

PAI DATA ANALYTICS

CLAIM DATA BEHAVIOR ANALYSIS

Group Discussion

Expense Group

Maria-UNPAR

Andiansyah-UGM

Kevin-Unbraw

Martha-Asuaransi Astra

Muna-Hanwha Life

Novi-Nasional Reinsurance

GOALS



Business Target

Reserve

Sophisticated Metodology

VS

Underwriting Result

Profit

Human Justification

Workflow



Preprocessing

DATA CLEANSING

DESCRIPTIVE STATISTIC

BUILD DATA SET

Data Cleansing

STATUS

All the "A" status or Active we change to "Y"

all the "K" or Klaim we change to "N" similar to "T" or Terminated

N/A

Uncomplete data deleted from table

COLUMN

Column that we use are Line Bisnis, Class Bisnis, Job, Age, Sex, Smoking Stat., Extra Mortality, Produk, Policy Term(Mnth), Sum Insured, Status

Column that we don't use are "Bulan Akuntansi, Tahun Akuntansi, Tahun Underwriting, Bulan Underwriting, Currency, Nomor Polis, Tanggal Masuk, Tanggal Lahir, Usia Awal, Tanggal Berakhir"

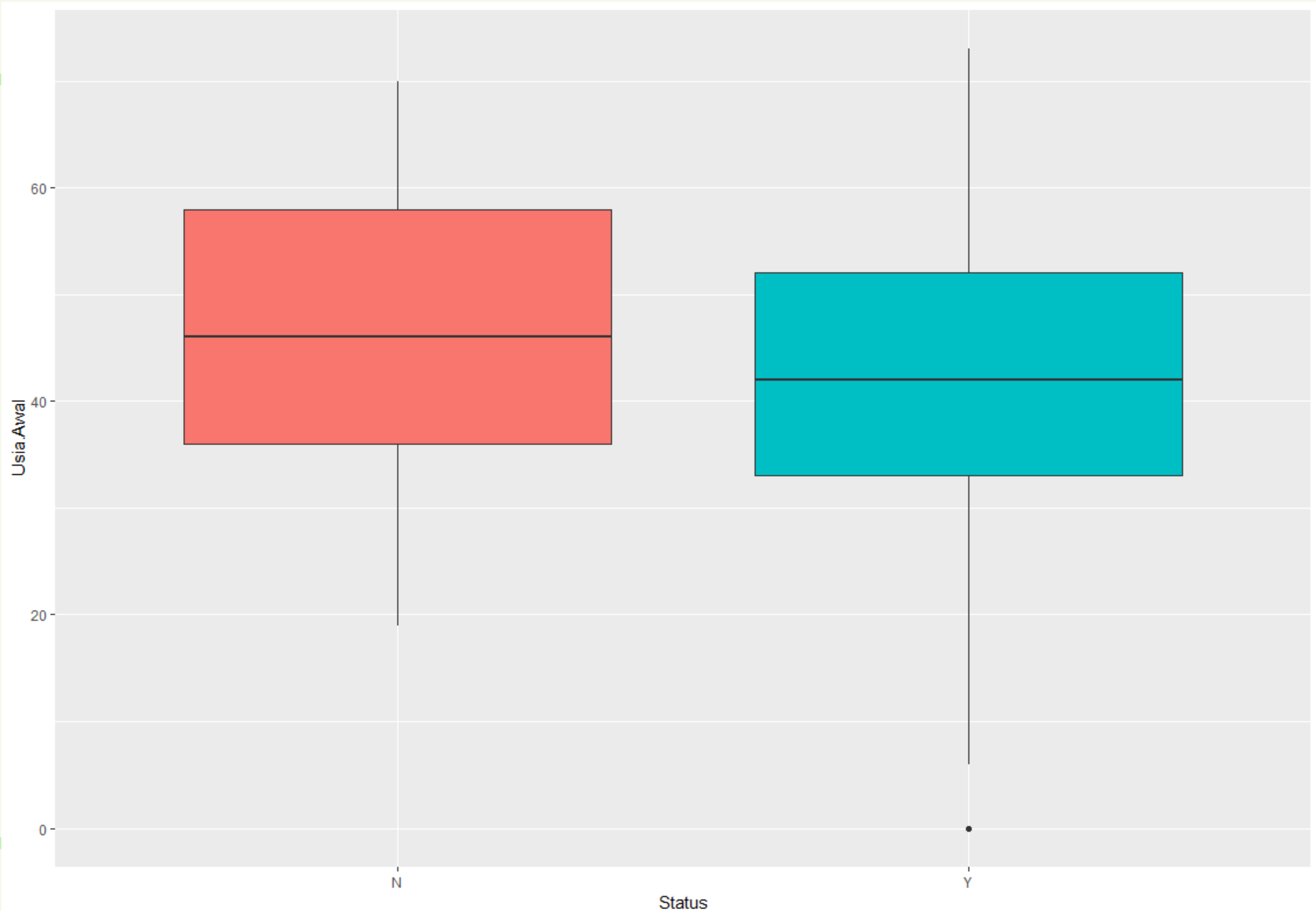
BOX PLOT

Blue : Active

Red : Terminated
and Claim

Absis : Status

Ordinat : Age



Status

N

Y

SUMMARY

> summary(insurance)

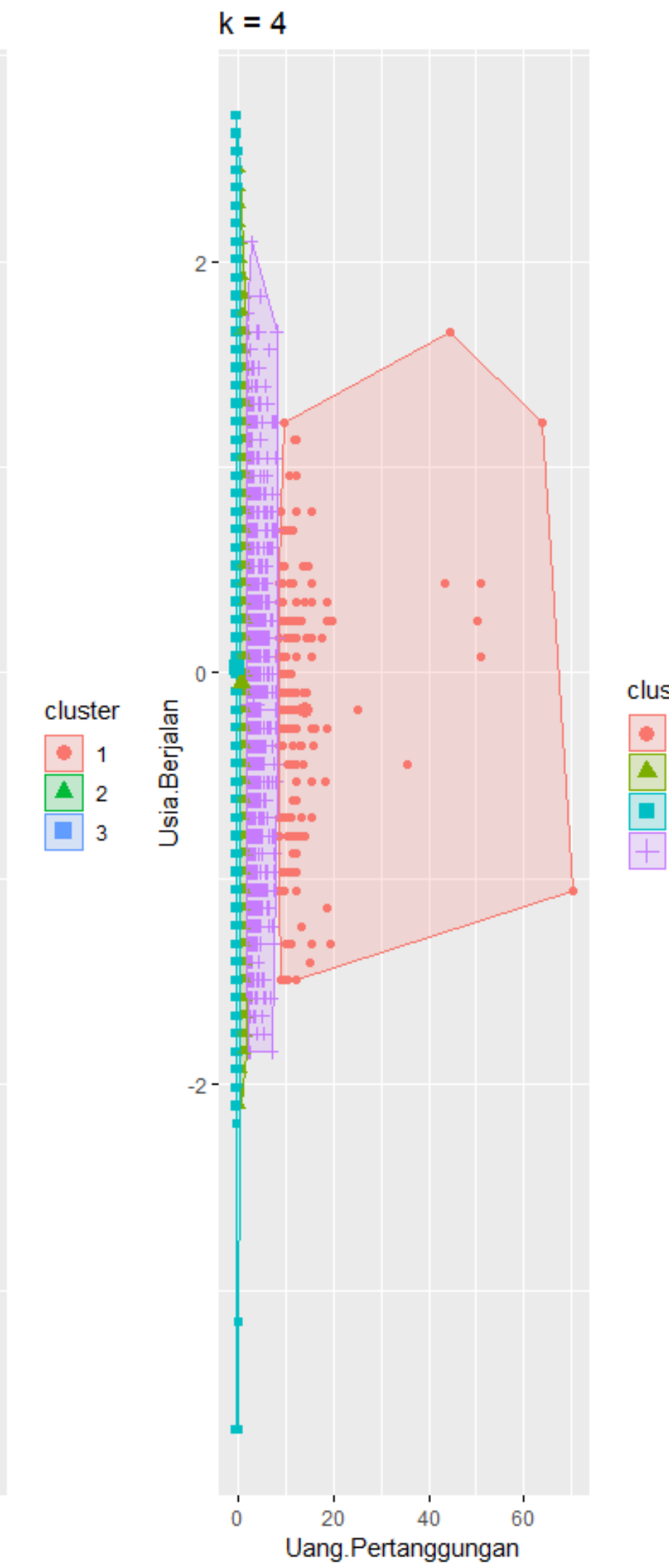
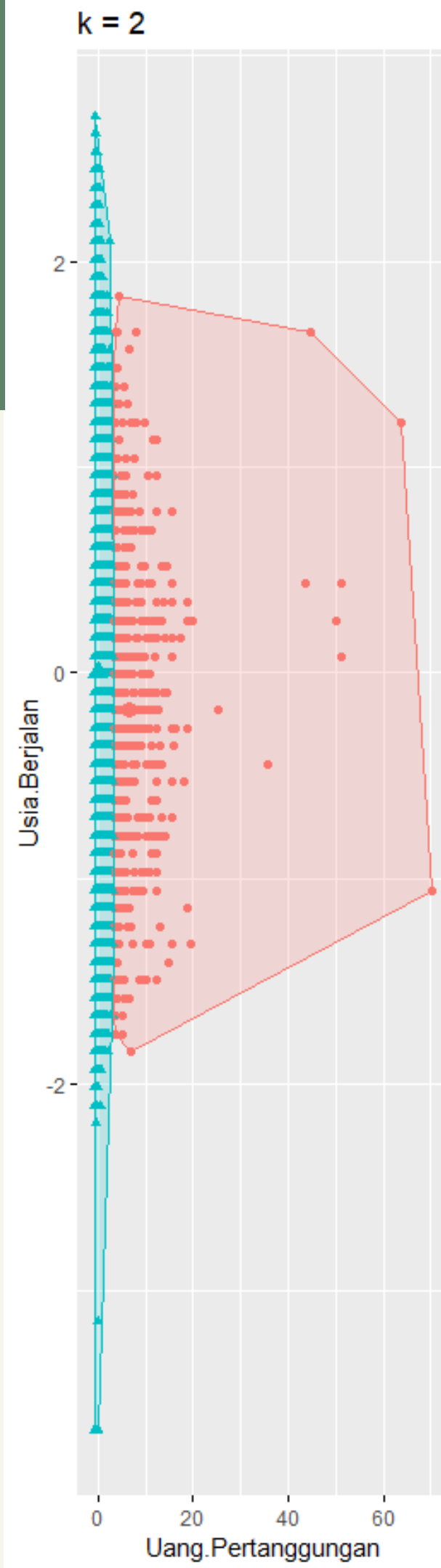
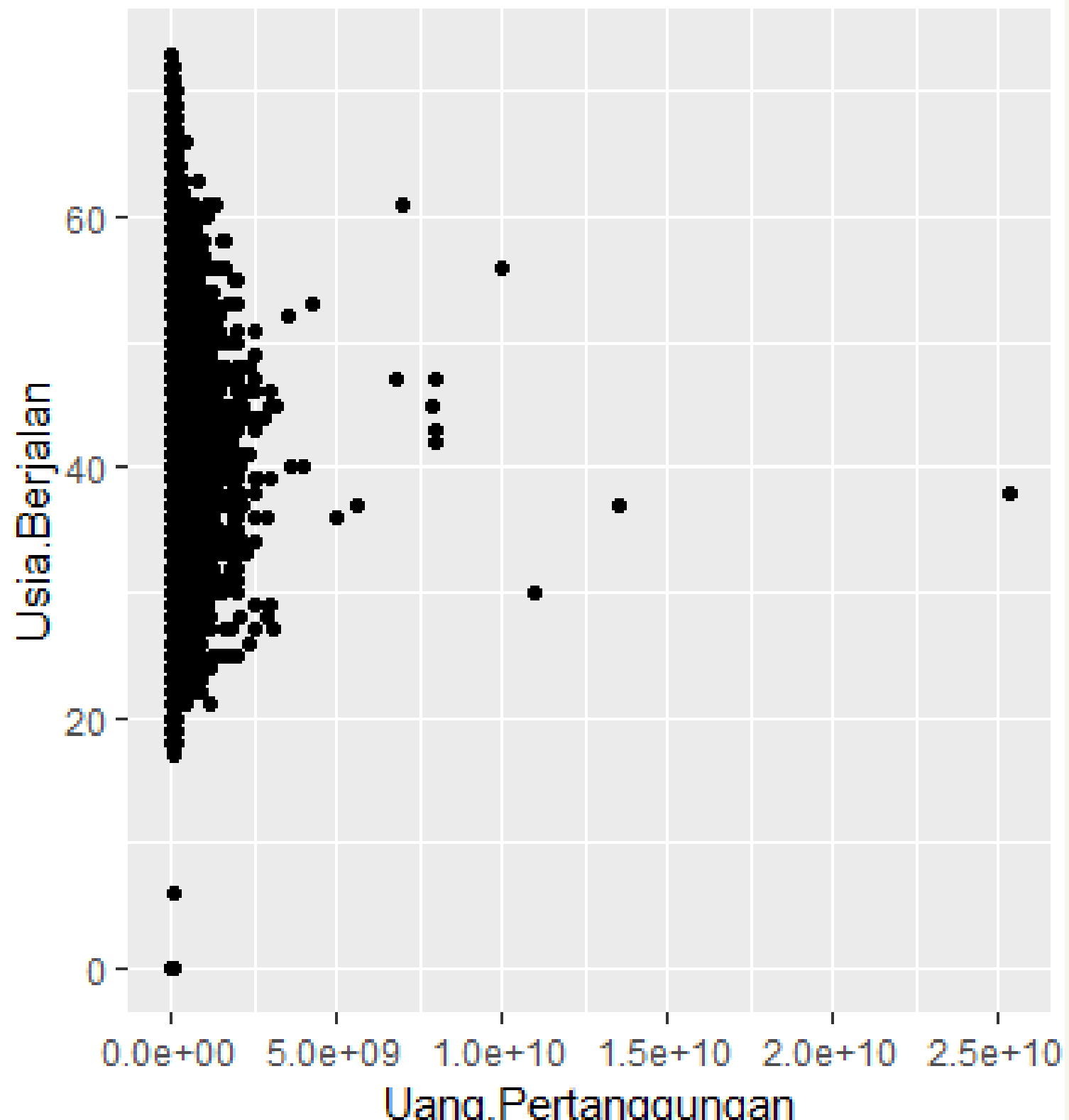
Line.Bisnis	Kelas.Bisnis	Pekerjaan	Usia.Awal
GROUP :87981	MEDICAL : 112	: 4	Min. : 0.00
INDIVIDUAL: 7546	NON MEDICAL:95415	Lain-lain :90889	1st Qu.:33.00
		OWNER : 4	Median :42.00
		P.Swasta(Karyawan/i): 4625	Mean :43.04
		Pedagang : 1	3rd Qu.:52.00
		Wiraswasta : 4	Max. :73.00

Jenis.Kelamin	Smoking.Status	Extra.Mortality	Produk
FEMALE: 411	NOT SMOKING:95405	Min. : 0.00000	Produk 1 :76507
MALE :95116	SMOKING : 122	1st Qu.: 0.00000	Produk 3 : 4338
		Median : 0.00000	Produk 13: 4318
		Mean : 0.05749	Produk 38: 2638
		3rd Qu.: 0.00000	Produk 78: 2089
		Max. :200.00000	Produk 14: 1165
			(Other) : 4472

Lama.Pertanggung..Bulan.	Uang.Pertanggung	Status
Min. : 3.0	Min. :3.000e+03	N: 2298
1st Qu.: 25.0	1st Qu.:3.000e+07	Y:93229
Median : 47.0	Median :6.429e+07	
Mean : 62.9	Mean :1.030e+08	
3rd Qu.: 84.0	3rd Qu.:1.300e+08	
Max. :1199.0	Max. :2.540e+10	

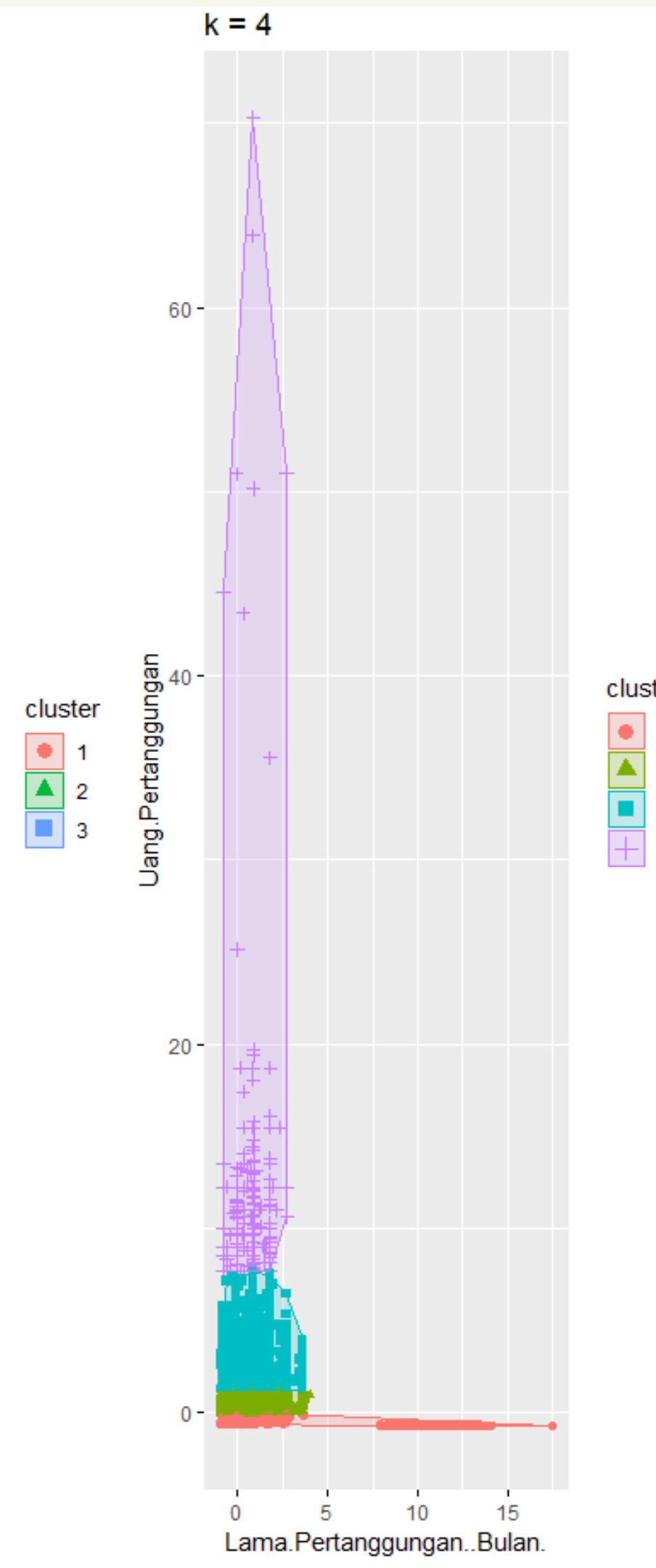
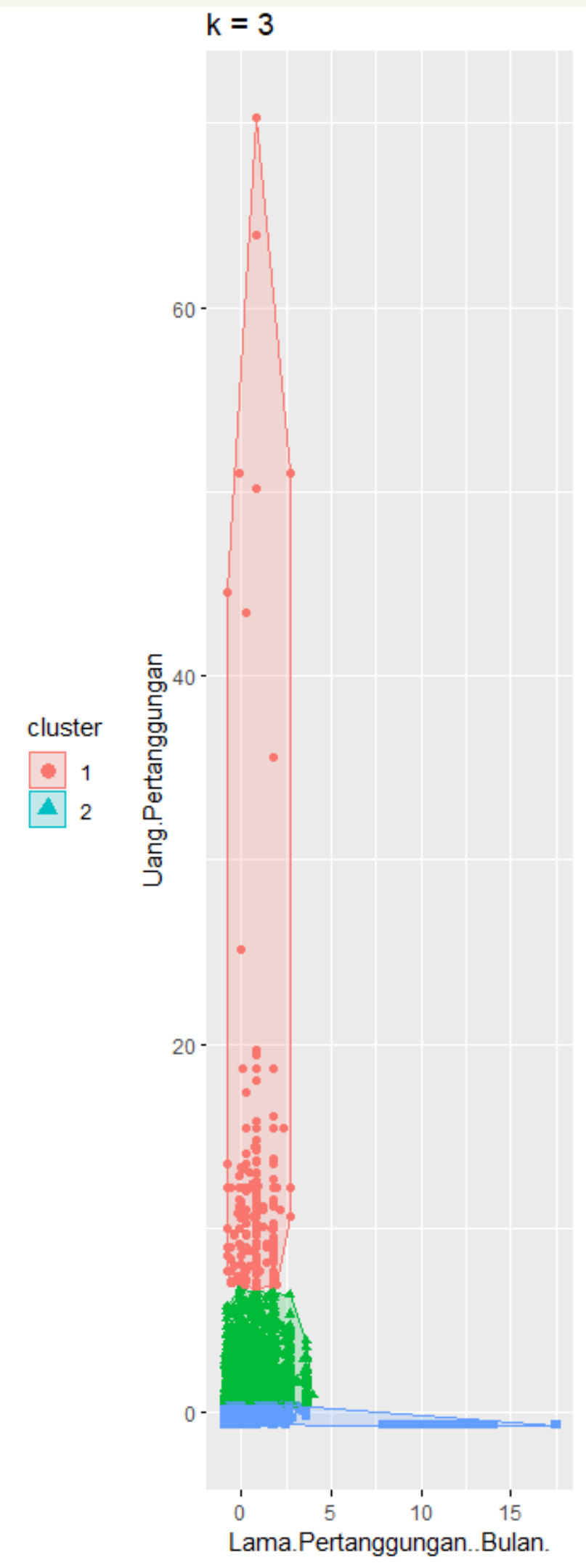
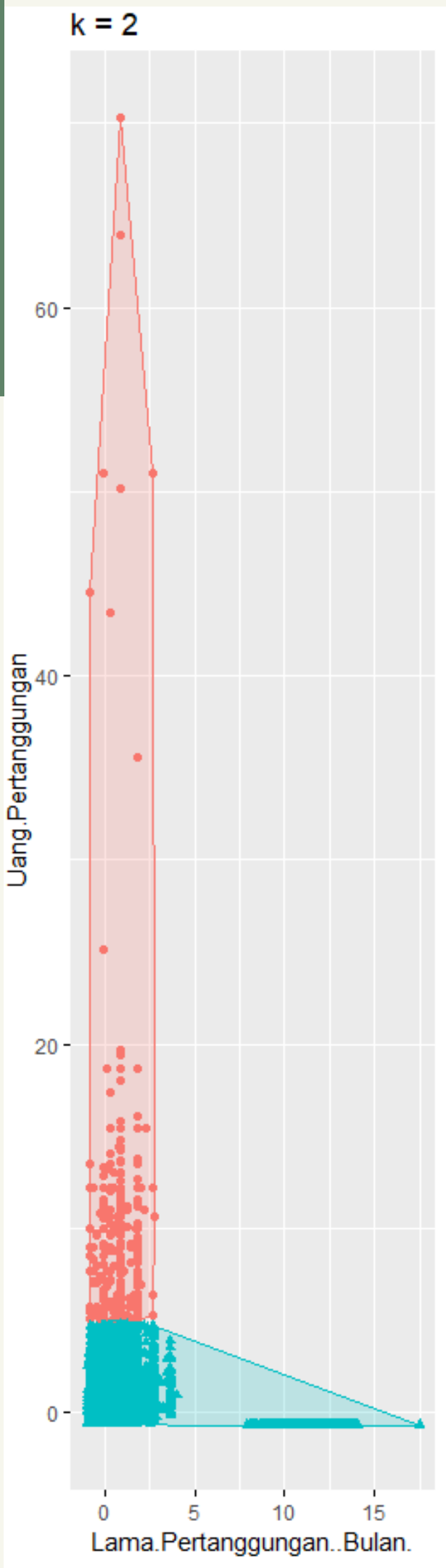
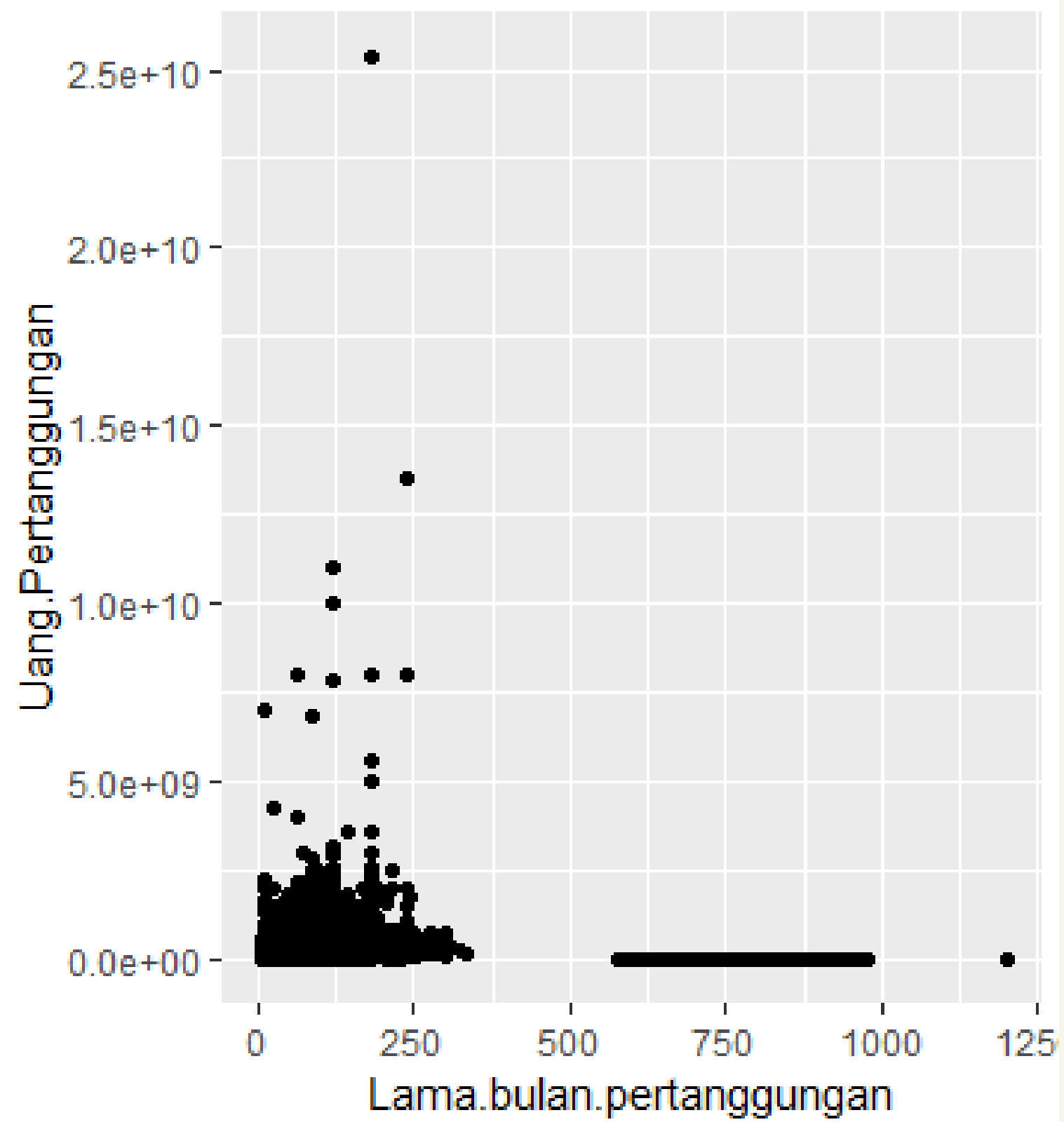
Build Data Set

Age vs Sum Insured



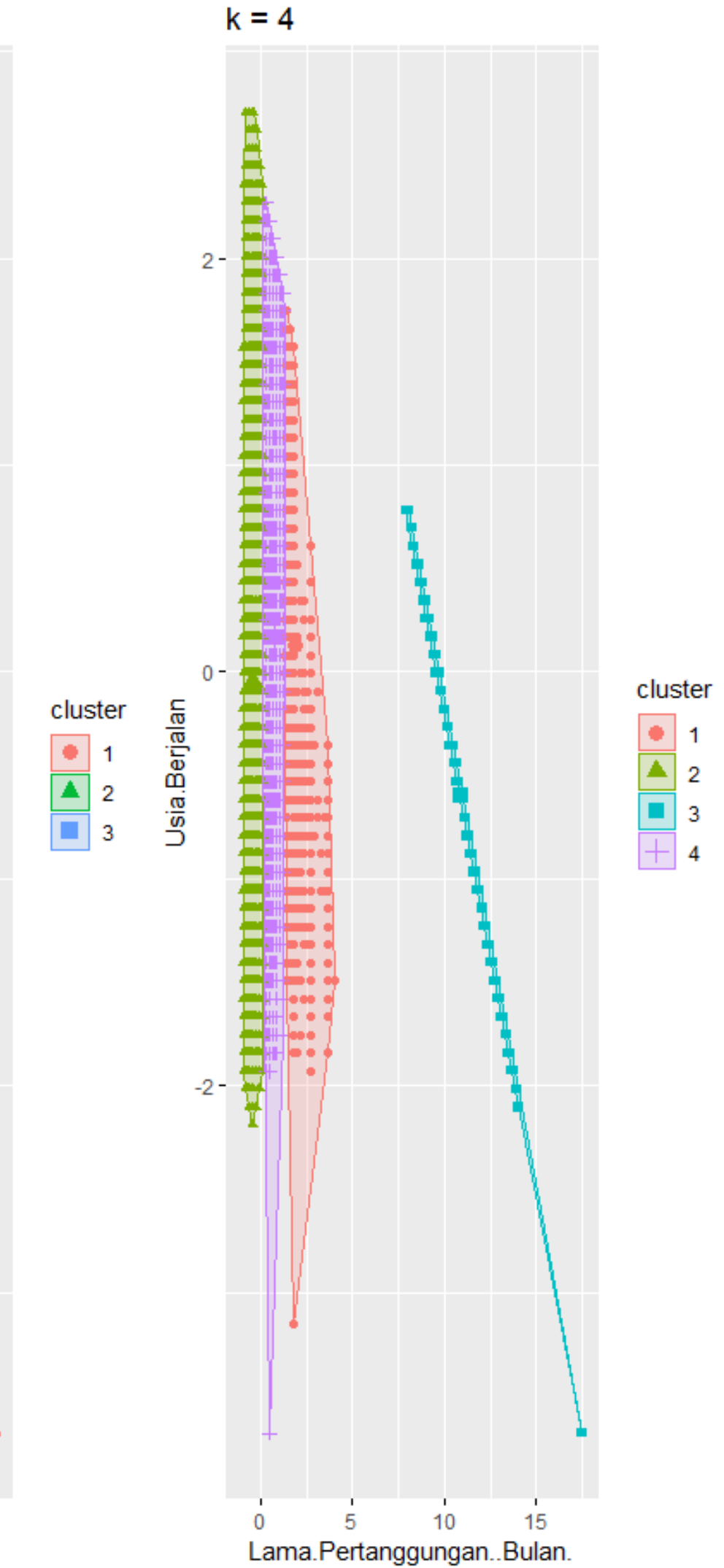
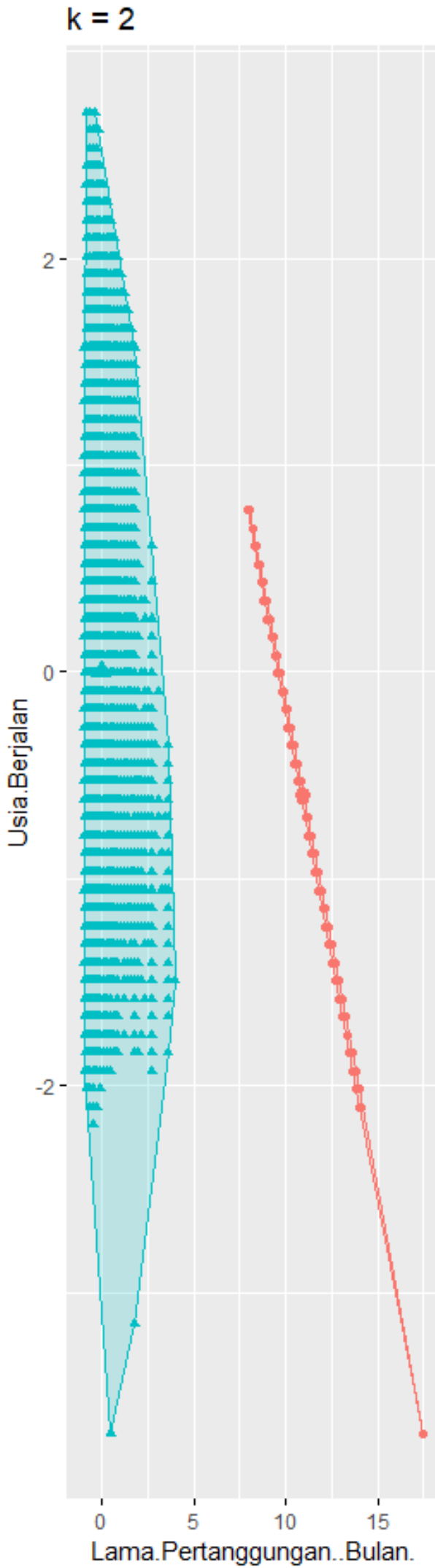
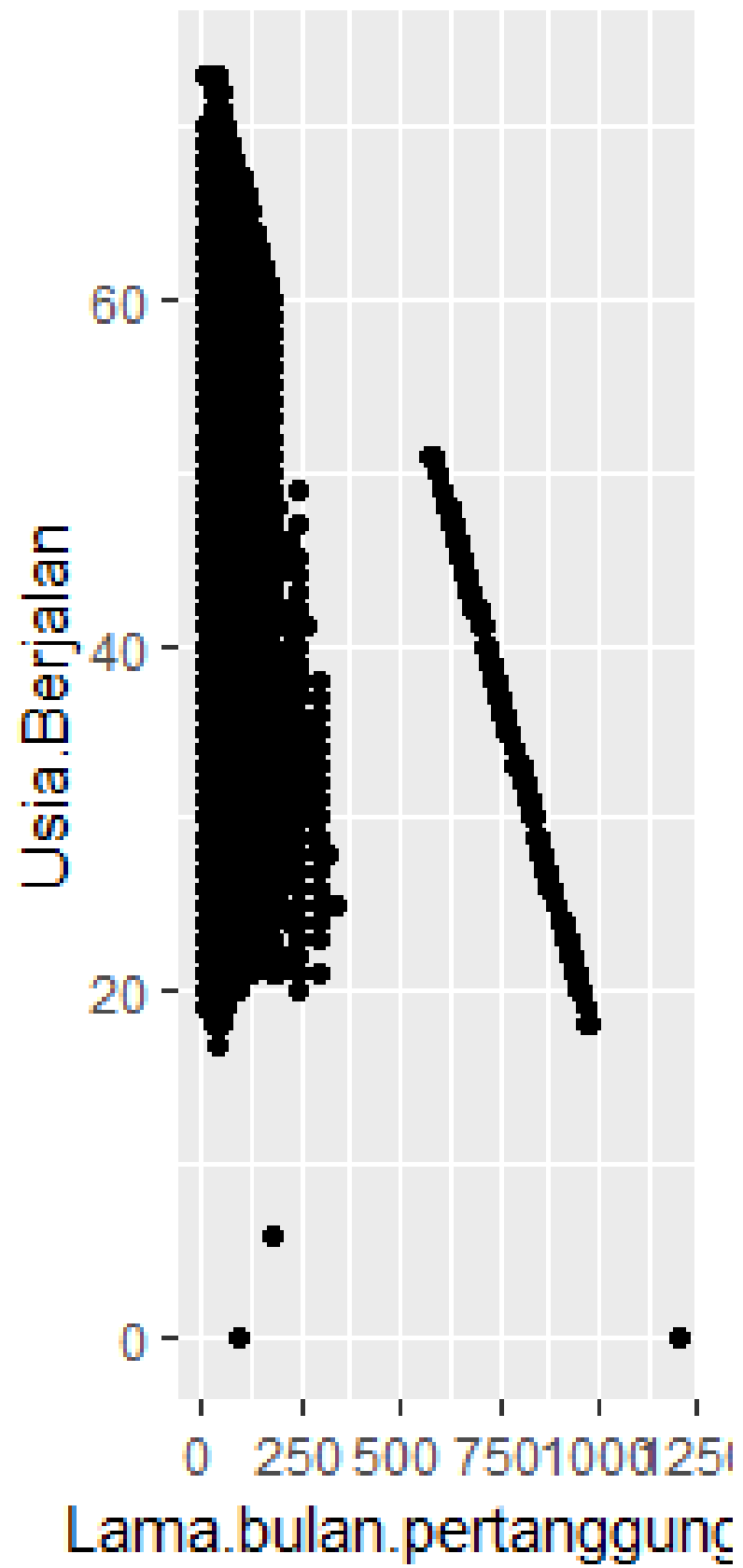
Build Data Set

Policy Term (Mth) vs Sum Insured



Build Data Set

Age vs Policy Term (Mth)



Method: Naive Bayes

INCLUDE PRODUCT 89

pred_nb		
	N	Y
N	20	637
Y	224	27778

Accuracy : 0.9699571

EXCLUDE PRODUCT 89

pred_nb		
	N	Y
N	33	690
Y	225	27603

Accuracy : 0.9679521

Method: Naive Bayes

```
Call:  
naive_bayes.formula(formula = Status ~ ., data = insurance_train)
```

A priori probabilities:

```
          N          Y  
0.02376324 0.97623676
```

Tables:


```
Line.Bisnis          N          Y  
GROUP      0.79861548 0.92412568  
INDIVIDUAL 0.20138452 0.07587432
```

```
Kelas.Bisnis          N          Y  
MEDICAL      0.002517306 0.001210190  
NON MEDICAL 0.997482694 0.998789810
```

```
Pekerjaan          N          Y  
0.000000e+00 4.595659e-05  
Lain-lain      9.836375e-01 9.499226e-01  
OWNER          0.000000e+00 4.595659e-05  
P.Swasta(Karyawan/i) 1.636249e-02 4.990885e-02  
Pedagang      0.000000e+00 1.531886e-05  
Wiraswasta    0.000000e+00 6.127545e-05
```

```
Usia.Awal          N          Y  
mean 46.43801 42.95188  
sd   12.71874 11.87872
```

```
Jenis.Kelamin          N          Y  
FEMALE 0.0006293266 0.0044424700  
MALE   0.9993706734 0.9955575300
```



Strategy is about making choices, trade-offs; It's about deliberately choosing to be different

-MICHAEL PORTER-



RESERVE

1. Reserve valuation date: 1 March 2019
2. Active status to be considered:
50,732 policies (53,1%)
3. Under the assumption of Tabel Mortalita
2011 and IBPA per 12
February 2019

PROBLEM

1. BirthDate N/A (Missing Data)
2. Choosing the appropriate data processing
3. Choosing the appropriate method,
ex: looping vs merge vs lapply
4. Time constraint to test whether the whole
process is robust and reliable

RESULT:

RESERVE NEEDED:
344.031.286.585
OF TOTAL SUM INSURED:
6.700.035.870.000 (5,13%)

Conclusion

“

END

”



END

NOT YET.....



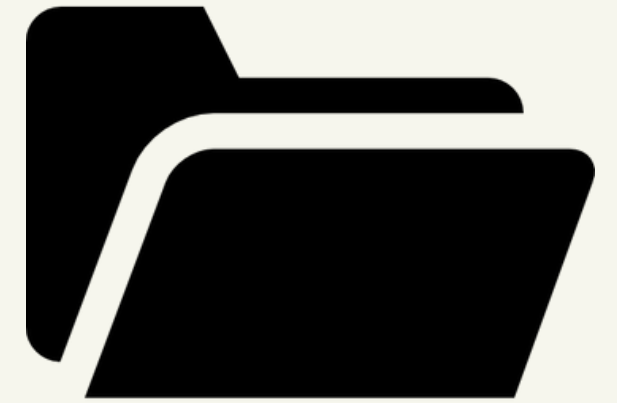
Next Discussion



Asset Liability
Matching



Investment
Strategy



Marketing
Recomendation