

Medical Underwriting: Approaches and Regulatory Restrictions

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Overview

- Purpose of medical underwriting
- Tools and techniques
- Common problems and challenges
- Impact on potential healthcare costs
- Comparison of approaches



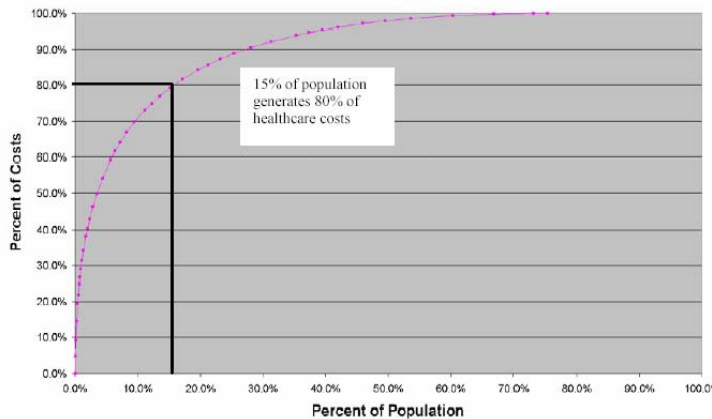
Medical Underwriting

- Used by health plans to maintain competitive, profitable and fair rates
- Internationally, tools do not vary much
- Application of tools does vary:
 - Regulatory environment
 - Available information
 - Custom



Need for Medical Underwriting

- Health costs vary within a population
 - Most costly 15% of individuals generate 80% of healthcare costs



Need for Medical Underwriting

- **Standard distribution:**
 - 850 low-cost members, 150 high-cost members

	Number	Cost - % of Average
Low-Cost	850	24%
High-Cost	150	533%
	1,000	100%



Need for Medical Underwriting

- **Large proportion of high-cost members:**
 - 700 low-cost members, 300 high-cost members

	Number	Cost - % of Average
Low-Cost	700	24%
High-Cost	300	533%
	1,000	156%



Need for Medical Underwriting

- **Small proportion of high-cost members:**
 - 925 low-cost members, 75 high-cost members

	Number	Cost - % of Average
Low-Cost	925	24%
High-Cost	75	533%
	1,000	65%



Competitive Need for Medical Underwriting

- **Health plan must use at least as sophisticated medical underwriting tools as competitors**
 - **Could get disproportionate share of high-cost individuals otherwise**
 - **"Death spiral effect"**



Tools and Techniques

- **Tools**
 - Used to gather information
- **Techniques**
 - Use to apply the underwriter's decision



Tools

- **Most common: Medical Application**
 - Information contained:
 1. List of ailments
 2. History of hospitalization
 3. Other medical treatment
 4. Prescription drugs
 - Underwriters may follow up on information by contacting doctors or applicant



Common Problems

- Using judgment instead of data
- Using life insurance guidelines
- Letting guidelines get old
- Adapting from another country



Medical Application: Problems

- Problems:
 1. Information not always complete
 - Reference internal and external databases to identify other potential issues
 2. Health plans often do not rescind policies containing misrepresentations
 - Difficult to prove applicant was aware of condition
 - Can case difficult public relations



Techniques

- Denial
- Rider out (exclude) conditions
- Rating classes
- Pre-existing condition limitation options
 - Acts as temporary or permanent rider
 - Only cover conditions *not* disclosed on application (encourages better reporting)



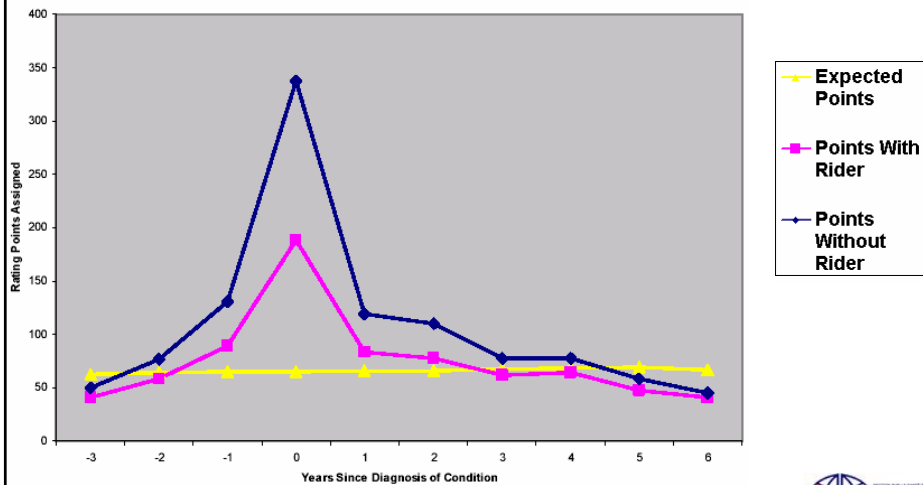
Impact on Potential Healthcare Costs

- *Milliman Medical Underwriting Guidelines*
 - Claims from 400,000 member longitudinal database
 - 7 years of claims experience
 - Identify the start of a particular condition
 - "Realign" claims by year of diagnosis, rather than calendar year
 - Stream of costs for conditions
 - Body systems
 - Can identify whether a rider would be useful



Acute Condition: Choristoma

A benign neoplasm of the eye or of the choroid plexus of the brain



- Rider: Treatment associated with neoplasms, benign or malignant



Acute Condition: Choristoma

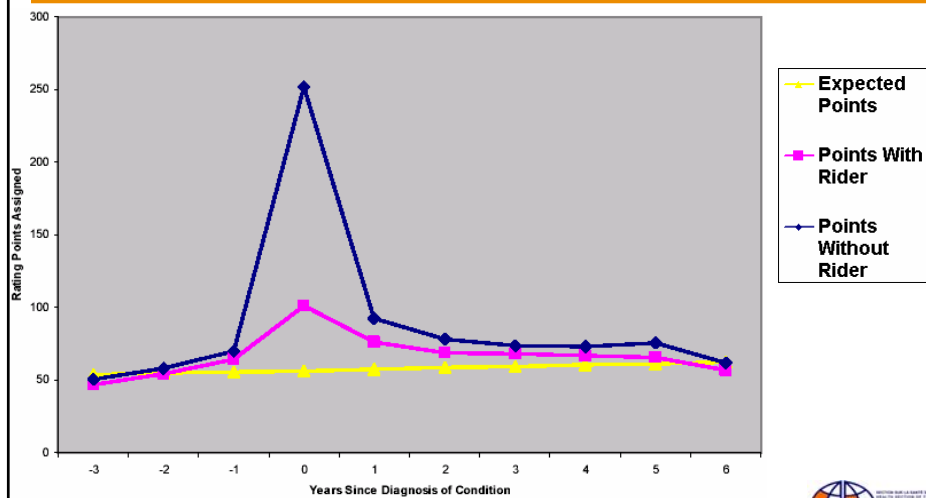
A benign neoplasm of the eye or of the choroid plexus of the brain

- Costs recede rapidly after diagnosis
- Rider not useful: 150 debit points still declines
- Underwriting decision:
 - Would likely decline
 - Might accept case, with additional premium and a rider in years 1 and 2, but no rider in years 3 and 4. Standard risk as of year 5.



Acute Condition: Cholelithiasis

The presence of gallstones in the gallbladder



- Rider: Treatment associated with specified diseases of digestive system



Acute Condition: Cholelithiasis

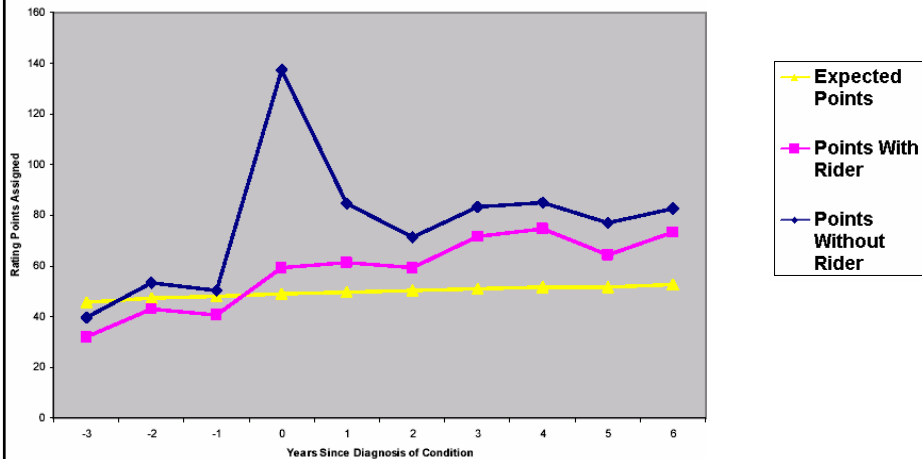
The presence of gallstones in the gallbladder

- Rider useful: if applied in year of diagnosis, risk is ratable because increase in cost is limited
- Underwriting decision: application of rider would allow coverage to be written



Acute Chronic Condition: Cystocele/Rectocele

Hernia of bladder or rectum



- Rider: Treatment associated with the genitourinary system



Acute Chronic Condition: Cystocele/Rectocele

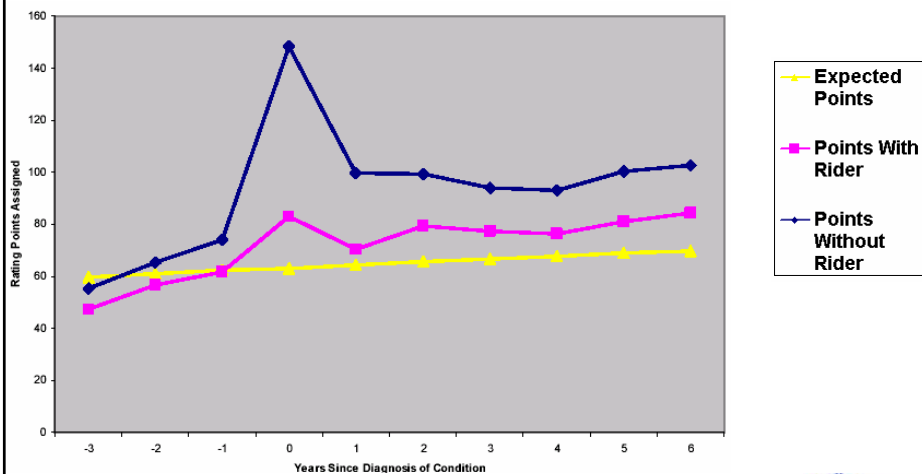
Hernia of bladder or rectum

- High costs maintained over long period of time
- Rider not useful: does not significantly reduce costs
- Underwriting decision: would likely decline



Chronic Condition: Spondylolisthesis

Forward slippage of a lumbar vertebra



- Rider: Treatment associated with the musculoskeletal system or related



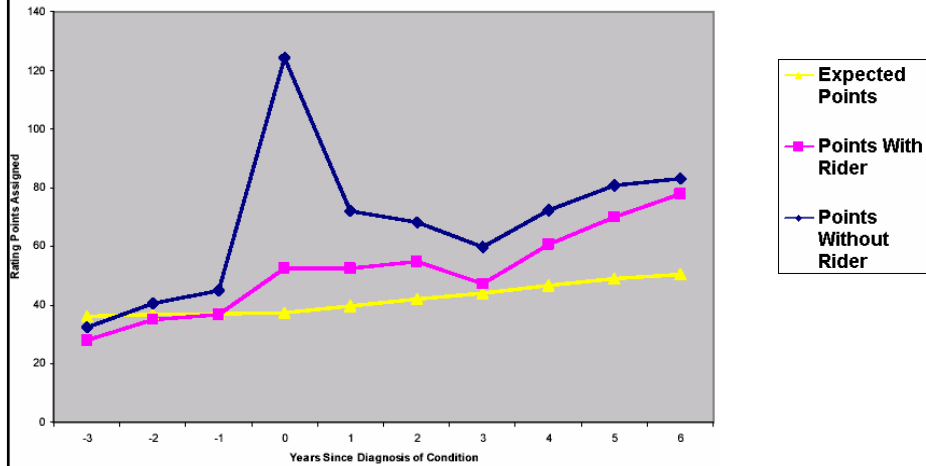
Chronic Condition: Spondylolisthesis

Forward slippage of a lumbar vertebra

- Rider useful: removes a meaningful portion of excess claim costs
- Underwriting decision: application of a rider would allow coverage to be written



Relapsing Condition: Alcoholism



- Rider: Treatment associated with mental disorders

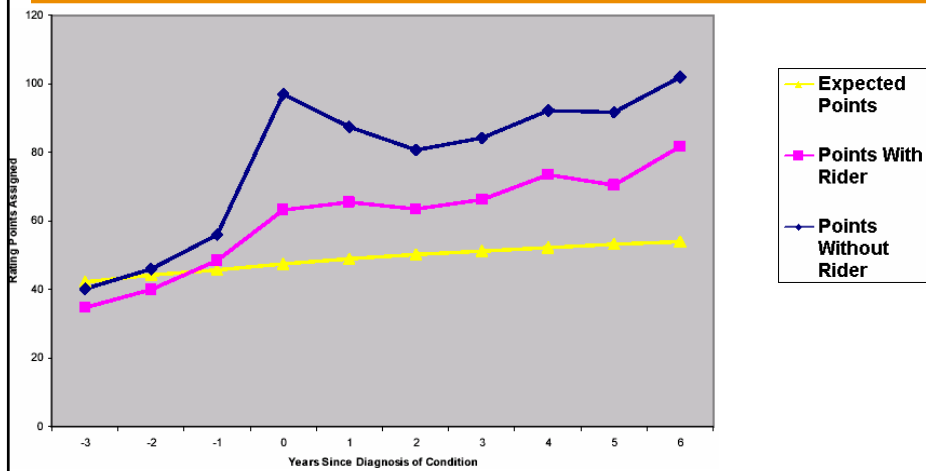


Relapsing Condition: Alcoholism

- Costs increase after an apparent recovery
- Rider useful: only in early years, not during relapse
- Underwriting decision: pay special attention to these conditions



Progressive Condition: Osteoarthritis



- Rider: Treatment associated with arthropathies and dorsopathies



Progressive Condition: Osteoarthritis

- Small cost decrease for a couple of years after diagnosis, then begins to increase steadily
- Rider: does remove a portion of costs
- Underwriting decision: long-term effects due to the steady increase may cause decline instead



Challenges in Adaptation

- Differing frequencies
- Differing cost structures
- Travel costs
- Regulatory/custom differences



Comparison of Approaches

- United States
- Brazil
- United Kingdom
- Hong Kong
- Australia
- Mexico
- Colombia
- Chile



United States

- **Underwriting techniques vary significantly**
 - Individual
 - Small group



United States: Individual

- **If no history of medical coverage, laws do not limit tools available to underwriter**
 - Tools:
 - Denial of coverage
 - Permanent or temporary riders
 - Rate classes
 - Pre-existing condition limitation
 - 12-month lookback and 12-month exclusion period
- **If uninterrupted creditable coverage**
 - Only tool is rating class



United States: Small Group

- **Law requires that everyone be issued:**
 - Without riders
 - Without pre-existing condition limitations for those with uninterrupted coverage
- **State law limits rate variation from one employer to another**
 - I.e. Limited to 25% deviation from base rate
 - Base rate may be adjusted for demographics of group



Brazil

- **If medical condition disclosed on application, federal law limits underwriting:**
 - A rated-up premium with full coverage
 - Condition is excluded for 24 months, but at standard premium
- **Since some conditions require immediate surgery, first option can cause significant adverse selection**
 - Enables applicant to pay high premiums for 1 or 2 months, then lapse
 - No level of premium can cover that risk



United Kingdom

- **Most carriers use riders (endorsements) to eliminate coverage of conditions**
- **One carrier uses rating-up system**
- **Pre-existing conditions have a 5-year look back, and a 2-year forward exclusion**



Hong Kong

- **Conditions not at all covered by insurers unless they are disclosed on application**
- **Underwriter can decide to accept or decline**
- **Extensive pre-existing condition clause, depending on condition**



Australia

- **Private medical coverage supplements a public health care system**
 - Coverage viewed as way to speed up treatment, and to supplement public coverage
- **Underwriter can accept or decline, based on any criteria, except for protected classes**
- **Undisclosed pre-existing conditions are not required to be covered**



Mexico

- **There are no specific underwriting regulations**
- **Most medical insurers use underwriting manuals:**
 - Provided by their reinsurers
 - Adapted from life insurance



Colombia & Chile

- Both countries have private healthcare integrated with social security system
- For coverage written on this basis, no medical underwriting allowed
- Full underwriting allowed for supplemental coverages



Thank You

QUESTIONS?

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Adapting Actuarial Tools for Use in Other Countries

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Overview

- Actuarial tools – what are they?
- Who should be interested
- Reasons for adaptation
- Types of tools
- Considerations
- Case study



Actuarial Tools – What Are They?

Based on actuarial principles

- Risk analysis
- Prediction of future events
- Financial
- Technical

Used to:

- Analyze experience or book of business
- Predict future risks
- Develop new products and expected profitability
- Calculate reserves



Actuarial Tools

Examples of tools

Increasing Complexity
↓

Table of Values – e.g. Table of disability rates by age

Spreadsheet - e.g. Predict annual expected cost for a book of business

Software - e.g. Project LTC cash flow and sensitivities, and produce financial statements



Who Should Be Interested

Multinational companies

- Consistency across countries
- Consolidated reporting
- Manage cross-border products
- Economies of scale

Consulting companies

- Similar services offered in different countries
- Consistency
- Efficiency
- Benefit clients by using well-tested tools



Who should be Interested

Local companies

- Transfer of knowledge for steeper learning curve
- Faster evolution
- External information not available locally

Regulators

- Simulation of reform impacts
- Consistent analysis of market players
- Learn from others



Reasons for Adaptation

- Globalization – operation and expansion
- Summarize results
- Apply lessons learned
- Continuous evolution of tools
- Financial benefits
- Maintain consistency
- Improve efficiency



Types of Tools

The following are some types of tools that tend to be well suited for adaptation based on cost/benefit trade off

- Experience analysis
- Reserving
 - IBNR
 - Premium deficiency
 - Claims
- Reporting
- Cashflow projection



Considerations

Which tools make sense to adapt?

Would it be easier to adapt a current tool or build a new one?

- **Regulatory requirements**
- **Structure of health insurance (private and public) in each country**
- **Cost vs. Benefit**
- **Cultural issues**



Case Study: Milliman Chile Health Cost Guidelines

US Health Cost Guidelines

- **Tool in US healthcare industry for 40+ years**
- **Flexible, reliable, consistent information**
- **Constantly evolving**
- **Used for**
 - **Pricing**
 - **Benchmarking**
 - **Managing utilization**
 - **Experience analysis**
- **Reflect US market**



Case Study: Milliman Chile Health Cost Guidelines

What country to go to?

Latin America

- Developing markets
- Some going in similar direction as US
- Relatively small, easy to understand markets

Chile

- Significantly developed private market
- Similar structure
- Competitive market
- Changes in regulations add to value of tool - both for insurers (Isapres) and for regulators



Case Study: Milliman Chile Health Cost Guidelines

Considerations once market was initially chosen

- Structure of market
- Availability and consistency of data
- User interest
- Confidentiality of information

Process

- Consolidate information
- Analysis
- Checks for consistency, completeness
- Ongoing improvements



Case Study: Milliman Chile Health Cost Guidelines

Results

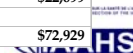
- Simplified tool compared to US Health Cost Guidelines
- Fits market needs in Chile
- Accepted by market
- Timely for market
- Ongoing evolution

Note: also has been done in other countries U.K., South Africa



Chile HCGs – Rating Structures

Health Cost Guidelines for ISAPRE System				
Composite Utilization and Costs of Monthly PMPM				
	Annual Admissions per 1000	Length of Hospital Stay	Annual Utilization per 1000	Average Cost per Service
Inpatient				
I. Hospital				
1. Medical / Surgical	63.17	4.19	264.61	\$123,148
2. Mother	43.08	3.82	164.44	\$125,595
3. Newborn	4.45	4.67	20.74	\$57,832
4. Psychiatric	0.39	15.05	5.83	\$52,166
5. Other	4.12	5.14	21.20	\$26,737
6. Clinical Material	78.51		78.51	\$101,994
Subtotal Hospital	193.71		555.32	\$114,017
II. Pharmacy and Blood Bank	106.10		106.10	\$120,821
III. Physician Fees				
1. Hospital Visits	106.71		106.71	\$65,759
2. Surgeries	130.89		130.89	\$168,788
3. Maternity	98.64		98.64	\$149,411
Subtotal Inpatient Physician Fees	336.24		336.24	\$130,406
IV. Exams				
1. Pathology	782.52		782.52	\$12,322
2. Radiology	75.07		75.07	\$62,842
3. Diagnostic / Therapeutic	71.49		71.49	\$86,336
Total Inpatient Exams	929.08		929.08	\$22,099
Subtotal Inpatient	1,565.12		1,926.74	\$72,929



Chile HCGs – Rating Structures

Health Cost Guidelines for ISAPRE System				
Composite Utilization and Costs of Monthly PMPM				
	Annual Admissions per 1000	Length of Hospital Stay	Annual Utilization per 1000	Average Cost per Service
Outpatient				
I. Hospital/ Physician Fees				
1. Home consults	123.08		123.08	\$18,719
2. Office visits	4,079.25		4,079.25	\$14,501
3. Surgery	20.83		20.83	\$51,389
4. Emergency consult	148.35		148.35	\$20,169
5. Psychiatric	100.45		100.45	\$27,625
6. Physical Therapy	395.96		395.96	\$14,671
7. Other	31.62		31.62	\$122,283
Subtotal Outpatient Hospital/ Physician Fees	4,899.55		4,899.55	\$15,913
II. Exams				
1. Pathology	4,889.35		4,889.35	\$3,969
2. Radiology	1,132.16		1,132.16	\$24,396
3. Diagnostic / Therapeutic	624.16		624.16	\$22,844
Subtotal Outpatient Exams	6,645.67		6,645.67	\$9,221
III. Other				
1. Immunizations	153.27		153.27	\$3,311
2. Newborn Exams and WellBaby Care	36.56		36.56	\$4,848
3. Eye Exams	262.86		262.86	\$18,353
4. Glasses / Contact Lenses	108.23		108.23	\$71,970
5. Audiological Exams	23.23		23.23	\$31,274
6. Physical Exams	0.78		0.78	\$3,995
7. Podiatry	1.60		1.60	\$21,324
8. Ambulance	0.28		0.28	\$44,784
9. Medical Equipment	2.10		2.10	\$596,546
Subtotal Other	588.92		588.92	\$26,025
Subtotal Outpatient	12,134.14		12,134.14	\$12,739
TOTAL	13,699.26		14,060.87	\$20,987



Chile HCGs – Basic Tables

Health Cost Guidelines for ISAPRE System									
1. Inpatient - Medical / Surgical									
July 1, 2004									
Sex / Age Range	Distribution		Annual Admission	Length of Stay	Rate per Day	PMPM	Age / Sex Factor		
	Primary	Dependent					Utilization	PMPM	PMPM
Male	To 25	34,197	11,873	0.0308	3.75	98,900	950.94	0.436	0.350
	25 - 29	120,972	20,346	0.0328	3.80	102,752	1,068.09	0.471	0.393
	30 - 34	138,011	3,373	0.0340	3.90	106,753	1,179.04	0.501	0.434
	35 - 39	132,618	1,852	0.0365	4.00	110,911	1,348.65	0.551	0.497
	40 - 44	107,705	1,699	0.0451	4.15	115,230	1,796.69	0.707	0.662
	45 - 49	81,631	1,650	0.0539	4.50	119,718	2,418.22	0.916	0.891
	50 - 54	62,843	1,385	0.0780	5.00	124,380	4,040.34	1.473	1.488
	55 - 59	46,257	1,611	0.0960	5.30	129,224	5,481.48	1.924	2.019
	60 - 64	27,935	1,160	0.1399	5.50	134,256	8,608.16	2.908	3.170
	65 +	28,108	4,966	0.3030	6.00	139,485	21,131.97	6.870	7.782
	Composite	780,277	49,915	0.0589	4.78	123,759	2,905.38	1.065	1.070
Female	To 25	20,084	18,601	0.0423	2.90	102,402	1,045.90	0.463	0.385
	25 - 29	77,692	48,650	0.0588	2.93	105,146	1,511.10	0.652	0.556
	30 - 34	78,251	54,470	0.0704	3.16	107,964	2,000.72	0.840	0.737
	35 - 39	69,274	60,555	0.0734	3.40	110,858	2,304.70	0.943	0.849
	40 - 44	59,843	52,777	0.0857	3.75	113,829	3,049.82	1.215	1.123
	45 - 49	51,097	39,277	0.0928	4.20	116,880	3,796.71	1.473	1.398
	50 - 54	35,716	32,367	0.0970	4.50	120,012	4,366.28	1.650	1.608
	55 - 59	28,104	22,279	0.1193	4.70	123,229	5,764.24	2.121	2.123
	60 - 64	15,738	13,608	0.1497	5.00	126,531	7,891.63	2.828	2.906
	65 +	13,944	22,690	0.2059	5.30	129,923	11,817.07	4.125	4.352
	Composite	449,743	365,274	0.0865	3.97	117,284	3,355.64	1.297	1.236
Comp.	Primary	1,230,021		0.0679	4.38	120,689	2,987.09	1.122	1.100
	Spouse		415,189	0.0865	4.13	119,107	3,547.18	1.351	1.306
Child	Adult		1,645,210	0.0726	4.30	120,232	3,128.43	1.180	1.152
	00 - 01		97,071	0.1316	6.38	129,923	9,097.12	3.175	3.350
	02 - 06		282,171	0.0610	2.88	129,923	1,901.53	0.664	0.700
	07 - 18		586,497	0.0368	3.39	129,923	1,350.52	0.471	0.497
	19 - 22		165,894	0.0269	3.77	129,923	1,097.30	0.383	0.404
	Composite		1,131,633	0.0495	3.95	129,923	2,115.29	0.738	0.779
TOTAL			0.0632	4.19	123,148	2,715.55	1.000	1.000	



Chile HCGs - Cumulative Probability Distributions

Inpatient Medical			
Trend in Cost			1.0000
Area Factor			1.0000
Maximum per Day			-
Copay			-
Average Cost per Day	Adjusted for Trend and Area	Adjusted for Maximum	Distribution
94,410	94,410	-	100.00%
448	448	-	0.08%
3,418	3,418	-	0.14%
4,840	4,840	-	0.03%
5,000	5,000	-	0.03%
8,149	8,149	-	0.06%
10,745	10,745	-	0.06%
11,636	11,636	-	0.06%
12,425	12,425	-	0.03%
13,110	13,110	-	0.03%
14,295	14,295	-	0.06%
16,159	16,159	-	0.30%
18,024	18,024	-	0.28%
20,079	20,079	-	0.77%
21,693	21,693	-	0.86%
24,306	24,306	-	1.21%
26,295	26,295	-	0.99%
27,918	27,918	-	0.69%
29,841	29,841	-	1.66%
31,700	31,700	-	2.84%
33,768	33,768	-	3.31%
37,378	37,378	-	7.42%
42,538	42,538	-	6.23%
47,545	47,545	-	5.43%
52,313	52,313	-	3.61%
57,656	57,656	-	5.30%
62,326	62,326	-	2.92%
67,177	67,177	-	3.94%
72,263	72,263	-	2.57%
77,450	77,450	-	3.23%
82,498	82,498	-	3.17%
89,153	89,153	-	5.54%
98,626	98,626	-	6.26%
110,028	110,028	-	3.64%
119,417	119,417	-	3.92%
127,997	127,997	-	1.60%



Thank You

QUESTIONS?

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