Solidarity monitor

The 2nd measurement, 2018

DUTCH ASSOCIATION OF INSURERS

Contents

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Summary

Insurers use data to estimate the risks of the insured. An increasing number of (large) databases is becoming available for insurers and more and more big data analyses are applied, the Dutch central bank, DNB, also notes[1]. In theory, this could lead to premiums increasingly being differentiated, up to a point where certain consumers become uninsurable because they are no longer accepted or because the premiums they have to pay are too high. It is not sure whether this will happen: data might also lead to more insurability. The Dutch Association of Insurers wants to follow the developments with the solidarity monitor. With the aid of representative persons defined by an external party and the premiums they have to pay to various insurers for some types of policies, we analyse how the spread in the premium is developing and to what extent consumers remain insurable.

In this second version we can see some development for the first time, although with just two measurements it is still very difficult to interpret those developments. The second version mainly confirms that the measurement was done correctly, although it is still too early to draw proper conclusions.

[1] See page 37 of the DNB report 'Visie op de toekomst van de verzekeringssector' [vision of the future in the insurance sector] for example.

1 Introduction

From the very beginning insurers have used data for analysing risks and ensuring that sufficient funds are generated to be able to pay the expected claims. Now, with the increasing availability of data, these analyses can be performed better and with greater accuracy. In principle it is sufficient for the insurers to collect enough premiums to cover all the costs and claims. The insured with less damages thus contribute to the claims of the insured with more damages, the so-called solidarity principle. Big data makes it increasingly possible to shift this distribution, with people who have fewer risks also pay less. This could ultimately mean people with a high risk pay such a high premium that they practically cannot afford to insure themselves. This individual uninsurability is an undesirable situation that the Dutch Association wishes to avoid, if it were to arise. The Dutch Insurer Code of Conduct, for instance, says: "*we enable as many (potential) clients as possible to cover financial risks and will make every effort to prevent people being uninsured against their will.*"

In order to monitor whether this aim is being achieved, the Dutch Association of Insurers has developed the solidarity monitor. In this monitor, the premiums for a number of insurance policies are calculated for various representative persons at a number of insurers. By comparing annually whether the premiums are converging or actually moving further apart, we can establish how insurability is developing. In selecting the representative persons, it was decided to focus on the extremes, because the chances are greatest that premiums will diverge here or that consumers become uninsurable. As a result, the averages in this report are neither representative of the population nor of the average consumer.

In other words, the monitor measures differentiation in the long term. The monitor does not reveal whether this differentiation is caused by 'big data analyses' or by something else. So, this monitor does not measure the extent to which insurers apply big data. The monitor measures something far more important: how insurability develops, irrespective of the causes of possible uninsurability. If insurability appears to be under threat, the causes will have to be investigated separately.

2 The research

Using the solidarity monitor the Dutch Association of Insurers wants to keep track of whether the insurance premiums differentiate, whereby they become too high for some consumers, or whether some consumers become marginalised and no longer accepted. We translate this into two research questions, a principle question (question 1) and a question derived from it:

1. How does the spread of insurance premiums develop over this period?
2. To what extent do the consumers remain insurable?

Concerning insurability, we examine two aspects: acceptance (can everybody obtain a specific insurance) and affordability (how expensive is the insurance for the measurement person in relation to other measurement people). In order to answer these questions we use data supplied by MoneyView. The data consists of the premiums for various representative persons for five different types of insurance, whereby the supplying party guarantees that the cover offered by these products remains the same over the coming years. The different types of insurance are:

1. Third party liability insurance for motor vehicles [WA]
2. Private household contents insurance
3. Private building insurance
4. AVP (personal liability insurance)
5. ORV (term life insurance)

Based on the representative persons, we look for each type of insurance at the spread of the premiums and the affordability and insurability of the representative persons. Because we want to specifically focus on these elements, there are relatively many ‘extreme’ representative persons in the dataset, i.e. people who, through a combination of characteristics, are either easier or more difficult to insure than the average consumer. This means that the premium averages are not representative of the average consumer. The representative persons used in the study are explained in detail in the appendices.

3 The method

The data comprises various representative persons. We request the premium for each type of insurance (home, content, third party or liability) from insurers so that we have several premiums per type of insurance for each representative person. For example, if we have requested the premiums for 20 different representative persons from 10 different insurers, we would get a database of 200 premiums, one premium for each unique combination of representative person and insurer. We then calculate the following derivative variables based on these premiums:

- Average premium
- Standard deviation
- Coefficient of variation
- Rejection rateRejection rate
- Maximum rejection rate
- Maximin ratio

Average premium

As the first derived variable, we calculate per type of insurance the average premium for all representative persons with all the insurers. In the previous example, we would therefore calculate the average premium for all 200 unique representative-person-insurer combinations, by adding up all 200 premiums and dividing the sum by 200. The average premium becomes the yardstick for the affordability of the insurances. By way of a statistical test we can find out whether the average premium significantly increases or decreases statistically over the period of time. We base this on a two-sided test with a total significance level of 1%. Part of the change in the average premium can naturally be attributed to the devaluation of money, in other words inflation. For this reason we also investigate whether the increase of the average premium is higher or lower than the rate of inflation. The inflation rate in 2017 in the Netherlands was 1.3%.

Standard deviation

The standard deviation is a statistical benchmark for spread. The higher the standard deviation, the greater the difference between premiums. In a normal spread, 95% of the observations differs at most twice the value of the standard deviation from the average. The benchmark itself does not say very much because it depends on the values in which the measurement is made. For instance, if the premiums are not measured in euros but in guilders, not only would the average be a factor of 2.2 higher, but also the standard deviation. A variable with a high average value as a rule then also has a higher expected standard deviation than a variable with a low average value. It therefore makes no sense to compare the standard deviations of the different types of insurances with one another. However, it does make sense to analyse the movement in the standard deviation over time. We therefore want to calculate the standard deviation over several years and, through statistical analyses, keep track of whether it significantly increases, decreases or stays the same statistically over time.. We conduct a two-sided test with a total significance level of 1%. In every case the changes in the standard deviation emerged to be higher than inflation so that we will no longer mention this explicitly in the text.

Coefficient of variation

By dividing the standard deviation by the average premium, we get the coefficient of variation. This is a non-dimensional number, which means that it does not depend on the value in which the variable is measured. For example, if the premium is measured in euros, we obtain exactly the same coefficient of variation as when the premium is measured in guilders (Dutch coin before the Euro). The level of the average premium also does not coincide with the coefficient of variation, so that by using this yardstick it is possible to compare the spread of the premiums for different types of insurance with each other. Just as with the standard deviation, we use a two-sided F test with a significance value of 1% for determining whether the changes are statistically significant.

Rejection rate

The rejection rate is the number of combinations of representative persons and insurers not given insurance, divided by the total of representative persons with all the insurers. In the first fictitious example, we have 20 representative persons for whom we request a premium from 10 insurers. This gives 200 premiums for all representative-person-insurer combinations. If 100 representative-person-insurer combinations of this total are rejected, it means that 100 of the 200 possible combinations are rejected, which leaves a rejection rate of 50%. We do not know how this 50% is spread. For instance, it is possible that one half of all representative persons is not accepted by any insurer, whereas the other half of all representative persons is accepted everywhere. Another possible extreme is that every representative person is rejected by half the insurers. Both extreme scenarios produce a rejection rate of 50%, but in the first instance, only half the representative persons can get insurance, while in the second case, every representative person can get insurance. What we do know for a fact is that a rejection rate of 100% means that not a single representative person can get insurance. A rejection rate of 0% means that every representative person is accepted by every insurer.rejection raterejection raterejection raterejection raterejection rate. We can see that the refusals are often made on a mainly technical basis. For example many consumers are refused insurance because the product is for businesses, or because their Postal Code cannot be found by the insurer in the Postal Code table. Because such refusals do not concern the solidarity principle, we also provide an overview of the most common reasons for the refusals.

Maximum rejection rate

As the rejection rate, with the exception of the extreme cases of 0% and 100%, does not make clear whether all the representative persons are insurable, we also calculate the rejection rate for each representative person. This means that for all 20 of the representative persons in the example, we should calculate a rejection rate based on how many of the 10 insurers have refused their request. For representative person1 it may be that 2 of the 10 insurers don't want to accept them, which results in a rejection rate for this representative personof 20%. Representative person2 can have a completely different rejection rate, for example 60% if 6 of the 10 insurers refuse their request for insurance. This allows us to calculate a rejection rate for each of the representative persons. We then take a look at the representative personwho is refused insurance most often. The rejection rate for this representative personis the maximum. If the rejection rate is less than 100%, we know that even the people who are refused insurance most often can still obtain it from at least one insurer, which means in principle that all the representative personsare insurable. Therefore only the maximum rejection rate of 100% means that there is at least one representative person that is not accepted by any insurers.

Maximin ratio

We calculate the minimum premium for each representative person. In the example we examine the premiums that the 10 insurers charge each representative person. In principle this representative personwould come out as the cheapest, assuming they choose the insurer with the lowest premium. This is therefore their minimum premium. This minimum premium can differ from person to person. For each representative person the insurer estimates the risk of claims and sets the premium accordingly. Somebody with a low anticipated level of claims is easy to insure and will be charged a low premium, while somebody with a high anticipated level of claims is more difficult to insure and must therefore pay a higher premium. If we take the minimum premium for all the representative persons, we are able to determine which of the representative personshave the lowest minimum premium, and which of them have the highest. The lowest minimum premium is called the 'minimin premium' and the highest premium is called the 'maximin premium'. The maximin ratio is the relationship between the maximin premium and the minimin premium, or in other words, the maximin premium divided by the minimin premium. If the factor is 1, this means that all the representative personscan obtain the same minimum premium and in principle, everybody can be insured for the same premium. When the factor is 2, this means that the representative personwho is the most difficult to insure must pay twice the premium amount as the representative personwho is easiest to insure, assuming both representative persons

choose the insurer with the lowest premium. If the average premium is low, then the insurance is still affordable for everybody. In the case of an extreme ratio, such as a billion for example, the representative person most difficult to insure would have to pay so much more than the easiest representative person to insure, whereby the insurance becomes unaffordable. The most difficult representative personto insure therefore becomes uninsurable. It is not possible to set an objective limit for the maximum ratio above which the issue of being unaffordable arises, because it partly depends on the average premium and budget of the representative person. If we compare the maximin ratio over the period of time, the increasing maximin ratio implies that the spread in the premiums also increases and therefore for the most difficult representative person, and so it becomes even more difficult to find insurance. A decreasing maximin ratio indicates better insurability and a lower spread.

In summary, we can say that the standard deviation and coefficient of variation provide an insight into the spread of premiums. The rejection raterejection rate and the maximum rejection rate give a picture of the level of acceptance of the representative personsfor insurance, and with that the insurability. The average premium and the maximin ratio provide insight into the affordability of the insurances.

The databases

MoneyView has provided several databases for different types of insurance. We are specifically interested in the premiums for representative persons who have different types of personal characteristics and who have insured properties with a wide range of different features. If we vary all these features then we obtain a database that becomes too large to manage. We can therefore include fewer features or characteristics, but then we end up with too few features in the analysis. The fewer the factors we include in the analysis now, the greater the chance that over a period of time we find a factor that has not been included, but which has been differentiated on. Because of this it was decided to use a database with a large number of personal characteristics and a limited number of property features (the persons database), as well as a database with a limited number of personal characteristics and a larger number property features (the properties database). This way we can measure the influence of all the characteristics and features, while the volume remains manageable. Because many of both the personal and property characteristics can already be obtained by some of the insurers based on the Postal Code, MoneyView has added a third database, consisting of a large number of different, existing addresses (the address database) for one measurement person and a single property. If we take everything together, for 2018 we have received data about 93,657 different representative persons and 4,717,551 calculated premiums.
Elaborated representative persons In order to understand the results of the different types of insurances better and make them more tangible, we have put together the details of a number of the representative persons. This means that in addition to the overall calculations, we have recalculated the premiums for these individual representative persons. This makes clear what the consequences of the differentiation are in some specific, recognisable situations. We only take these elaborated representative persons into account for the persons database.

Hugo

Hugo is an adult[2] living in rented accommodation. He recently started his first job and his net earnings are 1000 euro. He is unable to afford a car on his salary, but he currently uses his bicycle and travels by train. He does have a driving license, but has never owned a car. He would like to have a car so that he can travel more quickly to his girlfriend who lives in another part of the country. Hugo has never smoked.

[2] The age varies in a number of cases because a single man of 18 years of age does not appear in every database, which means that ‘Hugo’ is born in either 1992, 1997 or 1999.

Stef and Babs

Stef and Babs are both 40. They have two young children and recently bought a house for the first time. Babs earns the most with 3000 euro net per month. They have a 10 year old Opel Corsa, but because of a couple of nasty accident they have accumulated no claim-free years. Stef and Babs have not been able to stop smoking so far.

Naïma and Morad

Naïma and Morad are also both 40. They have no children. They bought their house a couple of years ago and have recently had a new kitchen installed. Morad is the breadwinner and earns 4000 euros net per month. For their kite surfing hobby they have purchased a larger car: an 11 year old Opel Astra Station-wagon. They also have not accumulated any claim-free years. Naïma and Morad have never smoked.

Henk

Henk is 70 years old. He lives with his almost grown-up child in a rented property and has a monthly income of 1000 euros. He drives in a 10 year old Opel Corsa and has accumulated 10 claim-free years. Henk smokes medium-strong rolling tobacco.

Coby

Coby is 70 and recently became a pensioner. She lives in rented accommodation and has a net income of 2000 euros a month. Unfortunately she has not accumulated any claim-free years. Coby has not smoked for at least 30 years.

Ali and Meryem

Ali and Meryem are 40 years old and still have two live-in children. They own their home and Ali earns 4000 euros net per month. Ali and Meryem have never smoked and drive an 11-year-old Opel Astra. The number of claim-free years is not specified.

Erik and Hans

Erik and Hans are 70 and have been drawing their pension for a couple of years. They are owner-occupiers and have a net income of 5000 euros a month. They drive a ten year old Opel Corsa and have accumulated 10 claim-free years. Erik and Hans smoked their last cigarette more than 30 years ago.

Karel and Ineke

Karel and Ineke are both 70. They are owner-occupiers and have a net monthly income of 3000 euros. They drive a 12 year old Peugeot 307 and have accumulated 10 claim-free years. Karel and Ineke both smoke filter tipped cigarettes.

4 Results

Third party liability [WA]

	People		Regions		Addresses	
	2017	2018	2017	2018	2017	2018
Average premium (rounded off in euros)	785	818	794	795	259	276
Standard deviation (rounded off euros)	626	620	731	666	68	79
Coefficient of variation	0.80	0.76	0.92	0.84	0.26	0.29
Rejection rateRejection rate (%)	23	23	17	16	5	6
Maximum rejection rate (%)	56	50	52	52	12	14
Maximin ratio	19	18	19	20	2	2

We received from MoneyView a database containing representative persons with a range of different personal characteristics, a database containing people with different regional features, and a database containing one specific measurement person for the many different addresses in the Netherlands. There is no database containing the many different property features. In place of this, each database uses three different passenger cars.

The increase in the average premium in the persons and addresses database is statistically significant and higher than inflation. With respect to the standard deviation and the coefficient of variation we see a mixed picture, because the spread in the regional database reduces in significance, while the spread in the addresses database increases significantly. The rejection rates, the maximum deviation percentages and the maximin ratios also show a mixed picture.

The insurers who refused a representative person did so for various reasons. The two most common reasons are that the Postal Code cannot be traced in the Postal Code table, and that the request concerns a private person, while the insurance product is only for the business market. Moreover, requests are refused based on minimum age, maximum age, the combination of the car's capacity and the car's weight, or the number of claim-free years and the age, or an unknown address. The list of reasons for refusal in 2018 is more or less the same as that for 2017.

We obtained the following picture for specific representative persons. This concerns the persons database:

	Average premium		Standard deviation		Coefficient of variation		Rejection rateRejection rate		Maximum Rejection percentage		Maximin ratio	
	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018
Hugo	2444	2362	1102	1051	0.45	0.45	43	40	48	50	3.4	2.2
Stef and Babs	811	837	312	329	0.39	0.39	8	12	12	17	2.3	2.5
Naïma and Morad	740	741	234	234	0.32	0.32	11	16	12	17	1.5	1.6
Henk	342	370	131	151	0.38	0.41	5	7	6	10	2.3	3.3
Coby	275	296	86	100	0.31	0.34	5	6	6	7	1.8	1.8
Ali and Meryem	962	978	430	441	0.45	0.45	19	18	22	21	2.8	2.5
Erik and Hans	389	420	160	183	0.41	0.44	11	7	12	10	3.0	3.3
Karel and Ineke	506	557	182	204	0.36	0.37	11	8	12	10	1.7	2.1

In four cases the increase in the average premium is both statistically significant and higher than inflation for representative person, Henk, Coby, Erik and Hans, as well as Karel and Ineke. The changes in both the standard deviation and the coefficient of variation are nowhere statistically significant. We can see no clear development with the rejection raterejection rate, the maximum rejection rates and the maximin ratios.

Household contents

	People		Objects		Postal Code	
	2017	2018	2017	2018	2017	2018
Average premium (rounded off in euros)	121	119	136	137	143	148
Standard deviation (rounded off euros)	42	46	64	69	53	58
Coefficient of variation	0.35	0.38	0.47	0.50	0.37	0.39
Rejection rate (%)	7	6	36	34	1	1
Maximum rejection rate (%)	44	35	80	83	5	13
Maximin ratio	3	3	4	3	2	3

For the household contents insurance MoneyView has provided three different databases. The first one has mainly many different personal characteristics and some property features, the second has mainly many property features and some personal characteristics, and the third database contains data for a specific measurement person at numerous different addresses. There is a detailed description of these representative persons in the appendices.

This result shows that the spread is increasing in all the databases[3]. All increases, both for the standard deviation and the coefficient of variation, are statistically significant. The average premium in the persons database is reducing, but is increasing in the other two. These changes are also statistically significant, although it is only the increases in the Postal Code database that are higher than the rate of inflation.

With respect to the personal characteristics, most of the refusals arise because the *household contents meter* (a standard tool in the Dutch market) used is not suitable for the variables associated with the representative persons. Cover is often refused for property where part of the building is thatched. Furthermore, in both databases representative persons are refused by insurers who are more regionally oriented, as the representative persons do not live in the region where the insurer is based. The distribution of reasons for refusal for 2018 is roughly the same as in 2017.

We obtained the following picture for the elaborated representative persons. This concerns the persons database. All the representative persons in this database live in rented accommodation.

	Average premium		Standard deviation		Coefficient of variation		Rejection rate		Maximum Rejection rate		Maximin ratio	
	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018
Hugo	93	100	43	45	0.47	0.45	2	2	2	2	1.3	1.2
Stef and Babs	129	130	41	47	0.32	0.36	2	2	2	2	1.4	1.5
Naïma and Morad	130	126	40	43	0.31	0.34	2	2	2	2	1.3	1.4
Henk	110	111	40	45	0.37	0.40	2	2	2	2	1.0	1.0
Coby	105	101	33	36	0.31	0.36	2	2	2	2	1.3	1.2
Ali and Meryem	140	139	44	49	0.32	0.36	2	2	2	2	1.5	1.6
Erik and Hans	123	115	40	41	0.33	0.36	44	35	44	35	1.3	1.3
Karel and Ineke	126	120	41	45	0.32	0.38	2	2	2	2	1.3	1.3

[3] In the original data supplied by MoneyView the data spread in the address database for household contents in 2017 is unlikely to increase much. Further analysis of the data indicated that there is one insurer who calculates extremely high premiums for certain Postal Codes - not just 10 times as much, but even 1,000 times as much. This insurer was not included in the previous set of data supplied. As the results would be useless on account of the obvious error, we have decided not to include this insurer except for the address database for household contents. This only affects the size of the increase and it has no effect on the final conclusions because either with or without this insurer, the spread and the average premium increase significantly.

With household contents insurance the average premium for Hugo statistically increased significantly with an increase that is higher than inflation. With Coby, Erik and Hans and also Karel and Ineke, we can see a statistically significant decrease of the average premium. There are no statistically significant changes to the standard deviation and the coefficient of variations.

As with the previous year, Erik and Hans are refused relatively often because they have a high income. In the home contents market many insurers still use the home contents meter (a standard tool in the Dutch market) to calculate the risk. This household contents meter, which has not been maintained since 1 January 2016, had a net monthly income of up to €4,850 as its 'highest' income category. Erik and Hans have an income of €5,000 which is just over, so that they end up 'off the meter' and are therefore not automatically accepted by some insurers. They can certainly approach another insurer or sign up for household contents insurance in another way, such as via an assessor or even by calculating the contents value themselves and submitting that for example.

Buildings

	People		Objects		Addresses	
	2017	2018	2017	2018	2017	2018
Average premium (rounded off in euros)	179	182	417	421	196	202
Standard deviation (rounded off euros)	41	45	436	463	51	73
Coefficient of variation	0.23	0.25	1.05	1.10	0.26	0.36
Rejection rate (%)	2	2	40	39	1	2
Maximum rejection rate (%)	2	2	82	80	8	15
Maximin ratio	1	1	14	6	2	2

We also have three databases for buildings insurance, the first with representative persons who differ mainly on account of their personal characteristics, the second with representative persons who differ mainly because of the property features, and the third with a fixed representative person at various addresses in the Netherlands. Just as with the household contents insurance we can see the spread on all the databases increasing, which is statistically significant. This applies to both the standard deviation and the coefficient of variations. The average premium increase slightly, but this is statistically significant for the persons and address databases, as well as being higher than the rate of inflation. The rejection rates and the maximum rejection rates give a mixed picture, although the changes are very slight. The rejection rates for the properties database is notable, just like last year. This is because the surface area, the contents or reinstatement value of some of the properties exceeds the maximum set by the insurers. Moreover, we have found that refusals occur on the basis of Postal Code in the case of regional insurers, or because the property is partly thatched. The distribution of reasons for refusal in 2018 pretty well match those for 2017.

We obtained the following picture for the elaborated representative persons. This concerns the persons database. All representative persons in the database own their own house.

	Average premium		Standard deviation		Coefficient of variation		Rejection rate		Maximum Rejection rate		Maximin ratio	
	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018
Hugo	184	191	43	47	0.23	0.25	2	2	2	2	1.2	1.3
Stef and Babs	183	187	41	46	0.23	0.24	2	2	2	2	1.2	1.2
Naïma and Morad	179	181	40	42	0.22	0.23	2	2	2	2	1.3	1.3
Henk	176	177	41	45	0.23	0.25	2	2	2	2	1.3	1.3
Coby	171	170	41	43	0.24	0.25	2	2	2	2	1.3	1.3
Ali and Meryem	183	187	41	46	0.23	0.24	2	2	2	2	1.2	1.2
Erik and Hans	173	172	40	42	0.23	0.25	2	2	2	2	1.3	1.3
Karel and Ineke	172	172	41	42	0.24	0.25	2	2	2	2	1.3	1.3

The average premium significantly increased statistically only with Hugo. This increase is higher than the rate of inflation. The changes in the standard deviation and the coefficient of variation are nowhere statistically significant.

Personal liability insurance [AVP]

	People	
	2017	2018
Average premium (rounded off in euros)	62	63
Standard deviation (rounded off euros)	16	17
Coefficient of variation	0.26	0.27
Rejection rate (%)	11	11
Maximum rejection rate (%)	22	22
Maximin ratio	5	4

With respect to liability insurance, MoneyView provided one database containing representative persons. We can see the average premium, the standard deviation and the coefficient of variation all increasing from 2017 to 2018. These increases are statistically significant and higher than inflation. The distribution of the reasons for refusal hardly differs in 2018 compared with 2017, which is mainly because the insured amount requested is too high.

It provides the following picture when converted into the elaborated representative persons:

	Average premium		Standard deviation		Coefficient of variation		Rejection rate		Maximum Rejection rate		Maximin ratio	
	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018
Hugo	55	57	17	18	0.30	0.31	11	11	22	22	2.4	1.9
Stef and Babs	71	73	12	13	0.17	0.18	11	11	22	22	1.3	1.3
Naïma and Morad	65	65	11	11	0.17	0.17	11	11	22	22	1.4	1.2
Henk	69	70	13	14	0.19	0.20	11	11	22	22	2.0	1.4
Coby	42	42	7	8	0.18	0.19	11	11	22	22	2.6	2.0
Ali and Meryem	71	73	12	13	0.17	0.18	11	11	22	22	1.3	1.3
Erik and Hans	64	64	12	12	0.19	0.19	11	11	22	22	2.0	1.6
Karel and Ineke	64	64	12	12	0.19	0.19	11	11	22	22	2.0	1.6

The average premium for all the representative persons significantly increased statistically, although for some of the representative persons that cannot be seen in the table due to rounding. The increase was above the level of inflation for four of the eight people. The standard deviation and coefficient of variation with five of the eight representative persons increased significantly statistically. The rejection rate and the maximum rejection rate remained the same with all the representative persons. The maximin ratio saw a decrease with most people.

Term life insurance [ORV]

The term life insurances are more complicated than general insurances. The premium depends partly on the insured amount that is paid out when the insured party dies and on the period for which the insurance is taken out. Additionally, 1 or 2 people can be insured, and depending on the stipulations and the type of insurance chosen, it is possible that the premium changed in the meantime. MoneyView has designed the 'comparison premium' to make the premium properly comparable. This is the sum of the discounted value of all premiums whereby account is taken in the discounting factor of a notional interest rate of 2% and the probability of death. Because this is the sum of all premiums paid over the entire period, the comparison premium is very high, and as a result it is not easily recognised and not properly comparable with the premiums for general insurance. We have corrected this by reducing the comparison premium to an annual basis, by dividing it by the number of years over which the cover was valid. This results in a comparison premium on an annual basis which we have used for the analysis.

MoneyView supplied the data for three different types of term life insurance. Of the first, the insured amount decreases, the second remains level for the entire period, and in the third the insured amount decreases linearly. For these types of insurance a database with representative persons, a database with one fixed measurement person and also a large number of different addresses were supplied. The results are given below, first for the representative persons and then for the addresses.

Representative persons

	Annuity decreasing		Level		Linearly decreasing	
	2017	**2018**	**2017**	**2018**	**2017**	**2018**
Average premium (rounded off in euros)	943	880	1404	1343	839	785
Standard deviation (rounded off euros)	1721	1630	2357	2343	1568	1484
Coefficient of variation	1.83	1.85	1.68	1.74	1.87	1.89
Rejection rate (%)	43	47	44	47	43	46
Maximum rejection rate (%)	100	100	100	100	100	100
Maximin ratio	1067	1208	1255	1051	1042	1171

The picture that emerges from the table of representative persons corresponds well with all the products. The average premium and the standard deviations decrease. Although the latter does not mean that the spread decreases, as shown by the variation coefficients, which increase with all products. In general the rejection rates are higher. Because the rejection rates are once again relatively high, we examined the most significant reasons for them. It emerged from the table below that the increase was mainly caused by the increase in the number of refusals based on the insured amount.

The number of times that the reason for refusal appears, annuity decreasing

	2017	**2018**
The insured amount is too high for the first insured.	7614	12762
The upper age limit is too high for the first insured.	10948	10676
The entry age is too high for the first insured.	10032	10152
The product can only be issued for a single insured.	4290	4290
The premium is too low.	126	228
The upper age limit for the premium payment of the first is too high.	208	208

Number of times that the reason for refusal arises, level

	2017	2018
The insured amount is too high for the first insured.	6810	11298
The upper age limit is too high for the first insured.	10804	10244
The entry age is too high for the first insured.	9960	9984
The product can only be issued for a single insured.	5184	5148
Invalid payment period month selected.	858	858
The premium is too low.	104	212

The number of times that the reason for refusal appears, linearly decreasing.

	2017	2018
The insured amount is too high for the first insured.	7614	12102
The upper age limit is too high for the first insured.	10740	10180
The entry age is too high for the first insured.	9564	9588
The product can only be issued for a single insured.	4290	4290
The premium is too low.	142	249
The upper age limit for the premium payment of the first is too high.	208	208

The results based on the address database differ from the results based on the representative persons database. The average premium and the spread are lower, because there are fewer extreme representative persons in the results. The standard deviations and the coefficient variations in the addresses database increase. With the exception of the standard deviation for those insurances with a level amount, these are statistically significant increases. Just as with the representative persons database, the premium decreases significantly statistically.

Addresses

	Annuity decreasing		Level		Linearly decreasing	
	2017	2018	2017	2018	2017	2018
Average premium (rounded off in euros)	65	63	94	91	57	55
Standard deviation (rounded off euros)	18	21	16	16	17	19
Coefficient of variation	0.27	0.33	0.17	0.18	0.30	0.35
Rejection rate (%)	0	0	2	2	0	0
Maximum rejection rate (%)	0	0	2	2	0	0
Maximin ratio	1	1	1	1	1	1

We translated the total picture to our elaborated representative persons, which gave the following picture:

	Average premium		Standard deviation		Coefficient of variation		Rejection rate		Maximum Rejection rate		Maximin ratio	
Annuity decreasing	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**
Hugo	112	**107**	65	67	0.58	0.63	11	17	27	33	8.3	8.4
Stef and Babs	796	**748**	609	597	0.76	0.80	19	23	33	42	21.7	22.8
Naïma and Morad	412	**390**	297	301	0.72	0.77	19	23	33	42	18.0	17.8
Henk	6501	6556	4949	5017	0.76	0.77	93	94	100	100	13.9	13.9
Coby	3444	3585	2728	3040	0.79	0.85	93	94	100	100	11.7	11.7
Ali and Meryem	412	**390**	297	301	0.72	0.77	19	23	33	42	18.0	17.8
Erik and Hans	5209	5341	4128	4537	0.79	0.85	93	94	100	100	12.3	12.3
Karel and Ineke	9956	9826	7556	7513	0.76	0.76	93	94	100	100	14.3	14.3
Level												
Hugo	138	132	84	82	0.61	0.62	12	17	27	34	11.7	9.6
Stef and Babs	1266	1216	1003	1012	0.79	0.83	20	24	33	40	34.6	31.7
Naïma and Morad	630	**595**	489	470	0.78	0.79	20	24	33	40	28.6	28.0
Henk	8472	8609	5938	6002	0.70	0.70	93	95	100	100	18.5	17.1
Coby	4433	4407	3028	3031	0.68	0.69	93	95	100	100	15.9	15.1
Ali and Meryem	630	**595**	489	470	0.78	0.79	20	24	33	40	28.6	28.0
Erik and Hans	6488	6391	4450	4414	0.69	0.69	93	95	100	100	15.7	15.7
Karel and Ineke	12412	12473	8678	8708	0.70	0.70	93	95	100	100	17.8	17.4
Linearly decreasing												
Hugo	102	99	59	61	0.58	0.62	12	17	27	33	7.6	8.1
Stef and Babs	673	**635**	502	490	0.75	0.77	19	23	34	41	18.3	19.0
Naïma and Morad	353	337	248	252	0.70	0.75	19	23	34	41	15.1	14.6
Henk	5968	5990	4544	4558	0.76	0.76	92	94	100	100	13.8	13.8
Coby	3143	3246	2479	2711	0.79	0.84	92	94	100	100	11.6	11.6
Ali and Meryem	353	337	248	252	0.70	0.75	19	23	34	41	15.1	14.6
Erik and Hans	4756	4837	3754	4048	0.79	0.84	92	94	100	100	12.3	12.3
Karel and Ineke	9142	8979	6932	6826	0.76	0.76	92	94	100	100	14.2	14.2

The average premium for the annuity decreasing insurances has decreased significantly statistically (in bold font) for Hugo, Stef and Babs, Naima and Morad and Ali and Meryem. The average premium for the level insurances has decreased significantly statistically for Naima and Morad and Ali and Meryem. The average premium for the linearly decreasing insurances has decreased significantly statistically for Stef and Babs. Regarding the standard deviation and the coefficient of variation, none of the changes by any of the representative persons is statistically significant.

5 Summary of the results

The results were described in detail in the previous chapter. With all the results it was eventually all about affordability and insurability. We are unable to determine an absolute limit for these definitions, because they differ per situation, but we can convert the results into conclusions about increases and decreases regarding affordability and insurability. For example, affordability decreases if the increase in the average premium is statistically significant and lies above the rate of inflation. When the average premium decreases significantly, affordability actually increases. Growth of maximin ratio also implies a change in the affordability. If this increases, then the insurance becomes less affordable, while a decrease implies that the insurance is actually more affordable. With respect to insurability, we look at the rejection rate and the maximum rejection rate: an increase means a decrease in insurability, while a decrease means that the insurability has increased. The results are less clear-cut with respect to the standard deviation and the coefficient of variation. An increase in this variable means that the spread becomes greater, which indicates that affordability decreases for specific groups. And a decrease means the opposite.

Because there are so many results, we have summarised these in a table in two different ways: once with symbols and once with figures. The criterion we have applied is that an increase or decrease in the premium, the standard deviation or the coefficient of the variation, must be statistically significant at a significance level of 1% with a two-sided test. We show it as unchanged if this is not the case.

Summary of results: ↑ means an increase, and ↓ a decrease. With an average premium, the standard deviation and the coefficient of variation ↑ means a statistically significant increase, and ↓ means a statistically significant decrease of the average premium and the standard deviation means ⇑ a statistically significant increase greater than inflation. Statistical significance is determined by a significance level of 1% with a two-sided test.

Type	Data	Ave. premium	Standard deviation	Variation Coefficient	Refusals %	Maximum refusals %	Maximin ratio
Third party liability [WA]	Person	⇑				↓	↓
Third party liability [WA]	Region		↓	↓	↓		↑
WA [third party liability]	Postal Code	⇑	⇑	↑	↑	↑	↑
Household contents	Person	↓	⇑	↑	↓	↓	↓
Household contents	Property	↑	⇑	↑	↓	↑	↓
Household contents	Postal Code	⇑	⇑	↑	↑	↑	↑
Buildings	Person	⇑	⇑	↑			
Buildings	Property		⇑	↑	↓	↓	↓
Buildings	Postal Code	⇑	⇑	↑	↑	↑	
AVP [personal liability insurance]	Person	⇑	⇑	↑			↓
ORV [fixed term insurance] annuity decreasing	Person	↓	↓		↑		↑

Type	Data	Ave. premium	Standard deviation	Variation Coefficient	Refusals %	Maximum refusals %	Maximin ratio
ORV [fixed term insurance] annuity decreasing	Postal Code	↓	↑	↑			
ORV [fixed term insurance] level	Person	↓		↑	↑		↓
ORV [fixed term insurance] level	Postal Code	↓		↑			
ORV [fixed term insurance] Lin decreasing	Person	↓	↓		↑		↑
ORV [fixed term insurance] Lin decreasing	Postal Code	↓	↑	↑			

Summary of the results in figures: the cells contain the percentage increases and decreases for 2017 with respect to 2016. A percentage given in bold font for the average premium and the standard deviation means a statistically significant increase greater than the rate of inflation. A cell without a figure means that the change is statistically not significantly different from zero. Statistical significance is determined by a significance level of 1% with a two-sided test.

Type	Data	Ave. premium	Standard deviation	Variation Coefficient	Refusals %	Maximum refusals %	Maximin ratio
WA [third party liability]	Person	**4%**				-11%	-5%
WA [third party liability]	Region		-9%	-9%	-5%		4%
WA [third party liability]	Postal Code	**7%**	**16%**	8%	17%	19%	8%
Household contents	Person	-1%	**8%**	9%	-17%	-21%	-8%
Household contents	Property	1%	**7%**	6%	-6%	3%	-14%
Household contents	Postal Code	**3%**	**10%**	6%		175%	16%
Buildings	Person	**2%**	**8%**	7%			
Buildings	Property		**6%**	5%	-3%	-2%	-54%
Buildings	Postal Code	**3%**	**44%**	39%	26%	80%	
AVP [personal liability insurance]	Person	**2%**	**5%**	3%			-18%
ORV [fixed term insurance] annuity decrease	Postal Code	-3%	**17%**	21%			

Type	Data	Ave. premium	Standard deviation	Variation Coefficient	Refusals %	Maximum refusals %	Maximin ratio
ORV [fixed term insurance] level	Person	-4%		4%	7%		-16%
ORV [fixed term insurance] level	Postal Code	-3%		7%			
ORV [fixed term insurance] Lin decrease	Person	-6%	-5%		8%		12%
ORV [fixed term insurance] Lin decrease	Postal Code	-3%	**15%**	19%			

The above table shows some very large changes in percentage, such as with maximum rejection rates for the household contents insurance in the Postal Code database, or for various variables in the Postal Code database for buildings insurance. This is caused by the background values being relatively small, whereby a small change very quickly becomes a large percentage change. It is therefore also important to base the general conclusions on both the change percentages and the background figures. We then see the following development:

The ***average premium*** for general insurance mainly increases, and decreases for life insurance. The increases are mostly statistically significant and are above the rate of inflation.

With ***standard deviation*** and **coefficient of variation** statistically significant increases appear the most. In three cases the standard deviation has shown a statistically significant decrease, although from two of the three cases it is clear that this was as a result of decreasing premiums and not because of a decrease of the spread, because the decrease in the coefficient of variation was not statistically significant.

With respect to the **rejection rate** we can see that increases with life insurance are the most prevalent. The picture is mixed for general insurance. The picture given for **maximum rejection rate** mainly corresponds with this, although there are more increases than decreases for general insurance.

The **maximin ratio** gives the most mixed picture. With WA [third-party liability for motor vehicles] there is more an indication of an increase, while with AVP [personal liability insurance] and ORV [fixed term insurance] the total picture is erratic and doesn't lend itself to having a clear conclusion.

With two measurement points it is not possible to talk about trends. The monitor shows that we can certainly make statistically significant pronouncements with the method used. Therefore the Association of Insurers has decided to proceed with this type of measurement.

Appendix 1 The MoneyView data

MoneyView has supplied data for five different types of insurance. These are the following types:

- Third party liability insurance for motor vehicles [WA]
- Household contents insurance
- Building insurance
- AVP (personal liability insurance)
- Term life insurance

Several different datasets were used per type of insurance. Normally there are three datasets:

- A dataset with a large number of different representative persons and some property to be insured. This is the persons database.
- A dataset with a large number of different properties and a few representative persons. This is the property database.
- A dataset with 1 property and 1 measurement person for a very large number of real addresses.

Next is a description of the data supplied by MoneyView for each insurance product.

Motor – Third party liability [WA]

For the database containing personal characteristics, MoneyView gathered 252 different profiles and calculated the premium for 42 different types of insurance for each profile. This created a database with 10,584 different WA premiums. The profiles represent all possible combinations of the following features:

Car / construction date / catalogue price / current value / weight
- Peugeot 307 SW Turbo Diesel / 01JUL2006 / 28300 / 4531 / 1377
- Opel Astra Station wagon Petrol / 01JUL2007 / 21970 / 5537 / 1215
- Opel Corsa 1.2 business Petrol / 01JUL2008 / 14795 / 4329 / 1000

Date of birth / age:
- 01JAN1933 / 85
- 01JAN1938 / 80
- 01JAN1943 / 75
- 01JAN1948 / 70
- 01JAN1958 / 60
- 01JAN1968 / 50
- 01JAN1978 / 40
- 01JAN1988 / 30
- 01JAN1990 / 28
- 01JAN1992 / 26
- 01JAN1994 / 24
- 01JAN1996 / 22
- 01JAN1998 / 20
- 01JAN2000 / 18

Accident-free years
- 0
- 10

Postal Code / House number
- 1102 LA / 1
- 4817 KZ / 9
- 8431 MB / 401

For the database containing the property features, MoneyView gathered 18 different profiles from 210 different addresses, and calculated the premium for 42 different types of insurance for each combination. This created a database with 158,760 different WA premiums. The profiles represent all possible combinations of the following features:

Car / construction date / catalogue price / current value / weight
- Peugeot 307 SW Turbo Diesel / 01JUL2006 / 28300 / 4531 / 1377
- Opel Astra Station wagon Petrol / 01JUL2007 / 21970 / 5537 / 1215
- Opel Corsa 1.2 business Petrol / 01JUL2008 / 14795 / 4329 / 1000

Date of birth / Age / Accident-free years

- 01JAN2000 / 18 / 0
- 01JAN1992 / 26 / 2
- 01JAN1978 / 40 / 0
- 01JAN1978 / 40 / 10
- 01JAN1948 / 70 / 0
- 01JAN1948 / 70 / 10

Regarding the analysis of actual addresses, MoneyView calculated for 20,000 addresses the WA premiums for 42 insurances. This created a database with 840,000 different premiums. The following details were selected for the persons and property features:

Age:	40 years
Accident free:	10 years
Car:	Opel Corsa 1.2 business Petrol
Date of construction:	01JUL2008
Catalogue price:	14,795
Current market value:	4,329
Weight:	1,000

Household contents

For the database containing personal characteristics, MoneyView gathered 2,464 different profiles and calculated the household contents premium for 63 different types of insurance for each profile. This created a database with 155,232 different household contents premiums. The profiles represent all possible combinations of the following features:

Family situation:

- Single without children
- Single with children
- Family without children
- Family with children

Date of birth / age:

- 01MRT1948 / 70
- 01MRT1953 / 65
- 01MRT1958 / 60
- 01MRT1963 / 55
- 01MRT1968 / 50
- 01MRT1973 / 45
- 01MRT1978 / 40
- 01MRT1983 / 35
- 01MRT1988 / 30
- 01MRT1993 / 25
- 01MRT1998 / 20

Monthly income of breadwinner (net)

- 1,000
- 2,000
- 2,500
- 3,000
- 3,500
- 4,000
- 4,500
- 5,000

Postal Code / House number / Year of construction / Household contents / Surface area

- 2061 TS 71 / 01JAN1927 / 383 / 118
- 2623 HM 7 / 01JAN1980 / 325 / 105
- 2719 TN 50 / 01JAN1994 / 375 / 135
- 2805 GW 68 / 01JAN1986 / 325 / 100
- 7813 CP 4 / 01JAN2012 / 435 / 112
- 8606 BD 5 / 01JAN1931 / 315 / 110
- 9663 EJ 32 / 01JAN1970 / 350 / 110

Owner

- No

Type of dwelling

- Terraced house

Type of construction
- Brick/concrete

Number of rooms
- 5

Reinstatement value
- 210,000

WOZ value
- 210,000

Glass cover
- No

Standard household effects
- 65,000

Standard household effects info file
- 65,000

Security
- None

Own risk
- 0

For the database containing property features, MoneyView gathered 720 different profiles and calculated the household contents premium for 63 different types of insurance for each profile. This created a database with 45,360 different household contents premiums. The profiles represent all possible combinations of the following features:

Family situation:
- Single without children

Date of birth / age:
- 01MRT1985 / 33

Monthly income of breadwinner (net)
- 2,400

Postal Code / House number
- 1015 BR / 78
- 1261 HL / 16
- 1325 LB / 11
- 1551 SC / 1
- 3059 XT / 536
- 3404 GC / 38
- 4524 MB / 6
- 5133 AK / 6
- 6041 LX / 97A
- 6971 EG / 41

- 7415 BV / 11
- 8051 SZ /7
- 8441 PH /81
- 9335 TB /113
- 9714 CP / 12A

Owner
- No

Construction date / Household contents / Surface area / Number of rooms
- 01JAN1614 / 713 / 212 / 7
- 01JAN1825 / 1908 / 425 / 9
- 01JAN1883 / 1532 / 329 / 9
- 01JAN1928 / 400 / 110 / 6
- 01JAN1935 / 2200 / 210 / 4
- 01JAN1954 / 350 / 136 / 4
- 01JAN1978 / 325 / 105 / 4
- 01JAN2002 / 400 / 135 / 5
- 01JAN2005 / 713 / 225 / 5
- 01JAN2007 / 450 / 120 / 4
- 01JAN2008 / 608 / 156 / 4
- 01JAN2009 / 250 / 83 / 2

Type of construction
- WOOD/CONCRETE
- WOOD FRAME BUILDING
- BRICK/CONCRETE
- BRICK/THATCH

Type of dwelling
- Terraced house

Type of construction
- Brick/concrete

Number of rooms
- 5

Reinstatement value
- 210,000

WOZ value
- 210,000

Glass cover
- No

Standard household effects
- 65,000

Standard household effects info file
- 65,000

Security
- None

Own risk
- 0

Regarding the analysis of actual addresses, MoneyView calculated for 20,000 addresses the household contents premiums for 63 insurances. This created a database with 1,260,000 different premiums. The following details were selected for the persons and property features:

Date of birth	01MRT1981
Family situation	FAMILY WITH CHILDREN
Monthly income	2150
Owner	NO
Type of dwelling	TERRACED HOUSE
Type of construction	BRICK/CONCRETE
Date of construction	01JAN1980
House volume m3	375
House floor area m2	110
Number of rooms	4
Reinstatement value	210,000
WOZ value of house	210,000
Glass cover	NONE
Standard household effects	65,000
Standard household effects info file	65,000
Security	NONE
Own risk	0

Buildings

For the database containing personal characteristics, MoneyView gathered 2,464 different profiles and calculated the premium for 61 different types of insurance for each profile. This created a database with 150,304 different building premiums. The profiles represent all possible combinations of the following features:

Family situation:

- Single without children
- Single with children
- Family without children
- Family with children

Date of birth / age:

- 01MRT1948 / 70
- 01MRT1953 / 65
- 01MRT1958 / 60
- 01MRT1963 / 55
- 01MRT1968 / 50
- 01MRT1973 / 45
- 01MRT1978 / 40
- 01MRT1983 / 35
- 01MRT1988 / 30
- 01MRT1993 / 25
- 01MRT1998 / 20

Monthly income of breadwinner (net)

- 1,000
- 2,000
- 2,500
- 3,000
- 3,500
- 4,000
- 4,500
- 5,000

Postal Code / House number / Year of construction / Household contents / Surface area

- 2061 TS 71 / 01JAN1927 / 383 / 118
- 2623 HM 7 / 01JAN1980 / 325 / 105
- 2719 TN 50 / 01JAN1994 / 375 / 135
- 2805 GW 68 / 01JAN1986 / 325 / 100
- 7813 CP 4 / 01JAN2012 / 435 / 112
- 8606 BD 5 / 01JAN1931 / 315 / 110
- 9663 EJ 32 / 01JAN1970 / 350 / 110

Type of dwelling

- Terraced house

Type of construction

- Brick/concrete

Number of rooms

- 5

Upper floors
- Concrete

WOZ value
- 210,000

Glass cover
- Double glazing

Reinstatement value
- 210,000

Reinstatement value info sheet
- 210,000

Foundation
- Piling activities

House construction
- Normal

External wall construction
- Normal

Kitchen finish
- 0

Bathroom finish
- 0

Living room finish
- Normal

Own risk
- 0

For the database containing property features, MoneyView gathered 720 different profiles and calculated the premium for 61 different types of insurance for each profile. This created a database with 43,920 different building premiums. The profiles represent all possible combinations of the following features:

Family situation:
- Single without children

Date of birth / age:
- 01MRT1985 / 33

Monthly income of breadwinner (net)
- 2,400

Postal Code / House number
- 1015 BR / 78
- 1261 HL / 16
- 1325 LB / 11
- 1551 SC / 1
- 3059 XT / 536
- 3404 GC / 38
- 4524 MB / 6
- 5133 AK / 6
- 6041 LX / 97A
- 6971 EG / 41
- 7415 BV / 11
- 8051 SZ /7
- 8441 PH /81
- 9335 TB /113
- 9714 CP / 12A

Year of construction / House contents / Surface area / Number of rooms/ House construction
- 1614 / 713 / 212 / 7 / Normal
- 1825 / 1908 / 425 / 9 / Unique
- 1883 / 1532 / 329 / 9 / Normal
- 1928 / 400 / 110 / 6 / Flat
- 1935 / 2200 / 210 / 4 / Normal
- 1954 / 350 / 136 / 4 / Normal
- 1978 / 325 / 105 / 4 / Normal
- 2002 / 400 / 135 / 5 / Flat
- 2005 / 713 / 225 / 5 / Normal
- 2007 / 450 / 120 / 4 / Normal
- 2008 / 608 / 156 / 4 / Flat
- 2009 / 250 / 83 / 2 / Flat

Type of construction
- WOOD/CONCRETE
- WOOD FRAME BUILDING
- BRICK/CONCRETE
- BRICK/THATCH

Type of dwelling
- Terraced house

Upper floors
- Concrete

WOZ value
- 210,000

Glass cover
- Double glazing

Reinstatement value
- 210,000

Reinstatement value info sheet
- 210,000

Foundation
- Piling activities

External wall construction
- Normal

Kitchen finish
- 0

Bathroom finish
- 0

Living room finish
- Normal

Own risk
- 0

Regarding the analysis of actual addresses, MoneyView calculated for 20,000 addresses the building premiums for 61 insurances. This created a database with 1,220,000 different premiums. The following details were selected for the persons and property features:

Age	37
Date of birth	01MRT1981
Family situation	FAMILY WITH CHILDREN
Monthly income	2150
Year of construction	1971
Type of dwelling	TERRACED HOUSE
Type of construction	BRICK/CONCRETE
Number of rooms	4
Upper floors	CONCRETE
WOZ value of house	210,000
Glass cover	DOUBLE GLAZING
Reinstatement value	210,000
Reinstatement value info sheet	210,000
House floor area m2	110
House volume m3	375
Foundations	PILING
House construction	NORMAL
External wall construction	NORMAL
Kitchen finish	0
Bathroom finish	0
Living room finish	NORMAL
Own risk	0

Personal liability insurance [AVP]

MoneyView has created 1 database for AVP. This consists of 88 different profiles at 199 different, existing addresses. For each of the combinations the premium for 33 insurances is calculated, resulting in a database with 563,376 different AVP premiums. The profiles represent combinations of the following characteristics:

Family situation:
- Single without children
- Single with children
- Family without children
- Family with children

Date of birth / age:
- 01JAN1948 / 70
- 01JAN1953 / 65
- 01JAN1958 / 60
- 01JAN1963 / 55
- 01JAN1968 / 50
- 01JAN1973 / 45
- 01JAN1978 / 40
- 01JAN1983 / 35
- 01JAN1988 / 30
- 01JAN1993 / 25
- 01JAN1998 / 20

Entry date
- 01JAN2018

Amount
- 1,000,000
- 2,500,000

Term life insurance [ORV]

Three different types of insurance have been included for the term life insurance:

- Annuity decreasing
- Fixed
- Linearly decreasing

A database has been created for each of these types based on the profiles and real addresses. The profiles are the same for each type of insurance. Combined on the basis of the following variables:

Smoker 1st contracting party / Smoker 2nd contracting party

- Yes / n/a
- Yes / yes
- No / n/a
- No / No

Date of birth for 1st contracting party / Date of birth for 2nd contracting party

- 01MRT1943 / n/a
- 01MRT1943/ 01MRT1946
- 01MRT1948 / n/a
- 01MRT1948/ 01MRT1951
- 01MRT1953 / n/a
- 01MRT1953/ 01MRT1956
- 01MRT1958 / n/a
- 01MRT1958/ 01MRT1961
- 01MRT1963 / n/a
- 01MRT1963/ 01MRT1966
- 01MRT1968 / n/a
- 01MRT1968/ 01MRT1971
- 01MRT1973 / n/a
- 01MRT1973/ 01MRT1976
- 01MRT1978 / n/a
- 01MRT1978/ 01MRT1981
- 01MRT1983 / n/a
- 01MRT1983/ 01MRT1986
- 01MRT1988 / n/a
- 01MRT1988/ 01MRT1991
- 01MRT1993 / n/a
- 01MRT1993/ 01MRT1996

BMI 1st contracting party / BMI 2nd contracting party

- 22.8 / n/a
- 22.8 / 22.8

Capital 1st contracting party

- 50,000
- 100,000
- 150,000
- 200,000
- 250,000
- 300,000
- 400,000
- 500,000

- 600,000
- 700,000
- 800,000
- 900,000
- 1,000,000

The capital of the 2nd contracting party is not applicable or the same as that for the 1st contracting party.

Postal Code
- 1011AC

Entry date
- 01MRT2018

Period in months
- 120
- 240
- 360

Premium payment period
- Monthly

The profiles are always the options that belong to either 1 or 2 contracting parties. This produces a total of 1,716 profiles. For decreasing annuity the premiums for these profiles are calculated for 48 insurances, with 47 insurances being used for level insurance, and 46 insurances for decreasing linear insurance. This created a database of 82,368 premiums for the decreasing annuity, and 80,652 for the level insurances, and 78,936 for the decreasing linear insurances.

With respect to Postal Codes, the premiums are calculated for 199 different Postal Code areas (4 number code, plus 2 letter code). For decreasing annuity the premiums are calculated for 48 insurances, with 47 insurances being used for level insurance, and 46 premiums are calculated for the decreasing linear insurance. This created a database of 9,552 premiums for the decreasing annuity insurances, and 9,353 premiums for the level insurances, and 9,154 for the decreasing linear insurances. The following variables are used for the profile of the insured party:

Number of contracting parties:	1
Smokes:	No
Date of birth:	01APR1988
BMI:	22.8
Postal Code:	2274 EX
Capital sum insured	150,000
Entry date:	01APR2018
Period in months:	360
Premium payment period:	Monthly