

COREMETRIX

Personality and Risk:

A New Chapter for Credit Assessment

August 2017

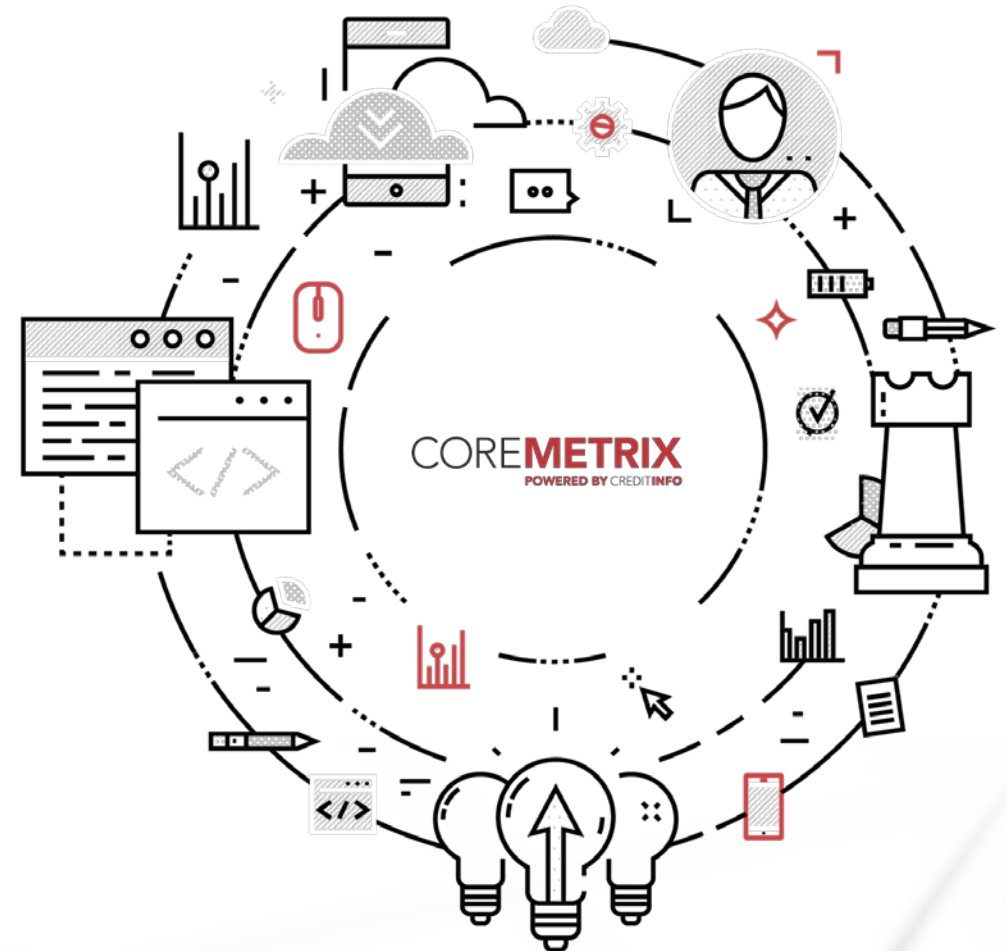
COREMETRIX and psychometrics

Not everyone can access credit for reasons of history or geography. Some people don't even have a credit history, but everyone has a personality.

COREMETRIX has proven that a link exists between psychology and credit behaviour. The team have developed a series of quizzes which, in real time, assess consumer credit risk and unlock credit.

This technology not only helps consumers to access funds but also provides lenders with new profitable customers.

COREMETRIX enables decision makers to understand their customers and prospects better resulting in better risk assessment of applicants and ultimately improved lifetime value.



Application scoring

Unsecured short term lending

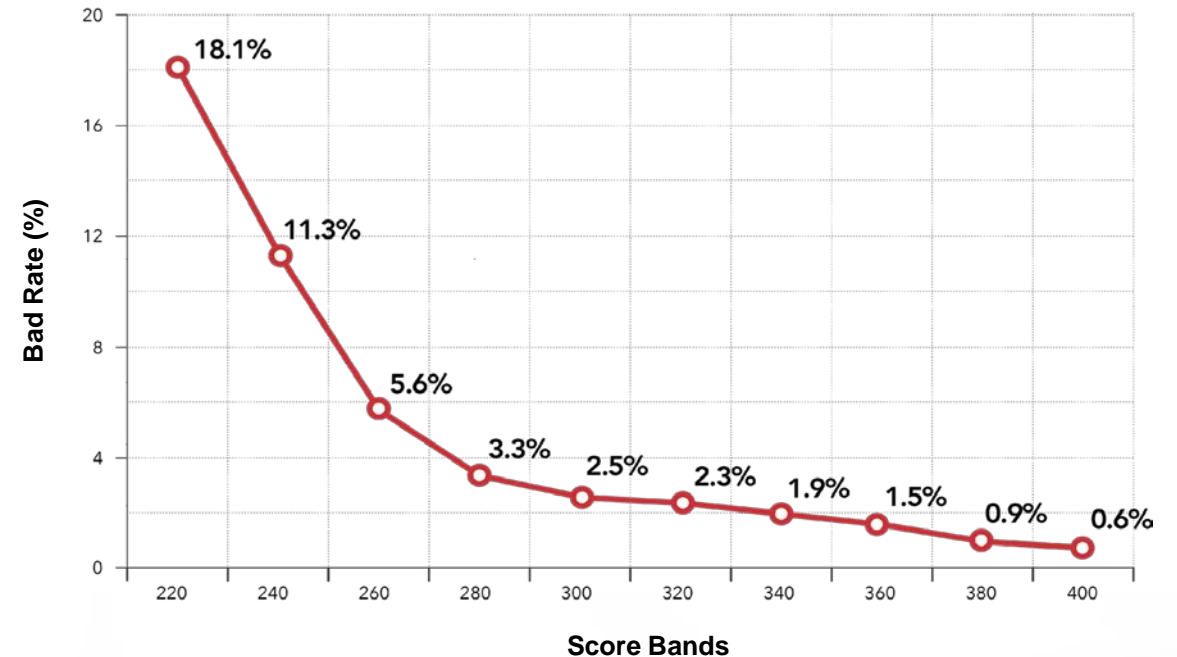
Goal The lender wished to gain a competitive advantage by utilising the COREMETRIX score to identify creditworthy individuals amongst the 'thin' file population.

Result

- Psychometric model trained on 10k existing customers with a bad definition of 1+ at month 3.
- Results were independently validated.
- Model Performance:
Gini 45% based solely on the psychometric quiz.

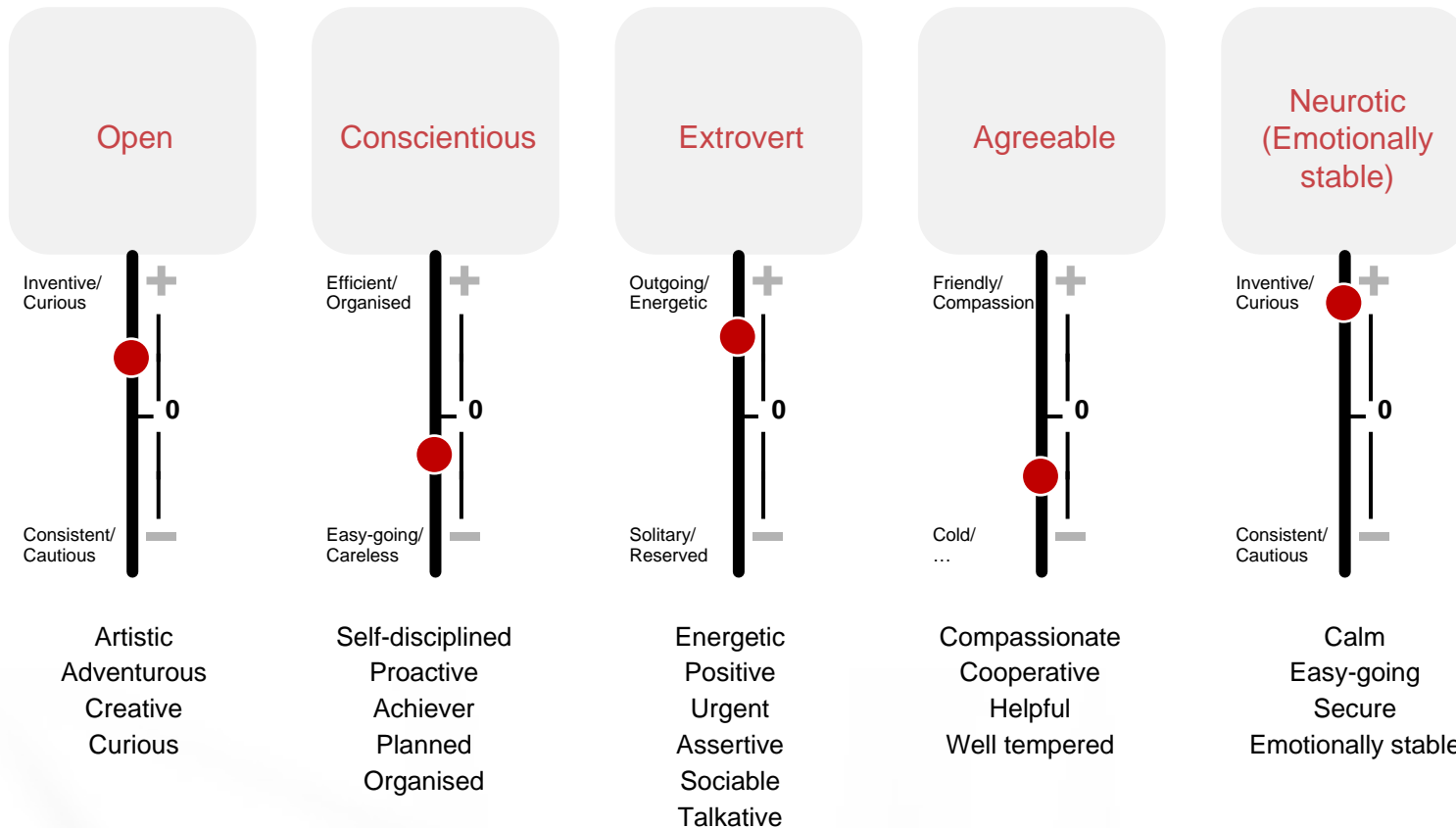
Predictive psychometric score: Bad rate by score bands

* Based on a bad definition of 1+ at 3 months



Impact: An effective creditworthiness assessment where there is limited or no bureau data

Measuring psychological constructs for risk assessment



Each person who completes a quiz can receive a detailed breakdown of their main personality traits across the “Big 5” personality traits.

We have also identified several new traits indicative of risk:

- Financial integrity
- Optimistic bias
- Temporal discounting

Established links to financial behaviour



High sensation seekers have a high need for arousal and therefore tend to take more and larger risks than low sensation seekers.



Individuals high on impulsivity take more risks because they tend not to evaluate information or all possible alternatives.

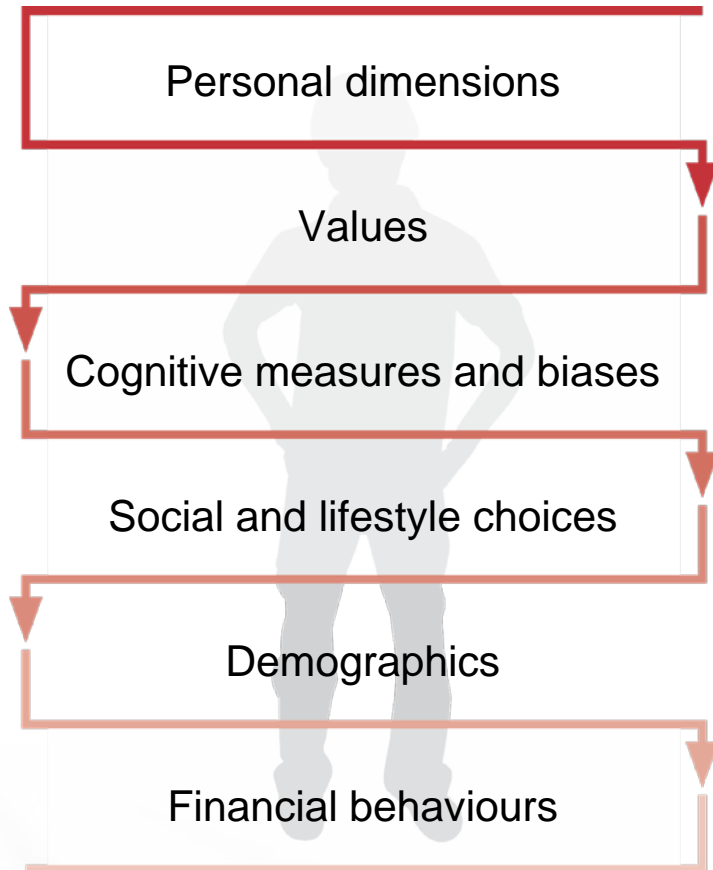
They are either eager to make a quick decision to enjoy the benefits or act to avoid unpleasant emotions.



Time horizon is particularly relevant for financial decisions that pertain to the distant future.

People with a present-time orientation (high time preference) focus on the present and prefer to spend their money immediately rather than later

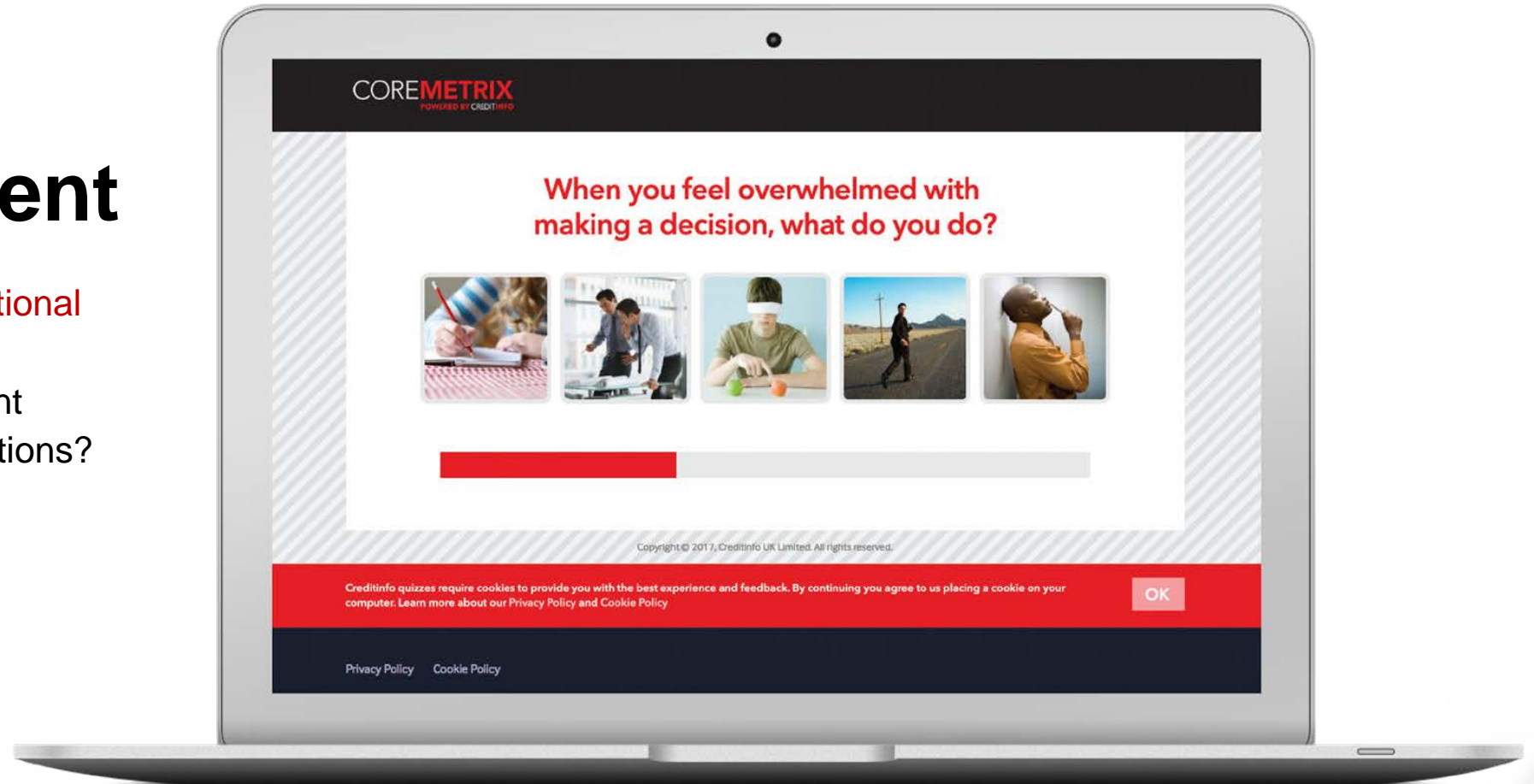
We captured a rounded personal profile



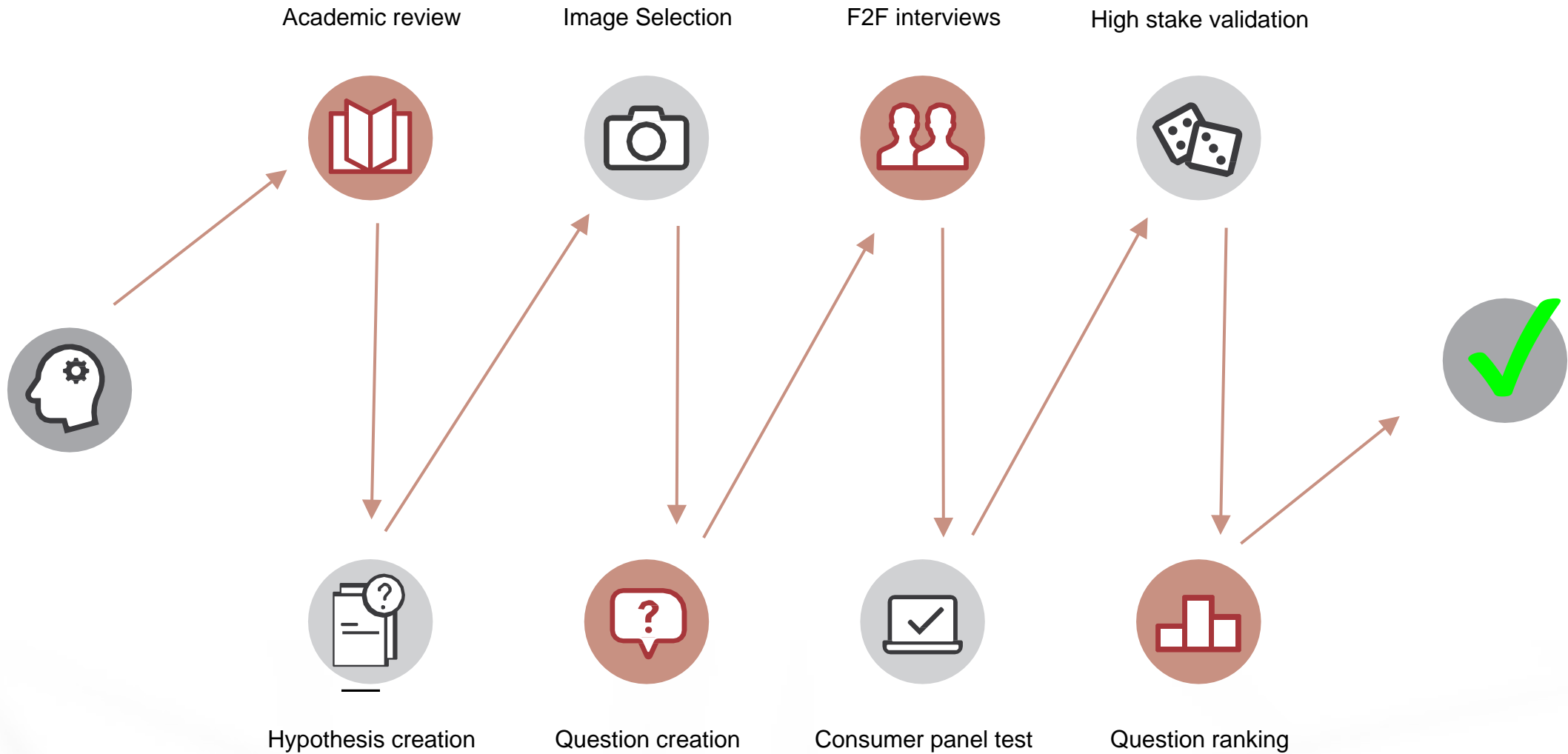
- Personality model stems from 30 years of research into psychological traits
- Each consumer assessed using 'OCEAN' and more
- Enhanced focus on most relevant constructs such as sensation seeking, honesty and locus of control
- COREMETRIX provides a simple gamified environment which is easy to interact with
- The use of images enables an intuitive and fast response
- The technology combines euphemisms and humour enabling COREMETRIX to ask deep and insightful questions in a comfortable setting

Use of imagery in risk assessment

Measurement of emotional stability –
how does the applicant react in adverse situations?



Question development



Reliability, validation & panel tests

Face validity

Ensure the imagery and language are acceptable, not offensive or deemed inappropriate.

Content validity

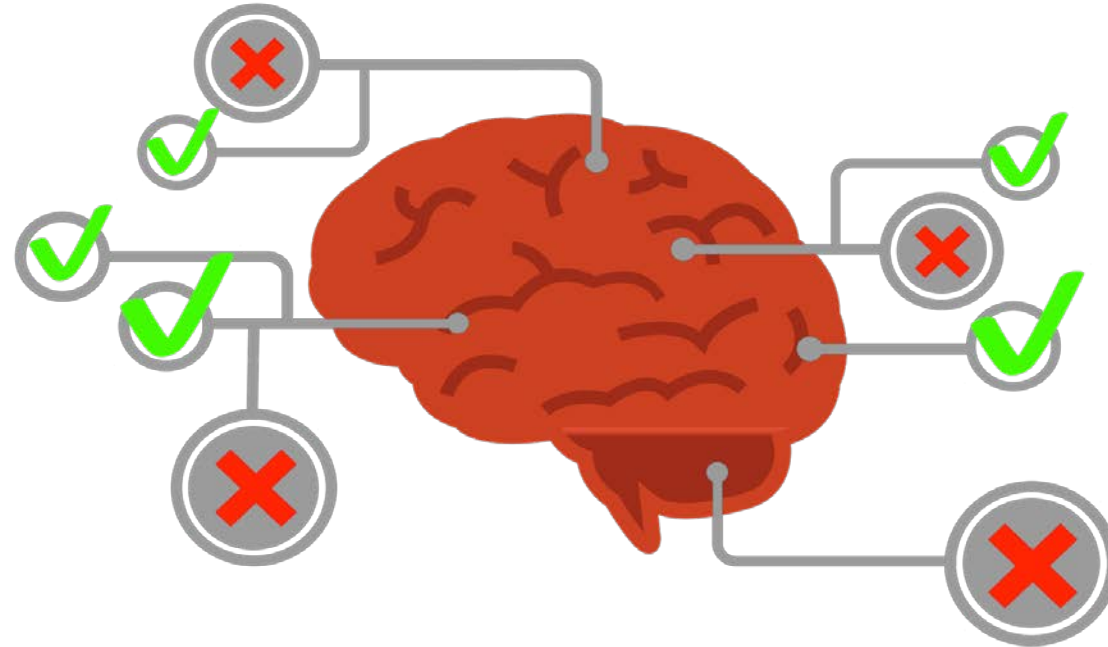
Ensure the images measure what we want them to measure.

Concurrent validity

Test that our questions measure the intended psychological construct as scientifically proven questionnaires do.

Predictive validity

Test that our questions predict future critical behaviour (e.g. missed payments).



Machine learning & scorecard development

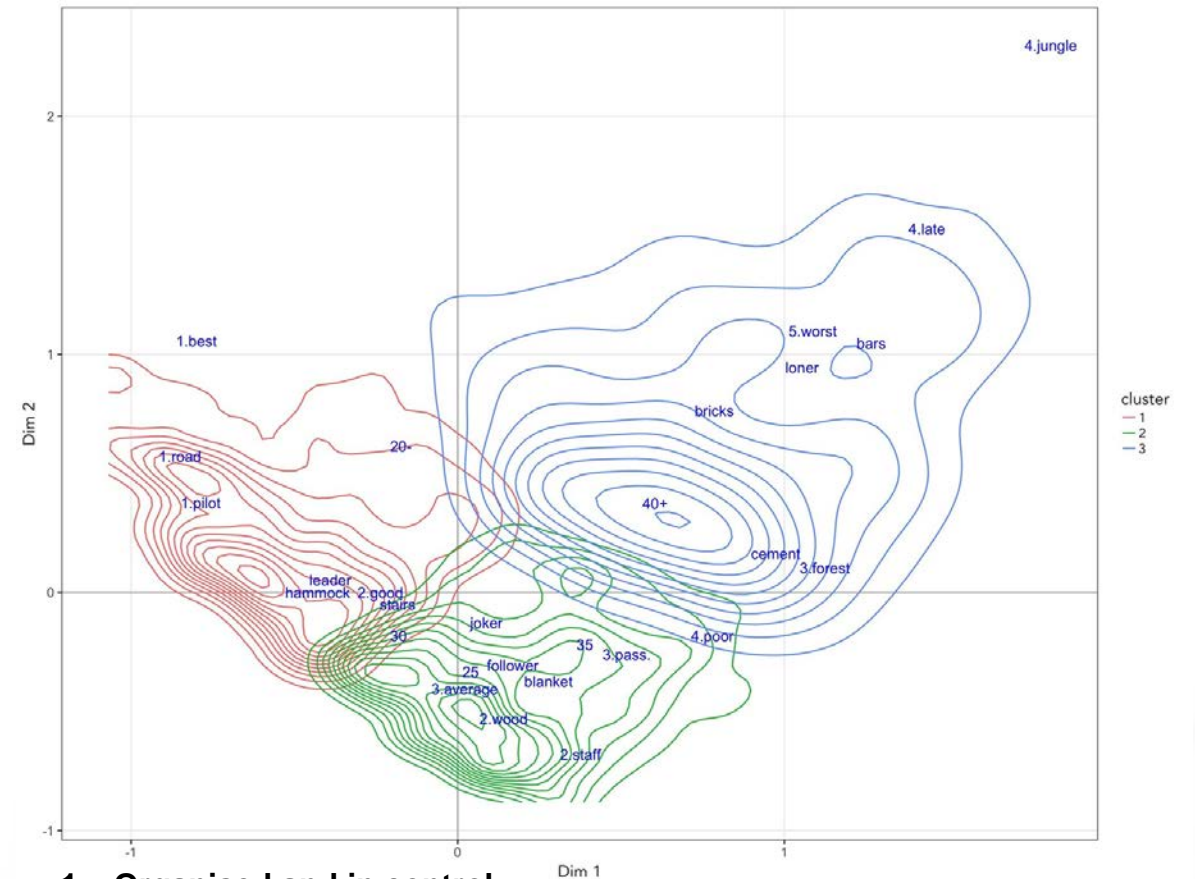
Using machine learning to build better credit risk models

Our approach builds on mature, tried and tested scorecards, enhancing them with advanced machine learning techniques to drive better segmentation and feature creation for inclusion in these models.

For example we use:

- Neural networks
- Clustering algorithms
- Random forests

Portfolio Segmentation



- 1 – Organised and in control**
- 2- Disorganised loner**
- 3 – Honest & helpful**

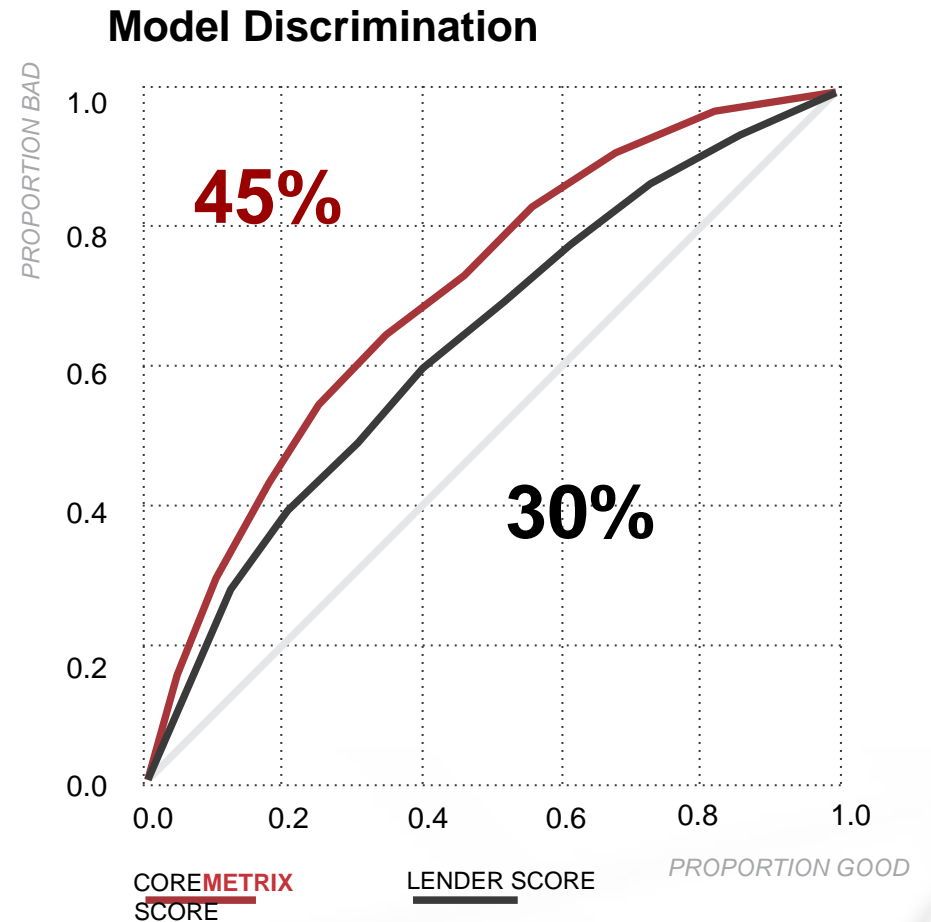
Psychometric data adds to scorecards

Adds value to credit risk scoring

In a recent project psychometric data was included in a thin file application scorecard.

The best result from a scorecard built on traditional data (application + bureau) was a Gini of 0.30

By combining traditional scorecards with psychometric data we created a strong, stable and robust model. We improved the incumbent score in this case by as much as 50% as measured in model performance (Gini).



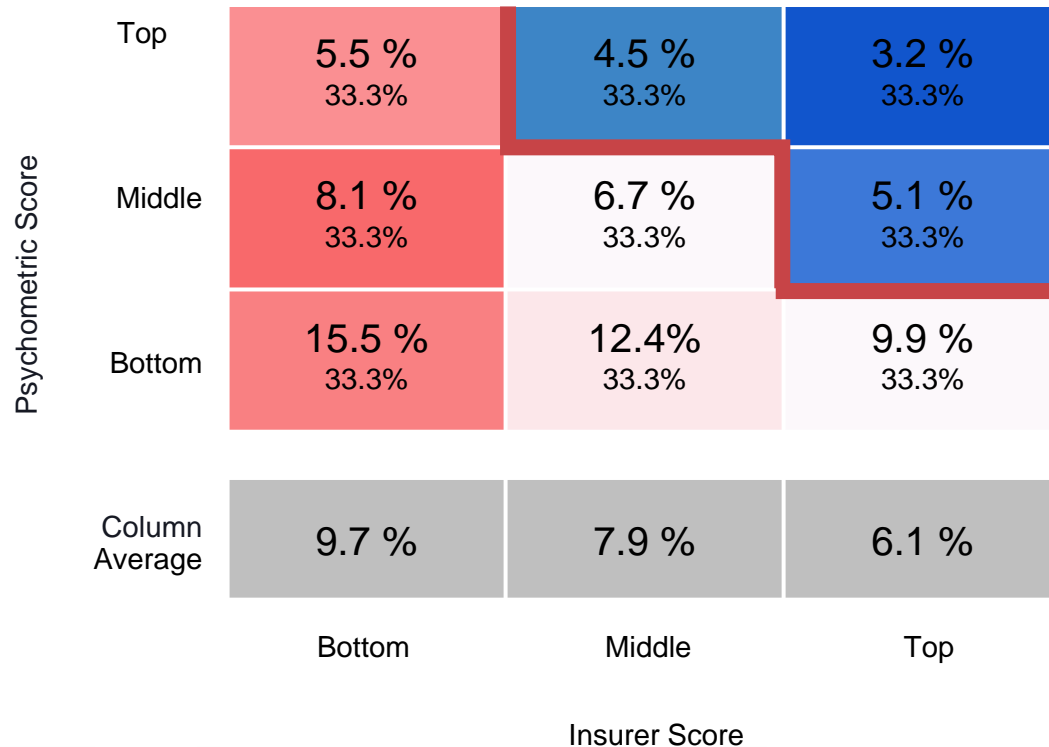
Motor Insurance

Targeted pricing

Grey bins at the bottom segment the population using client score and give proportional claim rate for each bin.

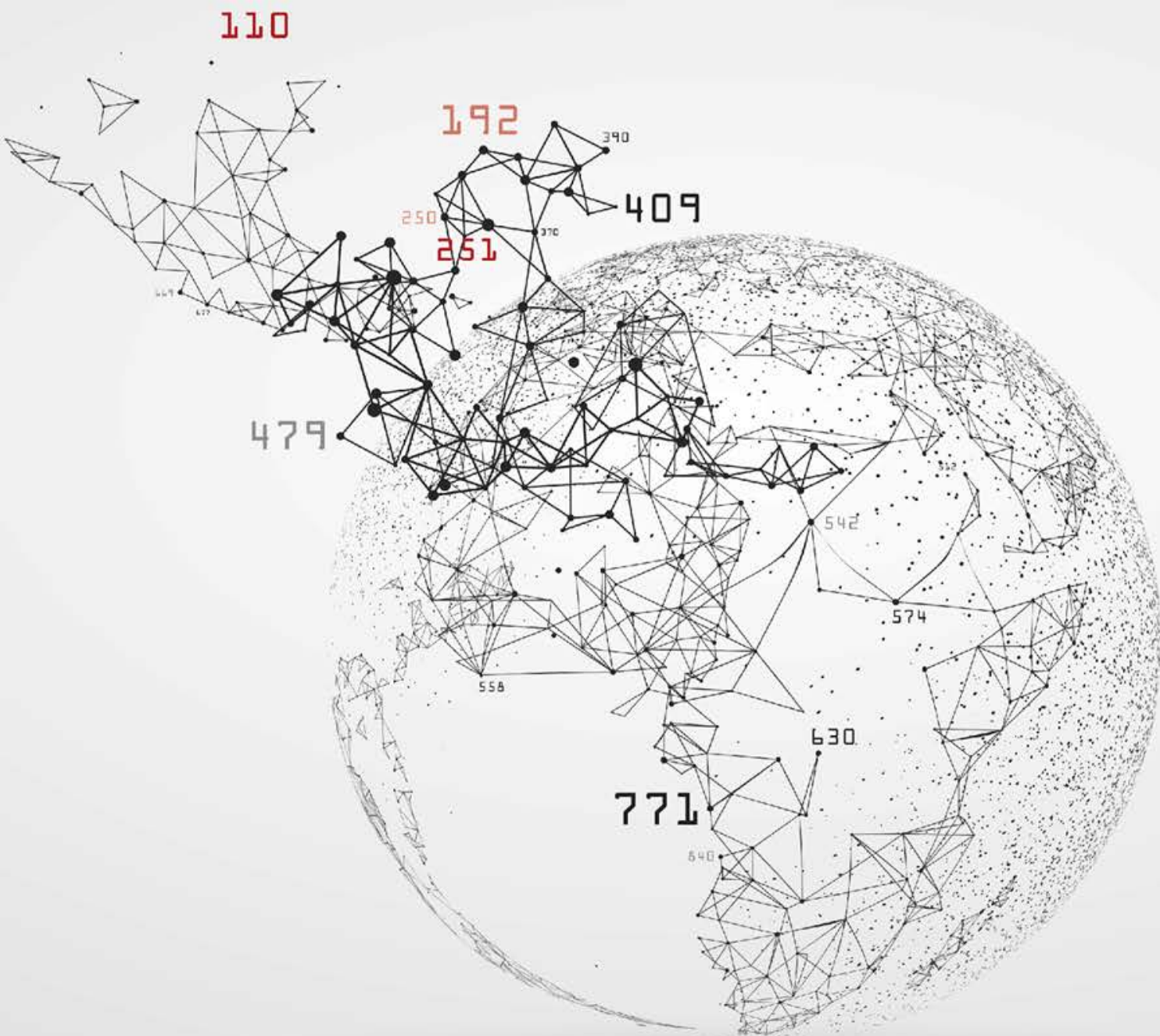
The coloured bins above further segment the population using the Coremetrix psychometric score. Large numbers represent the claim rate of the population of that cell. Small numbers give the column proportion.

For example, customers in the middle bin of the client score would ordinarily be priced at a 7.9% claim rate. Using the psychometric score, some of these customers can be priced at 4.5%.



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