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2013 CAS Annual Meeting

Data Analytics and Predicting Modeling for the China Insurance Market

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Agenda

- China P&C and Auto Insurance Market Overview
- China Auto Insurance Products
- Business Environment & Data Challenges
- Data Analytics and Predictive Modeling Opportunities for the China Auto Insurance Market
- Q&A

China P&C and Auto Insurance Market Overview

- China has a fast growing market since the market opened up in 1978.

Then.....



Now!



China P&C and Auto Insurance Market Overview

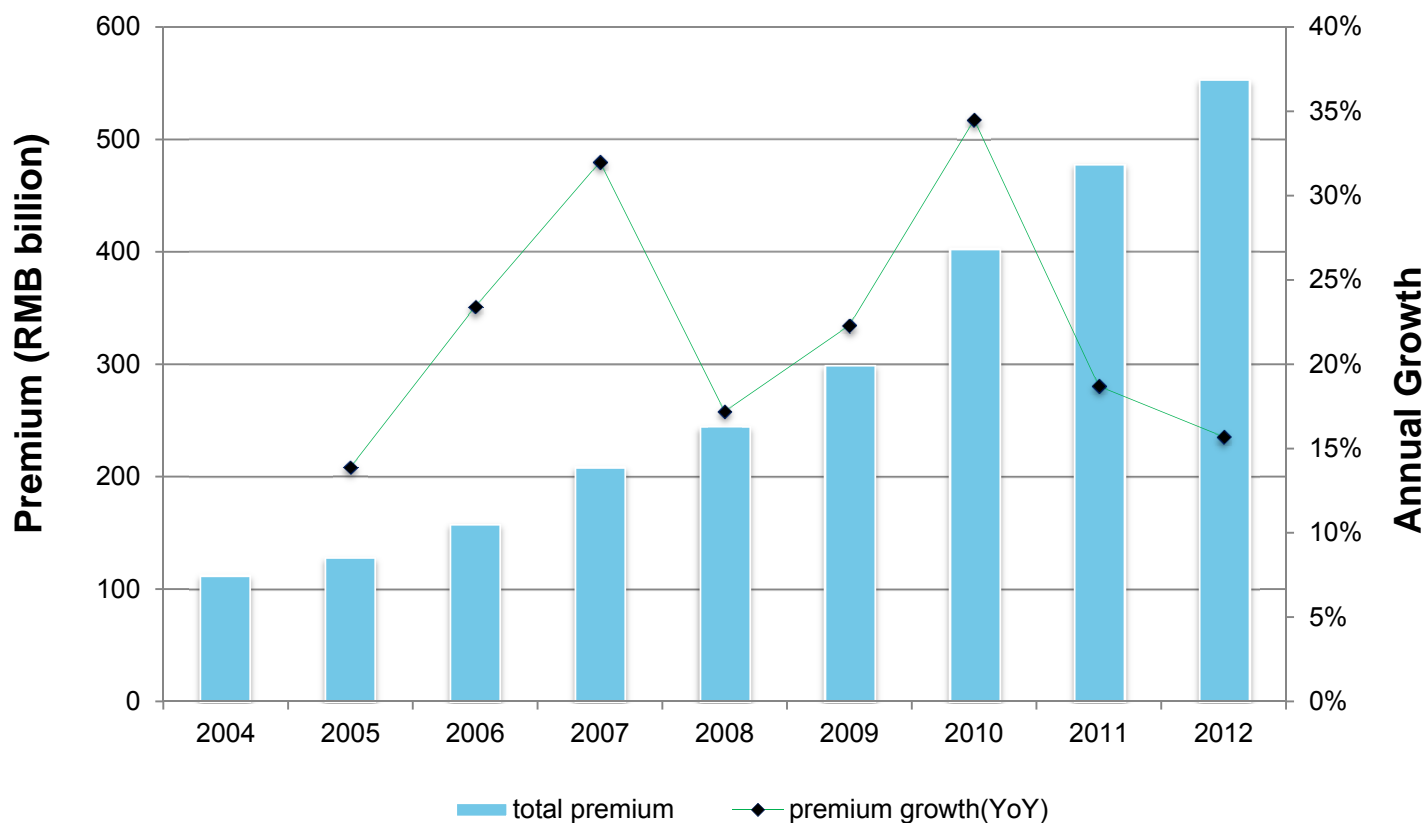
- In 2009, China took over US to become the world #1 country in auto sale, 13.6 million vs. 10.4 million.
- The annual auto sale grew from 2.4 million in 2001 to 18 million in 2011
- In 2013, the total number of registered vehicles in China hit 240 million.



Red: China
Blue: US
Per 10,000 Unit

China P&C and Auto Insurance Market Overview

- In 2012, the total P&C premium in China exceeded \$500 billion RMB (\$80 US billion). The growth rate has slowed down since 2010 to about 15%.



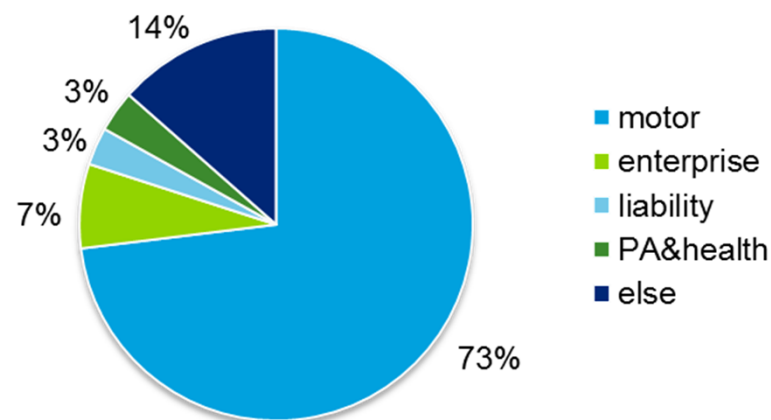
- \$1 US Dollar = 6.2 RMB

China P&C and Auto Insurance Market Overview

- As of 12/2012, there are a total 62 P&C insurance companies in China, of which 41 companies are Chinese owned and 21 are foreign owned.
- The total market share of the 20 foreign companies is only 1.2% with a total premium of 6.7 billion RMB (\$1.1 billion US dollars).
- In 2012, the top 3 P&C companies, PICC, Ping An, and CPIC, have a total of 66% market share.

	Company	Premium (RMB Billion)	Annual Growth, %	Market Share, %
1	People Insurance Company of China	193.0	11.3	34.9
2	Ping An Property	98.8	18.5	17.9
3	China Pacific Property	69.6	12.9	12.6
4	China United Property	24.6	17.2	4.4
5	China Life P&C	23.5	43.6	4.3
6	China Continent P&C	17.9	10.1	3.2
7	Sunshine Property	14.7	10.1	2.7
8	Sinosure	14.3	39.3	2.6
9	Tian An	8.1	3.9	1.5
10	Taiping	7.8	33.9	1.4

P&C Product Distribution, 2011



- Auto insurance has been the main growth engine for the China P&C insurance market. As of 2012, Auto insurance accounts for 73% of the total market, about \$57 billion US dollars.
- **\$1 US Dollar = 6.2 RMB**

China Auto Insurance Products

- There is no difference in the two auto products and their ratings between personal and commercial auto. There has been no/minimum changes in ratings and products since 2008.
- Compulsory “Take All Comers” Third Party Liability Insurance
 - Provides minimum liability coverage required by law. It covers BI with indemnity for death, medical expense, and property damage. No automobiles can be operated on the road without it.
 - The same limits (\$122K RMB limit for BI&PD&MP Staggered) are applied for all vehicles types, both personal and commercial.
 - Premium is regulated and is stipulated by a simple rating table. The premium is differed by vehicle types and few other variables with no territory differentiations at all.
 - Overall, the industry compulsory insurance has suffered UW loss in the last two years due to an increasing severity trend and no rate changes, but the performance varies widely by region due to the loss cost differentiations of fatal accident between poor regions vs. rich regions.
- Voluntary Auto Insurance for Excess Liability and Physical Damage
 - Covering both excess liability and physical damages
 - In the current China’s auto insurance market, there are 4 government approved rating plans, which are similar to each other.
 - There are two parts in each of the 4 rating plans:
 - By coverage base rating and class plan tables
 - Regulated discount rules for all coverage combined: the maximum allowed discount is typically 30% with some variation by risk and by region.

Business Environment & Data Challenges

- External economic impacts:
 - Slower growth of global economy
 - Double-digit growth no longer an easy task for China
 - Growth of automobile sales in China slowing down
- Potential future changes in pricing:
 - Maintain the current basic pricing, but gradually lower the regulatory bottom line discount
 - Allow a few companies to develop their own pricing, but all other companies still follow the same basic pricing and regulatory bottom line
 - Enforce a unified pricing in the market
- Challenges faced by the China insurance industry, especially in risk selection, UW and pricing:
 - Loss cost keeps increasing. The current practice of pricing along with the regulatory bottom line discount is no longer working appropriately.
 - Risk selection, UW, and pricing become more important due to an increase in loss trend and a lower investment return
- Since the products and pricing are highly regulated, applying underwriting models for risk segmentation and underwriting pricing has gained more popularity in the China market.

Business Environment & Data Challenges

- In China, each vehicle may have two policies, one is for a compulsory liability coverage, one is for voluntary insurance
 - The two policies could have different effective date. It creates some difficulties for product management, especially for commercial auto accounts with large number of vehicles.
 - For a given policy, policy number will change from one term to next. To link the history of a vehicle, a vehicle id must be used as a key field for linking.
 - Frequently, it is difficult to decide the key to link all policies to a customer or an account.
- Insufficient driver information:
 - In new business sales, especially the sales are from a brokerage channel, driver information is frequently not available.
 - Driver age and gender are not used as a base rating variable. They are used for premium discounting with fairly flat discount factors (see next slide)
 - Marital status is not used for either for rating or underwriting
- Vehicle symbol is not valid for either physical damage or liability
- Territory rating is not sufficient
 - Current territory rating is only by province for the voluntary insurance

Business Environment & Data Challenges

Current Driver Related Factors in the China Auto Insurance Rating Table

Factor (F12)	Gender	Years of Driving	Driver's Age				
			< 25	[25, 30)	[30, 40)	[40, 50)	≥ 50
Factor (F12)	Male	≤ 1	0.99	0.97	0.95	0.95	0.99
		(1, 5]	0.97	0.95	0.93	0.93	0.97
		> 5	0.95	0.93	0.91	0.91	0.95
	Female	≤ 1	0.98	0.96	0.94	0.94	0.98
		(1, 5]	0.96	0.94	0.92	0.92	0.96
		> 5	0.94	0.92	0.90	0.90	0.94

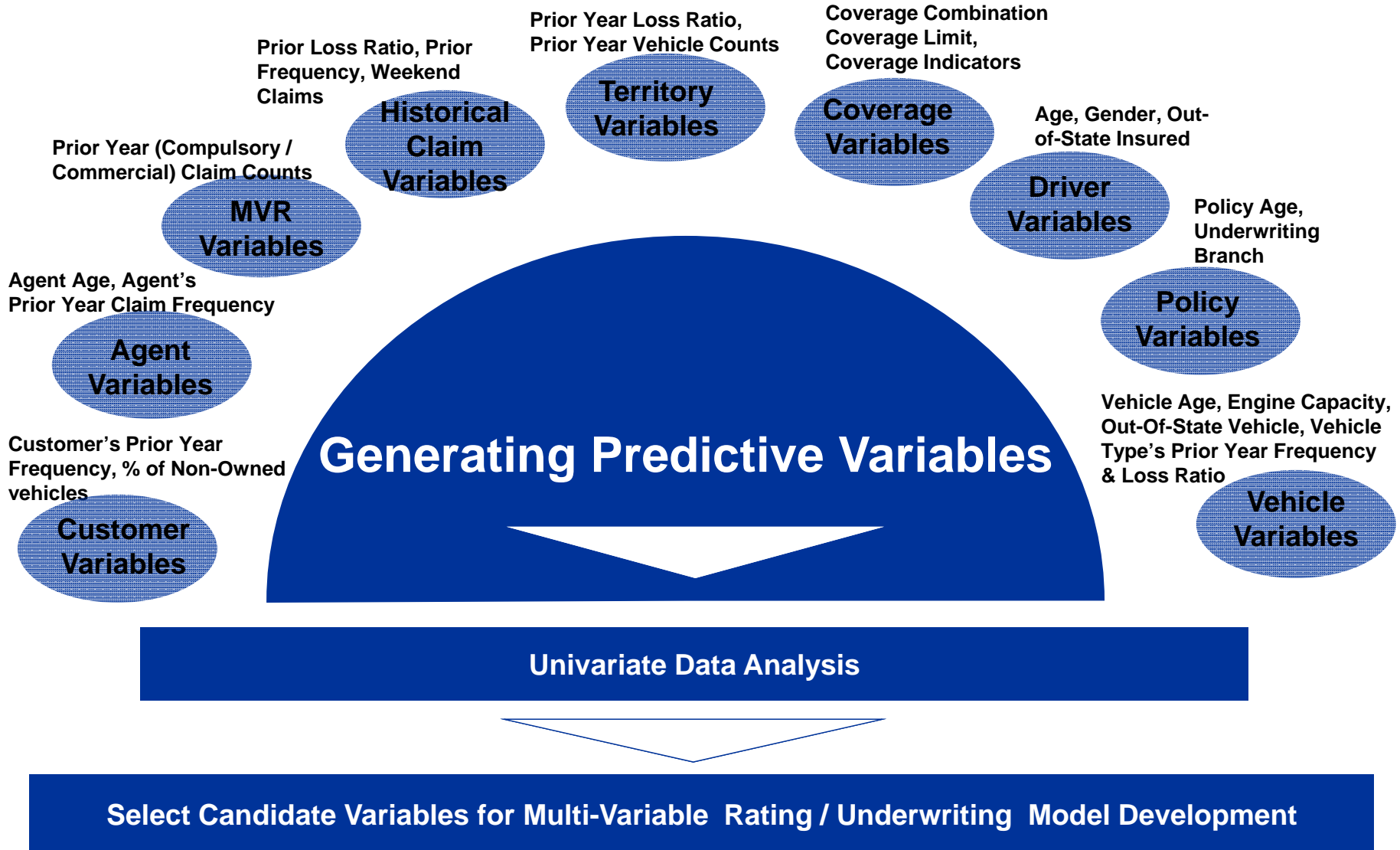
Data Analytics and Predictive Modeling Opportunities

- External Data:
 - The powerful external data resources frequently used in US auto rating and underwriting, such as credit data, demographic data, Carfax data, weather data and etc. are not available in China.
 - There are two industry data bases:
 - Industry Vehicle Type Database
 - ❑ Using make-model as key field
 - ❑ Linked fields including new car value, car weight, number of seats, engine power, etc.
 - Regulated Accident Reporting Platform (similar to MVR in US)
 - ❑ A major data source for rate discount
 - ❑ On vehicle basis, not on driver basis
 - ❑ The platform effective dates were differed by province between 2010 and 2012. The claim frequency was decreased after the platform was effective, but the claim severity was increased.
 - ❑ Separated by Compulsory Third Party Liability Insurance Vs. Voluntary Insurance

Data Analytics and Predictive Modeling Opportunities

- Predictive modeling opportunities in the China insurance market:
 - Frequency, severity, and rating models
 - UW models
 - Claim fraud detection models
 - Customer demand and price optimization models
 - Customer segmentation models
- A successful predictive modeling exercise in the China market requires:
 - Full understanding of the local market dynamics and regulatory environment
 - Careful model design
 - Creative variable generation
 - Thoughtful business implementation plan
- Our experience indicates that, even with a less ideal business environment and many data challenges, the segmentation power of a careful design model in the China market is as significant as, if not more than, the result for the US market.

Data Analytics and Predictive Modeling Opportunities



Q&A