

- Introduction to Gen Re's Dread Disease Survey
- Profile of Business Covered
- Claims
- A/E's and Incidence Rates
- The Korean Cancer Horror Story
- Regional Differences in China

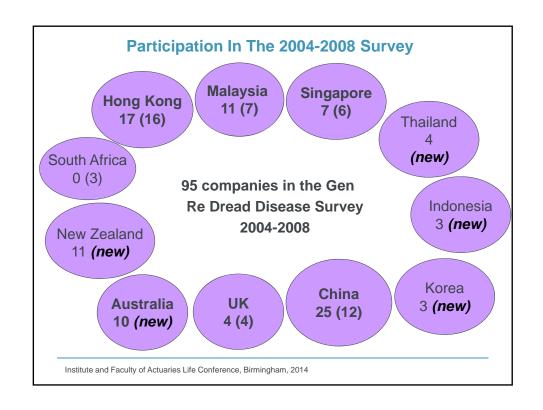
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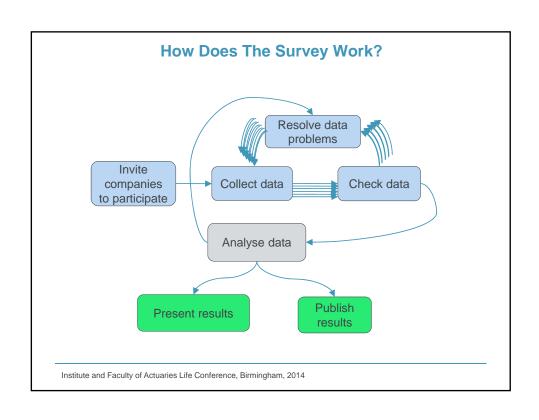
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### **Expanding Scope of the Survey**

	Survey	Countries	Companies	Claims	Lives In-force
1	1990–1994	3		4,600	
2	1993–1997	3		7,000	3 million
3	1996–2000	3	31	16,000	4 million
4	2000–2004	6	48	263,000	41 million
5	2004–2008	10	95	750,000	70 million
6	2008-2012*	8	86	>1,000,000	>100 million

<sup>\*</sup> In progress





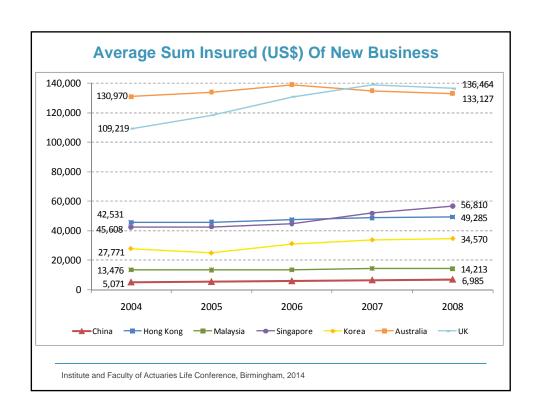
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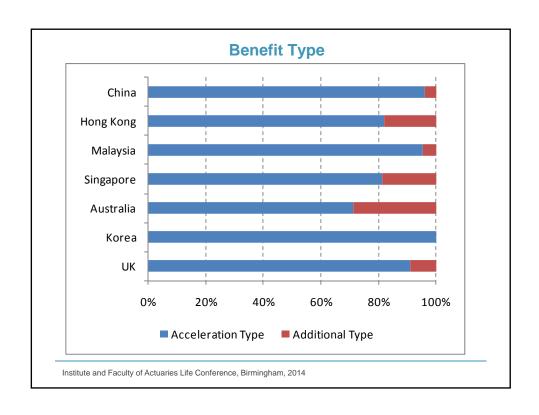
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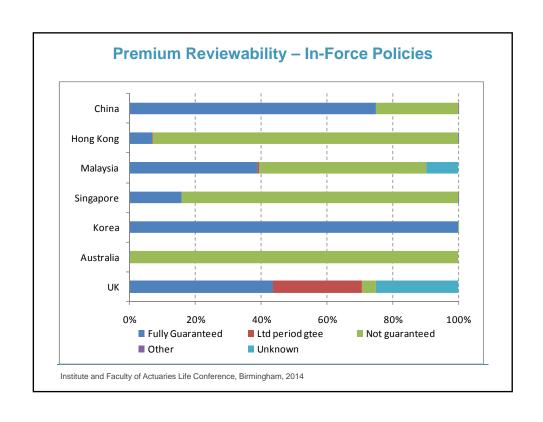
# Distribution of In-Force Policies by Product Type (31/12/2008)

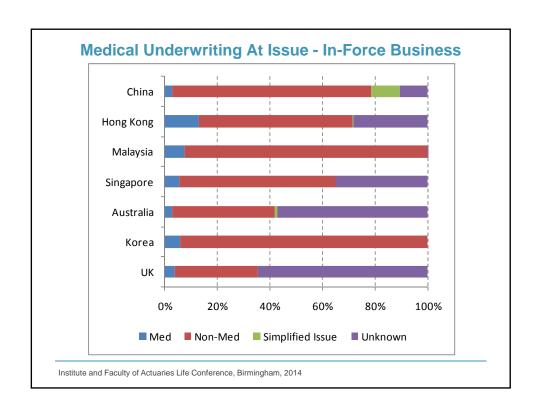
ı	-								
ı		Total	CN	HK	MY	SG	KR	AU	UK
l	Traditional	65,887,282	56,518,249	1,301,874	3,240,367	1,159,556	1,100,152	573,521	1,993,563
l	Juvenile	1,917,749	1,788,851	76,908	8,713	42,785	0	492	0
l	Cancer	650,960	625,527	1,987	23,384	62	0	0	0
I	Female	545,635	206,543	144,768	162,351	31,973	0	0	0
l	Male	3,661	0	3,362	0	299	0	0	0
١	Total	69,005,287	59,139,170	1,528,899	3,434,815	1,234,675	1,100,152	574,013	1,993,563

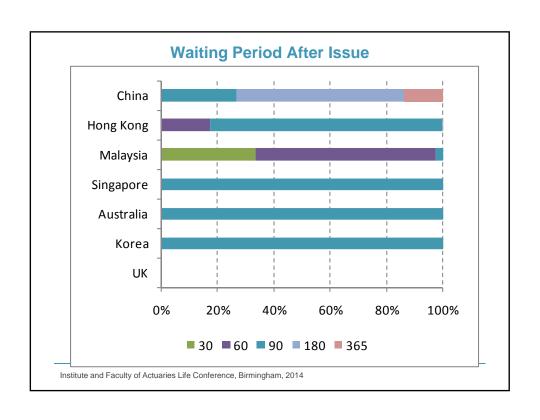
	In-For	ce Poli	icies by	Age B	Band		
Age Group	CN	HK	MY	SG	KR	AU	UK
0-19	15%	5%	19%	16%	9%	2%	0%
20-29	12%	17%	21%	16%	29%	7%	15%
30-39	28%	34%	30%	28%	30%	30%	43%
40-49	29%	30%	20%	25%	23%	40%	33%
50-59	15%	12%	9%	13%	7%	19%	9%
60+	2%	2%	1%	2%	0%	2%	1%
Total	100%	100%	100%	100%	100%	100%	100%
Average Age	36	37	32	35	34	42	38
Average Dur i/f	3.7	5.6	6.0	8.1	2.0	5.1	4.1
Claim Age - M	46	45	38	43	38	48	42
Claim Age - F	46	44	38	44	39	46	43
Institute and Faculty of	f Actuaries Life (	Conference, Bi	irmingham, 2014	1			











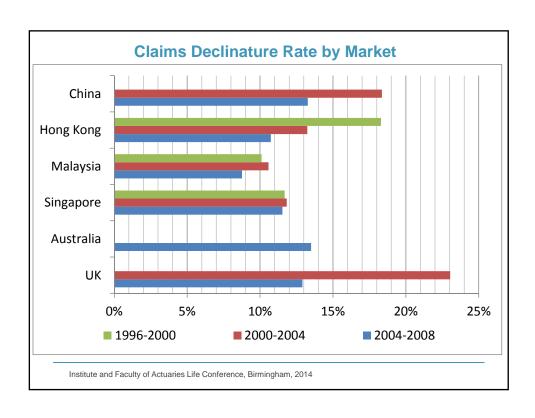
	Production	Ì		Р	olicy Yea	ır		
	Year	1	2	3	4	5	6	7
	2001	13.4%	6.8%	5.0%	4.7%	3.7%	2.7%	2.6%
	2002	12.0%	8.8%	6.2%	4.2%	3.3%	2.5%	
	2003	14.9%	6.1%	5.5%	3.8%	3.1%		
China	2004	14.8%	7.0%	6.3%	4.5%			
	2005	12.8%	6.8%	5.0%				
	2006	10.4%	6.2%					
	2007	10.0%						
	2001	16.3%	14.7%	9.6%	6.3%	5.5%	4.7%	4.6%
	2002	15.8%	12.8%	6.6%	5.1%	4.8%	5.1%	
	2003	14.9%	9.5%	5.4%	4.3%	4.7%		
Hong Kong	2004	10.8%	8.8%	5.2%	5.3%			
	2005	9.1%	7.8%	5.7%				
	2006	7.8%	8.3%					
	2007	8.5%						
	2001				11.4%	9.6%	7.3%	5.2%
	2002			12.6%	10.4%	8.1%	5.8%	
	2003		13.3%	13.2%	9.4%	7.2%		
UK	2004	14.0%	14.4%	13.4%	8.9%			
	2005	12.4%	14.3%	13.2%				
	2006	11.3%	13.9%					
	2007	11.3%						

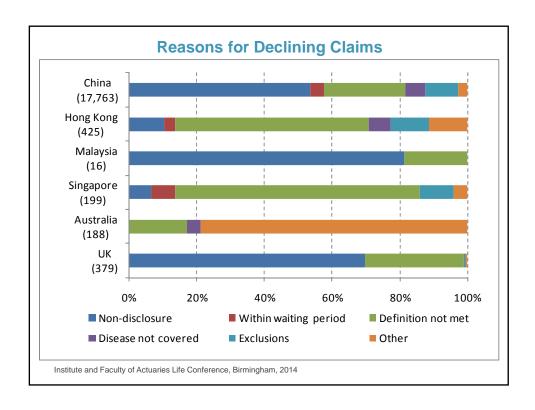
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### **Number of Claims by Market**

#### All claims collected

		ALL	CN	HK	MY	SG	AU	KR	UK	NZ
	DD	452,870	377,524	11,808	21,354	9,049	7,870	5,428	16,360	3,477
	Death	294,427	276,095	1,646	8,934	1,284	906	1,823	3,162	577
ĺ	Total	747,297	653,619	13,454	30,288	10,333	8,776	7,251	19,522	4,054



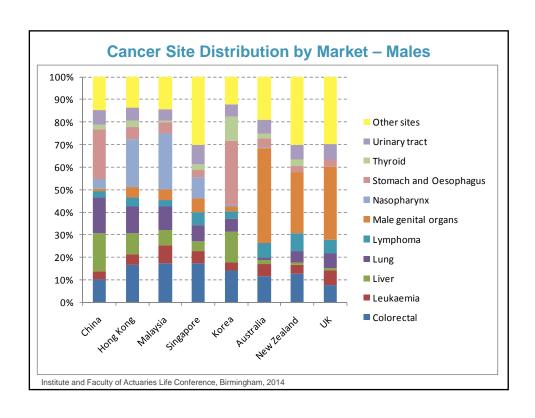


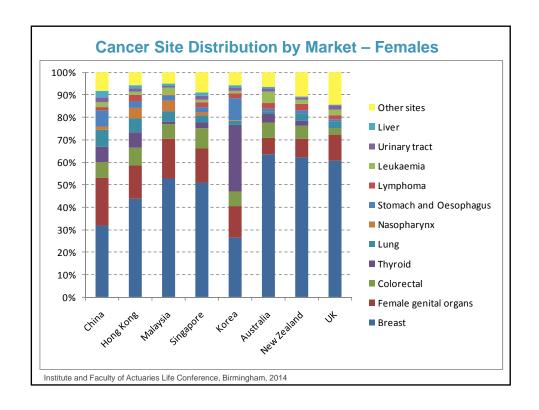
		Diagnosis to	Notification to	Diagnosis to
		Diagnosis to Notification		Diagnosis to Benefit Payment
	China	76	37	109
	Hong Kong	69	36	104
		98	38	126
All	Malaysia			
Admitted	Singapore	84	20	102
Claims	Korea	N/A	N/A	43
Olainis	Australia	87	91	167
	New Zealand	79	48	122
	UK	95	113	188
	China	85	50	133
	Hong Kong	79	83	158
Claims	Malaysia	104	85	182
Occurring	Singapore	89	60	148
in First	Korea	N/A	N/A	59
Policy Year	Australia	84	140	226
	New Zealand	80	56	135
	UK	96	124	210

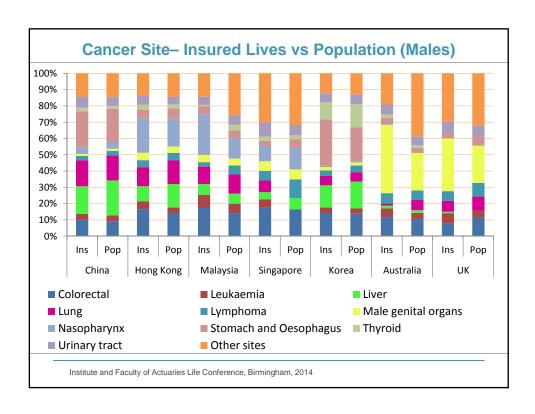
Cause of Claim		CN		HK		MY		SG		KR		AU		NZ		UK
Cancer	1	60.0%	1	70.0%	1	44.0%	1	54.5%	1	79.1%	1	60.5%	1	54.4%	1	50.0%
Ischemic Heart Disease	2	16.8%	2	11.8%	2	34.9%	2	29.9%	2	10.6%	2	24.9%	2	31.1%	2	27.0%
Stroke	3	10.1%	3	8.1%	3	7.3%	3	7.0%	3	3.5%	3	5.2%	3	4.8%	3	7.9%
Kidney Failure	4	4.8%	4	2.5%	4	4.2%	4	2.1%	5	2.3%		0.3%	8	0.8%	9	0.7%
Heart Surgeries	5	2.1%	6	1.3%	6	1.6%	5	1.7%	4	2.7%	4	2.9%	4	2.7%	7	2.2%
Paralysis	6	1.7%		0.1%	10	0.5%	8	0.3%		0.0%	10	0.4%	5	1.3%		0.3%
Chronic Liver Failure	7	0.9%	10	0.3%		0.2%		0.1%	7	0.8%		0.1%		0.0%		0.0%
Benign Brain Tumour	8	0.8%	5	2.2%	7	1.4%	6	1.7%		0.0%	6	0.8%		0.0%	5	2.4%
Major Burns	9	0.4%		0.1%		0.3%		0.1%	6	0.9%		0.3%		0.0%		0.0%
Fulminant Viral Hepatitis	10	0.4%		0.0%		0.1%		0.0%		0.0%		0.0%		0.0%		0.0%
Major Organ Transplant		0.3%	7	0.7%		0.1%		0.2%		0.0%		0.2%		0.2%		0.4%
TPD		0.0%	8	0.4%		0.1%		0.0%		0.0%		0.0%		0.0%	6	2.3%
Brain Surgery		0.0%	9	0.4%	5	1.8%		0.0%		0.0%		0.0%		0.0%		0.0%
Coma		0.0%	10	0.3%	8	0.9%		0.1%		0.0%		0.2%		0.3%		0.5%
Full Blown AIDS		0.0%		0.0%	9	0.5%		0.0%		0.0%		0.0%		0.0%		0.0%
Parkinson's Disease		0.1%		0.1%	10	0.5%	7	0.7%		0.0%	8	0.5%	7	0.9%	8	1.3%
Motor Neurone Disease		0.0%		0.2%		0.1%	9	0.2%		0.0%		0.1%	8	0.8%	10	0.6%
Multiple Sclerosis		0.0%		0.1%		0.1%	9	0.2%		0.0%	9	0.4%	10	0.5%	4	3.4%
Cardiomyopathy		0.1%		0.1%		0.0%		0.0%		0.0%	5	1.4%	11	0.4%		0.1%
Major Head Trauma		0.2%		0.2%		0.2%		0.1%		0.0%	7	0.8%	6	1.1%		0.0%
Total of top 10		98.1%		98.0%		97.4%		98.5%	1	100.0%		97.8%		98.4%		97.9%
Total number of claims	1	46,878		3,327		8,154		2,782		1,224		3,402		1,840		7,38

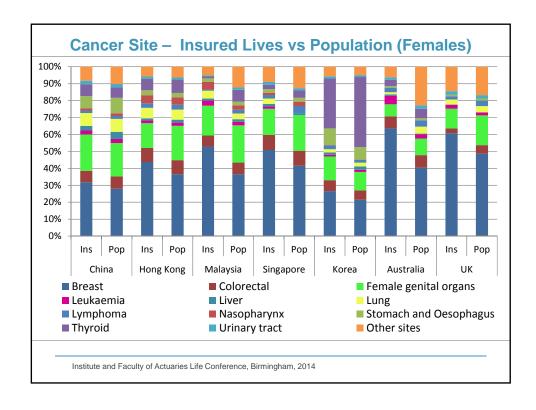
Te	n I	_ead	in	a Ca	au	ses	of	Clai	in	ր - Fe	n	nales	5			
Cause of Claim		CN		HK		MY		SG		KR		AU		NZ		UK
Cancer	1	80.8%	1	87.7%	1	83.4%	1	88.1%	1	95.6%	1	87.6%	1	87.1%	1	78.5%
Stroke	2	6.7%	2	3.5%	2	3.5%	2	4.0%	2	1.2%	2	3.8%	3	3.3%	3	4.6%
Kidney Failure	3	3.4%	4	1.7%	3	2.8%	4	1.2%	5	0.8%	8	0.3%		0.1%	9	0.4%
Ischemic Heart Disease	4	2.8%	6	0.7%	4	2.8%	3	3.0%	4	0.9%	3	3.4%	2	4.9%	4	3.3%
Heart Surgeries	5	2.1%	5	0.8%	7	0.9%	6	0.5%	3	1.1%	6	0.6%	5	0.8%	7	0.6%
Benign Brain Tumour	6	1.2%	3	2.9%	5	1.7%	5	1.1%		0.0%	5	0.8%		0.0%	5	2.0%
Paralysis	7	1.0%		0.1%		0.2%		0.2%		0.0%		0.0%	8	0.3%		0.2%
SLE	8	0.3%	9	0.2%	10	0.3%		0.0%		0.0%		0.0%		0.0%		0.0%
Aplastic Anaemia	9	0.2%	10	0.2%		0.2%		0.1%		0.0%		0.0%		0.1%		0.0%
Chronic Liver Failure	10	0.2%		0.1%		0.1%		0.0%	7	0.1%		0.1%		0.0%		0.0%
Major Organ Transplant		0.1%	7	0.4%		0.1%	10	0.2%		0.0%		0.1%	10	0.2%		0.1%
Brain Surgery		0.0%	8	0.3%	6	1.6%		0.0%		0.0%		0.0%		0.0%		0.0%
Parkinson's Disease		0.1%		0.1%	8	0.3%	7	0.3%		0.0%	10	0.2%	8	0.3%	8	0.4%
Multiple Sclerosis		0.1%	10	0.2%	9	0.3%	8	0.2%		0.0%	4	1.7%	4	1.1%	2	6.9%
Motor Neurone Disease		0.0%		0.1%		0.1%	8	0.2%		0.0%		0.0%	10	0.2%		0.2%
Coma		0.0%		0.1%		0.2%	10	0.2%		0.0%		0.0%		0.0%	10	0.3%
Cardiomyopathy		0.0%		0.0%		0.0%		0.0%		0.0%	7	0.4%	7	0.4%		0.0%
Major Head Trauma		0.1%		0.1%		0.2%		0.0%		0.0%	8	0.3%	5	0.8%		0.0%
Major Burns		0.2%		0.0%		0.1%		0.0%	6	0.2%		0.0%		0.0%		0.0%
TPD		0.0%		0.1%		0.0%		0.0%		0.0%		0.0%		0.0%	6	2.0%
Alzheimer's Disease		0.0%		0.1%		0.0%		0.1%		0.0%	10	0.2%	10	0.2%		0.1%
Total of top 10		98.8%		98.7%		97.7%		99.2%		100.0%		99.2%		99.3%		98.9%
Total number of claims	•	164,542		5,095		8,836		4,462		2,755		2,506		1462		7,219
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Cause of Claim		CN		HK		MY		SG		KR		AU		NZ		UK
Cancer	1	80.8%	1	87.7%	1	83.4%	1	88.1%	1	95.6%	1	87.6%	1	87.1%	1	78.5%
Stroke	2	6.7%	2	3.5%	2	3.5%	2	4.0%	2	1.2%	2	3.8%	3	3.3%	3	4.6%
Kidney Failure	3	3.4%	4	1.7%	3	2.8%	4	1.2%	5	0.8%	8	0.3%		0.1%	9	0.4%
Ischemic Heart Disease	4	2.8%	6	0.7%	4	2.8%	3	3.0%	4	0.9%	3	3.4%	2	4.9%	4	3.3%
Heart Surgeries	5	2.1%	5	0.8%	7	0.9%	6	0.5%	3	1.1%	6	0.6%	5	0.8%	7	0.6%
Benign Brain Tumour	6	1.2%	3	2.9%	5	1.7%	5	1.1%		0.0%	5	0.8%		0.0%	5	2.0%
Paralysis	7	1.0%		0.1%		0.2%		0.2%		0.0%		0.0%	8	0.3%		0.2%
SLE	8	0.3%	9	0.2%	10	0.3%		0.0%		0.0%		0.0%		0.0%		0.0%
Aplastic Anaemia	9	0.2%	10	0.2%		0.2%		0.1%		0.0%		0.0%		0.1%		0.0%
Chronic Liver Failure	10	0.2%		0.1%		0.1%		0.0%	7	0.1%		0.1%		0.0%		0.0%
Major Organ Transplant		0.1%	7	0.4%		0.1%	10	0.2%		0.0%		0.1%	10	0.2%		0.1%
Brain Surgery		0.0%	8	0.3%	6	1.6%		0.0%		0.0%		0.0%		0.0%		0.0%
Parkinson's Disease		0.1%		0.1%	8	0.3%	7	0.3%		0.0%	10	0.2%	8	0.3%	8	0.4%
Multiple Sclerosis		0.1%	10	0.2%	9	0.3%	8	0.2%		0.0%	4	1.7%	4	1.1%	2	6.9%
Motor Neurone Disease		0.0%		0.1%		0.1%	8	0.2%		0.0%		0.0%	10	0.2%		0.2%
Coma		0.0%		0.1%		0.2%	10	0.2%		0.0%		0.0%		0.0%	10	0.3%
Cardiomyopathy		0.0%		0.0%		0.0%		0.0%		0.0%	7			0.4%		0.0%
Major Head Trauma		0.1%		0.1%		0.2%		0.0%		0.0%	8	0.3%	5	0.8%		0.0%
Major Burns		0.2%		0.0%		0.1%		0.0%	6	0.2%		0.0%		0.0%		0.0%
TPD		0.0%		0.1%		0.0%		0.0%		0.0%		0.0%		0.0%	6	2.0%
Alzheimer's Disease		0.0%		0.1%		0.0%		0.1%		0.0%	10	0.2%	10	0.2%		0.1%
Total of top 10		98.8%		98.7%		97.7%		99.2%		100.0%		99.2%		99.3%		98.9%
Total number of claims	1	64,542		5,095		8,836		4,462		2,755		2,506		1462		7.219





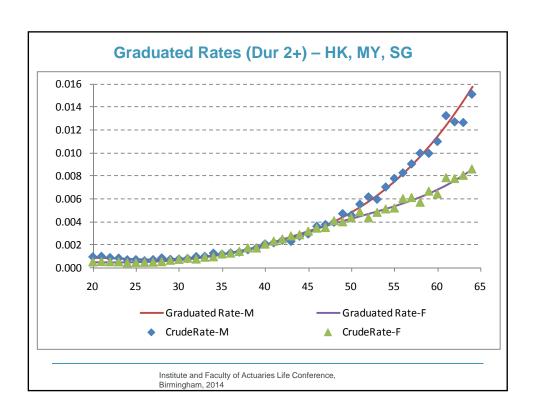


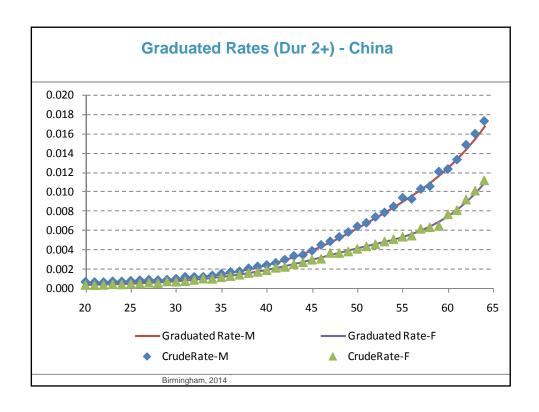


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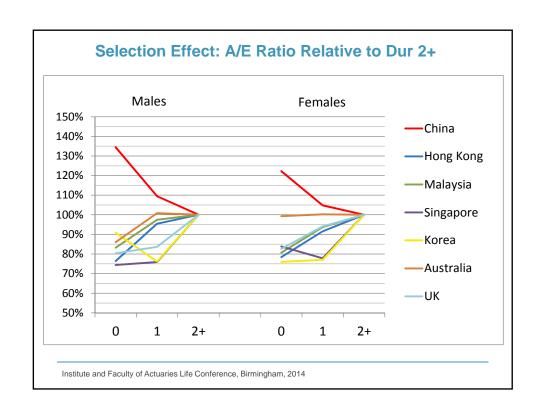
### Methodology

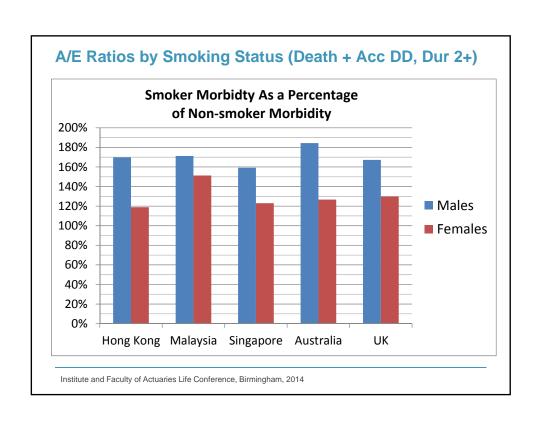
- > Include all claims for
  - Standard lives
  - Traditional type products
    - Some products may cover more diseases than other, range from 5 to 49, most cover 25-35 diseases, all products cover at least cancer, heart attack and stroke
- All products are treated as 100% acceleration, i.e. exposed to risk ceases when a claim occurs, either as Dread Disease Claim or as Death Claims
- > Only include exposure and claims after waiting period
- > Actual over Expected Ratios (A/E)
  - Expected claims are calculated using the graduated incidence rates from the DD survey 2000-2004





		2004	2005	2006	2007	2008	'04-'08	'00-'04
China	Male	113%	117%	118%	117%	120%	118%	85%
	Female	91%	96%	98%	100%	100%	98%	84%
Hong Kong	Male	90%	76%	80%	81%	78%	81%	84%
	Female	101%	104%	102%	96%	101%	101%	99%
Malaysia	Male	105%	115%	111%	106%	104%	108%	116%
	Female	99%	103%	102%	98%	97%	99%	99%
Singapore	Male	77%	77%	74%	71%	70%	73%	83%
	Female	105%	96%	98%	93%	96%	97%	103%
Australia	Male	98%	90%	89%	97%	80%	91%	
	Female	88%	90%	91%	91%	75%	87%	
UK	Male	103%	97%	90%	92%	78%	90%	106%
	Female	100%	101%	108%	104%	86%	99%	102%
	Female	100%	101%	108%	104%	86%	99%	102%





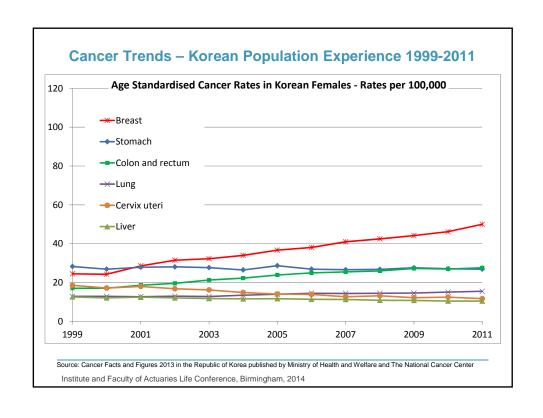
### **Substandard Life Experience (Dur 2+)**

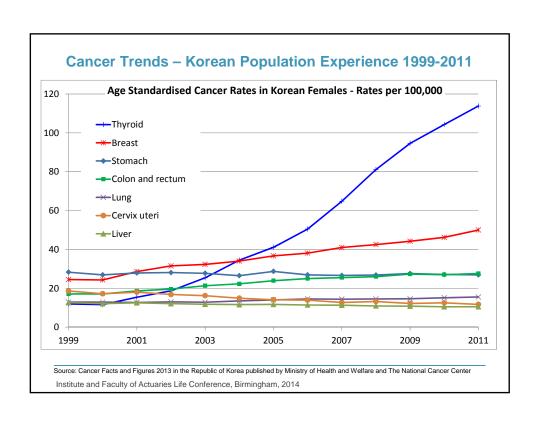
		Male			Female	
		A/E			A/E	
	No of	relative to	Average	No of	relative to	Average
	Claims	Standard	Loading	Claims	Standard	Loading
China	699	117%	162%	646	156%	160%
Hong Kong	202	252%	162%	141	140%	159%
Malaysia	71	47%	165%	32	33%	163%
Singapore	184	159%	165%	141	114%	162%
Australia	188	111%	176%	123	122%	176%
UK	190	132%	164%	114	98%	167%

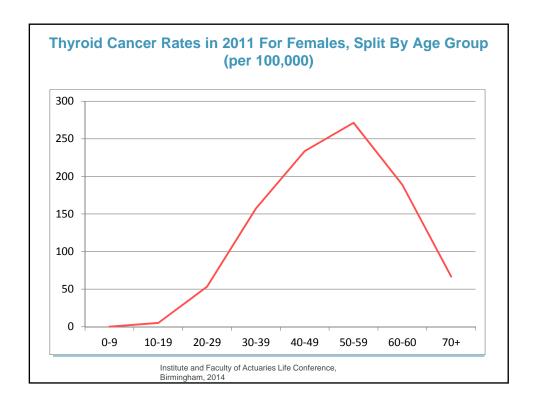
Institute and Faculty of Actuaries Life Conference, Birmingham, 2014

# **Agenda**

- Introduction to Gen Re's Dread Disease Survey
- Results of 2004-2008 Survey
- Profile of Business Covered
- Claims
- A/E's and Incidence Rates
- The Korean Cancer Horror Story
- Regional Differences in China
- Questions







### **Some Background On Thyroid Cancer**

- Thyroid cancer is divided into four types:
  - papillary (85%)
  - follicular (11%),
  - medullary (3%),
  - and anaplastic (1%)
- Anaplastic thyroid cancer is associated with the worst prognosis, with most patients dying within a year of diagnosis
- In contrast: papillary cancers which have excellent prognosis:
- especially in patients with nodules <20 mm in diameter: 99% of these patients will be alive at 20 years

source: BMJ 2013;347:f4706

#### Why Does Korea Have Such Bad Experience?

### **Product Design**

 100% of benefit needed to be paid for any cancer - benefit does not distinguished between minor cancers and severe cancers.

#### Medical Environment

- Medical check up
  - Regular medical check-ups for working population
  - Doctors attract patients by advertising they have they latest screening equipment
  - Screen for thyroid cancer intensively

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### Is Korea Unique?

- The question remains, whether:
  - a) the prevalence of thyroid cancer is different in Korea or
  - b) different screening behaviour in Korea unveils globally common prevalence
- Can the "Korean scenario" be ruled in any other country?
- Do trends elsewhere mirror the experience in Korea?

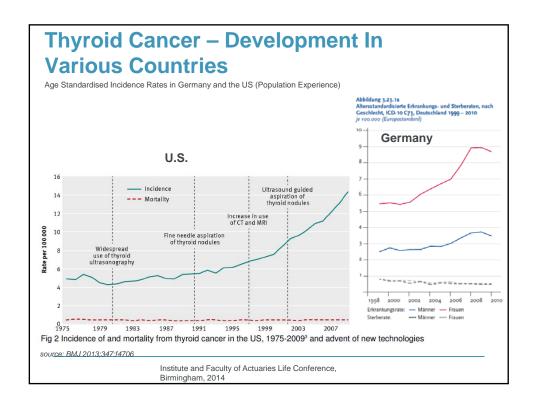
### **Thyroid Cancer Exclusions**

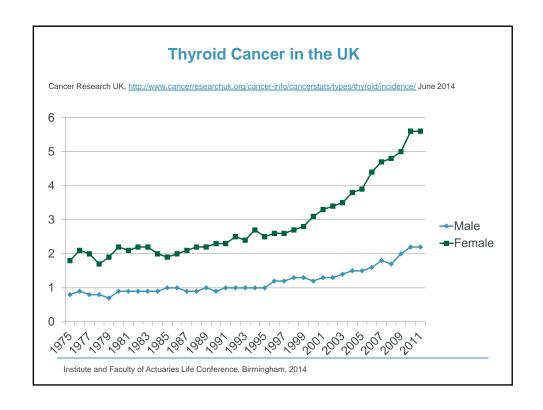
#### Korea

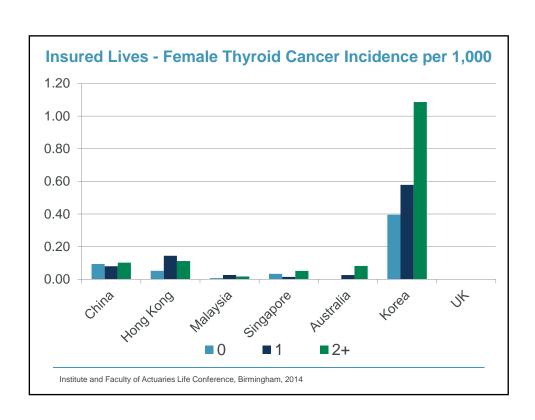
- · Before 2005: All thyroid cancers covered
- 2005-2010: Papillary microcarcinomas of thyroid smaller than 2cm excluded from coverage
- 2010 and after: All thyroid cancer excluded

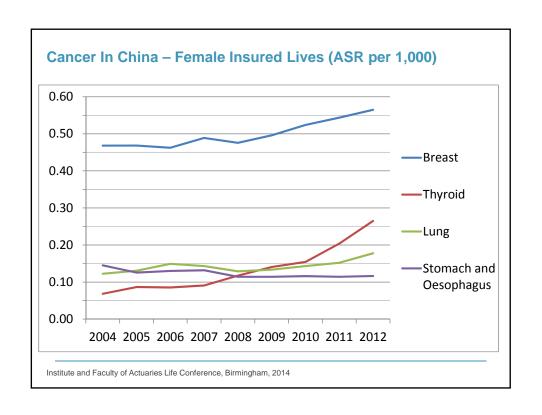
#### Elsewhere

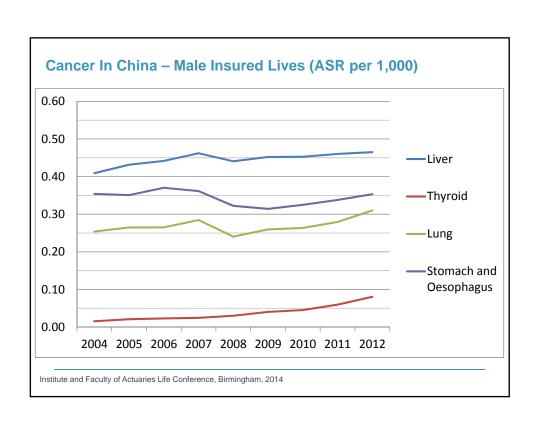
- Standard DD definition used in China and UK do not exclude thyroid papillary microcarcinomas of the thyroid
- Singapore only excludes tumours of < 1cm</li>
- Malaysia excludes
- In Hong Kong, it depends on the company definition

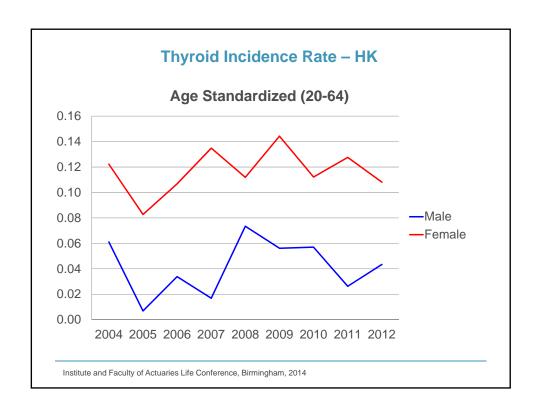












## Is Thyroid Cancer The Only "Problem" Cancer?

Cancer Site	Age Group	Autopsy "Surprise"
	All	12%
Prostate Cancer	50 - 59	approx. 25%
	60 - 69	approx. 33%
Thyroid Cancer	All	35.6%
Invasive Breast Cancer	All	0% to 1.8%
invasive breast Cancer	45 - 54	7%
Ductal CIS	All	0% to 14.7%
Ductai CiS	40 - 70	0% to 39%
Lung Cancer	All	0.7%
Lung Cancer	<70	0.8%
Uterine Cancer	All	4 – 6x diagnosed incidence
All Cancer "Known"	All	3%
Prevalence (UK)	45-64	4%
i iovaionos (Ort)	65+	13%

 $Source: Cancer\ Screening-Just\ Looking\ f\ or\ Trouble?\ Risk\ Matters\ September\ 2013,\ \textit{Ad\`ele\ Groyer},\ Gen\ Re,\ London\ September\ 2013,\ Ad\rel{Matters}$ 

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