Pricing Motor Insurance China vs UK
Dr Yan Liu, LV=
Lifeng Wang, Huatai
Eric Yang, Towers Watson
Agenda

- China
- UK
- Hot Topics
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<td>Pricing with General Linear Model（PinAn : Alex,Zhu）</td>
<td>Start to introduce motor insurance pricing practice</td>
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<td>Introduction to Motor Insurance Pricing Practice（CPIC: Meng,Liang）</td>
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<td>Managing Auto Insurance -An actuary’s business perspective（AIG: Yan,Zhongyi）</td>
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<td>No-fault Auto Insurance--Actuarial Issues（Milliman:David R.Chernick）</td>
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<td>Multivariate Classification Models in Auto Insurance Ratemaking（RUC: Meng,Shengwang）</td>
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<td>Dynamic Analysis in Auto Insurance （Haosheng ： Yu,Shenghao）</td>
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<td>Current Development and Practice of Personal Motor Insurance Pricing in UK and USA(Huatai:Wang,Lifeng;E&amp;Y:Zhang,Wei)</td>
<td>Research and share experiences on auto insurance ratemaking,from the aspects of international practice,actuarial modelling,business model,distribution channel and reinsurance,etc.</td>
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<td>Discussion of Motor Type Classification Methods （PICC:Chen,Donghui）</td>
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<td>GLM Models: Development and Practices（RUC: Meng,Shengwang）</td>
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<td>Auto insurance ratemaking and risk identification（PinAn:Zhang,Zhengyong）</td>
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<td>Personal Auto Insurance Distribution Channel and Ratemaking(Jintai Ins.:Dai,Shuyan）</td>
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<td>The Application of Actuarial Pricing in Different Business Models China Taipin: Fen,Xueyin）</td>
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<td>Ratemaking of XOL reinsurance treaty on high value cars（China Re: Chen,shen; Li,Xiaoxuan）</td>
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<td>Work shop on auto insurance pricing and its practices</td>
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<td>Discussion on Pricing Based on Auto Models（E&amp;Y:Zhang,Wei）</td>
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<td>The Application of Predictive Modeling in Risk Sifting and Underwriting(Deloitte:Allen, Sheen X)</td>
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<td>Combining GLMs and Credibility: Theory and Practice(China Continent P&amp;C Ins.:Guo,Renbin)</td>
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<td>What’s on Commercial Auto Insurance Rate Reform？（China Taipin: Dai,Shuyan）</td>
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China Motor Market

![Graph showing China Motor Market data from 2006 to 2015. The x-axis represents the years from 2006 to 2015, and the y-axis represents the percentage. The graph includes two lines: one for Car Sale% with markers indicating percentage values, and one for GWP% with similar markers. The percentage values for each year are as follows:

- Car Sale%: 29.1, 34, 26.6, 45.5, 32.5, 39.4, 16.7, 14.3, 17.9, 16.8, 17
- GWP%: 24.8, 22.3, 14.7, 6.6, 6.6, 2.7, 4.2, 6.9, 7

The graph shows a fluctuation in both Car Sale% and GWP% over the years.]
UK: Uses of GLM Models

✓ All started with Mike Brockman et al’s paper: making better use of your data
✓ Two sides of a coin: overall and segmental
✓ Pricing
  ✓ Expected Loss Ratio
  ✓ Investigation of New Factors
  ✓ Optimisation and What If Analysis
✓ Monitoring & Forecasting
  ✓ Risk Index (mix, rate strength)
  ✓ Actual vs Expected (frequency, severity, burning cost and loss ratio)
  ✓ Written Loss Ratio (against Target Loss Ratio)
UK: Total COR 2014 (exc. Ancillaries)

<table>
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<th>Company</th>
<th>COR %</th>
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<tr>
<td>DLG</td>
<td>96.20%</td>
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<tr>
<td>Admiral</td>
<td>79.50%</td>
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<tr>
<td>Esure</td>
<td>96.10%</td>
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<tr>
<td>LV=</td>
<td>101.10%</td>
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UK: Total COR 2014 (inc. Ancillaries)

- DLG: 88.20%
- Admiral: 38.10%
- Esure: 80.80%
- LV=: 98.70%
Current hot topics
How do you more accurately price a risk?

How do you make a car run faster?

Data  Analytics  IT infrastructure
Big Data?

SEE, I TOLD YOU THAT BIG DATA WAS TOO SCARY

TIME WELL SPENT™

by Tom Fishburne
Big Data Pathway

An insurer’s ability to exploit the full potential of big data analytics requires some forward and/or parallel planning.

Our view of the big data pathway

Make better use of your existing, accessible data
- Get the right IT infrastructure in place
- Ensure the data is clean, complete and robust

Enrich with directly related third party information
- Credit data for pricing and underwriting analytics
- Police crime data for fraud analytics

Penetrate inaccessible but rich proprietary data sources
- Customer telephone conversations and e-mails
- Complaints logs, general enquiries, feedback

Interrogate wider, less obvious data sources
- Unstructured and structured sources
- Use intelligent questioning and past experience

“‘Good enough’ rapid analytics may often beat ‘good’ or even ‘excellent’, slow analytics hands down.”
Advanced Analytics

GLMs:
- Entity groups
- Segmental modelling
- Multi-driver rating
- Claims and convictions

Optimisation:
- Classic optimisation
- Live optimisation
- Customer lifetime value model

Classification:
- Geographical risk classification
- Vehicle classification

Decision support:
- Best practice underwriting
- MI information
Tools – Towers Watson Pricing Software

Core Analytics

Classification:

Towers Watson Pricing Software

- Towers Watson Pricing Software
- Core Analytics
- Optimisation:
  - Classic optimisation
  - Live optimisation
  - Customer lifetime value model

- Decision support:
  - Best practice underwriting
  - MI information

- Classification:
  - Geographical risk classification
  - Vehicle classification

- GLMs:
  - Entity groups
  - Segmental modelling
  - Multi-driver rating
  - Claims and convictions

Emblem Classifier

Radar Optimiser

Radar Base
Tools – Towers Watson Pricing Software

Core Analytics

Emblem

Classifier

Radar Optimiser

Radar Base
Radar Live

Emblem

Classifier

Radar Optimiser

Main Policy Admin System

Radar Live

Radar Base
Integrated pricing process

- **Analyse MI**
  - Simple portfolio analysis
  - Emerging experience is examined against expected results

- **Develop Models**
  - Claims, behavioural and customer lifetime value models built and refined

- **Refine results**
  - Commercial considerations developed

- **Pricing Committee Approval**
  - Interactive analysis

- **Deploy to Live**
  - Models and test results checked on staging environment
  - Later escalation to production environment
Motor insurance pricing revolution

- Traditional Pricing Method
- Data
- Analytics
- Software

- Telematics or Usage-Based Insurance ("UBI")
- Global deployment
- Customer and insurer value
- Towers Watson Customer Survey
UBI widespread development underway globally

**U.S. and Canada**
Significant UBI penetration and established programs

**Europe**
In general, behind U.S. Varies significantly by country. More smartphone focus

**Asia**
Limited activity, but emerging interest by the major insurers (particularly China)

**South America**
Companies beginning to consider UBI

**Africa**
Strong emergence in South Africa where telematics sensors prevalent due to theft

**Australia**
Small pilots being considered
UBI – Evolution of value adding (Customer)

- **Insurance Discounts**
  - Discount driven, leverage self-selection

- **Value Added Services**
  - Customers opt (and pay) for services they value
  - Insurer uses these to differentiate product

- **Personal and Family Security**
  - Parent-teen relationships
  - Enhances overall value of insurer/customer relationship

- **Behavioral Change**
  - Potential to save lives and significantly impact profitability
  - Compelling proposition for the broader market beyond the “self selectors”
  - Creates long-term customer “stickiness”
UBI – Evolution of rating (Insurer)

Risk Proxies
- Estimated Mileage
- Garage Location
- Prior claim history

Utilisation
- Number of trips
- Time of day
- Mileage

Simple Behaviours Using Event Counters
- Acceleration
- Brake
- Cornering
- Excess Speed

“PAYD”

“PHYD”

Full Behaviour Rating
- Maneuvers
- Anticipation
- Aggression
- Adaptability

Behaviour Change
Towers Watson UBI Consumer Survey

1 Survey

9 Countries

19 Questions

Dec – Feb
Update 2014 July for
U.S. and Brazil

1,000+ From each country
The marketplace is ready for UBI

Definitely or probably interested in U.S.
52%

Would be open to UBI in the U.S.
79%

Percent interested in UBI, by Country

U.S. Interest in UBI

Definitely or probably interested
52%

May be open to UBI
27%

Not interested
21%
What are insureds’ main concerns?

**Money**
- **49%** worried that premium will increase

**Privacy**
- **40%** worried about sharing their data

**Claims**
- **38%** worried claims will be invalidated

Companies should address concerns through product design

Interest in UBI With Risk of Surcharge
- Interested 62%
- Not Interested 11%
- Maybe 27%

Interest in UBI Without Risk of Surcharge
- Interested 50%
- Not Interested 20%
- Maybe 29%

Money

Privacy

Claims
Value added services

Value Added Service, Ordered by Interest

Percent Interested

20%  40%  60%  80%  100%

Vehicle Theft Tracking
Automated Emergency Call
Vehicle Wellness Reports
Breakdown Notification Service
Fuel Efficiency Tips
Navigation
Real Time Driver Feedback
Safe Driving Tips
Journey Logs
Geo-Fencing Notifications
Gamification of Driving Behavior

72% of those interested in UBI are willing to pay for value added services

$7.50

61% of those interested in UBI are willing to pay between $3.75 and $7.50 per month for value added services
Large appetite for behavioral change

60% of those interested in UBI are willing to change their driving behavior.

- Sticking to speed limit
- Keeping distance
- Driving more considerately

are top three behaviors people are willing to change.

*Percentage taken of those that indicated they are willing to change behavior (i.e. ignores those who are not willing to change behavior).
What next?

Traditional Pricing Method  Telematics or UBI  What next?

NOW...  OMG, THERE'S NOBODY DRIVING THAT CAR!

THE FUTURE...  OMG, THERE'S SOMEBODY DRIVING THAT CAR!

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Driverless cars – current status

$1.3 trillion
Forecast of annual savings from lower fuel consumption and road accident in US

10
Forecast of reduction in road accident by a factor of

57%
Acceptable of the technology with Brazil, India and China most willing to trust driverless cars

Multiple countries
Passed legislations permitting driverless cars on public roads

2020
Expected to be made available to public

1980
First self-sufficient car appeared in Carnegie Mellon University's Navlab

1.1 million km
autonomous miles logged by Google

1
accident during the trial

$1.3 trillion forecast of annual savings from lower fuel consumption and road accident in the US. A forecast of reduction in road accident by a factor of 10. 57% of people accept driverless technology in Brazil, India, and China. Expected to be made available to the public in 2020. First self-sufficient car appeared in Carnegie Mellon University's Navlab in 1980. 1.1 million km autonomous miles logged by Google. 1 accident during the trial.
Death to motor insurance?

Driver Assistance
- Phase 1
  - Proximity sensors
  - Reversing camera
  - Auto emergency break

Driverless Options
- Phase 2
  - Driverless mode
  - Deployment in designated area

Mixed Vehicle Population
- Phase 3
  - Standard and driverless co-exist

All driverless
- Phase 4
  - 100% autonomous

Transfer of risk from driver to manufacturer
Questions?