Injury Schemes Seminar
Balancing Outcomes
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Sheraton Mirage Gold Coast

Actuaries Institute

Fire-fighters' cancer risk

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This presentation has been prepared for the Actuaries Institute 2013 Injury Schemes Seminar.
The Institute Council wishes it to be understood that opinions put forward herein are not necessarily those of the Institute and the Council is not responsible for those opinions.

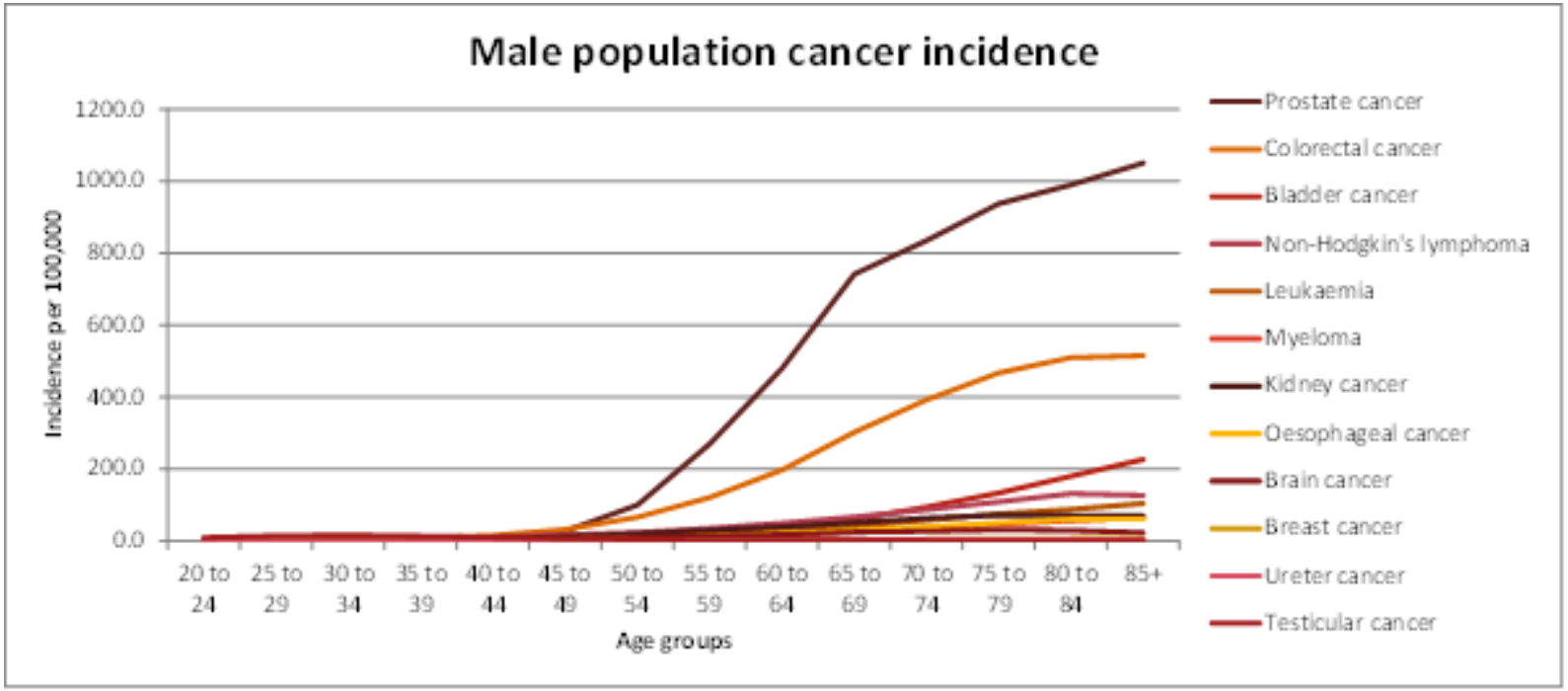
Prescribed cancers – presumptive legislation

Disease	Qualifying period
Brain cancer	5 years
Bladder cancer	15 years
Kidney cancer	15 years
Non-Hodgkin's lymphoma	15 years
Leukaemia	5 years
Breast cancer	10 years
Testicular cancer	10 years
Multiple myeloma	15 years
Primary site prostate cancer	15 years
Primary site ureter cancer	15 years
Primary site colorectal	15 years
Primary site oesophageal cancer	25 years

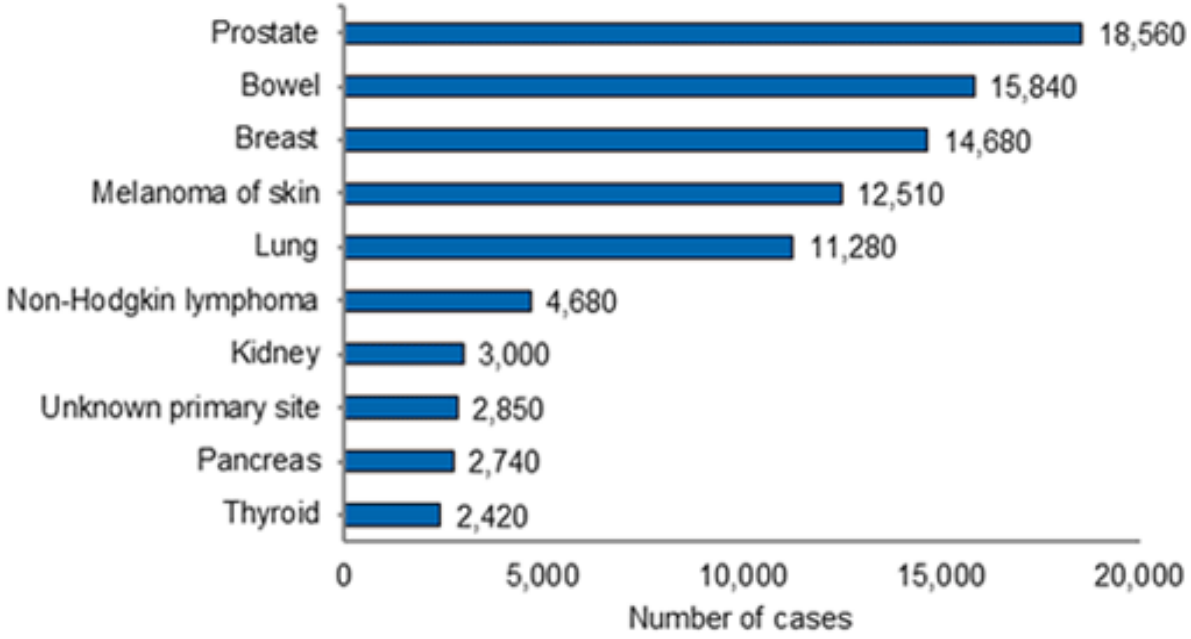
Insurance options

- Life Insurance
  - Income protection
  - TPD
  - Trauma
  - Group life/salary continuance
  - Fire fighter superannuation
  - Treatment costs
  - Definitions of incapacity
- Workers Compensation
  - Work relatedness
  - Age at diagnosis
  - Funding options
  - Retirement
  - Statutory lump sum
  - Common law entitlement

Australian Population cancer incidence rates



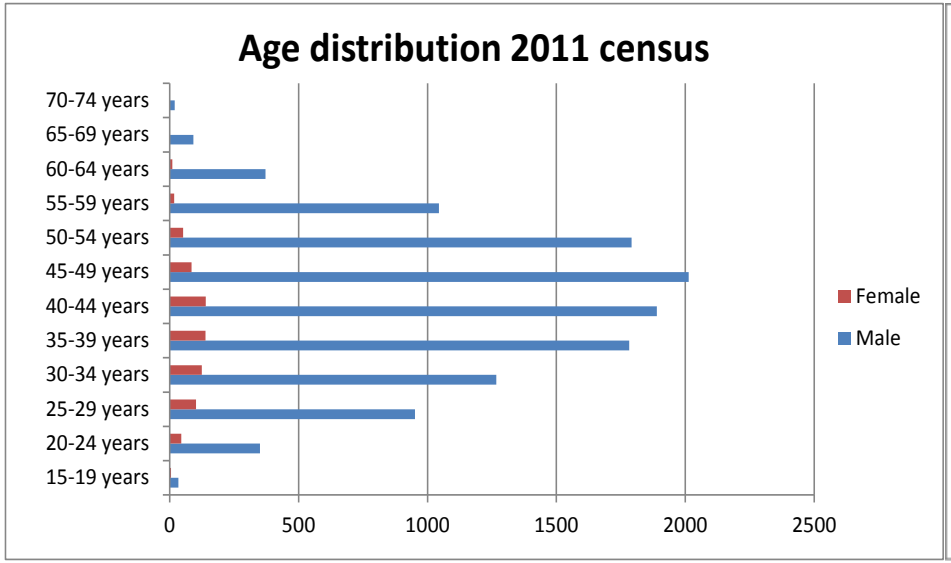
Estimated 10 most commonly diagnosed cancers, Australia, 2012

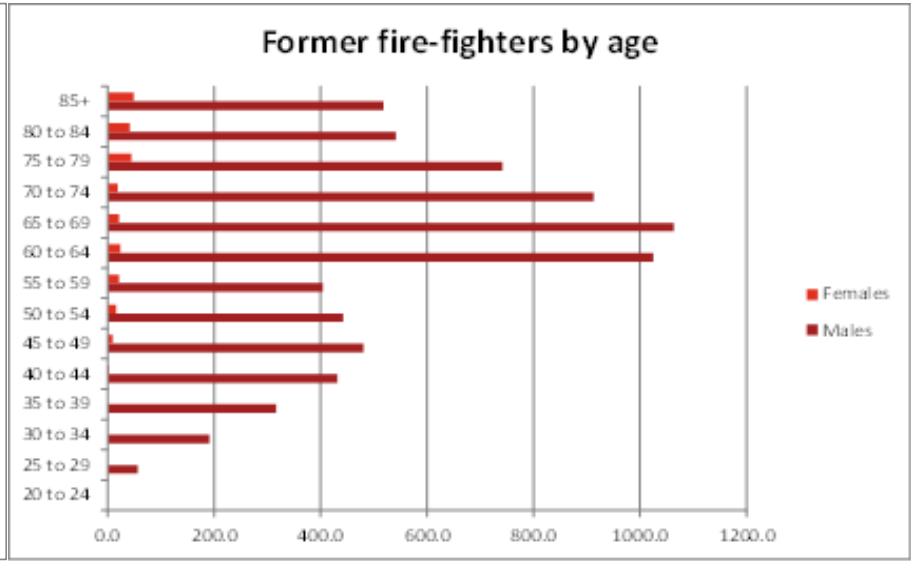


Relative risk for fire-fighters

Disease	Multiple
Brain cancer	1.32
Bladder cancer	1.20
Kidney cancer	1.07
Non-Hodgkin's lymphoma	1.51
Leukaemia	1.14
Breast cancer	1.00
Testicular cancer	2.02
Myeloma	1.53
Prostate cancer	1.28
Ureter cancer	1.07
Colorectal cancer	1.21
Oesophageal cancer	1.16

Age distribution of fire and ES





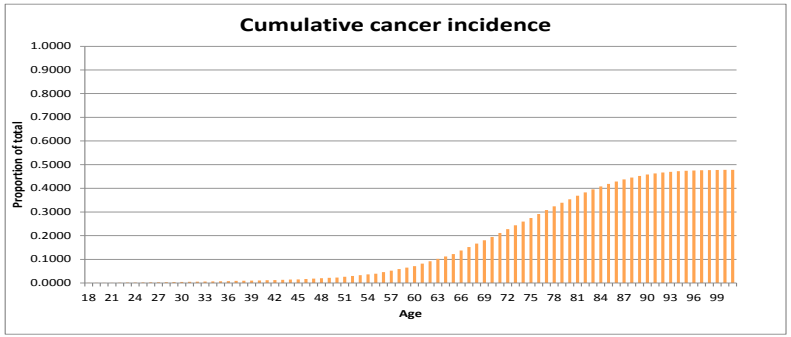
Cost estimates

Scenario	Number of claims	Cost estimate ($M)	Number of firefighters	Cost estimate per firefighter $	Wages ($M)	Cost as % of wageroll
Former firefighter						
Left in last 10 years	24.7	3.2	2,768	1,168		0.3%
Left more than 10 years ago	64.2	10.8	4,841	2,224		1.1%
Total former firefighters	**88.9**	**14.0**	**7,609**	**1,840**		**1.4%**
Current national career fire	**27.3**	**6.0**	**12,325**	**488**	**977**	**0.6%**
Total	**116.1**	**20.0**	**19,934**	**2,328**	**977**	**2.0%**

Scenario	Number of claims	Cost estimate ($M)	Number of firefighters	Cost estimate per firefighter $	Wages ($M)	Cost as % of wageroll
Former firefighter						
Left in last 10 years	24.7	8.1	2,768	2,929		0.8%
Left more than 10 years ago	64.2	31.5	4,841	6,497		3.2%
Total former firefighters	**88.9**	**39.6**	**7,609**	**5,199**		**4.0%**
Current national career fire	**27.3**	**11.6**	**12,325**	**938**	**977.1**	**1.2%**
Total	**116.1**	**51.1**	**19,934**	**2,564**	**977.1**	**5.2%**

Lifetime costing

Retirement Age	Entitlement Age	WA Male Lifetime % wages	WA Female Lifetime % wages	Other Male Lifetime % wages	Other Female Lifetime % wages
55	100	0.8%	0.6%	3.9%	2.3%
65	100	1.0%	0.8%	4.3%	2.5%
75	100	1.2%	1.1%	4.9%	2.8%
55	65	0.3%	0.3%	0.9%	0.9%
65	75	0.7%	0.7%	2.2%	1.6%
75	85	1.2%	1.0%	4.1%	2.4%



Funding options

Alternative	Stability	Responsiveness	Matching exposure	Ease of calculation
Claims made	Low	High	Low	High
Claims incurred	Medium	Medium	Medium	Medium
Lifetime costing	High	Low	High	Low

Actuarial risk

Compared with participants who did not spend any time in sedentary work, participants who spent 10 or more years in sedentary work had almost twice the risk of distal colon cancer (adjusted odds ratio ¼ 1.94, 95% confidence interval: 1.28, 2.93) and a 44% increased risk of rectal cancer (adjusted odds ratio ¼ 1.44, 95% confidence interval: 0.96, 2.18).

This association was independent of recreational physical activity and was seen even among the most recreationally active participants. Sedentary work was not associated with the risk of proximal colon cancer. These results suggest that long-term sedentary work may increase the risk of distal colon cancer and rectal cancer.