

Credit Rating as Next Generation Rating Criteria in Non Life.

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Summary

A Abstract: Credit Rating

- Existing rating criteria possess disadvantages and are (in some countries) under the risk that usage will be limited by law (e.g. European Unisex law prohibits usages of gender).
- Credit rating is considered a valuable option to replace important rating criteria (age, gender, nationality, others).
- Currently a large number of German insurers have started to use credit rating to improve processes like: Pricing, Underwriting, and Fraud detection.
- In a retrospective study around 100'000 non life contracts (motor, household, legal protection, property) were observed for the period of 3 years in our study.
- It could be proven that the historic credit rating at the moment of contract inception correlates strongly with the claims frequency and (after cut off of major claims) with claims ratios over 3 years for motor, household and legal protection. No correlation could be found for property insurance.



Agenda.

- 1 Relevance of Credit Rating for Non-Life Pricing
- 2 Approach for Testing
- 3 Results of an Extensive Test Approach
- 4 How to use Credit Rating in your Processes



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Most Insurers Assess Credit Rating as Relevant Information.

The usage of credit rating in insurance processes is a hot topic in Europe. Solution Providers can provide support in the calculation and implementation of it.

A Credit Rating

- Existing rating criteria possess disadvantages and are (in some countries) under the risk that usage will be limited by law (e.g. European Unisex law prohibits usages of gender).
- Credit rating is considered a valuable option to replace important rating criteria (age, gender, nationality,...).
- Some providers of credit rating data have issues with data quality and reputation. This needs to be managed proactively.

B Current Situation

- In almost all countries, the usage of credit rating to manage outstanding payments is established. This aspect is not discussed in this presentation.
- Currently a large number of German insurers have started to use credit rating in other processes like:
 - Underwriting
 - Pricing
 - Fraud detection
- German and Austrian insurers are starting to assess the usage of credit rating in pricing.

Managing External Information will be a critical success factor in the Insurance Industry.

The integration of external information into products/processes is challenging but difficult to copy for competitors.

C Solutions 2012/3



Article on the strategic relevance of managing external information (currently available in German)

D Possible external Information for Rating

Only Online Access

Offline possible

Credit Rating	Telematic Systems
Govern. Databases	
Fraud Detection Databases	
Marketing Databases	
Social Media Profiling	
Microzoning	
Company Codes	Geocoding
	Car Classes (D)
	Eurotax Car Inform.
Information on the policy holder	Information on the insured object



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Example from Austria: Data providers.

In Austria only two (typical) data providers are on the market. This is uncommon. In other markets the number of providers is around 4-8.

KSV

KSV1870

Collects data from official sources (courts, government).
Delivers fact based on a list of events.
Data available for private and commercial use.

Deltavista

 **deltavista**
data & decision engineers

Collects information from official sources (courts, government) and institutions which manage outstanding payments. Typical information is on credit history, address history, family relations, immigration, etc. and is combined with marketing data (education, profession, income).
Delivers pure credit rating information and a broader scoring value.
Data available for private and commercial use.



Example KSV.

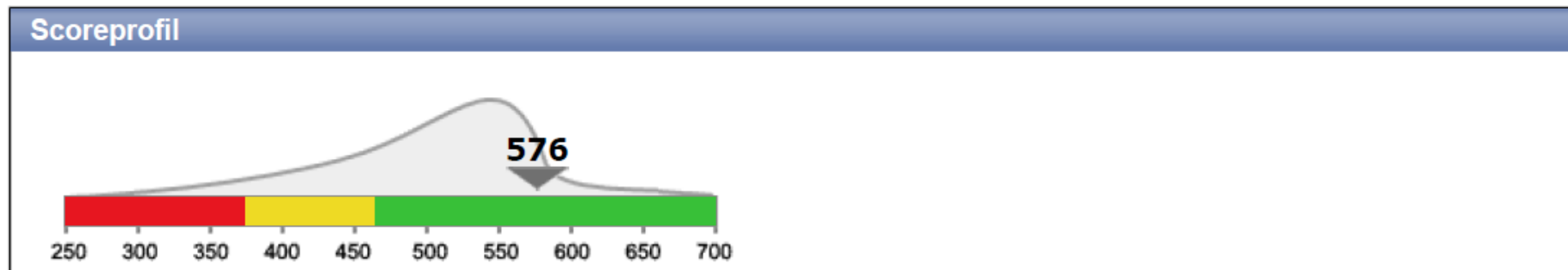
This provider delivers pure facts on a historic list of events. Valuation and classification is the responsibility of the insurance company and requires deep know-how.

	Datum der Einmeldung	Code	Text	Betrag	Währung
☒	25.11.2008	7583	KONK.AUFHEBUNG NACH EINLEITUNG ABSCHÖPFUNGSVERFAHREN		0EUR
☐	19.06.2010	0250	BEZAHLT NACH RECHTSANWALT		0EUR
☐	09.12.2005	0170	UNEINBRINGLICHKEIT NACH INKASSOBÜRO		0EUR
☐	19.06.2010	7720	SANIERUNGSPLAN (EIGENVERWALTUNG) WURDE ERFÜLLT		0EUR
☐	24.06.2007	0220	TEILBEZAHLUNG NACH RECHTSANWALT		10EUR



Example Deltavista.

“Credit rating” and “Scoring” are calculated using the basic information sample with complex algorithms. A good credit rating leads to a good score..



Zahlungserfahrungen - Stand vom 26.06.2011 19:31	
Zusammenfassung	
Zahlungserfahrungen	0 Einträge
Aktuellster Fall vom	
Forderungssumme	0,00 €
Offener Betrag	0,00 €
Forderungsstatus	
Bonitätswert	100



How is the “Scoring” value calculated.

The Scoring value is determined from a large set of data and predicts the future risk of credit default.

Parameters

- Negative credit experience
- Age
- Gender
- Profession
- Area code and address
- Experience period
- Number of address changes
- Historical experience of people with the family name in the same house
- Historical experience of all people in the same house
- Historical experience of all people in the same micro-zone
- Historical experience of all people in the same town



Goals of the test.

The test simulates the hypothetical usage of credit rating 3 years ago.

Main Questions

- Is there a correlation between credit history and claims experience (claims frequency and claims ratio)?
- How relevant is this correlation?
- Would this improve the current tariff? Is it possible to improve claims prediction?
- Are there other processes where this information can be used?



Approach for the test.

Both data suppliers provided different test samples.

Criteria	Deltavista	KSV
Required client data	Family Name, Name Address Date of birth	Family Name, Name Address Date of birth
New business	2007 and 2008	2007 and 2008
Lines of business	Motor, Legal protection, Home, Property (all private)	Motor, Legal protection, Home, Property (all private)
Geographic scope	Countrywide	Regional
Historical score available (at date of inception)	Yes	Yes
Number of historical contracts used	104.989	Approx. 25.000
Claims period analysed	3 years	3 years



Is data available for all clients?

The detailed analysis was based on the following information.

Number of records identified by Deltavista		Historical (at inception date)		Actual (when study was performed)	
	Selected new business 2007/2008	With Scoring	With Credit Rating	With Scoring	With Credit Rating
Motor TPL	74.783	74.603	64.889	74.567	71.257
MOD	19.557	19.530	17.902	19.539	18.945
Property	8.648	8.644	7.996	8.659	8.274
Household	31.293	31.241	27.424	31.246	29.935
Legal protection	15.774	15.737	13.419	15.793	n/a



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Basics for analysis.

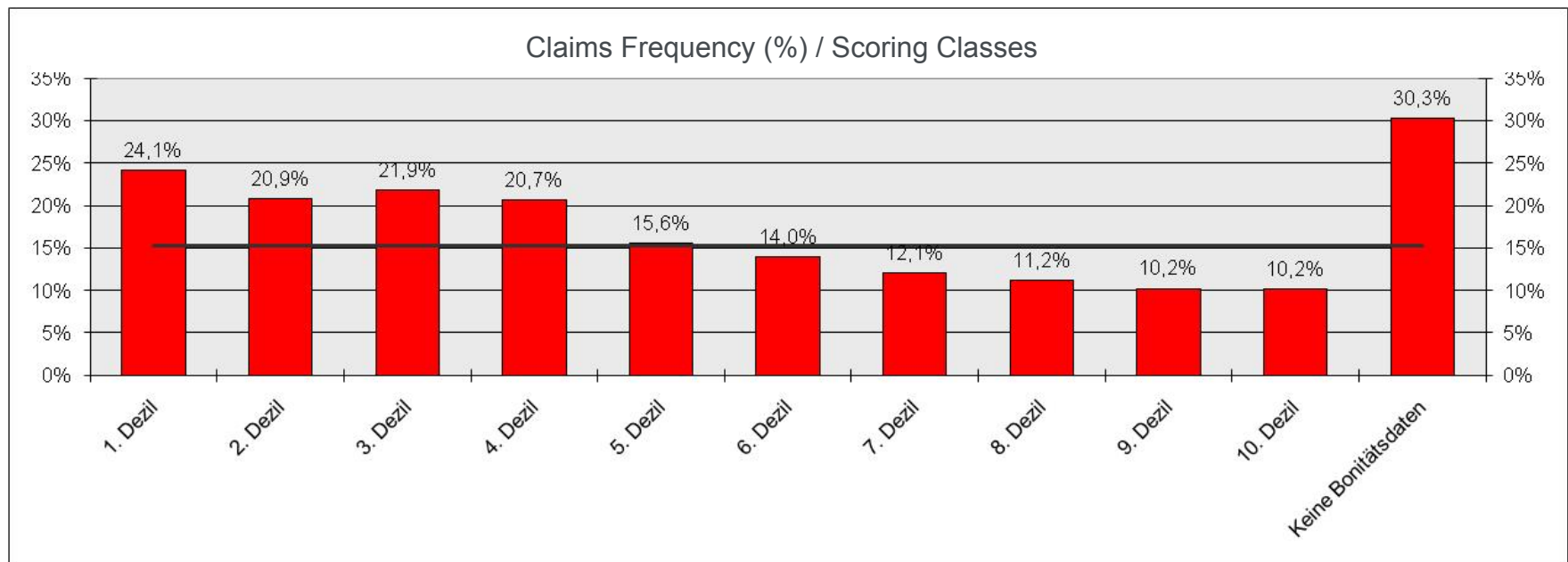
The original data was enriched with the scoring data. The relationship between credit rating and 3 years claims experience was calculated.

- New business for 2007 and 2008 was used.
- To assess the claims experience, the 3 year average after inception was used.
- After an initial comparison of credit rating and scoring, it turned out that scoring was a better indicator to predict claims experience. Therefore for detailed analysis, credit rating was neglected.
- The historical (at date of inception) scoring was used for the study.
- The relationship between scoring and
 - Claims frequency and
 - Claims ratio was calculated
- For the claims ratio calculation a LoB dependent threshold was used.
- Ten groups of equal size (Dezilen) were built for each LoB.



Motor TPL - (Credit) Scoring and Claims Frequency.

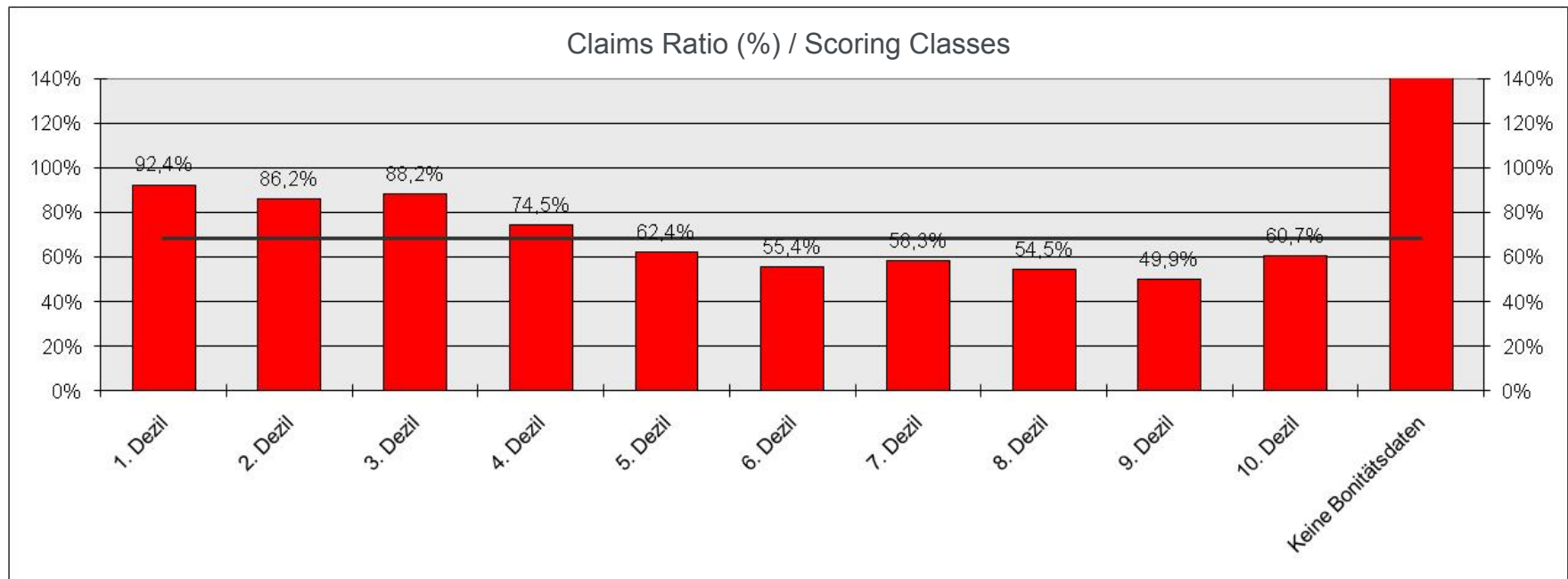
Motor TPL shows a very strong relationship between scoring and claims frequency. In this example all other rating criteria would be ruled out.





Motor TPL - (Credit) Scoring and Claims Ratio.

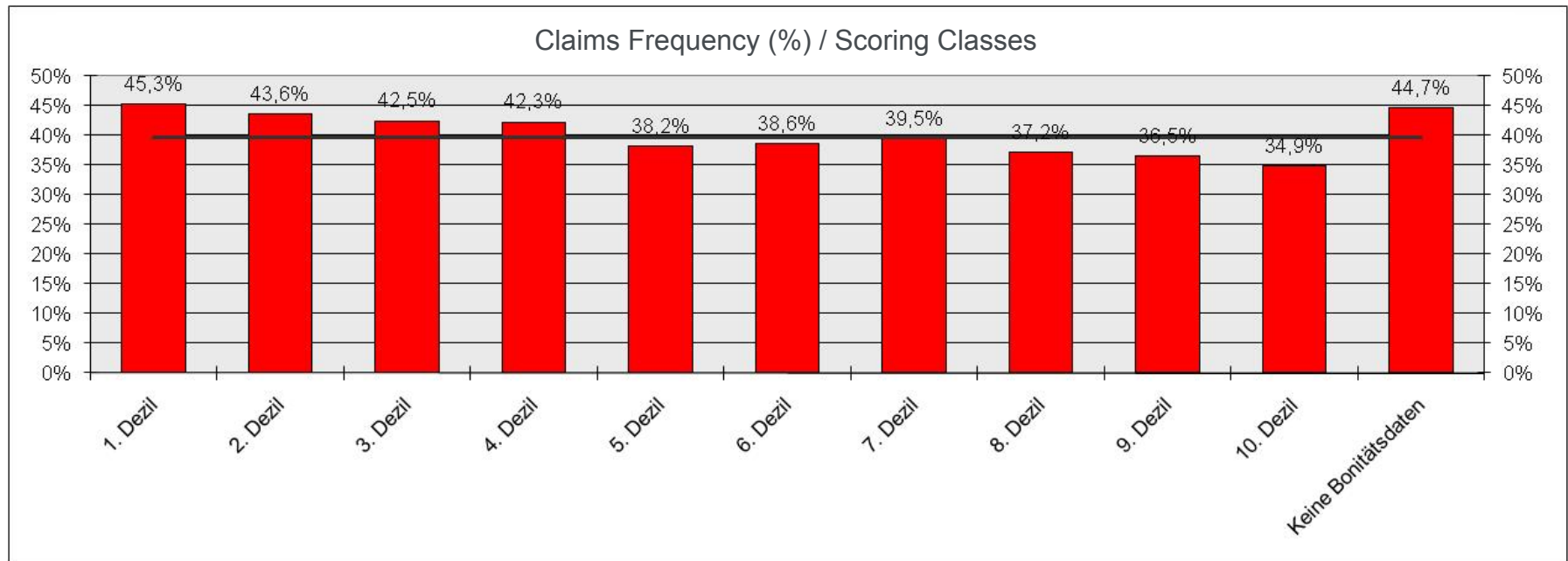
The same applies for claims ratio. Although large claims are filtered out, there is an effect with mid-sized claims.





Motor Own Damage - (Credit) Scoring and Claims Frequency.

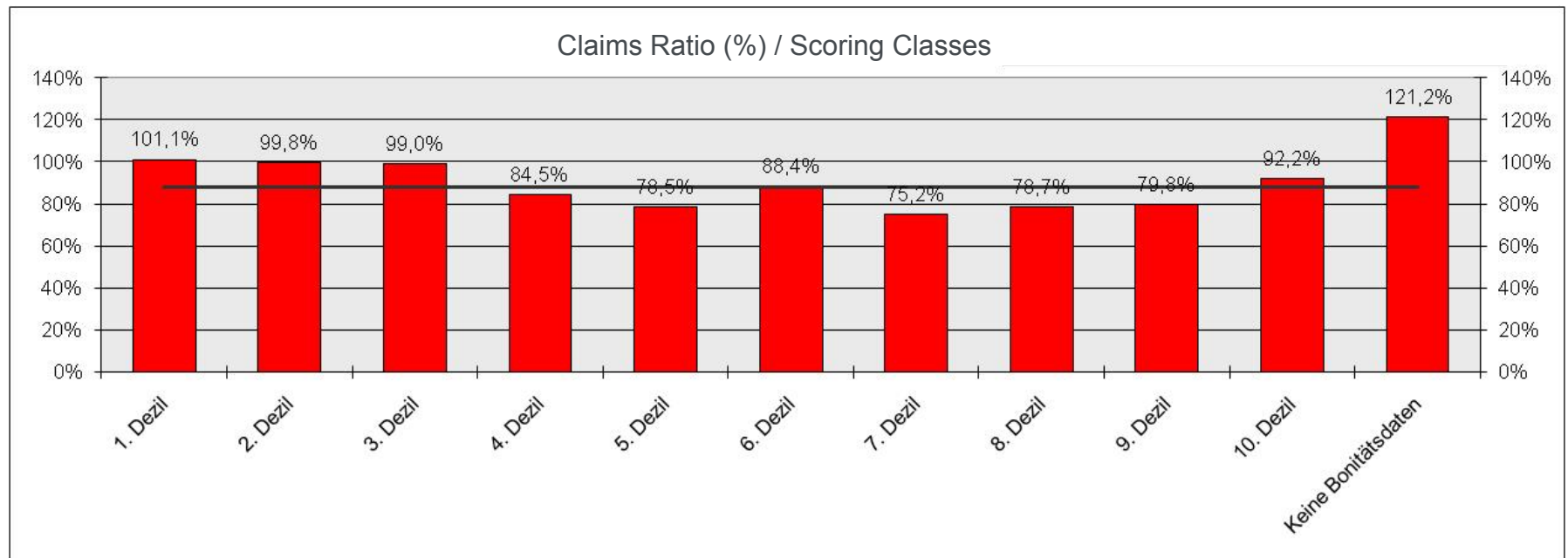
In MOD the dependency is still obvious but less strong.





Motor Own Damage - Scoring and Claims Ratio.

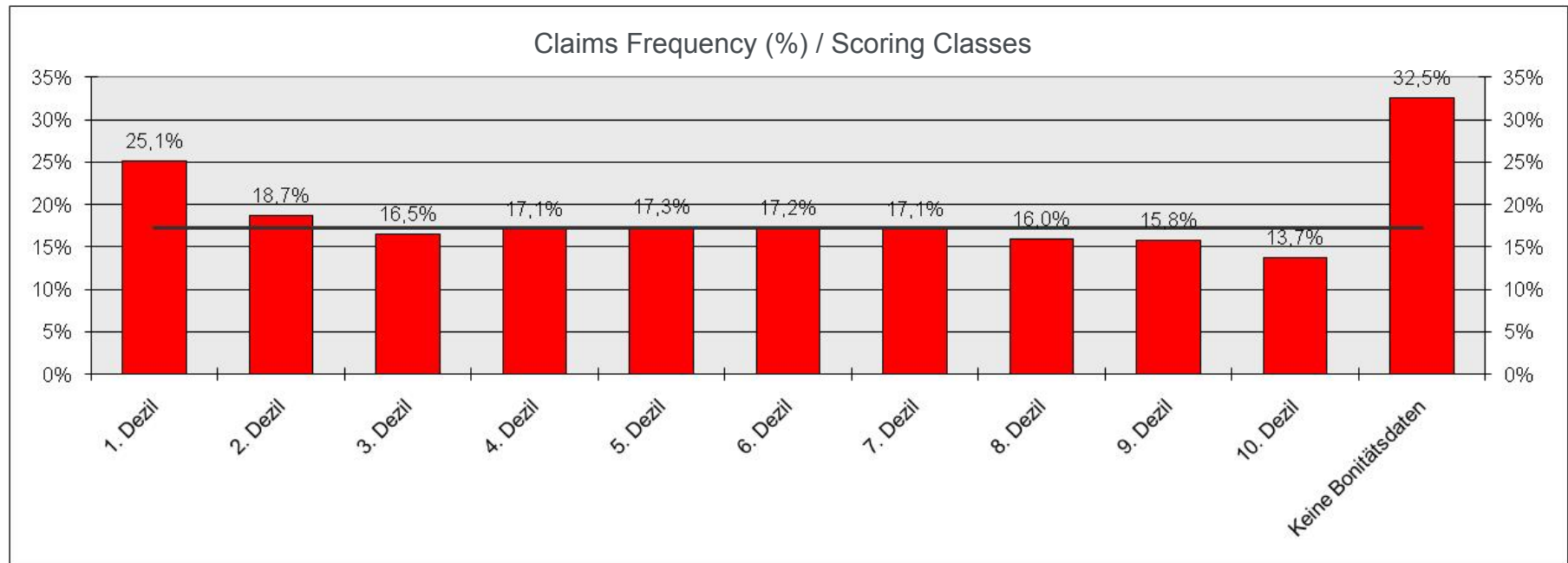
The small sample size needs to be taken into account.





Household - (Credit) Scoring and Claims Frequency.

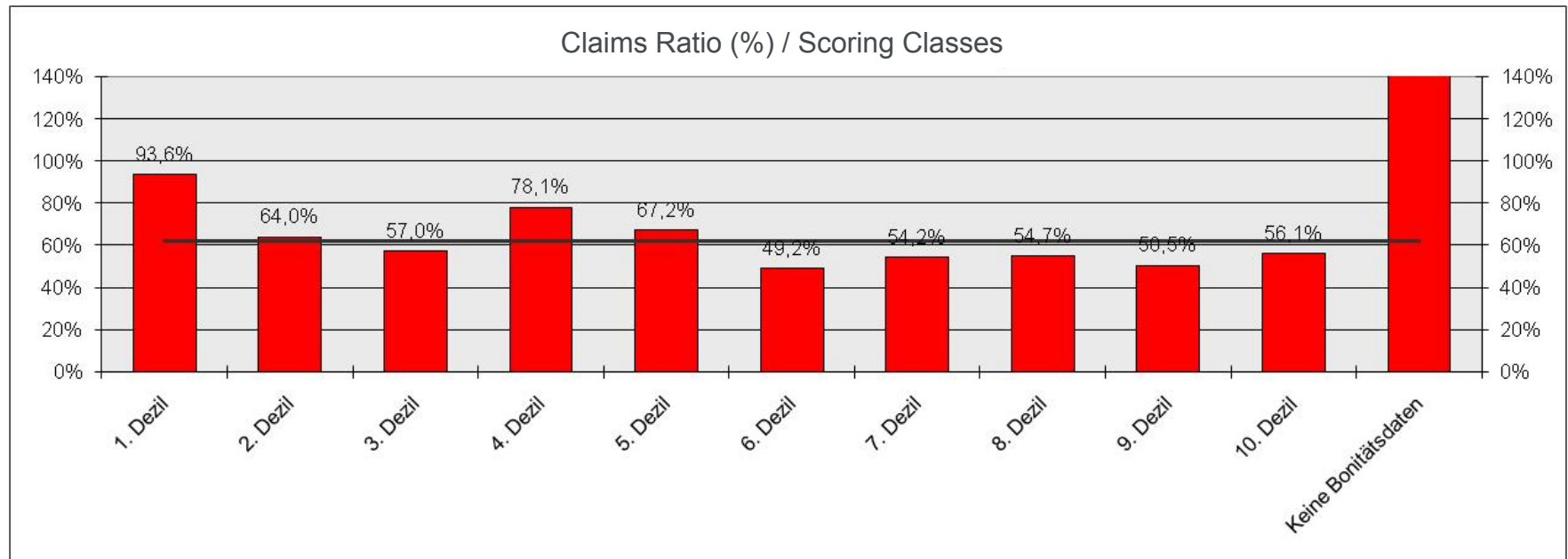
For household, the analysis shows a strong dependency as well.





Household - Scoring and Claims Ratio.

For analysis on claims ratio, a larger test sample would be favourable.





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Integration into Processes (1).

The integration of external data, which is only available online, leads to new requirements on IT applications that support processes.

A	Process: New Business	IT Req: High
	Sub-process: Pricing (Private)	
<ul style="list-style-type: none">▪ The analysis shows the relevance of (credit) scoring for almost all NL LoB▪ A credit scoring based rating criteria would be very selective.▪ For usage in pricing, it is required that premium calculation is done in online IT systems at PoS.▪ As it is common practice in banking to use credit scoring for interest calculations, it should be possible to solve legal and reputational issues. This topic must be tackled carefully.▪ It is possible to detect family relations (Son-Parents Issue in motor insurance)		

B	Process: New Business	IT Req: Low
	Sub-process: Pricing (Com.)	

- Especially for small/mid-sized fleets and/or newly founded companies the information available is poor.
- Credit rating is an indicator of how companies are managed and might help to predict how fleets/drivers are managed.



Integration into Processes (2).

Additional Options to use Credit Rating or Scoring.

C	Process: New Business Sub-process: Underwriting	IT Req: Medium
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- If usage in pricing is not possible it should be considered for use in underwriting. In case of poor credit rating:
 - Slowing down of offer preparation for online quotes
 - Policy awaiting Cash
 - Handling of Bonus / Malus scheme
 - ...

D	Process: Policy Admin. Sub-process: PQR	IT Req: Low
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- PQR is an internal process. Therefore no data enrichment at PoS is required and this process can be implemented with lower IT requirements.
- Preselected contracts can be enriched with credit scoring.
- The additional information leads to a improved prediction of future claims and therefore to better PQR decisions.



Integration into Processes (3).

Fraud detection is another field where credit scoring can help to improve decisions.

E

Process: Claims
Sub-process: Fraud detection

IT Req:
Medium

- Fraud detection system prediction quality depends on the amount of information that is fed into the algorithm.
- More information leads to better results.
- Possible usage:
 - Company owned fraud detection databases
 - Industry wide fraud detection databases.



Thank you!

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One more thing...

We are currently conducting a survey on pricing strategies in Motor Insurance:



- Online survey together with University of St. Gallen, a leading business school in Europe
- Focus on exploring pricing trends in Motor Insurance in certain markets (Switzerland, Germany, Austria, Singapore)
- We have a very good coverage of the three European markets (covering close to 90% of the premium volume)
- In Singapore, we still need more participation to generate relevant messages (currently AXA, AIG and AVIVA have filled out questionnaire)
- Online survey takes only 10 minutes, and will be analyzed by the University. The participating insurer gets a summarized report back, customized presentation are also available
- Please let me know if you are interested to participate, we will create customized online links for you!