Measuring competitiveness simply

Working Party

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Section 0. Summary

The paper considers the items that have to be analysed in order to assess the competitive position of a company and looks at current methods used. An alternative method is proposed. Advantages and disadvantages of this method are discussed.

The paper also shows the results of a comparison of declared and actual rate increases together with the results of a mystery shopping exercise. These analyses are commented on and the implications that these have on assessing competitive position considered.

The paper is an initial report on monitoring competitiveness and the Working Party will be continuing their researches over the Summer months in order to report in more detail at the conference.

All data used by the Working Party was generated using the Praemium system from EL Systems which uses the Cheshire Data systems rating engine, a database of motor premium rates contributed by broker companies. The working party would like to thank EL Systems for all their help.

Section 1. Introduction

The aim of the Working Party was to derive statistics that will give simple, easy to assimilate measures of competitiveness and, if possible, to use these statistics to predict business volumes. The Working Party has restricted their investigations to personal lines motor and household insurance.

Background

The need for this Working Party has arisen from the ever increasing heterogeneity of the current motor and household insurance markets. Because of the following factors, it is rapidly becoming more difficult to make any fairly quick, sensible judgements on the competitiveness of a product:

- There are an increasing number of companies offering motor and/or household insurance, all of which should be included in any analysis of competitiveness if possible.

- The number of schemes that each company offers is also increasing; for example Eagle Star currently has four different household schemes. This substantially increases the number of rating sets that need to be analysed.

- The direct writing companies (companies which advertise on television and in newspapers and which policyholders contact direct via the telephone, i.e., not via a broker or agent) are very secretive about their premiums. Their premiums are available only via mystery shopping (a large scale sampling exercise by telephone) which is expensive.

- Risks are not rated consistently across the market. For example Company A may rate postcode district W13 in their rating area 10 (out of 12) whereas Company B rates it as their area 4 (out of 8), i.e., company A regards the risk as very risky but Company B regards it as less risky.

- Companies have different rating structures. For instance Company A may use age of policyholder as a rating factor but Company B does not.

- The number of rating factors that companies are using to set premiums is also increasing. This causes significant problems when trying to measure competitiveness as each additional rating factor used adds to the number of combinations of rating factors that needs to be analysed.

- The time to get rates to the market is also (generally) reducing. Direct writers and some broker companies can change their premiums on a daily or even hourly basis.

Further, the anticipated increased use of Polaris based products will also serve to reduce the average 'time to market'. Polaris is a single consistent platform for distributing rates to brokers. Pre Polaris, insurers wanting to change rates had to specify the rates to each software house individually, wait for them to implement the changes and check them individually. This meant that work had to be done several times instead of once. This can cause a delay of up to six weeks between the rating decision and going live. It is also expensive. The Polaris system means that insurers set the rates up once in exactly the form required, check it once and send it to the software houses who can upload it immediately with no additional work. The delay from rating decision to implementation is potentially reduced to one day. Hence any analysis of competitiveness needs to be quick, otherwise it will be out of date before the base premium data can be analysed.

- The number of distribution channels used for selling insurance is increasing with the Internet being the latest addition. Given that prices are likely to eventually vary by outlet there is going to be a need to measure competitiveness by distribution channel as well.

Further, companies often declare the average change in their Motor and Domestic Household rates. Some may feel that this would be an adequate 'quick and dirty' method of measuring how the market in general is moving and, hence, how the competitiveness of their particular (motor or household) product is changing over time, reducing the need for frequent analyses. To test this theory, we randomly picked two companies who had declared an 'average' change in their rates between two months and analysed the actual change in 1,000 random quotes over the same period. The results are shown in Section 2 and Appendix 1 and clearly demonstrate the problems associated with relying on publicly declared information – the emphasis has to be on you doing your own analysis on a frequent basis and reaching your own conclusions in the context of your current and target market and your own rates.

Section 2. Current methods of analysing competitive position.

Most companies will have access in some form to competitors premiums, either by having purchased one of the computerised quotation systems (see Appendix 3 for a description of these) or by exchange of rates via some market agreement. Of course, not all companies' premiums will be readily accessible (e.g., direct writing companies).

In this section, we look at methods that we believe are currently used and comment on the pros and cons of each. In practice, a combination of these approaches will be used.

Approach 1

Using your own rating structure, pick a sample risk from each rating area, and perhaps for each level of other rating factors. This sample risk could be based on the company's "average" risk in that cell. Find your competitive position for each cell. Use this to decide whether you are competitive where you want to be.

Advantages

- Can give a feel for how your rating compares to others'
- Quick and easy to carry out
- If only a few rating factors are used, the results are easy to assimilate

Disadvantages

- The sample risk could be biased, and give an incorrect view of the position
- The sample risk is unlikely to reflect the actual make up of the market
- Have to make assumptions on the rating factors used by other companies but not ours

Approach 2

Collect feedback from policyholders, brokers and/or salesmen. This can be pro-active, via a focus group or questionnaires, or reactive, by waiting for complaints.

Advantages

- Get information on real risks and the issues that concern interested parties
- Investigations would be based on "real" quoted premiums

Disadvantages

- Hit and miss. Again, the sample could be biased

- Is likely to tell you what you already know

EXAMPLE

A sales outlet complained that postcodes in one region had been moved up several rating areas by the insurer, making them much more expensive than previously. This made it much more difficult to write business for this insurer in this area.

The two postcode districts have a very high proportion of London clay (which dramatically increases the risk of subsidence claims) in them, although this is not in every sector. The insurer has information by sector which shows that three sectors have no London clay and these sectors have lower rating areas than the other sectors. In fact, the insurer has reduced the rating areas for these sectors over the past few years. (Note that the presence or absence of London clay is not the only factor affecting the decision on rating area allocation - the risk of claims from other perils also has an effect. However, the main driver is the London clay.) A quick analysis of competitive position shows that the insurer is cheap in the postcodes with no London clay. The rating areas of the other sectors reflect the relative proportions of London clay in them.

As the insurer believes that London clay is one of the main causes of subsidence it charges higher rates to avoid anti-selection. Looking at competitors' premiums shows that they have achieved this in most sectors.

The feedback from the sales outlet has confirmed the insurer's position, but will probably not cause them to change it.

Approach 3

Comparing differences between actual and declared rate rises using declared rate rise information.

Companies often declare to other insurers and/or the press the average change in their Motor and Domestic Household rates. However, it is an "average" change and can often mask the true changes on certain segments of the account.

To demonstrate this point, two companies were chosen at random and their declared change in rates from one month to the next was compared to the actual change in premiums. Details are shown in Appendix 1.

Advantages

- Quick and easy to carry out

Disadvantages

- Can produce misleading results

Approach 4

A company can carry out a mystery shopping exercise by telephoning insurance companies with a variety of risks and asking for premium quotations. The telephoning may be done by a third party. The Working Party carried out such a mystery shopping exercise and the results are shown in Appendix 2.

Advantages

- You can get access to information that is not available on software systems.

Disadvantages

- It takes a long time to do (and so is expensive).

Section 3. Description of use of quotation systems

Quotation Systems are used mainly in two arenas of General Insurance

- Insurance brokers
- Insurance companies, who use them for

    ⇒ Rate checking

    ⇒ Competitive positioning

Insurance brokers

Their first and most widespread area of application is in the Insurance Broker's office. Brokers use Quotation Systems to run quotes for their customers in order to generate business. Brokers will normally run each risk against the market (i.e., a number of schemes). They will then advise the customers as to which scheme is best for them based on factors such as price, reputation of the company behind the scheme, additional features offered along with the policy etc. Brokers normally have the ability to run quotes for all the main schemes that are available in the market, even if they do not have agency agreements with those companies.

Insurance companies - rate checking

The second area of application for Quotation Systems is in that of the Insurance Company. Insurance Companies use Quotation Systems for a variety of different applications. A major application for Quotation systems in the this environment is to check that the software houses responsible for maintaining the rates on the various quotation systems are providing accurate data to the market. Insurance Companies provide scheme Underwriting Criteria to software houses, who then place it on their various quotation systems, and issue the data to the brokers. It is therefore vitally important for the Insurance Companies to check that the quotation systems are quoting accurate premiums for their schemes in the market.

In order for Insurance Companies to maintain checks on the data integrity, large amounts of data covering as wide a spread of risk combinations must be processed regularly. Most quotation systems have the ability to process large amounts of quote data in a relatively short period of time, either by running quotes through in batches, or by creating fictitious data using a Risk Generator, or by importing 'live' business from their own administration system.

Insurance companies - competitive positioning

Another major use for Quotation Systems by Insurance Companies, is to run various risks against competitor schemes to assess competitiveness. In today's fiercely competitive market, it is necessary to be able to have a thorough picture of what your competitors are providing. The larger the combination of risks that can be processed, the more accurate the analysis. Results from these runs can show the relative position of a scheme in the market. In order to analyse the results that have been generated, Quotation Systems usually have facilities to export the results to a variety of Industry – Standard software packages for further analysis, as well as being able to design user defined reports. Results from the Market Analysis may simply be used for Management information, or be used by the marketing/underwriting department to target different areas of the market by re-defining some underwriting criteria.

In order to be able to find niche areas in the market and design competitive products, some Quotation Systems have Modelling features, which allow the user to create schemes based either on existing Underwriting Criteria, or in the case of some of the more advanced systems, create schemes based on any Underwriting Criteria. By creating Model Schemes, the user can then make changes to their own products, or new ones, and re-run their market batches to ascertain whether they have become more competitive.

The ability to do historical analysis is also available to Insurance Companies on some Quotation Systems. Risk data can be run over historical time periods, to provide an indication of the movement of the market as a whole, or to track the movement of an individual scheme, or schemes over time. However, it should be noted that some systems hard code data and this can lead to problems, e.g., when postcodes and rating areas are hard coded.

Software

There are various market modelling systems currently available in the Personal Lines market which enable the user to run batches of quotes for motor and household products in order to model and assess the general competitive position of the market.

Obviously, to carry out any analysis of competitiveness of a product, some measure of the premiums being charged by the market is required involving the use of a competitive market quotation system. The following table lists the comparative market modelling software known by members of the Working Party to be available as at December 1997. A fuller description of each system, including a description of their functionality, hardware requirements, estimated run times, price etc, is given in Appendix 3.

Name of	**Name of software**	**Classes of business covered**

company		
CDL		Private car, motor cycle, commercial vehicles
EL systems	Praemium	Motor, household
ISL	Whatif?	Household, private car
Sprintgrace	Probe	Household, private car, motor cycles, commercial vehicles

Section 4. Description of analyses

Procedure

The Working Party considers that any analysis of a product's competitiveness needs to look at three separate components – namely **price, structure** and **features**.

- '**Price'** refers to the premiums being charged.
- '**Structure'** refers to the rating structure both currently and in the past. This will allow an analysis of the current competitive position and also the historical position to be assessed.
- '**Features'** refers to special features of companies' products such as (compulsory and voluntary) excesses, vehicle terms, driving restrictions, courtesy cars, accident assistance etc,.

More detail of how each of these components can be measured/assessed in today's competitive marketplace is given below.

Comparison of Price

The Working Party picked a company/scheme at random and calculated various statistics such as:

- the average competitive position of the chosen scheme premium, i.e., cheapest, second cheapest etc;
- the deviation in both pounds and percentage terms of the chosen scheme premium from the **mean** of the top 10 premiums, (for each risk individually and then averaged overall);
- the deviation in both pounds and percentage terms of the chosen scheme premium from the **median** of the top 10 premiums, (for each risk individually and then averaged overall);
- the deviation in both pounds and percentage terms of the chosen scheme premium from the **cheapest** premium, (for each risk individually and then averaged overall);
- the number and percentage of times that the chosen scheme premium comes in the **top 3** premiums;
- the number and percentage of times that the chosen scheme premium is more

expensive than the **premium in 10th position**;

- the number and percentage of times that the difference between the chosen scheme premium and the **average of all** premiums for a risk is **10% or more**;
- the number and percentage of times that the difference between the chosen scheme premium and the **average of the top 10** premiums for a risk is **10% or more**;
- the number and percentage of times that the difference between the chosen scheme premium and the **average of all** premiums for a risk is **less than 10%**;
- the number and percentage of times that the difference between the chosen scheme premium and the **average of the top 10** premiums for a risk is **less than 10%**;
- the number and percentage of times that the chosen scheme premium **is within 2 standard deviations** of the average of all premiums for a risk;
- the difference between the **cheapest and most expensive** premium, calculated for each risk individually and averaged over all risks, (expressed as a percentage of the cheapest premium). This is not dependent on the scheme chosen and is used to put the other measures in context, to see whether the range of quotes is narrow or wide.

Note: As we are measuring competitiveness, some measure of the number of people quoting in each cell was also required. Hence statistics on the number of times the chosen scheme premium did not quote, together with the number of companies/schemes quoting in each cell were also calculated.

All data used was as at February 1998.

Results will be presented at the conference.

Comparison of the Structure

To calculate the statistic, we produced a **result** for each cell (combination of rating factors). Over the Summer, this will be used to compare rating structures of the chosen company to the market by fitting a model to the selected rating factors to explain the results. At this point academic resources will be used. Models included will be GLMs and possibly the use of neural networks.

Comparison of Features

There does not seem to be a natural way of analysing these in a numerical / statistical manner. Obviously knowledge of the product and the market is essential here, making the close involvement of the Underwriter / Product Manager in this stage of the process

paramount. Marketing departments will also need to be involved in terms of assessing the relative appeal of various features and to whom they would appeal.

A list of example features for private motor insurance is shown in Appendix 4.

Section 5. Data

Rating factors

Ideally the working party wished to analyse premiums for every combination of rating factors used in the market. It soon became apparent that this would generate so many data items that analysis would be impossible without a supercomputer.

To try to reduce the number of cells, the working party cut back on the number of rating factors and the levels of each rating factor. Initially, we produced the following list of factors:

Factor	Values	#
Age of driver	19, 25, 40	3
ABI vehicle group	1-15	15
Vehicle age	0, 3, 6, 9, 15	5
Postcode	district	3,000
Gender	M, F	2
Mileage	10,000 pa	1
Driver only	Y	1
Clean risk	Y	1
NCD	2 years, full	2
Protected	No	1
	Total	**2.7m**

Selection of postcode districts

An explanation of how UK postcodes work is in Appendix 5.

When we started to produce the data it soon became apparent that running data for all postcodes would take an enormous amount of time. We decided to take a sample of 10% of postcode districts that would be representative of the UK.

There were several possible options:

- Random selection of postcode districts. However, we could not be sure that the sample obtained would be truly representative. (This type of selection produces a **random sample**).

- Base random selection on the nature of the location e.g. urban, rural etc. This ensures that we have a number of postcode districts in every type of area and this should provide a better selection of risks. A proportionate number of postcode

districts can be selected from each subset in one of two ways:

⇒ Select typical risks within each subset. However, these typical risks are biased towards the criteria used to create the subsets. This is a **representative sample**.

⇒ Select a random sample of postcode districts within each subset. This type of selection of postcode districts produces a **stratified sample**. A stratified sample should improve accuracy if the subsets are relatively homogenous. The Gallup Poll, Harris Poll etc use stratified sampling because of the greater accuracy with smaller sample sizes, as compared with simple random sampling.

The sample size determines the accuracy of the analysis and is dependent on:

- Variance of the population (either within each subset, or the overall population).
- Analysis being performed e.g. the desired accuracy of the overall competitiveness estimate.
- Significance tests on the data that will be performed.

Without any of the above information, a sample size cannot be calculated.

For any given sample size, we believe that a stratified sample would give the best estimates. However, we were unable to find any method of stratifying the data without access to any insurer's experience. For this reason, we chose to select a random sample. In a "real life" environment we would recommend stratifying postcode districts with reference to the claims experience of the major peril for the class of business or cover being considered, e.g., for household contents business theft claims experience would be used.

Companies

Initially the working party planned to include all companies in the analysis. It soon became apparent that this significantly increased run times and added little to the analysis as many companies had special schemes which did not quote in the majority of cases. To reduce the size of the database the working party restricted the analysis to only those companies which quoted in the majority of cases and to one scheme from each such company.

Reduction of number of cells

We recommend in Section 8 that the analysis is initially performed for a segment of the market. In order to reduce the size of the dataset under consideration and hence the time needed to analyse it we selected the following market segment:

Factor	Values	#	Comment
Age of driver	19	1	We restricted the segment to young drivers
ABI vehicle group	1-10	10	Young drivers with high group cars will probably be insured by specialist insurers.
Vehicle age	0, 6, 15	3	
Postcode	district	300	See above
Gender	M	1	We restricted the segment to males
Mileage	10,000 pa	1	
Driver only	Y	1	
Clean risk	Y	1	
NCD	2 years	1	Young drivers won't have had time to build up full NCD.
Protected	No	1	
	Total	**9,000**	

The reduction in the number of cells for analysis means that the Working Party will be able to test the statistics over a period of time.

Summary

We finally produced a dataset comprising approximately 270,000 items for 56 companies.

Comment

The working party aimed to present a paper showing how, with the right data, some complicated analysis could be done which produced a simple statistic - simple in the sense of being easy to assimilate - which showed quickly what a company's competitive position is. As with many GISG working parties we struggled with data. Unlike many GISG working parties, our struggle was not with obtaining data - EL Systems were very helpful and provided all the data we requested - but with the volume of data.

Even after reducing the number of rating factors and levels of rating factors, after reducing dramatically the number of postcodes for analysis, it took hours of processing time to produce the required datasets. The datasets were produced in text format and had one field for each rating factor, and two fields for each scheme considered - position and premium. Unfortunately the position field was unable to be filled.

Once these had been circulated to the members of the working party more time had to be spent adding a value in the position field. This is complicated by schemes which do not quote. The process again took hours of processing time. The working party used

Paradox to analyse the database.

The working party concludes in Section 8 that any analysis of competitive position must be done quickly if it is to be useful. However, if a company plans to use the methods outlined in this paper and expanded on in our presentation, we would recommend that they invested in high specification computers and worked closely with their software suppliers to obtain data from systems in exactly the format needed.

Section 6. Use of the analyses

Use of the results

The statistics developed can, we believe, be used in the following ways:

- A simple statistic for financial reporting which needs to be easy to assimilate. This will impact on the following areas:

  ⇒ Estimation of business volumes

  ⇒ Analysis of retention rates

- More detail for monitoring possible areas of anti selection or unintentional over pricing. This will include

  ⇒ Analysis of problem areas, e.g., young drivers in high car groups, subsidence areas and flood areas for the company.

  ⇒ Knowing where to tell the sales force to stop selling.

  ⇒ Feeding into reserving, i.e., allowing for the effects of the underwriting cycle and the company's actual rating on loss ratios.

- More detail to assist the sales force in targeting competitive but profitable areas.

A use would also be to plot over time to compare to retention rates for renewals.

Predicting volumes of business

Once the statistic is tested we can look at it historically to see how useful it is as a predictor of business volumes. Predicting new business and renewals will be looked at separately with the Price Elasticity working party.

Section 7. Caveats

As with any analysis of this nature there are various caveats which will impact the validity of the findings. The main issues identified by the Working Party are outlined below.

a) Missing Premium Data

Certain data is missing from the analysis.

- No Direct Writer premiums are included in any of the available competitive market quotation systems which means that they will be missing from any analysis. Allowance for these can only be made subjectively or by large, time consuming and expensive mystery shopping exercises usually carried out by a third party.

- The different market quotation systems available have different companies and schemes on them, making any comparison of competitive position limited if only one system is used. However, using more than one such system would greatly complicate the analysis.

b) Incorrect/Differing Premium Data

As outlined in Appendix 2 the Working Party has found that the different market quotation systems do not always quote the same price for the same risk, with the percentage differences in some cases being extremely marked. It is not known if the differences are caused by errors at the underlying software house or by actual (deliberate?) differences in the rates quoted by companies via different software houses.

c) Niche Players

It is difficult to allow for niche players, hence such segments of the market, (e.g. exotic/high value vehicles such as Porsches etc.), should be analysed separately, with the relevant niche players being excluded from the main / normal analysis.

d) Objective Versus Subjective Analyses

The analyses carried out by the Working Party concentrated solely on (objective) premium data obtained from a market quotation system. There was no allowance for any subjective factors such as:

- off screen activity / deals, (for example a number of companies have preferred intermediaries who can quote less than the screen rate or have

schemes whereby the intermediary can potentially get a discount if they phone up and discuss the case);

- how the consumer views the company - qualitative;

- how the intermediary views the company, (i.e. the level of goodwill) - could perhaps use BIIBA surveys for this;

- the impact of recent marketing campaigns in terms of company and brand awareness;

- differences in product features, such as different compulsory and voluntary excesses or different vehicle terms etc.. This could also include differences in commission levels, (although this could be allowed for by some off line programming/manipulation of the premium amounts);

- the method of transmitting the new business, (i.e. the intermediary's view of electronic data interchange (EDI) versus paper transmission, given the costs involved).

e) Frequency, Speed and Size of Analysis

The frequency at which rates are changed varies both by company and by software house system, (and hence, by implication, by competitive market quotation system).
Thus, all analyses should be carried out at the same point in time to minimise any distortion from using rates from different time periods and **must** be completed quickly, otherwise they will be out of date before they are of any use!
(This situation will worsen as more companies launch Polaris based products, which have a shorter time to market).

However, as products get more complicated and the number of schemes available increases, any analysis of competitive position will get more complicated and time consuming, although improvements in technology should help to mitigate this to some extent.

Note: In the work carried out by the Working Party, only one scheme from each company, (the most general scheme), was used in order to cut down the size of the analysis. However, all schemes should ideally be included - even where they are for the same company and are technically competing against each other.

Section 8. Conclusion

It might appear from the above that the Working Party had great aims and achieved very little. The Working Party would strongly dispute this! We did have great aims and are some way to achieving some of them. Along the way we have learnt much about how to approach an analysis of competitive position

- It is vital to think carefully before starting such an exercise. Plan, plan, plan!
- To speed up calculations it might be best to analyse a section of the market initially.
- Even with a lot of work the whole picture will still be unclear. The missing bits are important and should be recognised as such.

Future work

- We plan to continue to work on the analysis of rating structure.
- Next year we plan to

  ⇒ Test the price analysis "in anger". We would appreciate volunteers from different companies who would be prepared to test the statistic.

  ⇒ We plan to extend the analysis to household business.

  ⇒ There is the possibility of extending our research to other markets than the UK - again if anyone would like to volunteer to assist, we would be grateful.

Section 9. Appendix 1

Company A.

Declared rise in premiums between the 2 months = 2%.

Actual average rise in premiums over the 1,000 random quotes = 4.28%.

From this:

- 11.1% of the premiums stayed the same.
- All premiums for 45 years olds stayed the same or reduced slightly.
- 20.9% of the premiums increased by between 1% - 3%. These were all for drivers aged 55 or 65 years old.
- Biggest increases were seen for younger ages (i.e. 25/28/30) - often 6/7%.

Company B.

Declared rise in premiums between the 2 months = 2%

Actual average rise in premiums over 1,000 random quotes = 1.10%

From this:

- 78.5% of premiums decreased, with the largest decrease being 1.44%.
- 1.50% of risks remained at the same premium.
- 20% of risks saw an increase in premium, all for higher car groups, with the biggest loads being seen at the younger ages. The average increase seen on these risks was 6.27%.

This clearly demonstrates just how misleading these declared "average" changes can be!!

Section 10. Appendix 2

MYSTERY SHOPPING EXERCISE

The aim of this was to compare direct writing company quotes with broker company quotes to show the variation in premiums, and hence how even the most sophisticated analysis of competitive position will be incomplete. Three members of the working party each telephoned six companies for one quotation, although one member had to change his risk profile until enough companies would quote for the risk. Using some of the premium quotations systems we obtained broker market quotes for the same six companies as a comparison.

The quotes requested were:

Quote 1

Male	Date of Birth: 11th October 1935	Registered owner and keeper of vehicle.
	Retired teacher. Main driver.	License for at least 35 years.
Female	Date of Birth: 28th May 1936	
	Retired teacher. Second driver.	License for 25 years.

No accidents, no convictions , no physical or mental conditions. Never been refused insurance.

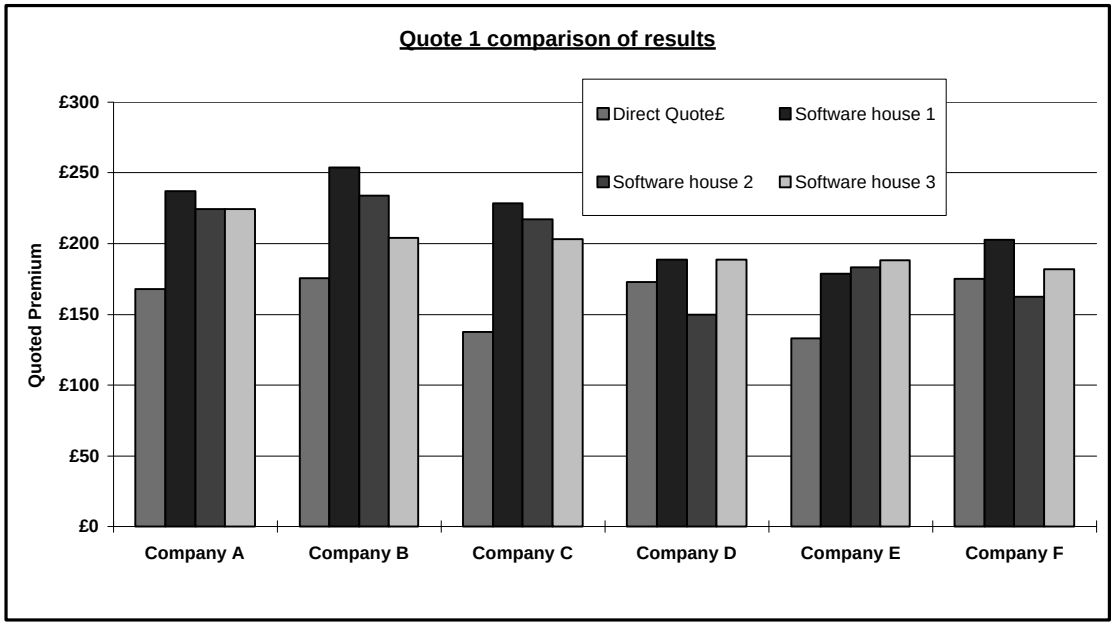
Maximum NCD (earned privately not from company car), protected. Fully comprehensive required.

Registration: N227 EWA, Peugeot 306 XLDT, 1.9cc, five door hatchback, 1995 registration.
Alarm and immobiliser, no modifications, right hand drive. Market value £8,655 (was what one insurer told me). Garaged.

Social, domestic and pleasure use only. 6,000 miles p.a. max. Renewal: 20th January.

The quotes obtained were:

Company	Direct Quote £	SWH1 Quote £	SWH2 Quote £	SWH3 Quote £	% Commission SWH Quote	% Difference Direct v SWH1	% Difference Direct v SWH2	% Difference Direct v SWH3
A	167.91	237.12	224.64	224.64	10.00	-20.75	-15.35	-15.35
B	175.55	253.75	234.00	203.84	10.00	-30.70	-24.85	13.73
C	137.65	228.63	217.18	202.98	10.00	-39.78	-36.61	-32.18
D	172.92	188.73	149.58	188.73	12.50	-7.40	15.80	-7.40
E	133.20	178.80	183.04	188.40	15.00	-24.88	-27.23	-19.95
F	175.22	202.80	162.24	182.00	12.50	-13.60	-8.00	-3.73



Quote 2

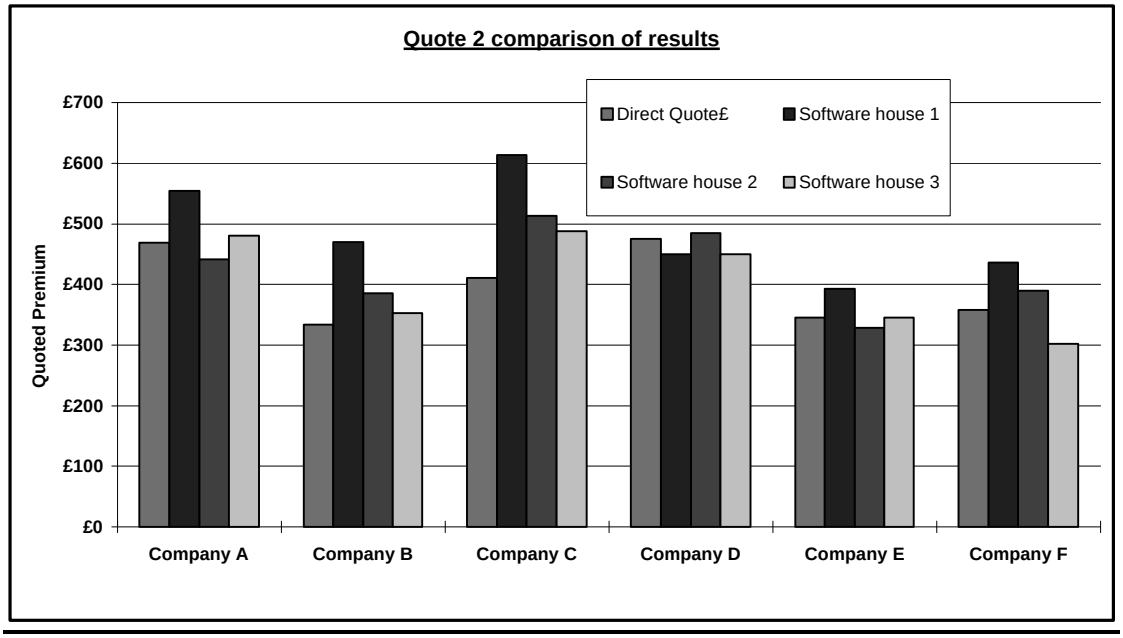
Male Date of Birth: 8th August 1967 Registered owner and keeper of vehicle. Accountant. Main driver. License for 9 years.

Female Date of Birth: 4th January 1968 Occasional use. Housewife. Second driver. License for 9 years.

No accidents, no convictions , no physical or mental conditions. Never been refused insurance. 4 years NCD, wants protected if possible fully comprehensive. Registration: CM2 9JH, Brand new BMW 316I, Toning manual. Immobiliser, tracker, right hand drive. Market value £15,000. Garaged. 12,000 miles p.a. max. Renewal: 1st February.

The quotes obtained were:

Company	Direct Quote £	SWH1 Quote £	SWH2 Quote £	SWH3 Quote £	% Commission SWH Quote	% Difference Direct v SWH1	% Difference Direct v SWH2	% Difference Direct v SWH3
A	468.56	554.32	440.85	480.48	10.00	-15.47	6.26	-2.48
B	333.33	470.08	385.84	352.56	7.50	-28.09	-13.61	-5.45
C	411.00	613.20	513.23	488.07	10.00	-32.97	-19.92	-15.78
D	474.77	450.24	485.08	450.24	12.50	5.45	2.08	5.45
E	345.09	393.12	328.64	345.51	15.00	-12.22	5.01	-1.01
F	358.10	435.76	390.00	301.80	12.50	-17.82	-8.18	18.73



Quote 3

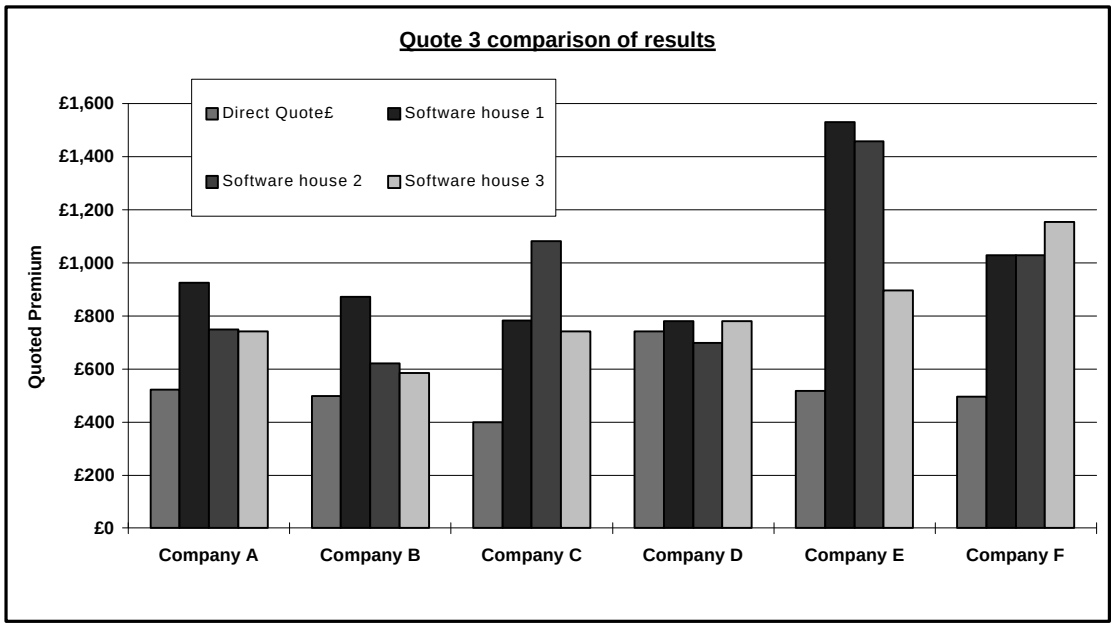
Male 25 years old. Driver only. 8 years driving experience.

No NCD, no claims, first insurance policy, no security, no legal cover. Fully comprehensive required.

Registration: N134 HLD, Fiat Punto 44SX 3 door, 1100 cc, 1996 registration.
Market value £5,500. Parked in drive not garaged. Postcode: W13 0EL.
Social, domestic and pleasure use only. 6,000 miles p.a. max. Effective: 1st February 1998.

The quotes obtained were:

Company	Direct Quote £	SWH1 Quote £	SWH2 Quote £	SWH3 Quote £	% Commission SWH Quote	% Difference Direct v SWH1	% Difference Direct v SWH2	% Difference Direct v SWH3
A	523.32	925.00	749.84	742.56	10.00	-43.46	-30.21	-29.52
B	497.07	870.50	619.84	585.52	7.50	-25.90	-19.81	-15.11
C	399.02	781.75	1,080.91	742.66	10.00	-48.98	-62.39	-46.27
D	740.67	779.38	697.78	779.36	12.50	-4.95	6.15	-4.96
E	516.46	1,531.29	1,457.21	895.56	10.00	-66.27	-84.58	-42.52
F	495.95	1,027.52	1,027.52	1,152.32	12.50	-51.73	-51.73	-56.96



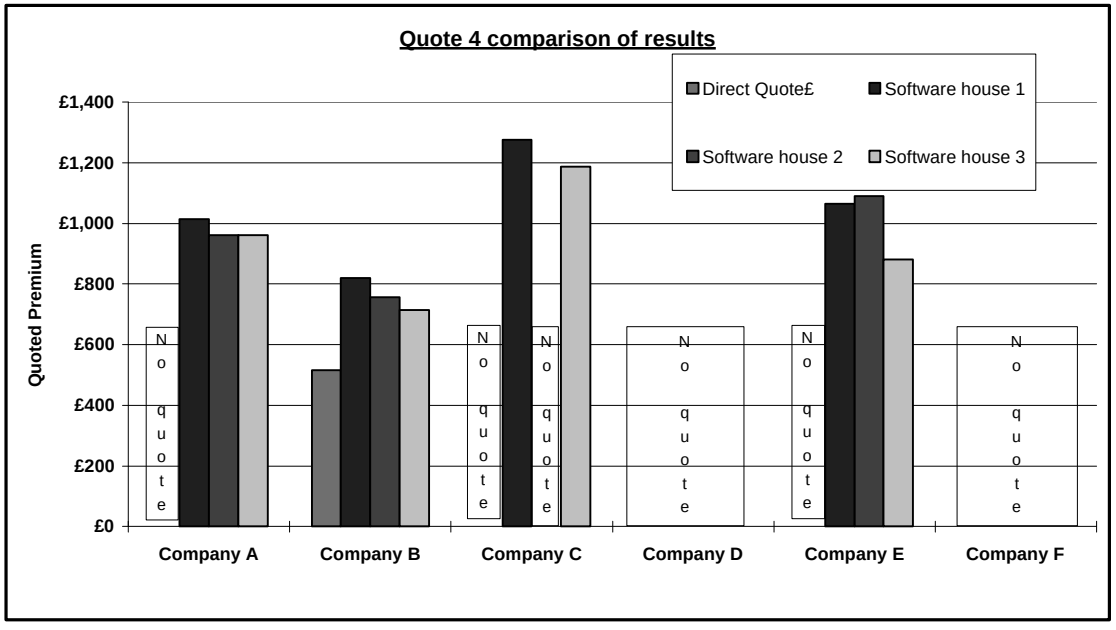
Quote 4

Male 19 years old. Driver only. 1 year driving experience.

No NCD, no claims, first insurance policy, no security, no legal cover. Third party fire and theft. Registration: CM2 9JH, Mini Mayfair 2 door - 92J, 1300 commercial combined.. Market value £1,000. Not garaged. Social, domestic and pleasure use only. 6,000 miles p.a. max. Effective in next 60 days.

The quotes obtained were:

Company	Direct Quote £	SWH1 Quote £	SWH2 Quote £	SWH3 Quote £	% Commission SWH Quote	% Difference Direct v SWH1	% Difference Direct v SWH2	% Difference Direct v SWH3
A	No quote	1,012.96	962.00	962.00	10.00	-	-	-
B	515.00	818.48	755.04	713.44	7.50	-37.08	-31.79	-27.81
C	No quote	1,275.28	-	1,187.27	10.00	-	-	-
D	No quote	No quote	No quote	No quote	12.50	-	-	-
E	No quote	1,064.96	1,089.92	880.88	15.00	-	-	-
F	No quote	No quote	No quote	No quote	12.50	-	-	-



Quote 5

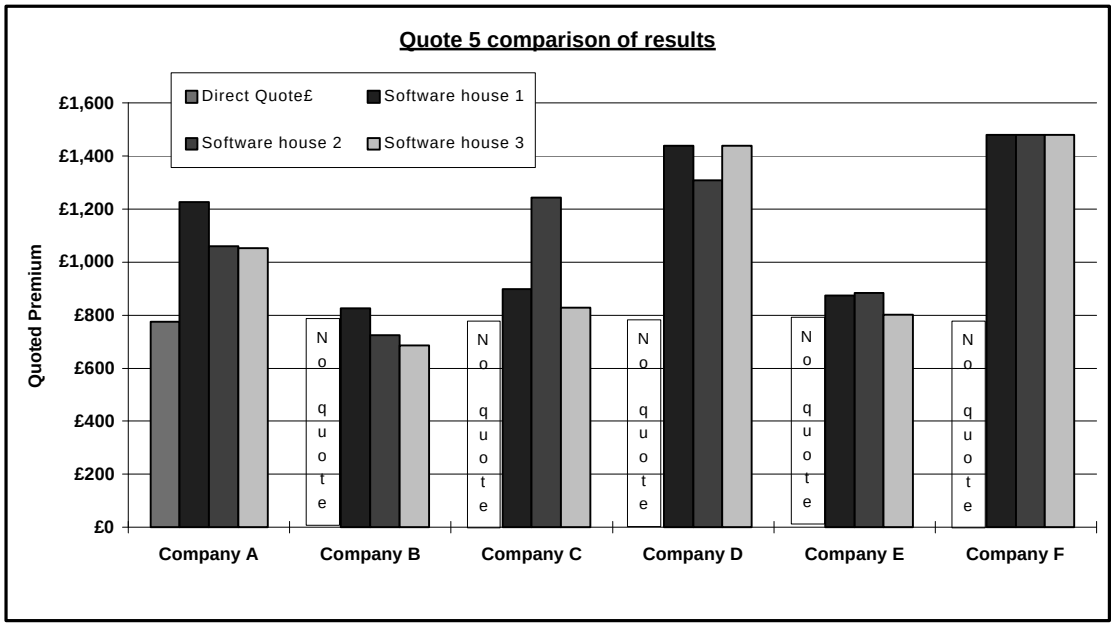
Male 21 years old. Driver only. 3½ years driving experience. No NCD, no claims, first insurance policy, no security, no legal cover. Fully comprehensive required.

Mini Mayfair 2 door - 94L, 1300 cc.
Market value £4,000. Not garaged.

Social, domestic and pleasure use only. 6,000 miles p.a. max. Effective in next 60 days.

The quotes obtained were:

Company	Direct Quote £	SWH1 Quote £	SWH2 Quote £	SWH3 Quote £	% Commission SWH Quote	% Difference Direct v SWH1	% Difference Direct v SWH2	% Difference Direct v SWH3
A	773.8	1,225.12	1,058.64	1,051.84	10.00	-36.83	-26.76	-27.12
B	Not obtained	825.78	724.88	684.32	7.50	-	-	-
C	No quote	897.29	1,243.37	826.85	10.00	-	-	-
D	No quote	1,438.81	1,308.82	1,436.81	12.50	-	-	-
E	No quote	872.55	882.96	800.80	15.00	-	-	-
F	No quote	1,479.92	1,479.92	1,479.92	12.50	-	-	-



Conclusion

- We noted that there is a wide variation in premiums between the direct arm of an insurer and their broker arm.

- We also noted that the premium quotation systems varied in the quotes they gave, even though all figures were quoted as at the same date.

- We conclude that any analysis of competitive position will be partial if based on the data from the commercial premium quotation systems as direct arms will not be included

- As the underlying data appears to vary between software systems, any analysis will only be partly reliable. One check is to look at how the system calculates one's own company's premiums.

Section 11. Appendix 3

The details of these systems are briefly outlined below under the following headings:

- Company Coverage
- Functionality of the System
- Hardware Requirements/Estimated Run Time
- Price
- Historical Data
- Reports
- User Friendliness

Cheshire Datasystems Limited (CDL)

Company Coverage

The quotation modules provided by CDL include:

Module	Number of Insurers	Number of Products
Private Car	70	890
Motor Cycle	18	130
Commercial Vehicle	48	66
Household	97	417

Functionality of the System

- Single or batch processing
- Can automatically receive renewals or new business from the Insurer System, after the information has been reformatted.
- Can select a limited insurer base or the whole range

Hardware requirements/Estimated Run Time

For private car quotes, hardware requirements together with estimated run times are detailed below:

Machine	Number of Risks	Processing Time
Pentium 166 Basic System	50-60,000	24-48 Hours
Pentium 200 Advanced System	1,500,000	12 Hours

Price

- Full Private Car Software Only Package - £22,000 (+VAT)
- Annual Maintenance Fee (Private Car Module up to 10 Users) - £4,500 (+VAT)
- Price of other modules vary

Historical Data

Monthly rates can be stored manually on the system, allowing risks to be processed against any month requested so historical statistics can be created retrospectively.

Reports

Reports are not available directly from the system. Raw data has to be exported to another computer package and then processed to achieve the desired output.

User Friendliness

This system does not support a GUI type interface. CDL recommend training for the system described above. This is charged at £400 per day.

EL systems - PRÆMIUM®

The quotation modules provided by PRÆMIUM® General include:

Module	Number of Insurers	Number of Schemes
Private Car	84	576
Motorcycle	20	74
Commercial Vehicle	40	60
Household	79	363

Functionality of the System

– - Single Quotes, Batch Quotes, Risk Generator, File Import and Historical Analysis Modules

– - Ability to exclude insurers &/or schemes from the analysis

– Ability to apply loadings to schemes to mimic rate changes

– A "Risk Generator" enables a set of risks to be generated from one set of parameters, by adding variations

– Ability to import an unlimited number of risks using the File Import module

– Ability to instantly adjust elements of the Rating Structure (Model), and analyse their impact

– Run changes against the Market to analyse the effect that the changes may have

– Output results to a variety of Industry Standard software formats for further analysis

– Ability to build new schemes using any type of structure or logic

– Rates are updated daily, (via a modem Monday to Thursday nights).

Hardware Requirements/Estimated Run Time

For private car quotes, hardware requirements together with estimated run times are as follows:

Machine	Estimated Run Time
100Mhz Processor	68000 risks per hour
200Mhz Processor	95000 risks per hour
300Mhz Processor	

NOTE:These run times were obtained using the 16-bit version of the PRÆMIUM® General software.
A 32-bit version has just been released, which processes the data approximately 8 times faster.

- *Runs on IBM compatible hardware:- Desktops, Networks or Laptops*

- *Compatible with Windows, NT4 and OS/2 operating systems*

Reports

Summary reports are available which show the position of the insurer and the name of the cheapest insurer in each analysis. There are also six system-defined reports which show inter-alia an average premium summary, an average position summary, comparisons between two schemes and a report showing the percentage differences between all quotes. Reports can also be customised.

There is also a "scan rates" facility which shows the levels of certain rating factors for other companies on a particular quote.

User Friendliness

The system is fairly user friendly, with screens for all classes being similar. There is an on-line help facility available as well as a comprehensive User's Guide.

ISL - Whatif?

Company Coverage

The quotation modules provided by Whatif? for their product include:

Module	Number of Insurers	Number of Products
Household	n/a	126
Private motor	n/a	350

Functionality of the System

Whatif? makes use of the Intermediary Systems Household quotation 'engine'.

Test products can be added to the system to see how they compare to the market. New criteria can be added to rating structures with "**Designer Underwriting"**, allowing rating on brand new factors not currently used such as flood risk area, residence being near a tree, flat roofs, or may be iron bars at the windows. Up to 28 new rating factors can be added to the system.

The "**fast batch**" facility allows a basket of risks to be assessed. This works by asking for values (e.g. Contents sum insured) in the form of a range. A minimum and maximum value plus the amount by which the values are to be incremented, e.g., Contents sum insured from £25,000 to £50,000 with a £5,000 increment, are entered.

In addition the system allows definition of postcodes by group names. These can be town / city names (London, Birmingham, Manchester, etc.) or regions (North Wales, South Wales) or perhaps by a company's own branch network (Midland branch, Southern branch or City branch).

The system is delivered with UK.PCB which contains a list of all the postcodes in the UK. Plus you can import postcode lists for batching from:

- *An external text file on a floppy disc or network drive*
- *A Lotus 1-2-3™ or Microsoft Excel™ spreadsheet*
- *From any other Whatif? postcode files*

The **import batch** option allows importation of risk data from a client database into ***Whatif?'***s batching facility.

Hardware Requirements/Estimated Run Time

Whatif? is a fully integrated household modelling, batch testing and quotation system which is designed for use on IBM PC's and compatible equipment. The recommended configuration is a 486 66Mhz processor (or faster), 8 Mbytes of RAM, 250 Mbytes fixed disk.

Price

The household module is £10,000 plus VAT pre annum. The private car module is £10,000 plus VAT for batching and £6,000 plus VAT for modelling.

Historical Data

For the new Windows household product, unlimited historical data will be available, although this will build up over time.

For private motor, up to one year's data is available, depending on hard disk space.

Reports

The Raw Data: *This is a straight forward listing of the premium for each of the products on the panel for every postcode by risk. There is a column for each panel member and an average premium is given for each postcode.*

The Rank Reports: *Here, premiums are listed for each postcode and by risk, but this time the premiums are sorted into competitive order running from left to right across the spreadsheet. Also, for each rank position is shown the percentage difference from 1st place and the percentage difference from the average.*

The Performance Table (Percentage): *This table is arranged so that the panel members are listed on each of the rows and the rank positions (including declines) are across the columns. The table therefore shows the percentage occurrence for each panel member, i.e. 1st, 2nd, 3rd .... last and the percentage times declined.*

This table provides figures for the performance of each product for the whole batch plus each of the postcode groups (AB, GL, NW, TQ, etc).

The Performance Table (Premium): *This table displays information similar to the Performance Table (Percentage) above, but instead of the percentage occurrence the actual premium each of the panel member products had to charge to achieve 1st, 2nd, 3rd ... and last is shown.*

The Performance Table (Number of Instances): *This table displays information similar*

to the Performance Table (Premium) above, but instead of the premium the actual number of times each of the panel member products were 1st, 2nd, 3rd ... last and declined is shown.

Cost Comparisons: *The percentage difference in average cost is the provided by this table. Each of the panel products are listed on both axis. Within the table are shown the difference in average cost between the products. Also listed for each product is the cost difference from the overall average premium.*

This table provides cost comparisons based on average premiums for the whole batch, plus the average premiums calculated for each of the postcode groups, (i.e. AB, GL, NW, TQ).

Position Guidance: *As well as collecting the average premiums for each of the products, the system also calculates the average premium for each rank position in the market. The position guidance report uses this information with great effect because it shows the positioning of product(s) or new product(s). If the results show a need for a performance alteration, this report signifies the percentage amount by which you would have to manipulate your product to achieve the appropriate ranking, i.e. 1st, 2nd, 3rd.*

User Friendliness

The new Windows version is expected to be more user friendly than the current DOs version.

Sprintgrace Probe

Company Coverage

The quotation modules provided by Sprintgrace for their Probe product include:

Module	Number of Insurers	Number of Products
Private Car	More than 60	More than 400[1]
Motorcycle	12	18[2]
Commercial Vehicle	More than 35	More than 43
Household	44	96[3]

1) The schemes for Private Car include EDI schemes, Polaris schemes, net rated schemes, public and private Hire, kit cars (more than 2900 models) and Classic cars

2) The schemes for Motorcycle include rider and specified schemes and Classic bike policies.

3) The schemes for Household include buildings, contents (including All Risks extensions) and building and contents combined.

For the motor modules, both annual and short period contracts are covered.

Functionality of the System

- Single or Batch processing, including the ability to multiple product batch.

- Ability to store all quotations/exclude rejected cases (other than for own schemes) whilst processing.

- Ability to suspend and later recover a single or batch run to be run later.

- Ability to include all insurers/schemes or restrict selection of either.

- Retains stored data should a power cut/system crash occur.

- Ability to import data into and export data out of the Probe. Export out

into Excel, Access, Lotus 123, etc,.

- Ability to alter rates for other companies by applying loadings / discounts to mimic rate changes.

- Rates are updated twice a month.

- In addition, there is the AClone Rating Editor@ facility. This enables the user to alter the value of one or more of their own rating factors (in percentage or monetary terms) in order to create a Aghost@ product which can then be compared to current market rates, including own if desired. Probe allows for multiple products to be assembled, up to a maximum of 99.

Hardware Requirements/Estimated Run Time

For the Private Car module:

Machine	**Number of Risks**	**Processing Time**
486/66	1	6 seconds per quote (273 schemes)
Pentium 200	1	2-4 seconds per quote
Pentium 333 Windows 95/ 98 or Windows NT 4.00	1	Approx. 1.0 seconds per quote (305 schemes)

An estimated run time is given after 10 quotes have been processed. Processing is only restricted to the size of available hard drive.

Price

- The price to set up each Clone is £1,200 plus VAT, (a one off set up fee).

- Annual maintenance fee is £18,000 plus VAT for each Probe, which includes 12 months releases from date of acceptance, 2 personalised releases per month, ad-hoc releases available, updating/modifying of Clones.

Historical Data

Historical market rates can be stored on all modules for a period of 2 months.

Reports

Certain standard reports are available directly from the system. These cover items such as basic line/bar graphs showing a specific insurer scheme to more detailed reports giving statistical analyses of the data, such as percentage/number of times each scheme is in position 1,2,3....., the average premium in position 1,2,3 etc..

Insurer specific reports can also be built into the system on request although this will be charged for.
Also, via the export facility, can output various items of rating factor and premium information. These would be shown for all companies requested.

User Friendliness

Sprintgrace Probe is a menu driven package and hence, is fairly straightforward to operate. Full help facility is available and a trial system can be installed.

Section 12. Appendix 4

EXAMPLES OF POLICY FEATURES - MOTOR

- Free courtesy car
- Approved repairer network
- NCD transferable
- Monthly payment plans
- Discounts for security systems
- Unlimited glass cover
- Limited mileage for reduced premium
- Voluntary excesses
- Non smoker discounts
- Personal incident manager
- Free breakdown cover
- Cheap mobile phones

Section 13. Appendix 5

Royal Mail postcodes

The following has kindly been provided by Stephen Jones.

What is a postcode?

When using postcodes as a geographical location descriptor for household insurance risks, it is important to remember that this was not the purpose for which they were designed! Postcodes were introduced to help the Royal Mail deliver letters more efficiently, primarily by enabling the automated sorting of mail items.

The first, single character, UK postcodes were introduced in 1857/8 to divide a growing London into 8 postal districts. By 1974, the whole of the UK had been allocated postcodes. A modern UK postcode comprises between 5 and 7 letters and digits arranged in one of a number of standard hierarchical patterns. The hierarchical structure contains four distinct levels. The hypothetical *unit postcode* AB12 3YZ falls within *postcode sector* AB12 3, *postcode district* AB12 and *postcode area* AB. The postcode area AB covers a large area of north-east Scotland, closely corresponding with the Grampian administrative region, so that any household risk having an AB postcode will be situated within this part of Scotland. Similarly, any residential property having postcode district AB12 will be situated within an area of approximately 15 square kilometres south and east of the centre of the city of Aberdeen.

The Royal Mail Postal Address File (PAF) is the central database of UK addresses to which mail is delivered ("delivery points"), and their associated postcodes. A 1996 version of the PAF contained 124 postcode areas, 2,761 postcode districts, 9,153 postcode sectors, 1,431,099 unit postcodes and 24,871,104 delivery points.

Postcode areas are denoted by a string of 1 or 2 letters - single letter codes are used for major cities (e.g. Birmingham = "B") and for the historic division of London (e.g. East

London = “E”). Where 2 letters are used then they are selected, where possible, to provide a mnemonic for the dominating conurbation (e.g. Coventry = “CV”).

Postcode districts are normally denoted by a string of 1 or 2 digits, commonly interpreted as a number lying between 1 and 99. However, for a limited number of London postcode districts, the second character of the district is a letter, rather than a digit (e.g. “EC4Y”). Those postcode districts situated closest to the centre of the dominating conurbation of the postcode area are generally assigned the lowest numbers. The postcode area and district taken together are often referred to as the “*outward postcode*”, or “outcode”, and this identifies the office to which mail having that outcode is sent for sorting. The remainder of the postcode is often referred to as the “*inward postcode*” or “incode”, and determines the property, or group of properties, to which the mail is to be delivered. The incode is always a string of 3 characters, 1 digit (the *postcode sector*) followed by 2 letters (sometimes referred to as the “*postcode unit*”). Certain letters are prohibited in certain positions in the postcode area, district and unit in order to avoid confusion with other letters or digits which may appear similar in hand-written form. There are no such prohibitions on the use of digits - the postcode sector, in particular, may take any value from 0 to 9.

The problem of non-geographic postcodes

The postcodes allocated to residential properties - those important in the context of household business - are “geographic” in nature, in that the postcodes contain information about the geographic location of the property. However, some postcodes, such as “large-user” postcodes, may be non-geographic in nature. The Royal Mail issues large-user postcodes to commercial organisations receiving large numbers of mail items each day, and to users of PO Boxes. These postcodes are generally consistent with other postcodes in the immediate surrounding area (they may share district or even sector classification), but some “non-geographic” large-user postcodes are allocated to organisations receiving extremely high mail volumes. An example of a non-geographic

large-user postcode is the postcode district SA99 which has been allocated to the DVLA. Whilst the "SA" postcode area reflects this organisation's being situated in Swansea, the "SA99" district differs from those of surrounding postcodes. The pricing actuary must take particular care not to waste any effort calculating premium rates for non-geographic large-user postcodes, since there is no possibility of any valid household risk sharing such a postcode. Indeed, during the early days of postcode-rating for household business (1992/3), UK insurers published rating guides providing household premium rates for, inter alia, the DVLA, Littlewoods Pools, the TV Licensing Authority, various tax offices and even the Blue Peter appeal!

How many delivery points are there in a unit postcode?

A unit postcode does not generally permit the unique identification of a residential property - the vast majority of postcodes contain more than one delivery point. The number of delivery points included in a unit postcode varies considerably between postcodes, although a "rule of thumb" often heard is that there are "around 15". The distribution of numbers of delivery points in a unit postcode is, in fact, extremely skewed (to the right). Whilst the mean of this distribution (based on the 1996 PAF) is 17.4, the median is 13 and the mode is 1. In the past, some unit postcodes (typically relating to large blocks of flats) contained as many as 500 delivery points. However, it is now the case that no unit postcode has more than 100 delivery points, and only 3.4% have more than 50. One reason for this change is to enable individual properties to be uniquely identified by means of the unit postcode followed by a 2 digit suffix.

Do postcodes ever change?

The Royal Mail PAF is updated approximately four times a year. At the time of writing the most recent PAF update, number 24, had been effective from April 1997. One reason why the PAF is updated is that additional postcodes are required when new properties are built, and this may result in the exhaustion of valid postcodes in a locality. Alternatively, the Royal Mail may wish to reflect any changes in sorting or

delivery operations by re-postcoding selected addresses.

References:

Raper J.F., Rhind D.W., Shepherd J.W.; Postcodes: The New Geography. Longman (1992)