



To: Mark Flanders, Director, Legislative Service Commission
Senator Gayle Manning, Chair, Senate Transportation, Commerce and Labor Committee
Senator Jay Hottinger, Chair, Senate Insurance Committee
Representative Bob Hackett, Chair, House Insurance Committee

From: Nicholas W. Zuk, Chair, Ohio Bureau of Workers' Compensation (BWC) Board of Directors

Date: July 13, 2015

Re: ORC 4121.125 Actuarial Analysis of Pending Legislation

ORC 4121.125 (C)(6) and (7) require the BWC Board of Directors to have prepared, by or under the supervision of an actuary, an actuarial analysis of any introduced legislation expected to have a measurable financial impact on the workers' compensation system, and to submit that report to the legislative service commission and the standing committees of the house of representatives and the senate with primary responsibility for the workers' compensation legislation.

On June 25, 2015 the BWC Actuarial Committee reviewed the analysis presented by BWC's chief actuary for the items below, and recommended that the BWC Board of Directors remit the results pursuant to the revised code.

Senate Bill 5 (Patton/ Brown) would make peace officers, firefighters, and emergency medical workers diagnosed with post-traumatic stress disorder arising from employment, without an accompanying physical injury, eligible for compensation and benefits under Ohio's Workers' Compensation Law.

Summary (See Attachment A): BWC's analysis is based upon the assumption that the national average of 18% of first responders filing for PTSD benefits at any one point in time. Based on this percentage, we estimate that it would cost approximately \$182 million a year for impacted employers. Because the majority of first responders are covered by public employers this change would approximately double the amounts that the public employers currently pay in premium. Please note the potential cost could be even higher than BWC's estimate. BWC used 18% of the covered parties experiencing PTSD while other information has shown up to 36% reported PTSD cases in other states. There is also an expectation that PTSD related costs will be higher for the first year due to the condition being newly compensable under workers' compensation

Senate Bill 27 (Patton) would provide that a firefighter who is disabled as a result of specified types of cancer is presumed to have incurred the cancer while performing his or her official duties as a firefighter for purposes of the laws governing workers' compensation and the Ohio Police and Fire Pension Fund.

Summary (See Attachment B): The National Council on Compensation Insurance (NCCI), which is the leading organization focused on workers' compensation research and actuarial analysis, expects that the enactment of this presumption in workers' compensation systems will result in

increases in workers' compensation costs. The extent of such increase is hard to predict due to significant data limitations. Using the data available to BWC, the attached analysis estimates that an additional 568 claims would be covered annually, at a total annual cost of approximately \$75,345,000.

House Bill 205 (Henne, Retherford) would modify the requirements for an employer to become a self-insuring employer for purposes of the Workers' Compensation Law. The legislation would transfer authority over the workers' compensation self-insurance program to the Superintendent of Insurance, and allow certain employers and groups of employers to obtain workers' compensation coverage from a private workers' compensation insurer.

Summary: While House Bill 205 affects the operation of the workers' compensation system, it is not possible to perform an actuarial analysis of these proposed changes on required premium collections due to the fact that BWC does not have information or data sufficient to quantify how ODI would run the self-insured program or the number of employers and groups of employers that would choose to be insured by private insurers.

House Bill 207 (Henne, McColley) would allow a state fund employer to have their workers' compensation claim costs paid from the surplus fund account in the state insurance fund rather than charged to the employer's experience, in cases where that claim is a motor vehicle-related claim that is likely to be subrogated against a third party.

Summary (See Attachment C): On a statewide rate level basis, there would be minimal impact to the estimated overall future costs to the state fund. The analysis suggests the impact to overall base rates from the change in experience modifiers will be immaterial. There may however, be an impact to the experience modification applied to the premiums of a specific employer with subject motor vehicle related claims.

ATTACHMENT A

Senate Bill 5 (Patton, Brown)- Post-Traumatic Stress Disorder Coverage for First Responders

PTSD Cost Estimates

3-20-2015

Estimated Cost:

\$182,746,120

Per year once the program has matured

Assumptions

- 18% of first responders have PTSD at any one time

Assumption Source

- “PTSD is an occupational hazard for emergency medical services personnel, who are routinely and frequently exposed to their patients’ trauma and suffering,” states a article published in 2006 by the University of Washington School of Public Health & Community Medicine. It references studies that have reported 15% to 20% of EMS personnel have PTSD.

http://www.nwpublichealth.org/docs/nph/f2006/beaton_f2006.pdf

Assumption Source

- The American Journal of Psychiatry published a German study that indicated the prevalence of PTSD symptoms in firefighters at 18.2%.

<http://ajp.psychiatryonline.org/doi/abs/10.1176/ajp.155.12.1727>

Assumptions

Occupation	#	Avg Salary	Avg Annual TT
Ambulance Drivers	1,080	\$21,280	\$14,449
EMS	10,130	\$29,630	\$20,119
Firefighters	33,491	\$40,029	\$31,206*
Police	35,399	\$52,490	\$39,169**

Average 52 weeks missed from work

* Used AWW for volunteer firefighters

** Used FWW for part time/special police

Assumptions

Treatment Year	Medical*	Pharmacological	Treatment
1	\$6,869	\$2,500	\$9,369
2	\$4,361	\$2,500	\$6,861
3	\$2,181	\$2,500	\$4,681
4	\$2,181	\$2,500	\$4,681
5	\$2,181	\$2,500	\$4,681

Average 5 years of treatment

*Includes individual and/or family therapy sessions and E&M visits tapering throughout treatment period.

Assumption Source

- The National Comorbidity Survey found that the median duration of PTSD is 3 years for those who got treatment and 5.3 years for those that did not get treatment...the study found that 1/3 of patients with PTSD never fully go “into remission” after many years regardless of whether they received treatment. Note: Based on DSM-3 definition.

Cost in Any One Year

Occupation	Treatment	Indemnity	Total
Ambulance Drivers	\$1,180,588	\$563,511	\$1,744,099
EMS	\$11,049,090	\$7,343,333	\$18,392,423
Firefighters	\$36,507,405	\$37,634,107	\$74,141,512
Police	\$38,565,866	\$49,901,791	\$88,467,657
Total	\$87,302,949	\$95,442,742	\$182,745,691

Not Included in Assumptions

- Any in-patient hospitalizations
- Any treatment/pharmacy beyond 5 years
- Any coverage for “partial” PTSD benefits
- Any PTD benefits
- Any medical or wage inflation

Estimates on Inflation

- If we assume 1% inflation for medical treatment and 8% inflation for pharmacy, we could expect that we would see medical treatment cost increases of about 4% or \$3-\$4 million per year
- If we assume 2% inflation in AWW, we would see another \$1.5 to \$2 million increase in indemnity cost per year

Assumption Change Impacts

Assumption Change	New Estimate	Change
10% not 18% rate	\$101,566,920	-\$81,178,771
25% not 18% rate	\$253,847,383	\$71,101,692
26 not 52 weeks missed from work	\$135,548,256	-\$47,197,435
104 not 52 weeks missed from work	\$277,140,560	\$94,394,869
20 not 52 weeks missed from work	\$124,656,540	-\$58,089,151

Assumption Change Impacts

Assumption Change	New Estimate	Change
4 not 5 years treatment	\$169,247,014	-\$13,498,677
3 not 5 years treatment	\$155,748,336	-\$26,997,355
Half the medical treatment intensity (5 yrs but half the # visits, same Rx)	\$157,119,216	-\$25,626,475
3 not 5 years, half of medical treatment intensity (same Rx)	\$136,410,539	-\$46,335,152

From SB 5 Fiscal Note

Using information from SB 5 fiscal note, over 4 years treatment and assumptions of 52 weeks missed time

Rate	LSC Medical	LSC Indemnity	LSC Total
10% rate or 2,950 new/year	\$59,590,000	\$82,428,120	\$142,018,120
15% rate or 4,425 new/year	\$89,385,000	\$123,642,180	\$213,027,180
BWC Estimate	\$87,302,949	\$95,442,742	\$182,745,691

ATTACHMENT B

Senate Bill 27 (Patton)- Presumptive Cancer Coverage for Firefighters

Actuarial Commentary on Senate Bill 27 - Presumptive Cancer Coverage for Firefighters

Senate Bill 27 would provide “occupational disease coverage” to firefighters with at least three years of hazardous active duty. In order to develop an estimate of the annual cost related to the presumptive cancer coverage mandated by Senate Bill 27, it is necessary to make a number of assumptions. In this commentary, BWC provides the assumptions upon which our estimates are based.

The following summarizes the estimated potential annual impact from this bill, based on four classifications of firefighters:

Classification of Firefighter	Expected Annual Claims	Projected Potential Annual Costs
Active Career	30.23	\$9,920,000
Retired Career	141.43	\$12,830,000
Active Volunteer	69.87	\$22,930,000
Retired Volunteer	326.95	\$29,665,000
Total	568.48	\$75,345,000

Based on data of current manual classifications within the state fund, we estimate that 80 percent of the costs fall to the Taxing Districts covered by the State Insurance Fund, 5 percent are private employers covered by the State Insurance Fund and the remaining 15 percent would fall to the self-insured employers.

One overarching assumption we must make involves when coverage is triggered. There are at least two triggers of coverage in an occupational disease claim. The first would be the last date of exposure. The second would be the date of diagnosis. A third possible trigger would be the first date of exposure, which typically is used to determine which party is financially responsible for providing benefits.

The bill is silent with respect to the trigger of coverage, so in developing our estimates, we have assumed that the trigger of coverage is the date of diagnosis, per our normal practice. As such, any diagnosis of cancer prior to the effective date of this bill would not be included in this coverage expansion (pre-existing condition). If exposure prior to the date of this bill triggers coverage for cancer at any time in the future, there is a significant liability above our stated estimates created by the bill. If that is not the intent of the legislation, clarifying language would be helpful.

It should be noted that we have assumed that upon reaching the sixth year anniversary of diagnosis, the firefighter has either returned to active employment or is deceased and that no further related medical costs are incurred. No provision in our estimates is included for payment of temporary total disability benefits beyond five years, new awards of death benefits beyond five years, or any payment of permanent total disability benefits beyond five years. In this respect, our estimates may be considered low with respect to the total future costs.

Additional areas where BWC made assumptions to develop this estimate include the following:

- The number of exposed firefighters both current and retired/career and volunteer
- The assumed wage benefit level
- The duration of benefit
- The average annual incidence of cancer rate
- The survival rate for years one through five post diagnosis
- The adjusted risk for firefighters
- The medical treatment cost including
 - Initial treatment
 - Continuing treatment
 - Treatment during last year of life

- The costs to be covered by the State Insurance Fund include:
 - Medical costs
 - Wage replacement – temporary total disability benefit (TTD)
 - Survivor benefits
 - Funeral expenses
 - Wage replacement (Death Benefit)

The remainder of this document provides specific details on our assumptions and analysis.

Estimation of Subject Population of Firefighters

As mentioned above, we have developed estimates for the following four segments of firefighters:

1. Active career firefighters
2. Retired career firefighters
3. Active volunteer firefighters
4. Retired volunteer firefighters

We relied upon information from two sources:

- a. US Fire Department Census - FEMA website, Census Last Updated: February 26, 2015
- b. Ohio Police & Fire Pension Fund; Jan. 1, 2014 Actuarial Valuation of Pension Benefits - Oct. 2014

The FEMA data provided a summary of the number of active (both career and volunteer) firefighters in the state of Ohio to be 42,125. The Pension Fund report provided information that there are 12,720 active firefighter members of the Pension Fund and 8,372 retired career firefighter members. We used the Pension Fund figures for those two categories. By using the Pension Fund figures, we are attempting to reflect the impact of the three years of hazardous duty requirement. The Pension Fund data was also used to provide an age distribution of the firefighters.

To estimate the number of active volunteer firefighters, we subtracted the Pension Fund active member figure from the FEMA figure to develop an estimate of 29,405 active volunteer firefighters.

Finally to develop an estimate the number of retired volunteer firefighters, we assumed the same ratio of retired career to active career firefighters applied to retired volunteer to active volunteer firefighters.

Roughly 40 percent of the Pension Fund members are retired and 60 percent are currently active. Using that same relationship on the estimated 29,405 active volunteer firefighter figures, we develop an estimate the number of retired volunteer firefighters of 19,354.

Thus, the current population of firefighters, active and retired, career and volunteer, approaches 70,000.

Estimated Presumptive Cancer Costs – Active Career Firefighters

Below are the key assumptions made in our estimate of the policy year costs for active career firefighters as a result of Senate Bill 27:

Active Career Firefighters	
Number of Firefighters	12,720
Expected Average Number of Diagnoses	30.23
Average Annual Salary	\$50,000
Average First year Benefit - TTD	\$17,287
Average Annual Benefit – TTD (Years 2 – 5)	\$33,350
Percentage with Beneficiaries	70%
Mortality Percentage due to Cancer for Medical Benefits Estimate	80%
Funeral Benefit Payment	\$5,500
Assumed Age of Surviving Partner	45
Average Annual Death Benefit	\$33,350
Assumed Treatment Horizon	5 years

The following table provides the estimated annual medical costs related to the various types of cancer.

Active Career Firefighters Cancer Diagnosis Average Annual Medical Cost of Cancer Treatment ⁽¹⁾ Age Less Than 65				
			Last Year of Life	
Type of Diagnosis	Initial Year	Continuing Years	Cancer death	Other cause
Brain and Other Nervous System	\$138,300	\$9,434	\$201,366	\$67,914
Colorectal	\$62,174	\$4,595	\$128,507	\$15,068
Kidney and Renal Pelvis	\$46,048	\$6,018	\$117,123	\$19,142
Leukemia	\$43,243	\$10,249	\$199,774	\$35,941
Lung and Bronchus	\$73,062	\$7,591	\$142,977	\$25,008
Melanoma of the Skin	\$6,524	\$1,951	\$93,654	\$546
Myeloma	\$41,161	\$7,363	\$97,473	\$25,758
Non-Hodgkin Lymphoma	\$41,161	\$7,363	\$97,473	\$25,758
Prostate	\$23,652	\$3,201	\$93,363	\$5,370
Stomach	\$94,144	\$4,282	\$160,695	\$25,800
Testis	\$41,161	\$7,363	\$97,473	\$25,758
Urinary Bladder	\$25,152	\$4,677	\$113,659	\$8,446

Shown on the table below are the assumed survival rates and mortality percentage during the five year treatment window. This table is followed by a table of the cancer incidence rates for the United States population at large.

Cancer Diagnosis Assumed Survival and Mortality Rates ⁽²⁾							
Type of Diagnosis	Annual Survival Rate in Year						Died during 5 years
	0	1	2	3	4	5	
Brain and Other Nervous System	100.0%	57.7%	42.4%	37.2%	34.4%	32.6%	67.4%
Colorectal	100.0%	83.5%	75.9%	70.6%	66.9%	64.1%	35.9%
Kidney and Renal Pelvis	100.0%	81.7%	76.1%	72.7%	70.0%	67.8%	32.2%
Leukemia	100.0%	72.3%	64.5%	60.4%	57.2%	54.6%	45.4%
Lung and Bronchus	100.0%	38.5%	23.8%	18.4%	15.5%	13.8%	86.2%
Melanoma of the Skin	100.0%	96.8%	94.1%	92.1%	90.7%	89.7%	10.3%
Other - Myeloma	100.0%	75.6%	64.0%	54.5%	46.6%	40.2%	59.8%
Non-Hodgkin Lymphoma	100.0%	76.2%	70.0%	66.5%	63.9%	61.5%	38.5%
Prostate	100.0%	99.5%	99.1%	98.8%	98.6%	98.4%	1.6%
Stomach	100.0%	49.3%	35.0%	29.4%	26.5%	24.6%	75.4%
Testis	100.0%	97.8%	96.6%	95.9%	95.8%	95.7%	4.3%
Urinary Bladder	100.0%	91.7%	87.2%	84.6%	82.5%	80.8%	19.2%

**Cancer sites include invasive cases only unless otherwise noted.
The annual survival estimates are calculated using monthly intervals.**

US Population Cancer Incidence Rate Per 100,000 ⁽³⁾									
Type of Diagnosis	AGE								
	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	Over 60
Brain and Other Nervous System	2.6	3.5	4.0	4.4	5.5	7.1	9.2	12.4	16.5
Colorectal	1.0	2.3	5.0	9.5	18.5	33.3	63.1	83.6	116.6
Kidney and Renal Pelvis	0.5	1.2	3.1	6.5	12.2	20.1	30.8	44.6	60.7
Leukemia	2.9	3.1	3.6	4.7	6.2	9.1	13.4	20.5	31.2
Lung and Bronchus	0.4	0.6	1.3	3.1	9.4	28.1	63.7	114.9	195.8
Melanoma of the Skin	2.1	4.3	7.0	10.1	14.1	21.0	30.0	42.0	59.2
Myeloma	0.1	0.1	0.4	1.0	2.3	4.1	7.3	12.2	18.6
Non-Hodgkin Lymphoma	3.0	4.0	5.5	8.2	12.2	17.8	25.2	35.8	50.6
Prostate	0.0	0.0	0.1	1.2	11.0	46.8	151.5	319.4	536.0
Stomach	0.2	0.5	1.0	1.8	3.2	5.7	9.7	14.2	22.2
Testis	9.6	13.9	13.6	11.2	8.4	6.3	4.3	2.8	1.7
Urinary Bladder	0.3	0.6	1.2	2.3	4.7	10.8	22.2	41.9	74.4

In order to adjust the cancer incidence rates from a general population basis to an Ohio firefighter incidence basis, we have used the following adjustment factors.

Adjustment Factors from US Population to Ohio Firefighter ^{(4), (5)}				
Type of Diagnosis	Estimated Annual Active Career Firefighter Claimants*	Ohio Rate/ National Rate	Firefighter Adjustment Based on NIOSH data - SIR	Adjusted Estimated Annual Active Career Firefighter Claimants
Brain and Other Nervous System	0.84	1.039	1.02	0.89
Colorectal	3.90	1.025	1.18	4.72
Kidney and Renal Pelvis	2.17	0.990	1.27	2.72
Leukemia	1.10	0.871	0.94	0.90
Lung and Bronchus	3.94	1.218	1.12	5.37
Melanoma of the Skin	2.35	0.832	0.87	1.70
Myeloma	0.50	0.880	0.72	0.31
Non-Hodgkin Lymphoma	1.99	0.946	0.99	1.87
Prostate	9.08	0.919	1.03	8.60
Stomach	0.66	0.817	1.15	0.62
Testis	1.06	0.945	0.75	0.75
Urinary Bladder	1.51	1.044	1.12	1.76
Total	29.10			30.23
* assuming US cancer incident rate				

Based upon all of the assumptions and adjustments displayed above, we have developed an estimated cost for claims diagnosed during a policy year over an assumed five year treatment horizon.

Active Career Firefighters						
Cost Estimate over Five Year Treatment Horizon						
SITE	Adjusted Estimated Annual Claimants	Medical Cost	Funeral Costs	5 Yr TTD Costs	Death Benefit Cost	Total Estimated Costs
Brain and Other Nervous System	0.89	\$187,453	\$3,288	\$59,161	\$232,684	\$482,586
Colorectal	4.72	\$484,739	\$9,324	\$527,171	\$659,872	\$1,681,107
Kidney and Renal Pelvis	2.72	\$234,958	\$4,823	\$309,393	\$341,360	\$890,534
Leukemia	0.90	\$118,653	\$2,256	\$87,431	\$159,646	\$367,986
Lung and Bronchus	5.37	\$733,039	\$25,467	\$214,516	\$1,802,410	\$2,775,432
Melanoma of the Skin	1.70	\$36,116	\$965	\$239,322	\$68,316	\$344,719
Myeloma	0.31	\$30,110	\$1,032	\$28,103	\$73,052	\$132,297
Non-Hodgkin Lymphoma	1.87	\$154,287	\$3,953	\$196,047	\$279,750	\$634,036
Prostate	8.60	\$321,393	\$756	\$1,281,952	\$53,540	\$1,657,641
Stomach	0.62	\$94,439	\$2,574	\$34,468	\$182,139	\$313,619
Testis	0.75	\$54,348	\$178	\$109,678	\$12,616	\$176,821
Urinary Bladder	1.76	\$99,632	\$1,862	\$229,416	\$131,748	\$462,658
Total	30.23	\$2,549,167	\$56,477	\$3,316,657	\$3,997,134	\$9,919,435

Estimated Presumptive Cancer Costs – Retired Career Firefighters

Below are the key assumptions made in our estimate of the policy year costs for retired career firefighters as a result of Senate Bill 27:

Retired Career Firefighters	
Number of Firefighters	8,372
Expected Average Number of Diagnoses	141.43
Average Annual Salary	\$50,000
Average First year Benefit - TTD	\$17,287
Average Annual Benefit – TTD (Years 2 – 5)	\$33,350
Percentage Receiving TTD Benefits	20%
Percentage with Beneficiaries	10%
Mortality Percentage due to Cancer for Medical Benefits Estimate	80%
Funeral Benefit Payment	\$5,500
Assumed Age of Surviving Partner	70
Average Annual Death Benefit	\$33,350
Assumed Treatment Horizon	5 years

The following table provides the estimated annual medical costs related to the various types of cancer for retired career firefighters. We have assumed that the medical costs are in line with diagnosis after 65 years of age.

Retired Career Firefighters Cancer Diagnosis Average Annual Medical Cost of Cancer Treatment ⁽¹⁾ Age Over 65				
			Last Year of Life	
Type of Diagnosis	Initial Year	Continuing Years	Cancer death	Other cause
Brain and Other Nervous System	\$115,250	\$9,434	\$134,244	\$67,914
Colorectal	\$51,812	\$4,595	\$85,671	\$15,068
Kidney and Renal Pelvis	\$38,374	\$6,018	\$78,082	\$19,142
Leukemia	\$36,036	\$10,249	\$133,183	\$35,941
Lung and Bronchus	\$60,885	\$7,591	\$95,318	\$25,008
Melanoma of the Skin	\$5,437	\$1,951	\$62,436	\$546
Myeloma	\$41,161	\$7,363	\$97,473	\$25,758
Non-Hodgkin Lymphoma	\$41,161	\$7,363	\$97,473	\$25,758
Prostate	\$19,710	\$3,201	\$62,242	\$5,370
Stomach	\$78,453	\$4,282	\$107,130	\$25,800
Testis	\$41,161	\$7,363	\$97,473	\$25,758
Urinary Bladder	\$20,960	\$4,677	\$75,772	\$8,446

Shown on the table below are the assumed survival rates and mortality percentage during the five year treatment window. This table is the same table used for the active career firefighters. This table is followed by a table of the cancer incidence rates for the United States population at large.

Cancer Diagnosis Assumed Survival and Mortality Rates ⁽²⁾							
Type of Diagnosis	Annual Survival Rate						Died during 5 years
	0	1	2	3	4	5	
Brain and Other Nervous System	100.0%	57.7%	42.4%	37.2%	34.4%	32.6%	67.4%
Colorectal	100.0%	83.5%	75.9%	70.6%	66.9%	64.1%	35.9%
Kidney and Renal Pelvis	100.0%	81.7%	76.1%	72.7%	70.0%	67.8%	32.2%
Leukemia	100.0%	72.3%	64.5%	60.4%	57.2%	54.6%	45.4%
Lung and Bronchus	100.0%	38.5%	23.8%	18.4%	15.5%	13.8%	86.2%
Melanoma of the Skin	100.0%	96.8%	94.1%	92.1%	90.7%	89.7%	10.3%
Myeloma	100.0%	75.6%	64.0%	54.5%	46.6%	40.2%	59.8%
Non-Hodgkin Lymphoma	100.0%	76.2%	70.0%	66.5%	63.9%	61.5%	38.5%
Prostate	100.0%	99.5%	99.1%	98.8%	98.6%	98.4%	1.6%
Stomach	100.0%	49.3%	35.0%	29.4%	26.5%	24.6%	75.4%
Testis	100.0%	97.8%	96.6%	95.9%	95.8%	95.7%	4.3%
Urinary Bladder	100.0%	91.7%	87.2%	84.6%	82.5%	80.8%	19.2%

**Cancer sites include invasive cases only unless otherwise noted.
The annual survival estimates are calculated using monthly intervals.**

US Population Cancer Incidence Rate Per 100,000 ⁽³⁾									
Type of Diagnosis	AGE								
	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
Brain and Other Nervous System	7.1	9.2	12.4	16.5	20.5	23.5	27.2	27.2	24.8
Colorectal	33.3	63.1	83.6	116.6	174.6	225.5	278.8	328.6	367.2
Kidney and Renal Pelvis	20.1	30.8	44.6	60.7	82.8	92.9	99.4	98.1	82.3
Leukemia	9.1	13.4	20.5	31.2	47.2	65.2	87.1	110.8	126.9
Lung and Bronchus	28.1	63.7	114.9	195.8	333.3	450.7	548.9	576.2	478.4
Melanoma of the Skin	21.0	30.0	42.0	59.2	80.2	101.3	127.3	147.2	155.2
Myeloma	4.1	7.3	12.2	18.6	28.0	37.6	46.7	52.0	51.2
Non-Hodgkin Lymphoma	17.8	25.2	35.8	50.6	74.6	96.5	124.2	143.2	145.2
Prostate	46.8	151.5	319.4	536.0	800.9	845.6	752.4	562.0	493.1
Stomach	5.7	9.7	14.2	22.2	32.3	43.8	55.1	62.6	71.4
Testis	6.3	4.3	2.8	1.7	1.3	1.1	1.2	0.9	1.2
Urinary Bladder	10.8	22.2	41.9	74.4	129.1	188.1	260.1	325.4	364.4

In order to adjust the cancer incidence rates from a general population basis to an Ohio firefighter incidence basis, we have used the following adjustment factors which are the same as used with the active career firefighter data.

Adjustment Factors from US Population to Ohio Firefighter ^{(4), (5)}				
Type of Diagnosis	Estimated Annual Retired Career Firefighter Claimants*	Ohio Rate/ National Rate	Firefighter Adjustment Based on NIOSH data - SIR	Adjusted Estimated Annual Retired Career Firefighter Claimants
Brain and Other Nervous System	1.60	1.039	1.02	1.70
Colorectal	14.87	1.025	1.18	17.99
Kidney and Renal Pelvis	5.98	0.990	1.27	7.52
Leukemia	4.39	0.871	0.94	3.59
Lung and Bronchus	26.01	1.218	1.12	35.48
Melanoma of the Skin	6.87	0.832	0.87	4.97
Myeloma	2.34	0.880	0.72	1.48
Non-Hodgkin Lymphoma	6.37	0.946	0.99	5.96
Prostate	48.46	0.919	1.03	45.88
Stomach	2.82	0.817	1.15	2.65
Testis	0.16	0.945	0.75	0.12
Urinary Bladder	12.05	1.044	1.12	14.09
Total	131.93			141.43
*assuming US cancer incident rate				

Based upon all of the assumptions and adjustments displayed above, we have developed an estimated cost for claims diagnosed during a policy year over an assumed five year treatment horizon.

Retired Career Firefighters Cost Estimate over Five Year Treatment Horizon						
SITE	Adjusted Estimated Annual Claimants	Medical Cost	Funeral Costs	5 Yr TT Costs	Death Benefit Cost	Total Estimated Costs
Brain and Other Nervous System	1.70	\$251,528	\$6,298	\$22,668	\$41,087	\$321,581
Colorectal	17.99	\$1,240,222	\$35,516	\$401,628	\$231,682	\$1,909,048
Kidney and Renal Pelvis	7.52	\$396,548	\$13,327	\$170,971	\$86,933	\$667,779
Leukemia	3.59	\$279,128	\$8,971	\$69,546	\$58,523	\$416,168
Lung and Bronchus	35.48	\$3,316,603	\$168,201	\$283,362	\$1,097,228	\$4,865,394
Melanoma of the Skin	4.97	\$51,796	\$2,816	\$139,648	\$18,371	\$212,631
Myeloma	1.48	\$120,016	\$4,884	\$26,592	\$31,857	\$183,348
Non-Hodgkin Lymphoma	5.96	\$377,998	\$12,631	\$125,293	\$82,395	\$598,316
Prostate	45.88	\$937,073	\$4,037	\$1,368,319	\$26,336	\$2,335,765
Stomach	2.65	\$284,011	\$10,988	\$29,433	\$71,678	\$396,111
Testis	0.12	\$5,043	\$27	\$3,348	\$178	\$8,596
Urinary Bladder	14.09	\$439,281	\$14,876	\$366,666	\$97,040	\$917,863
Total	141.43	\$7,699,245	\$282,573	\$3,007,475	\$1,843,308	\$12,832,600

Estimated Presumptive Cancer Costs – Active Volunteer Firefighters

Using the same assumptions as the Active Career Firefighters, we have developed the following annual policy year cost estimate based upon a population estimate of 29,400 Active Volunteer Firefighters:

Active Volunteer Firefighters						
Cost Estimate over Five Year Treatment Horizon						
SITE	Adjusted Estimated Annual Claimants	Medical Cost	Funeral Costs	5 Yr TT Costs	Death Benefit Cost	Total Estimated Costs
Brain and Other Nervous System	2.05	\$433,337	\$7,600	\$136,764	\$537,899	\$1,115,600
Colorectal	10.92	\$1,120,578	\$21,553	\$1,218,669	\$1,525,436	\$3,886,237
Kidney and Renal Pelvis	6.30	\$543,155	\$11,150	\$715,228	\$789,128	\$2,058,661
Leukemia	2.09	\$274,292	\$5,215	\$202,115	\$369,057	\$850,678
Lung and Bronchus	12.42	\$1,694,577	\$58,872	\$495,899	\$4,166,656	\$6,416,004
Melanoma of the Skin	3.94	\$83,489	\$2,231	\$553,243	\$157,927	\$796,891
Myeloma	0.73	\$69,606	\$2,386	\$64,965	\$168,875	\$305,832
Non-Hodgkin Lymphoma	4.32	\$356,668	\$9,137	\$453,204	\$646,701	\$1,465,711
Prostate	19.87	\$742,968	\$1,749	\$2,963,506	\$123,769	\$3,831,991
Stomach	1.43	\$218,315	\$5,949	\$79,680	\$421,053	\$724,997
Testis	1.74	\$125,638	\$412	\$253,545	\$29,165	\$408,760
Urinary Bladder	4.08	\$230,322	\$4,303	\$530,343	\$304,564	\$1,069,532
Total	69.87	\$5,892,945	\$130,559	\$7,667,161	\$9,240,230	\$22,930,895

Estimated Presumptive Cancer Costs – Retired Volunteer Firefighters

Using the same assumptions as the Retired Career Firefighters, we have developed the following annual policy year cost estimate based upon a population estimate of 19,350 Retired Volunteer Firefighters. We have assumed that the ratio of active volunteer firefighters to active career firefighters of 2.31 to 1.0 also holds true for the relationship between retired volunteer firefighters to retired career firefighters.

Retired Volunteer Firefighters						
Cost Estimate over Five Year Treatment Horizon						
SITE	Adjusted Estimated Annual Claimants	Medical Cost	Funeral Costs	5 Yr TT Costs	Death Benefit Cost	Total Estimated Costs
Brain and Other Nervous System	3.93	\$581,460	\$14,560	\$52,402	\$94,981	\$743,403
Colorectal	41.58	\$2,867,038	\$82,103	\$928,448	\$535,583	\$4,413,172
Kidney and Renal Pelvis	17.40	\$916,706	\$30,807	\$395,236	\$200,965	\$1,543,715
Leukemia	8.31	\$645,264	\$20,739	\$160,770	\$135,289	\$962,062
Lung and Bronchus	82.01	\$7,667,037	\$388,833	\$655,052	\$2,536,477	\$11,247,399
Melanoma of the Skin	11.49	\$119,737	\$6,510	\$322,827	\$42,469	\$491,542
Myeloma	3.43	\$277,442	\$11,289	\$61,474	\$73,643	\$423,848
Non-Hodgkin Lymphoma	13.79	\$873,823	\$29,199	\$289,642	\$190,473	\$1,383,136
Prostate	106.06	\$2,166,244	\$9,333	\$3,163,162	\$60,882	\$5,399,621
Stomach	6.13	\$656,552	\$25,401	\$68,042	\$165,700	\$915,694
Testis	0.27	\$11,658	\$63	\$7,741	\$410	\$19,872
Urinary Bladder	32.57	\$1,015,491	\$34,389	\$847,626	\$224,330	\$2,121,836
Total	326.95	\$17,798,452	\$653,227	\$6,952,420	\$4,261,200	\$29,665,300

References

1. Annual Medical Cost of Cancer Treatment

Projections of the Cost of Cancer Care in the United States: 2010–2020;
Angela B. Mariotto, K. Robin Yabroff, Yongwu Shao, Eric J. Feuer, and Martin L. Brown; Table 4;
J Natl Cancer Inst. 2011 Jan 19; 103(2): 117–128. ; doi: 10.1093/jnci/djq495; PMID: PMC3107566
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3107566/>

2. Survival and Mortality Rates

Relative Survival By Survival Time by Cancer Site All Ages, All Races, Male 1988-2011
<http://seer.cancer.gov/faststats/selections.php?run=runit&output=2&data=4&statistic=5&year=201506&race=1&sex=2&age=1&series=cancer&cancer=76;18;20;86;72;90>

3. Incidence of Cancer

The United States Cancer Statistics: Incidence and Mortality Web-based report
National Program of Cancer Registries (NPCR)
Average annual cancer rate - Male, 2007-2011, All races;
http://www.cdc.gov/cancer/npcr/uscs/download_data.htm

4. Ohio Cancer Adjustment

Cancer in Ohio 2014; Ohio Department of Health; Table 2; pg. 12

5. NIOSH Adjustment

NIOSH Study - Mortality and cancer incidence in a pooled cohort of US firefighters from San Francisco, Chicago, and Philadelphia (1950-2009); Supplement Data - Table S4. Cancer-specific standardized incidence ratios compared to the US population by fire department (1985-2009, n=24453, 403152 PYAR)*;

<http://oem.bmj.com/content/suppl/2013/10/14/oemed-2013-101662.DC1/oemed-2013-101662supp.pdf>

6. US Fire Department Census - FEMA website (2015, February 26) Retrieved from

<https://apps.usfa.fema.gov/census/>

7. Ohio Police & Fire Pension Fund; Jan. 1, 2014 *Actuarial Valuation of Pension Benefits - Oct. 2014*

8. The National Council on Compensation Insurance (2014). *NCCI White Paper on Firefighter Presumptive Coverage*. Retrieved from

http://kslegislature.org/li_2014/b2013_14/committees/ctte_s_cmrce_1/documents/testimony/20140218_07.pdf

Qualifications

This commentary is submitted by Christopher S. Carlson, FCAS, MAAA, Chief Actuarial Officer of the Ohio Bureau of Workers' Compensation. Mr. Carlson meets the continuing education requirements of the American Academy of Actuaries and the Casualty Actuarial Society to issue this actuarial report.

Reliance

In developing these estimates, a majority of the research and estimation model development was performed by Erwin Grabisna, Teresa Arms and Dr. Rick Percy. Their efforts on this project have been invaluable to the completion of the estimate and have relied upon heavily in developing this report.

ATTACHMENT C

House Bill 207 (Henne, McColley)- Subrogated workers' compensation claims

Actuarial Commentary on House Bill 207- Subrogated Claims

House Bill 207 would alter the treatment of loss amounts in development of an employer's experience modification factor resulting from an auto (motor vehicle) accident where a third party (other than the employer or the employees) was found to be at-fault/ financially responsible.

In order to provide a context around the potential scope of this issue, during the 27 month period between January 1, 2013 and March 31, 2015, there were 5,253 subrogation referrals to the BWC related to motor vehicle accidents.

We have not performed a comprehensive actuarial analysis. This effort would require:

- identifying previous claims that would have been excluded from the employer's experience, re-developing the expected loss rates by manual classification,
- re-estimating all employer's experience modification factors, re-development of the uniform off-balance factor and subsequent revised base rates and
- recalculating the employer's premiums and comparing them with their previous premium.

We also would be unable to estimate the full impact due to the potential that an employer under this proposed treatment could have been included in and rated as part of group in the group rating program.

We provide this commentary with respect to the anticipated impact to the statewide rate level indications, the manual classification expected loss rates and employer experience modification factors and the manual classification base rates.

Statewide Rate Level

On an overall statewide rate level basis, there would not be any impact to the estimated future costs in the program (private employer or public employer – taxing district). Thus, we anticipate no impact to the overall statewide premium level of either program as a result of this bill.

Manual Classification Expected Loss Rates and Employer Experience Modification Factors

The impact from implementation of this proposed change would primarily be felt in the experience modification factor of employers whose employees have been involved in an auto accident, where another party was found to be at-fault/responsible. These employers' experience modification factor will be lower under the proposed bill than it is in the current system – both before any subrogation is received by the BWC as well as after. We note that actual subrogation receipts by the BWC are most typically less than the full value paid on an individual claim due to the law that governs subrogation recoveries by the BWC.

The exclusion of the claim costs from these not at-fault claims from the experience rating process will result in slightly lower historical manual classification expected loss rates – the average historical experience period costs per \$100 of payroll in each manual classification. The expected loss rates are used as a benchmark or comparative average in determining whether an employer's historical experience was less than or greater than the average. These lower historical expected loss rates will also result in slightly higher experience modification factors for employers without these types of claims in their experience but not materially so. The lower historical expected loss rates might also cause some employers to be placed in a lower expected loss/credibility band than they otherwise would be. For very few employers possibly affected in this way, their experience modification factor would increase, if they were credit rated, and decrease, if they were debit rated.

Manual Classification Base Rates

We note that the current and future manual classification base rates include a provision for all expected costs regardless of whether the historical costs are included or excluded in the experience modification factor calculation process. There may possibly be a very small impact from this proposed legislation to the manual classification base rates from the overall movement in the average experience modification factor. While we have not done an extensive analysis, we think that the impact to the manual classification base rates from this change in the development of the employer experience modification factors will not be material.

Qualifications

This commentary is submitted by Christopher S. Carlson, FCAS, MAAA, Chief Actuarial Officer of the Ohio Bureau of Workers' Compensation. Mr. Carlson meets the continuing education requirements of the American Academy of Actuaries and the Casualty Actuarial Society to issue this actuarial report.