



ACTUARIAL SOCIETY
H O N G of K O N G
香 港 精 算 學 會

Report on

Hong Kong Assured Lives
Critical Illness

Experience Study

2005 – 2009

Actuarial Society of Hong Kong

Experience Committee

Table of Contents

1.	Introduction	3
2.	Data.....	4
2.1	Overview of Data Gathered	4
2.1.1	Market Coverage of this Study.....	4
2.1.2	Data Requested.....	4
2.1.3	Data Provided.....	5
2.1.4	Data Validation.....	5
2.1.5	Comparison of data with ASHK 2002 – 2006 (“ASHK08”).....	5
2.2	Analysis of In-Force	5
2.3	Analysis of Claims.....	7
2.4	Analysis of Sum Assured	8
3.	Critical Illness Experience.....	9
3.1	Claim Rates.....	9
3.2	Selection Effect	11
3.3	Smoking Differentials.....	13
3.3.1	Gender Mix.....	14
3.4	Underwriting Methods.....	16
3.5	Breakdown by Sum Assured	19
3.6	Claim Lag	20
3.7	Trend in Incidence of Critical Illness	20
4.	Critical Illness Experience.....	21
4.1	Cause of Critical Illness Breakdown	21
4.2	Summary of Results	23
5.	Lapse/Surrender Experience.....	26
6.	Use of this Report	27
6.1	Considerations	27
6.2	Disclaimer.....	28
7.	Appendices.....	29
7.1	Appendix: Data for all critical illness benefits.....	29
7.2	Appendix: Participating Companies.....	30

1. Introduction

This report provides an overview of the assured lives critical illness experience in Hong Kong for the period 2005 to 2009. It is based on data collected from eighteen (18) Hong Kong life insurance companies that were representative of the industry. This report only examines the critical illness experience under standard individually underwritten life insurance. It excludes group policies and substandard cases. The SOA Experience Study tool was used to perform this study.

This report has included experience by sum assured and experience for policies with China residency. Unfortunately, there was insufficient data to provide credible experience for policies with China residency alone. This is an area for future analysis.

As there is no industry table available for critical illness, crude rates from ASHK's 2002-2006 CI experience was used as the expected.

This report will be available in electronic format from the Actuarial Society of Hong Kong's website, www.actuaries.org.hk. Should there be any questions or queries on the study of this report, please contact the Chairperson of the Experience Committee at the Actuarial Society of Hong Kong by email: actsoff@netvigator.com.

Finally, this experience study could not have been completed without the contribution from the participating companies and the hard work from individuals primarily on the Life Committee of the Actuarial Society of Hong Kong who were involved in collating and analyzing the data. Their contribution is very much appreciated.

Life Committee

2. Data

The study of this report covers a 5 year period from 1/1/2005 to 31/12/2009 (Hereinafter “ASHK11”) as compared to the 5 year period of the previous Critical Illness Experience Study from 2002 to 2006 (Hereinafter “ASHK08”). The data was collected in 2011 in order to capture as many claims as possible.

2.1 Overview of Data Gathered

2.1.1 Market Coverage of this Study

Data requests were sent to the forty-five companies who responded to a survey in 2011 offering their support for an industry critical illness study. Eighteen of these companies (the “participating companies”) responded with comprehensive data for this study. According to the statistics reported to Insurance Authority, the participating companies for this study represented 92% of the individual life policies in-force in Hong Kong at the end of 2009.

2.1.2 Data Requested

Data was requested on both a per life/per policy basis and a per amount basis for the following parameters:

- Policy type: accelerated critical illness, critical illness only
- Gender: Male, female, unknown
- Date of Birth
- Issue Age: 0 to 100
- Policy Issue Date
- Non-medical, medical, simplified, unknown
- Smoking status: non-smoker, smoker, aggregate/unknown
- Policy status: Inforce, lapsed, surrendered, matured, claimed
- Policy status date
- Sum Insured
- Waiting Period: Number of days
- Channel: Agency, Bancassurance, Direct Marketing, Other
- Location of China cities if applicable

Extra for Claims

- Date of CI Diagnosis
- Date of Report
- Cause of CI Claim: Cancer, heart attack, stroke, kidney failure, coronary artery bypass surgery, other heart surgery excluding CABS, benign brain tumour, multiple sclerosis, angioplasty, major head trauma, paralysis, coma, major organ transplant, carcinoma-in-situ, systemic lupus erythematosus, Parkinson’s disease, Alzheimer’s, total permanent disability, loss of independence existence, other
- Survival Period

The data was restricted to individual policies that were fully underwritten or simplified issue (i.e. excluding group policies) issued at standard rates.

The data used in this report was standardized, as far as possible, to:

- An age definition of age last at previous policy anniversary
- A duration definition of curtate duration since inception
- Per lives and per amounts

2.1.3 Data Provided

The majority of the participating companies provided data for the full period in the detailed format requested. This has allowed a large proportion of the data provided to be used as the basis for this report. However, not all the companies could provide the cause of claims for their data and those with missing cause of claims were categorized as Unknown.

Some companies also provided data for tailored CI products such as cancer only, female specific policies. These were removed from this study.

For this study, claims with partial payments such as angioplasty and carcinoma-in-situ were excluded from the analysis.

2.1.4 Data Validation

The collected data was gathered and consolidated. A number of checks were carried out on the original data to obtain a degree of confidence in the accuracy of the data supplied.

To minimise the impact of Incurred But Not Reported (IBNR) claims, we requested participating companies to provide data for claims incurred in 2009 with a reporting year as far out as possible. The majority of the participants extracted data up to a reporting year of 2011 or 2012.

2.1.5 Comparison of data with ASHK 2002 – 2006 (“ASHK08”)

The table below compares the volume of critical illness data underlying this study. Overall there was a substantial increase in the volume of data.

		Volume of Data			
Gender	Duration	Inforce Exposures		CI Claims	
		ASHK11	ASHK08	ASHK11	ASHK08
Male	0	420,681	337,327	313	245
	1	332,264	309,466	393	287
	2+	2,547,047	1,842,734	3,868	2,318
	Subtotal	3,299,991	2,489,527	4,574	2,850
Female	0	524,810	433,481	486	389
	1	429,536	402,384	601	537
	2+	3,319,956	2,352,321	6,385	3,914
	Subtotal	4,274,302	3,188,186	7,472	4,840
Total		7,574,293	5,677,714	12,046	7,690

Table 2.1 – Volume of data for all policies

2.2 Analysis of In-Force

The table below shows the split by age and gender for lives in-force.

Age Last	Inforce Exposures		
	Male	Female	% Male
0-4	85,391	78,829	52%
5-9	90,742	82,895	52%
10-14	90,270	79,624	53%
15-19	87,839	81,612	52%
20-24	186,287	242,682	43%
25-29	390,638	559,744	41%
30-34	527,002	751,125	41%
35-39	544,472	753,835	42%
40-44	546,314	683,752	44%
45-49	411,189	488,525	46%
50-54	215,492	283,621	43%
55-59	96,054	142,487	40%
60-64	24,491	39,154	38%
65-69	3,421	5,831	37%
70-74	368	568	39%
75-79	20	21	48%
80-84	-	-	0%
85+	-	-	0%
All Ages	3,299,991	4,274,302	44%

Table 2.2 – Inforce exposures by age and gender

The average gender mix is about 44% male and 56% female for critical illness policies.

2.3 Analysis of Claims

The table below shows the number of claims split by age and gender.

Age Last	Actual CI Claims		
	Male	Female	% Male
0-4	18	8	69%
5-9	16	5	76%
10-14	12	13	48%
15-19	7	12	37%
20-24	43	62	41%
25-29	150	285	34%
30-34	305	653	32%
35-39	477	1,115	30%
40-44	776	1,707	31%
45-49	1,079	1,538	41%
50-54	868	1,144	43%
55-59	537	664	45%
60-64	231	216	52%
65-69	47	44	52%
70-74	7	6	54%
75-79	1	-	100%
80-84	-	-	0%
85+	-	-	0%
All Ages	4,574	7,472	38%

Table 2.3 – Actual claims by age and gender

Overall, males represent 38% of the critical illness claims. This is consistent with the ASHK08 study.

2.4 Analysis of Sum Assured

The following table indicates the average sum assured per policy in Hong Kong dollars split by age and gender.

Age Last	Average Sum Assured	
	Male	Female
0-4	285,414	289,625
5-9	247,283	255,547
10-14	251,517	256,085
15-19	275,080	277,480
20-24	324,880	310,003
25-29	366,691	332,339
30-34	391,268	341,431
35-39	395,493	338,047
40-44	371,790	315,089
45-49	327,810	273,445
50-54	277,952	227,843
55-59	231,942	192,459
60-64	202,606	168,226
65-69	179,771	163,116
70-74	192,760	160,473
75-79	157,056	140,555
80-84	-	-
85+	-	-
All Ages	346,883	306,085

Table 2.4 -Average sum assured by age and gender

The average sum assured varies materially across age groups, and may influence any summary comparison of experience on a lives and amounts basis.

3. Critical Illness Experience

3.1 Claim Rates

The table below shows the claim rate for critical illness claims under policies providing accelerated critical illness benefits together with policies providing additional/standalone critical illness benefits. This provides an estimate of the critical illness incidence rates. These incidence rates have not been adjusted for any claims delays.

Age Last	Experience for Male Lives, Duration 2+				Experience for Female Lives, Duration 2+			
	Lives Exposed	CI Claims	Rate % Lives	Rate % Amounts	Lives Exposed	CI Claims	Rate % Lives	Rate % Amounts
0-4	34,940	8	0.23	0.21	32,516	1	0.03	0.02
5-9	70,935	14	0.20	0.19	64,691	2	0.03	0.04
10-14	67,380	12	0.18	0.13	59,697	12	0.20	0.29
15-19	55,514	4	0.07	0.08	48,972	8	0.16	0.19
20-24	96,929	19	0.20	0.18	114,020	32	0.28	0.29
25-29	256,711	95	0.37	0.39	375,824	200	0.53	0.48
30-34	406,085	238	0.59	0.66	594,202	531	0.89	0.89
35-39	447,198	405	0.91	0.90	625,993	943	1.51	1.56
40-44	461,172	633	1.37	1.46	577,413	1,474	2.55	2.52
45-49	351,400	924	2.63	2.58	413,978	1,330	3.21	3.38
50-54	186,751	762	4.08	4.26	243,225	1,008	4.14	4.56
55-59	85,105	482	5.66	5.91	125,980	592	4.70	5.18
60-64	23,168	218	9.41	10.22	37,120	203	5.47	6.12
65-69	3,373	46	13.64	15.45	5,740	43	7.49	12.70
70-74	366	7	19.13	39.85	562	6	10.69	7.64
75-79	20	1	50.60	32.22	21	-	-	-
80-84	-	-	-	-	-	-	-	-
85+	-	-	-	-	-	-	-	-
All Ages	2,547,047	3,868	1.52	1.45	3,319,956	6,385	1.92	1.86

Table 3.1a – Claim rates for duration 2+ by age and gender

As expected, the rate of claim increases as the age increases. Female claim rates are higher than male rates for ages 10-54.

The actual claims are compared against expected, based on the crude rates from the ASHK08 critical illness study. The results are shown in the following table.

Age Last	Experience for Male Lives, Duration 2+					Experience for Female Lives, Duration 2+				
	Lives	CI	Expected	A/E	A/E	Lives	CI	Expected	A/E	A/E
	Exposed	Claims	Claims	Lives	Amounts	Exposed	Claims	Claims	Lives	Amounts
0-4	34,940	8	7	108%	99%	32,516	1	2	54%	32%
5-9	70,935	14	9	158%	154%	64,691	2	6	34%	39%
10-14	67,380	12	7	179%	128%	59,697	12	4	323%	459%
15-19	55,514	4	10	41%	45%	48,972	8	7	109%	127%
20-24	96,929	19	23	84%	76%	114,020	32	35	90%	93%
25-29	256,711	95	102	93%	99%	375,824	200	205	98%	87%
30-34	406,085	238	217	109%	124%	594,202	531	536	99%	99%
35-39	447,198	405	424	95%	95%	625,993	943	1,000	94%	98%
40-44	461,172	633	695	91%	97%	577,413	1,474	1,340	110%	109%
45-49	351,400	924	830	111%	110%	413,978	1,330	1,277	104%	110%
50-54	186,751	762	659	116%	122%	243,225	1,008	941	107%	118%
55-59	85,105	482	477	101%	106%	125,980	592	571	104%	115%
60-64	23,168	218	184	119%	129%	37,120	203	217	93%	105%
65-69	3,373	46	40	116%	132%	5,740	43	49	87%	148%
70-74	366	7	9	78%	164%	562	6	6	94%	68%
75-79	20	1	1	140%	89%	21	-	0	0%	0%
80-84	-	-	-	0%	0%	-	-	-	0%	0%
85+	-	-	-	0%	0%	-	-	-	0%	0%
All Ages	2,547,047	3,868	3,693	105%	108%	3,319,956	6,385	6,197	103%	107%

Table 3.1b - Experience for duration 2+ by age and gender

This shows that the claims rate has increased compared to the previous study.

3.2 Selection Effect

The following tables show duration 0 and duration 1 claim rates and compare them with the expected claim rate (crude rates from ASHK08). The resulting A/E ratios are then compared with duration 2+.

Age Last	Experience for Male Lives, Duration 0					Experience for Female Lives, Duration 0				
	Lives	CI	Rate ‰	A/E	Dur 0/2+	Lives	CI	Rate ‰	A/E	Dur 0/2+
	Exposed	Claims	Lives	Lives	Lives	Exposed	Claims	Lives	Lives	Lives
0-4	29,665	6	0.20	74%	68%	27,104	3	0.11	233%	428%
5-9	11,194	-	-	0%	0%	10,336	-	-	0%	0%
10-14	13,286	-	-	0%	0%	11,603	-	-	0%	0%
15-19	19,693	2	0.10	56%	138%	20,532	3	0.15	89%	82%
20-24	54,032	13	0.24	104%	123%	76,762	12	0.16	51%	57%
25-29	74,388	24	0.32	83%	89%	98,549	35	0.36	67%	69%
30-34	65,318	31	0.47	90%	82%	83,136	57	0.69	77%	78%
35-39	52,610	32	0.61	65%	68%	68,202	78	1.14	72%	76%
40-44	45,844	57	1.24	83%	91%	56,805	100	1.76	76%	69%
45-49	32,487	69	2.12	90%	81%	40,284	88	2.18	71%	68%
50-54	15,693	47	2.99	85%	74%	21,860	70	3.20	83%	77%
55-59	5,932	27	4.55	81%	81%	8,794	34	3.87	86%	82%
60-64	516	4	7.75	102%	86%	804	6	7.46	137%	147%
65-69	21	1	47.15	422%	363%	37	-	-	0%	0%
70-74	-	-	-	0%	0%	2	-	-	0%	0%
75-79	-	-	-	0%	0%	-	-	-	0%	0%
80-84	-	-	-	0%	0%	-	-	-	0%	0%
85+	-	-	-	0%	0%	-	-	-	0%	0%
All Ages	420,681	313	0.74	83%	79%	524,810	486	0.93	75%	73%

Table 3.2a - Experience for duration 0 by age and gender

Duration 0 experience is clearly better than duration 2+. Overall, duration 0 experience is about 25% lower than duration 2+. However, it should be noted that the majority of critical illness policies sold in Hong Kong apply a waiting period of up to 90 days. The inability to claim during this period has not been allowed for in the above analysis.

Age Last	Experience for Male Lives, Duration 1					Experience for Female Lives, Duration 1				
	Lives Exposed	CI Claims	Rate ‰ Lives	A/E Lives	Dur 1/2+ Lives	Lives Exposed	CI Claims	Rate ‰ Lives	A/E Lives	Dur 1/2+ Lives
0-4	20,785	4	0.19	77%	71%	19,209	4	0.21	463%	851%
5-9	8,613	2	0.23	184%	116%	7,868	3	0.38	422%	1232%
10-14	9,603	-	-	0%	0%	8,324	1	0.12	192%	59%
15-19	12,632	1	0.08	44%	108%	12,108	1	0.08	51%	47%
20-24	35,327	11	0.31	133%	158%	51,899	18	0.35	112%	124%
25-29	59,539	31	0.52	133%	144%	85,371	50	0.59	111%	114%
30-34	55,599	36	0.65	123%	112%	73,786	65	0.88	100%	101%
35-39	44,665	40	0.90	95%	100%	59,640	94	1.58	99%	105%
40-44	39,298	86	2.19	146%	160%	49,534	133	2.69	116%	105%
45-49	27,302	86	3.15	134%	120%	34,263	120	3.50	114%	109%
50-54	13,048	59	4.52	129%	111%	18,537	66	3.56	92%	86%
55-59	5,017	28	5.58	101%	100%	7,712	38	4.93	109%	105%
60-64	807	9	11.15	147%	124%	1,230	7	5.69	106%	113%
65-69	27	-	-	0%	0%	53	1	18.97	224%	257%
70-74	2	-	-	0%	0%	4	-	-	0%	0%
75-79	-	-	-	0%	0%	-	-	-	0%	0%
80-84	-	-	-	0%	0%	-	-	-	0%	0%
85+	-	-	-	0%	0%	-	-	-	0%	0%
All Ages	332,264	393	1.18	125%	119%	429,536	601	1.40	108%	104%

Table 3.2b- Experience for duration 1 by age and gender

Duration 1 experience is around 20% higher for duration 2+ for males and around 5% higher for duration 2+ for females. For comparison, the ASHK08 study showed that duration 1 experience was about 3% higher than duration 2+ experience for both males and females.

3.3 Smoking Differentials

The following tables show the experience by smoker status for all durations. Around 73% of lives in this study had a smoker status identified.

Age Last	Experience for Non-Smokers, All Durations					Experience for Smokers, All Durations				
	Lives Exposed	CI Claims	Rate ‰ Lives	A/E Lives	NSm/Avg Lives	Lives Exposed	CI Claims	Rate ‰ Lives	A/E Lives	Sm/Avg Lives
15-19	91,665	12	0.13	78%	103%	10,065	1	0.10	58%	77%
20-24	295,311	80	0.27	97%	100%	51,134	13	0.25	95%	98%
25-29	676,803	304	0.45	93%	97%	129,006	67	0.52	114%	119%
30-34	882,584	675	0.76	100%	99%	168,899	121	0.72	110%	108%
35-39	879,072	1,062	1.21	89%	97%	145,173	186	1.28	115%	125%
40-44	824,638	1,639	1.99	99%	97%	111,629	237	2.12	128%	125%
45-49	595,326	1,602	2.69	96%	95%	68,365	255	3.73	151%	149%
50-54	325,333	1,186	3.65	97%	95%	33,386	189	5.66	158%	154%
55-59	154,010	692	4.49	92%	98%	14,418	91	6.31	116%	123%
60-64	39,319	241	6.13	95%	96%	3,501	37	10.57	141%	142%
65-69	4,551	46	10.11	107%	95%	389	7	17.98	169%	151%
70-74	304	5	16.42	111%	91%	25	1	39.76	232%	191%
75-79	10	1	104.05	341%	100%	-	-	-	0%	0%
80-84	-	-	-	0%	0%	-	-	-	0%	0%
85+	-	-	-	0%	0%	-	-	-	0%	0%
Age 15+	4,768,927	7,545	1.58	96%	96%	735,991	1,205	1.64	130%	131%

Table 3.3a – Experience by smoking differentials for all durations

3.3.1 Gender Mix

The following tables show the experience by gender and smoking status. The proportion of smokers is 22% for males and 7% for females. This is consistent with the proportion of smokers from the ASHK08 study.

Age Last	Experience for Male Non-Smokers, All Durations					Experience for Female Non-Smokers, All Durations				
	Lives	CI	Rate ‰	A/E	NSm/Avg	Lives	CI	Rate ‰	A/E	NSm/Avg
	Exposed	Claims	Lives	Lives	Lives	Exposed	Claims	Lives	Lives	Lives
15-19	46,573	5	0.11	60%	112%	45,092	7	0.16	98%	96%
20-24	120,278	35	0.29	124%	108%	175,034	45	0.26	83%	96%
25-29	256,754	96	0.37	95%	99%	420,049	208	0.50	92%	96%
30-34	323,605	174	0.54	101%	96%	558,979	501	0.90	100%	100%
35-39	321,739	254	0.79	83%	89%	557,333	808	1.45	91%	99%
40-44	319,065	386	1.21	80%	86%	505,573	1,253	2.48	107%	100%
45-49	236,805	508	2.15	91%	87%	358,522	1,094	3.05	99%	100%
50-54	119,516	394	3.30	94%	87%	205,817	792	3.85	100%	100%
55-59	51,578	243	4.71	84%	93%	102,432	449	4.38	97%	100%
60-64	12,417	94	7.57	96%	90%	26,902	147	5.46	94%	100%
65-69	1,377	19	13.79	120%	88%	3,173	27	8.51	99%	103%
70-74	87	1	11.55	48%	114%	218	4	18.36	165%	84%
75-79	7	1	149.71	406%	100%	3	-	-	0%	0%
80-84	-	-	-	0%	0%	-	-	-	0%	0%
85+	-	-	-	0%	0%	-	-	-	0%	0%
Age 15+	1,809,802	2,210	1.22	89%	89%	2,959,126	5,335	1.80	99%	100%

Table 3.3b - Experience for non-smokers for all durations by age and gender

Age Last	Experience for Male Smokers, All Durations					Experience for Female Smokers, All Durations				
	Lives	CI	Rate %	A/E	SM/Avg	Lives	CI	Rate %	A/E	SM/Avg
	Exposed	Claims	Lives	Lives	Lives	Exposed	Claims	Lives	Lives	Lives
15-19	5,545	-	-	0%	0%	4,520	1	0.22	138%	136%
20-24	28,558	5	0.18	74%	65%	22,575	8	0.35	114%	132%
25-29	75,772	30	0.40	100%	104%	53,234	37	0.70	129%	135%
30-34	111,411	71	0.64	120%	113%	57,488	50	0.87	99%	99%
35-39	104,977	122	1.16	123%	132%	40,196	64	1.59	101%	111%
40-44	88,372	185	2.09	140%	150%	23,257	52	2.24	98%	92%
45-49	56,714	215	3.79	161%	154%	11,651	40	3.43	112%	112%
50-54	28,007	166	5.93	168%	156%	5,379	23	4.28	111%	111%
55-59	12,152	80	6.58	118%	130%	2,266	11	4.86	107%	110%
60-64	2,854	34	11.91	151%	142%	648	3	4.63	80%	85%
65-69	298	7	23.52	209%	155%	92	-	-	0%	0%
70-74	13	-	-	0%	0%	12	1	83.56	759%	389%
75-79	-	-	-	0%	0%	-	-	-	0%	0%
80-84	-	-	-	0%	0%	-	-	-	0%	0%
85+	-	-	-	0%	0%	-	-	-	0%	0%
Age 15+	514,673	915	1.78	140%	140%	221,317	290	1.31	105%	106%

Table 3.3c - Experience for smokers for all durations by age and gender

3.4 Underwriting Methods

The following tables show the experience by underwriting methods.

Age Last	Experience for Male Medical, All Durations					Experience for Female Medical, All Durations				
	Lives	CI	Rate ‰	A/E	Med/Avg	Lives	CI	Rate ‰	A/E	Med/Avg
	Exposed	Claims	Lives	Lives	Lives	Exposed	Claims	Lives	Lives	Lives
0-4	2,687	2	0.74	307%	562%	2,008	-	-	0%	0%
5-9	2,566	-	-	0%	0%	1,859	-	-	0%	0%
10-14	2,670	1	0.37	376%	277%	2,082	-	-	0%	0%
15-19	2,872	-	-	0%	0%	2,628	-	-	0%	0%
20-24	6,830	2	0.29	125%	150%	12,354	5	0.40	129%	193%
25-29	16,455	5	0.30	76%	79%	34,528	22	0.64	118%	121%
30-34	29,286	10	0.34	63%	59%	51,361	46	0.90	99%	103%
35-39	42,591	41	0.96	100%	109%	57,978	97	1.67	104%	111%
40-44	54,367	76	1.40	92%	98%	62,448	148	2.37	102%	94%
45-49	54,249	124	2.29	96%	86%	57,239	181	3.16	102%	100%
50-54	40,236	163	4.05	113%	99%	46,152	187	4.05	104%	101%
55-59	25,193	126	5.00	88%	91%	34,142	160	4.69	103%	104%
60-64	9,629	88	9.14	114%	97%	14,302	73	5.10	86%	91%
65-69	2,032	32	15.74	132%	107%	3,552	28	7.88	91%	107%
70-74	295	7	23.74	97%	108%	441	2	4.54	40%	71%
75-79	18	1	54.39	150%	102%	21	-	-	0%	0%
80-84	-	-	-	0%	0%	-	-	-	0%	0%
85+	-	-	-	0%	0%	-	-	-	0%	0%
All Ages	291,975	678	2.32	101%	97%	383,091	949	2.48	101%	100%

Table 3.4a – Experience for all durations with medical underwriting method by gender

Age Last	Experience for Male Non-Medical, All Durations					Experience for Female Non-Medical, All Durations				
	Lives	CI	Rate ‰	A/E	Non-Med/Avg	Lives	CI	Rate ‰	A/E	Non-Med/Avg
	Exposed	Claims	Lives	Lives	Lives	Exposed	Claims	Lives	Lives	Lives
0-4	57,352	6	0.10	43%	78%	52,728	6	0.11	225%	104%
5-9	62,183	5	0.08	65%	104%	56,112	1	0.02	20%	103%
10-14	63,770	8	0.13	126%	93%	55,859	7	0.13	201%	104%
15-19	63,274	4	0.06	36%	105%	59,234	9	0.15	98%	105%
20-24	127,170	24	0.19	82%	97%	167,212	32	0.19	62%	93%
25-29	249,357	96	0.38	98%	101%	366,707	188	0.51	95%	98%
30-34	332,541	199	0.60	112%	104%	497,033	428	0.86	96%	100%
35-39	348,533	302	0.87	91%	99%	512,906	762	1.49	93%	99%
40-44	359,991	512	1.42	94%	100%	477,327	1,206	2.53	109%	101%
45-49	275,747	741	2.69	114%	103%	345,058	1,081	3.13	102%	100%
50-54	139,452	562	4.03	115%	100%	192,402	765	3.98	103%	100%
55-59	56,618	320	5.65	101%	104%	86,040	381	4.43	98%	99%
60-64	11,603	111	9.57	122%	103%	18,666	107	5.73	100%	107%
65-69	857	10	11.66	103%	83%	1,217	7	5.75	68%	79%
70-74	26	-	-	0%	0%	29	1	33.92	309%	548%
75-79	0	-	-	0%	0%	-	-	-	0%	0%
80-84	-	-	-	0%	0%	-	-	-	0%	0%
85+	-	-	-	0%	0%	-	-	-	0%	0%
All Ages	2,148,473	2,900	1.35	104%	101%	2,888,530	4,981	1.72	100%	100%

Table 3.4b – Experience for all durations with non-medical underwriting method by gender

Age Last	Experience for Male Simplified Issues, All Durations					Experience for Female Simplified Issues, All Durations				
	Lives Exposed	CI Claims	Expected Claims	Rate ‰ Lives	A/E Lives	Lives Exposed	CI Claims	Expected Claims	Rate ‰ Lives	A/E Lives
0-4	47	-	0	-	0%	66	-	0	-	0%
5-9	46	-	0	-	0%	33	-	0	-	0%
10-14	40	-	0	-	0%	25	-	0	-	0%
15-19	113	-	0	-	0%	131	-	0	-	0%
20-24	471	-	0	-	0%	717	-	0	-	0%
25-29	747	-	0	-	0%	984	-	1	-	0%
30-34	815	-	0	-	0%	1,310	1	1	0.76	85%
35-39	1,111	2	1	1.80	187%	1,332	2	2	1.50	94%
40-44	1,205	3	2	2.49	165%	1,265	2	3	1.58	68%
45-49	873	1	2	1.15	48%	969	4	3	4.13	134%
50-54	511	5	2	9.79	277%	650	1	3	1.54	40%
55-59	220	-	1	-	0%	332	3	2	9.04	200%
60-64	57	1	0	17.53	221%	105	-	1	-	0%
65-69	9	-	0	-	0%	22	-	0	-	0%
70-74	-	-	-	-	0%	-	-	-	-	0%
75-79	-	-	-	-	0%	-	-	-	-	0%
80-84	-	-	-	-	0%	-	-	-	-	0%
85+	-	-	-	-	0%	-	-	-	-	0%
All Ages	6,266	12	9	1.92	128%	7,941	13	15	1.64	88%

Table 3.4c – Experience for all durations with simplified underwriting method by gender

Overall, there does not appear to any difference between medical experience and non-medical experience.

Policies with simplified underwriting were identified. Unfortunately, the number of policies is too small to draw any conclusions. Readers must be cautious when referencing these figures.

Age Last	Experience for Male Unknown, All Durations					Experience for Female Unknown, All Durations				
	Lives	CI	Expected	Rate ‰	A/E	Lives	CI	Expected	Rate ‰	A/E
	Exposed	Claims	Claims	Lives	Lives	Exposed	Claims	Claims	Lives	Lives
0-4	25,305	10	6	0.40	162%	24,028	2	1	0.08	164%
5-9	25,947	11	3	0.42	337%	24,892	4	2	0.16	178%
10-14	23,790	3	2	0.13	127%	21,658	6	1	0.28	445%
15-19	21,580	3	4	0.14	79%	19,619	3	3	0.15	100%
20-24	51,816	17	12	0.33	139%	62,399	25	19	0.40	129%
25-29	124,080	49	49	0.39	100%	157,525	75	85	0.48	88%
30-34	164,360	96	87	0.58	110%	201,421	178	180	0.88	99%
35-39	152,236	132	143	0.87	92%	181,619	254	288	1.40	88%
40-44	130,751	185	196	1.41	95%	142,712	351	330	2.46	106%
45-49	80,320	213	188	2.65	113%	85,259	272	262	3.19	104%
50-54	35,293	138	124	3.91	111%	44,418	191	172	4.30	111%
55-59	14,024	91	78	6.49	116%	21,973	120	100	5.46	121%
60-64	3,202	31	25	9.68	123%	6,081	36	36	5.92	101%
65-69	523	5	6	9.57	82%	1,040	9	9	8.65	101%
70-74	47	-	1	-	0%	98	3	1	30.64	272%
75-79	1	-	0	-	0%	0	-	0	-	0%
80-84	-	-	-	-	0%	-	-	-	-	0%
85+	-	-	-	-	0%	-	-	-	-	0%
All Ages	853,276	984	926	1.15	106%	994,739	1,529	1,489	1.54	103%

Table 3.4d – Experience for all durations with unknown underwriting method by gender

3.5 Breakdown by Sum Assured

The following table shows the A/E ratio broken down by Sum Assured band.

SA Band	Experience by Sum Assured, All Durations				
	Lives	Actual	Expected	A/E	A/E
	Exposed	Claims	Claims	Lives	Amounts
0-100K	830,969	1,618	1,664	97%	98%
101K-250K	3,076,609	5,269	5,188	102%	102%
251K-500K	2,678,522	3,800	3,656	104%	104%
501K-750K	435,927	530	542	98%	97%
751K-1M	381,237	571	512	112%	111%
1M+	171,029	258	229	113%	117%
All SA	7,574,293	12,046	11,790	102%	105%

Table 3.5 – Experience by sum assured

3.6 Claim Lag

The following table shows the lag time between the actual date of claim and the reported date of claim.

Lag in Months	2005-2009	
	Actual Claims	Cumulative % Reported
0	4,987	42%
1	2,619	64%
2	1,362	76%
3	813	83%
4	493	87%
5	330	90%
6	227	92%
7	162	93%
8	109	94%
9	104	95%
10	58	95%
11	63	96%
12	52	96%
Over 12 months	433	100%
Total	11,812	
Unknown	234	

Table 3.6 - Lag time in reporting for policies 2005-2009

About 42% of the total claims reported to the insurance companies within the first month. About 96% of the claims had been reported within the first 12 months after the date of claim.

3.7 Trend in Incidence of Critical Illness

The following table looks at the A/E ratio by year with expected claims based on the crude CI rates from ASHK08.

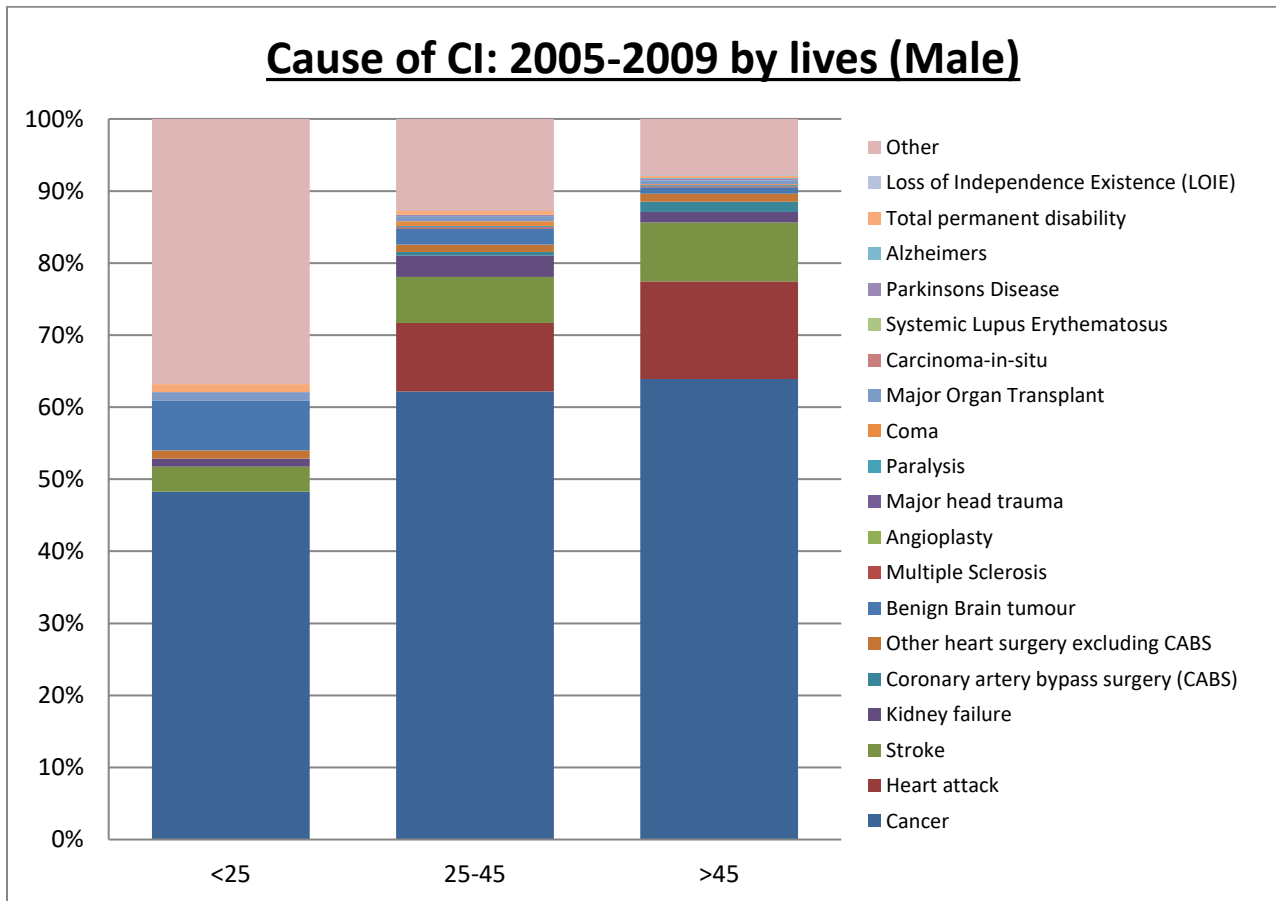
Year	Experience for Male Lives, Duration 2+					Experience for Female Lives, Duration 2+				
	Lives	Actual	Expected	A/E	A/E	Lives	Actual	Expected	A/E	A/E
	Exposed	Claims	Claims	Lives	Amounts	Exposed	Claims	Claims	Lives	Amounts
2005	454,426	581	593	98%	101%	580,106	1,037	1,002	103%	105%
2006	478,670	664	658	101%	106%	619,630	1,133	1,113	102%	103%
2007	505,256	788	730	108%	110%	660,327	1,194	1,230	97%	100%
2008	540,799	891	818	109%	117%	710,119	1,452	1,367	106%	109%
2009	567,896	944	895	105%	103%	749,773	1,569	1,485	106%	114%
2005-2009	2,547,047	3,868	3,693	105%	108%	3,319,956	6,385	6,197	103%	107%

Table 3.7 – Experience for duration 2+ by year and gender

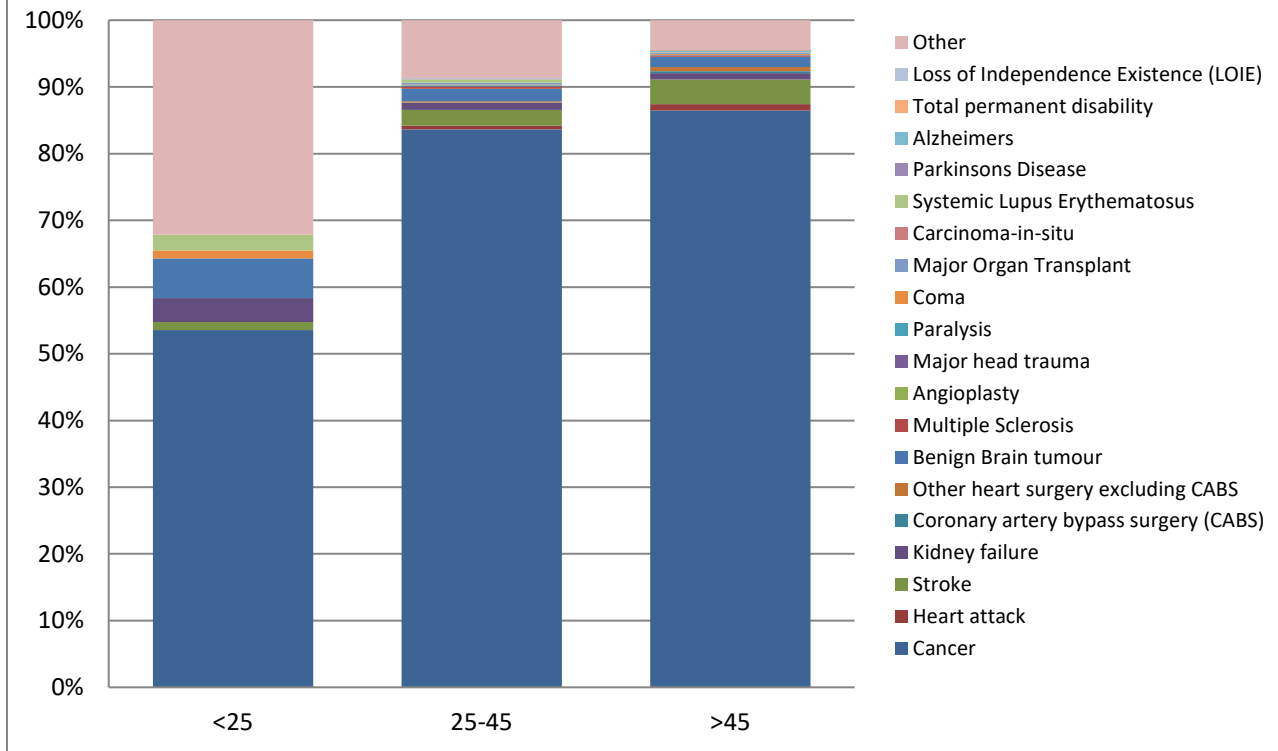
From the table above, there does not appear to be an obvious year on year trend. However, the A/E exceeds 100% which indicates that claim rates are higher than the previous study.

4. Critical Illness Experience

4.1 Cause of Critical Illness Breakdown



Cause of CI: 2005 - 2009 by lives (Female)



Neoplasms (malignancies) are still the major cause of claims for the older age bands. These findings are consistent with the ASHK08 study.

4.2 Summary of Results

Cause of CI	Males under 25 years old		Females under 25 years old	
	ASHK11	Claim #	ASHK11	Claim #
Cancer	48%	42	54%	45
Heart attack	0%	-	0%	-
Stroke	3%	3	1%	1
Kidney failure	1%	1	4%	3
Coronary artery bypass surgery (CABS)	0%	-	0%	-
Other heart surgery excluding CABS	1%	1	0%	-
Benign Brain tumour	7%	6	6%	5
Multiple Sclerosis	0%	-	0%	-
Angioplasty	0%	-	0%	-
Major head trauma	0%	-	0%	-
Paralysis	0%	-	0%	-
Coma	0%	-	1%	1
Major Organ Transplant	1%	1	0%	-
Carcinoma-in-situ	0%	-	0%	-
Systemic Lupus Erythematosus	0%	-	2%	2
Parkinsons Disease	0%	-	0%	-
Alzheimers	0%	-	0%	-
Total permanent disability	1%	1	0%	-
Loss of Independence Existence (LOIE)	0%	-	0%	-
Other	37%	32	32%	27
Unknown		-		4

Table 4.2a – Cause of CI claims by percentage for age under 25 by gender

Cause of CI	Males between 25-45 years old		Females between 25-45 years old	
	ASHK11	Claim #	ASHK11	Claim #
Cancer	62%	1,099	84%	3,192
Heart attack	10%	168	1%	22
Stroke	6%	113	2%	88
Kidney failure	3%	52	1%	42
Coronary artery bypass surgery (CABS)	1%	9	0%	1
Other heart surgery excluding CABS	1%	18	0%	8
Benign Brain tumour	2%	39	2%	70
Multiple Sclerosis	0%	3	0%	13
Angioplasty	0%	-	0%	-
Major head trauma	0%	1	0%	3
Paralysis	0%	2	0%	5
Coma	1%	12	0%	3
Major Organ Transplant	1%	13	0%	12
Carcinoma-in-situ	0%	-	0%	-
Systemic Lupus Erythematosus	0%	-	0%	18
Parkinsons Disease	0%	3	0%	2
Alzheimers	0%	-	0%	-
Total permanent disability	1%	9	0%	3
Loss of Independence Existence (LOIE)	0%	-	0%	3
Other	13%	226	9%	331
Unknown		51		82

Table 4.1b – Cause of CI claims by percentage for age 25-45 by gender

Cause of CI	Males over 45 years old		Females over 45 years old	
	ASHK11	Claim #	ASHK11	Claim #
Cancer	64%	1,678	86%	2,970
Heart attack	14%	356	1%	34
Stroke	8%	214	4%	127
Kidney failure	1%	39	1%	33
Coronary artery bypass surgery (CABS)	1%	37	0%	9
Other heart surgery excluding CABS	1%	29	1%	22
Benign Brain tumour	1%	24	2%	53
Multiple Sclerosis	0%	3	0%	4
Angioplasty	0%	-	0%	-
Major head trauma	0%	1	0%	3
Paralysis	0%	4	0%	2
Coma	0%	3	0%	5
Major Organ Transplant	1%	15	0%	5
Carcinoma-in-situ	0%	-	0%	-
Systemic Lupus Erythematosus	0%	-	0%	3
Parkinsons Disease	0%	6	0%	3
Alzheimers	0%	2	0%	6
Total permanent disability	0%	9	0%	3
Loss of Independence Existence (LOIE)	0%	1	0%	-
Other	8%	205	4%	154
Unknown		43		50

Table 4.1c– Cause of CI claims by percentage for age over 45 by gender

For both sexes and across all age groups, cancer is the major cause of claim. For males, the cardiovascular related claims (Heart Attack, Stroke, CABS) forms a larger proportion of claims compared to females. This trend is apparent particularly in the oldest age group (>45), where the total percentage exceeds 20% for males and is below 10% for females.

5. Lapse/Surrender Experience

The following table calculates the implied rate of exit for the policies on a lives and amounts basis by year for duration 0 and duration 1+. The implied rate of exit is calculated by comparing the trend in exposures from year to year over the study period and then estimating the annual rate of exit that applied and assuming that half of exits occur evenly over the policy year and half at the end of the policy year.

Year	Duration 0		Duration 1		Duration 2+		Implied Rate of Exit			
	Lives Exposed	Amounts \$m Exposed	Lives Exposed	Amounts \$m Exposed	Lives Exposed	Amounts \$m Exposed	Lives Dur 0	Amounts Dur 0	Lives Dur 1+	Amounts Dur 1+
2005	157,362	53,223	129,654	43,418	1,034,705	316,186				
2006	171,849	59,440	140,758	47,864	1,098,484	339,068	12%	12%	6%	6%
2007	176,941	64,120	155,386	54,080	1,165,778	364,103	11%	10%	6%	6%
2008	196,823	74,457	161,142	58,811	1,251,127	396,300	10%	9%	5%	5%
2009	242,622	90,429	175,046	66,910	1,317,889	425,081	13%	12%	7%	7%
2005-2009	945,596	341,668	761,986	271,084	5,867,983	1,840,739	12%	11%	6%	6%

Table 5.1 – Implied rate of exit by year and duration

6. Use of this Report

6.1 Considerations

The data supporting this study has a number of deficiencies and these should be taken into account when interpreting or using the results in this report.

General data issues include:

- The study is based on a large amount of data. With such a volume of data from a variety of sources, the accuracy of all data cannot be ensured. In particular, the cause of claim may not have been recorded consistently across all companies.
- The study covers five years of exposure. Whilst the study covers a large proportion of the policies in-force over this time, there remains a number of areas where data is relatively sparse e.g. at older ages, or where data is split by various subgroups.
- Critical illness definitions are not standardized in Hong Kong and the number of conditions covered can vary by company.

In addition to data issues, it is noted that the study pools data from a number of companies and there are considerable variations in experience between companies. The industry results may not be reflective of the experience for any particular company.

This study only includes business defined as long term insurance from the Insurance Companies Ordinance. Long term insurance business means any direct business, being long term business, in relation to which the risk is underwritten in Hong Kong. In particular:

- i. The policy is issued in Hong Kong;
- ii. The proposal form, application form or any other form of a similar nature is signed in Hong Kong;
- iii. The proposal form, application form or any other form of a similar nature is submitted or received in Hong Kong;
- iv. The proposal form, application form or any other form of a similar nature is accepted in Hong Kong; or
- v. The risk is accepted in Hong Kong

6.2 Disclaimer

This report is provided for general information only and is not necessarily comprehensive, complete, accurate or up to date. As such, the information should not be construed as providing professional advice. The Actuarial Society of Hong Kong and the participating companies make no warranty, statement or representation, express or implied, with respect to the accuracy, availability, completeness or usefulness of the information, contained herein, and they assume no responsibility or liability for any claims or losses of any nature, arising indirectly or directly from any individual's use of, or reference to such information.

The information may be freely distributed and copied on the condition that they are not to be used for advertising or promotional purposes, for inclusion in collective works or for resale. In all cases, the Actuarial Society of Hong Kong should be acknowledged as the source when reproducing or quoting any information in this report. The Actuarial Society of Hong Kong expressly reserves all its rights in respect of any breach of the above.

For enquiries or requests for reproduction permission, please contact the Actuarial Society of Hong Kong by email: actsoff@netvigator.com.

7. Appendices

7.1 Appendix: Data for all critical illness benefits

Age Last	Lives Exposed	CI Claims	CI Rate	Age Last	Lives Exposed	CI Claims	CI Rate
0	-	-	-				
1	-	-	-				
2	10,964	3	0.27	41	93,533	116	1.24
3	11,602	2	0.17	42	93,847	144	1.53
4	12,374	3	0.24	43	92,686	128	1.38
5	13,031	3	0.23	44	89,217	147	1.65
6	13,779	4	0.29	45	83,850	207	2.47
7	14,318	5	0.35	46	77,290	186	2.41
8	14,904	1	0.07	47	70,537	171	2.42
9	14,903	1	0.07	48	63,519	178	2.80
10	14,643	4	0.27	49	56,204	182	3.24
11	14,231	-	-	50	49,242	162	3.29
12	13,738	-	-	51	42,533	176	4.14
13	12,812	2	0.16	52	36,529	133	3.64
14	11,957	6	0.50	53	31,435	147	4.68
15	11,459	-	-	54	27,013	144	5.33
16	11,198	1	0.09	55	23,308	121	5.19
17	10,963	1	0.09	56	20,171	109	5.40
18	10,770	2	0.19	57	17,144	104	6.07
19	11,123	-	-	58	13,980	83	5.94
20	12,974	1	0.08	59	10,502	65	6.19
21	14,963	4	0.27	60	7,920	53	6.69
22	18,191	4	0.22	61	5,912	53	8.96
23	22,347	2	0.09	62	4,235	50	11.81
24	28,454	8	0.28	63	2,988	32	10.71
25	36,101	15	0.42	64	2,113	30	14.20
26	44,295	15	0.34	65	1,227	13	10.60
27	51,893	14	0.27	66	872	9	10.32
28	59,029	19	0.32	67	613	11	17.94
29	65,394	32	0.49	68	409	9	22.00
30	71,663	24	0.33	69	251	4	15.93
31	77,640	52	0.67	70	156	3	19.26
32	82,371	41	0.50	71	97	2	20.65
33	85,916	62	0.72	72	58	1	17.22
34	88,495	59	0.67	73	34	-	-
35	89,128	76	0.85	74	21	1	48.16
36	89,218	66	0.74	75	11	-	-
37	89,159	84	0.94	76	6	-	-
38	89,402	94	1.05	77	3	1	380.96
39	90,290	85	0.94	78	-	-	-
40	91,889	98	1.07	79	-	-	-
				80	-	-	-

7.2 Appendix: Participating Companies

Data for this study has been provided by the following companies:

1. American Family Life Assurance Company of Columbus
2. American International Assurance Co (Bermuda) Ltd
3. Aviva Life Insurance Co Ltd
4. AXA (Hong Kong) Life Insurance Co Ltd
5. BOC Group Life Assurance Co Ltd
6. Chubb Life Insurance Company Ltd
7. CIGNA Worldwide Life Insurance Co Ltd
8. FTLife Insurance Company Limited
9. FWD Life Insurance Company (Bermuda) Limited
10. Hang Seng Insurance Co Ltd
11. Hong Kong Life Insurance Ltd
12. HSBC Insurance (Asia) Ltd
13. Manulife (International) Ltd
14. MassMutual Asia Ltd
15. Prudential Assurance Co Ltd
16. Sun Life Financial (Hong Kong) Ltd
17. Tahoe Life Insurance Company Limited
18. Zurich Life Insurance Company Ltd