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making financial sense of the future

General insurance pricing seminar  
Beth Fitzgerald



## U.S. trend sources and techniques for commercial lines classes

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## Trend Sources and Techniques

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- Data for Trend Analysis
- Data available for Reinsurance/Excess Pricing
- Issues in Selecting Trends
- General Liability Manufacturers & Contractors example
- Commercial Property Basic Group I (Fire) example
- Directors and Officers
- EPL, Crime Frequency

## TREND DATA

## ISO Industry Data

- Data available for claim severity, claim frequency and exposure trend analysis
- Detailed transaction reporting of premium and losses
  - individual policy information
  - individual occurrence/claimant information
- More flexibility in compiling data for analysis
- Enhanced quality and accuracy

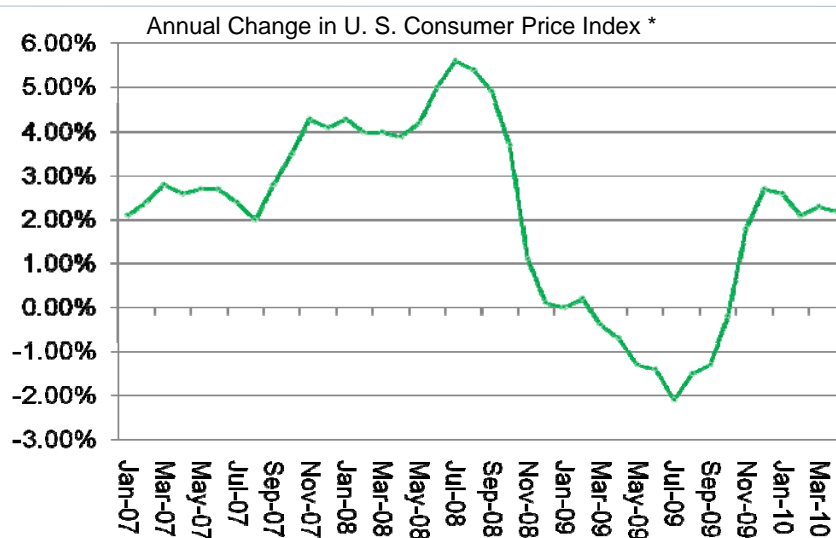
## U. S. Economic Data

- Historical data sources
  - Federal Reserve
  - U.S. Bureau of Labor Statistics
  - Bureau of Economic Analysis
- Forecasted information
  - IHS Global Insight \*
  - ISO models

\* Neither IHS Global Insight nor any of its third party licensors make any warranties, expressed or implied, as to the results obtained using their data and forecasts.

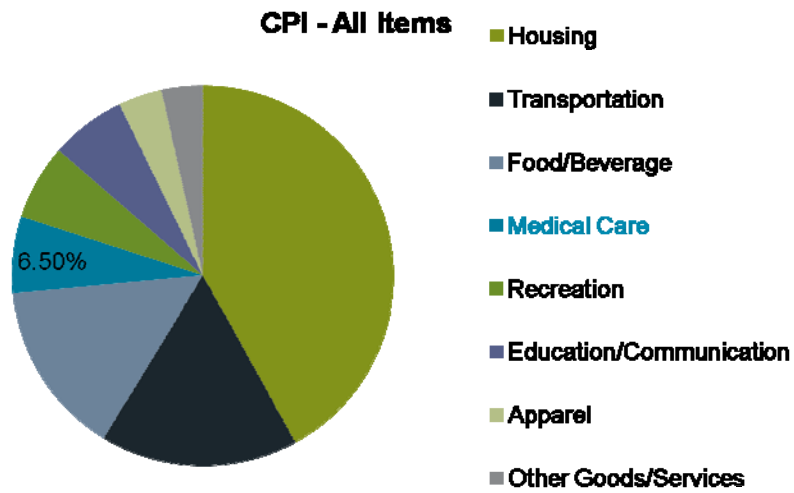
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## Consumer Price Index Data for U. S.

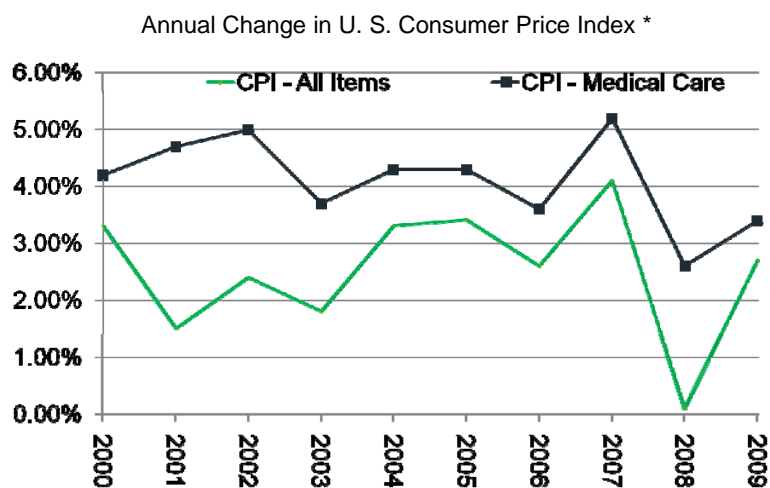


\* source: Bureau of Labor Statistics

## Breakdown of CPI- All Items



## Consumer Price Index Data



\* source: Bureau of Labor Statistics

## Inflation Risk for U. S.

- Near term, increased liquidity not enough to ignite inflation
- Core inflation (excluding food and energy) expected to be stable
  - Employment rising but continuing high unemployment rate
  - Housing market still weak
- Long term, risk if monetary policy not tightened as economies approach full employment

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## Alternative Trend Forecasts for Severity

- Inflation Adjusted Trend Procedure
  - Calculate inflation index (or *severity deflator*) by weighting economic price indices
  - Compute real severities by dividing historical nominal severities by inflation index
  - Price inflation = trend in the (forecasted) severity deflators
  - Social inflation = exponential fit of historical real severities
    - changes in claim settlement, laws, court practices

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## Alternative Trend Forecasts for Severity

- Inflation Adjusted Trend Procedure
  - trend in real severities (social inflation) is constant
  - trend in severity deflators (price inflation) varies depending on trending period
- Forecasted Nominal (or total) severity
  - = forecasted real severity x forecasted severity deflators

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## General Liability Severity

- Bodily Injury Severity Deflators
  - Medicare – weighted price index of CPIs for hospital, physician services and medical commodities
  - Legal – price index for personal legal services
- Property Damage Severity Deflators
  - PCWC – personal consumption price index
  - Legal

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## Commercial Auto Severity

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- Bodily Injury and Personal Injury Protection Severity Deflators
  - Medicare – weighted price index of CPIs for hospital, physician services and medical commodities
  - Wage –employment cost index for private industry workers
- Property Damage and Physical Damage Severity Deflators
  - CPI for Motor Vehicle Body Work

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## General Liability Exposure

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- Contractors Payroll
  - hourly earnings for construction workers
  - wages for private industry workers
- Manufacturers Sales
  - consumption of durables & nondurables
  - consumption of food services
  - net exports of merchandise
  - private domestic investment
- OL&T Sales
  - retail sales including food services

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## General Liability Frequency

- Forecasts: frequency 
- with  interest rates
- and  unemployment rates
- Use Unemployment rate & 5-year Treasury note interest rate

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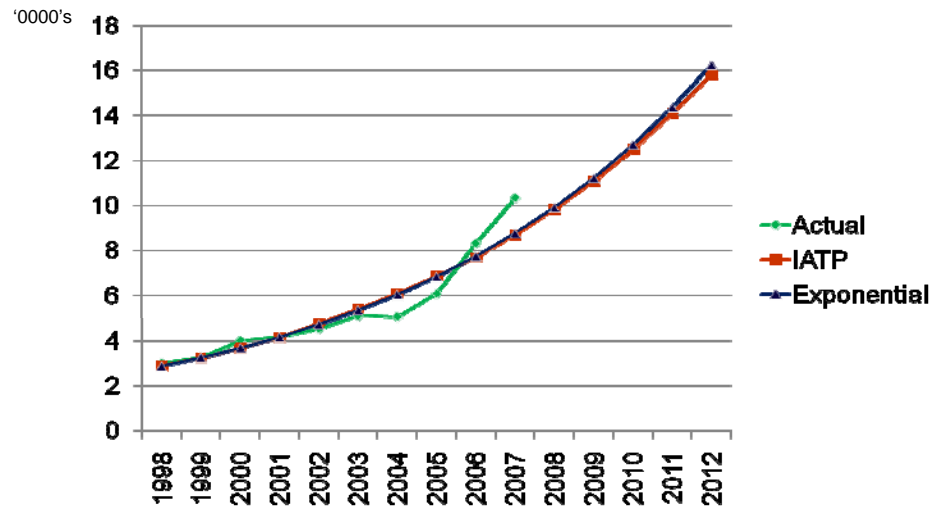
## General Liability Frequency

- High interest rates
  - businesses have increased financial pressure
  - claimants under greater financial stress (higher debt service, lower asset values)
- High unemployment
  - poor business climate
  - claimants under greater financial stress
- Potential for less investment & maintenance and production cutbacks

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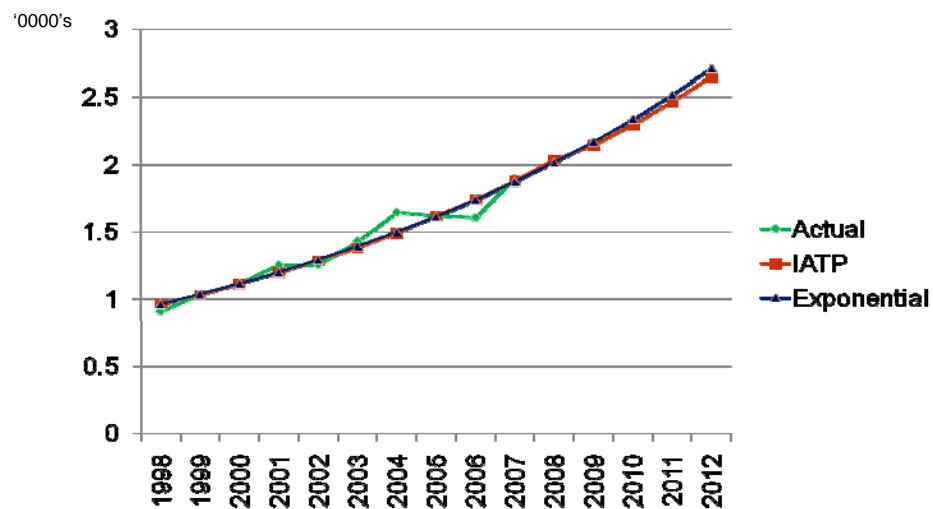


## General Liability - Bodily Injury Total Limits Severity



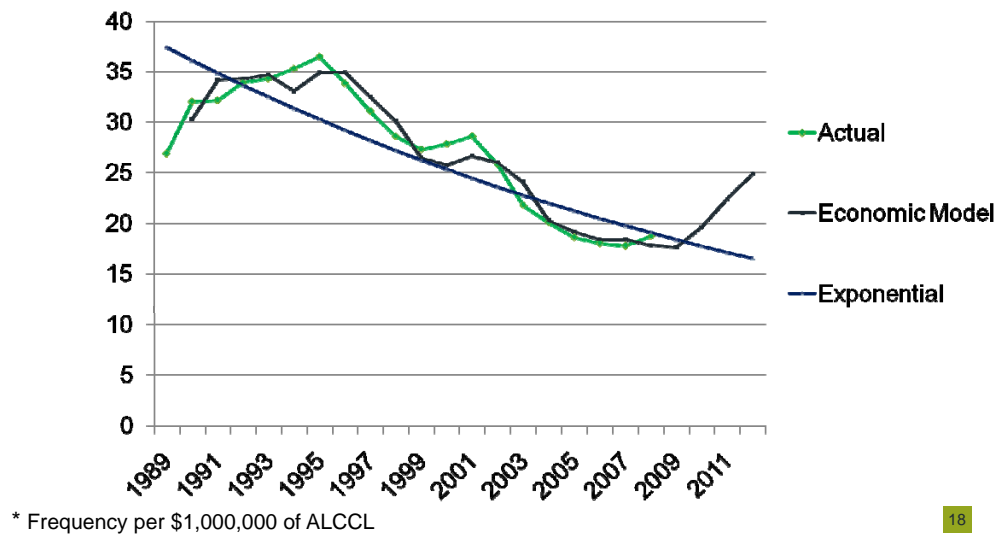
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## General Liability - Property Damage Total Limits Severity



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## General Liability - Frequency Example



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## External Data for Commercial Property

- U.S. Economic Data
  - Retail Sales
  - Manufacturers Sales
  - Producer Price Indices (PPI)
- Xactware Commercial Index (XCI) for buildings

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## DATA FOR REINSURANCE/EXCESS TREND

## Data Compilations

### Standard Compilations

- Size of Loss data for General Liability ("GL") and Commercial Property ("CP")
- Layer of Loss data for GL
- 5-years historical primary experience by Class and State/Territory for GL & CP

### Custom Compilations

- Size of Loss by Amount of Insurance for CP
- Layer of Loss by Policy Limit for GL
- Other possibilities for both lines

## General Liability Increased Limit Analysis

- Calculate Increased Limit Factors using mixed exponential curves fit to paid occurrence data by accident year & settlement date
- Analyze paid/settled data for many years by policy limit purchased
- Analyze basic limit and total limit paid and incurred accident year data
- Select long-term average unlimited severity trend for CSL

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TREND ISSUES

## Trend Method

- Fit data to exponential curves
- Calculate goodness of fit  $R^2$
- Calculate fits for different number of years

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## Trend Selection Issues

- Stability
- Regulatory Support
- Compliance with Actuarial Standard of Practice #13 on Trending Procedures
  - consider bias or distortions in data
  - consider economic or social influences either in data or in projection period

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## GENERAL LIABILITY TREND

## Manufacturers & Contractors Claim Severity and Frequency Trend

- By coverage (bodily injury, property damage, pers & advertising injury)
- Internal ISO claim severity and claim frequency data
  - Basic limits accident year loss data (unlimited ALAE)
  - losses/claims developed to ultimate
  - paid and incurred
  - indemnity, ALAE, indemnity + ALAE
  - 10, 8 and 6 year fits

## Manufacturers & Contractors Exposure Trend

- Use Economic Trend forecasts
  - Contractors classes – use contractors payroll price index
  - Manufacturers classes – use manufacturers sales price index

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## Issues for Manufacturers & Contractors Trend Selections

- Analyze severity fits excluding latest point(s) due to loss development
- Use paid severity to avoid bias in case reserve changes over time
- Incurred development more stable
- Analyze Indemnity vs. ALAE for any severity distortions
- Frequency selection also reflects any recent patterns and any external information

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## Manufacturers & Contractors Example

### \$100k/\$200k Bodily Injury Paid Severity

	Indemnity + ALAE Fits	Indemnity + ALAE R <sup>2</sup>	ALAE Fits	ALAE R <sup>2</sup>
6 year	6.5%	.75	9%	.70
8 year	6.0%	.84	7%	.75
10 year	8.0%	.85	10%	.80
9 year (ex latest)	6.2%	.95	7%	.88

Last year's selection = 7.0%

This year's selection = 6.5%

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COMMERCIAL PROPERTY TREND



## Basic Group I (Fire) Claim Severity and Claim Frequency Trend

- By coverage (buildings, contents, time element)
- Fit internal ISO claim severity and claim frequency data
  - losses/claims developed to ultimate
  - total vs. normal accident year losses
  - 10, 7 and 5 year fits
  - by deductible & “blended” weighted avg. of all deductible data

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## Basic Group I (Fire) Claim Severity

- Fit 12 points of External data
  - XCI for buildings
  - PPI for contents
  - Manufacturing sales & Retail sales for time element
- Determine Current Cost Factor & Loss Projection Factor using External data

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## Basic Group I (Fire) Loss Trend

- Select Severity Loss Trend Adjustment (LTA) to complement external economic indices
- Select Frequency LTA based on internal data
- Apply severity trend to individual occurrence
  - first add \$ded back to loss amount
  - apply severity trend
  - subtract \$ded

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## Basic Group I (Fire) Exposure Trend

- By coverage (buildings, contents, time element) using internal ISO data
- Determined from actual changes in amounts of insurance from one year to the next
- Based on a sample of renewal policies, matched on premium record ID, insurer, state, territory, construction, coverage, protection, occupancy class and rating ID

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## Issues for Commercial Property

- Deductible distribution changes over time = rely on “blended average” of all deductibles
- Distortions due to large losses = rely more on normal losses
- Bias in distribution of losses by cause in different years- analyze fire, VMM, theft, water claims each year

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## Commercial Property Example

### Basic Group I Building Internal Severity

	\$500 Ded.		\$1000 Ded.		\$2500 Ded.		Blended Ded.	
	Normal	Total	Normal	Total	Normal	Total	Normal	Total
10 Yr. Fits	3%	4.5%	4%	4.5%	6%	5.5%	4.2%	5%
R <sup>2</sup>	.85	.80	.90	.88	.80	.78	.90	.85

Last year's selection = 4.0%

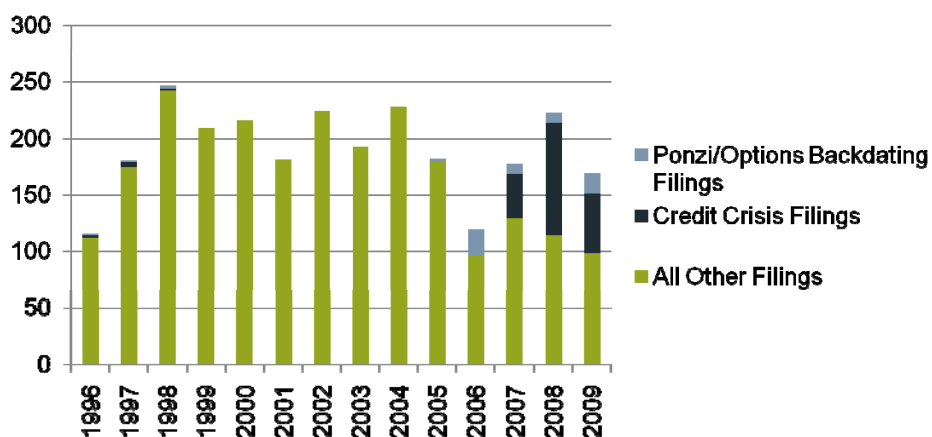
This year's selection = 4.2%

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## DIRECTORS AND OFFICERS

## Annual Number of Securities Class Action Filings\*



\* Data from Stanford Securities Class Action Clearinghouse and Cornerstone Research

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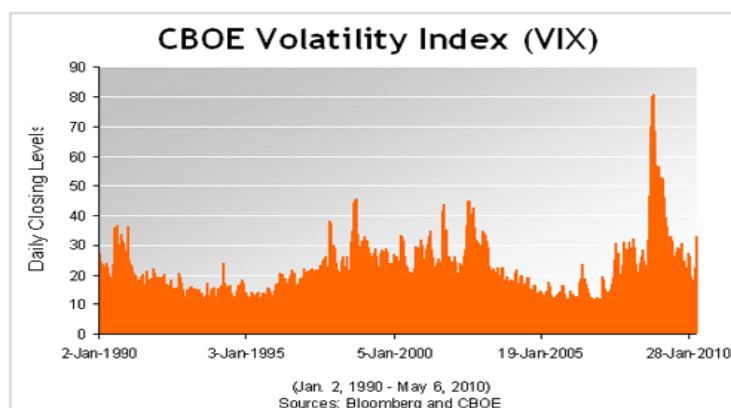
## Stanford Securities Class Action Lawsuits

- Litigation for credit crisis cut nearly in half from 100 in '08 to 53 in '09
- Financial sector still about half of claims with 84 in '09
- Increase in "older lawsuit" in '09
- Disclosure dollar loss (DDL\*) decreased from \$220B in '08 to \$83B in '09

\*DDL is dollar value change in firm's market capitalization between trading day before and after end of class day period.

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## Volatility Index by Chicago Board of Trade \*



\*VIX is measure of market expectations of near-term volatility conveyed by S&P 500 stock index option prices.

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## Issues with Directors and Officers Claims

- U. S. SEC spur increase in fraud litigation?
- Corporate accountability for climate risk?
  - emissions, government mandates
  - transportation, energy, manufacturing firms at higher risk

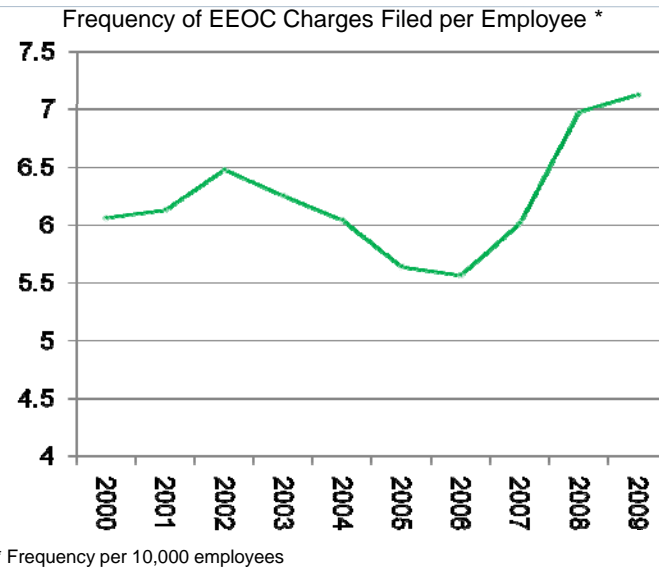
\*DDL is dollar value change in firm's market capitalization between trading day before and after end of class day period.

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EPL FREQUENCY TREND

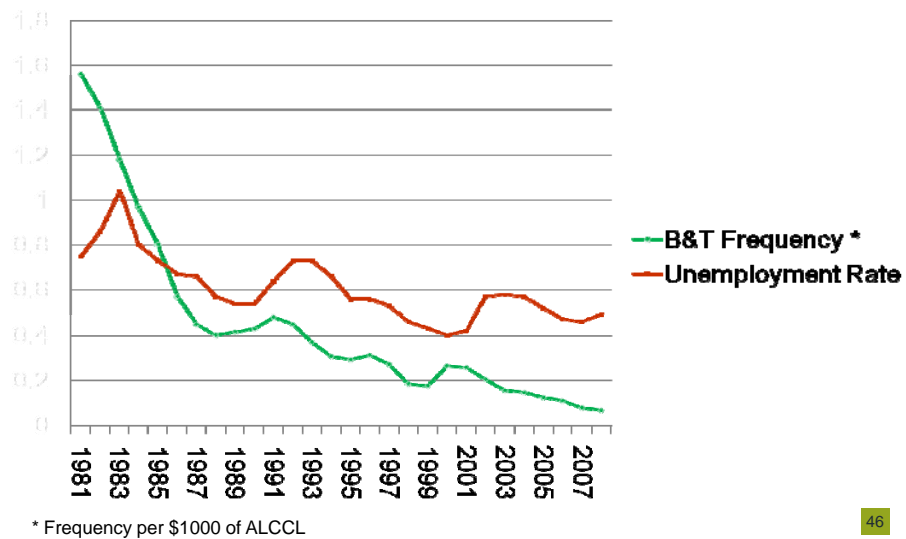
## Employment Practices Liability Frequency



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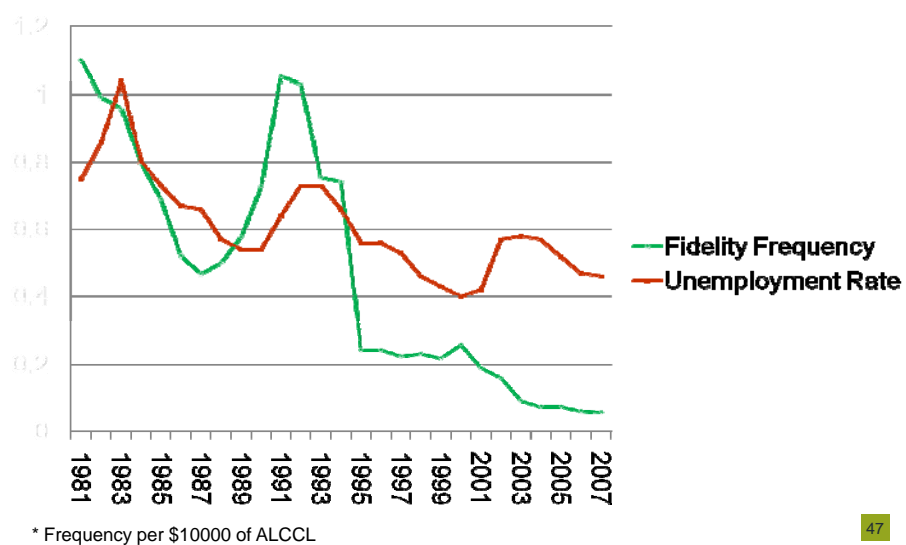
CRIME FREQUENCY TREND

## Burglary & Theft Frequency



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## Commercial Fidelity Frequency



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## Questions or comments?

Expressions of individual views by members of The Actuarial Profession and its staff are encouraged.

The views expressed in this presentation are those of the presenter.

