

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 general goals of this presentation are to:

- Present a detailed discussion of underlying exposure to loss
- Illustrate the use of commonly applied actuarial techniques to estimate the unpaid cost of incurred coal worker pneumoconiosis (CWP) claims
- Discuss recent law changes expected to materially impact the cost of CWP claims filed under the Federal Act

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### Goals

Specifically, the following items will be discussed:

- The nature of the underlying exposure to loss
- Benefits payable for claims that are approved for benefits under the Federal Act
- Similarities and differences from other workers compensation exposures
- Differences between jurisdictions (Federal and State)
- Differences between the pension component associated with active employees (not specifically examined here) and the unpaid component associated with 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 using commonly applied actuarial techniques
- Methodology will be discussed and reviewed
- Discussion of the potential impact of legislative changes to the Federal Act embedded in the Patient Protection and Affordable Care Act (PPACA – health care reform)

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## Understanding the Exposure to Loss




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### 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
  - Workers compensation claims are generated when CWP results in disability defined by the Federal Act

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### Understanding the Exposure to Loss

**Latency**

- 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	17%	83%
5	50%	50%
10	66%	34%
20	82%	18%
30	91%	9%

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

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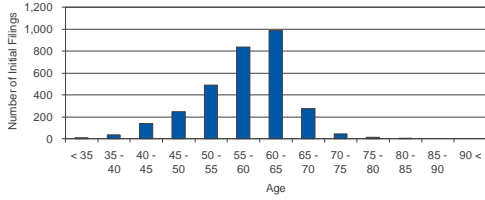
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**Understanding the Exposure to Loss**

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



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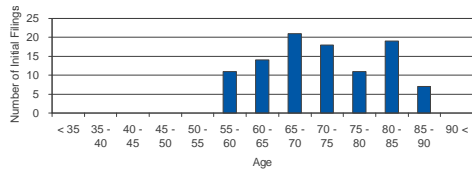
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**Understanding the Exposure to Loss**

**Distribution of Age at Initial Claim Filing  
Claims Resulting in Entitlements  
Filings between 288 and 336 months from CME**



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**Benefits Available under the Federal Act**



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**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 2011 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

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**Benefits Available Under the Federal Act**

Monthly Primary Benefit Rate



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**Benefits Available Under the Federal Act**

Impact of Geography

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

**Initial Claim Filings by Region**

EAST		WEST	
ALL OTHER	112	ALL OTHER	67
Indiana	509	Montana	27
Tennessee	957	Iowa	32
Ohio	1462	Oklahoma	63
Illinois	2267	Missouri	83
Alabama	2563	Arizona	123
Pennsylvania	4708	New Mexico	130
Virginia	6165	Wyoming	168
West Virginia	14274	Colorado	242
Kentucky	15561	Utah	351

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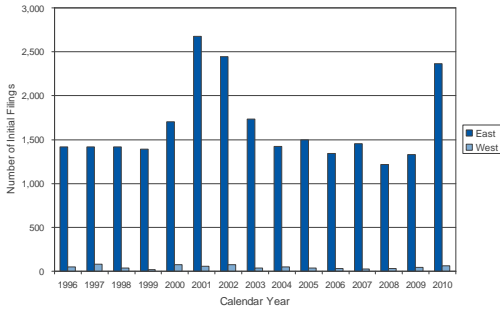
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**Benefits Available Under the Federal Act**

Impact of Geography: Initial Claim Filings



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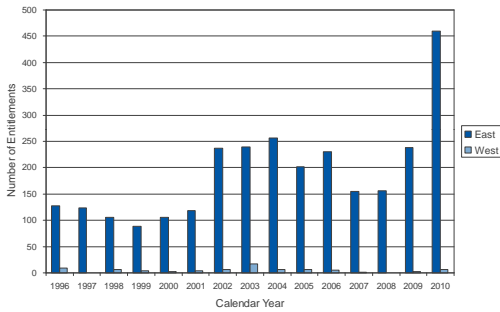
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**Benefits Available Under the Federal Act**

Impact of Geography: Entitlements



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**Benefits Available Under the Federal Act**

Impact of Geography: Entitlements

Region	CY 96 to 11 Initial Filings	CY 96 to 11 Entitlements	Average Entitlement Ratio
EAST	24,811	2,842	11.5%
WEST	709	73	10.3%
Countrywide	25,520	2,915	11.4%

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**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 Claims"
  - May file for continuation of benefits upon death of primary beneficiary
    - Rules governing this process were changed by the PPACA

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**Similarities and Differences Compared to Other Workers Compensation Exposures**



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**Similarities and Differences Compared to Other Workers Compensation Exposures**

**Basic Similarities**

- Entitled claims represent compensation for disease stemming from employment
- 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 claim
- Benefit structure is specific and clearly defined by statute, as with other workers compensation claims

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## 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 workers compensation case
  - Typical 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
- Administrative rule changes and statutory changes to the program have the potential to be retroactive
  - PPACA
  - 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

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## Differences Between Jurisdictions

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## 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 than typical WC claims
    - In general, most costs associated with CWP claims are due to claims filed under the Federal Act

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**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
Illinois	2.87	1.68	5.66	3.27
Kentucky	0.20	1.52	0.80	6.24
Virginia	0.10	1.46	0.27	3.80
West Virginia	0.32	1.37	1.15	4.84

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**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
  - 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
    - Expected to increase the number of claims entitled to benefits
    - 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

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




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**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
- 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
      - this is a risk associated with other workers compensation exposures
      - Population demographics impact likelihood of claims, though impact is different
        - For CWP, a relatively young workforce is less likely to generate claims
        - 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
    - Data will generally exclude claims not the financial responsibility of the employer

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**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 12/31/XX) 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

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**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:
    - $15/25 \times \$25,000 = \$15,000$
    - Aware of one client that "takes the whole thing" – does not prorate
  - This process is repeated for each active employee
  - Assumes closed population

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

**Questions Regarding Accounting Treatment**

- The pension component, as described above, is a reserve for the latent liability under the Federal Act associated with the cumulative exposure of active employees, to date, to coal dust
  - Self-Insured Mining Enterprises: Treatment Varies
    - Record for Federal Act and state act claims
    - Record for Federal claims only
    - Record Federal claims and PTD claims under state acts
  - Mining Enterprises with Guaranteed Cost or Large Deductible Programs
    - My experience is that they do not record a provision for the latent liability associated with active employees, though this liability exists.
- In principle, this is no different than the latent liability under other jurisdictions with the cumulative exposure of active employees in other industries to different industrial hazards
  - Cumulative trauma
  - Asbestos
  - Fumes
  - Etc.

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**United States Department of Labor Data**



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**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 the most recent filed claim – one claim per employee
  - 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

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## United States Department of Labor Data

Countrywide  
Living Member Filings

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
1989	939	1,291	1,466	1,605	1,655	1,623	2,013	2,009	2,103	2,213	2,262	2,263	2,462	2,465	2,546	2,540	2,607	2,622	2,707	2,748	2,779	2,820	2,842	2,845	2,880	2,895	2,930	2,945
1990	929	1,196	1,429	1,565	1,617	1,616	2,146	2,136	2,116	2,111	2,109	2,109	2,169	2,170	2,260	2,264	2,304	2,304	2,321	2,395	2,406	2,407	2,412	2,412	2,414	2,414	2,428	2,434
1991	895	1,141	1,472	1,595	1,637	1,637	2,424	2,419	2,419	2,403	2,714	2,760	2,849	2,811	2,951	2,967	3,038	3,119	3,178	3,231	3,263	3,308	3,349	3,375	3,398	3,420	3,448	
1992	1,041	1,709	2,025	2,277	2,413	2,416	2,468	2,777	2,905	3,065	3,169	3,125	3,178	3,248	3,268	3,339	3,405	3,465	3,528	3,590	3,650	3,693	3,732	3,769	3,802	3,829	3,862	
1993	943	1,509	1,773	1,962	2,020	2,033	2,435	2,537	2,579	2,620	2,703	2,785	2,784	2,884	2,925	2,983	3,060	3,098	3,131	3,205	3,249	3,289	3,326	3,359	3,390	3,417	3,443	
1994	647	1,110	1,367	1,545	1,678	1,765	1,869	1,977	2,007	2,060	2,132	2,154	2,246	2,263	2,315	2,322	2,407	2,448	2,508	2,568	2,626	2,682	2,736	2,787	2,835	2,879	2,920	
1995	581	1,020	1,283	1,453	1,585	1,754	1,889	1,889	1,945	2,033	2,067	2,070	2,154	2,225	2,268	2,305	2,345	2,380	2,428	2,483	2,536	2,587	2,635	2,679	2,720	2,758	2,793	
1996	531	1,009	1,292	1,461	1,609	1,768	1,887	1,968	1,997	2,061	2,132	2,171	2,267	2,303	2,345	2,382	2,473	2,509	2,543	2,595	2,645	2,692	2,736	2,776	2,812	2,847	2,879	
1997	477	921	1,139	1,254	1,409	1,576	1,661	1,683	1,698	1,712	1,738	1,763	1,842	1,842	1,842	1,842	1,842	1,842	1,842	1,842	1,842	1,842	1,842	1,842	1,842	1,842	1,842	
1998	405	965	1,139	1,268	1,405	1,533	1,573	1,633	1,638	1,648	1,652	1,652	1,652	1,652	1,652	1,652	1,652	1,652	1,652	1,652	1,652	1,652	1,652	1,652	1,652	1,652	1,652	
1999	420	985	1,178	1,262	1,405	1,529	1,569	1,578	1,582	1,582	1,582	1,582	1,582	1,582	1,582	1,582	1,582	1,582	1,582	1,582	1,582	1,582	1,582	1,582	1,582	1,582	1,582	
2000	398	951	961	964	964	964	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	
2001	440	467	467	467	467	467	467	467	467	467	467	467	467	467	467	467	467	467	467	467	467	467	467	467	467	467	467	
2002	230	344	344	344	344	344	344	344	344	344	344	344	344	344	344	344	344	344	344	344	344	344	344	344	344	344	344	
2003	171	321	321	321	321	321	321	321	321	321	321	321	321	321	321	321	321	321	321	321	321	321	321	321	321	321	321	
2004	208	348	348	348	348	348	348	348	348	348	348	348	348	348	348	348	348	348	348	348	348	348	348	348	348	348	348	
2005	177	305	305	305	305	305	305	305	305	305	305	305	305	305	305	305	305	305	305	305	305	305	305	305	305	305	305	
2006	137	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	
2007	127	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	
2008	205	474																										
2009	177																											

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## United States Department of Labor Data

Countrywide  
Living Member Filings

Year	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
1989	1,110	1,110	1,110	1,110	1,110	1,110	1,110	1,110	1,110	1,110	1,110	1,110	1,110	1,110	1,110	1,110	1,110	1,110	1,110	1,110	1,110	1,110	1,110	1,110	1,110	1,110	1,110
1990	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140
1991	1,170	1,170	1,170	1,170	1,170	1,170	1,170	1,170	1,170	1,170	1,170	1,170	1,170	1,170	1,170	1,170	1,170	1,170	1,170	1,170	1,170	1,170	1,170	1,170	1,170	1,170	1,170
1992	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
1993	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230
1994	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260
1995	1,290	1,290	1,290	1,290	1,290	1,290	1,290	1,290	1,290	1,290	1,290	1,290	1,290	1,290	1,290	1,290	1,290	1,290	1,290	1,290	1,290	1,290	1,290	1,290	1,290	1,290	1,290
1996	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320
1997	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350
1998	1,380	1,380	1,380	1,380	1,380	1,380	1,380	1,380	1,380	1,380	1,380	1,380	1,380	1,380	1,380	1,380	1,380	1,380	1,380	1,380	1,380	1,380	1,380	1,380	1,380	1,380	1,380
1999	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,410
2000	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440
2001	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470
2002	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
2003	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530
2004	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560
2005	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590
2006	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620
2007	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650
2008	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,680
2009	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710

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## United States Department of Labor Data

Data is Available by State -> Initial Filings

State	All Years	CY 2009	CY 2010
Remainder	1,047	35	36
Utah	351	13	31



United States Department of Labor Data

Calendar Year Development to 132 Months (Product Along Diagonal)  
Initial Filings Pennsylvania

1993	2,887
1994	3,316
1995	3,031
1996	4,158
1997	3,337
1998	2,514
1999	3,632
2000	4,072
2001	4,174
2002	2,844
2003	7,213
2004	4,535
2005	3,723
2006	2,808
2007	11,041
2008	4,244
2009	8,190
2010	14,128

← Rule Changes

← PPACA

United States Department of Labor Data

Countrywide  
Using Minor Comments

1993	13	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	
1994	14	27	41	55	69	83	97	111	125	139	153	167	181	195	209	223	237	251	265	279	293	307	321	335	349	363	377	391	405
1995	15	29	44	59	74	89	104	119	134	149	164	179	194	209	224	239	254	269	284	299	314	329	344	359	374	389	404	419	434
1996	16	31	47	63	79	95	111	127	143	159	175	191	207	223	239	255	271	287	303	319	335	351	367	383	399	415	431	447	463
1997	17	33	50	67	84	101	118	135	152	169	186	203	220	237	254	271	288	305	322	339	356	373	390	407	424	441	458	475	492
1998	18	35	53	71	89	107	125	143	161	179	197	215	233	251	269	287	305	323	341	359	377	395	413	431	449	467	485	503	521
1999	19	37	56	75	94	113	132	151	170	189	208	227	246	265	284	303	322	341	360	379	398	417	436	455	474	493	512	531	550
2000	20	39	59	79	99	119	139	159	179	199	219	239	259	279	299	319	339	359	379	399	419	439	459	479	499	519	539	559	579
2001	21	41	62	83	104	125	146	167	188	209	229	249	269	289	309	329	349	369	389	409	429	449	469	489	509	529	549	569	589
2002	22	43	65	87	109	131	153	175	197	219	241	263	285	307	329	351	373	395	417	439	461	483	505	527	549	571	593	615	637
2003	23	45	68	91	114	137	160	183	206	229	252	275	298	321	344	367	390	413	436	459	482	505	528	551	574	597	620	643	666
2004	24	47	71	95	119	143	167	191	215	239	263	287	311	335	359	383	407	431	455	479	503	527	551	575	599	623	647	671	695
2005	25	49	74	99	124	149	174	199	224	249	274	299	324	349	374	399	424	449	474	499	524	549	574	599	624	649	674	699	724
2006	26	51	77	103	129	155	181	207	233	259	285	311	337	363	389	415	441	467	493	519	545	571	597	623	649	675	701	727	753
2007	27	53	80	107	134	161	188	215	242	269	296	323	350	377	404	431	458	485	512	539	566	593	620	647	674	701	728	755	782
2008	28	55	83	111	139	167	195	223	251	279	307	335	363	391	419	447	475	503	531	559	587	615	643	671	699	727	755	783	811
2009	29	57	86	115	144	173	202	231	260	289	318	347	376	405	434	463	492	521	550	579	608	637	666	695	724	753	782	811	840
2010	30	59	89	119	149	179	209	239	269	299	329	359	389	419	449	479	509	539	569	599	629	659	689	719	749	779	809	839	869
2011	31	61	92	123	153	183	213	243	273	303	333	363	393	423	453	483	513	543	573	603	633	663	693	723	753	783	813	843	873
2012	32	63	95	126	156	186	216	246	276	306	336	366	396	426	456	486	516	546	576	606	636	666	696	726	756	786	816	846	876
2013	33	65	98	129	159	189	219	249	279	309	339	369	399	429	459	489	519	549	579	609	639	669	699	729	759	789	819	849	879
2014	34	67	101	132	162	192	222	252	282	312	342	372	402	432	462	492	522	552	582	612	642	672	702	732	762	792	822	852	882
2015	35	69	104	135	165	195	225	255	285	315	345	375	405	435	465	495	525	555	585	615	645	675	705	735	765	795	825	855	885
2016	36	71	107	138	168	198	228	258	288	318	348	378	408	438	468	498	528	558	588	618	648	678	708	738	768	798	828	858	888
2017	37	73	110	141	171	201	231	261	291	321	351	381	411	441	471	501	531	561	591	621	651	681	711	741	771	801	831	861	891
2018	38	75	113	144	174	204	234	264	294	324	354	384	414	444	474	504	534	564	594	624	654	684	714	744	774	804	834	864	894
2019	39	77	116	147	177	207	237	267	297	327	357	387	417	447	477	507	537	567	597	627	657	687	717	747	777	807	837	867	897
2020	40	79	119	150	180	210	240	270	300	330	360	390	420	450	480	510	540	570	600	630	660	690	720	750	780	810	840	870	900
2021	41	81	122	153	183	213	243	273	303	333	363	393	423	453	483	513	543	573	603	633	663	693	723	753	783	813	843	873	903
2022	42	83	125	156	186	216	246	276	306	336	366	396	426	456	486	516	546	576	606	636	666	696	726	756	786	816	846	876	906
2023	43	85	128	159	189	219	249	279	309	339	369	399	429	459	489	519	549	579	609	639	669	699	729	759	789	819	849	879	909
2024	44	87	131	162	192	222	252	282	312	342	372	402	432	462	492	522	552	582	612	642	672	702	732	762	792	822	852	882	912
2025	45	89	134	165	195	225	255	285	315	345	375	405	435	465	495	525	555	585	615	645	675	705	735	765	795	825	855	885	915
2026	46	91	137	168	198	228	258	288	318	348	378	408	438	468	498	528	558	588	618	648	678	708	738	768	798	828	858	888	918
2027	47	93	140	171	201	231	261	291	321	351	381	411	441	471	501	531	561	591	621	651	681	711	741	771	801	831	861	891	921
2028	48	95	143	174	204	234	264	294	324	354	384	414	444	474	504	534	564	594	624	654	684	714	744	774	804	834	864	894	924
2029	49	97	146	177	207	237	267	297	327	357	387	417	447	477	507	537	567	597	627	657	687	717	747	777	807	837	867	897	927
2030	50	99	149	180	210	240	270	300	330	360	390	420	450	480	510	540	570	600	630	660	690	720	750	780	810	840	870	900	930

United States Department of Labor Data

Countrywide  
Using Minor Comments

1993	13	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	
1994	14	27	41	55	69	83	97	111	125	139	153	167	181	195	209	223	237	251	265	279	293	307	321	335	349	363	377	391	405
1995	15	29	44	59	74	89	104	119	134	149	164	179	194	209	224	239	254	269	284	299	314	329	344	359	374	389	404	419	434
1996	16	31	47	63	79	95	111	127	143	159	175	191	207	223	239	255	271	287	303	319	335	351	367	383	399	415	431	447	463
1997	17	33	50	67	84	101	118	135	152	169	186	203	220	237	254	271	288	305	322	339	356	373	390	407	424	441	458	475	492
1998	18	35	53	71	89	107	125	143	161	179	197	215	233	251	269	287	305	323	341	359	377	395	413	431	449	467	485	503	521
1999	19	37	56	75	94	113	132	151	170	189	208	227	246	265	284	303	322	341	360	379	398	417	436	455	474	493	512	531	550
2000	20	39	59	79	99	119	139	159	179	199	219	239	259	279	299	319	339	359	379	399	419	439	459	479	499	519	539	559	579
2001	21	41	62	83	104	125	146	167	188	209	229	249	269	289	309	329	349	369	389	409	429	449	469	489	509	529	549	569	589
2002	22	43	65	87	109	131	153	175	197																				

**United States Department of Labor Data**  
 Calendar Year Development (Product Along Diagonal)  
 Entitlements Countrywide

CY	12 to 132	24 to 144	36 to 156
1993	9.904		
1994	8.758	3.372	
1995	5.754	1.614	1.486
1996	14.519	3.378	2.359
1997	8.654	2.363	1.720
1998	4.833	2.744	2.169
1999	5.778	2.257	1.597
2000	6.776	2.389	2.118
2001	7.218	3.053	2.401
2002	15.737	11.562	7.496
2003	51.745	9.691	5.706
2004	27.351	10.198	7.876
2005	14.572	4.138	3.063
2006	7.749	3.625	3.582
2007	4.154	1.424	1.430
2008	3.792	2.167	1.845
2009	6.885	2.447	2.538
2010	20.653	7.798	6.937

← Rule Changes (between 2001 and 2002)

← PPACA (between 2009 and 2010)

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**United States Department of Labor Data**  
 Calendar Year Development (Product Along Diagonal)  
 Entitlements Kentucky

CY	12 to 132	24 to 144	36 to 156
1993	37.175		
1994	18.836	5.684	
1995	1.136	1.105	1.281
1996	7.561	2.930	2.374
1997	1.415	1.527	1.625
1998	9.394	6.642	1.328
1999	3.007	3.482	2.537
2000	2.487	1.492	0.994
2001	3.202	3.812	2.668
2002	45.420	53.436	29.147
2003	253.631	34.501	5.606
2004	147.919	39.915	23.425
2005	12.132	6.104	4.739
2006	7.340	4.404	4.415
2007	14.305	3.017	2.794
2008	4.129	1.867	1.689
2009	10.478	2.620	2.502
2010	11.140	3.939	3.326

← Rule Changes (between 2001 and 2002)

← PPACA (between 2009 and 2010)

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**United States Department of Labor Data**  
 Calendar Year Development (Product Along Diagonal)  
 Entitlements West Virginia

CY	12 to 132	24 to 144	36 to 156
1993	8.658		
1994	8.580	2.860	
1995	5.016	2.205	1.878
1996	11.658	3.553	2.357
1997	3.900	3.977	2.372
1998	4.083	2.880	2.392
1999	2.447	1.196	0.983
2000	15.337	2.506	2.563
2001	3.352	2.920	3.440
2002	8.843	6.566	3.936
2003	125.009	6.676	5.722
2004	8.435	4.504	4.699
2005	19.816	3.310	2.402
2006	7.846	3.179	2.417
2007	8.377	1.376	1.376
2008	4.500	2.500	1.839
2009	3.302	1.793	1.950
2010	19.905	8.580	8.104

← Rule Changes (between 2001 and 2002)

← PPACA (between 2009 and 2010)

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## United States Department of Labor Data

### Calendar Year Development (Product Along Diagonal)

#### Entitlements Pennsylvania

CY	12 to 120	24 to 132	36 to 144
1993	1.132		
1994	5.071	2.028	
1995	49.605	10.010	5.147
1996	2.442	2.595	2.220
1997	3.875	3.875	2.214
1998	3.520	1.810	1.328
1999	3.574	3.463	1.424
2000	1.034	1.293	1.335
2001	1.591	1.723	1.551
2002	4.011	4.011	1.491
2003	4.640	4.640	1.768
2004	20.571	22.041	5.510
2005	2.000	0.667	0.667
2006	0.972	0.875	1.575
2007	11.429	10.159	11.287
2008	9.000	4.500	4.500
2009	9.600	16.000	16.000
2010	5.208	6.510	3.906

Rule Changes

PPACA

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## United States Department of Labor Data

### Calculation of Expected Entitlement Ratios

Initial Filings	Ultimate Entitlements	Ratio	Initial Filings	Ultimate Entitlements	Ratio	
1983	2,541	1,101	1,238	465	10.00	36.4%
1984	3,246	1,131	1,612	412	10.00	43.6%
1985	3,468	1,123	3,894	364	10.00	37.1%
1986	3,382	1,134	4,288	384	10.00	39.6%
1987	3,223	1,144	3,688	286	10.00	30.0%
1988	2,645	1,155	3,094	221	10.00	23.7%
1989	2,530	1,167	2,952	223	10.00	24.1%
1990	2,671	1,180	3,153	239	11.17	26.7%
1991	2,679	1,198	3,449	268	11.51	30.9%
1992	2,716	1,216	3,302	221	12.06	26.7%
1993	2,556	1,236	3,013	210	13.65	26.6%
1994	2,471	1,259	3,111	206	13.03	26.8%
1995	1,858	1,282	2,382	166	13.65	22.7%
1996	1,500	1,311	2,031	108	14.66	15.8%
1997	1,320	1,342	2,030	108	15.46	16.7%
1998	1,700	1,375	2,142	120	16.01	20.7%
1999	1,836	1,413	2,312	130	17.06	20.5%
2000	1,124	1,460	1,441	105	18.09	19.1%
2001	904	1,511	1,366	73	19.78	14.4%
2002	1,221	1,573	1,521	103	21.28	19.1%
2003	941	1,643	1,546	77	23.85	17.6%
2004	747	1,732	1,294	40	25.86	12.7%
2005	461	1,850	890	44	28.11	13.4%
2006	633	2,011	1,273	50	31.18	15.6%
2007	574	2,310	2,174	54	30.72	18.8%
2008	335	2,574	862	40	43.54	18.1%
2009	474	3,278	1,654	61	61.89	37.8%
2010	377	6,019	1,400	16	16.907	27.1%

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

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## United States Department of Labor Data

### Calendar Year Entitlement Ratios

(Does not properly match entitlements to underlying initial filings)

2005	13.5%
2006	17.1%
2007	10.2%
2008	12.0%
2009	17.6%
2010	19.0%

- It is a matter of judgment as to what to select for future claims
- For the purpose of this study, 20% is selected

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## 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 @ 12/31/2010	Reported Living Miner Filings	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)
2005	3	1,850	6	256	0.022	21	13
2006	9	2,011	18	355	0.051	29	24
2007	11	2,219	24	280	0.084	24	24
2008	9	2,574	23	266	0.084	20	21
2009	14	3,278	46	356	0.129	29	34
2010	5	6,019	30	279	0.108	23	24
<b>TOTAL</b>	<b>51</b>		<b>147</b>	<b>1,782</b>		<b>145</b>	<b>139</b>

- (1) Year of Last Exposure to Coal Dust  
 (2) Reported Data from Client  
 (3) Derived From Department of Labor Data  
 (4) (2) x (3)  
 (5) Reported 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 @ 12/31/2010	Reported Entitlements as of 12/31/2010	Entitlements CDF	Selected Ultimate Initial Filings	Entitlement Ratio	Expected Entitlements	Selected Ultimate Entitlements @ 12/31/2010	Final Entitlements @ 12/31/2010	Remaining Entitlements
(1)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
2005	0	2,811	13	0.200	3	2	0	2
2006	2	3,118	24	0.200	5	5	1	4
2007	1	3,672	24	0.200	5	4	1	3
2008	2	4,534	21	0.200	4	6	1	4
2009	2	6,189	34	0.200	7	8	0	8
2010	0	16,967	24	0.200	5	5	0	5
<b>TOTAL</b>	<b>7</b>		<b>139</b>		<b>28</b>	<b>29</b>	<b>3</b>	<b>26</b>

- (1) Year of Last Exposure to Coal Dust  
 (9) Reported Data from Client  
 (10) Derived From Department of Labor Data  
 (11) (8)  
 (12) Derived From Department of Labor Data  
 (13) (11) x (12)  
 (14) (9) + (13) x ( 1.00 - 1.00 / (10) )  
 (15) Reported Data from Client  
 (16) (14) - (15)

- '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

Discussion of Reported Entitlements that are Not "Final"

- Calculation above does incorporate any information on these claims
- Cost of these claims is grouped with true IBNR entitlements, and their associated severity
- Information that might be available is the cost of the claim and the likelihood of reversal on appeal
- Another approach would be to include the cost of the claim, weighted by the likelihood of final disposition as entitled claim
  - Weight the IBNR severity with the likelihood of final disposition as reversal of entitlement

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### 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

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### Impact of the PPACA

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### 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%

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### 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 uncertain. Estimates range from increases of 20% to 50% or more on costs depending on who you ask

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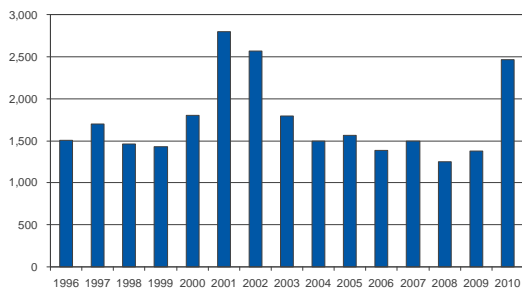
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### Impact of the PPACA

Calendar Year Initial Filings



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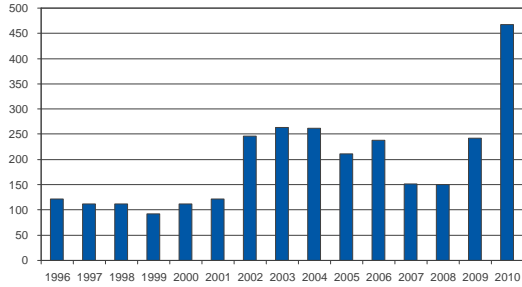
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**Impact of the PPACA**

Calendar Year Entitlements



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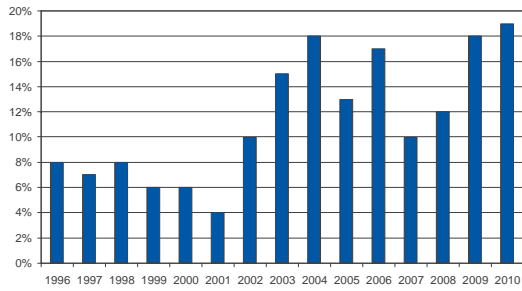
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**Impact of the PPACA**

Calendar Year Entitlement Ratios



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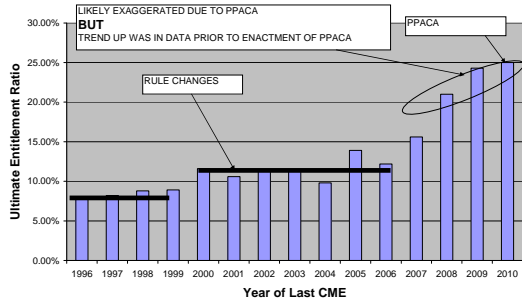
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**Impact of the PPACA**

Calculated Ultimate Entitlement Ratios by Year of Last CME



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Questions



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## OLIVER WYMAN

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