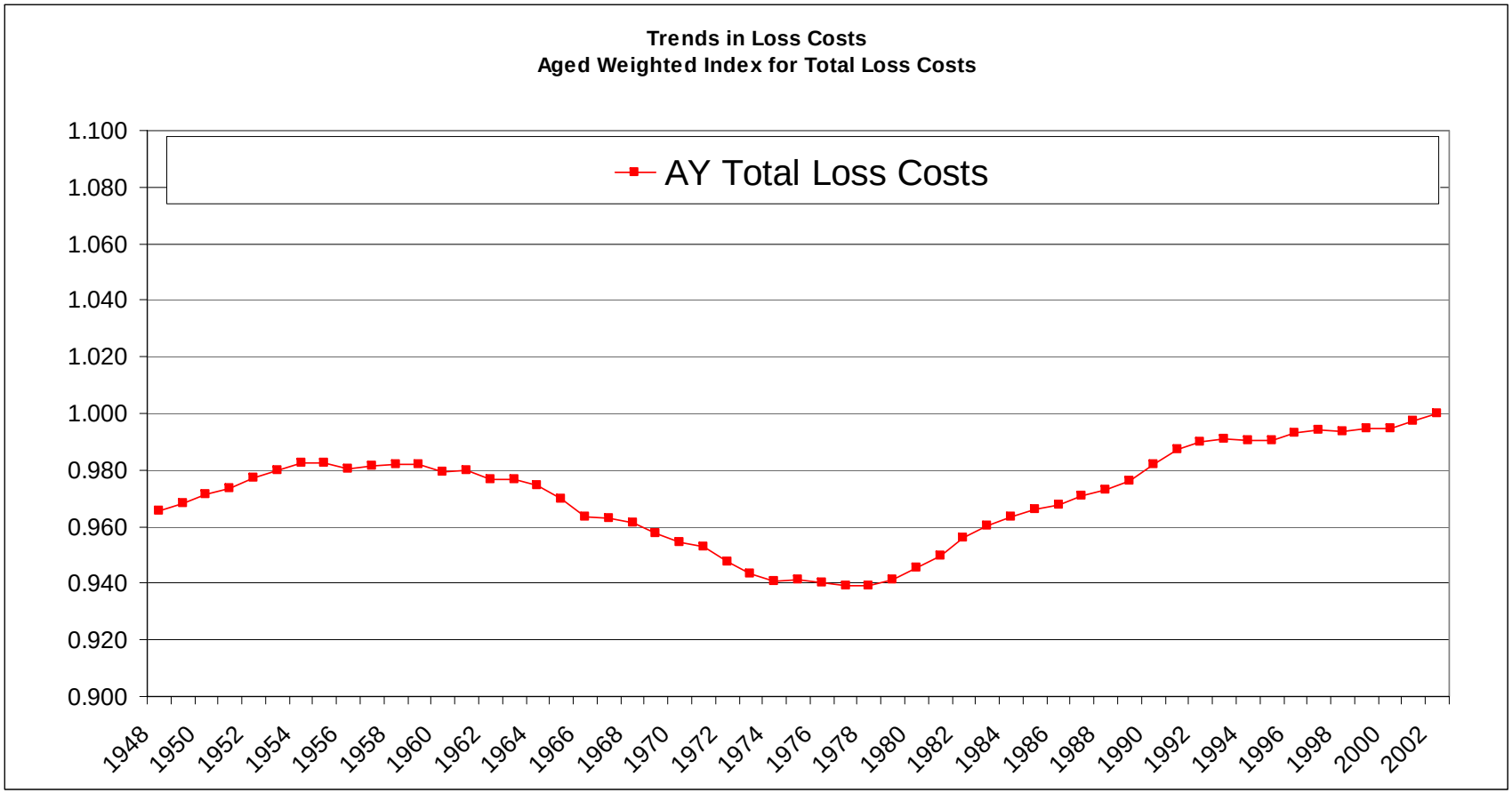
(2002=1.000)



Severities based on paid plus case at 18 months.

Age Related Trends in Loss Costs
Total Loss Cost Index

(2002=1.000)



Severities based on paid plus case at 18 months.

Tracking Age Weighted Trends in Loss Costs

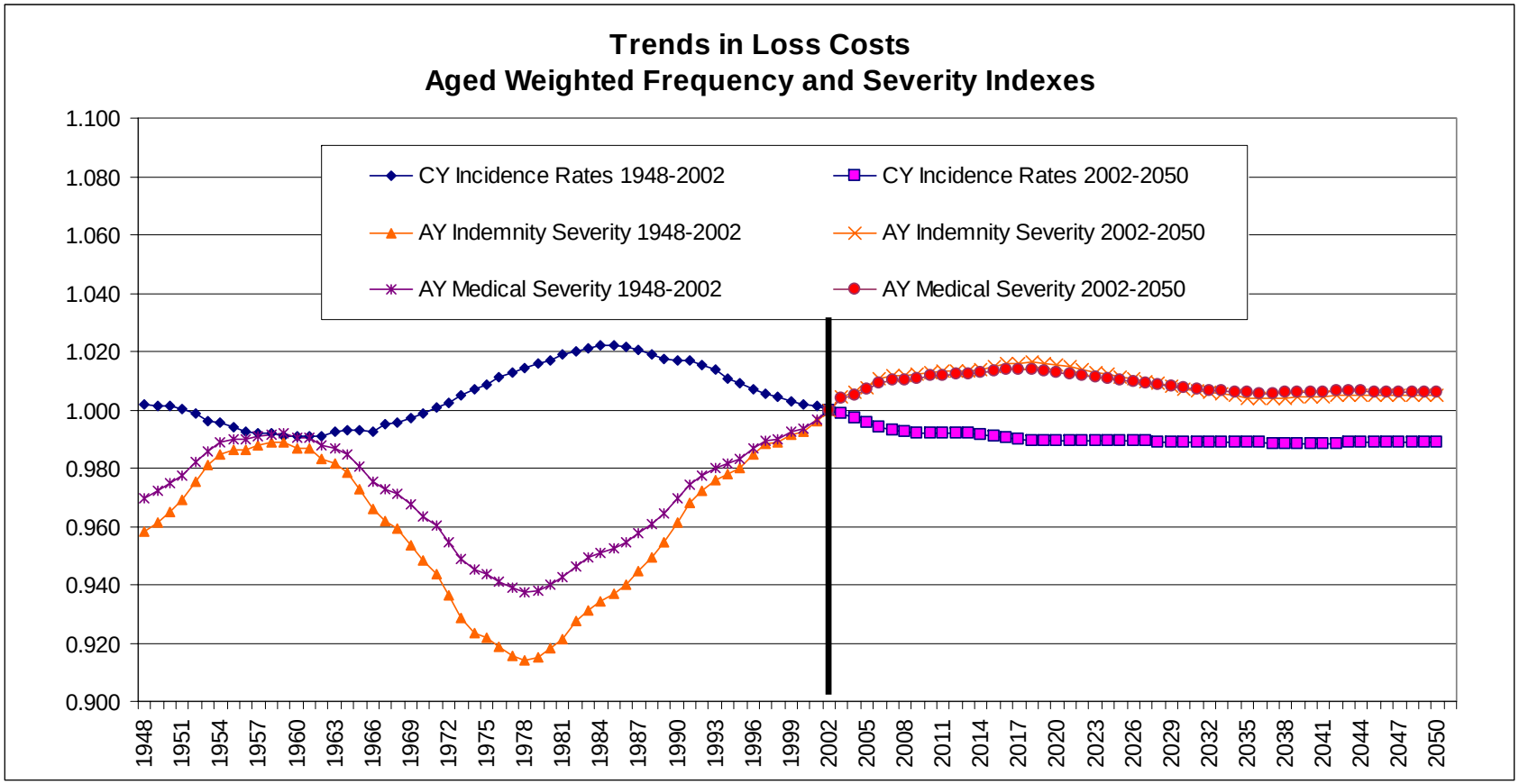
Boomers Made a Difference Historically

Will They Continue to Make a Difference?

Estimates for 2003–2050

Age Related Trends in Loss Costs Frequency and Severity Indexes

(2002=1.000)



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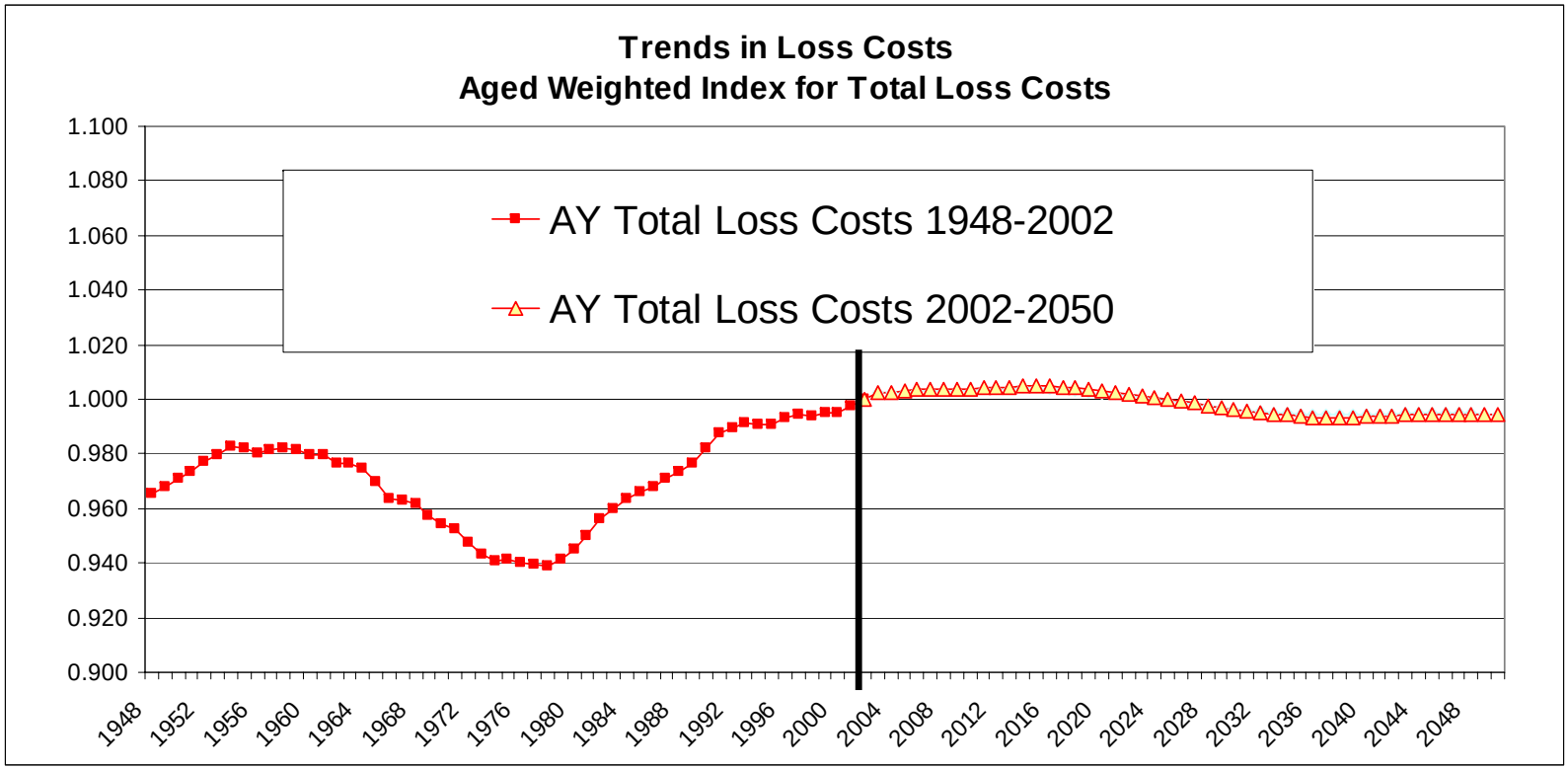
Age Related Trends in Loss Costs
Total Loss Cost Index



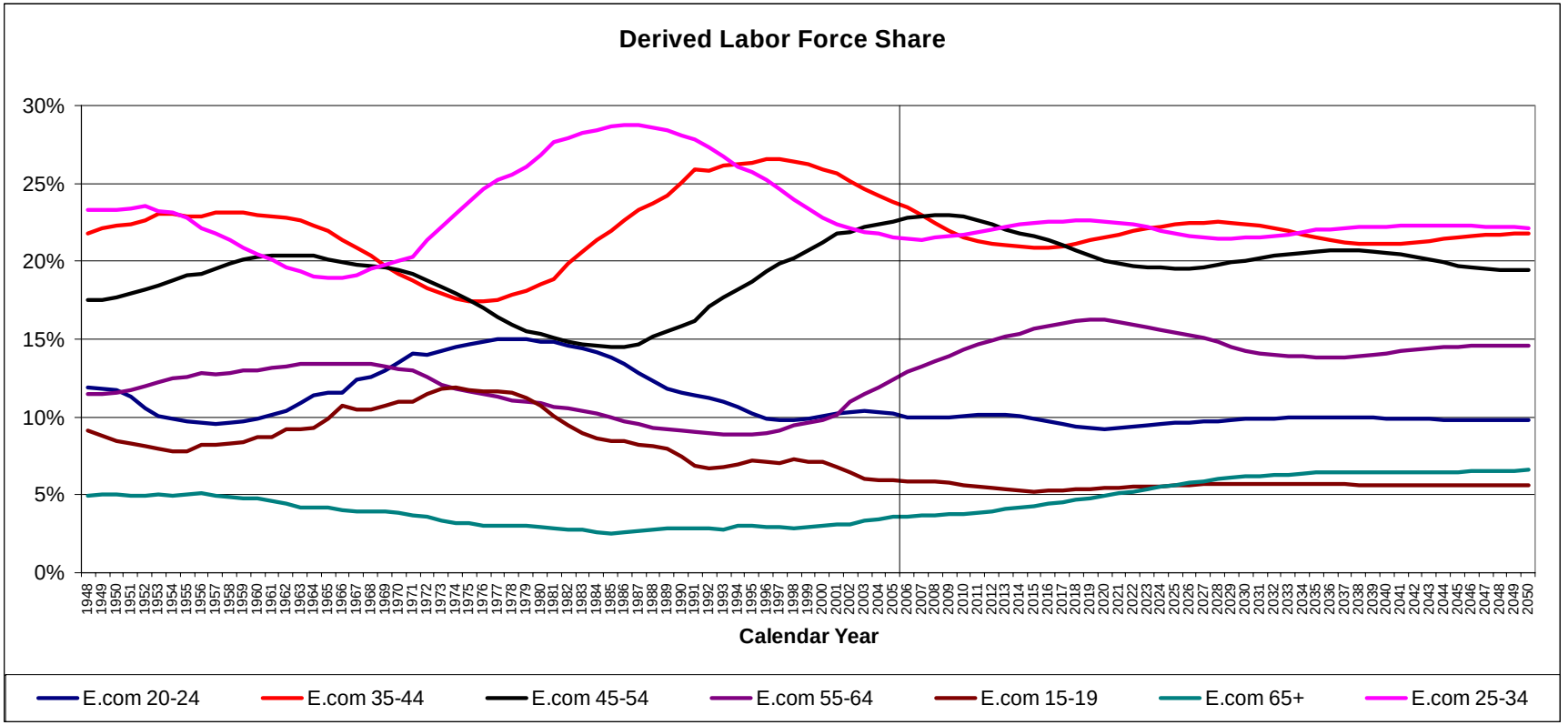
Severities based on paid plus case at 18 months.

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.

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.

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