

OLIVER WYMAN

**Estimating the Unpaid Cost of
Coal Worker Pneumoconiosis Claims
Filed Under the Federal Coal Mine
Health and Safety Act**

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Goals

The following items will be discussed:

- The nature of the underlying exposure to loss
- Benefits payable for claims that are approved for under the Federal Act
- Comparison CWP claims with typical workers compensation traumatic injuries
- Differences between jurisdictions (Federal and State)
- Differences between geography
- The pension component associated with active employees (not specifically examined here) as compared to the unpaid cost due to incurred claims
- Examination of detailed data from the United States Department of Labor to generate claim reporting patterns, claim entitlement patterns, and claim entitlement ratios for use in a methodology based on commonly applied actuarial techniques
- Methodology will be discussed and reviewed
- Discussion of the impact of legislative changes to the Federal Act embedded in the Patient Protection and Affordable Care Act (PPACA – health care reform)

Understanding the Exposure to Loss



Understanding the Exposure to Loss

Definition

- Coal Worker Pneumoconiosis (CWP or “black lung” disease) is caused by long term exposure to coal dust
 - Inhaled coal dust remains in lungs and, over years, causes changes to lung tissue that ultimately leads to decreased lung function and disease
 - Pneumoconiosis is a “restrictive” respiratory disease
 - Asbestosis, Silicosis
 - Workers compensation claims are generated when CWP results in disability defined by the Federal Act, or whichever jurisdiction under which the employee elects to file a claim
- It is important to understand that a claim award under the Federal Act is as much a result of the statutory definition of CWP and case law as well as the physical symptoms exhibited by the claimant

Understanding the Exposure to Loss

Latency and Report Lag

- Latency period extends over 50 years since last date of exposure to coal dust (CME)
 - For insurance purposes, the date of loss is defined as the last date of exposure to coal dust
 - Also know as last date of coal mine exposure, or CME
 - Equivalent to the last day worked
 - Following chart is based on data from the DOL

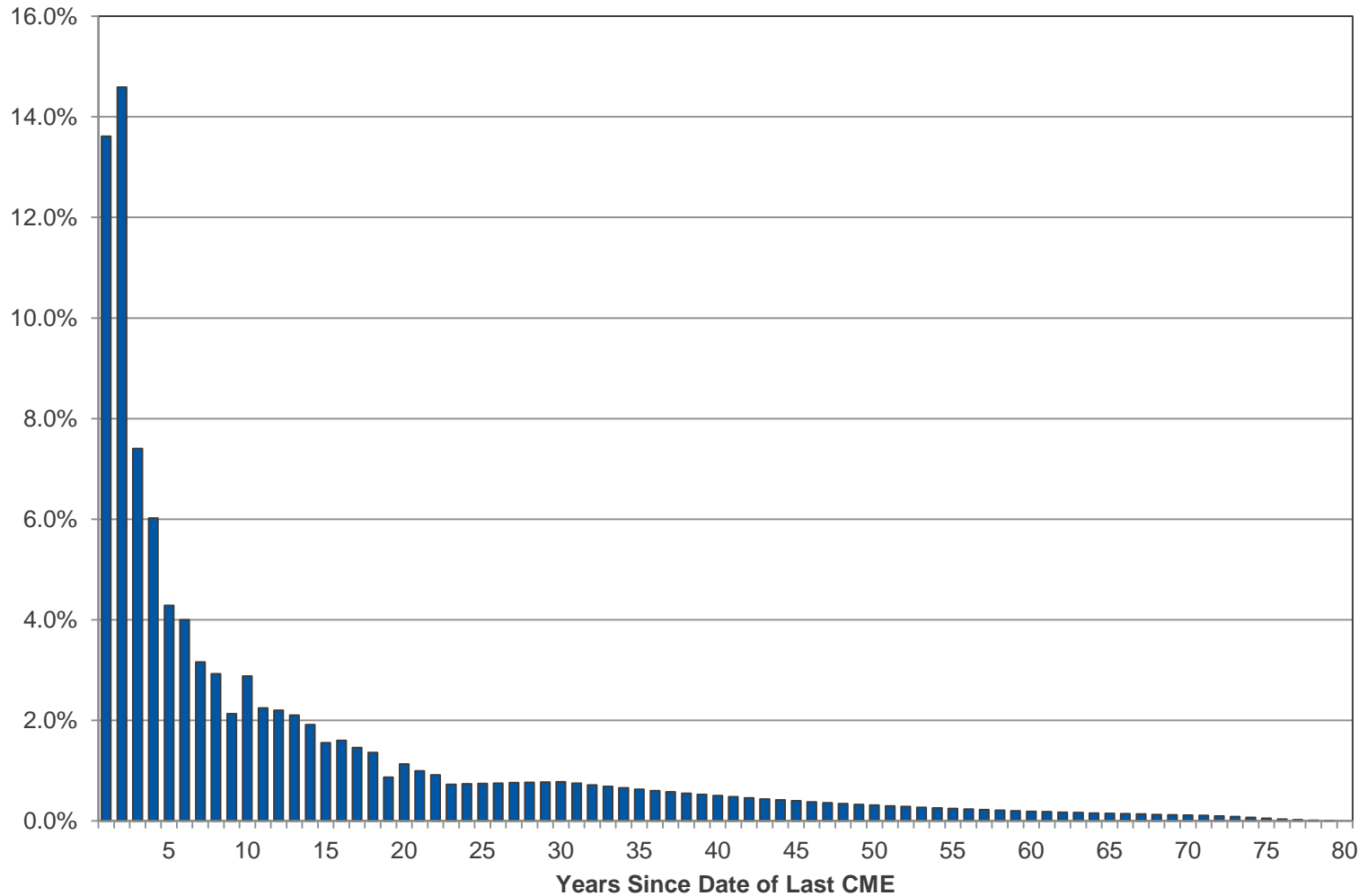
Years Since Last Date of CME	Percent Claims Filed (Reported)	Percent Claims to be Filed (Unreported)
1	14%	86%
5	46%	54%
10	61%	39%
20	77%	23%
30	85%	15%

- Average annual reported claim development from 25 to 30 years is 0.8%
- Individuals file claims well into their 90's

Note: Data is available through ~30 years. Reporting percentage subsequent to 30 years is judgment based on available data.

Understanding the Exposure to Loss

Initial Claim Filing Reporting Pattern

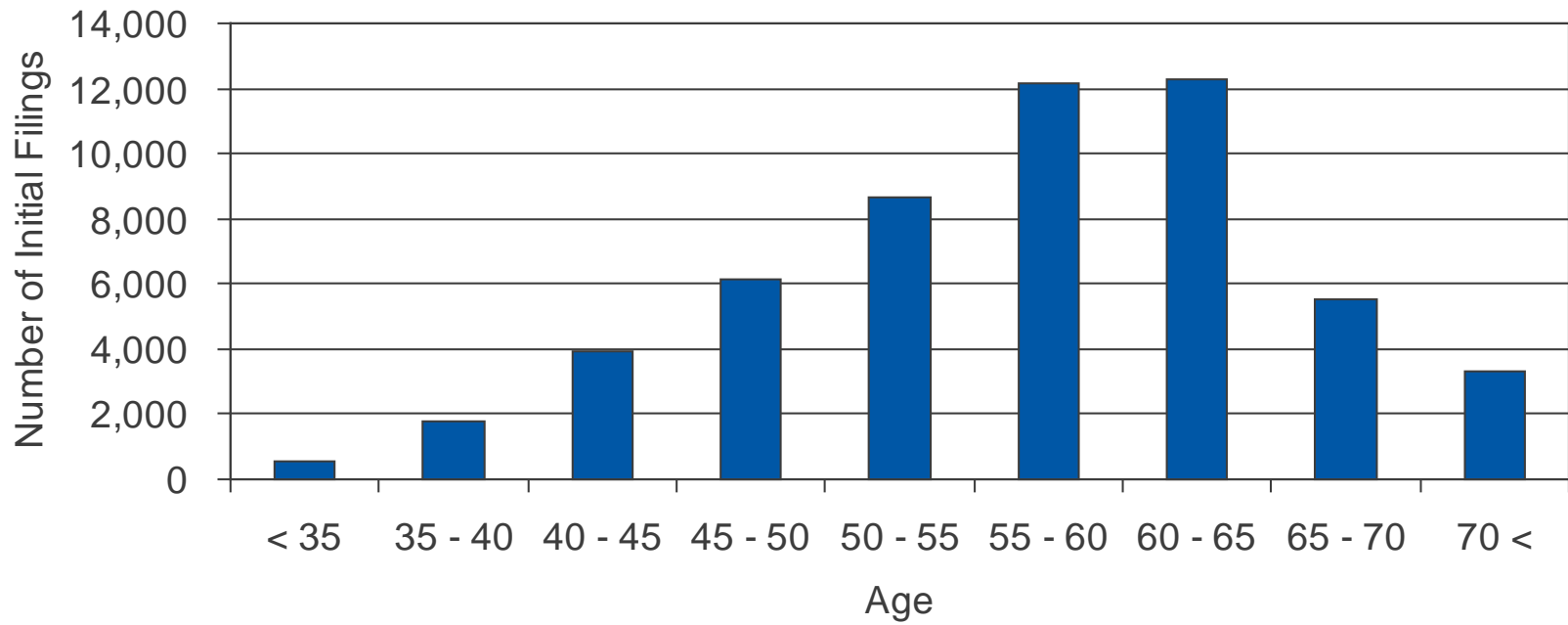


Understanding the Exposure to Loss

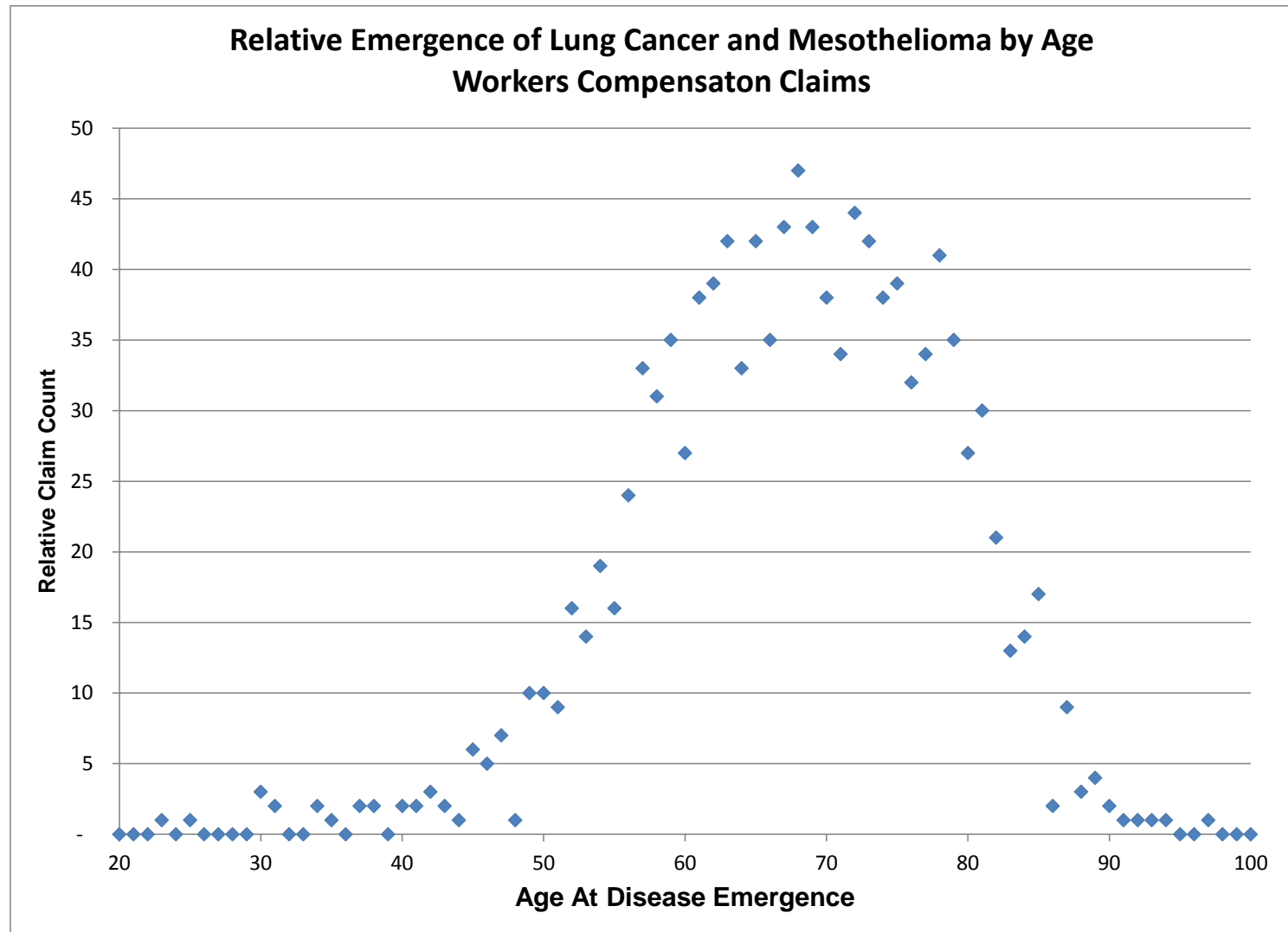
Consideration of Age

- Claims are generally filed between age 55 and 65

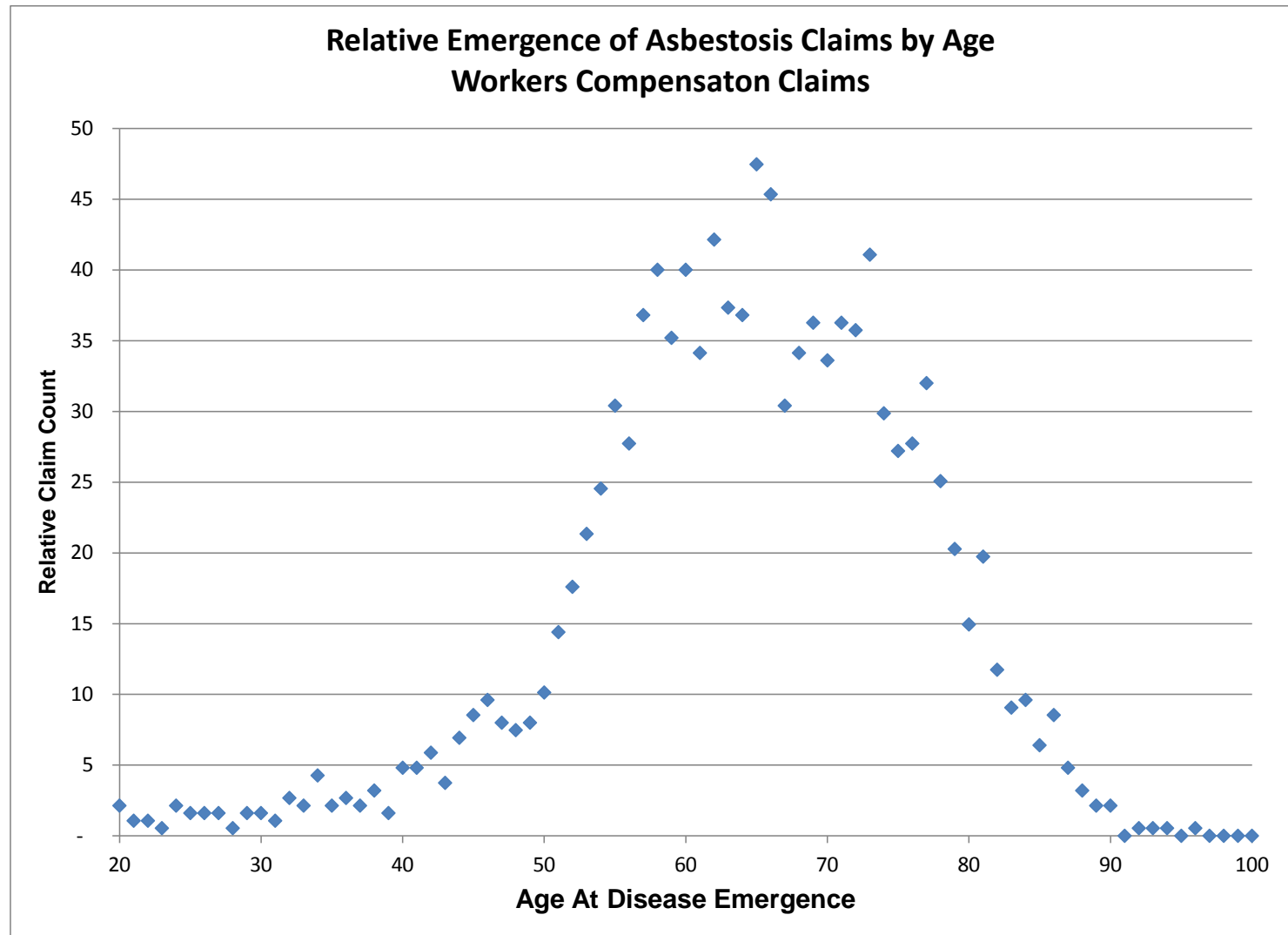
All Living Miner Initial Filings
All Initial Filings
Age at Filing



Understanding the Exposure to Loss



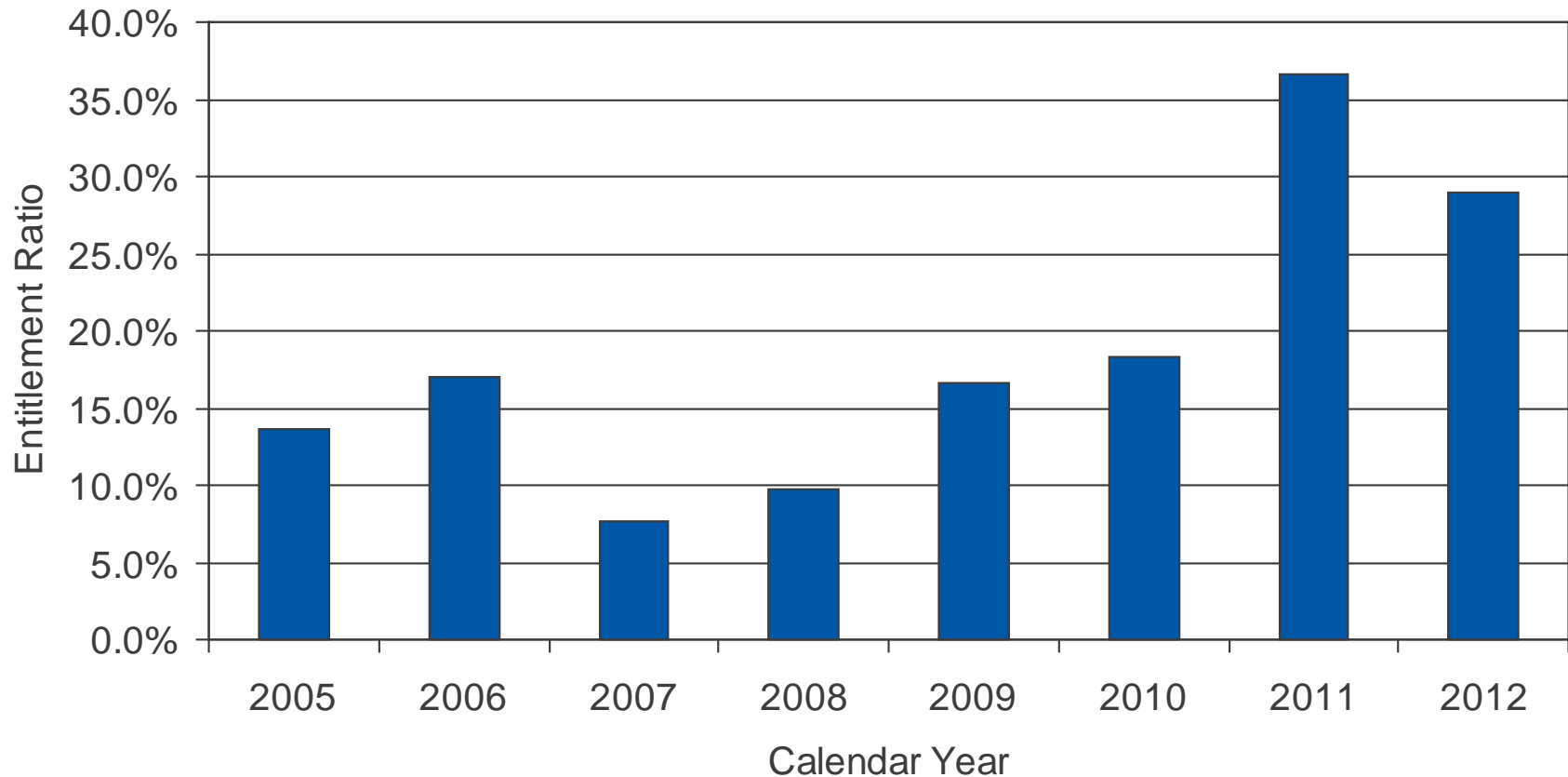
Understanding the Exposure to Loss



Understanding the Exposure to Loss

Entitlements

- Filings are essentially applications for benefits payable under the Federal Act
- Successful filings are defined as entitled claims
 - Adjudication and appeals process can continue for years
 - Currently, roughly 30% of claim filings may be expected to be entitled to benefits




Understanding the Exposure to Loss

Lag to Entitlement

- The time period to entitlement includes report lag as well as the additional time required to adjudicate and reach final disposition on claims
 - Adjudication process can continue for years – Most claims resolved within 2 years
 - District Office
 - Administrative Law Judge
 - Benefits Review Board
 - US Federal Court System

Years Since Last Date of CME	Percent Entitlements Awarded	Percent Entitlements To be Awarded	Percent Claims to be Filed (Unreported)
1	5%	95%	86%
5	26%	74%	54%
10	39%	61%	39%
20	68%	32%	23%
30	87%	13%	15%

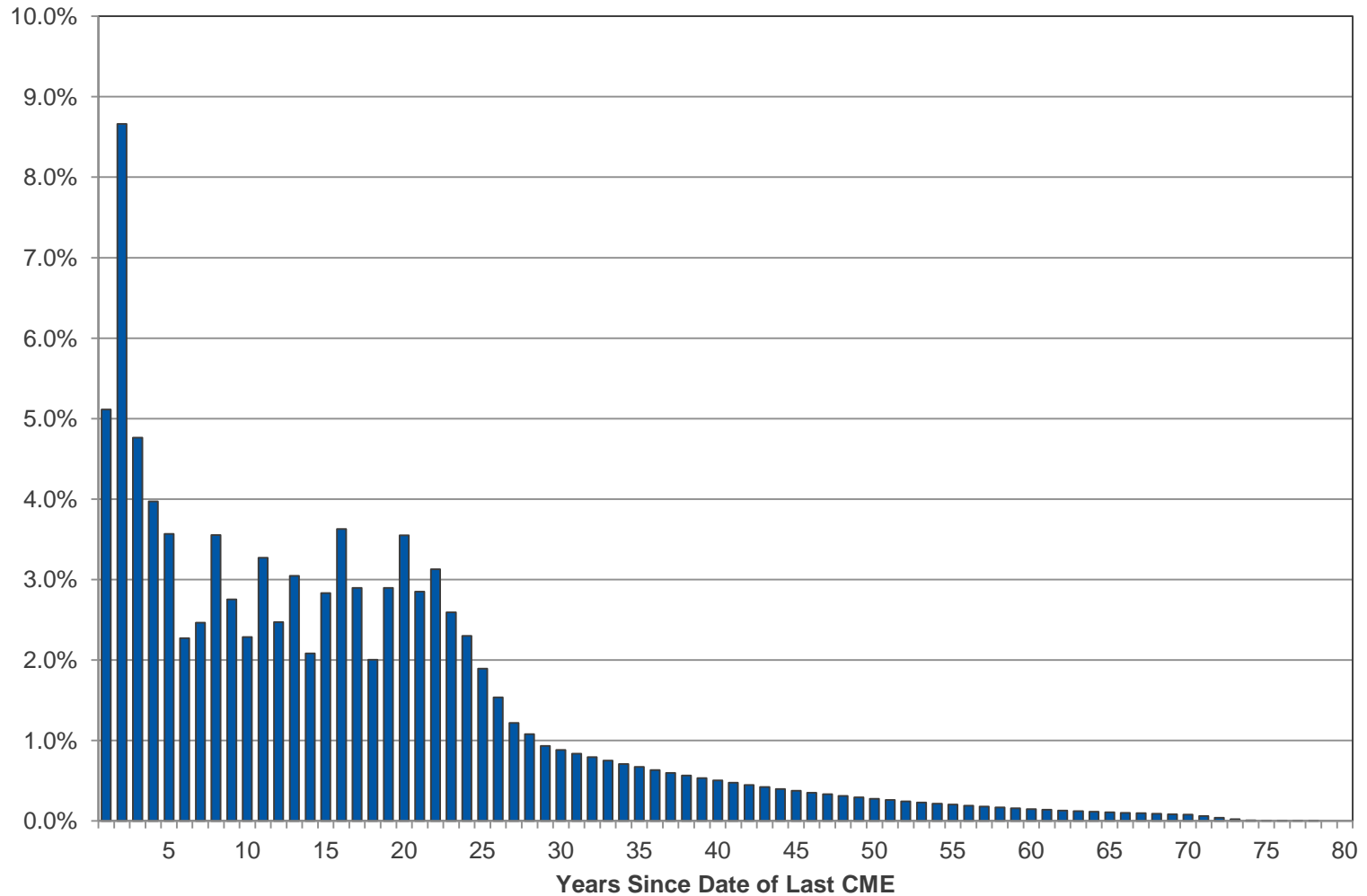


Data available through 30 years – claims are still being reported; entitlements are still being awarded

- Currently, average annual entitled claim development from 25 to 30 years is 2.8%
- Values underlying above chart are lower and reflect that currently observed high percentages are artifacts of PPACA and will likely be lower in the future

Understanding the Exposure to Loss

Entitlement Pattern



Understanding the Exposure to Loss

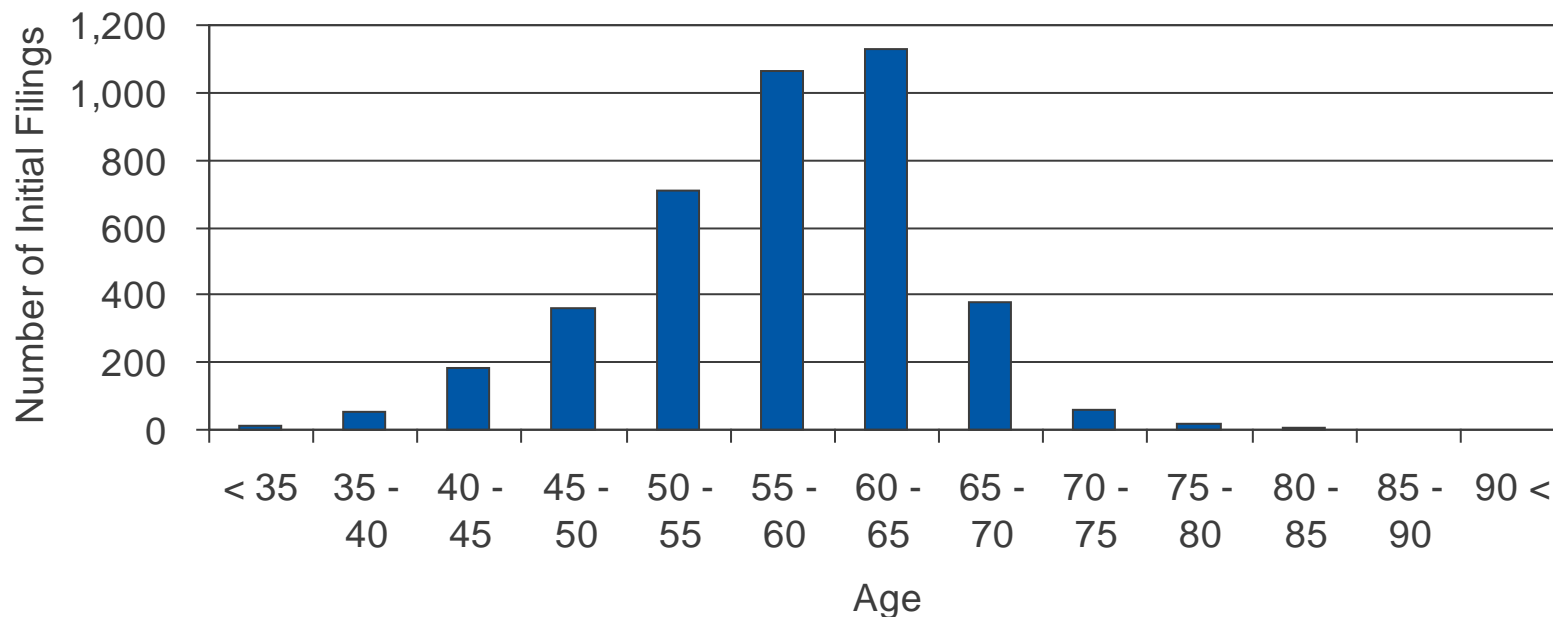
Consideration of Age

- Age at filing will obviously vary with report lag
 - Following charts show distributions of age at initial claim filing, *for claims that result in entitlements:*
 - for initial filings within 48 months of last date of CME
 - for initial filings after 288 months from last date of CME

Understanding the Exposure to Loss

Consideration of Age

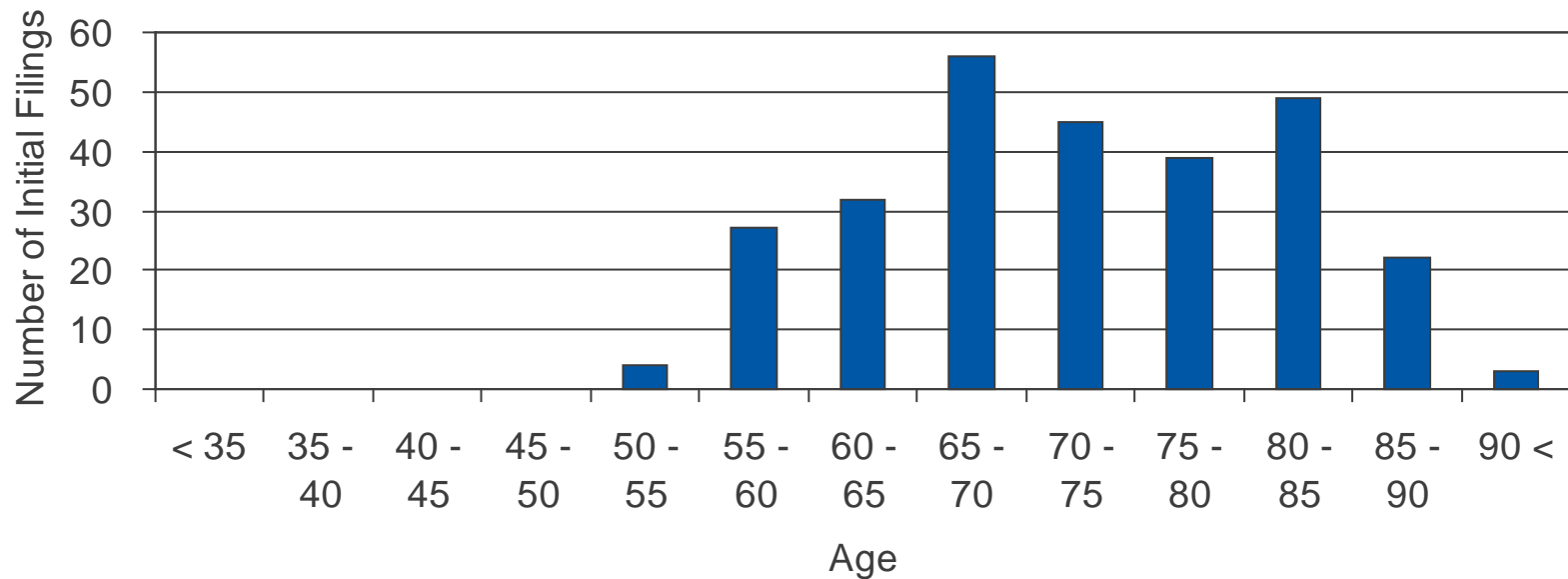
Distribution of Age at Initial Filing Claims Resulting in Entitlements Filings within 48 Months of CME



Understanding the Exposure to Loss

Consideration of Age

**Distribution of Age at Initial Claim Filing
Claims Resulting in Entitlements
Filings After 288 months from CME**



Impact of Geography



Impact of Geography

Initial Claim Filings

- Material difference between states east and west of Mississippi River
 - Chart below shows total initial filings since 1983

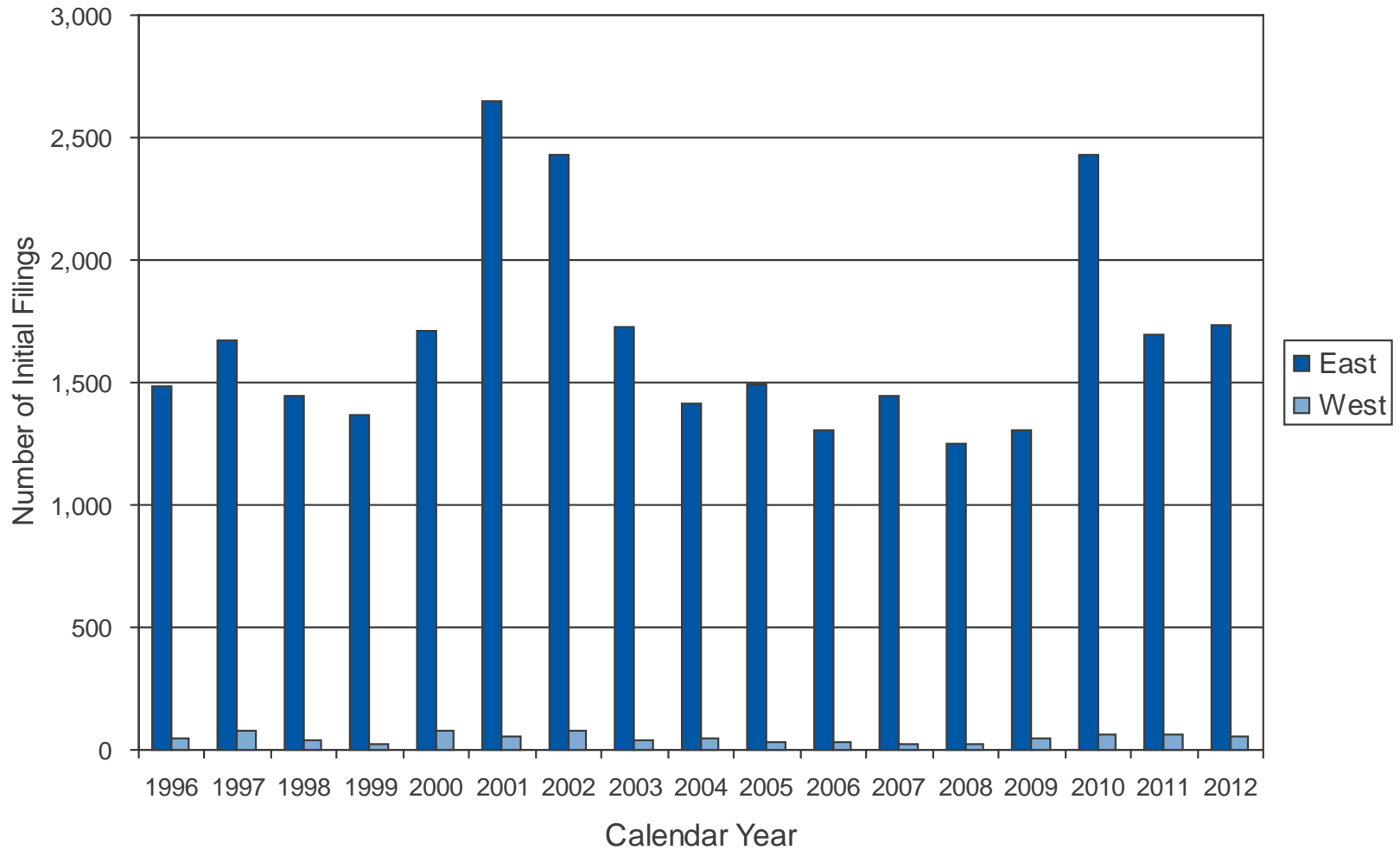
Initial Claim Filings by Region

East	
ALL OTHER	115
Indiana	570
Tennessee	1,034
Ohio	1,601
Illinois	2,601
Alabama	2,752
Pennsylvania	4,975
Virginia	6,619
West Virginia	15,390
Kentucky	16,776

West	
ALL OTHER	80
Montana	31
Iowa	32
Oklahoma	65
Missouri	88
New Mexico	142
Arizona	149
Wyoming	184
Colorado	264
Utah	389

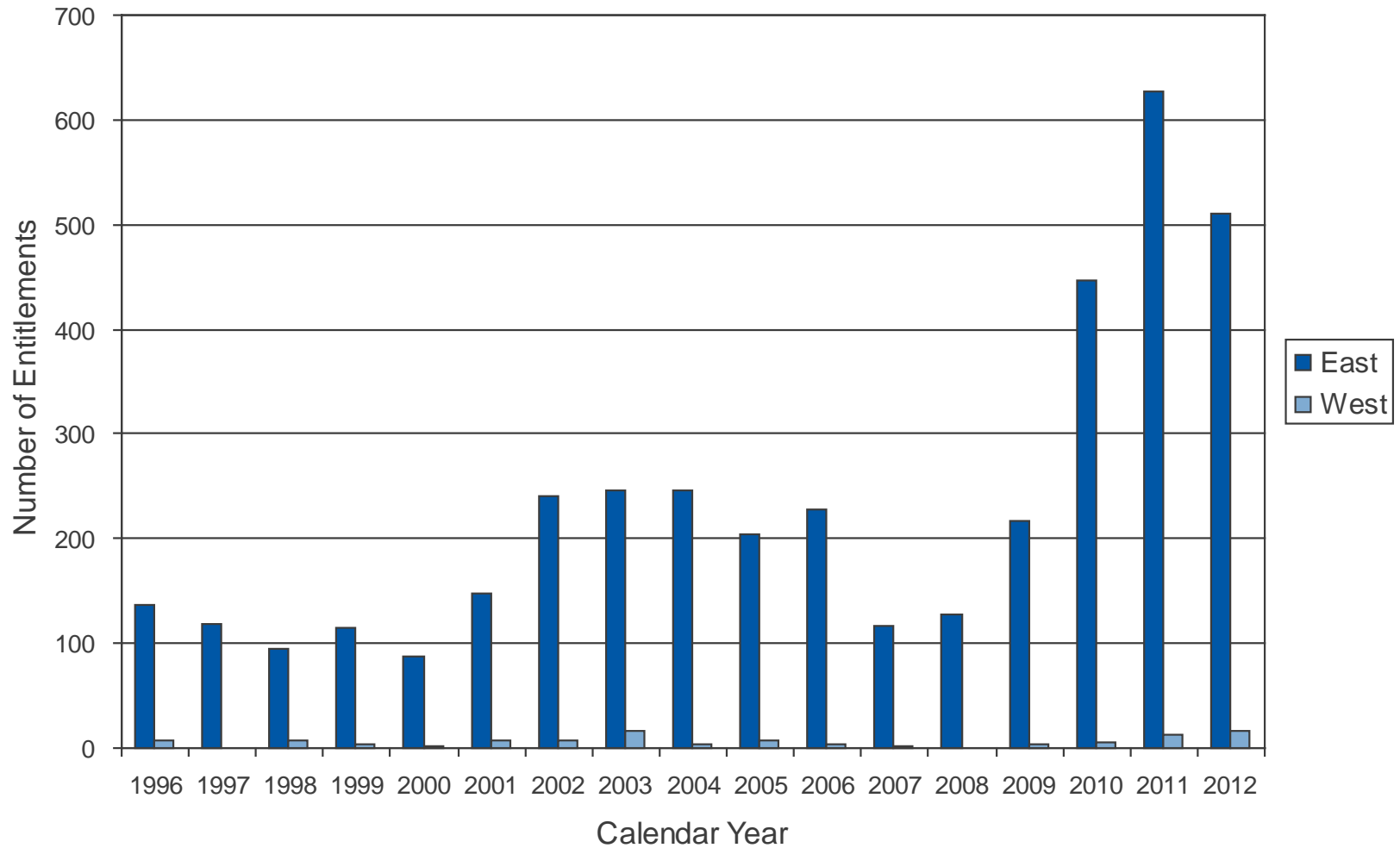
Impact of Geography

Initial Claim Filings



Impact of Geography

Entitlements



Impact of Geography

Entitlements

			Average
	CY 96 to 12	CY 96 to 12	Entitlement
Region	Initial Filings	Entitlements	Ratio
EAST	28,547	3,912	13.7%
WEST	841	102	12.1%
Countrywide	29,388	4,014	13.6%

Benefits Available Under the Federal Act



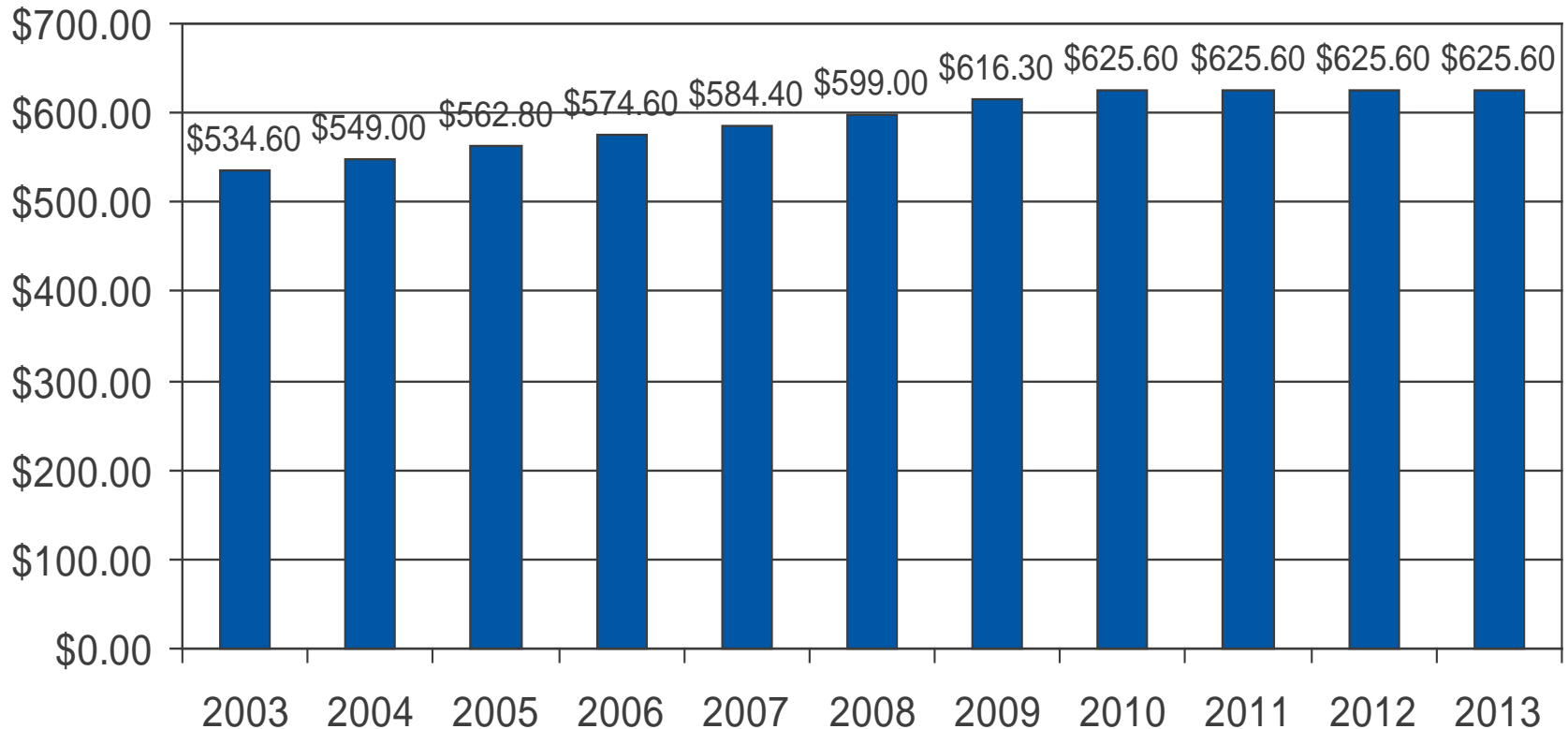
Benefits Available Under the Federal Act

- Claimants awarded entitlements receive the following benefits:
 - All required medical services
 - Primary Benefit is monthly pension equal to 37.5% of the base salary of a federal employee at level GS-2, Step 1
 - Benefits generally include cost of living adjustments annually, equal to the increase to the GS-2, Step 1, federal pay grade.

Beneficiary	Benefit	Current 2013 Value
Single Beneficiary	100% of Primary	625.60
+ 1 Dependent	150% of Primary	938.30
+ 2 Dependents	175% of Primary	1,094.70
> 2 Dependents	200% of Primary	1,251.10

Benefits Available Under the Federal Act

Monthly Primary Benefit Rate




Benefits Available Under the Federal Act

Death Benefits

- Widow(er)s
 - May file an initial claim subsequent to death of miner → very small number of claims
 - Referred to as “Living Widow Claims”
 - As opposed to “Living Miner Initial Filings (claims)”
 - Continuation of benefits is automatic upon death of primary beneficiary
 - Rules governing this process were changed by the PPACA

Similarities and Differences Compared to Other Workers Compensation Exposures



Similarities and Differences Compared to Other Workers Compensation Exposures

Basic Similarities

- Entitled claims represent compensation for disease stemming from employment; as defined by statute
- Very similar as respects impact and latency when compared to other workers compensation claims associated with long term exposure to hazardous substances
- Entitled claimants receive all associated medical services, as with other workers compensation claims
- Benefit structure is specific and clearly defined by statute, as with other workers compensation claims

Similarities and Differences Compared to Other Workers Compensation Exposures

Basic Differences

- Adjudication process and litigation is centered on the question of entitlement, or compensability
 - Materially different from a typical traumatic workers compensation case
 - Typical traumatic workers compensation claims where compensability is litigated are rare
 - Result is materially greater legal costs associated with these cases
 - In addition to defense costs, employers/insurers are responsible for claimant attorney fees for claims that result in entitlements
 - This aspect is similar to WC claims filed under the USLHWA
 - Claims filed under the USLHWA are also administered by the DOL
- All claims, by definition, are permanent total disability cases as defined by the Federal Act
 - Extraordinarily expensive cases, with typical nominal severities on the order of \$400,000 to \$500,000 with legal and other claim related expenses
- Employees appeal, and/or file subsequent claims if not successful

Similarities and Differences Compared to Other Workers Compensation Exposures

Basic Differences

- Administrative rule changes and statutory changes to the program have the potential to be retroactive
 - 2001 rule change and PPACA
 - Changes under the Federal Act generally affect claims relative to filing date, not date of CME
 - Example: Patient Protection and Affordable Care Act of 2010
 - Has increased the number of claims entitled to benefits, as well as filings
 - Applicable to claims **filed** (reported) on or after January 1, 2005 regardless as to last date of coal mine exposure (CME), or date of loss
 - Miners previously denied benefits may file new claims
 - Creates a challenging environment under which to estimate unpaid claim costs
 - 40+ year emergence pattern combined with potential for statutory changes that retroactively impact the cost of claims
 - If only because of rules and statutory changes since 2000, forecasts generated in the late 1990s and early 2000s would have grossly understated long term claim reports and entitlements

Differences Between Jurisdictions



Differences Between Jurisdictions

- Claims for disability may be filed under the jurisdiction of the Federal Act or under the jurisdiction of the applicable state WC act
 - Claimants are not permitted to collect benefits concurrently from claims filed under both acts
 - Benefits payable under the Federal Act are excess to benefits paid under a state act for claimants who file successful claims in both jurisdictions
- Comparison between exposure under the Federal Act and the various state acts
 - Reporting Period
 - State acts → in general, claims are reported within 3 - 5 years of last date of exposure
 - Statutes of limitation exist under various state acts, but vary
 - Federal Act → claim reporting extends over 40+ years from the last date of CME
 - Claim Costs
 - State acts → generally permanent partial disability claims of limited cost
 - Federal Act → by definition, permanent total disability claims
 - Monthly lifetime pension
 - All associated medical costs
 - Higher litigation costs as noted
 - In general, most costs associated with CWP claims are due to claims filed under the Federal Act

Differences Between Jurisdictions

- The following table displays the occupational disease (OD) component of the current loss costs in various states for surface mining (1005) and underground mining (1016)

State	Surface Mining (1005)		Underground Mining (1016)	
	State OD	Federal OD	State OD	Federal OD
Kentucky	0.22	1.74	0.92	7.18
Virginia*	0.13	1.95	0.36	5.05
West Virginia	0.22	1.88	0.80	6.61

*Split between State OD and Federal OD for Virginia is estimated

Differences Between Jurisdictions

Impact of Legislative and Administrative Changes

- State acts → impact of legislative changes affecting benefit levels and rules generally do not “reach back” and do not apply to claims with dates of loss prior to the law change
- Federal Act → legislative changes can reach back and impact claims with dates of loss prior to the law change

Differentiating a Provision for the Unpaid Cost of Incurred Claims and a Pension Component Associated with Active Employees



Differentiating a Provision for the Unpaid Cost of Incurred Claims and a Pension Component Associated with Active Employees

Provision for Unpaid Cost of Claims with Loss Dates On or Prior to 12/31/XX

- No different from any other casualty reserve
- Provides for claims with dates of loss on or before 12/31/XX → reported / unreported claims
 - Date of loss is last date of exposure to coal dust, or last day worked
- Consideration must be given to unique aspect of the loss exposure
 - Extraordinarily long claim emergence
 - Potential impact of legislative changes
 - Impact of external influences
 - Workforce reductions generally result in a surge to filed CWP claims: is also a risk associated with other workers compensation exposures
 - Population demographics impact likelihood of claims, though impact is different
 - For CWP
 - Younger Workers → minimal frequency / very high severity
 - Older Workers → higher frequency / high severity
 - For typical workers compensation exposures
 - Younger Workers → higher frequency / lower average severity
 - Older Workers → lower frequency / higher average severity
 - Other considerations
 - “Vesting” issue: under the Federal Act, an employer is financially responsible for the claim if the claimant worked for the employer at least one year prior to claim filing

Differentiating a Provision for the Unpaid Cost of Incurred Claims and a Pension Component Associated with Active Employees

Pension Component for Active Workforce

- Defined as an accrued liability that provides for the cost of future (last date of exposure subsequent to 12/31XX) CWP claims due to cumulative “earned” exposure of active employees to coal dust
- Calculations utilize detailed information on each individual active miner, and include, but are not necessarily limited to:
 - Age
 - Dependents
 - Gender
 - Cumulative Years Worked
 - Underground versus Surface
 - Geography
- Calculations incorporate numerous detailed assumptions regarding future events. These include, but are not necessarily limited to:
 - Likelihood of withdrawal from workforce and filing/not filing a claim, at every age
 - Mortality excluding CWP as cause, at every age
 - Likelihood of filing a successful claim, at every age, as an active worker
 - Consideration of mine lifetime

Differentiating a Provision for the Unpaid Cost of Incurred Claims and a Pension Component Associated with Active Employees

Pension Component for Active Workforce

- Discounted present value of the expected future claim cost per active employee is calculated, and then prorated based on years worked and expected remaining work life
 - Example: Discounted present value of expected future claim cost of a specific employee is \$25,000 as of 12/31/XX. Employee worked 15 years and has an expected remaining work life of 10 years. Contribution of this employee's expected future cost to the accrued liability is:
 - $15/25 \times \$25,000 = \$15,000$
 - This process is repeated for each active employee
 - Assumes closed population
- Firms that account for black lung exposure as a post-retirement benefit program record a liability for the pension component

United States Department of Labor Data



United States Department of Labor Data

Initial Filings

- The Department of Labor (DOL) maintains a database that records the reporting and adjudication history of all claims filed under the Federal Act
- Detailed information is available on each claim which is tracked by claimant
- Claims are coded as insured, self-insured or Trust claim
 - Insured and self-insured represent claims for employers that are insured or self-insured
 - Trust pays for claims where there is no responsible operator identified, and other older claims
 - Only self-insured and insured data is used
- Challenges
 - Employees may file multiple claims
 - Count only one claim in development triangle at any single point in time
 - Properly match resulting entitlements to the initial filings by year of exposure
- Data subsequent to 1982 is used
 - Material law change effective 1/1/1982
 - Numerous law changes in the 1970s

United States Department of Labor Data

Example 1

- Claimant files initial filing in CY 1983
 - Date of Last CME is 1983
 - Claim is denied in 1984
- Claimant refiles in CY 1986 after leaving the workforce
 - Date of Last CME is now 1986

Date of Last CME	12	24	36	48	60	72
1983	1	1	1	0	0	0
1984	#	#	#	#	#	
1985	#	#	#	#		
1986	1	1	1			
1987	#	#				
1988	#					

United States Department of Labor Data

Example 2

- Claimant files initial filing in CY 1983
 - Date of Last CME is 1983
 - Claim is denied
- Claimant leaves workforce in CY 1986 however, does not refile until CY 1988
 - Date of Last CME is still 1986 but claim does not switch until CY 1988

Date of Last CME	12	24	36	48	60	72
1983	1	1	1	1	1	0
1984	#	#	#	#	#	
1985	#	#	#	#		
1986	0	0	1			
1987	#	#				
1988	#					

United States Department of Labor Data

Data is Available by State → Initial Filings

State	All Years	CY 2011	CY 2012
Remainder	1,150	55	35
Utah	389	11	23
Indiana	570	33	23
Tennessee	1,034	42	23
Ohio	1,601	69	59
Illinois	2,601	172	133
Alabama	2,752	81	84
Pennsylvania	4,975	130	94
Virginia	6,619	191	223
West Virginia	15,390	495	495
Kentucky	16,776	481	603
TOTAL	53,857	1,760	1,795

United States Department of Labor Data

Countrywide

Living Miner Filings

CME

Year	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	252	264	276	288	300	312	324	336	348	360
1983	904	1,316	1,501	1,711	1,885	1,991	2,079	2,165	2,232	2,306	2,359	2,465	2,523	2,573	2,627	2,659	2,684	2,723	2,786	2,841	2,879	2,904	2,926	2,946	2,973	2,992	3,015	3,042	3,061	3,096
1984	832	1,306	1,677	1,924	2,056	2,172	2,277	2,383	2,454	2,552	2,665	2,728	2,776	2,820	2,863	2,884	2,927	2,993	3,060	3,109	3,145	3,175	3,194	3,214	3,237	3,256	3,292	3,309	3,329	
1985	794	1,561	1,919	2,132	2,281	2,412	2,517	2,596	2,682	2,778	2,855	2,912	2,981	3,019	3,057	3,102	3,156	3,220	3,270	3,304	3,343	3,384	3,414	3,425	3,453	3,495	3,528	3,541		
1986	979	1,777	2,155	2,382	2,535	2,680	2,788	2,886	3,015	3,098	3,165	3,232	3,283	3,320	3,368	3,464	3,508	3,548	3,595	3,639	3,673	3,692	3,732	3,776	3,809	3,851	3,892			
1987	873	1,489	1,797	1,991	2,142	2,266	2,371	2,492	2,579	2,639	2,724	2,777	2,807	2,858	2,926	2,982	3,009	3,048	3,069	3,103	3,135	3,164	3,187	3,241	3,275	3,304				
1988	568	1,091	1,376	1,559	1,695	1,797	1,920	2,007	2,069	2,116	2,163	2,193	2,235	2,315	2,387	2,439	2,473	2,518	2,548	2,575	2,600	2,628	2,673	2,708	2,751					
1989	483	965	1,266	1,448	1,592	1,778	1,858	1,926	2,003	2,053	2,091	2,135	2,178	2,250	2,281	2,317	2,358	2,390	2,414	2,438	2,483	2,542	2,571	2,612						
1990	429	984	1,260	1,455	1,656	1,777	1,845	1,931	1,982	2,027	2,083	2,178	2,267	2,329	2,377	2,434	2,480	2,516	2,543	2,591	2,682	2,736	2,779							
1991	504	1,071	1,436	1,735	1,861	1,979	2,064	2,144	2,196	2,273	2,402	2,506	2,567	2,610	2,663	2,715	2,753	2,802	2,830	2,887	2,928	2,977								
1992	388	936	1,355	1,572	1,702	1,839	1,924	2,000	2,091	2,224	2,345	2,392	2,437	2,485	2,525	2,577	2,609	2,656	2,740	2,799	2,864									
1993	380	967	1,171	1,300	1,438	1,546	1,611	1,696	1,841	1,964	2,029	2,072	2,126	2,185	2,213	2,259	2,295	2,378	2,414	2,472										
1994	536	915	1,134	1,312	1,428	1,508	1,626	1,799	1,961	2,053	2,116	2,198	2,247	2,302	2,341	2,394	2,485	2,543	2,607											
1995	231	508	736	860	966	1,099	1,280	1,435	1,496	1,549	1,585	1,637	1,678	1,729	1,776	1,865	1,928													
1996	174	456	592	700	813	981	1,126	1,190	1,243	1,329	1,368	1,416	1,462	1,493	1,566	1,616	1,671													
1997	169	430	590	735	928	1,099	1,175	1,245	1,292	1,344	1,394	1,433	1,476	1,536	1,584	1,623														
1998	200	467	686	961	1,125	1,226	1,311	1,378	1,422	1,498	1,554	1,595	1,716	1,794	1,856															
1999	214	503	845	1,052	1,154	1,267	1,346	1,391	1,440	1,477	1,524	1,639	1,716	1,781																
2000	169	451	626	755	817	888	940	979	1,012	1,052	1,123	1,186	1,245																	
2001	191	428	559	636	689	733	780	821	842	910	960	998																		
2002	285	582	728	834	912	1,006	1,068	1,136	1,229	1,317	1,381																			
2003	229	436	564	663	726	780	829	946	1,011	1,057																				
2004	142	375	459	542	591	645	745	795	836																					
2005	121	249	325	384	420	490	539	586																						
2006	185	400	481	548	640	701	747																							
2007	193	363	448	570	651	708																								
2008	107	218	331	390	446																									
2009	174	475	605	705																										
2010	173	324	417																											
2011	131	291																												
2012	250																													

United States Department of Labor Data

Countrywide

Living Miner Filings

	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	252	264	276	288	300	312	324	336	348	360
	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	252	264	276	288	300	312	324	336	348	360	
1983	1.456	1.141	1.140	1.102	1.056	1.044	1.041	1.031	1.033	1.023	1.045	1.024	1.020	1.021	1.012	1.009	1.015	1.023	1.020	1.013	1.009	1.008	1.007	1.009	1.006	1.008	1.009	1.006	1.011	
1984	1.570	1.284	1.147	1.069	1.056	1.048	1.047	1.030	1.040	1.044	1.024	1.018	1.016	1.015	1.007	1.015	1.023	1.022	1.016	1.012	1.010	1.006	1.006	1.007	1.006	1.011	1.005	1.006		
1985	1.966	1.229	1.111	1.070	1.057	1.044	1.031	1.033	1.036	1.028	1.020	1.024	1.013	1.013	1.015	1.017	1.020	1.016	1.010	1.012	1.012	1.009	1.003	1.008	1.012	1.009	1.004			
1986	1.815	1.213	1.105	1.064	1.057	1.040	1.035	1.045	1.028	1.022	1.021	1.016	1.011	1.014	1.029	1.013	1.011	1.013	1.012	1.009	1.005	1.011	1.012	1.009	1.011	1.011				
1987	1.706	1.207	1.108	1.076	1.058	1.046	1.051	1.035	1.023	1.032	1.019	1.011	1.018	1.024	1.019	1.009	1.013	1.007	1.011	1.010	1.009	1.007	1.017	1.010	1.009					
1988	1.921	1.261	1.133	1.087	1.060	1.068	1.045	1.031	1.023	1.022	1.014	1.019	1.036	1.031	1.022	1.014	1.018	1.012	1.011	1.010	1.011	1.017	1.013	1.016						
1989	1.998	1.312	1.144	1.099	1.117	1.045	1.037	1.040	1.025	1.019	1.021	1.020	1.033	1.014	1.016	1.018	1.014	1.010	1.010	1.018	1.024	1.011	1.016							
1990	2.294	1.280	1.155	1.138	1.073	1.038	1.047	1.026	1.023	1.028	1.046	1.041	1.027	1.021	1.024	1.019	1.015	1.011	1.019	1.035	1.020	1.016								
1991	2.125	1.341	1.208	1.073	1.063	1.043	1.039	1.024	1.035	1.057	1.043	1.024	1.017	1.020	1.020	1.014	1.018	1.010	1.020	1.014	1.017									
1992	2.412	1.448	1.160	1.083	1.080	1.046	1.040	1.046	1.064	1.054	1.020	1.019	1.020	1.016	1.021	1.012	1.018	1.032	1.022	1.023										
1993	2.545	1.211	1.110	1.106	1.075	1.042	1.053	1.085	1.067	1.033	1.021	1.026	1.028	1.013	1.021	1.016	1.036	1.015	1.024											
1994	1.707	1.239	1.157	1.088	1.056	1.078	1.106	1.090	1.047	1.031	1.039	1.022	1.024	1.017	1.023	1.038	1.023	1.025												
1995	2.199	1.449	1.168	1.123	1.138	1.165	1.121	1.043	1.035	1.023	1.033	1.025	1.030	1.027	1.050	1.034	1.025													
1996	2.621	1.298	1.182	1.161	1.207	1.148	1.057	1.045	1.069	1.029	1.035	1.032	1.021	1.049	1.032	1.034														
1997	2.544	1.372	1.246	1.263	1.184	1.069	1.060	1.038	1.040	1.037	1.028	1.030	1.041	1.031	1.025															
1998	2.335	1.469	1.401	1.171	1.090	1.069	1.051	1.032	1.053	1.037	1.026	1.076	1.045	1.035																
1999	2.350	1.680	1.245	1.097	1.098	1.062	1.033	1.035	1.026	1.032	1.075	1.047	1.038																	
2000	2.669	1.388	1.206	1.082	1.087	1.059	1.041	1.034	1.040	1.067	1.056	1.050																		
2001	2.241	1.306	1.138	1.083	1.064	1.064	1.053	1.026	1.081	1.055	1.040																			
2002	2.042	1.251	1.146	1.094	1.103	1.062	1.064	1.082	1.072	1.049																				
2003	1.904	1.294	1.176	1.095	1.074	1.063	1.141	1.069	1.045																					
2004	2.641	1.224	1.181	1.090	1.091	1.155	1.067	1.052																						
2005	2.058	1.305	1.182	1.094	1.167	1.100	1.087																							
2006	2.162	1.203	1.139	1.168	1.095	1.066																								
2007	1.881	1.234	1.272	1.142	1.088																									
2008	2.037	1.518	1.178	1.144																										
2009	2.730	1.274	1.165																											
2010	1.873	1.287																												
2011	2.221																													

United States Department of Labor Data

Calendar Year Development to 132 Months (Product Along Diagonal)

Countrywide Initial Filings

1995	3.295	
1996	4.041	
1997	6.292	
1998	5.279	
1999	5.193	
2000	7.174	
2001	15.043	← Rule Changes
2002	8.470	
2003	4.899	
2004	4.066	
2005	5.842	
2006	4.164	
2007	5.046	
2008	3.848	
2009	4.253	
2010	11.821	← PPACA
2011	4.986	
2012	5.534	

United States Department of Labor Data

Calendar Year Development to 132 Months (Product Along Diagonal)

Kentucky Initial Filings

1995	3.573	
1996	4.180	
1997	7.184	
1998	11.212	
1999	5.300	
2000	8.976	
2001	37.711	← Rule Changes
2002	19.582	
2003	3.791	
2004	3.888	
2005	3.431	
2006	3.995	
2007	5.198	
2008	2.878	
2009	3.297	
2010	10.030	← PPACA
2011	6.077	
2012	6.633	

United States Department of Labor Data

Calendar Year Development to 132 Months (Product Along Diagonal)

West Virginia Initial Filings

1995	3.800	
1996	3.996	
1997	7.510	
1998	4.382	
1999	5.131	
2000	5.933	
2001	9.089	← Rule Changes
2002	5.503	
2003	5.383	
2004	3.838	
2005	6.952	
2006	5.624	
2007	4.819	
2008	5.650	
2009	5.131	
2010	23.159	← PPACA
2011	3.517	
2012	4.563	

United States Department of Labor Data

Calendar Year Development to 132 Months (Product Along Diagonal)

Pennsylvania Initial Filings

1995	3.682	
1996	4.440	
1997	4.157	
1998	2.925	
1999	4.543	
2000	5.247	
2001	5.473	← Rule Changes
2002	3.944	
2003	7.681	
2004	4.638	
2005	5.083	
2006	2.575	
2007	13.031	
2008	4.611	
2009	10.194	
2010	17.597	← PPACA
2011	6.137	
2012	6.925	

United States Department of Labor Data

Countrywide Living Miner Entitlements

CME	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	252	264	276	288	300	312	324	336	348	360	
Year	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	252	264	276	288	300	312	324	336	348	360	
1983	93	188	207	234	283	323	336	345	352	360	385	392	396	398	407	414	414	416	421	437	441	445	453	465	470	467	468	469	479	497	
1984	56	102	135	184	241	266	279	283	296	314	326	314	324	342	346	358	364	365	373	392	399	408	418	419	419	423	431	441	450		
1985	31	72	97	143	178	195	202	224	228	241	257	263	260	266	276	287	301	305	310	327	329	339	340	344	352	367	383	396			
1986	38	71	122	159	186	182	203	211	227	236	248	256	263	269	271	284	301	311	326	335	346	347	355	356	383	400	410				
1987	31	72	100	116	131	145	155	165	170	182	191	196	203	209	218	229	245	252	255	269	279	282	285	287	309	332					
1988	18	42	54	70	98	104	112	117	123	132	134	133	137	142	154	163	171	180	189	194	192	208	222	247	262						
1989	22	41	64	84	99	98	100	117	121	122	128	130	143	140	152	169	175	185	190	192	204	219	241	253							
1990	11	45	63	79	99	88	97	105	112	122	127	136	143	156	164	173	178	193	204	218	238	258	276								
1991	24	54	79	91	96	94	95	115	122	134	145	165	191	184	195	216	226	224	242	267	295	333									
1992	14	47	68	78	88	98	102	101	119	126	157	160	169	173	186	192	204	206	222	242	273										
1993	22	55	62	76	81	85	88	88	97	109	129	149	163	172	163	176	183	209	235	259											
1994	11	44	65	67	69	74	71	79	98	107	115	124	136	143	147	171	205	236	274												
1995	6	27	40	45	48	49	54	86	89	110	120	126	127	126	135	166	197	205													
1996	6	23	29	36	33	36	41	55	70	72	77	79	88	97	107	134	157														
1997	9	20	32	37	37	49	62	76	80	78	89	93	99	110	139	150															
1998	11	33	33	43	53	66	84	86	94	96	101	114	128	167	186																
1999	9	24	34	46	55	62	79	85	89	91	97	117	145	169																	
2000	10	24	37	43	59	65	73	78	83	86	105	120	136																		
2001	10	17	30	36	46	53	48	58	65	73	90	103																			
2002	7	45	50	59	67	70	75	87	103	129	153																				
2003	12	35	50	66	62	64	62	77	108	116																					
2004	14	48	53	49	46	39	48	70	79																						
2005	12	29	31	28	35	45	61	69																							
2006	11	29	40	47	51	72	82																								
2007	21	37	38	54	68	80																									
2008	10	32	40	49	57																										
2009	19	63	87	98																											
2010	17	46	60																												
2011	15	43																													
2012	35																														

United States Department of Labor Data

Countrywide

Living Miner Entitlements

	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	252	264	276	288	300	312	324	336	348	360
	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	252	264	276	288	300	312	324	336	348	360	
1983	2.022	1.101	1.130	1.209	1.141	1.040	1.027	1.020	1.023	1.069	1.018	1.010	1.005	1.023	1.017	1.000	1.005	1.012	1.038	1.009	1.009	1.018	1.026	1.011	0.994	1.002	1.002	1.021	1.038	
1984	1.821	1.324	1.363	1.310	1.104	1.049	1.014	1.046	1.061	1.038	0.963	1.032	1.056	1.012	1.035	1.017	1.003	1.022	1.051	1.018	1.023	1.025	1.002	1.000	1.010	1.019	1.023	1.020		
1985	2.323	1.347	1.474	1.245	1.096	1.036	1.109	1.018	1.057	1.066	1.023	0.989	1.023	1.038	1.040	1.049	1.013	1.016	1.055	1.006	1.030	1.003	1.012	1.023	1.043	1.044	1.034			
1986	1.868	1.718	1.303	1.170	0.978	1.115	1.039	1.076	1.040	1.051	1.032	1.027	1.023	1.007	1.048	1.060	1.033	1.048	1.028	1.033	1.003	1.023	1.003	1.076	1.044	1.025				
1987	2.323	1.389	1.160	1.129	1.107	1.069	1.065	1.030	1.071	1.049	1.026	1.036	1.030	1.043	1.050	1.070	1.029	1.012	1.055	1.037	1.011	1.011	1.007	1.077	1.074					
1988	2.333	1.286	1.296	1.400	1.061	1.077	1.045	1.051	1.073	1.015	0.993	1.030	1.036	1.085	1.058	1.049	1.053	1.050	1.026	0.990	1.083	1.067	1.113	1.061						
1989	1.864	1.561	1.313	1.179	0.990	1.020	1.170	1.034	1.008	1.049	1.016	1.100	0.979	1.086	1.112	1.036	1.057	1.027	1.011	1.063	1.074	1.100	1.050							
1990	4.091	1.400	1.254	1.253	0.889	1.102	1.082	1.067	1.089	1.041	1.071	1.051	1.091	1.051	1.055	1.029	1.084	1.057	1.069	1.092	1.084	1.070								
1991	2.250	1.463	1.152	1.055	0.979	1.011	1.211	1.061	1.098	1.082	1.138	1.158	0.963	1.060	1.108	1.046	0.991	1.080	1.103	1.105	1.129									
1992	3.357	1.447	1.147	1.128	1.114	1.041	0.990	1.178	1.059	1.246	1.019	1.056	1.024	1.075	1.032	1.063	1.010	1.078	1.090	1.128										
1993	2.500	1.127	1.226	1.066	1.049	1.035	1.000	1.102	1.124	1.183	1.155	1.094	1.055	0.948	1.080	1.040	1.142	1.124	1.102											
1994	4.000	1.477	1.031	1.030	1.072	0.959	1.113	1.241	1.092	1.075	1.078	1.097	1.051	1.028	1.163	1.199	1.151	1.161												
1995	4.500	1.481	1.125	1.067	1.021	1.102	1.593	1.035	1.236	1.091	1.050	1.008	0.992	1.071	1.230	1.187	1.041													
1996	3.833	1.261	1.241	0.917	1.091	1.139	1.341	1.273	1.029	1.069	1.026	1.114	1.102	1.103	1.252	1.172														
1997	2.222	1.600	1.156	1.000	1.324	1.265	1.226	1.053	0.975	1.141	1.045	1.065	1.111	1.264	1.079															
1998	3.000	1.000	1.303	1.233	1.245	1.273	1.024	1.093	1.021	1.052	1.129	1.123	1.305	1.114																
1999	2.667	1.417	1.353	1.196	1.127	1.274	1.076	1.047	1.022	1.066	1.206	1.239	1.166																	
2000	2.400	1.542	1.162	1.372	1.102	1.123	1.068	1.064	1.036	1.221	1.143	1.133																		
2001	1.700	1.765	1.200	1.278	1.152	0.906	1.208	1.121	1.123	1.233	1.144																			
2002	6.429	1.111	1.180	1.136	1.045	1.071	1.160	1.184	1.252	1.186																				
2003	2.917	1.429	1.320	0.939	1.032	0.969	1.242	1.403	1.074																					
2004	3.429	1.104	0.925	0.939	0.848	1.231	1.458	1.129																						
2005	2.417	1.069	0.903	1.250	1.286	1.356	1.131																							
2006	2.636	1.379	1.175	1.085	1.412	1.139																								
2007	1.762	1.027	1.421	1.259	1.176																									
2008	3.200	1.250	1.225	1.163																										
2009	3.316	1.381	1.126																											
2010	2.706	1.304																												
2011	2.867																													

United States Department of Labor Data

Calendar Year Development (Product Along Diagonal)

Countrywide Entitlements

CY	12 to 132	24 to 144	36 to 156
1995	5.906	1.422	1.274
1996	13.731	3.123	2.181
1997	8.853	2.384	1.591
1998	4.686	2.164	1.763
1999	8.472	2.803	1.814
2000	3.729	1.420	1.463
2001	7.485	3.340	2.593
2002	18.234	12.206	8.325
2003	44.557	7.063	4.633
2004	15.865	6.283	5.973
2005	12.536	3.943	3.019
2006	6.347	2.758	2.739
2007	3.019	1.175	1.108
2008	3.152	1.870	1.510
2009	5.692	2.008	2.081
2010	20.390	7.417	6.663
2011	34.840	14.715	13.206
2012	10.676	4.262	3.703

← Rule Changes

← PPACA

United States Department of Labor Data

Calendar Year Development (Product Along Diagonal)

Kentucky Entitlements

CY	12 to 132	24 to 144	36 to 156
1995	9.908	0.939	0.985
1996	15.104	4.882	3.164
1997	1.242	1.333	1.178
1998	11.016	7.560	1.203
1999	2.964	3.432	2.000
2000	1.395	0.717	0.522
2001	21.844	6.886	4.929
2002	32.977	40.999	24.360
2003	457.183	40.158	5.529
2004	53.165	19.367	15.270
2005	11.163	5.781	4.027
2006	5.248	3.051	3.044
2007	8.680	2.640	2.154
2008	2.965	1.341	1.173
2009	11.262	2.844	2.859
2010	11.003	3.897	3.367
2011	113.015	13.182	10.396
2012	7.733	3.177	4.030

← Rule Changes

← PPACA

United States Department of Labor Data

Calendar Year Development (Product Along Diagonal)

West Virginia Entitlements

CY	12 to 132	24 to 144	36 to 156
1995	4.058	1.786	1.501
1996	11.466	3.531	2.211
1997	4.498	4.541	2.512
1998	4.720	2.426	2.060
1999	5.795	1.811	1.281
2000	3.788	1.123	1.563
2001	3.512	2.549	2.549
2002	11.663	7.073	4.619
2003	142.249	6.376	5.531
2004	4.593	2.675	3.026
2005	14.012	3.653	2.722
2006	5.940	2.119	1.801
2007	6.287	0.988	0.958
2008	4.312	2.304	1.579
2009	2.659	1.444	1.507
2010	17.259	7.371	7.700
2011	37.542	23.161	22.596
2012	6.934	3.082	2.439

← Rule Changes

← PPACA

United States Department of Labor Data

Calendar Year Development (Product Along Diagonal)

Pennsylvania Entitlements

CY	12 to 132	24 to 144	36 to 156
1995	45.353	7.559	3.884
1996	1.443	1.534	1.561
1997	4.415	4.509	2.254
1998	3.142	1.616	1.161
1999	3.770	3.652	1.502
2000	0.995	1.105	1.141
2001	1.591	1.723	1.551
2002	5.943	5.943	1.657
2003	3.132	2.891	1.101
2004	20.571	22.041	5.510
2005	2.000	0.667	0.667
2006	0.972	0.875	1.575
2007	8.571	7.619	7.619
2008	6.000	3.000	3.000
2009	9.600	16.000	16.000
2010	5.208	6.510	3.906
2011	0.853	1.067	1.920
2012	4.219	4.570	4.266

← Rule Changes

← PPACA

United States Department of Labor Data

Calculation of Expected Entitlement Ratios

Last CME	Initial		Ultimate		CDF	Ultimate		Entitlement Ratio	Last CME	Initial		Ultimate		CDF	Ultimate		Entitlement Ratio
	Filings	CDF	Filings	Entitlements		Entitlements	Entitlements			Filings	Entitlements	Filings	Entitlements		Entitlements	Entitlements	
1983	3,096	1.171	3,624	497	1.156	575	15.9%	1998	1,856	1.408	2,613	186	1.883	350	13.4%		
1984	3,329	1.181	3,933	450	1.168	526	13.4%	1999	1,781	1.439	2,563	169	1.989	336	13.1%		
1985	3,541	1.192	4,222	396	1.181	468	11.1%	2000	1,245	1.480	1,843	136	2.075	282	15.3%		
1986	3,892	1.203	4,683	410	1.196	490	10.5%	2001	998	1.527	1,524	103	2.215	228	15.0%		
1987	3,304	1.214	4,012	332	1.214	403	10.0%	2002	1,381	1.581	2,183	153	2.343	359	16.4%		
1988	2,751	1.226	3,371	262	1.237	324	9.6%	2003	1,057	1.639	1,732	116	2.538	294	17.0%		
1989	2,612	1.237	3,231	253	1.267	320	9.9%	2004	836	1.720	1,438	79	2.694	213	14.8%		
1990	2,779	1.248	3,469	276	1.305	360	10.4%	2005	586	1.786	1,046	69	2.910	201	19.2%		
1991	2,977	1.260	3,750	333	1.350	450	12.0%	2006	747	1.884	1,408	82	3.246	266	18.9%		
1992	2,864	1.274	3,650	273	1.410	385	10.5%	2007	708	2.004	1,419	80	3.528	282	19.9%		
1993	2,472	1.291	3,191	259	1.469	380	11.9%	2008	446	2.178	971	57	3.835	219	22.5%		
1994	2,607	1.310	3,415	274	1.550	425	12.4%	2009	705	2.402	1,694	98	4.442	435	25.7%		
1995	1,976	1.325	2,619	205	1.622	333	12.7%	2010	417	2.809	1,171	60	5.394	324	27.6%		
1996	1,671	1.350	2,255	157	1.677	263	11.7%	2011	291	3.546	1,032	43	7.260	312	30.3%		
1997	1,623	1.377	2,234	150	1.762	264	11.8%	2012	250	7.347	1,837	35	19.562	685	37.3%		

Trend upward in most recent accident (CME) years was present prior to PPACA

United States Department of Labor Data

Calendar Year Entitlement Ratios

(Does not properly match entitlements to underlying initial filings)

2005	13.7%
2006	17.0%
2007	7.7%
2008	9.8%
2009	16.6%
2010	18.3%
2011	36.6%
2012	29.0%

- It is a matter of judgment as to what to select for future claims
- For the purpose of this presentation, 30% is selected

Calculating an Unpaid Cost of Incurred Claims



Calculating an Unpaid Cost of Incurred Claims

Part 1: Calculating the Ultimate Number of Initial Filings

Accident Year	Reported Living Miner Filings @ 12/31/12	Claim Count CDF	Developed Ultimate Initial Filings	Terminated Employees	Implied Frequency per Termination	Expected Initial Filings	Selected Ultimate Initial Filings
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2007	7	2.004	14	256	0.055	25	19
2008	9	2.178	20	355	0.055	34	27
2009	11	2.402	26	290	0.091	28	27
2010	9	2.809	25	246	0.103	24	24
2011	14	3.546	50	356	0.139	34	38
2012	5	7.347	37	279	0.132	27	28
TOTAL	55	XXX	172	1,782	XXX	171	165

- (1) Year of Last Exposure to Coal Dust
- (2) Data from Client
- (3) Derived From Department of Labor Data
- (4) (2) x (3)

- (5) Data from Client
- (6) (4) / (5)
- (7) (5) x Average of (6)
- (8) (2) + (7) x [1.00 - 1.00 / (3)]

Calculating an Unpaid Cost of Incurred Claims

Part 2: Calculating the Ultimate Number of Entitlements

Accident Year	Reported Entitlements as of @ 12/31/12	Entitlements CDF	Initial Ultimate Entitlements	Selected Ultimate Initial Filings	Ultimate Empirical Entitlement Ratio	Ultimate Countrywide Entitlement Ratio	Initial Selected Ultimate Entitlement Ratio
(1)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
2007	0	3.528	0	19	0.000	0.199	0.099
2008	2	3.835	8	27	0.280	0.225	0.252
2009	1	4.442	4	27	0.163	0.257	0.210
2010	2	5.394	11	24	0.446	0.276	0.361
2011	2	7.260	15	38	0.377	0.303	0.340
2012	0	19.562	0	28	0.000	0.373	0.373
TOTAL	7	XXX	37	165	XXX	XXX	XXX

(1) Year of Last Exposure to Coal Dust

(9) Data from Client

(10) Derived From Department of Labor Data

(11) (9) x (10)

(12) (8)

(13) (11) / (12)

(14) Derived From Department of Labor Data

(15) Based on (13) and (14)

Calculating an Unpaid Cost of Incurred Claims

Part 2: Calculating the Ultimate Number of Entitlements

Accident Year	Expected Ultimate Entitlements	Selected Ultimate Entitlements	Selected Ultimate Entitlement Ratio	Final Reported Entitlements @ 12/31/12	Remaining Entitlements @ 12/31/12
(1)	(16)	(17)	(18)	(19)	(20)
2007	2	1	0.071	0	1
2008	7	7	0.260	1	6
2009	6	5	0.200	1	4
2010	9	9	0.377	1	8
2011	13	13	0.345	0	13
2012	10	10	0.354	0	10
TOTAL	47	46	XXX	3	43

(1) Year of Last Exposure to Coal Dust (19) Data from Client
 (16) (12) x (15) (20) (17) - (19)
 (17) (9) + [1 - 1/(10)] x (16)
 (18) (17) / (12)

- 'Final Entitlements' are entitlements that are no longer being adjudicated and are final
- 'Remaining Entitlements' represent both the IBNR as well as entitlements that have been reported as such, but are still in the process of adjudication

Calculating an Unpaid Cost of Incurred Claims

Part 3: Calculating the Unpaid Cost

Accident Year	Remaining Entitlements @ 12/31/12	Expected Severity Discounted at 3%	Unpaid Cost of Remaining Entitlements @ 12/31/12	Unpaid Cost of Final Entitlements Discounted at 3% @ 12/31/12	Total Unpaid Cost Discounted at 3% @ 12/31/12
(1)	(21)	(22)	(23)	(24)	(25)
2007	1	\$191,000	\$262,571	\$0	\$262,571
2008	6	196,000	1,198,263	146,234	1,344,497
2009	4	202,000	895,330	473,194	1,368,524
2010	8	208,000	1,688,063	298,525	1,986,588
2011	13	218,000	2,895,312	0	2,895,312
2012	10	223,000	2,216,361	0	2,216,361
TOTAL	43	XXX	\$9,155,900	\$917,953	\$10,073,853

- (1) Year of Last Exposure to Coal Dust
 (21) (20)
 (22) Calculated Value
 (23) (21) x (22)
 (24) Derived from Client Data
 (25) (23) + (24)

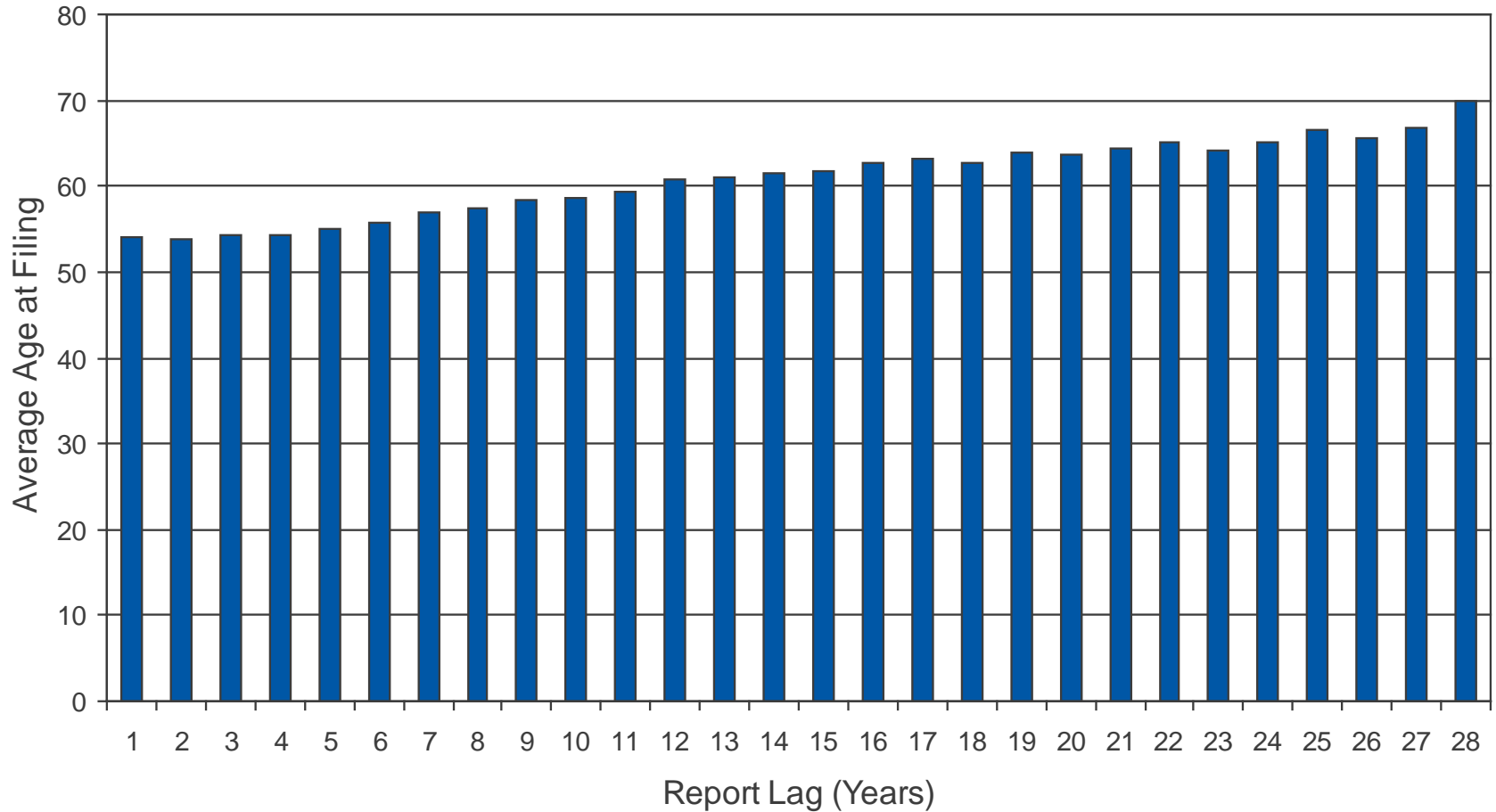
Calculating an Unpaid Cost of Incurred Claims

IBNR Severity is based on:

- Expected age at report
- 80% chance of being married
- If married, spouse is 2 years younger
- No other dependents assumed
- Life time pension
 - Male: general population table adjusted to reflect tobacco use
 - Female: general population table
- 3.0% COLA
- Annual medical cost of \$2,250 increased annually by 5%
- Assumes automatic widow benefits
- 20% provision for defense and other claim related expenses
- Discounted using an interest rate of 3.0%
- Provision for Living Widow filings

Calculating an Unpaid Cost of Incurred Claims

Correlation of Age at Filing Versus Report Lag



Calculating an Unpaid Cost of Incurred Claims

Discussion of Reported Entitlements that are Not “Final”

- Calculation above does incorporate any information on these claims
- These claims are treated as filings, with any associated expected future costs assumed to be accounted for within the IBNR provision

Calculating an Unpaid Cost of Incurred Claims

Discussion of Level of Necessary Precision

- Calculation above is general, with a number of areas where level of precision could be increased
 - More precise calculation of severity by expected age of entitlement
 - Consideration of actual demographics of terminated employees
 - Etc.
- In general, this level of precision is not necessary
 - Changes in law and administration tend to be the primary factors that drive estimates
- Implementation of the PPACA essentially made all prior estimates invalid

Impact of the PPACA



Impact of the PPACA

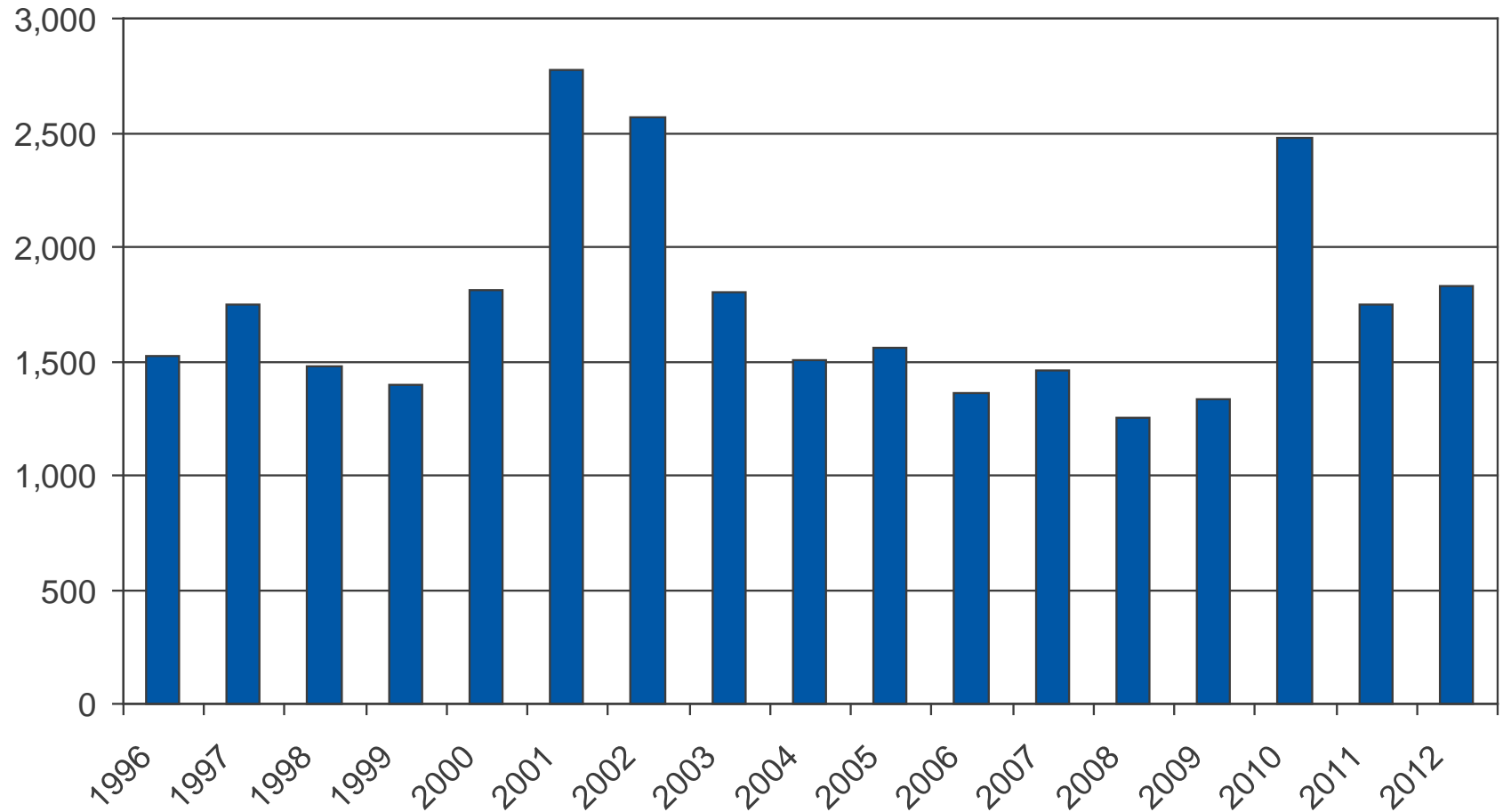
- The Patient Protection and Affordable Care Act (PPACA) was enacted March 23, 2010
- Embedded in the PPACA are two key changes to the Federal Act impacting survivorship benefits and entitlements
 - Survivorship benefits
 - Prior to the PPACA, upon death of the primary beneficiary, eligible survivors had to file for survivorship benefits and demonstrate that the primary beneficiary's death was due in whole or in part to coal mine employment
 - This element of the law was effective for claims filed on or after January 1, 1982
 - PPACA reversed the 1982 law. Eligible survivors are automatically entitled to survivorship benefits. Burden of proof is now on employer to demonstrate that the death was not due in whole or in part to coal mine employment
 - General assumption is that survivorship benefits will be automatic in 100% of cases
 - Overall impact on costs on a going forward basis is expected to be an increase of 5% to 10%

Impact of the PPACA

- Rebuttable Presumption
 - Prior to PPACA, for an employee found to be totally disabled due to respiratory illness, the burden of proof was on the employee to demonstrate that the total disability was due to coal mine employment
 - This element of the law was effective for claims filed on or after January 1, 1982
 - PPACA reversed the 1982 law. Coal miners who have 15 or more years of underground coal mine employment (or the equivalent) and are found to be totally disabled under the Federal Act due to respiratory illness, are now presumed to be totally disabled due to coal mine employment, with the burden of proof shifted to the employer/insurer to demonstrate that the totally disabling condition is not due to coal mine employment
 - Overall impact is significant – following charts show what has happened since implementation.

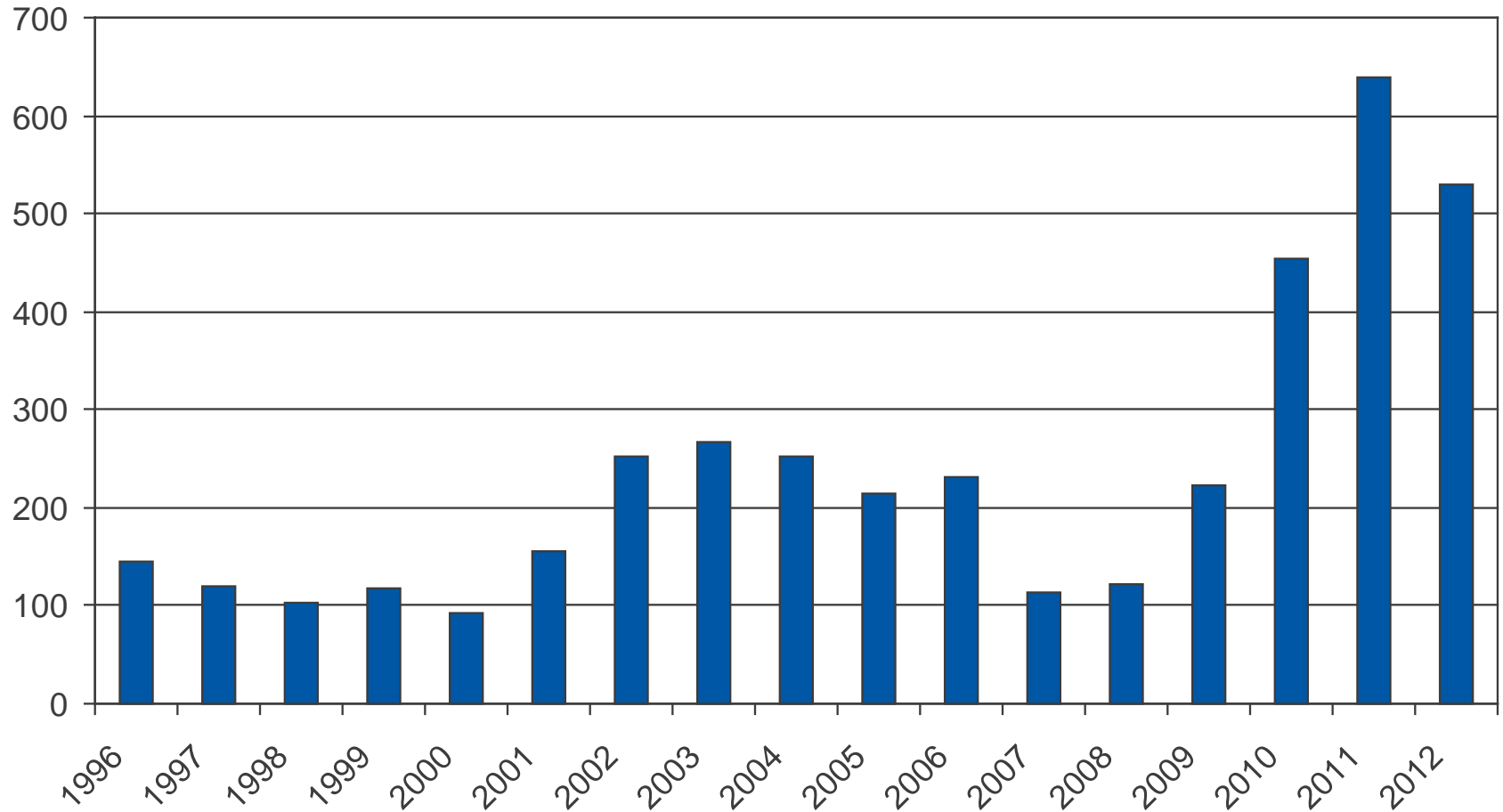
Impact of the PPACA

Calendar Year Initial Filings



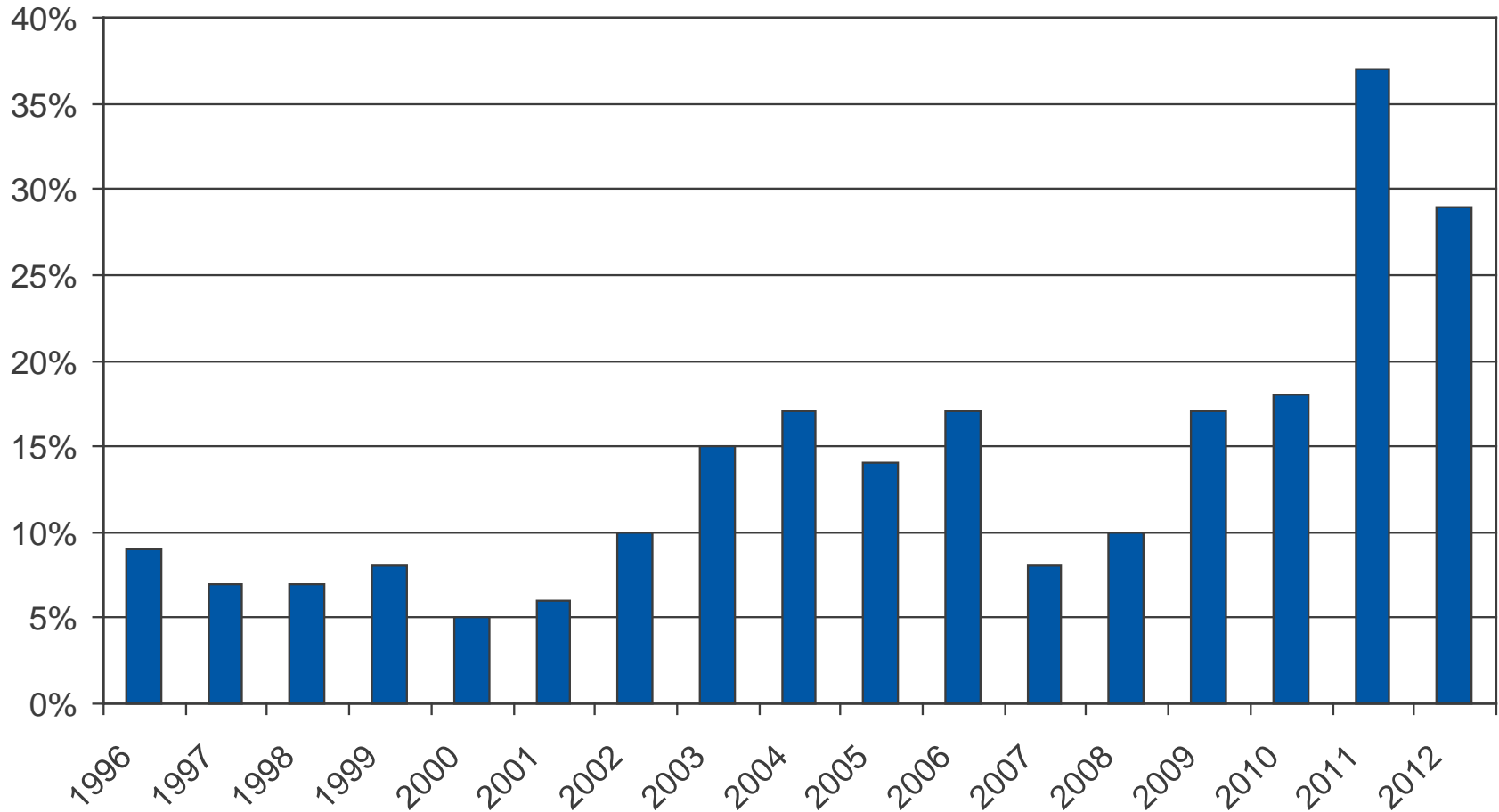
Impact of the PPACA

Calendar Year Entitlements

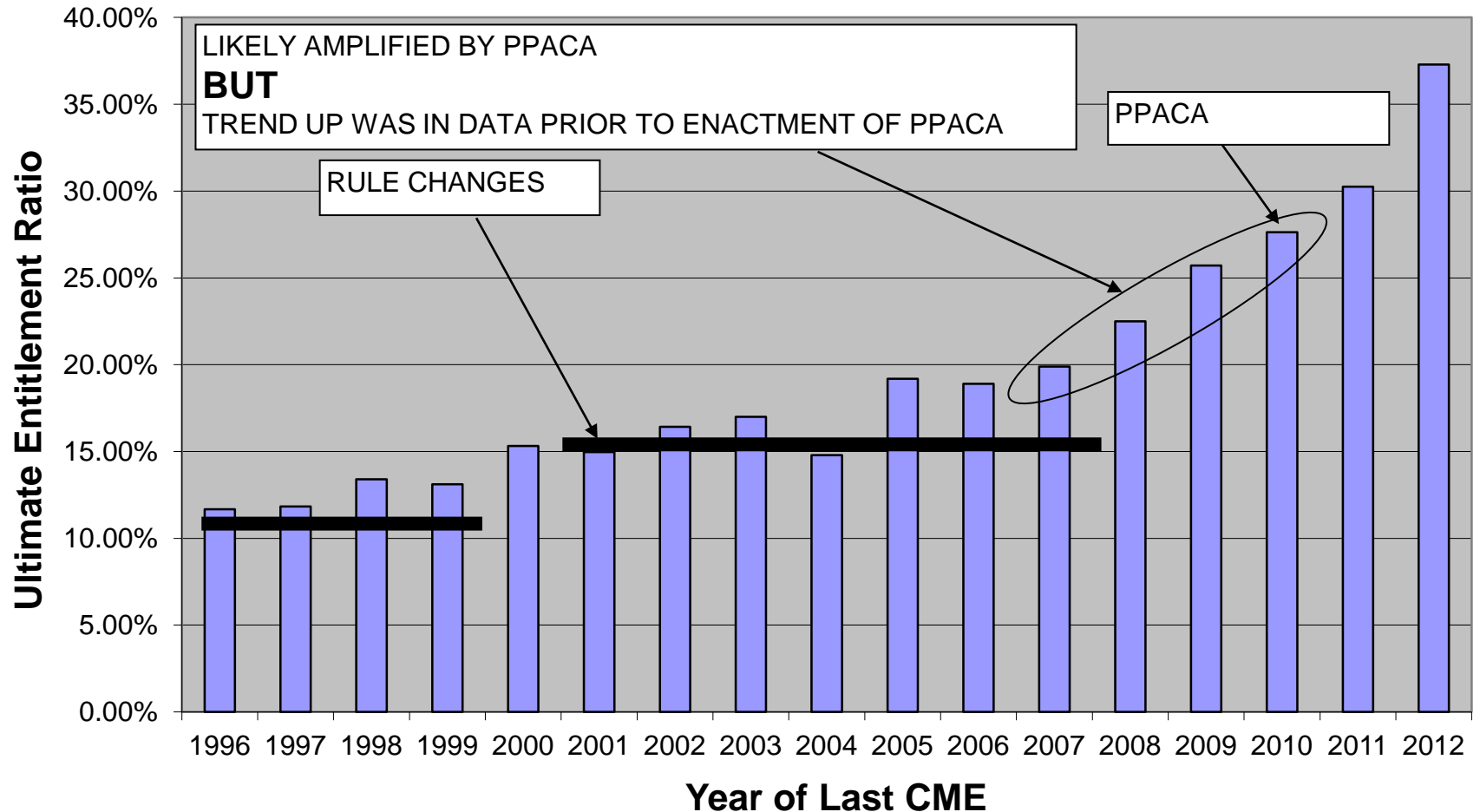


Impact of the PPACA

Calendar Year Entitlement Ratios



Calculated Ultimate Entitlement Ratios by Year of Last CME



Questions



OLIVER WYMAN

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- **Steven G. McKinnon, FCAS, MAAA, FCA**