

ACTUARIAL SOCIETY OF SOUTH AFRICA

DISABILITY LUMP SUM 2000-2003

29 November 2011

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ABSTRACT

In this report, the CSI committee present the analysis of disability lump sum experience of individual insured lives sold in South Africa. The analysis includes experience of some of the largest insurance companies and the period of investigation is 2000 to 2003.

Crude incidence rates in age bands have been produced on a lives basis as well as an amounts basis in selected instances. Data issues limit the usefulness of the results of this investigation and the drop in exposure and claims is a concern. Comparisons have been made with the SA 85-90 Light and Heavy mortality tables to provide an indication of how disability lump sum experience compares to mortality experience.

There is no clear trend in morbidity experience over the 4 year period of this investigation however experience appears to have improved since the previous investigation. The analysis considers the experience by sex, occupation class, disability definition, smoker status, duration, medical underwriting and socio-economic rating class.

KEYWORDS

Disability Lump Sum, Morbidity, CSI, experience analysis, Own occupation, Own or Suited occupation

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1 Introduction

1.1 Previous investigation

There have been two previous investigations in respect of disability lump sum. The last investigation covered the period from 1995 to 1999 and was presented to the Actuarial Society in October 2003.

1.2 Scope of current investigation

The investigation covers individual policies in South Africa with disability lump sum benefits, that is where lump sums are paid on the total and permanent disability (whether occupational, physical or frailty) of the policyholder. The period of investigation is 2000 to 2003.

1.3 Data

The participating companies were Old Mutual, Sanlam, Liberty, Momentum and Metropolitan. One company's data was excluded from the investigation and another company's data for calendar year 2000 was also excluded. The companies included in the investigation made up the bulk of business sold in the industry at the time of the investigation.

The data specification also requested that the following policies are excluded from the investigation:

- Policies subject to a loading for health, occupation, residence etc. or policies accepted with a lien.
- Pure endowment policies and minimum cover policies
- Policies affected by exercising of an option including those effected in terms of a cover reinstatement benefit after a disability or dread disease claim.
- Policies issued as a result of "back-to-back" arrangement with immediate annuities (that is insurance cover funded by an immediate annuity issued when single premium policies were not approved)
- Policies not issued in South Africa.

1.4 Exposed-to-Risk Calculation

The exposed-to-risk for each individual policy is calculated in days and converted to years. The exposure and deaths are grouped by life year for age and policy year for duration. The exposed-to-risk and deaths are based on number of policies rather than number of lives. Where results on an amounts basis are shown the exposed to risk is calculated as the sum insured provided multiplied by the number of life years' exposed-to-risk.

1.5 Analyses performed (overview)

Crude incidence rates have been produced on a lives basis as well as an amounts basis in selected instances. Comparisons have been made with the SA 85-90 Light and Heavy mortality tables to provide an indication of how disability lump sum experience compares to mortality experience. These tables are available on the Committee's web page at the Actuarial Society of South Africa website www.actuarialsociety.org.za.

Ultimate rates (and rates ignoring duration) are presented as exact age and rates by age and duration are presented as exact age attained (not at entry) and duration attained.

2 Data and Statistics

2.1 Disclaimers

The results of this investigation are dependent on the quality of the data and the extent to which we have been able to analyse the experience by different factors. There were a number of data issues and missing data fields that could not be rectified by the contributing companies. We expect this to be less of an issue in future investigations as the data collection process has been improved. The main change is that the data will be collected annually which will enable the data cleaning process to begin soon after the data collection

This is the first disability lump sum investigation which includes some results on an amounts basis and due caution should be paid to the data concerns when interpreting these results.

The data specification requested companies to provide data on occupation class and socio-economic rating class, as well as other data fields. Disciplines of companies may, however, differ with regards to this categorisation. This investigation provides the results combining classes according to each company's categorisation and does not make an attempt to verify the differences between occupation class lists and socio-economic rating class lists.

Although some data fields requested may not be used as a pricing rating factor (e.g. Province) we would encourage companies to improve data capturing to enable analysis of the experience by these factors at an industry level and improve the usefulness of these reports.

2.2 Data problems

Reasonability checking of the data by the committee is done for each company. The biggest concerns included the drop in exposure and claims compared to the previous investigation, missing data fields and the accuracy of the sum insured and claim amounts provided. These are discussed below.

2.2.1 Drop in Exposure and Claims

The exposure and claims are significantly lower than the previous investigation (even for 1999 where data was collected as part of this investigation for reconciliation). Since the data for the previous investigation was collected on an aggregated basis it is not possible to reconcile the data provided. The exclusion of some older books of business from the current investigation was provided by some companies as an explanation. Most companies were satisfied with the accuracy of the current investigation data; however, the committee was not able gain comfort independently.

One company showed a significant reduction in claims while there was an increase in exposure which was not able to be explained. The results for this company were excluded from the analysis. One company had no claims coming through in 1999 and 2000. Given that 1999 was not included in this investigation the results for this company was excluded for 2000.

2.2.2 Missing Data Fields

This investigation provides analysis of most of the data categories requested, however, varying degrees of unspecified (unknown) data limits some of the analysis. Not all of the companies were able to provide data for all the categories requested. Detailed analyses of some categories such as Deferred Period (often referred to in South Africa as Waiting Period or Elimination Period), Province and Cause of Claim were not possible due to lack of available data. Improved data collection will make these investigations possible in the future.

Data fields missing from the five companies that initially contributing data:

- Medical field – two companies unknown
- Occupational field – one company unknown
- Deferred period – four companies unknown
- Cause of claim – three companies unknown
- Type of disability – two companies unknown (one unknown and one classifying all claims as unknown)
- Claim severity – not provided for 36% of the claims
- Type of Policy (Accelerated or Standalone) – one company unknown
- Province – one company unknown as well as a large proportion of unknown by the other companies
- Underwriting Socio-economic rating class – all companies included a large proportion of unknown fields

2.2.3 Sum Insured

Not all companies provided the correct sum insured for the exposure period making an amounts analysis on the full data set not possible. Common data issues included providing the initial sum insured or the mortality parent benefit sum insured rather than the rider benefit current sum insured (including any benefit increases). Results were provided on an amounts basis using data from three out of the four companies included in this analysis in addition to results including the fourth company (whose experience would be overstated due to the exposure for this company being understated as only initial sum insured was provided).

2.2.4 Policy maturities

One company showed an increase in claims incidence for ages above 60 which was unexplained however could be due to the inclusion of some maturities or other terminations as claims. The results for these ages are not as credible and therefore have been excluded from most of the results shown. Where these ages have been included in the overall results we do not expect this data issue to have a significant impact.

2.3 Exposure and Claims statistics

Total exposure for this four year investigation period is 8.16 million policy-years and total number of disabilities are 10 985 (15.3 million policy-years and 25 000 disabilities for the 1995-99 five year investigation period).

Table 2.3.1 Claims and exposure by year: lives

Year	Claims	Exposure	Crude Observed Rate
1995	5 268	2 875 813	0.00183
1996	4 832	3 050 937	0.00158
1997	4 903	3 141 362	0.00156
1998	5 707	3 171 194	0.00180
1999	4 233	3 019 498	0.00140
1999 (new)	2 735	2 010 514	0.00136
2000	2 478	1 958 058	0.00127
2001	3 105	2 176 097	0.00143
2002	2 789	2 070 751	0.00135
2003	2 613	1 959 387	0.00133

Table 2.3.2 Claims and exposure by year: amounts

Year	Claims	Exposure	Crude Observed Rate
2000	267 484 627	263 897 946 711	0.00101
2001	315 917 217	287 130 538 296	0.00110
2002	303 948 833	296 980 232 030	0.00102
2003	298 437 962	304 672 061 395	0.00098

The overall lives exposure for the current period of investigation (2000-2003) has reduced by 34% when compared to the data from the previous investigation for the prior four years (1996-1999). The number of claims fell by 44%. The overall observed rate fell by 15%.

The main reasons for this drop in exposure and claims are given below:

- The exclusion of one company's data from this investigation as well as another company's data for calendar years 1999 and 2000.
- The exclusion of some older books of business from the current investigation where this was included previously.

Since the data for the previous investigation was collected on an aggregate basis, reconciliation to the previous data set has not been possible, however, most companies expressed confidence in the current investigation data extracts.

Figure 2.3.1 Exposure and number of disabilities – overall: lives

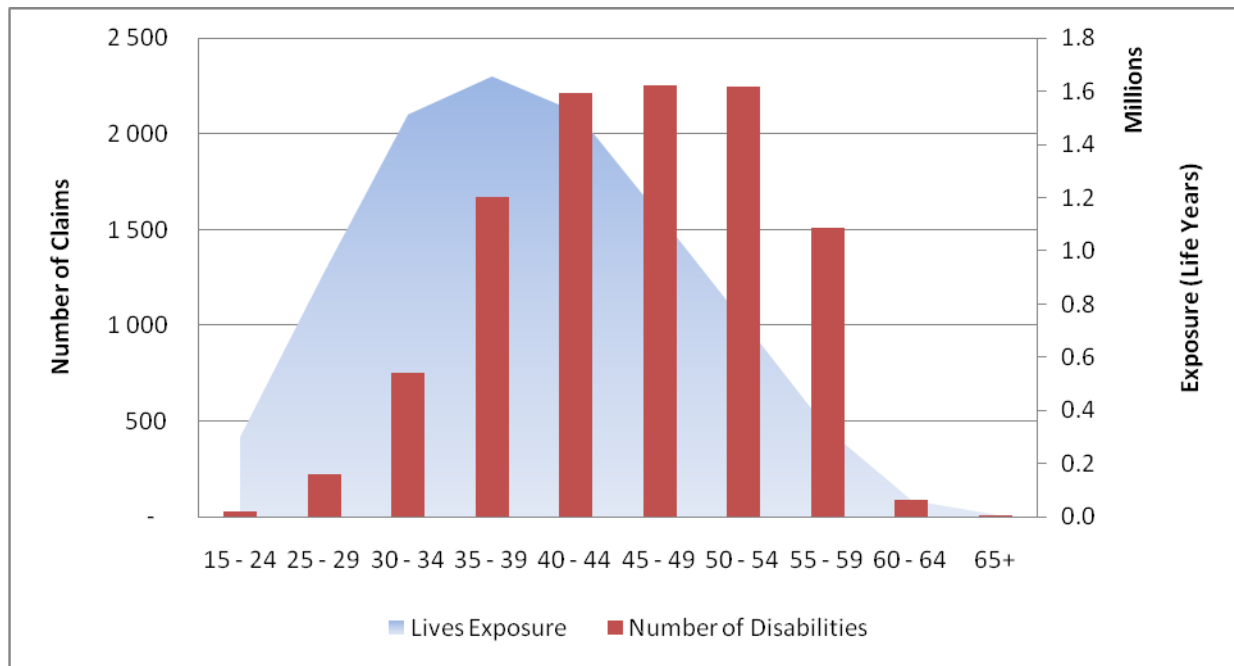


Figure 2.3.2 Exposure and number of disabilities – males: lives

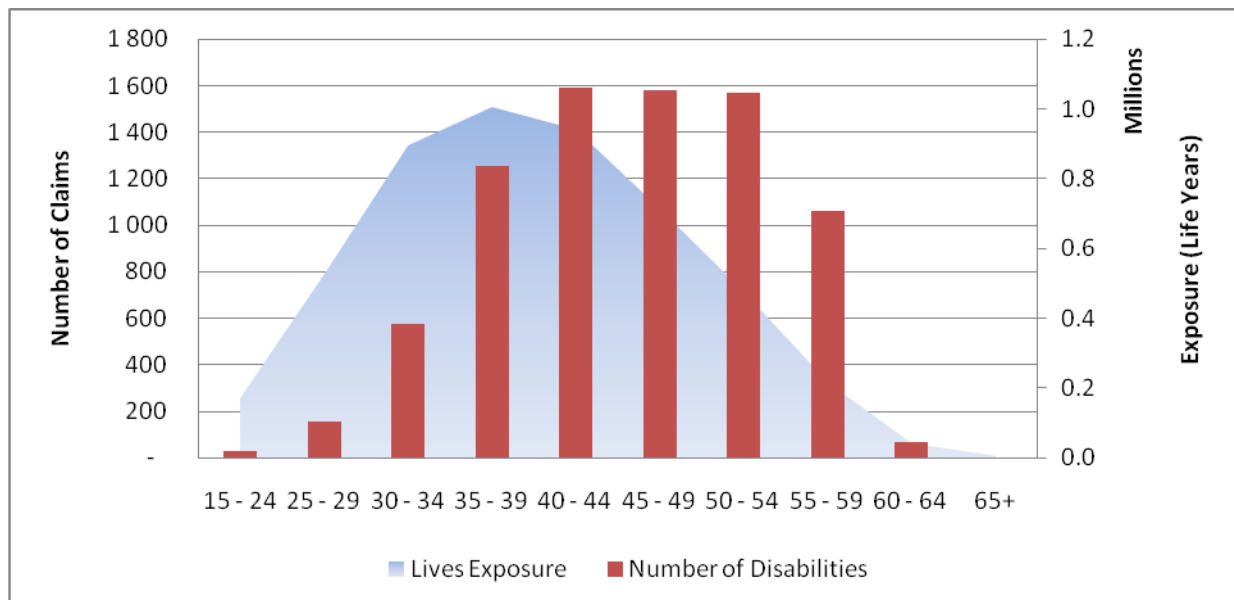
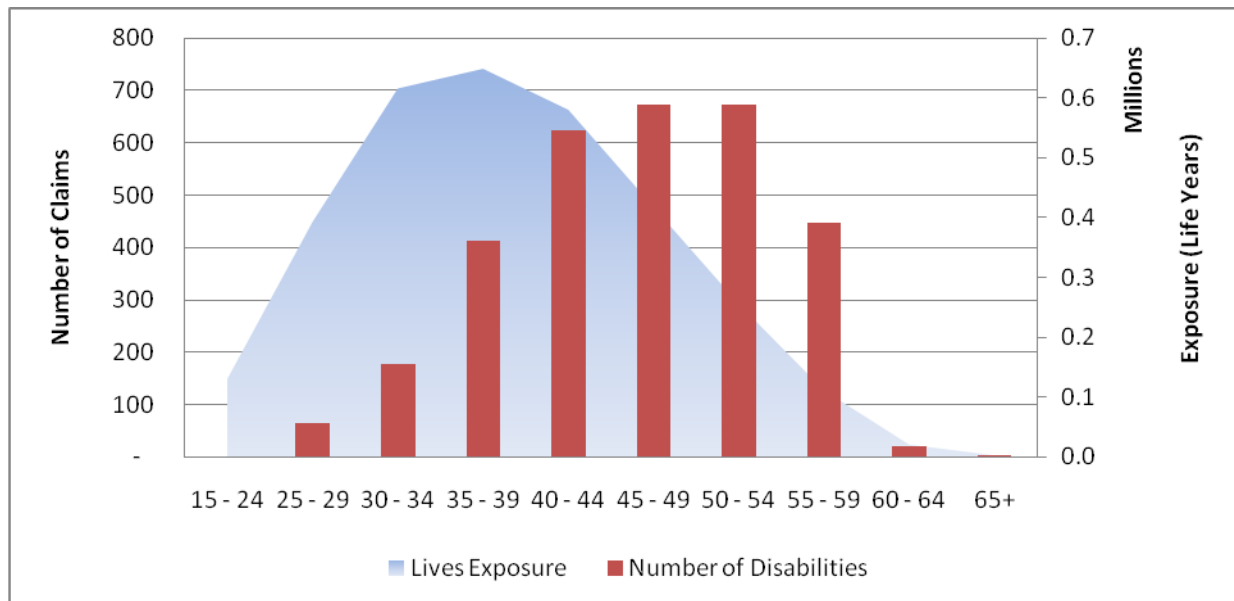


Figure 2.3.3 Exposure and number of disabilities – females: lives



3 Analyses

3.1 Lives vs Amounts Experience

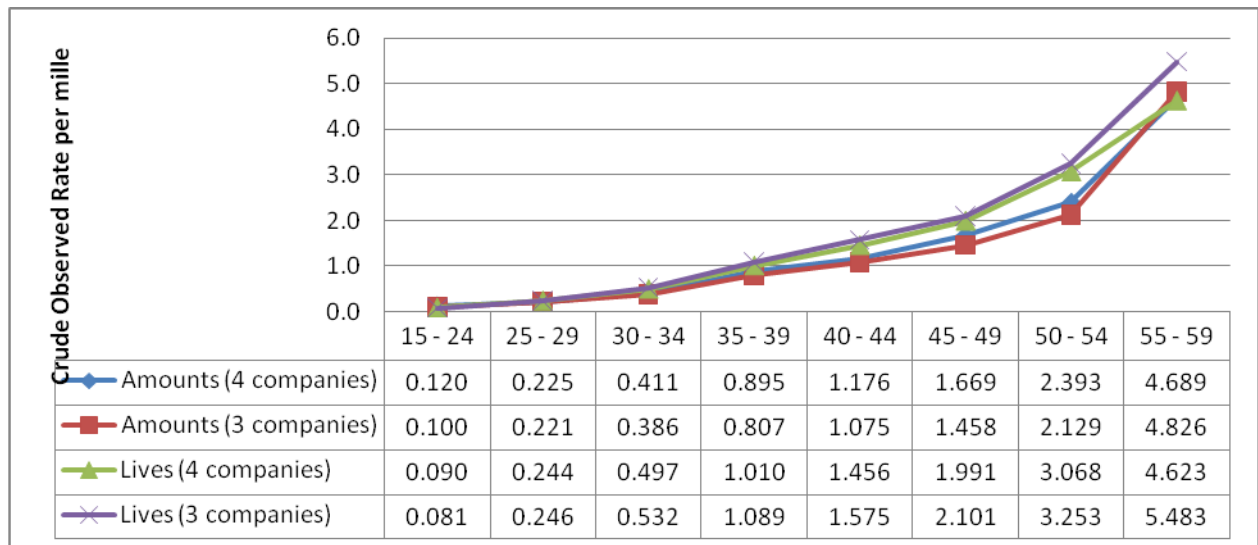
The detailed results in this report are based primarily on an analysis by lives, which is consistent with the previous investigations. In this section of the report we show the results on an amounts analysis for all four contributing companies, however, it is important to note that one company's exposure uses initial sum insured and not sum insured during the period of exposure. The results excluding this company have therefore also been shown.

For disability lump sum benefits we would expect the majority of claims to be settled at the full benefit amount, however, some of the business may have been written on disability definitions which allow for partial claims. Although requested, the claim severity field was not completed by all companies. We have compared the claim amounts to the sum insured reported to calculate the claim severity in the table below. One company provided us with initial sum insured rather than current sum insured which explains why there is a significant proportion of claims above 100% claim severity. Assuming these were settled at full sum insured the table below suggests that 91% of claims were settled for the full sum insured. We are not able to confirm whether the 9% of claims settled below the full sum assured were all due to partial payments and this may indicate further data issues.

Table 3.1.1 Distribution of calculated claim severity

Claim Severity	Percentage of Policies
0%	1.2%
10%	0.2%
20%	0.1%
30%	0.4%
40%	0.2%
50%	2.3%
60%	0.5%
70%	0.5%
80%	0.7%
90%	2.9%
100%	71.0%
110%	5.2%
120%	3.1%
>120%	11.5%
Total	100.0%

Figure 3.1.1 Overall claims rate by age: lives vs amounts



The overall amounts experience is 76% of the overall lives experience for all companies included in this investigation. As mentioned, one company's amounts rate will be overstated due to the fact that initial sum insured was provided rather than current sum insured. The overall amount experience is 66% of the overall lives experience if we exclude this company from the lives and amounts analysis.

Figure 3.1.2 Overall claims rate by calendar year: lives vs amounts

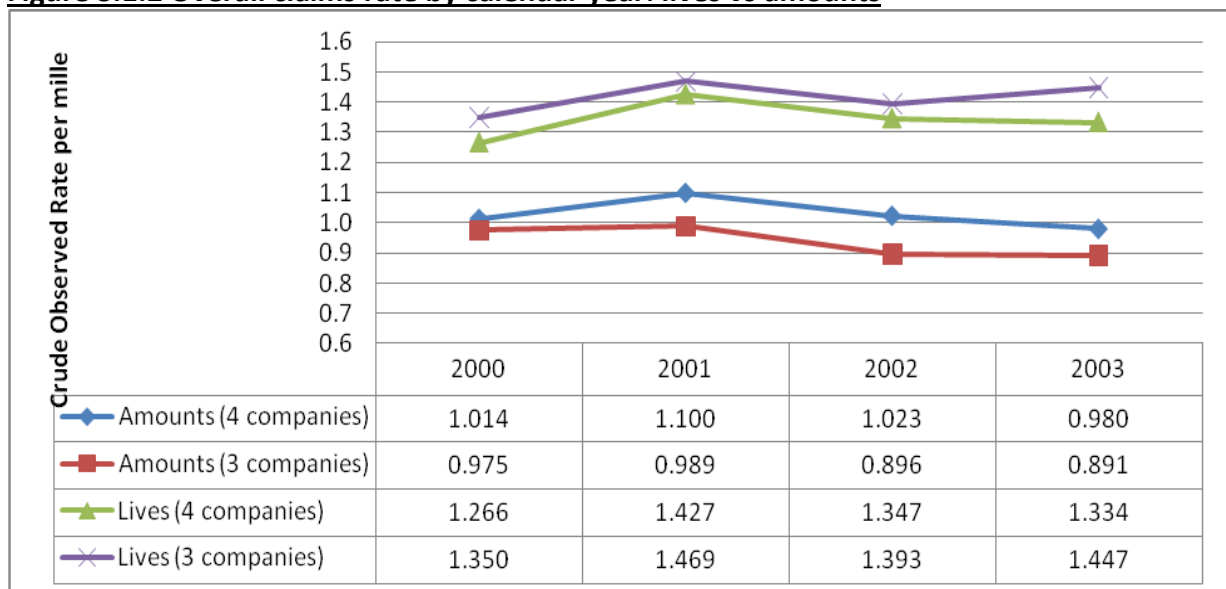
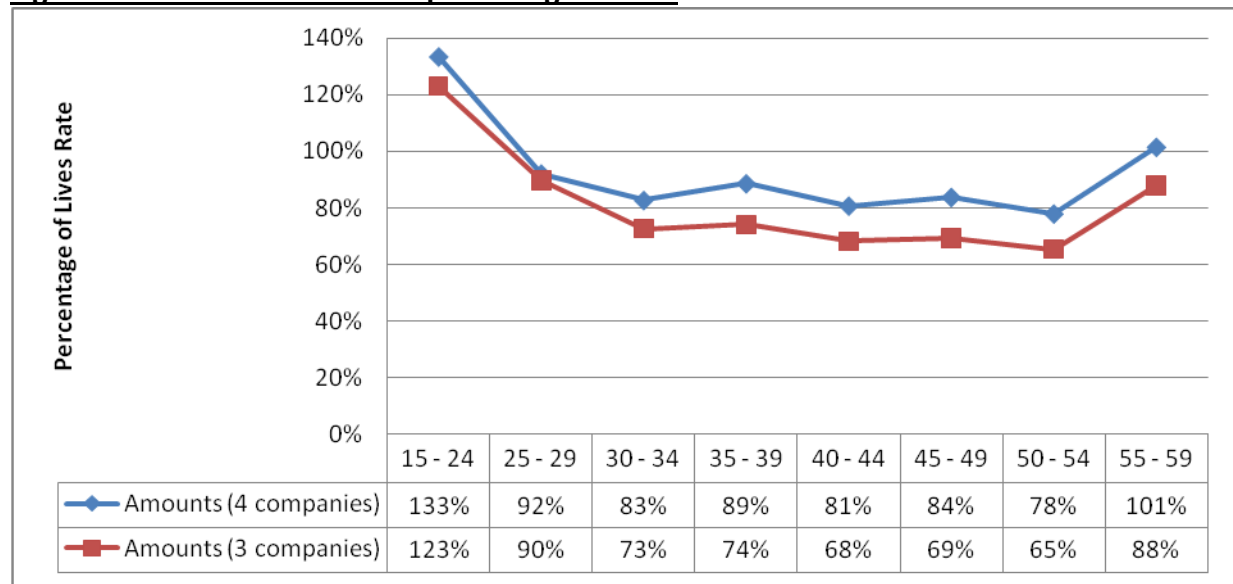


Figure 3.1.3 Rates: Amounts as percentage of lives

The amount versus lives ratio is significantly different when including three companies compared to including all four companies. Given the data concerns it is difficult to draw conclusions as differences may also be due to company variation in experience.

A lives analysis by sum insured band has not been included in this report given that more than 86% of the exposure and claims are within the R0 – R250 000 sum insured band.

Table 3.1.2 Lives exposure and claims by sum insured band

Sum Insured Band	Exposure	Claims	Rate	Ave Age	Ave Sum Insured	Exposure Distribution
R0k - R250k	7 035 949	10 127	1.439	39.3	84 315	86%
R250k - R500k	753 123	631	0.838	37.1	333 058	9%
R500k - R750k	224 459	143	0.637	38.0	573 420	3%
R750k - R1m	57 216	41	0.717	38.9	841 070	1%
R1m - R2m	80 186	37	0.461	39.0	1 211 058	1%
> R2m	13 360	6	0.449	39.8	2 595 003	0%
Total	8 164 292	10 985	1.345	39.1	141 186	100%

3.2 Analysis by Sex

Table 3.2.1 Sex distribution

	Exposure	Claims	Rate	Ave Age
Males	4,990,595	7,890	1.58	39.4
Females	3,173,697	3,095	0.98	38.5
	8,164,292	10,985	1.35	39.1

	Exposure	Claims
Males	61%	72%
Females	39%	28%
	100%	100%

The distribution between males and females appears reasonable and relatively consistent with the previous investigation which showed lives exposure for males accounting for 64%. The female overall experience is lighter than males (again consistent with the previous investigation), however, the average age for females is lower. The results split by age and occupation class are considered below.

Figure 3.2.1 Disability rate by sex

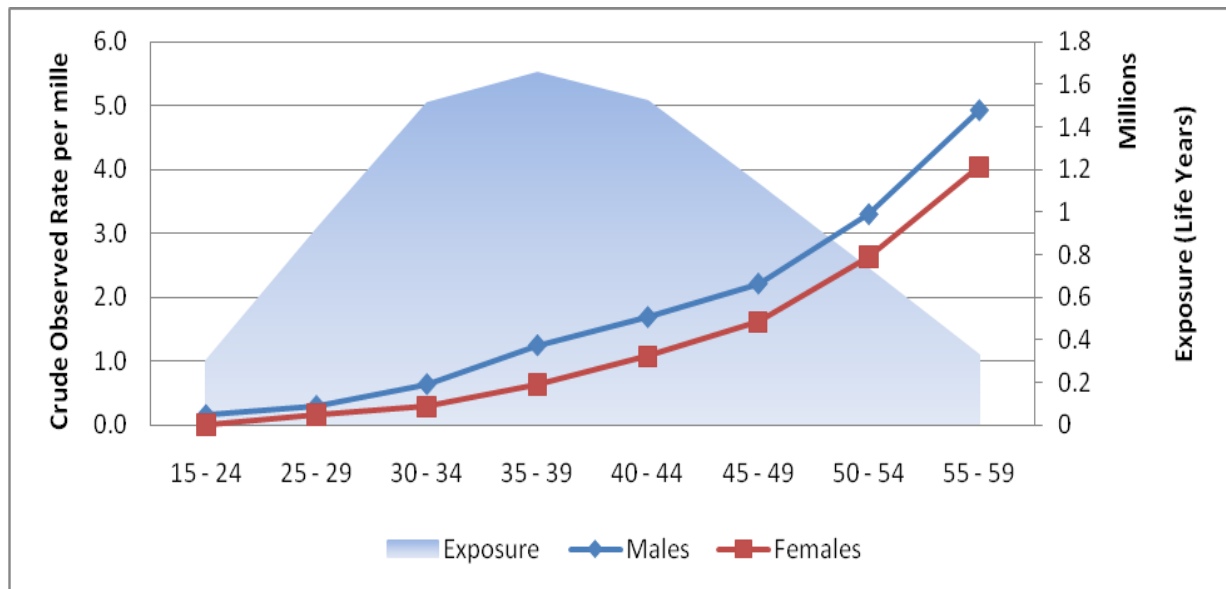
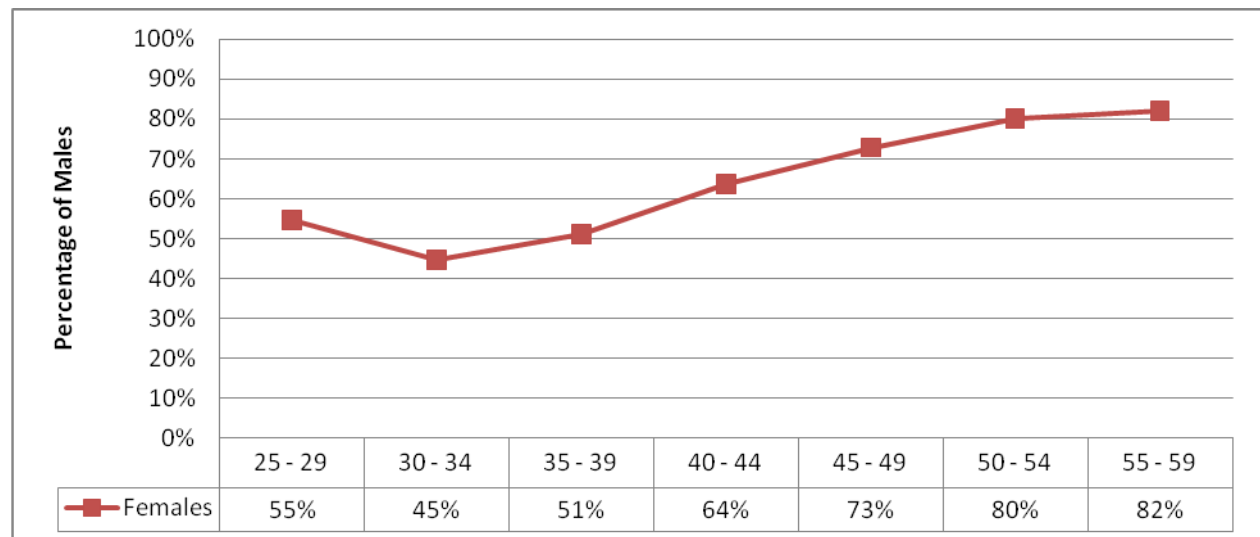
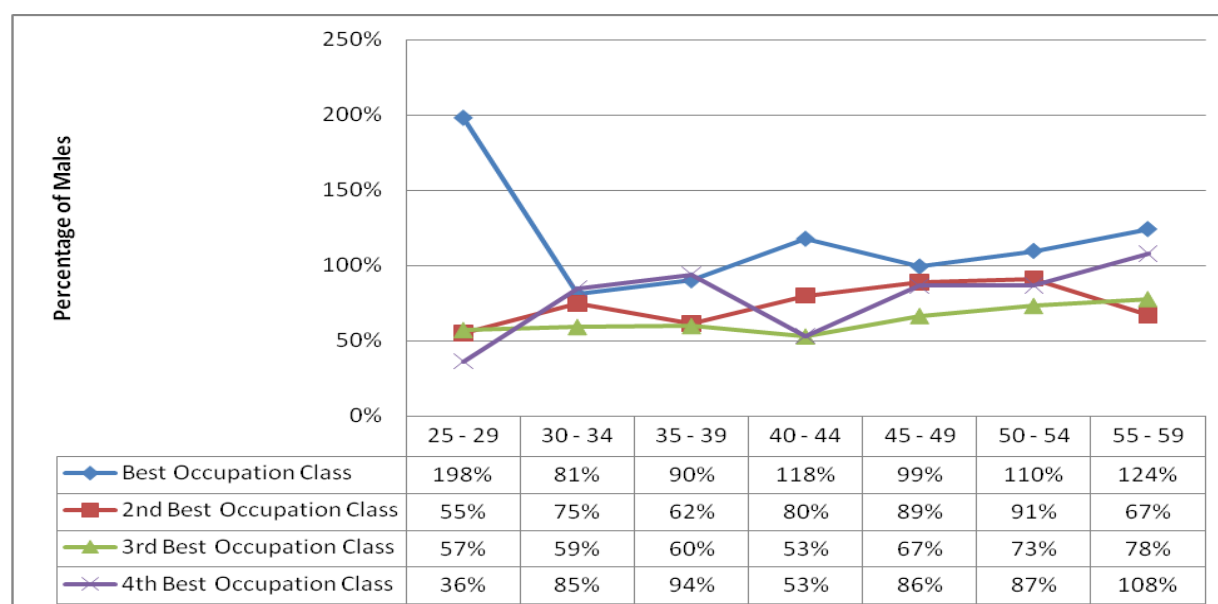


Table 3.2.2 Disability rate by sex

Age Band	Male				Female			
	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age
15 - 24	170 037	27	0.159	22.2	129 874	-	0.000	22.3
25 - 29	525 621	159	0.302	27.4	392 843	65	0.165	27.3
30 - 34	895 933	575	0.642	32.1	616 024	177	0.287	32.1
35 - 39	1 005 824	1 257	1.250	37.0	648 907	414	0.638	37.0
40 - 44	941 449	1 591	1.690	41.9	580 326	624	1.075	41.9
45 - 49	713 481	1 579	2.213	46.9	417 453	673	1.612	46.8
50 - 54	475 699	1 569	3.298	51.8	255 384	674	2.639	51.8
55 - 59	216 162	1 064	4.922	56.5	110 660	447	4.039	56.5
60 - 64	40 922	69	1.686	61.5	19 980	20	1.001	61.5
65+	5 466	-	0.000	66.3	2 246	1	0.445	66.3
Total	4 990 595	7 890	1.581	39.4	3 173 697	3 095	0.975	38.5

Figure 3.2.2 Female rates relative to male rates

Female experience is lighter than male experience with female experience for ages above 45 being around 80% of males but a lot lighter for ages younger than 45. The previous investigation reported that female Own occupation experience was higher than males, which was not observed in this investigation. The sex differential for Own and Own or Suited occupation definition is similar to the overall experience shown in the graph above.

Figure 3.3.3 Female rates relative to male rates by age band and occupation class

The sex differential by Occupation Class indicates that for the Best Occupation Class female experience is similar to male experience and in fact higher at some ages. Overall the female rates are around 94% of the male rates for the Best Occupation Class. For the lower Occupation Classes the female experience is significantly lighter than male experience by around 30% to 50%. Male and female incidence rates by Occupation Class are discussed in section 3.5.

International experience for disability income has suggested female incidence rates are higher than male incidence rates. Australia, another country which writes a large amount of disability income and disability lump sum business, also has consistent results for disability income experience with females experiencing higher incidence rates than males. Australian disability lump sum experience on the other hand suggests there is no statistical difference between male and female experience which is somewhat consistent with our Best Occupation Class results.

3.3 Analysis by Disability Definition

This section considers the experience split by Disability Definition and companies were asked to classify the policies into one of the following disability definitions:

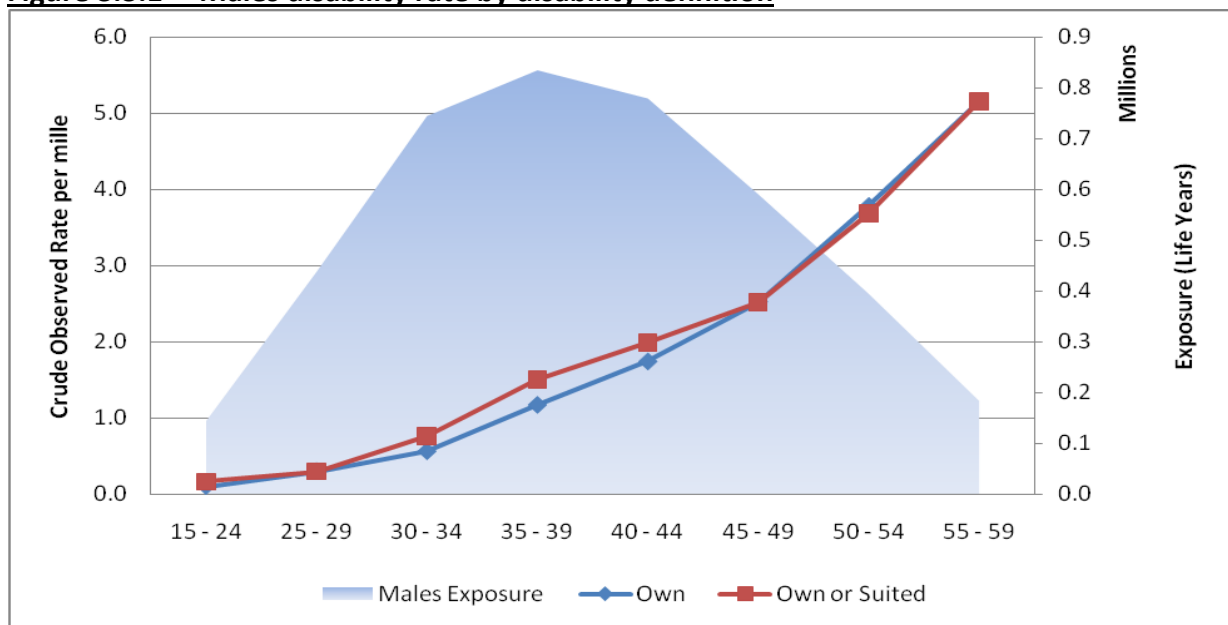
- Own occupation (that is inability to perform one's own occupation)
- Own or Suited occupation (that is inability to perform one's own occupation or another occupation to which one could be reasonably suited (also referred to as own or reasonable))
- Functional Impairment (that is inability to perform certain set of defined functions)
- Combination of functional and occupational (that is meeting either an occupation definition or a defined functional impairment definition)

One of the four contributing companies was excluded from the analysis by disability definition due to the misallocation of exposure and claims between disability definitions. The remaining companies all classified their policies into either Own occupation, Own or Suited occupation or Functional Impairment.

Table 3.3.1 Distribution by disability definition

Males:					Females:				
	Exposure	Claims	Rate	Ave Age		Exposure	Claims	Rate	Ave Age
Own Occupation	799 147	1 388	1.74	40.2	Own Occupation	645 922	769	1.19	39.6
Own or Suited Occupation	3 350 700	5 948	1.78	39.3	Own or Suited Occupation	2 054 569	2 179	1.06	38.2
Functional Impairment	385 672	149	0.39	38.7	Functional Impairment	278 054	36	0.13	38.2
	4 535 519	7 485	1.65	39.4		2 978 544	2 984	1.00	38.5
	Exposure	Claims				Exposure	Claims		
Own Occupation	18%	19%			Own Occupation	22%	26%		
Own or Suited Occupation	74%	79%			Own or Suited Occupation	69%	73%		
Functional Impairment	9%	2%			Functional Impairment	9%	1%		
	100%	100%				100%	100%		

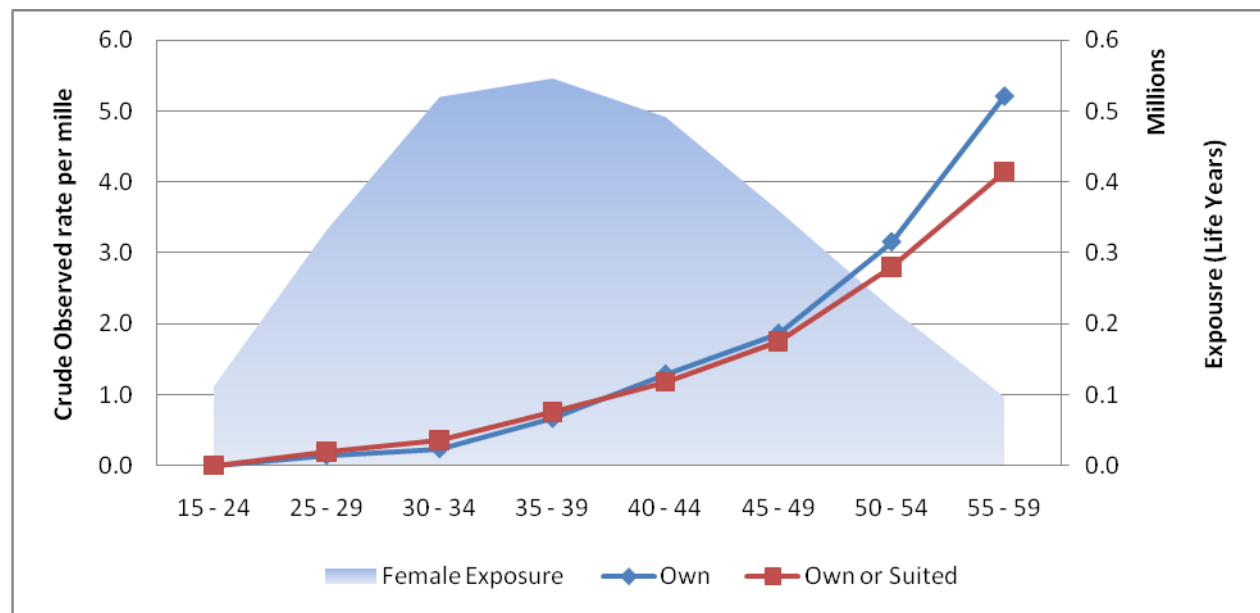
Own or Suited occupation exposure for this investigation (5.4m) is significantly lower than the previous investigation (8.9m). The crude overall male rate is lighter (1.78 per mille compared to 1.96 per mille) while the crude overall female rate is relatively unchanged (1.06 per mille compared to 1.07 per mille, for the previous investigation). Own occupation exposure for this investigation was significantly higher (1.4m) than the previous investigation (0.96m) despite one company being excluded from the analysis by disability definition. The crude overall rate is higher for males (1.74 per mille compared to 1.32 per mille) however lower for females (1.19 per mille compared to 1.38 per mille).

Figure 3.3.1 Males disability rate by disability definition

The male Own occupation lives disability rates for all occupation classes are lower than the Own or Suited occupation lives disability rates for ages less than 45 and higher for ages greater than 45. The overall male Own occupation disability rate is 97.8% of the overall male Own or Suited occupation disability rate (92% in the previous investigation).

Table 3.3.2 Disability definition - males

Age Band	Own Occupation				Own or Suited Occupation			
	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age
15 - 24	10 151	1	0.099	22.9	134 054	22	0.164	22.2
25 - 29	60 759	18	0.296	27.5	377 213	112	0.297	27.3
30 - 34	141 715	79	0.557	32.2	602 721	456	0.757	32.1
35 - 39	182 547	213	1.167	37.0	651 911	979	1.502	37.0
40 - 44	167 998	292	1.738	41.9	610 930	1 212	1.984	41.9
45 - 49	122 904	310	2.522	46.8	467 301	1 175	2.514	46.9
50 - 54	73 498	278	3.782	51.8	320 894	1 183	3.687	51.8
55 - 59	30 817	159	5.159	56.5	152 740	787	5.153	56.5
60 - 64	7 879	38	4.823	61.5	28 739	22	0.766	61.5
65+	878	-	-	65.9	4 196	-	-	66.4
Total	799 147	1 388	1.737	40.2	3 350 700	5 948	1.775	39.3

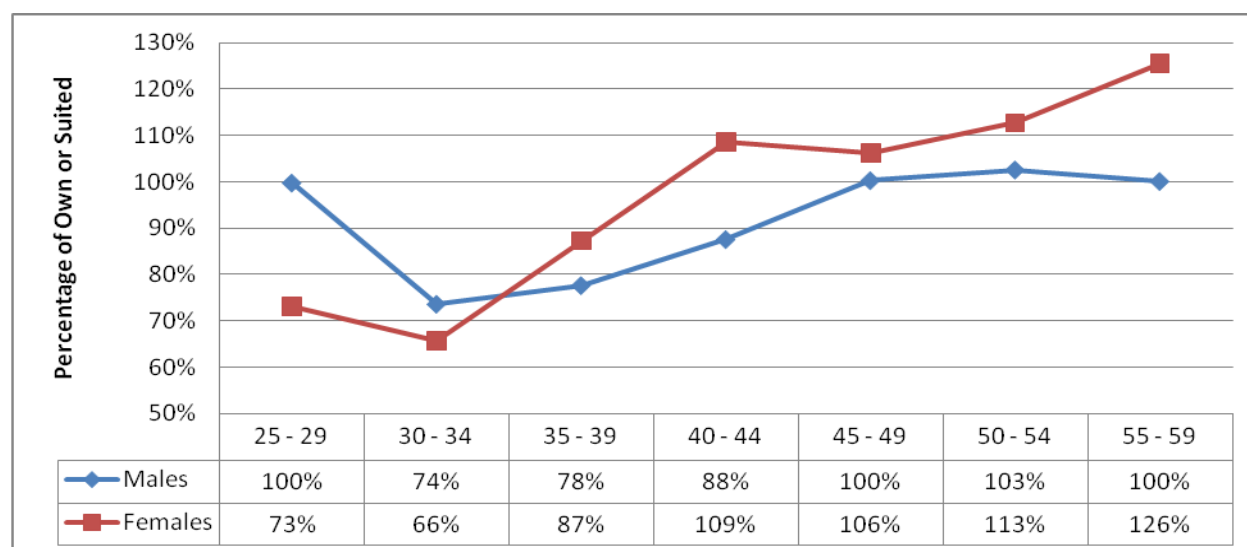
Figure 3.3.2 Females disability rate by disability definition

The female Own or Suited occupation lives disability rates for all occupation classes are lower than the Own occupation lives disability rates for ages above 35 with the overall female Own occupation disability rate 112.3% of the overall female Own or Suited occupation disability rate (148% in previous investigation).

Table 3.3.3 Disability definition – females

Age Band	Own Occupation				Own or Suited Occupation			
	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age
15 - 24	8 934	-	0.000	23.0	103 128	-	0.000	22.2
25 - 29	56 906	8	0.141	27.5	275 482	53	0.192	27.3
30 - 34	124 723	29	0.233	32.2	395 027	140	0.354	32.0
35 - 39	147 985	98	0.662	37.0	397 789	302	0.759	37.0
40 - 44	133 515	171	1.281	41.9	357 947	422	1.179	41.9
45 - 49	93 700	174	1.857	46.8	266 327	466	1.750	46.8
50 - 54	51 087	161	3.152	51.8	170 935	478	2.796	51.8
55 - 59	22 479	117	5.205	56.6	74 789	310	4.145	56.5
60 - 64	5 884	10	1.700	61.5	11 799	8	0.678	61.5
65+	709	1	1.411	66.2	1 345	-	-	66.2
Total	645 922	769	1.191	39.6	2 054 569	2 179	1.061	38.2

The relative percentage (that is Own relative to Own or Suited) is shown in the graph below for males and females.

Figure 3.3.3 Own occupation rates relative to Own or Suited occupation rates

One would expect the crude rates for Own occupation disability to be higher than those of Own or Suited occupation disability. However this is not the case for younger male and female lives. The older lives show experience for Own occupation is higher than Own or Suited occupation (which is contrary to the previous investigation). It is likely that the true differential is being masked by the fact that the Own or Suited occupation experience will include lower occupation classes and considering the experience by occupation class and disability definition may reflect that Own occupation has higher experience.

The tables and graphs below show the distribution and relative percentage of Own and Own or Suited occupation experience by occupation class. Since the results in this section include only three companies, splitting the data by disability definition as well as occupation class, sex and age band reduces the credibility.

Table 3.3.4 Own occupation distribution by occupation class

Males:					Females:				
	Exposure	Claims	Rate	Ave Age		Exposure	Claims	Rate	Ave Age
Best Class	310 821	317	1.02	40.4	Best Class	176 684	201	1.14	38.2
2nd Best Class	99 100	139	1.40	36.8	2nd Best Class	105 753	104	0.98	36.9
3rd Best Class	24	-	-	44.3	3rd Best Class	-	-	-	-
4th Best Class	8	-	-	46.2	4th Best Class	-	-	-	-
Worst Class	460	-	-	44.7	Worst Class	-	-	-	-
Unknown	388 734	932	2.40	40.9	Unknown	363 484	464	1.28	41.0
	799 147	1 388	1.74	40.2		645 922	769	1.19	39.6

	Exposure	Claims
Best Class	39%	23%
2nd Best Class	12%	10%
3rd Best Class	0%	0%
4th Best Class	0%	0%
Worst Class	0%	0%
Unknown	49%	67%
	100%	100%

	Exposure	Claims
Best Class	27%	26%
2nd Best Class	16%	14%
3rd Best Class	0%	0%
4th Best Class	0%	0%
Worst Class	0%	0%
Unknown	56%	60%
	100%	100%

As expected, Own occupation disability is weighted towards the Best two occupation classes. The credibility of the Own occupation results is significantly reduced considering that more than half the exposure is classified as Unknown occupation class.

Table 3.3.5 Own or Suited occupation distribution by occupation class

Males:					Females:				
	Exposure	Claims	Rate	Ave Age		Exposure	Claims	Rate	Ave Age
Best Class	770 567	905	1.17	41.5	Best Class	804 150	881	1.10	39.8
2nd Best Class	1 096 176	1 456	1.33	39.3	2nd Best Class	780 216	720	0.92	38.1
3rd Best Class	988 281	2 106	2.13	38.2	3rd Best Class	382 969	421	1.10	35.4
4th Best Class	429 629	1 332	3.10	37.0	4th Best Class	66 304	128	1.93	34.6
Worst Class	21 082	45	2.13	36.0	Worst Class	1 569	2	1.27	32.9
Unknown	44 964	104	2.31	48.5	Unknown	19 359	27	1.39	46.9
	3 350 700	5 948	1.78	39.3		2 054 569	2 179	1.06	38.2

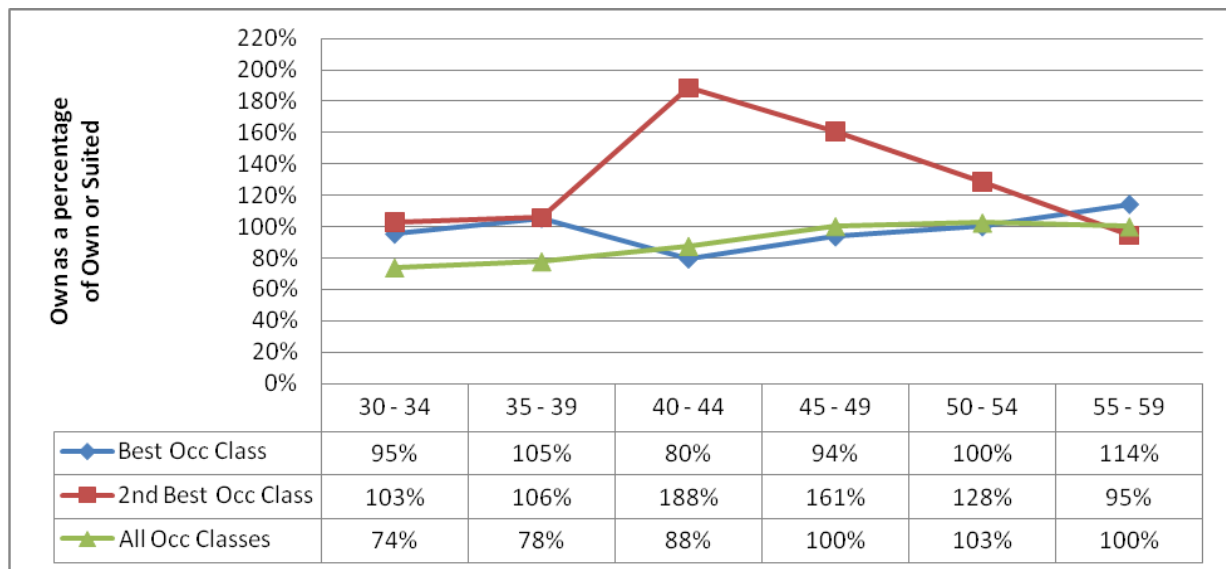
	Exposure	Claims
Best Class	23%	15%
2nd Best Class	33%	24%
3rd Best Class	29%	35%
4th Best Class	13%	22%
Worst Class	1%	1%
Unknown	1%	2%
	100%	100%

	Exposure	Claims
Best Class	39%	40%
2nd Best Class	38%	33%
3rd Best Class	19%	19%
4th Best Class	3%	6%
Worst Class	0%	0%
Unknown	1%	1%
	100%	100%

A significant proportion of the Own or Suited Occupation exposure relates to the Third and Fourth Best occupation class while the Own occupation exposure relates to the Best and Second Best occupation class. An overall comparison of the Own to Own or Suited occupation experience may therefore not be appropriate given the different mix of business by occupation class.

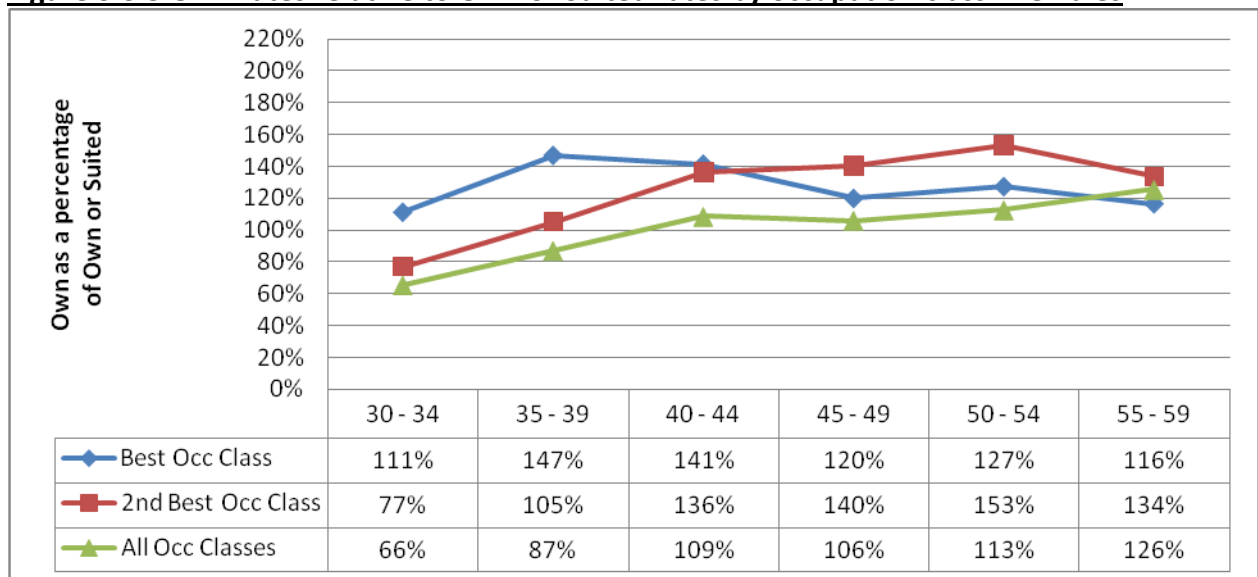
The graphs below consider relative percentage of the Own occupation experience to the Own or Suited occupation experience for the Best and Second Best occupation classes. We have excluded the results for ages less than 30 due to the lack of credibility at these ages.

Figure 3.3.4 Own rates relative to Own or Suited rates by occupation class – males



Male experience for the Second Best occupation class suggests a significant differential between Own occupation and Own or Suited occupation. This is contrary to the relative experience for the Best occupation class. The credibility of these results needs to be questioned and the Male Best occupation class ratio above compares 319 Own occupation claims to 905 Own or Suited occupation claims. Credibility is further reduced for Male Second Best occupation class where 139 Own occupation claims are compared to 1 456 Own or Suited occupation class claims.

Figure 3.3.5 Own rates relative to Own or Suited rates by occupation class – females



Female experience above age 35 suggests Own occupation experience is worse than Own or Suited occupation with the biggest differential being for Second Best occupation class. However credibility is low (104 claims for Own occupation compared to 702 claims for Own or Suited occupation).

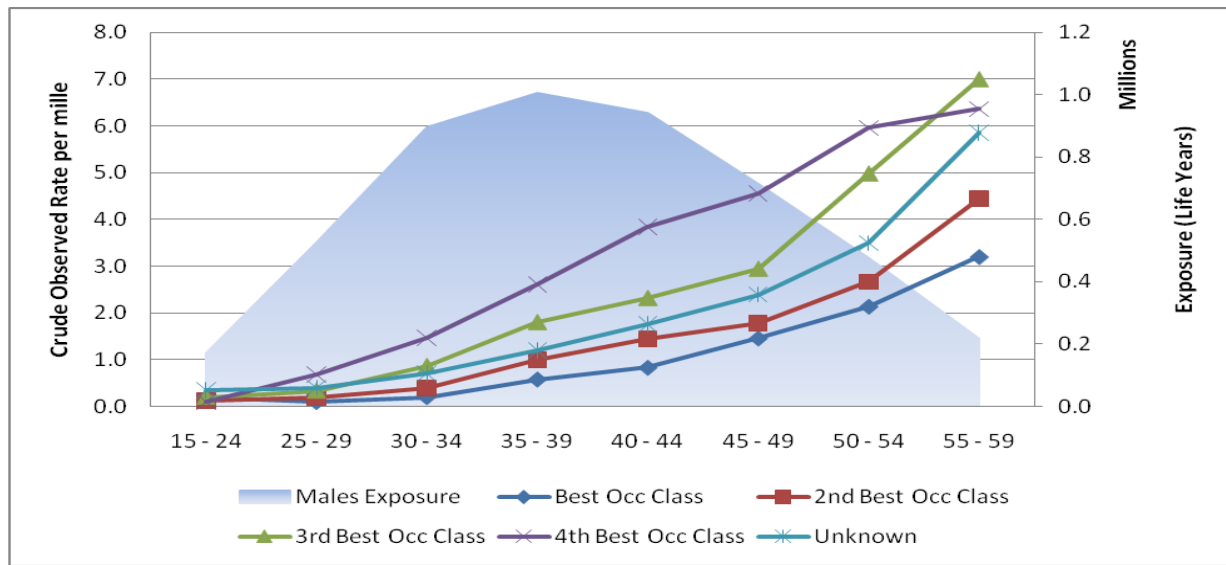
3.4 Analysis by Occupation Class

Own occupation and Own or Suited occupation have been combined so that all four contributing companies can be included in this comparison by occupation class. As mentioned in the disclaimers, we have not attempted to verify the appropriateness of each company's categorisation. In the previous investigation companies were asked to classify into three occupation classes (Professional, Skilled and Unskilled) compared to five in this investigation making comparisons more difficult.

Table 3.4.1 Distribution by occupation class

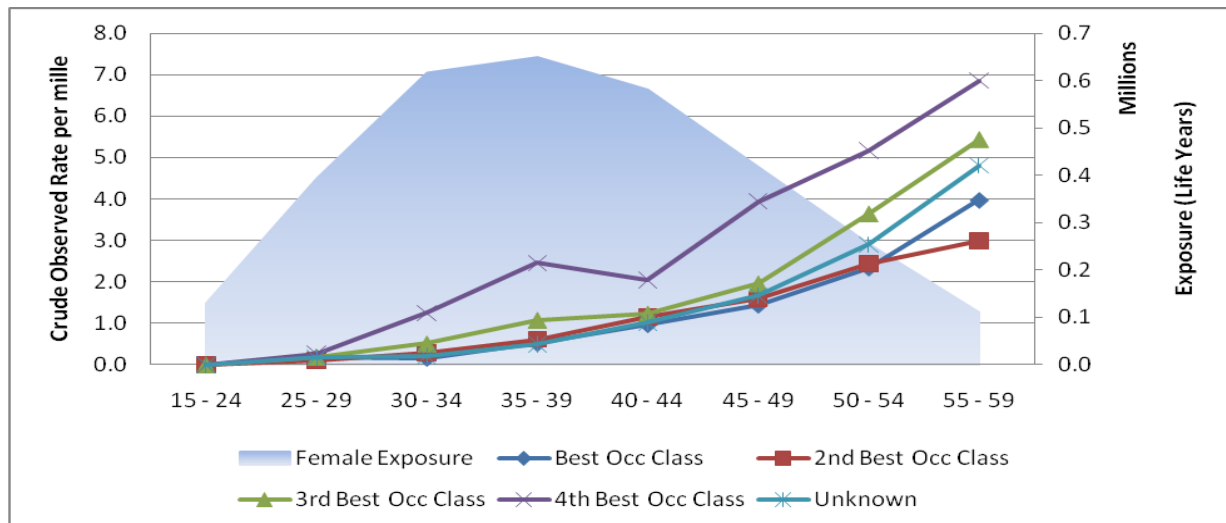
Males:					Females:				
	Exposure	Claims	Rate	Ave Age		Exposure	Claims	Rate	Ave Age
Best Class	1 323 403	1 278	0.97	40.8	Best Class	1 227 389	1 110	0.90	39.3
2nd Best Class	1 331 532	1 650	1.24	38.9	2nd Best Class	953 072	835	0.88	37.8
3rd Best Class	1 074 097	2 147	2.00	38.1	3rd Best Class	415 245	427	1.03	35.4
4th Best Class	514 831	1 374	2.67	37.3	4th Best Class	73 785	129	1.75	34.8
Worst Class	48 601	56	1.15	37.1	Worst Class	4 202	3	0.71	36.4
Unknown	698 132	1 385	1.98	41.6	Unknown	500 005	591	1.18	40.8
	4 990 595	7 890	1.58	39.4		3 173 697	3 095	0.98	38.5
	Exposure	Claims				Exposure	Claims		
Best Class	27%	16%			Best Class	39%	36%		
2nd Best Class	27%	21%			2nd Best Class	30%	27%		
3rd Best Class	22%	27%			3rd Best Class	13%	14%		
4th Best Class	10%	17%			4th Best Class	2%	4%		
Worst Class	1%	1%			Worst Class	0%	0%		
Unknown	14%	18%			Unknown	16%	19%		
	100%	100%				100%	100%		

Given that occupation class is a rating factor for disability lump sum business we would have expected all companies to be able to provide this data field. The large proportion of Unknowns is mainly due to one company classifying all policies as Unknown while another company had 68% classified as Unknown. Company variation in experience may therefore reduce the usefulness of the detailed results by occupation classes.

Figure 3.4.1 Males disability rate by occupation class**Table 3.4.2 Occupation class - males**

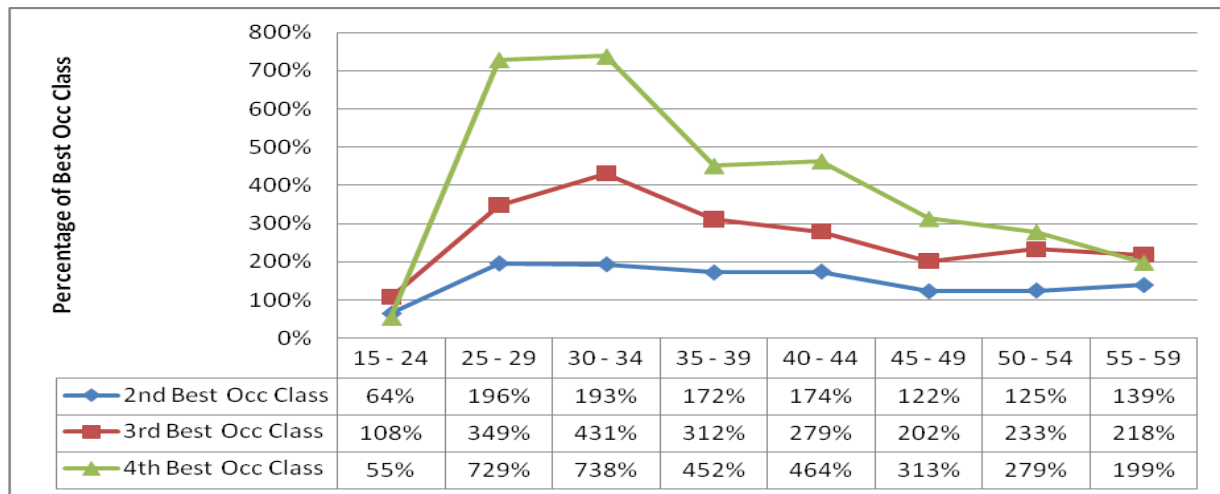
Age Band	Best Class				2nd Best Class				3rd Best Class			
	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age
15 - 24	16 556	3	0.181	22.8	68 604	8	0.117	21.9	51 216	10	0.195	22.4
25 - 29	96 065	9	0.094	27.5	152 816	28	0.183	27.3	143 916	47	0.327	27.3
30 - 34	211 145	42	0.199	32.2	236 920	91	0.384	32.1	216 730	186	0.858	32.0
35 - 39	281 133	162	0.576	37.1	254 588	252	0.990	37.0	214 813	386	1.797	37.0
40 - 44	281 566	233	0.828	41.9	240 781	347	1.441	41.9	183 804	425	2.312	41.9
45 - 49	217 799	317	1.455	46.9	184 178	328	1.781	46.9	132 072	388	2.938	46.8
50 - 54	142 203	304	2.138	51.8	125 707	335	2.665	51.8	86 011	428	4.976	51.8
55 - 59	63 374	203	3.203	56.5	58 018	258	4.447	56.5	39 165	274	6.996	56.5
60 - 64	11 996	5	0.417	61.5	8 907	3	0.337	61.4	5 497	3	0.546	61.5
65+	1 566	-	-	66.3	1 012	-	-	66.2	873	-	-	67.2
Total	1 323 403	1 278	0.966	40.8	1 331 532	1 650	1.239	38.9	1 074 097	2 147	1.999	38.1

Age Band	4th Best Class				Unknown			
	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age
15 - 24	20 216	2	0.099	22.3	11 596	4	0.345	22.6
25 - 29	77 609	53	0.683	27.4	47 506	19	0.400	27.4
30 - 34	118 486	174	1.469	32.0	101 540	71	0.699	32.2
35 - 39	109 114	284	2.603	36.9	135 922	163	1.199	37.1
40 - 44	84 369	324	3.840	41.9	142 687	250	1.752	42.0
45 - 49	54 617	249	4.559	46.8	119 596	286	2.391	46.9
50 - 54	32 738	195	5.956	51.8	86 178	301	3.493	51.8
55 - 59	14 466	92	6.360	56.6	40 012	234	5.848	56.5
60 - 64	2 907	1	0.344	61.4	11 402	57	4.999	61.6
65+	310	-	-	66.3	1 695	-	-	66.0
Total	514 831	1 374	2.669	37.3	698 132	1 385	1.984	41.6

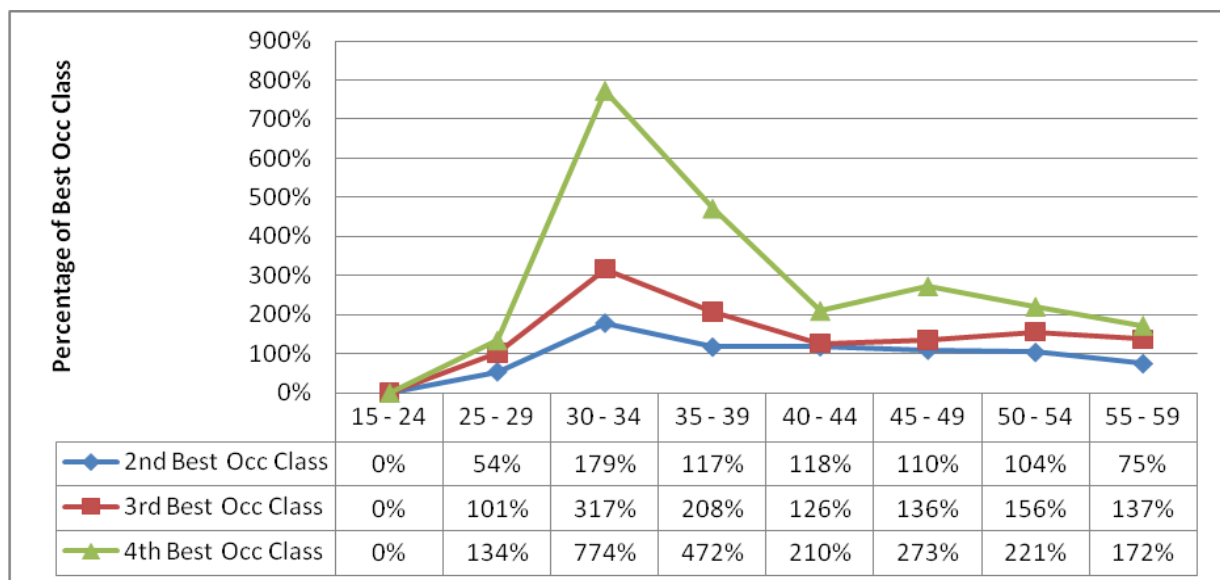
Figure 3.4.2 Females disability rate by occupation class**Table 3.4.3 Occupation class - females**

Age Band	Best Class				2nd Best Class				3rd Best Class			
	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age
15 - 24	27 809	-	0.000	22.8	50 258	-	0.000	21.9	34 684	-	0.000	22.4
25 - 29	129 389	24	0.185	27.4	119 300	12	0.101	27.4	90 709	17	0.187	27.2
30 - 34	230 081	37	0.161	32.1	201 463	58	0.288	32.0	90 180	46	0.510	31.9
35 - 39	265 851	138	0.519	37.0	193 664	118	0.609	37.0	71 373	77	1.079	36.9
40 - 44	242 402	236	0.974	41.9	163 860	189	1.153	41.9	56 115	69	1.230	41.9
45 - 49	172 359	249	1.445	46.8	117 370	186	1.585	46.8	38 303	75	1.958	46.8
50 - 54	104 156	244	2.343	51.8	73 543	179	2.434	51.8	23 319	85	3.645	51.8
55 - 59	45 532	181	3.975	56.5	30 518	91	2.982	56.4	9 746	53	5.438	56.4
60 - 64	8 893	1	0.112	61.4	2 919	2	0.685	61.3	739	5	6.766	61.2
65+	917	-	-	66.2	176	-	-	66.4	76	-	-	68.4
Total	1 227 389	1 110	0.904	39.3	953 072	835	0.876	37.8	415 245	427	1.028	35.4

Age Band	4th Best Class				Unknown			
	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age
15 - 24	8 561	-	0.000	22.0	8 302	-	0.000	22.7
25 - 29	16 096	4	0.249	27.2	36 475	6	0.164	27.4
30 - 34	15 267	19	1.245	31.8	78 175	16	0.205	32.2
35 - 39	11 833	29	2.451	36.9	105 405	52	0.493	37.1
40 - 44	9 784	20	2.044	41.9	107 610	110	1.022	42.0
45 - 49	6 593	26	3.943	46.8	82 392	137	1.663	46.8
50 - 54	4 059	21	5.174	51.7	50 007	145	2.900	51.8
55 - 59	1 458	10	6.857	56.4	23 296	112	4.808	56.6
60 - 64	133	-	0.000	61.2	7 264	12	1.652	61.6
65+	-	-	-	-	1 077	1	0.928	66.2
Total	73 785	129	1.748	34.8	500 005	591	1.182	40.8

Figure 3.4.3 Occupation class relative to Best occupation class - males

There appears to be a reasonable increase in experience by occupation class which reduces by age. Overall the Second Best occupation class is 128% relative to the Best occupation class while the Third Best and Fourth Best occupation class is 207% and 276% relative to overall Best occupation class respectively.

Figure 3.4.4 Occupation class relative to Best occupation class - females

Similar to the males, there is an increase in female experience by occupation class. The Second Best occupation class is lower than the Best occupation class at the younger and older ages while the mid age-bands do not show a significant increase to Best occupation class with the overall ratio being 97%. The Third Best and Fourth Best occupation class is 114% and 193% relative to Best occupation class over all age bands respectively.

3.5 Analysis by Smoker Status

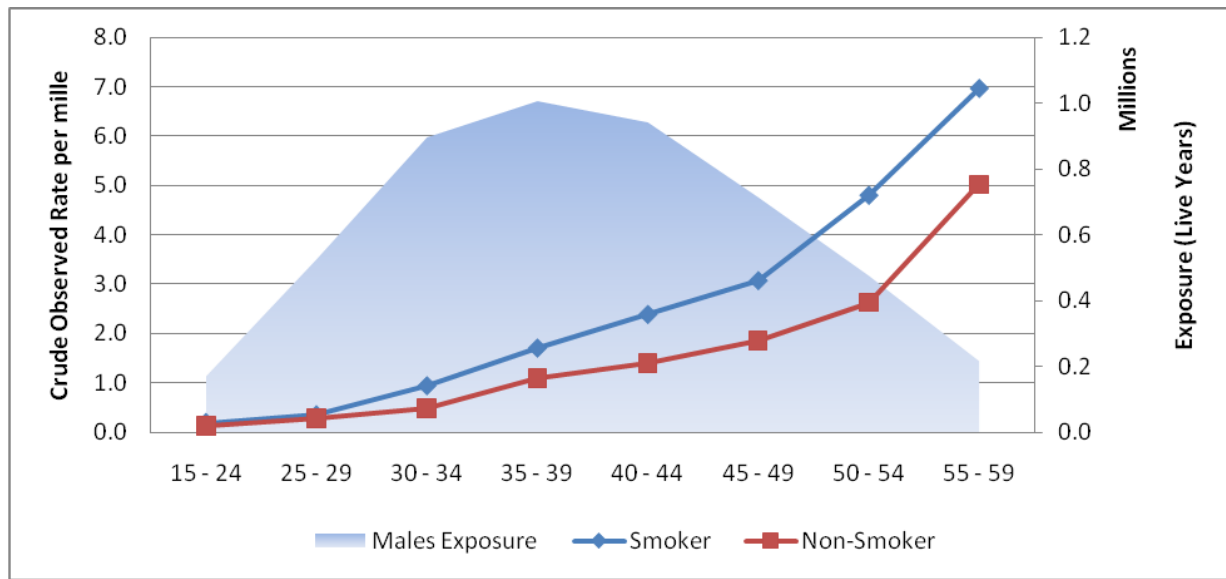
Table 3.5.1 Distribution by smoker status

Males:					Females:				
	Exposure	Claims	Rate	Ave Age		Exposure	Claims	Rate	Ave Age
Smoker	1 404 093	2 942	2.10	38.7	Smoker	504 465	665	1.32	38.1
Non-smoker	2 617 862	3 270	1.25	38.2	Non-smoker	2 132 573	1 764	0.83	37.4
Unknown	968 639	1 678	1.73	43.9	Unknown	536 659	666	1.24	43.0
	4 990 595	7 890	1.58	39.4		3 173 697	3 095	0.98	38.5
	Exposure	Claims				Exposure	Claims		
Smoker	28%	37%			Smoker	16%	21%		
Non-smoker	52%	41%			Non-smoker	67%	57%		
Unknown	19%	21%			Unknown	17%	22%		
	100%	100%				100%	100%		

Of the policies with known smoker status, 35% of male exposure relates to smokers and 19% of female exposure relates to smokers. The smoker proportion (for policies with known smoker status) is provided in more detail by occupation class in the table below. One company had a significant amount of policies with Unknown smoker status, mainly for relating to older business.

Table 3.5.2 Lives exposure by occupation class – smoker distribution

Occupation Class	Smoker Proportion (where Status known)		Proportion Unknown	
	Males	Females	Males	Females
Best Class	28%	15%	31%	37%
2nd Best Class	33%	17%	17%	7%
3rd Best Class	40%	19%	15%	1%
4th Best Class	40%	22%	30%	5%
Worst Class	38%	12%	15%	1%
Unknown	38%	29%	2%	1%
Total	35%	19%	19%	17%

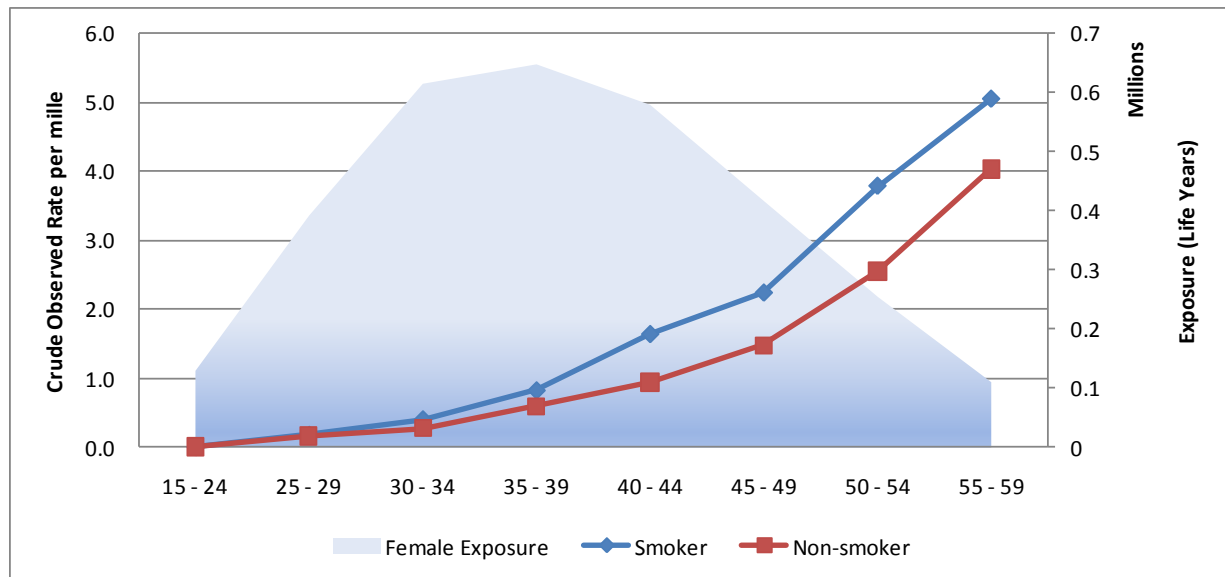
Figure 3.5.1 Males disability rate by smoker status

As expected male smoker experience is higher than male non-smoker experience.

Table 3.5.3 Smoker status – males

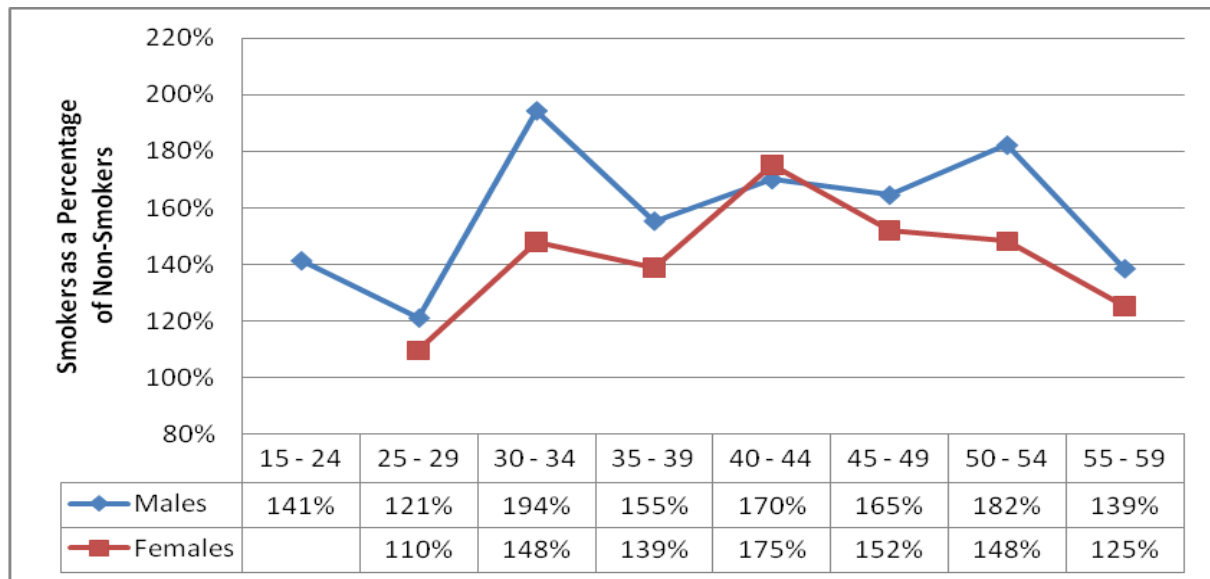
Age Band	Smoker				Non-Smoker				Smoker Proportion
	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age	Exposure
15 - 24	51 904	10	0.193	22.3	117 445	16	0.136	22.2	31%
25 - 29	165 757	58	0.350	27.4	336 017	97	0.289	27.3	33%
30 - 34	270 198	253	0.936	32.1	529 316	255	0.482	32.1	34%
35 - 39	286 226	486	1.698	37.0	532 765	582	1.092	37.0	35%
40 - 44	266 441	634	2.380	41.9	453 803	635	1.399	41.9	37%
45 - 49	191 497	587	3.065	46.8	332 906	620	1.862	46.8	37%
50 - 54	117 862	565	4.794	51.8	213 283	561	2.630	51.8	36%
55 - 59	47 567	331	6.959	56.4	90 842	456	5.020	56.4	34%
60 - 64	6 154	18	2.925	61.3	10 895	48	4.406	61.3	36%
65+	487	-	0.000	66.0	591	-	0.000	65.9	45%
Total	1 404 093	2 942	2.095	38.7	2 617 862	3 270	1.249	38.2	35%

The smoker proportion is relatively consistent by age for males.

Figure 3.5.2 Females disability rate by smoker status**Table 3.5.3 Smoker status – females**

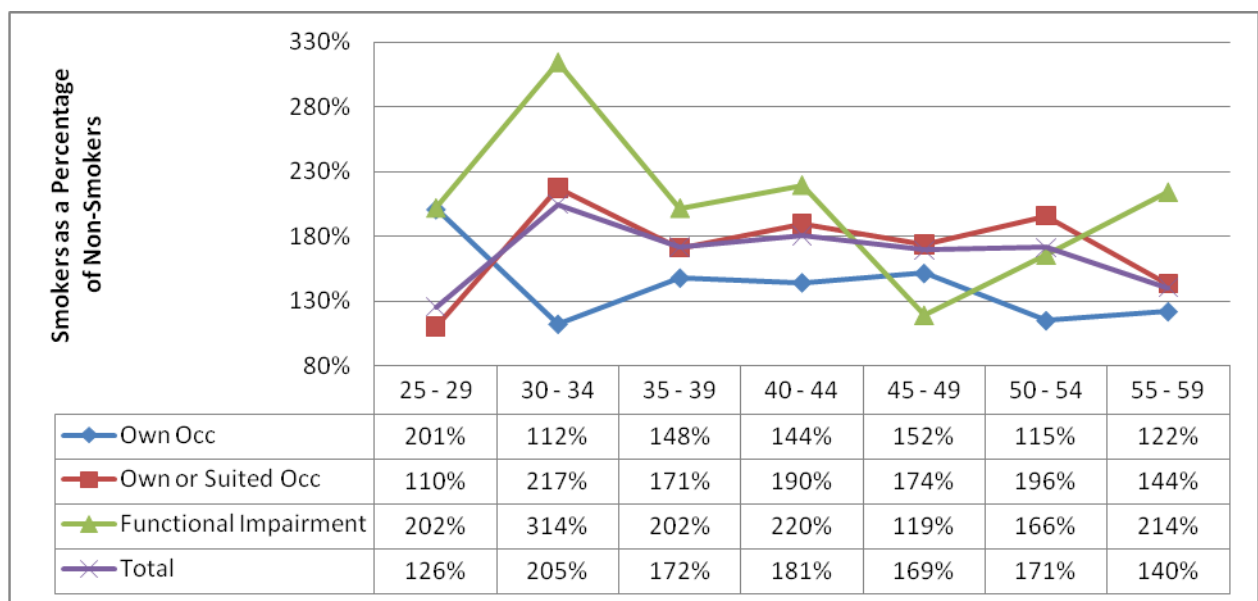
Age Band	Smoker				Non-Smoker				Smoker Proportion
	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age	
15 - 25	24 697	-	0.000	22.3	104 716	-	0.000	22.3	19%
26 - 30	67 408	12	0.178	27.3	307 970	50	0.162	27.3	18%
31 - 35	94 335	38	0.403	32.0	455 617	124	0.272	32.0	17%
36 - 40	99 673	82	0.823	37.0	437 095	259	0.593	37.0	19%
41 - 45	94 609	155	1.638	41.9	364 501	341	0.936	41.9	21%
46 - 50	67 001	150	2.239	46.8	250 567	369	1.473	46.8	21%
51 - 55	38 310	145	3.785	51.8	145 656	372	2.554	51.8	21%
56 - 60	15 657	79	5.046	56.4	58 305	235	4.031	56.4	21%
61 - 65	2 503	4	1.598	61.4	7 571	13	1.717	61.3	25%
66+	271	-	0.000	66.6	576	1	1.736	66.2	32%
Total	504 465	665	1.318	38.1	2 132 573	1 764	0.827	37.4	19%

As with male lives, the smoker proportion is relatively consistent by age.

Figure 3.5.3 Smoker rates relative to non-smoker rates by sex

The smoker differential appears to be higher for males with an average differential of 168% for males and 159% for females.

The previous investigation showed females having a higher smoker differential (174%) compared to males (144%). The smoker differential for males between ages 25 and 59 varied between 152% and 165% while the current investigation suggests the smoker differential has increased for males.

Figure 3.5.4 Smoker rates relative to non-smoker rates by disability definition

The graph above considers the smoker differential for different disability definitions as well as the total experience for three companies only. Note that this graph shows the results for males and females combined.

The smoker differential appears to be higher for Own or Suited occupation (189%) compared to Own occupation (142%). The overall smoker differential for these three companies was 179%. The previous investigation reported the smoker differential for Own occupation class to be higher than Own or Suited occupation. This is contrary to this investigation although the previous investigation results are less credible. The smoker differential in the previous investigation was highest for Own occupation and Professional Own or Suited occupation.

3.6 Analysis by Duration

Crude Observed Rates are presented by age attained (not at entry) in five year age groups and duration attained.

Table 3.6.1 Duration distribution

Table 3.6.1 Duration

Males:

	Exposure	Claims	Rate	Ave Age
Dur 0	311 357	44	0.14	33.9
Dur 1	311 750	162	0.52	34.7
Dur 2	317 809	263	0.83	35.4
Dur 3	330 754	378	1.14	35.9
Dur 4+	3 718 926	7 043	1.89	40.9
	4 990 595	7 890	1.58	39.4

	Exposure	Claims
Dur 0	6.2%	0.6%
Dur 1	6.2%	2.1%
Dur 2	6.4%	3.3%
Dur 3	6.6%	4.8%
Dur 4+	74.5%	89.3%
	100.0%	100.0%

Females:

	Exposure	Claims	Rate	Ave Age
Dur 0	197 194	15	0.08	32.9
Dur 1	198 902	54	0.27	33.7
Dur 2	209 744	97	0.46	34.5
Dur 3	229 216	125	0.55	35.3
Dur 4+	2 338 641	2 804	1.20	40.0
	3 173 697	3 095	0.98	38.5

	Exposure	Claims
Dur 0	6.2%	0.5%
Dur 1	6.3%	1.7%
Dur 2	6.6%	3.1%
Dur 3	7.2%	4.0%
Dur 4+	73.7%	90.6%
	100.0%	100.0%

Figure 3.6.1 Males disability rate by duration

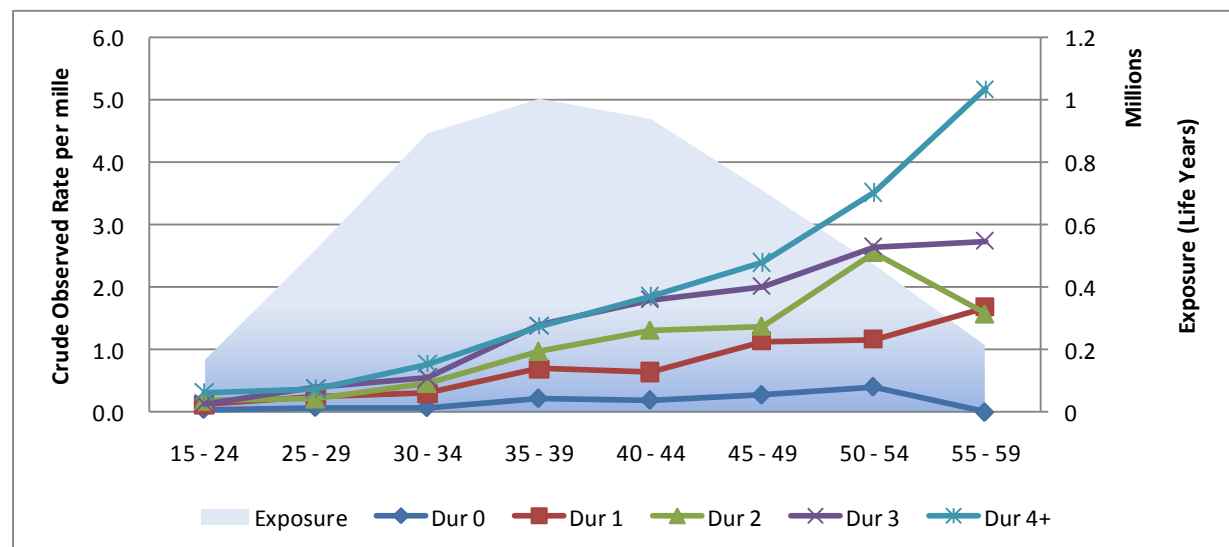


Table 3.6.2 Males disability rates by duration

Age Band	Dur 0				Dur 1				Dur 2			
	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age
15 - 24	42 359	2	0.047	21.7	34 635	4	0.115	21.9	28 344	5	0.176	22.2
25 - 29	64 601	5	0.077	27.1	62 213	16	0.257	27.1	61 405	13	0.212	27.2
30 - 34	66 965	5	0.075	31.9	67 372	20	0.297	31.9	69 191	32	0.462	31.9
35 - 39	55 268	12	0.217	36.9	56 881	39	0.686	36.9	59 421	58	0.976	36.9
40 - 44	41 815	8	0.191	41.8	44 071	28	0.635	41.9	47 083	62	1.317	41.9
45 - 49	25 771	7	0.272	46.8	28 134	32	1.137	46.8	30 396	42	1.382	46.8
50 - 54	12 551	5	0.398	51.7	14 597	17	1.165	51.7	16 376	42	2.565	51.7
55 - 59	1 948	-	0.000	56.0	3 578	6	1.677	56.0	5 076	8	1.576	56.2
60 - 64	77	-	0.000	60.1	269	-	0.000	60.3	512	1	1.952	60.7
65+	1	-	0.000	65.3	0	-	0.000	65.0	4	-	0.000	66.8
Total	311 357	44	0.141	33.9	311 750	162	0.520	34.7	317 809	263	0.828	35.4

Age Band	Dur 3				Dur 4+			
	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age
15 - 24	23 118	3	0.130	22.5	41 582	13	0.313	23.0
25 - 29	61 936	24	0.387	27.3	275 465	101	0.367	27.5
30 - 34	74 093	41	0.553	31.9	618 312	477	0.771	32.2
35 - 39	63 381	88	1.388	36.9	770 873	1 060	1.375	37.0
40 - 44	50 397	91	1.806	41.9	758 083	1 402	1.849	41.9
45 - 49	32 833	66	2.010	46.8	596 347	1 432	2.401	46.9
50 - 54	18 123	48	2.649	51.7	414 053	1 457	3.519	51.8
55 - 59	6 198	17	2.743	56.3	199 363	1 033	5.182	56.5
60 - 64	668	-	0.000	61.1	39 396	68	1.726	61.5
65+	8	-	0.000	67.4	5 453	-	0.000	66.3
Total	330 754	378	1.143	35.9	3 718 926	7 043	1.894	40.9

Figure 3.6.2 Females disability rate by duration

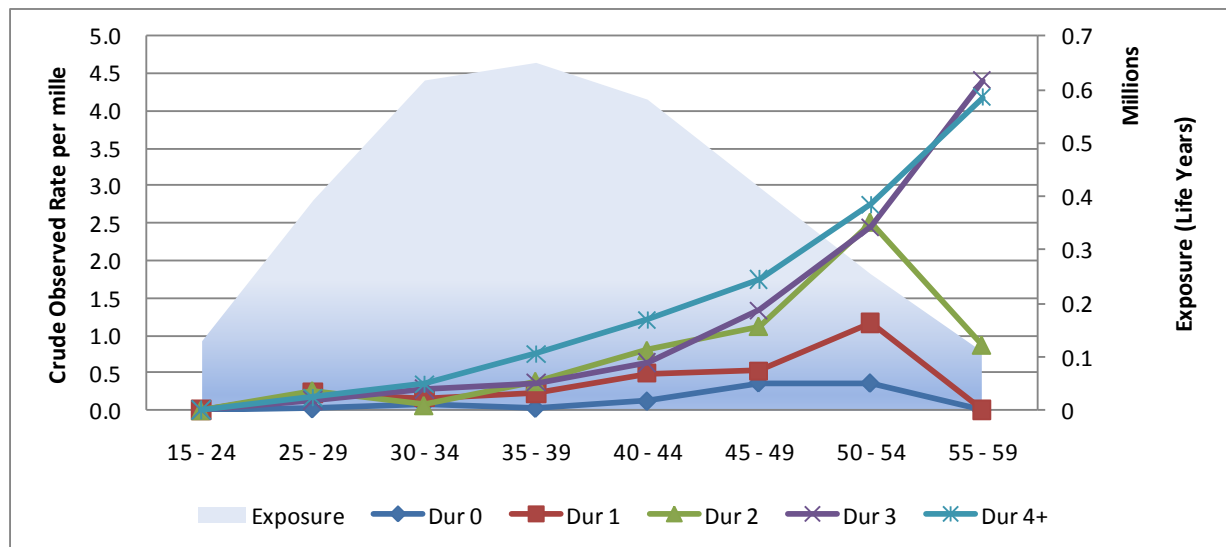
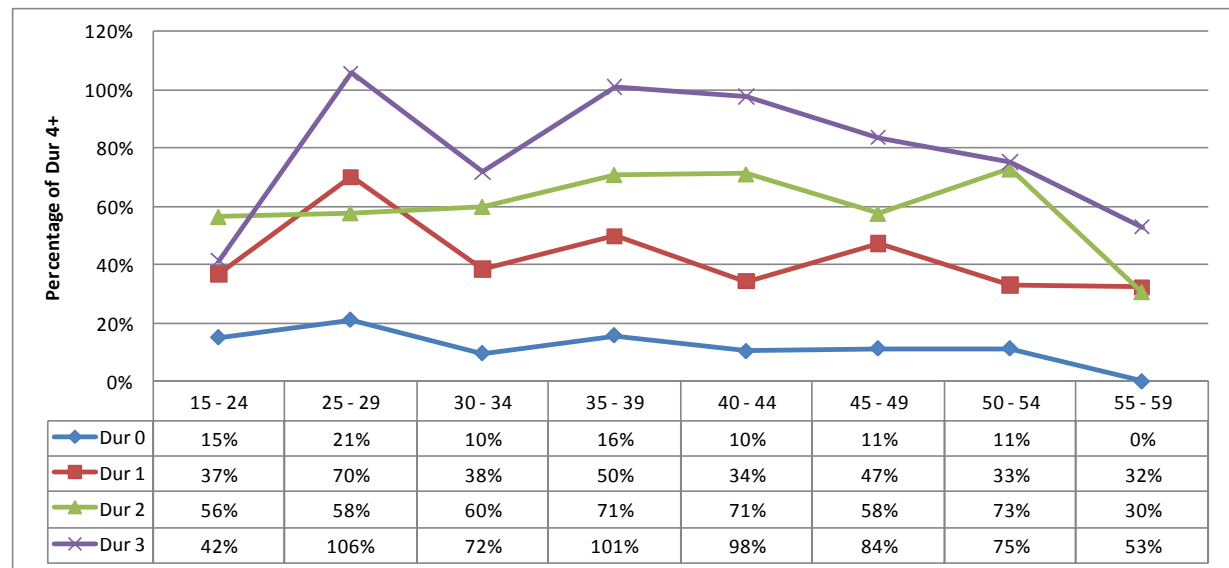


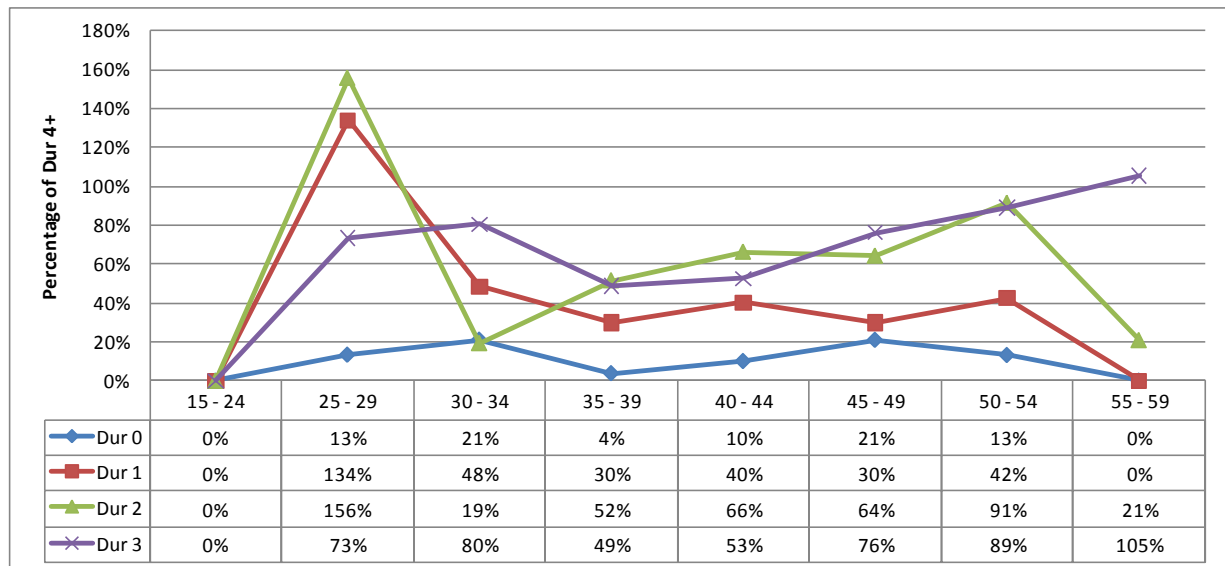
Table 3.6.3 Females disability rates by duration

Age Band	Dur 0				Dur 1				Dur 2			
	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age
15 - 24	33 274	-	0.000	21.7	27 087	-	0.000	22.0	22 018	-	0.000	22.3
25 - 29	43 873	1	0.023	27.0	43 890	10	0.228	27.0	45 352	12	0.265	27.1
30 - 34	41 358	3	0.073	31.9	42 137	7	0.166	31.9	45 155	3	0.066	31.9
35 - 39	34 338	1	0.029	36.9	35 454	8	0.226	36.9	38 610	15	0.388	37.0
40 - 44	24 480	3	0.123	41.8	26 611	13	0.489	41.8	29 936	24	0.802	41.8
45 - 49	13 576	5	0.368	46.7	15 288	8	0.523	46.7	17 790	20	1.124	46.7
50 - 54	5 492	2	0.364	51.6	6 863	8	1.166	51.6	8 346	21	2.516	51.6
55 - 59	770	-	0.000	56.1	1 463	-	0.000	56.1	2 288	2	0.874	56.2
60 - 64	33	-	0.000	60.2	105	-	0.000	60.3	244	-	0.000	60.7
65+	0	-	0.000	67.5	3	-	0.000	69.6	6	-	0.000	71.2
Total	197 194	15	0.076	32.9	198 902	54	0.271	33.7	209 744	97	0.462	34.5

Age Band	Dur 3				Dur 4+			
	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age
15 - 24	17 546	-	0.000	22.6	29 950	-	0.000	23.0
25 - 29	48 077	6	0.125	27.2	211 651	36	0.170	27.5
30 - 34	50 665	14	0.276	31.9	436 708	150	0.343	32.1
35 - 39	43 598	16	0.367	36.9	496 907	374	0.753	37.0
40 - 44	34 573	22	0.636	41.8	464 727	562	1.209	41.9
45 - 49	21 002	28	1.333	46.8	349 796	612	1.750	46.8
50 - 54	10 209	25	2.449	51.7	224 474	618	2.753	51.8
55 - 59	3 175	14	4.409	56.2	102 964	431	4.186	56.5
60 - 64	362	-	0.000	61.0	19 237	20	1.040	61.5
65+	9	-	0.000	70.8	2 228	1	0.449	66.2
Total	229 216	125	0.545	35.3	2 338 641	2 804	1.199	40.0

Figure 3.6.3 Male Rates by duration relative to duration 4+ (that is ultimate duration)

The current investigation suggests a logical progression of male disability rates by duration which appears consistent with the previous investigation. Duration 0 rates across all ages for males are 7% of male ultimate rates. The select discounts for appear to be significant for durations 1, 2 and 3 and relatively flat by age. The select discounts for males across all ages for duration 1, 2 and 3 are 27%, 44% and 60% respectively.

Figure 3.6.4 Female Rates by duration relative to duration 4+ (that is ultimate duration)

The female experience by duration is more volatile due to lower credibility. Duration 0 female rates across all ages are 6% of female ultimate rates. The select discounts for females across all ages for duration 1, 2 and 3 are 23%, 39% and 45% respectively.

As was cautioned in the previous investigation, if the participating companies measured the date of claim from the end of the deferred period, or from the date of payment, rather than from the actual date the disability event occurred (or date last worked) there is potential for a mismatch of claims and exposure. This will make the analysis by duration inaccurate. The CSI committee are investigating this for future analyses to ensure consistency between participating companies.

3.7 Analysis by Medical Underwriting

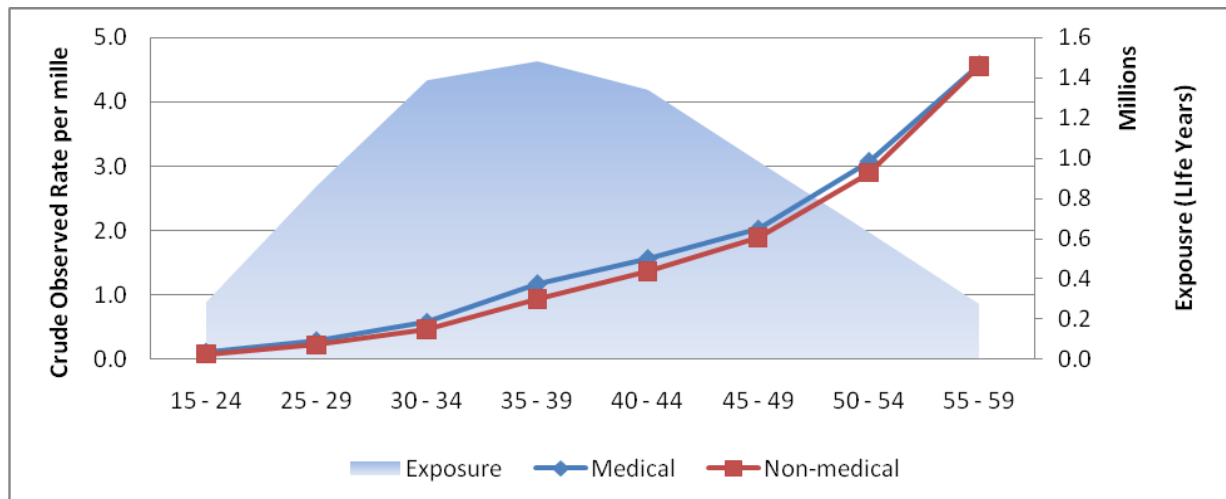
The table below shows the proportion of lives that have been classified as medically underwritten (that is where a medical examination has taken place) compared to non-medically underwritten lives. Non-medical lives are not medically examined, but answer medical questions on the proposal form. Companies have not been consistent in their interpretation of medical examination with one company including HIV and cotinine testing as medically underwritten while the others have assumed these are non-medical lives. The CSI committee will be providing more guidance on this going forward to ensure future investigations have a consistent interpretation. Male and female experience has been combined for the analysis by Medical Underwriting.

Table 3.7.1 Distribution by medical underwriting status

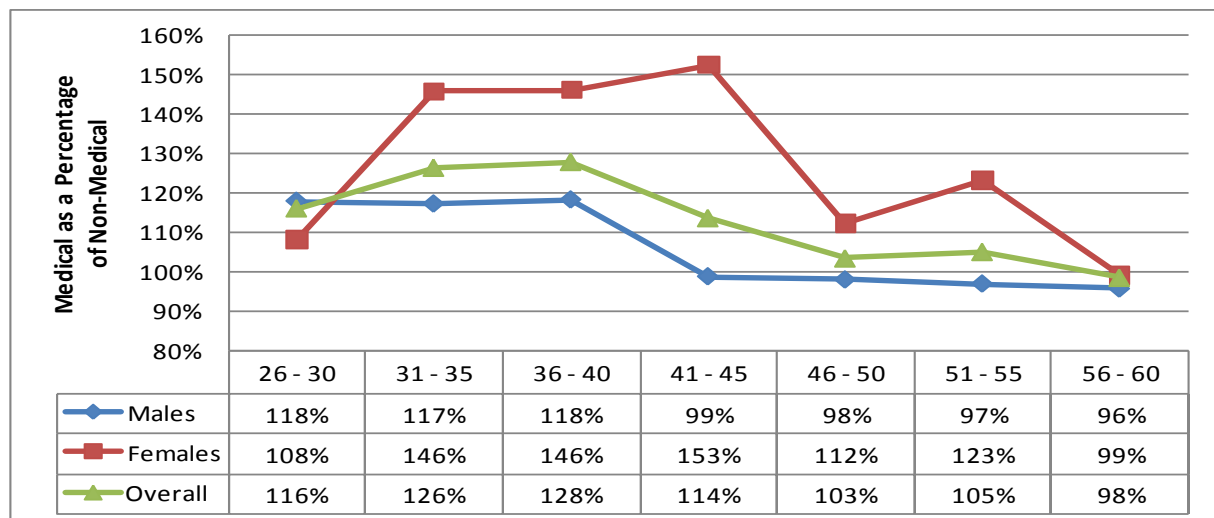
	Exposure	Claims	Rate	Ave Age
Medical	1 785 297	2 699	1.51	39.9
Non-Medical	5 507 220	6 636	1.20	38.4
Unknown	871 775	1 650	1.89	41.6
	8 164 292	10 985	1.35	39.1

	Exposure	Claims
Medical	22%	25%
Non-Medical	67%	60%
Unknown	11%	15%
	100%	100%

Despite slightly different interpretations, the proportion of medically underwritten lives is relatively consistent across companies. One company was not able to provide this classification.

Figure 3.7.1 Rates by Medical underwriting: lives**Table 3.7.2 Disability rates by medical underwriting**

Age Band	Medical				Non-Medical				Medical Proportion
	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age	Exposure
15 - 24	58 456	7	0.120	22.3	226 347	19	0.084	22.2	21%
25 - 29	177 913	53	0.298	27.3	683 335	153	0.224	27.3	21%
30 - 34	301 016	175	0.581	32.1	1 085 135	503	0.464	32.1	22%
35 - 39	340 352	401	1.178	37.0	1 140 068	1 072	0.940	37.0	23%
40 - 44	342 756	538	1.570	42.0	996 194	1 364	1.369	41.9	26%
45 - 49	276 021	559	2.025	46.9	707 653	1 337	1.889	46.8	28%
50 - 54	185 735	571	3.074	51.8	447 274	1 297	2.900	51.8	29%
55 - 59	85 279	390	4.573	56.5	190 987	869	4.550	56.5	31%
60 - 64	15 004	5	0.333	61.5	27 736	22	0.793	61.4	35%
65+	2 763	-	-	66.4	2 493	-	-	66.1	53%
Total	1 785 297	2 699	1.512	39.9	5 507 220	6 636	1.205	38.4	24%

Figure 3.7.2 Medical underwriting rates relative to non-medical underwriting rates

Medical experience is generally higher than Non-Medical experience (apart from males above age 40). This may be due a large proportion of medically underwritten lives including lives sent for medicals because of disclosures on the application form leading the underwriter to suspect poorer health.

The results for males suggests smaller differential between Medical and Non-Medical underwriting (117%) while the results for females show a larger differential between Medical and Non-Medical underwriting (140%). This is also consistent with previous investigation. For both male and female lives combined the Medical underwriting experience is 125% relative to Non-Medical underwriting. There appears to be a much closer differential for older lives (ages above 40 for males and above 45 for females).

3.8 Analysis by Socio-Economic Rating Class

The CSI committee requested companies to classify policies by socio-economic rating class (referred to as Underwriting class in the data specification) and requested policies commencing prior to 1994 to be classified as Unknown.

Table 3.8.1 Distribution by socio-economic rating class

	Exposure	Claims	Rate	Ave Age
Best Rating class	855 651	608	0.71	38.3
2nd Best Rating class	1 150 890	1 029	0.89	35.8
3rd Best Rating class	1 208 822	1 302	1.08	33.8
4th Best Rating class	327 911	329	1.00	36.9
5th Best Rating class	525 713	490	0.93	37.8
6th Best Rating class	16 942	6	0.35	31.6
7th Best Rating class	2 724	2	0.73	37.0
8th Best Rating class	1 930	1	0.52	35.3
Unknown/ Pre-1994	4 073 707	7 218	1.77	42.1
	8 164 292	10 985	1.35	39.1

	Exposure	Claims
Best Rating class	10%	6%
2nd Best Rating class	14%	9%
3rd Best Rating class	15%	12%
4th Best Rating class	4%	3%
5th Best Rating class	6%	4%
6th Best Rating class	0%	0%
7th Best Rating class	0%	0%
8th Best Rating class	0%	0%
Unknown/ Pre-1994	50%	66%
	100%	100%

Approximately 3% of the exposure related to post-1994 Unknowns while the remaining unspecified was in respect of pre-1994 business. Given that the bulk of the unspecified records relate to pre-1994 data we can reasonably conclude that the specified records are more representative of cases with relatively shorter durations. There appears however, to be a credible number of claims to include an analysis for the Best five socio-economic rating classes (3 758 claims classified between Best and Fifth Best socio-economic rating class). Ideally the experience by socio-economic rating class would also be analysed by sex, occupation class and disability definition as well as duration however we felt the results would not be sufficiently credible.

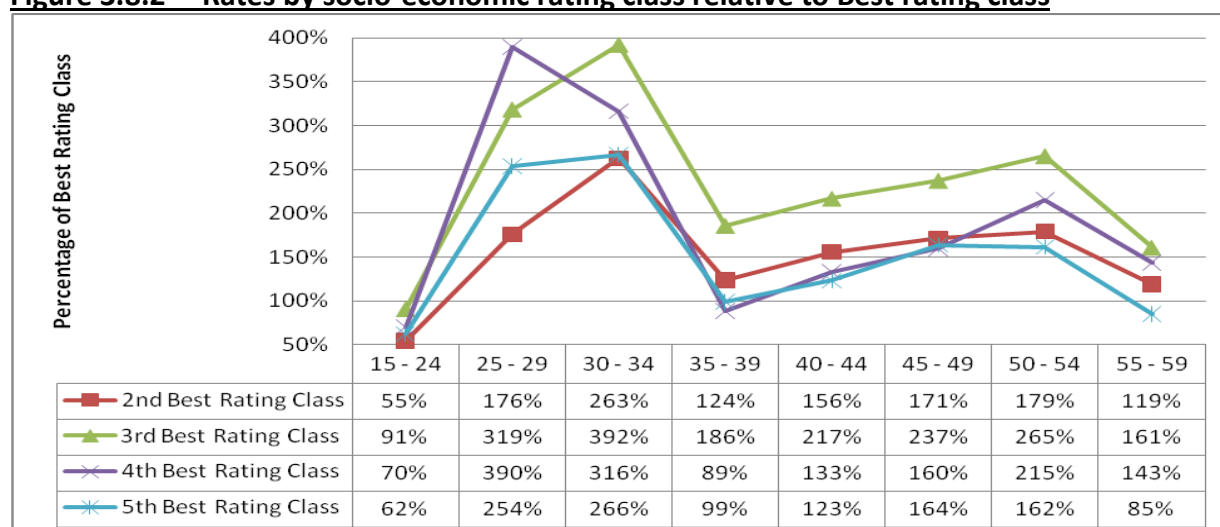
Figure 3.8.1 Disability rates by socio-economic rating class

Fourth and Fifth Best socio-economic rating class does not show the highest experience, however it is difficult to draw conclusions without considering the mix of business within each socio-economic rating class. One possible explanation is that lower socio-economic classes experience higher mortality rates and hence may be more likely to die within the deferred period or claim for an accelerated death benefit reducing the disability claims incidence.

Table 3.8.2 Socio-economic rating class

	Best Socio-Economic Rating Class				2nd Best Socio-Economic Rating Class				3rd Best Socio-Economic Rating Class			
Age Band	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age
15 - 24	18 695	2	0.107	22.4	85 744	5	0.058	21.8	133 467	13	0.097	22.5
25 - 29	104 239	10	0.096	27.5	195 482	33	0.169	27.3	307 636	94	0.306	27.1
30 - 34	185 875	27	0.145	32.0	272 605	104	0.382	32.0	273 835	156	0.570	31.9
35 - 39	184 100	130	0.706	37.0	230 974	202	0.875	36.9	198 066	260	1.313	36.9
40 - 44	163 071	140	0.859	41.9	177 419	237	1.336	41.8	143 972	268	1.861	41.8
45 - 49	113 722	123	1.082	46.8	110 119	204	1.853	46.8	88 475	227	2.566	46.8
50 - 54	63 208	98	1.550	51.7	57 623	160	2.777	51.7	46 453	191	4.112	51.7
55 - 59	21 386	77	3.600	56.3	19 405	83	4.277	56.3	15 345	89	5.800	56.3
60 - 64	1 341	1	0.746	60.9	1 492	1	0.670	60.9	1 523	4	2.627	61.1
65+	15	-	-	66.3	27	-	-	67.8	50	-	-	67.4
Total	855 651	608	0.711	38.3	1 150 890	1 029	0.894	35.8	1 208 822	1 302	1.077	33.8

	4th Best Socio-Economic Rating Class				5th Best Socio-Economic Rating Class			
Age Band	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age
15 - 24	26 638	2	0.075	22.0	15 003	1	0.067	22.6
25 - 29	45 461	17	0.374	27.2	69 834	17	0.243	27.4
30 - 34	65 298	30	0.459	32.1	118 929	46	0.387	32.1
35 - 39	67 152	42	0.625	37.0	116 225	81	0.697	37.0
40 - 44	56 200	64	1.139	41.9	95 474	101	1.058	41.9
45 - 49	37 631	65	1.727	46.8	62 026	110	1.773	46.8
50 - 54	20 721	69	3.330	51.7	32 712	82	2.507	51.7
55 - 59	7 359	38	5.164	56.4	12 438	38	3.055	56.6
60 - 64	1 388	2	1.441	61.2	2 910	14	4.812	61.2
65+	63	-	-	66.2	163	-	-	67.2
Total	327 911	329	1.003	36.9	525 713	490	0.932	37.8

Figure 3.8.2 Rates by socio-economic rating class relative to Best rating class

The Best socio-economic rating class has the lowest experience. Over all ages the experience as a percentage of Best socio-economic rating class is 134%, 171%, 154% and 130% for Second Best, Third Best, Fourth Best and Fifth Best socio-economic rating classes respectively.

3.9 Analysis by Deferred Period

An analysis by deferred period (often referred to in South Africa as Waiting Period or Elimination Period) is not included due to the large proportion of policies classified as unknown. It is most likely that the deferred period of majority of the business is either 6 months or 12 months.

Table 3.9.1 Distribution by deferred period

	Exposure	Claims	Rate	Ave Age
Less than 6m	663 726	185	0.28	38.5
Between 6m and 12m	2 353 380	3 525	1.50	40.2
Greater than 12m	62 464	68	1.09	39.7
Unknown	5 084 722	7 207	1.42	38.6
	8 164 292	10 985	1.35	39.1

	Exposure	Claims
Less than 6m	8%	2%
Between 6m and 12m	29%	32%
Greater than 12m	1%	1%
Unknown	62%	66%
	100%	100%

8% of the exposure has a deferred period less than 6 months with an overall rate of 0.28 per mille which is extremely light compared to the other deferred period categories. One might expect the shorter deferred periods to be sold mainly to a higher socio-economic rating class of lives. We considered the mix of business by occupation class and socio-economic rating class however the

exposure mix by deferred period did not suggest a significantly higher weighting to the better occupation or socio-economic rating classes

3.10 Analysis by Policy Type

Contributing companies were asked to classify policies by Policy Type, being either standalone or accelerated rider policies. One company did not classify its policies leading to a high proportion of Unknown policy type.

Table 3.10.1 Distribution by standalone/ accelerated

	Exposure	Claims	Rate	Ave Age
Standalone	124 714	103	0.83	37.2
Accelerated	4 960 008	7 104	1.43	38.7
Unknown	3 079 571	3 778	1.23	39.8
	8 164 292	10 985	1.35	39.1

	Exposure	Claims
Standalone	2%	1%
Accelerated	61%	65%
Unknown	38%	34%
	100%	100%

There does not appear to be a large amount of business classified as standalone. 98% of business with known policy type was classified as accelerated business. The accelerated business is showing significantly higher results than the standalone business which is not as expected however the small amount of standalone exposure provided does have a higher mix of the better occupation class lives compared to the accelerated exposure. We have not included further detailed results for accelerated business compared to standalone due to the low credibility of standalone business.

3.11 Analysis by Province

A detailed analysis by province is not included due to the large proportion of policies classified as unknown. One company was not able to provide a split by province and a significant proportion of the other contribution companies was classified as unknown.

Table 3.11.1 Distribution by province

	Exposure	Claims	Rate	Ave Age
Gauteng	1 240 836	1 040	0.84	39.9
Mpumalanga	146 317	135	0.92	39.4
Northern Province	170 850	164	0.96	39.3
Western Cape	602 679	781	1.30	38.5
Eastern Cape	310 466	438	1.41	39.4
Free State	179 493	262	1.46	39.9
North West	111 326	163	1.46	40.1
Kwa-Zulu Natal	637 421	1 004	1.58	40.3
Northern Cape	34 879	71	2.04	38.3
Unknown	4 730 025	6 927	1.46	38.9
	8 164 292	10 985	1.35	39.1

	Exposure	Claims
Gauteng	15%	9%
Mpumalanga	2%	1%
Northern Province	2%	1%
Western Cape	7%	7%
Eastern Cape	4%	4%
Free State	58%	63%
North West	2%	2%
Kwa-Zulu Natal	1%	1%
Northern Cape	8%	9%
Unknown	0%	1%
	100%	100%

Although less credible, the Northern Cape and Kwa-Zulu Natal appear to have the highest overall crude observed rate. There did not appear to be any significant differences in exposure by sex, occupation class or socio-economic rating class. Although province may not be used by all companies as a pricing rating factor and hence not recorded, we would encourage improved data capturing going forward to enable an analysis of this experience as we would expect a significant difference between regions.

3.12 Analysis by Cause of Claim

A detailed analysis by cause of claim was not included since not all companies were able to supply this field. We do however show below the split of claims by cause for the claims that were categorised. This split has also been shown by broad age bands since we would expect some causes of claim to be more prominent in younger or older lives.

Table 3.12.1 Cause of claim – proportion of number of claims

Cause of Claim	Number of Claims	Overall Proportion	Male Proportion	Female Proportion
Cancer	437	4%	4%	5%
Cardiac	583	5%	6%	4%
Injuries	412	4%	4%	2%
Mental: Depression/ PTSD	1 898	18%	18%	16%
Musculoskeletal	1 376	13%	11%	15%
Neurological	528	5%	4%	6%
Other Specified	642	6%	6%	6%
Unspecified	815	7%	7%	8%
Blank Field/ Not Provided	4 294	39%	39%	38%
All Causes	10 985	100%	100%	100%

We have the cause of claim for 5 876 claims which is just over half the number of claims. Of the specified claim causes, 33% are in respect of mental conditions while 23% were classified as musculoskeletal conditions. These two causes accounted were by far the highest proportion of claims. Cancer, cardiac, injuries and neurological were the other main causes of claim. The remaining specified causes were grouped into 'Other Specified'.

Table 3.12.2 Proportion of specified number of claims by age and cause of claim

Cause of Claim	15 - 34	35-44	45-54	55-64	Total
Cancer	6%	7%	8%	8%	7%
Cardiac	4%	5%	12%	20%	10%
Injuries	17%	8%	5%	3%	7%
Mental: Depression/ PTSD	41%	45%	27%	14%	33%
Musculoskeletal	15%	20%	25%	31%	23%
Neurological	10%	8%	10%	9%	9%
Other Specified	6%	8%	14%	15%	11%
All Specified Causes	100%	100%	100%	100%	100%
Number of Claims	571	2 169	2 305	830	5 876

The proportion of mental conditions was highest at the 30 – 40 age group while musculoskeletal conditions showed the highest proportion of claims at the oldest age bands. The main causes of claim in ages less than 30 were injuries and mental conditions. The main causes of claim in the mid-ages were mental and musculoskeletal while the main causes of claim in the older ages (that is above 55) were cardiac and musculoskeletal.

Table 3.12.3 Proportion of specified number of claims by age, sex and cause of claim

Cause of Claim	Males					Females				
	15 - 34	35-44	45-54	55-64	Total	15 - 34	35-44	45-54	55-64	Total
Cancer	6%	6%	8%	8%	7%	9%	9%	10%	7%	9%
Cardiac	3%	6%	13%	24%	11%	6%	3%	9%	13%	7%
Injuries	20%	9%	6%	3%	8%	10%	5%	3%	2%	4%
Mental: Depression/ PTSD	41%	44%	27%	13%	33%	39%	44%	23%	16%	30%
Musculoskeletal	16%	20%	23%	27%	21%	13%	22%	31%	43%	28%
Neurological	9%	7%	9%	10%	8%	15%	9%	12%	7%	11%
Other Specified	5%	7%	14%	16%	11%	9%	8%	12%	12%	11%
All Specified Causes	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Number of Claims	430	1 584	1 597	588	4 199	141	585	708	242	1 676

The proportions by age band for specified claims show the same main causes are applicable for males and females however there are some differences in the proportions by age band for males and females.

The proportion of injuries around young males is higher than females while cardiac claims have a higher proportion of total claims in older males compared to females as expected. Musculoskeletal claims are a significantly higher proportion for females compared to males particularly at the older ages. Cancer proportions were not significantly different by age band or sex.

4 Trends

4.1 Experience over Time

This section looks at the experience over the 4 calendar years included in this investigation.

Table 4.1.1 Calendar year

Males:					Females:				
	Exposure	Claims	Rate	Ave Age		Exposure	Claims	Rate	Ave Age
2000	1 220 930	1 791	1.47	38.2	2000	737 128	687	0.93	37.1
2001	1 326 872	2 259	1.70	39.1	2001	849 226	846	1.00	38.2
2002	1 257 774	2 020	1.61	39.8	2002	812 976	769	0.95	38.9
2003	1 185 019	1 820	1.54	40.5	2003	774 368	793	1.02	39.6
	4 990 595	7 890	1.58	39.4		3 173 697	3 095	0.98	38.5
	Exposure	Claims				Exposure	Claims		
2000	24%	23%			2000	23%	22%		
2001	27%	29%			2001	27%	27%		
2002	25%	26%			2002	26%	25%		
2003	24%	23%			2003	24%	26%		
	100%	100%				100%	100%		

Figure 4.1.1 Males disability rate by year of exposure

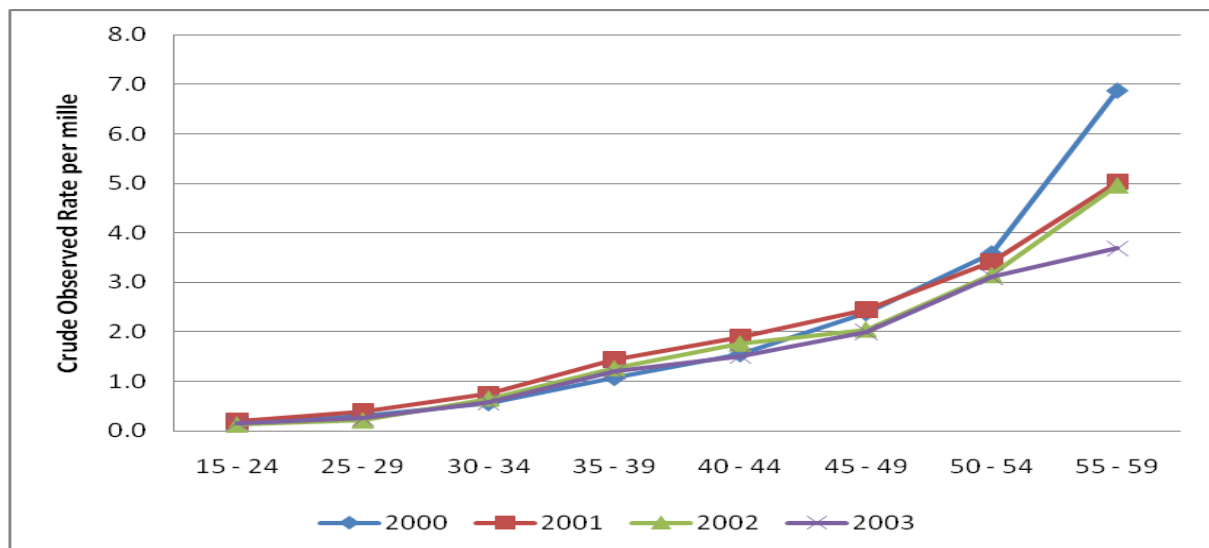


Table 4.1.2 Males disability rate by year of exposure

Age Band	2000				2001				2002				2003			
	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age
15 - 24	54 118	8	0.148	22.2	46 781	9	0.192	22.3	38 158	5	0.131	22.2	30 981	5	0.161	22.2
25 - 29	159 044	49	0.308	27.3	146 483	58	0.396	27.4	120 917	26	0.215	27.4	99 177	26	0.262	27.4
30 - 34	235 845	132	0.560	32.0	244 358	183	0.749	32.1	220 497	145	0.658	32.1	195 233	115	0.589	32.1
35 - 39	251 538	269	1.069	37.0	270 837	391	1.444	37.0	251 989	320	1.270	37.0	231 460	277	1.197	37.0
40 - 44	217 607	337	1.549	41.9	248 216	472	1.902	41.9	242 308	429	1.770	41.9	233 319	353	1.513	42.0
45 - 49	156 087	371	2.377	46.8	184 651	453	2.453	46.9	186 259	382	2.051	46.9	186 484	373	2.000	46.9
50 - 54	101 251	363	3.585	51.8	121 728	415	3.409	51.8	125 038	394	3.151	51.8	127 682	397	3.109	51.8
55 - 59	37 984	261	6.871	56.3	52 299	263	5.029	56.4	59 630	296	4.964	56.5	66 250	244	3.683	56.6
60 - 64	6 787	1	0.147	61.4	10 435	15	1.437	61.5	11 397	23	2.018	61.5	12 303	30	2.438	61.5
65+	669	-	0.000	66.3	1 085	-	0.000	66.3	1 582	-	0.000	66.3	2 130	-	0.000	66.4
Total	1 220 930	1 791	1.467	38.2	1 326 872	2 259	1.703	39.1	1 257 774	2 020	1.606	39.8	1 185 019	1 820	1.536	40.5

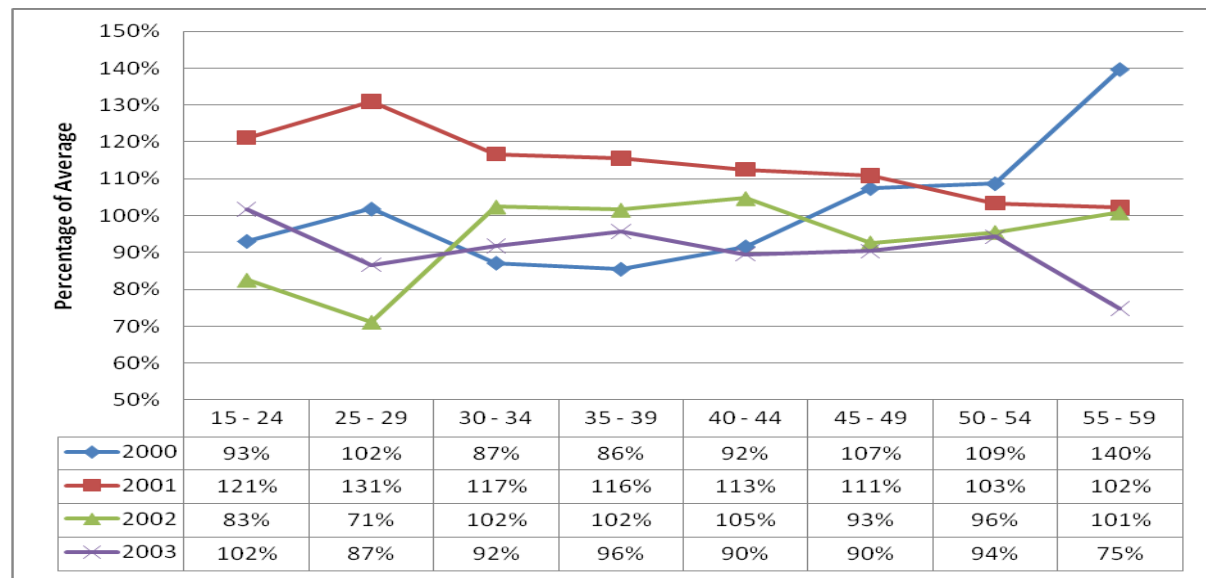
Figure 4.1.2 Rates by calendar year relative to average – males

Figure 4.1.2 above shows the male crude observed rate for each year relative to the average for the whole period of the investigation. There is no clear trend by calendar year with 2001 showing the highest experience for ages less than 50. The average duration did increase from 5.6 years in 2000 to 6.4 years in 2003.

Figure 4.1.3 Females disability rate by year of exposure

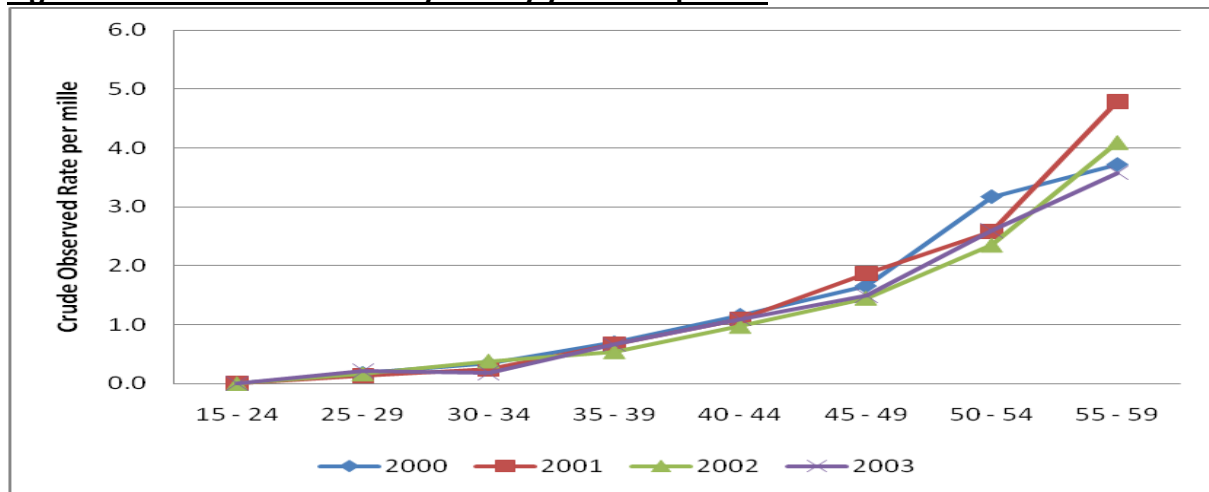
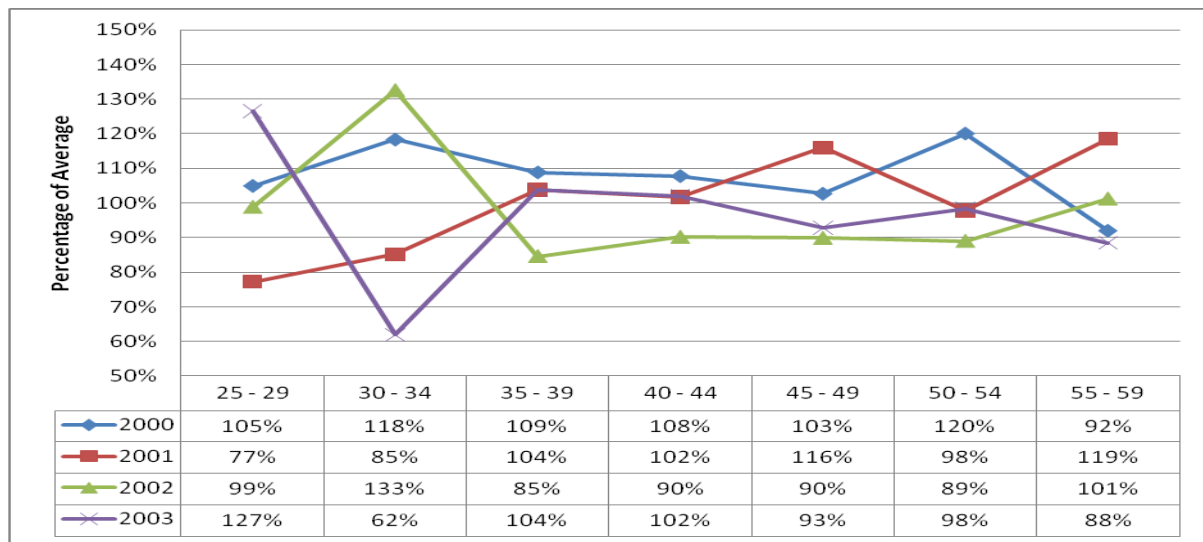


Table 4.1.3 Females disability rate by year of exposure

Age Band	2000				2001				2002				2003			
	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age	Exposure	Claims	Rate	Ave Age
15 - 24	40 612	-	0.000	22.3	35 575	-	0.000	22.3	29 471	-	0.000	22.3	24 217	-	0.000	22.3
25 - 29	115 220	20	0.174	27.3	109 489	14	0.128	27.3	91 728	15	0.164	27.3	76 406	16	0.209	27.4
30 - 34	152 969	52	0.340	32.0	167 626	41	0.245	32.1	154 850	59	0.381	32.1	140 579	25	0.178	32.1
35 - 39	149 801	104	0.694	37.0	175 096	116	0.662	37.0	166 833	90	0.539	37.0	157 177	104	0.662	37.0
40 - 44	123 421	143	1.159	41.9	154 529	169	1.094	41.9	152 712	148	0.969	41.9	149 664	164	1.096	41.9
45 - 49	83 391	138	1.655	46.8	108 562	203	1.870	46.8	111 836	162	1.449	46.8	113 663	170	1.496	46.8
50 - 54	50 499	160	3.168	51.8	65 510	169	2.580	51.8	68 139	160	2.348	51.8	71 236	185	2.597	51.8
55 - 59	18 040	67	3.714	56.4	27 146	130	4.789	56.5	31 065	127	4.088	56.5	34 409	123	3.575	56.6
60 - 64	2 936	3	1.022	61.3	5 247	4	0.762	61.4	5 667	8	1.412	61.5	6 130	5	0.816	61.5
65+	238	-	0.000	66.2	445	-	0.000	66.3	677	-	0.000	66.2	886	1	1.128	66.3
Total	737 128	687	0.932	37.1	849 226	846	0.996	38.2	812 976	769	0.946	38.9	774 368	793	1.024	39.6

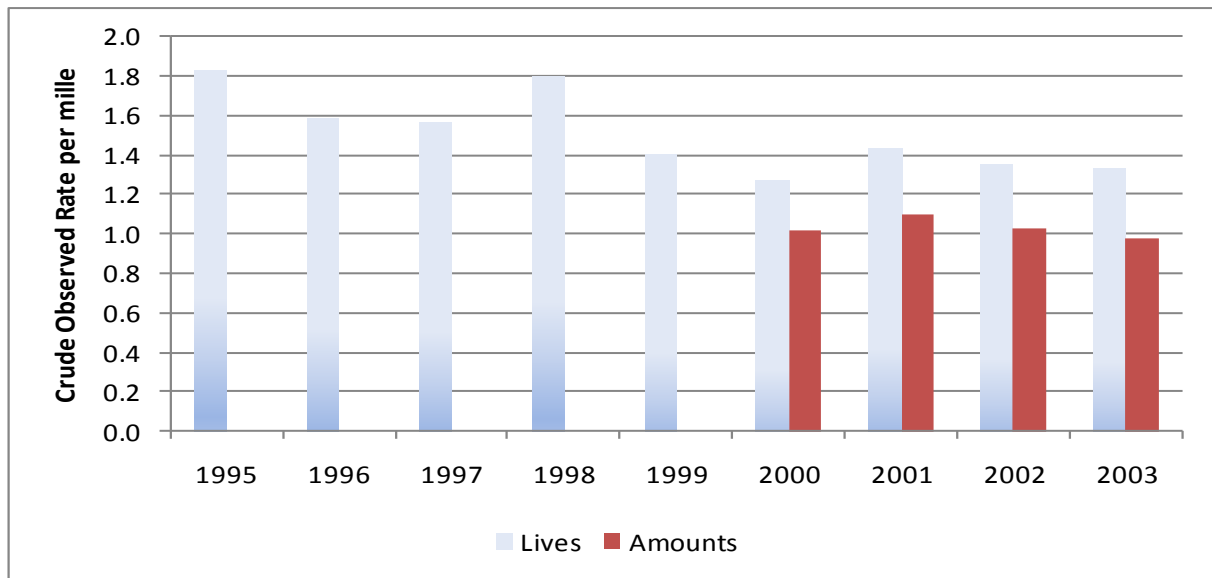
Figure 4.1.4 Rates by calendar year relative to average – females



Similar to the male experience, there is no clear trend by calendar year. The average duration did increase from 5.4 years in 2000 to 6.3 years in 2003.

4.2 Comparison to Previous Investigations

Figure 4.2.1 General trends



The graph above shows the trend in aggregate crude rates from the start of the previous investigation until the end of the current one.

There appears to be an improvement in experience in the current investigation compared to the previous investigation, however, changes in the mix of business should be considered before drawing conclusions. The CSI committee has not included further detailed comparisons of the current investigation to the previous investigation due to data concerns limiting the ability to analyse the experience by disability definition as well as differences in analysis methodology and occupation class classification making comparisons more challenging.

4.3 Comparison to Mortality Tables

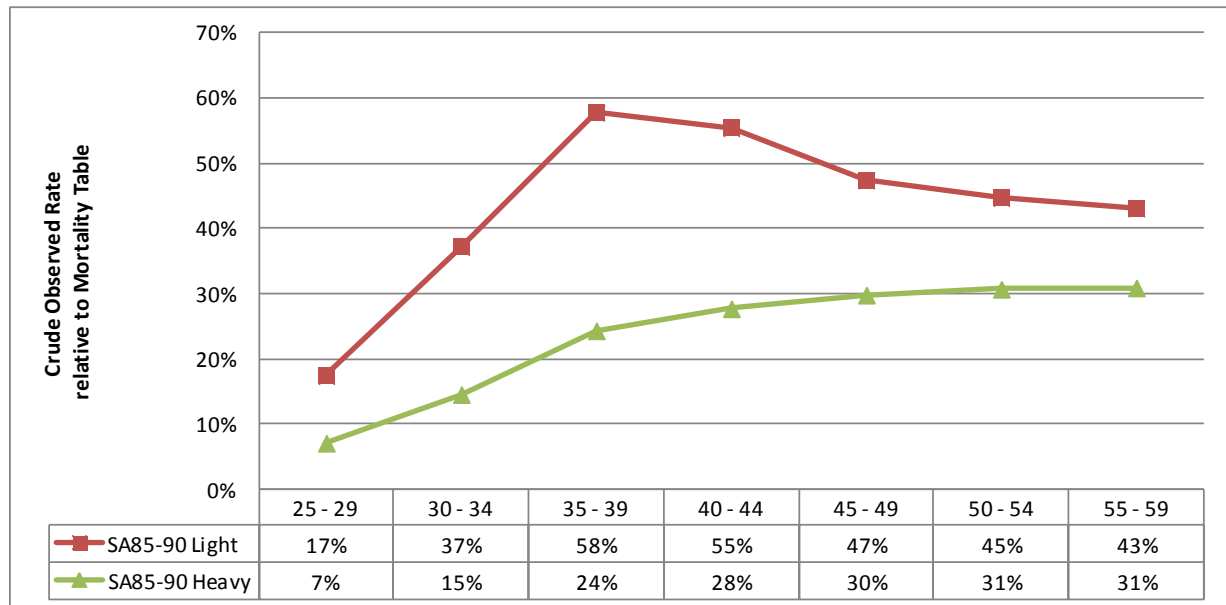
The disability experience has been compared to the insured lives mortality tables SA85-90 Light and SA85-90 Heavy.

Please note the following in interpreting these results:

- The initial rates by age at entry, and duration attained from the SA85-90 tables were converted to central rates by age and duration attained for calculating the expected number of claims;
- The data is classified according to age last and curtate duration attained, which means that the exposure will be older and with longer duration than the rates from the rates from SA85-90. Thus, the rates were adjusted approximately to allow for this mismatch assuming that the average exposure for lives classified as (x,t) who will reach duration (t+1) before reaching age (x+1) will be the same as the average exposure for lives classified as (x,t) who will reach age

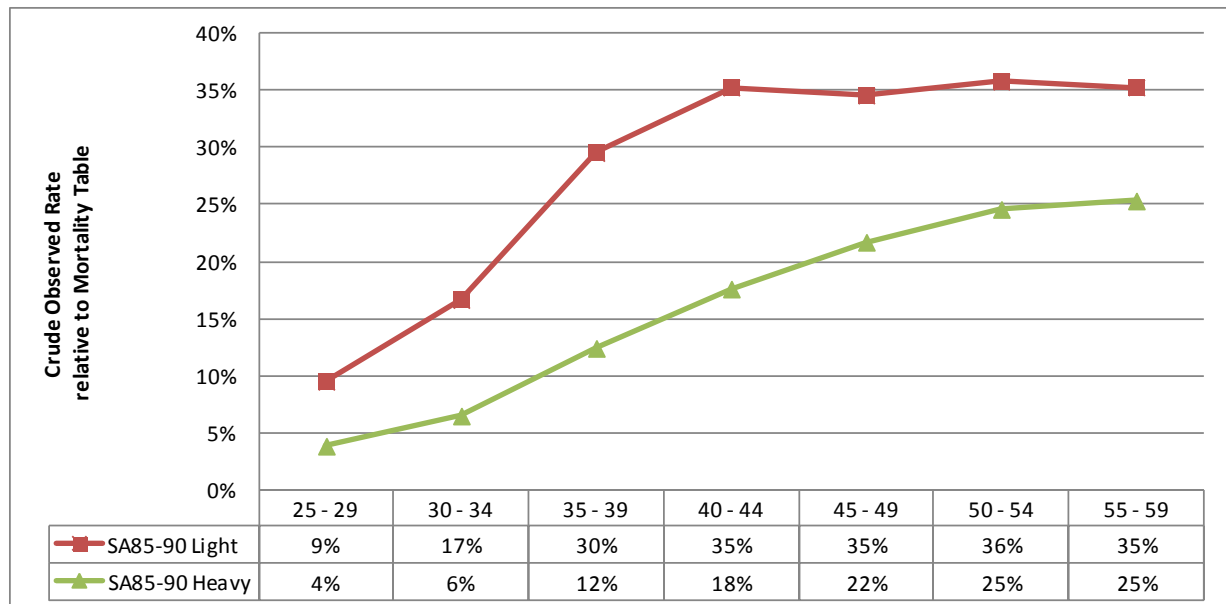
(x+1) before reaching duration (t+1) and that in each case birthdays occur on average half-way through the policy year.

Figure 4.3.1 Crude observed disability rates relative to mortality table – males

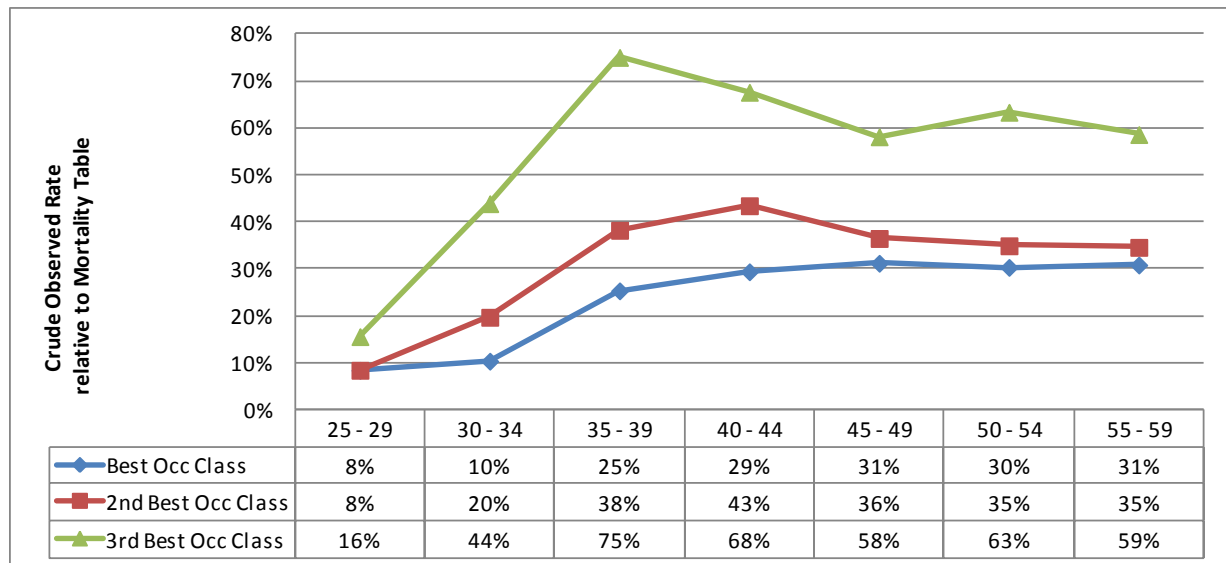


The overall disability experience for males was 43.5% of SA85-90 Light and 23.9% of SA85-90 Heavy.

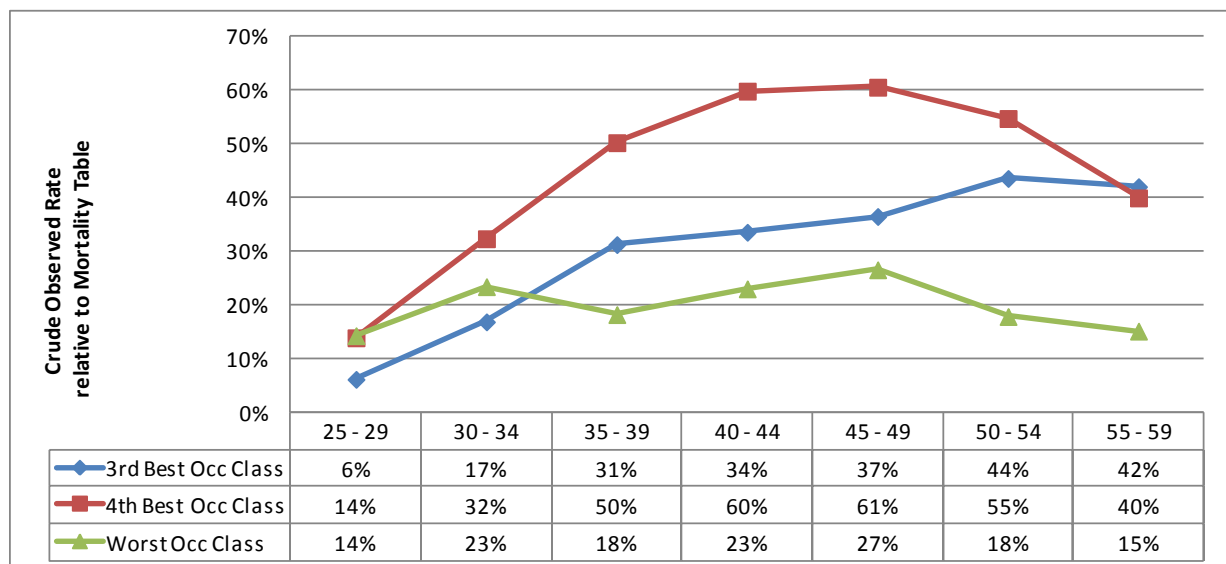
Figure 4.3.2 Crude observed disability rates relative to mortality table – females



The overall disability experience for females was 28.8% of SA85-90 Light and 15.4% of SA85-90 Heavy.

Figure 4.3.3 Disability rates relative to SA85-90 Light by occupation class

The experience of the Best three occupation classes have been compared to the mortality 'Light' table. The graph above shows the aggregate actual-to-expected ratio for males and females combined. Overall the percentage of SA85-90 Light for Best occupation class, Second Best occupation class and Third Best occupation class is 26%, 32% and 54% respectively.

Figure 4.3.3 Disability rates relative to SA85-90 Heavy by occupation class

The experience of the lower occupation classes have been compared to the mortality 'Heavy' table. The graph above shows the aggregate actual-to-expected ratio for males and females combined. Overall the percentage of SA85-90 Heavy for Third Best occupation class, Fourth Best occupation class and Worst occupation class is 28%, 43% and 19% respectively.

5 Graduation

Given the data issues it is not intended to graduate the results of this investigation.

6 Summary and Conclusions

- 6.1. Data issues limit the usefulness of the results of this investigation and the drop in exposure and claims is a concern. Improved future data collection will enable more detailed analysis by more rating factors.
- 6.2. Although some results on amounts basis have been included, there were data issues reducing the credibility of these results. An amounts analysis will become more important going forward as we would expect the proportion of partial claims may increase given the disability definitions of the newer style products. Due caution should be paid to the proportion of partial claims included in the lives analysis of this investigation which is potentially overstating the results.
- 6.3. Female experience is significantly lighter than male experience for all occupation classes except Best occupation class. This is contrary to international disability income trends which suggests female incidence experience is higher than male experience. Best occupation class experience is somewhat consistent with Australian disability lump sum experience which suggests no significant difference between male and female experience.
- 6.4. There appears to be reasonable increase in experience from Best occupation class to Fourth Best occupation class
- 6.5. Smoker morbidity differentials are of a similar level to mortality experience.
- 6.6. There is no clear trend in morbidity experience over the 4 year period of this investigation however experience has improved since the previous investigation.
- 6.7. Where cause of claim is known, the main causes of claims appear to be mental and musculoskeletal conditions.

7 References

- Lump Sum Disability Investigation, 1995-1999 [CSI Committee]
 - SA85-90 Mortality Tables [CSI Committee]
- Institute of Actuaries of Australia experience investigation reports including:
- TPD Experience by Occupation and Gender, 1995-1997 [Mortality Committee]
 - Report on the Lump Sum Experience Investigation, 1998-99 [Life Risk Insurance Committee]
 - 2002 Report of the Disability Committee [Disability Committee]