

**Consolidating the Foundation of Life
Insurance Development**

**— An Overview of the Compiling History of
China's Life Insurance Experience Tables**

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中国精算师协会
CHINA ASSOCIATION OF ACTUARIES

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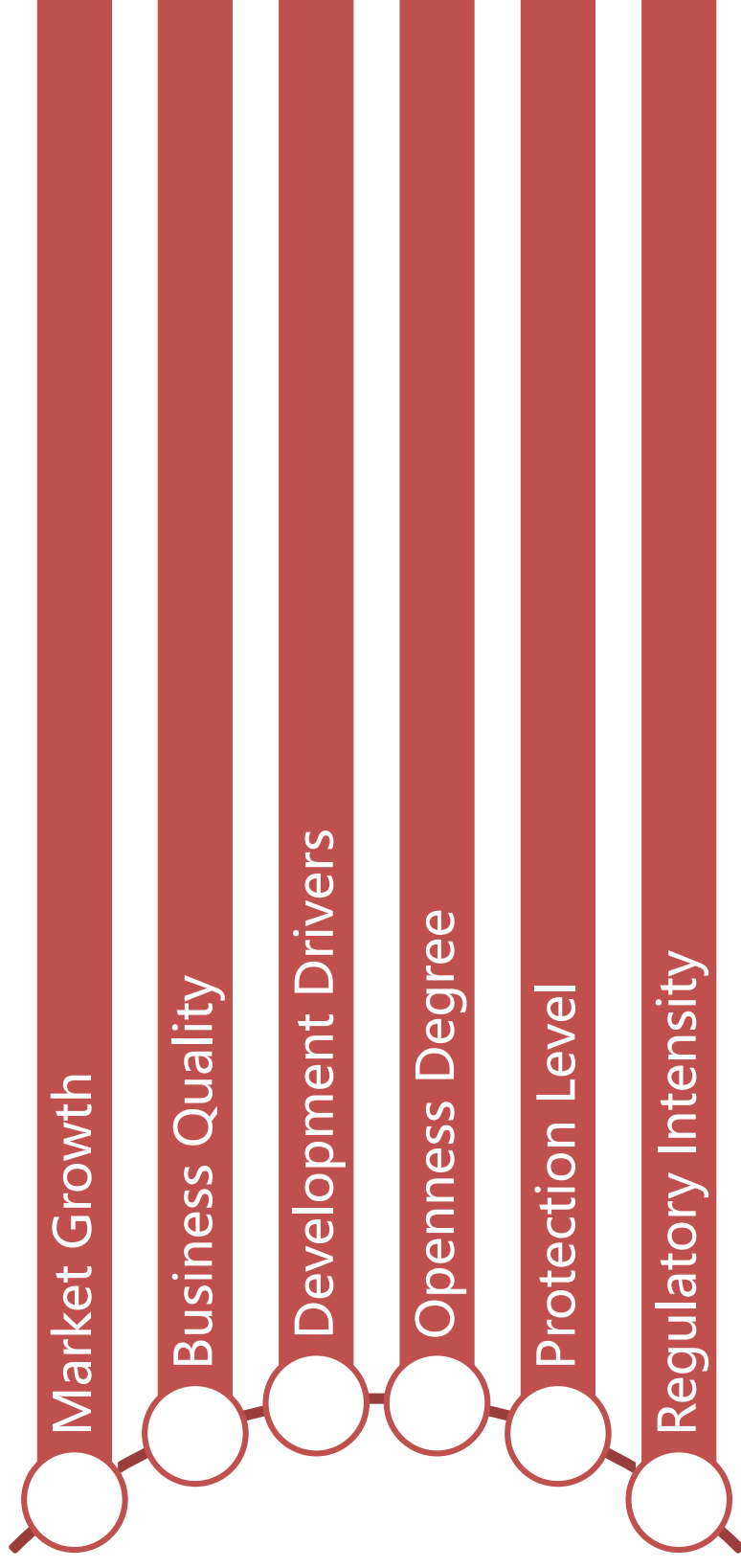


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Market Overview: China Life Insurance Developments



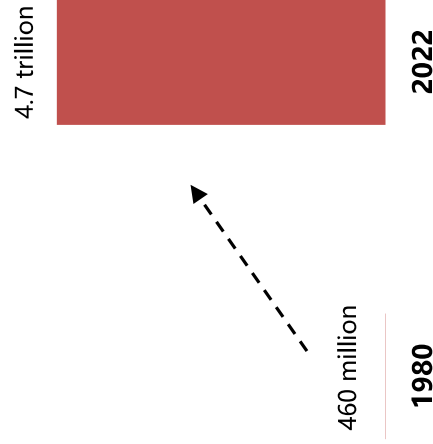
Facts and Achievements



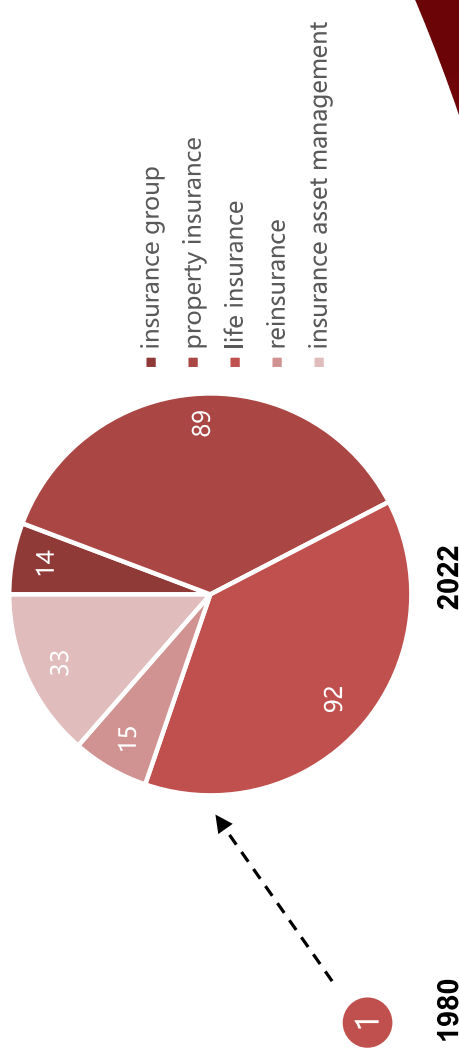
Market Growth

China become the world's **second largest** insurance market and its contribution to the growth of the international insurance market is nearly **30%**

Premium scale



Number of insurance institutions



China's insurance industry has continuously enriched its products. In recent years, the life insurance business is showing a trend of **returning to risk protection, enhancing value, and pursuing sustainable development**.

2022 vs 2021 YoY Increase

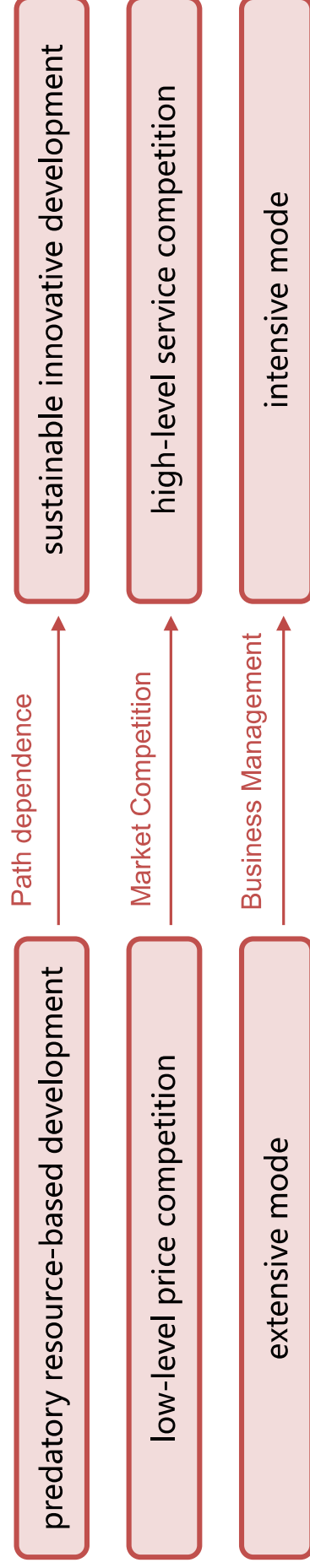
Protection business premium income	9.5%
Claims and benefits	1.2%
Number of new individual policies	5.4%
Health insurance Sum Assured	8.6%



Development Drivers

Extensive growth relied on institutional expansion and regulatory incentives no longer exists. High-quality development must rely on **innovation, services, and management.**

Development Driver Change



66 foreign insurance institutions, **117** rep-offices and **17** professional insurance intermediaries are established by overseas insurance institutions.

Measures for Openness

Foreign share upper limit is **no longer restricted**

Qualified foreign investors can hold **insurance agency license** and **insurance assessment license**.

Foreign brokers have the same business scope as domestic company.

2-year rep-office requirement cancelled for foreign insurers.



Proactively contribute to national development strategy and deeply participate in the construction of **multi-layer social security systems** such as pension and healthcare systems.

Pension insurance

- **Exclusive commercial pension insurance** continues to expand, and accumulate 339,000 policies and 3.84 billion premium at the end of 2022.
- **Pension annuity** collect 64.2 billion premium in 2022 and accumulate 22.52 million policies and 665.9 billion liability reserve at the end of 2022

Health insurance

- **Serious illness medical insurance** covers 1.22 billion people and compensated over 70 million people in 2022.
- **Long term care insurance** covers over 130 million people and provides long-term care benefits to over 700000 disabled elderly people.



Regulatory Intensity

Regulatory Policy

- Institutional constraints
- Daily supervision
- On-site inspections
- Punishment measures

Regulatory Power

- Increased regulatory staff
- Extended regulatory power to city and county levels
- Further emphasis on market behavior and risk penetration supervision in the future.



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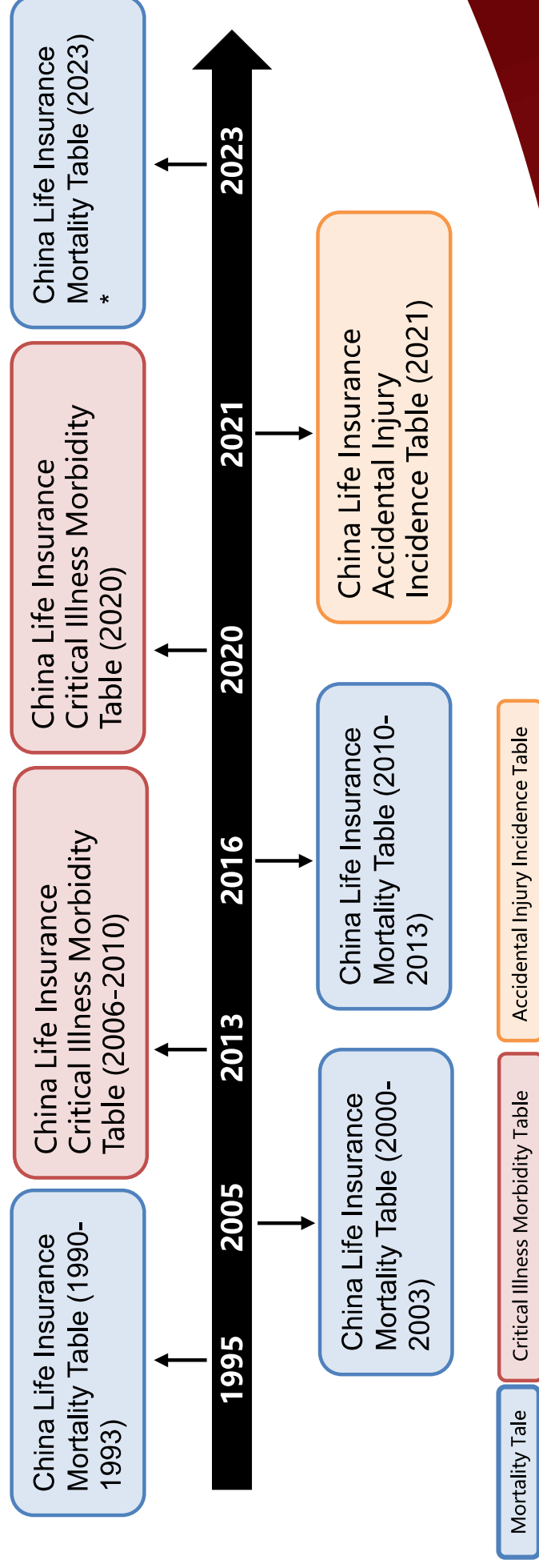
Compiling History of Incidence Tables



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Compiling History

Along with the quick development of China life insurance market, industry infrastructures such as incidence tables are constructed, updated and refined continuously.



*China Life Insurance Mortality Table (2023) is compiling and expected to release at the end of 2023



Experience Analysis Office

- On April 21, 2011**, the China Association of Actuaries established the **Mortality Investigation Office(MIO)**. The main responsibilities include:
- Conduct research and analysis on industry empirical data;
 - Develop and revise industry incidence tables;
 - Regularly or irregularly release research results to the entire industry;
 - Publish relevant research publications and convene relevant seminar meetings.



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Mortality Table

	Observation Period	Company	Data Scale	Table Structure	Breakthrough & Impact
1 st Set	1990-1993	1	unknown	2 tables for non-pension and pension	symbolize the commencement of the infrastructure construction
2 nd Set	2000-2003	6	40 million policies and 60,000 claims	2 tables for non-pension and pension	laying a solid foundation for the healthy development of the life insurance industry
3 rd Set	2010-2013	9	340 million policies and 1.8 million claims	3 tables for protection product, saving product and pension	non-pension business is divided into two types, adapting to a more refined evaluation system
4 th Set	2014-2021	All life insurance companies	723 million policies and 10 million claims	6 tables for 3 types product of national scope and Greater bay Area	compiling tables based on data from Mainland China, Hong Kong and Macao for the first time



CI Morbidity Table

	Period	Company	Data Scale	Table Structure	Breakthrough & Impact
1st Set	2006-2010	6	70 million policies and 0.85 million claims	2 tables for 6 diseases and 25 diseases	solidifying the technological foundation and playing an important role in promoting the rapid development of critical illness insurance in recent years
2nd Set	2014-2018	All life insurance companies	356 million policies and 5.3 million claims	11 tables, involving old and new definition, multiple and single disease, national scope and Greater bay Area	reflecting the latest morbidity level and adapting the revision of disease definition for new products



AD&D Incidence Table

	Period	Company	Data Scale	Table Structure	Breakthrough & Impact
1 st Set	2015-2019	56	5.4 billion policies and 10.4 million claims	4 tables for accidental death and accidental disability, whole population and juveniles 1 table for occupational risk factors	promoting the reform of accident insurance and improving scientific and refined pricing



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Case Sharing: Critical Illness Morbidity Table(2020)



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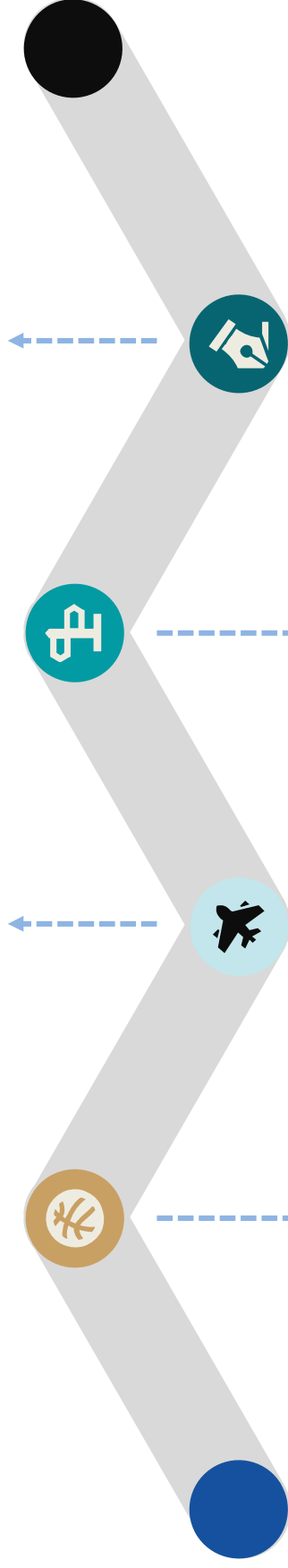
Overall Process

Data Collection and Processing 2019.3-2019.8

- Data submission and verification
- Automatic and manual diseases classification
- Domestic and foreign morbidity data Collection

Review and Release 2020.1-2020.8

- Soliciting opinions
- Face to face discussion meetings and teleconference with experts
- Officially reviewed by a expert review panel and successfully passed.



Preparation 2018.11-2019.3

- Planning project goals and organizational structure
- Developing data collection plan, product information form and data verification plan

Table Compiling 2019.8-2019.12

- 7 technical teams collaborate to compile the morbidity tables.
- Comprehensive experience analysis and writing report



Data Collection

Rich data contribute to multiple levels of analysis and multiple indicators for analysis

- Analyze incidence rate, survival rate, death proportion due to critical illness, etc.
- Analyze by gender, age, region, occupation, policy year, calendar year, issue year, etc.

Policy Seriatim Data: **38 fields** related to underwriting, preservation and claims

No.	Field	No.	Field
1	Company Code	20	Sales Channel
2	Product Code	21	Issue Date
3	Policy No.	22	End Reason
4	Insured No.	23	End Date
5	Type of ID	24	Claim No.
6	ID No.	25	Occur Date
7	Birth Date	26	Report Date
8	Gender	27	Close Date
9	Occupation	28	Claim Type
10	Smoking Flag	29	Claim Reason
11	Insurance Period	30	ICD
12	Payment Freq	31	Payment Type
13	Payment Period	32	Theoretical Compensation
14	Standard Premium	33	Actual Compensation
15	Actual Premium	34	Refusal Reason
16	Face Amount	35	Accident Notes
17	Region Code	36	Review Comments
18	Standard Flag	37	Other Notes
19	Examination Flag	38	Hospital Name

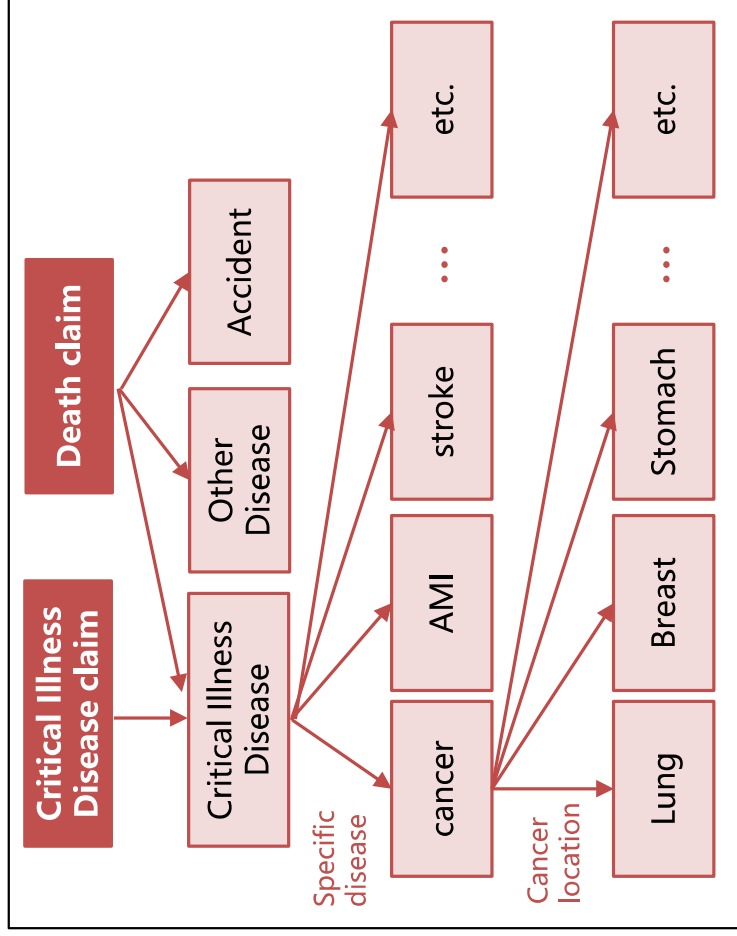
Product Data: **32 fields** of basic product information and **160 fields** recording the diseases covered

No.	Field	No.	Field
1	Company Code	18	MI Multiple No.
2	Product Code	19	Special CI Flag
3	Product Name	20	Premium Waiver Type
4	Additional risk flag	21	CI No.
5	Product Code of Main risk	22	MI No.
6	Product Name of Main risk	23	Waiting Period
7	Sale Date Min	24	Death Amount Formula
8	Sale Date Max	25	CI Amount Formula
9	Insurance Period Type	26	CI Group No.
10	Sales Channel Type	27	Multiple CI Interval
11	Age Min	28	Cancer Multiple No.
12	Age Max	29	Multiple Cancer Interval
13	Product Type	30	MI Amount Formula
14	CI Type	31	MI Group No.
15	CI Multiple Type	32	Multiple MI Interval
16	CI Multiple No.	33- 192	Single Disease Marker
17	MI Type		



Data cleaning – Disease Classification

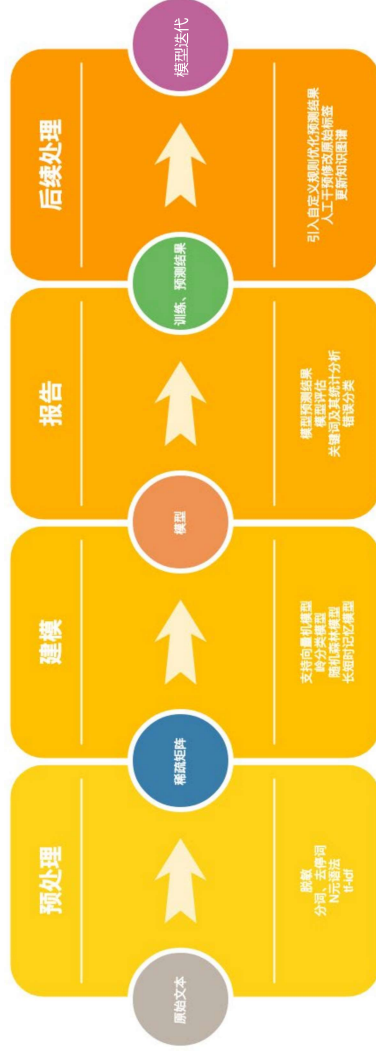
Classification Objective



Automatic Classification

Text Mining Technique

- ✓ Based on natural language processing, machine learning
- ✓ According to the characteristics of claim data, there are more than 50 versions of iterative model
- ✓ The Classification results are reasonable and reliable by adding hard rules and revising error record



Data cleaning – Thyroid cancer

Manual classification

For claims failure to classify automatic and for more detail information of cancer pathology, underwriter and claims assessors **read the original claim files** to classify manually

- ✓ Death claims unclassified: 310,000 cases
- ✓ Disease claims unclassified : 130,000 cases
- ✓ Claim of four types of cancer for pathological information: 310,000 cases

Recording standards for Pathology of thyroid cancer

Pathological Type	Location	T	N	M
Papillary	Left	0- 0.5cm	N	N
Follicular	Right	0.6- 1.0cm	Y	Y
Myeloid	Isthmus	1.1- 2.0cm	Unknown	Unknown
Undifferentiated	Multiple	2.1- 3.0cm		
Unknown	Unknown	3.1- 4.0cm		
		Above 4.0cm		
		Unknown		

Recording standards for Pathology of breast cancer

Pathological Type	Location	T	N	M
Ductal	Left	0- 0.1cm	N	N
Lobular	Right	0.2- 0.5cm	Y1	Y
Medullary	Bilateral	0.6- 1.0cm	Y2	Unknown
Mucous gland	Unknown	1.1- 2.0cm	Y3	
Other		2.1- 5.0cm	Y4	
Unknown		Above 5.0cm	Unknown	
		Unknown		



Table Compiling

Empirical
Morbidity

Definition
Adjust

Volatility
Adjust

Trend Adjust

Smooth
Curve

Age
Extrapolation

Add Margin



Table Structure

**Critical Illness Morbidity Table
(2006-2010)**

CI1 (2006-2010)	6 diseases, male
CI2 (2006-2010)	6 diseases, female
CI3 (2006-2010)	25 diseases, male
CI4 (2006-2010)	25 diseases, female

**Critical Illness Morbidity Table
(2020)**

CI1 (2020)	6 diseases (old definition)
CI2 (2020)	25 diseases (old definition)
CI3 (2020)	6 severe diseases (new definition)
CI4 (2020)	28 severe diseases (new definition)
CI5 (2020)	6 severe diseases (new definition; Greater bay Area)
CI6 (2020)	28 severe diseases (new definition; Greater bay Area)
CI7 (2020)	Severe cancer (new definition)
CI8 (2020)	Severe acute myocardial infarction (new definition)
CI9 (2020)	Severe Stroke (new definition)
CI10 (2020)	Alzheimer's disease and Parkinson's disease (new definition)
MI (2020)	3 mild diseases (new definition)

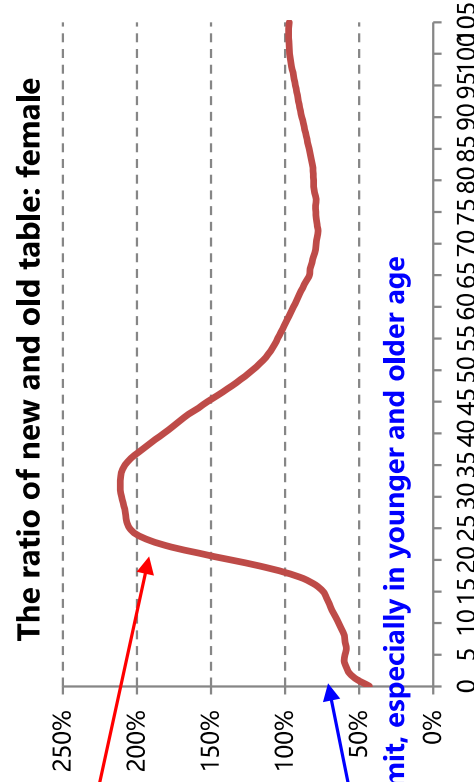
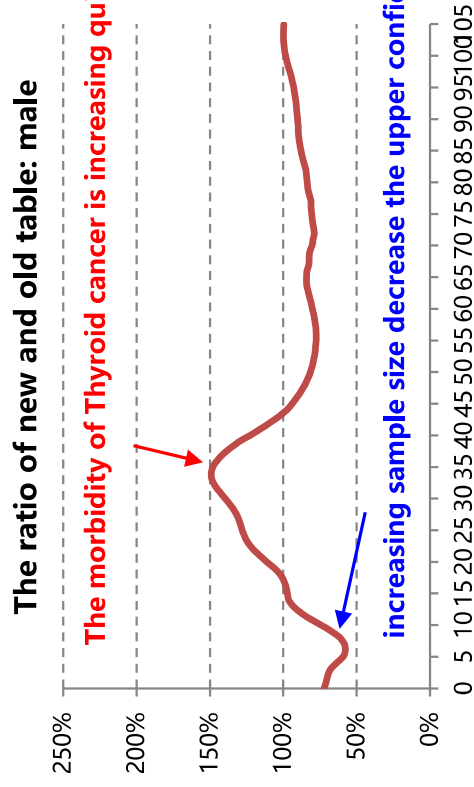
Improvement of CI(2020):

1. Constructing table for new and old critical illnesses definition separately
2. Constructing table for special region
3. Constructing table for single disease



CI3&4 (2006-2010) VS. CI2(2020)

- **Male**
 - 0-10: new table is 60-75% of old table
 - 25-40: new table is 130-150% of old table
 - 50-90: new table is 80-90% of old table
- **Female**
 - 0-10: new table is 50-65% of old table
 - 25-40: new table is 180-210% of old table
 - 60-90: new table is 80-90% of old table



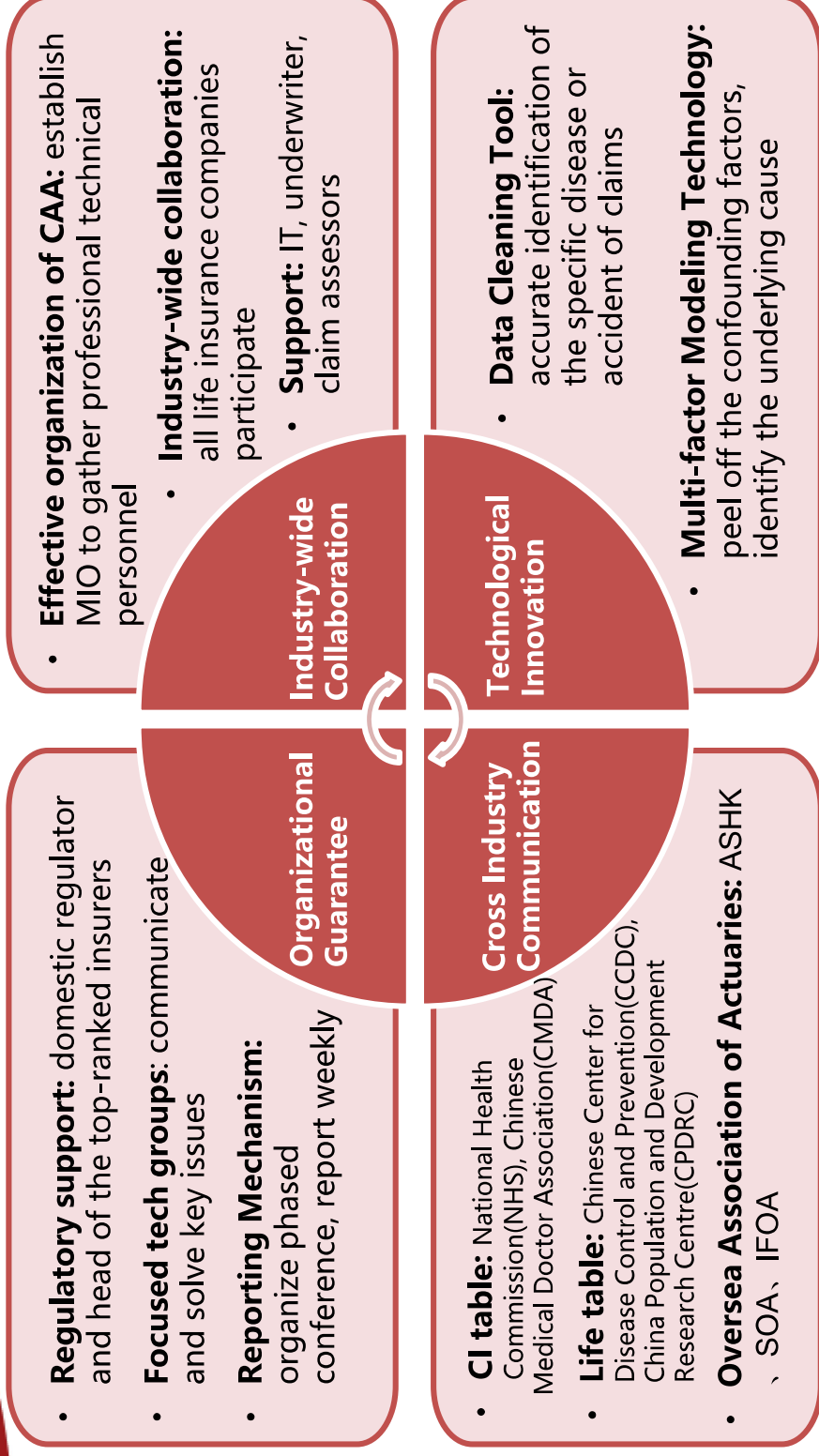
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Experience Summary



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Key success factors



Thanks



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