Hoge Risico Verevening

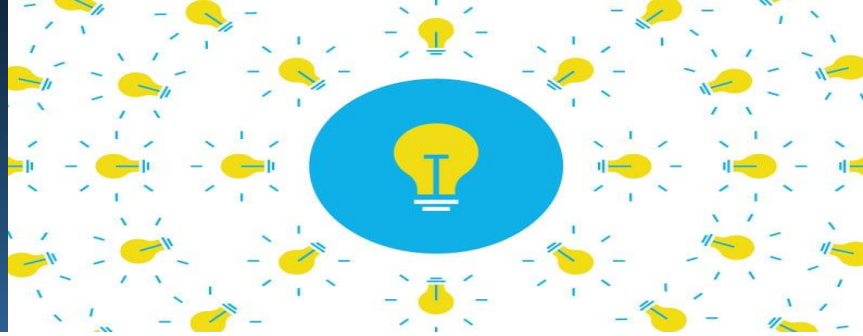
WPR-webinar #2

7 maart 2025 (Teams)

Agenda

Opening (5 min)	Richard
Introductie HRV (10 min)	Richard
HRV o.b.v. enquêtegegevens (15 min)	Anja
HRV o.b.v. administratieve gegevens (15 min)	Michel
Discussie o.b.v. peilingen (25 min)	Sprekers & deelnemers
Afsluiting (5 min)	Richard

Wat is HRV?



Hoge Risico Verevening (HRV) is een vorm van ex-post kostencompensatie die conditioneel wordt toegepast op een vooraf bepaalde groep van hoog-risicoverzekerden.

Waarom HRV?

Bron: evaluatie RV 2024 & 2025 (release: 28-mrt)

Het ex-ante risicovereveningsmodel compenseert grotendeels voor verschillen in gemiddelde zorgkosten tussen laag-risicoverzekerden en hoog-risicoverzekerden.

Echter, voor sommige subgroepen resteert na toepassing van de ex-ante risicoverevening een fors voorspelbaar verlies.

Hoe kunnen voorspelbare verliezen op hoog-risico verzekerden worden verminderd?

1. Nieuwe/andere vereveningscriteria
2. Constrained regression
3. Premiedifferentiatie
4. Ex-post kostencompensatie

Vormen van ex-post kostencompensatie

1. Bandbreedteregeling
2. Proportionele risicodeling
3. Hoge Kosten Verevening (HKC)
4. Hoge Risico Verevening (HRV)

ELSEVIER

Journal of Health Economics

Volume 20, Issue 2, March 2001, Pages 147-168

Risk sharing as a supplement to imperfect capitation: a tradeoff between selection and efficiency

Erik M van Barneveld [1], Leida M Lamers, René C.J.A van Vliet, Wynand P.M.M van de Ven

https://doi.org/10.1016/S0167-6296(00)00077-1

Abstract

This paper describes forms of risk sharing between insurers and the regulator in a competitive individual health insurance market with imperfectly risk-adjusted capitation payments. Risk sharing implies a reduction of an insurer's incentives for selection as well as for efficiency. In a theoretical analysis, we show how the optimal extent of risk sharing may depend on the weights the regulator assigns to these effects. Some countries employ outlier or proportional risk sharing as a supplement to demographic capitation payments. Our empirical results strongly suggest that other forms of risk sharing yield better tradeoffs between selection and efficiency.

Hoge Risico Verevening

1. Welke verzekerden toewijzen aan de HRV-pool?
2. Welke compensatie voor verzekerden in de HRV-pool?
3. Hoe de compensatie van de HRV-pool financieren?

› Inquiry. 1996 Summer;33(2):133-43.

Mandatory high-risk pooling: an approach to reducing incentives for cream skimming

E M van Barneveld [1], R C van Vliet, W P van de Ven

Affiliations + expand

PMID: 8675277

Abstract

Risk-adjusted capitation payments (RACPs) to competing health insurers are an essential element of market-oriented health care reforms in The Netherlands. Crude RACPs are inadequate, especially because they encourage insurers to select against people expected to be unprofitable--a practice called cream skimming. However, implementing improved RACPs does not appear to be straightforward. This paper analyzes an approach that, given a system of crude RACPs, reduces insurers' incentives for cream skimming in the market for individual health insurance, while preserving incentives for efficiency and cost containment. Under the proposed system of Mandatory High-Risk Pooling (MHRP), each insurer would be allowed to periodically predetermine a small fraction of its members whose costs would be (partially) pooled. The pool would be financed with mandatory, flat-rate contributions. The results suggest that MHRP is a promising supplement to RACPs.

Recente publicaties

Open access

Withagen-Koster *et al. BMC Health Services Research* (2024) 24:273
https://doi.org/10.1186/s12913-024-10774-x

BMC Health Services Research

RESEARCH Open Access

High-risk pooling for mitigating risk selection incentives in health insurance markets with sophisticated risk equalization: an application based on health survey information

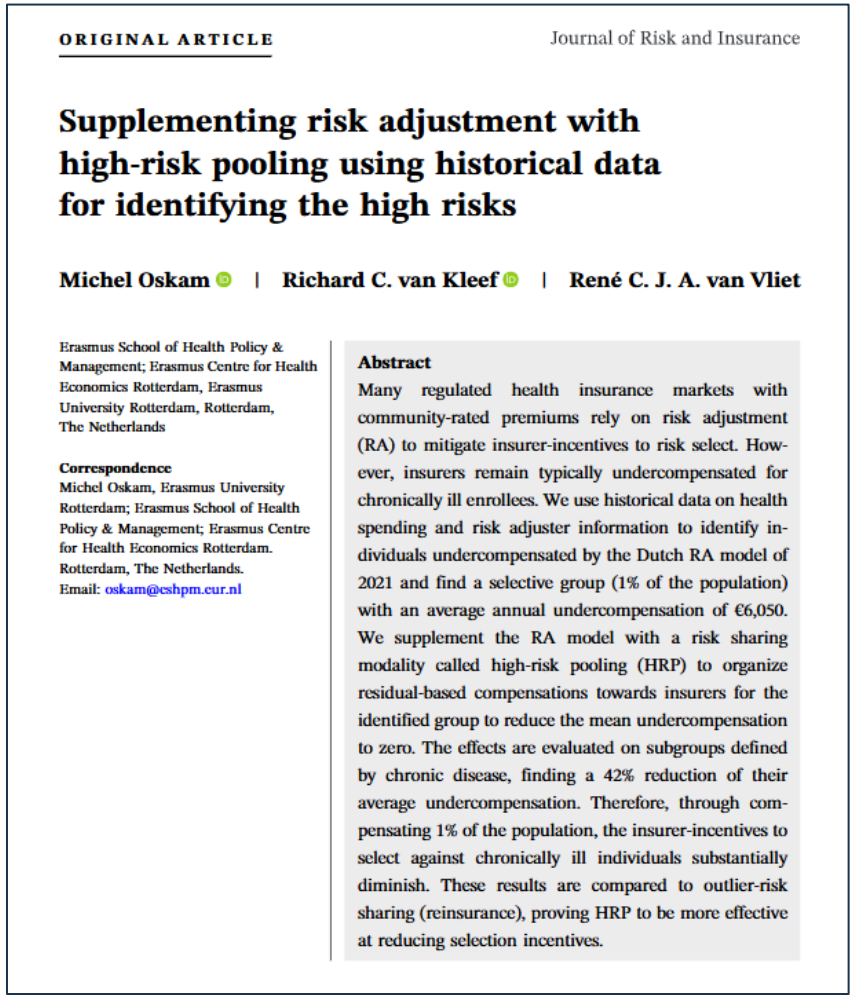
A. A. Withagen-Koster[1*], R. C. van Kleef[1] and F. Eijkenaar[1]

Abstract

Background Despite sophisticated risk equalization, insurers in regulated health insurance markets still face incentives to attract healthy people and avoid the chronically ill because of predictable differences in profitability between these groups. The traditional approach to mitigate such incentives for risk selection is to improve the risk-equalization model by adding or refining risk adjusters. However, not all potential risk adjusters are appropriate. One example are risk adjusters based on health survey information. Despite its predictiveness of future healthcare spending, such information is generally considered inappropriate for risk equalization, due to feasibility challenges and a potential lack of representativeness.

Methods We study the effects of high-risk pooling (HRP) as a strategy for mitigating risk selection incentives in the presence of sophisticated– though imperfect– risk equalization. We simulate a HRP modality in which insurers can ex-ante assign predictably unprofitable individuals to a 'high risk pool' using information from a health survey. We evaluate the effect of five alternative pool sizes based on predicted residual spending post risk equalization on insurers' incentives for risk selection and cost control, and compare this to the situation without HRP.

Results The results show that HRP based on health survey information can substantially reduce risk selection incentives. For example, eliminating the undercompensation for the top-1% with the highest predicted residual spending reduces selection incentives against the total group with a chronic disease (60% of the population) by approximately 25%. Overall, the selection incentives gradually decrease with a larger pool size. The largest marginal reduction is found moving from no high-risk pool to HRP for the top 1% individuals with the highest predicted residual spending.



ORIGINAL ARTICLE

Journal of Risk and Insurance

Supplementing risk adjustment with high-risk pooling using historical data for identifying the high risks

Michel Oskam | **Richard C. van Kleef** | **René C. J. A. van Vliet**

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Michel Oskam, Erasmus University Rotterdam; Erasmus School of Health Policy & Management; Erasmus Centre for Health Economics Rotterdam. Rotterdam, The Netherlands.
Email: oskam@eshpm.eur.nl

Abstract

Many regulated health insurance markets with community-rated premiums rely on risk adjustment (RA) to mitigate insurer-incentives to risk select. However, insurers remain typically undercompensated for chronically ill enrollees. We use historical data on health spending and risk adjuster information to identify individuals undercompensated by the Dutch RA model of 2021 and find a selective group (1% of the population) with an average annual undercompensation of €6,050. We supplement the RA model with a risk sharing modality called high-risk pooling (HRP) to organize residual-based compensations towards insurers for the identified group to reduce the mean undercompensation to zero. The effects are evaluated on subgroups defined by chronic disease, finding a 42% reduction of their average undercompensation. Therefore, through compensating 1% of the population, the insurer-incentives to select against chronically ill individuals substantially diminish. These results are compared to outlier-risk sharing (reinsurance), proving HRP to be more effective at reducing selection incentives.

Hoge Risico Verevening (HRV)

Vormgevingsaspecten/keuzes	Withagen-Koster et al. (2024)	Oskam et al. (2024)
Welke verzekerden komen in aanmerking voor HRV?		
Welke compensatie voor verzekerden in de HRV-pool?		
Hoe de compensaties vanuit de HRV-pool financieren?		

Afweging tussen…

vermindering
selectieprikkels

versus

vermindering
doelmatigheidsprikkels

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Doel van deze onderzoeken

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Het testen van interessante HRV-modaliteiten en het kwantificeren van de effecten daarvan op selectieprikkels en doelmatigheidsprikkels

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Hoge Risico Verevening (HRV)

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Welke verzekerden komen in aanmerking voor HRV?	Hoogste voorspelde residu o.b.v. voorspelmodel met enquêtegegevens	
Welke compensatie voor verzekerden in de HRV-pool?	100% van de residuele kosten boven drempel	
Hoe de compensaties vanuit de HRV-pool financieren?	Vast bedrag per verzekerde die niet in de HRV-pool zit	

Residu = feitelijke zorgkosten – voorspelde zorgkosten volgens ex-ante vereveningsmodel

Uitgangspunten

HRV o.b.v. enquêtegegevens

- Risicovereveningsmodel 2016 (en dus geen constrained regression)
- Toewijzing aan de HRV-pool o.b.v. hoogste voorspelde residu
  - OLS regression, stepwise selection
  - Random Forest

De HRV pool

HRV o.b.v. enquêtegegevens

Mean per person actual residual spending in euros for the top X% of predicted residual spending under the OLS and random forest prediction model.

	Top 1%	Top 2%	Top 3%	Top 4%	Top 5%
OLS	1091*	1331*	1093*	895*	886*
Random forest	2359*	1506*	1343*	1130*	1086*

Note: Results are based on test sample (N= 115,473). An asterisk (*) means that the presented value is statistically significantly different from zero (p<0.05).

De HRV pool

HRV o.b.v. enquêtegegevens

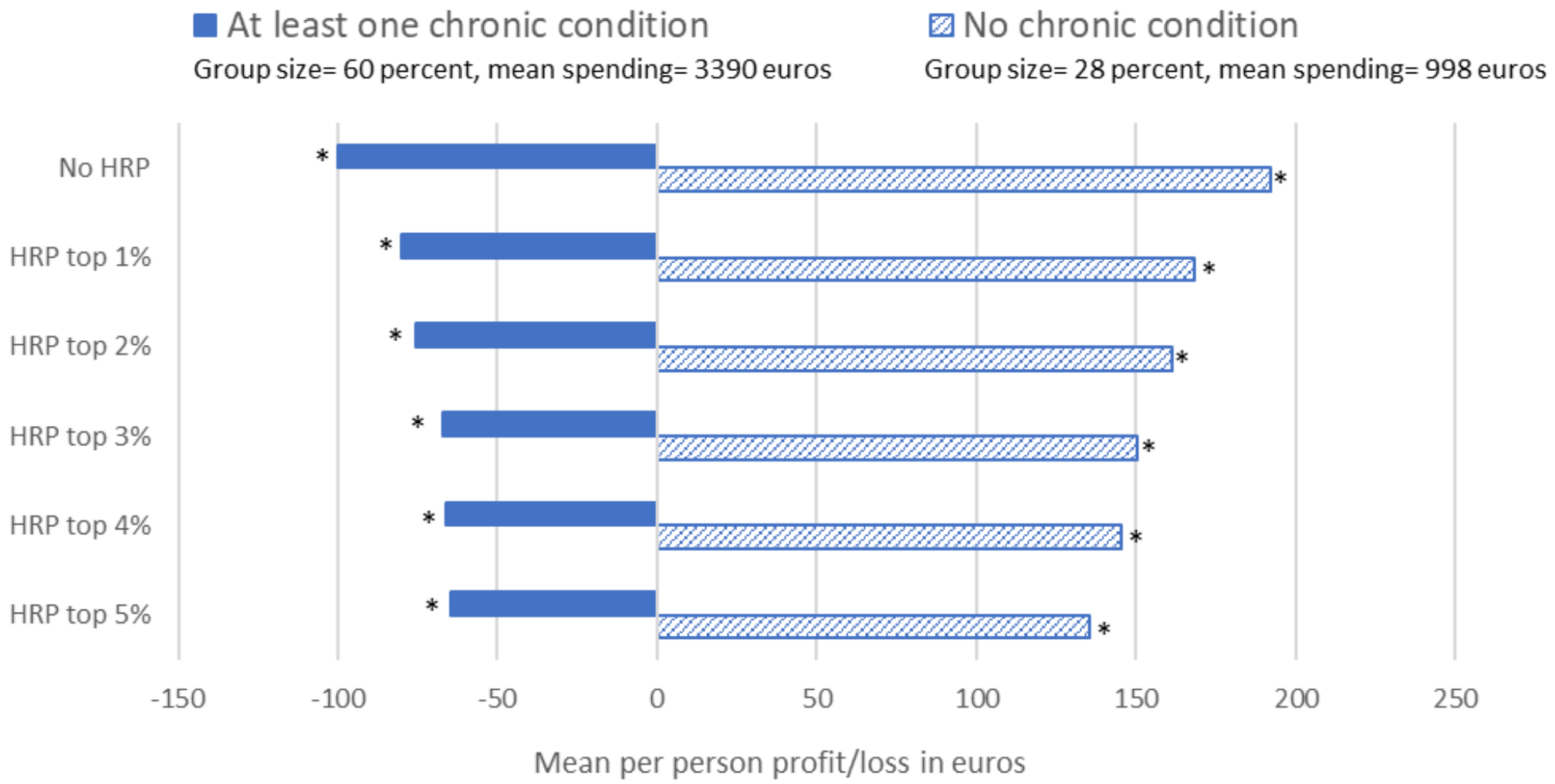
Mean (predicted) spending in euros under risk equalization without a high-risk pool, the threshold for compensation and the percentage of total costs needed to finance the high-risk pool for five different pool sizes (i.e., top-1% to top-5% of predicted residual spending)

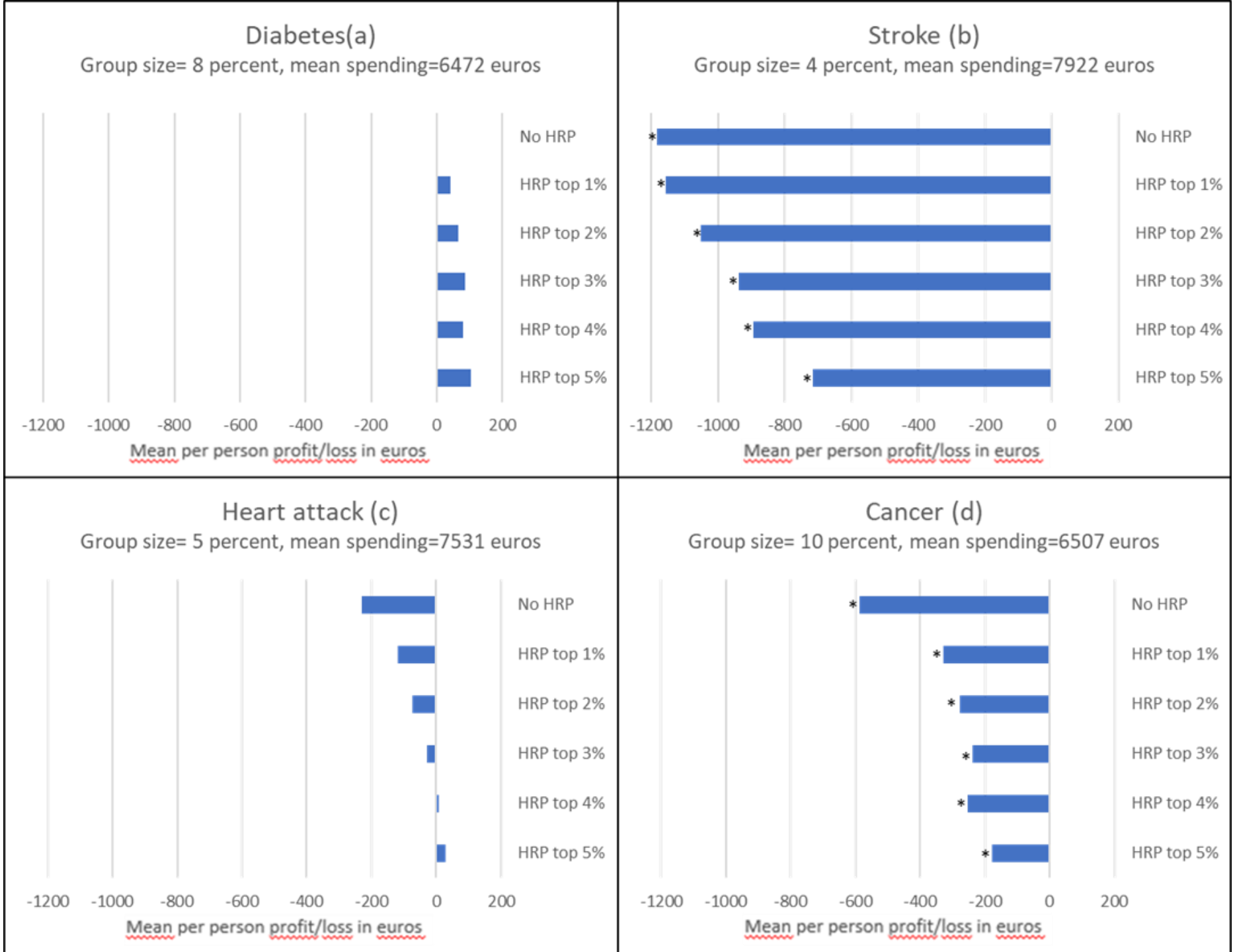
	High-risk pools based on predicted residual spending from the random forest model				
	Top 1%	Top 2%	Top 3%	Top 4%	Top 5%
Mean spending	12730	10826	10097	9571	9280
Mean spending predicted by the risk-equalization model	10371	9320	8755	8440	8194
Threshold	12961	18066	20408	23706	23807
HRP financing costs as percentage of total spending in test sample	0.96%	1.2%	1.6%	1.8%	2.2%

Note: all spending is in euros. Results are based on test sample (N= 115,473).

Resultaten op subgroepen

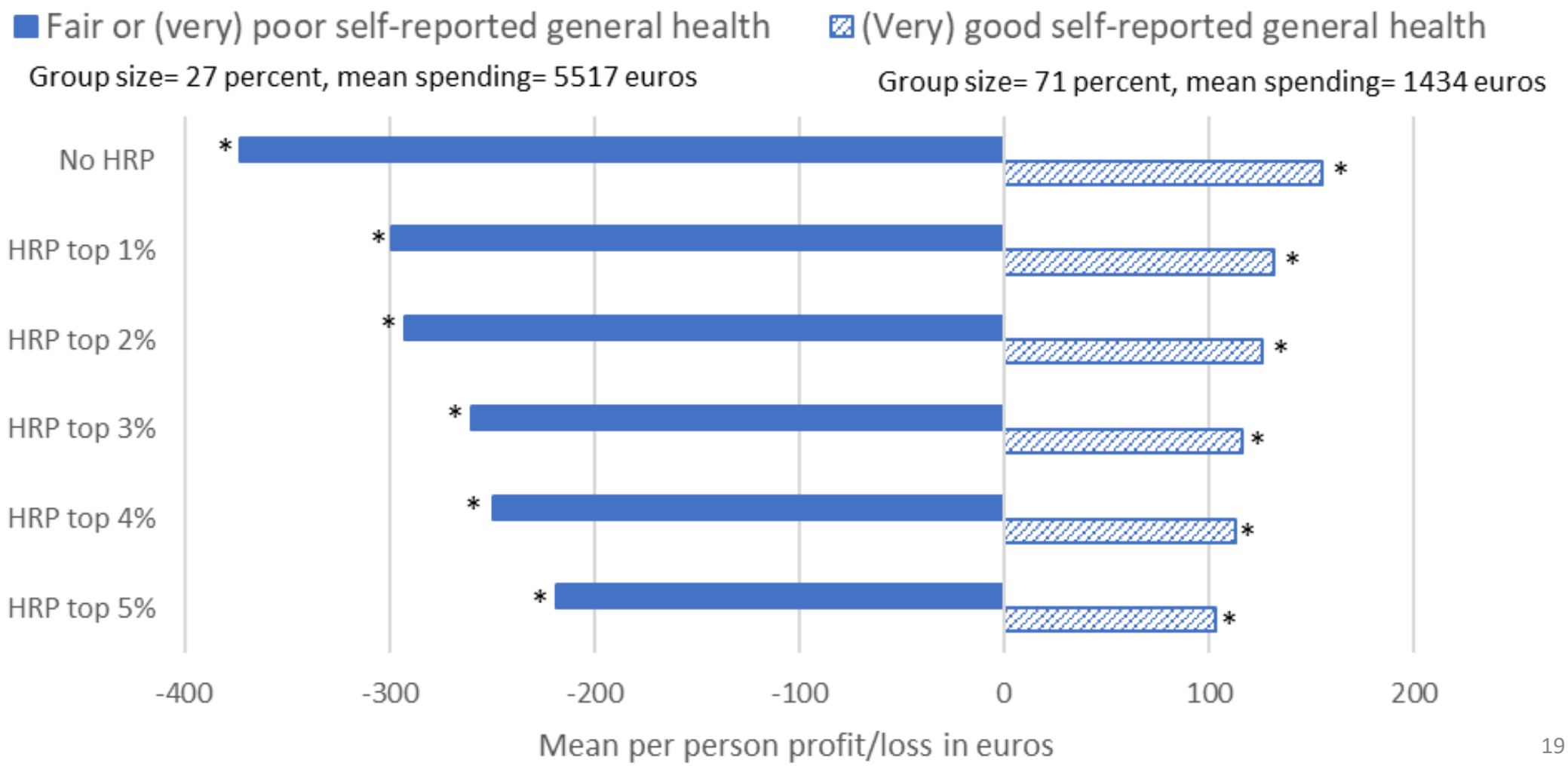
HRV o.b.v. enquêtegegevens




Diabetes(a)
Group size= 8 percent, mean spending=6472 euros
No HRP
HRP top 1%
HRP top 2%
HRP top 3%
HRP top 4%
HRP top 5%
-1200 -1000 -800 -600 -400 -200 0 200
Mean per person profit/loss in euros
Stroke (b)
Group size= 4 percent, mean spending=7922 euros
No HRP
HRP top 1%
HRP top 2%
HRP top 3%
HRP top 4%
HRP top 5%
-1200 -1000 -800 -600 -400 -200 0 200
Mean per person profit/loss in euros
Heart attack (c)
Group size= 5 percent, mean spending=7531 euros
No HRP
HRP top 1%
HRP top 2%
HRP top 3%
HRP top 4%
HRP top 5%
-1200 -1000 -800 -600 -400 -200 0 200
Mean per person profit/loss in euros
Cancer (d)
Group size= 10 percent, mean spending=6507 euros
No HRP
HRP top 1%
HRP top 2%
HRP top 3%
HRP top 4%
HRP top 5%
-1200 -1000 -800 -600 -400 -200 0 200
Mean per person profit/loss in euros

Resultaten op subgroepen

HRV o.b.v. enquêtegegevens



Selectieprikkels versus doelmatigheidsprikkels

HRV o.b.v. enquêtegegevens

- HRV leid tot een afname van selectieprikkels
- Afname in doelmatigheidsprikkels beperkt:
  - Nog geen 1% van de totale kosten voor de HRV-pool voor de top 1% hoogste voorspelde residuen
  - Maximaal 2,2% van de totale kosten voor de HRV-pool voor de top 5% hoogste voorspelde residuen

Conclusie

- HRV kan de selectieprikkels fors verminderen tegen een relatief kleine afname in doelmatigheidsprikkels.

- Grootste winst in reductie van selectieprikkels al bij het toepassen van HRV voor de top 1% van hoogste voorspelde residuen.

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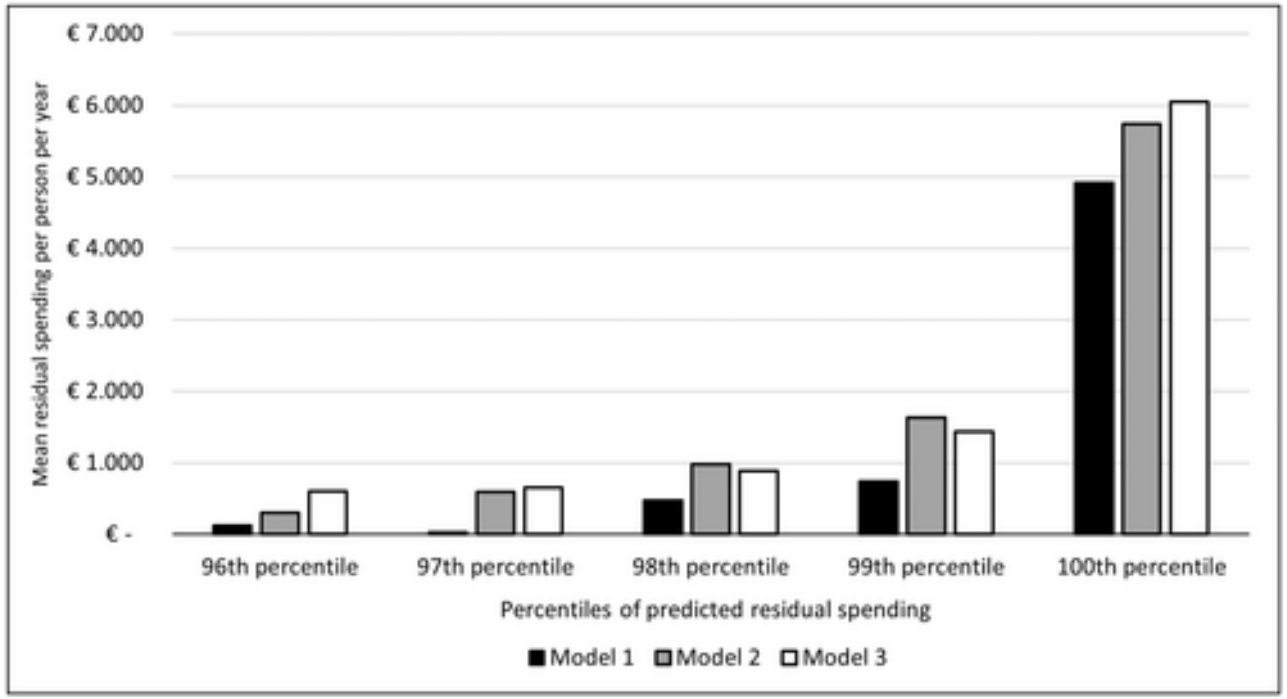
Welke compensatie voor verzekerden in de HRV-pool?	100% van de residuele kosten boven drempel	100% van de residuele kosten boven drempel
Hoe de compensaties vanuit de HRV-pool financieren?	Vast bedrag per verzekerde die niet in de HRV-pool zit	Vast bedrag per verzekerde die niet in de HRV-pool zit

Residu = feitelijke zorgkosten – voorspelde zorgkosten volgens ex-ante vereveningsmodel

Het voorspelmodel

HRV o.b.v. Administratieve gegevens

Model 1	Zorgkosten in jaar t-1 als voorspeller van residuele kosten in jaar t
Model 2	**OLS** op basis van zorgkosten in t-1 en indeling in vereveningskenmerken van voorgaand vereveningsjaar
Model 3	**Random Forest** op basis van zorgkosten in t-1 en indeling in vereveningskenmerken van voorgaand vereveningsjaar



De HRV pool

HRV o.b.v. Administratieve gegevens

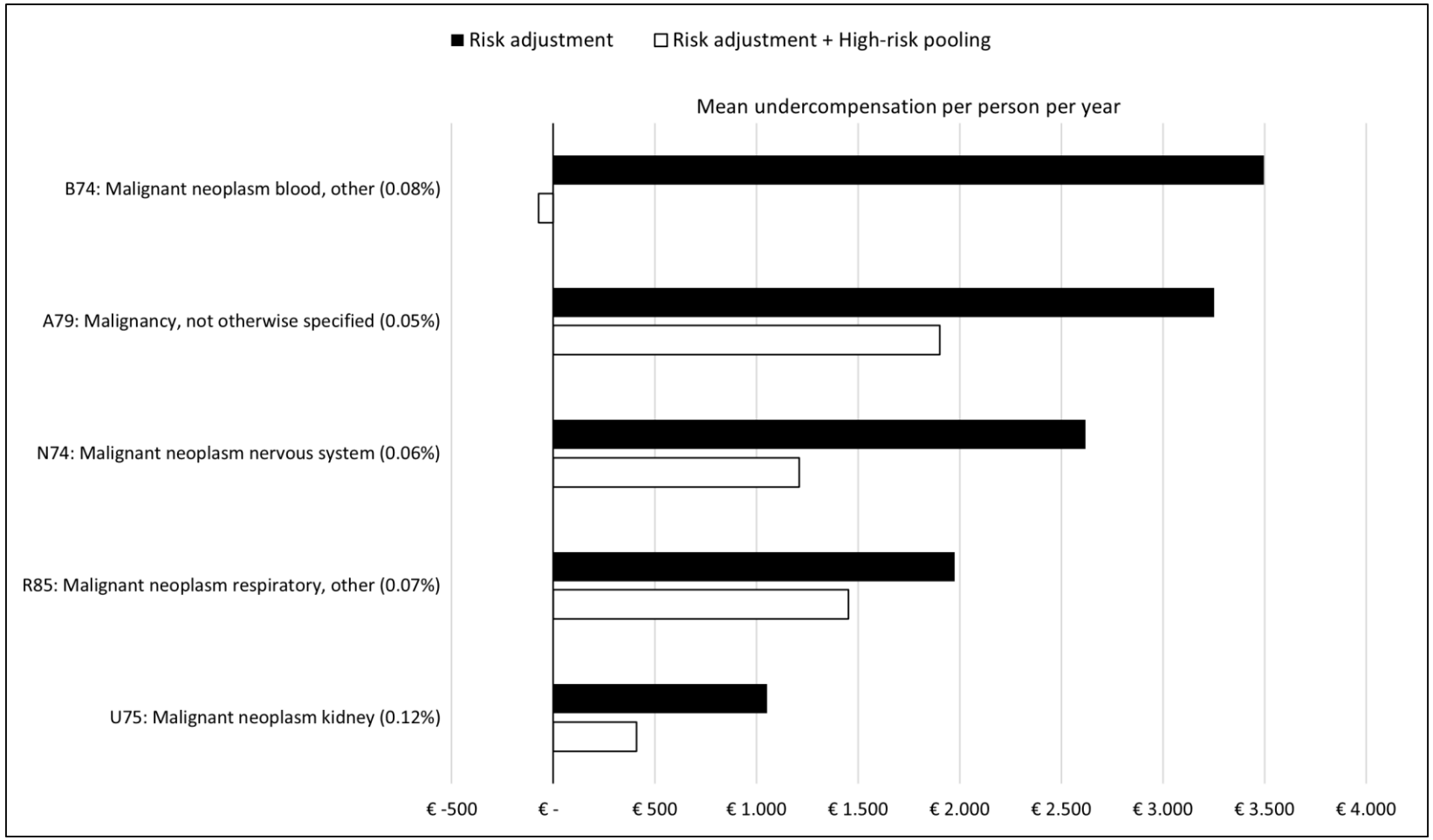
	99%	Geïdentificeerde 1% van het test sample
Verzekerdenjaren	8.399.761	84.846
Gemiddelde zorgkosten jaar t	€2.180	€24.900
Gemiddelde zorgkosten jaar t-1	€1.697	€46.772
Gemiddelde residuele kosten	€ -61	€6.050
Ingedeeld in tenminste één morbiditeitskenmerk	24,5%	97,2%

€18.611 als drempel	|	2,6% van het totale budget vereist

Resultaten op subgroepen

HRV o.b.v. Administratieve gegevens

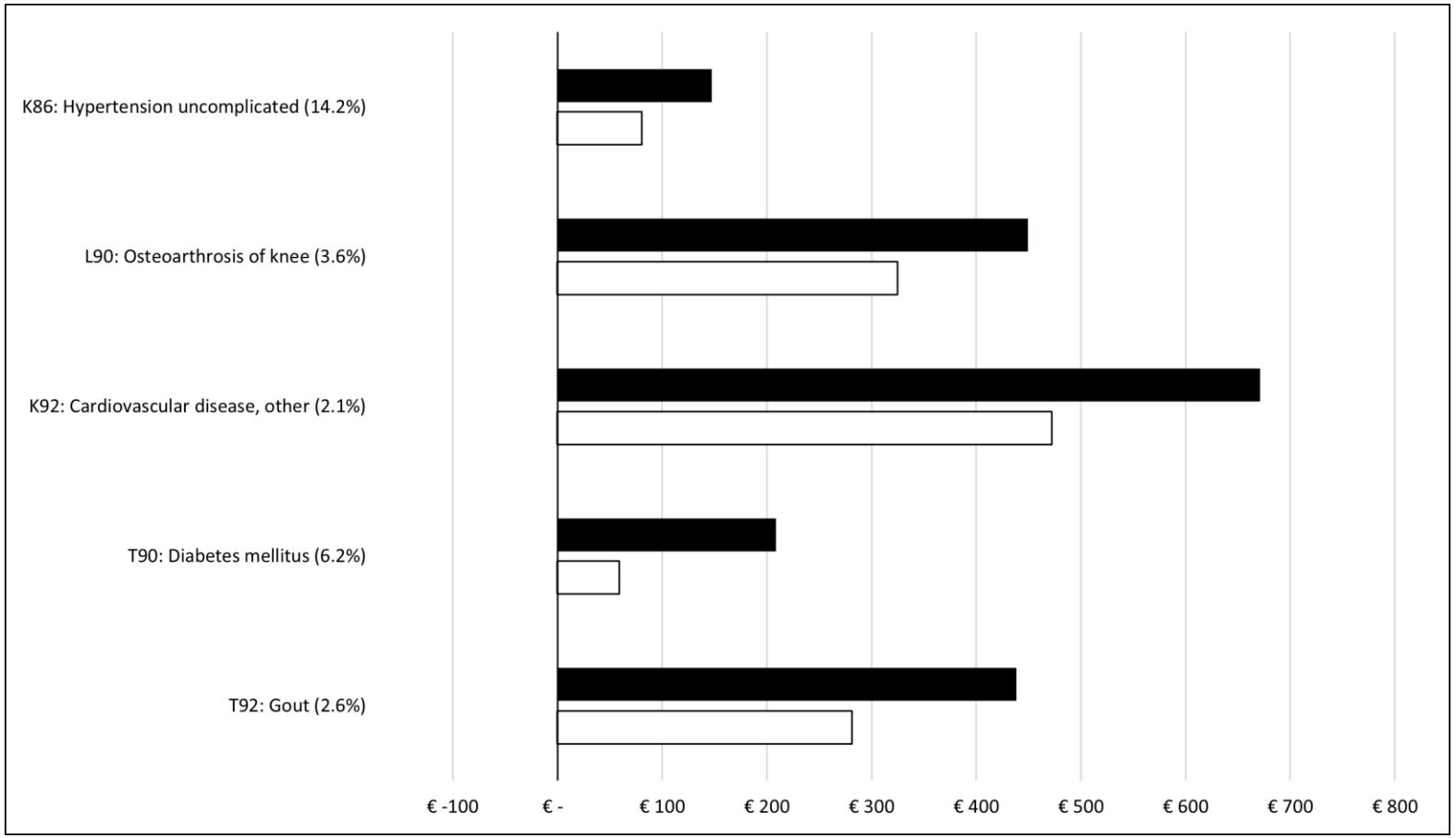
Figuur: gemiddelde residuele kosten van meest significant ondercompenseerde aandoeningen



Resultaten op subgroepen

HRV o.b.v. Administratieve gegevens

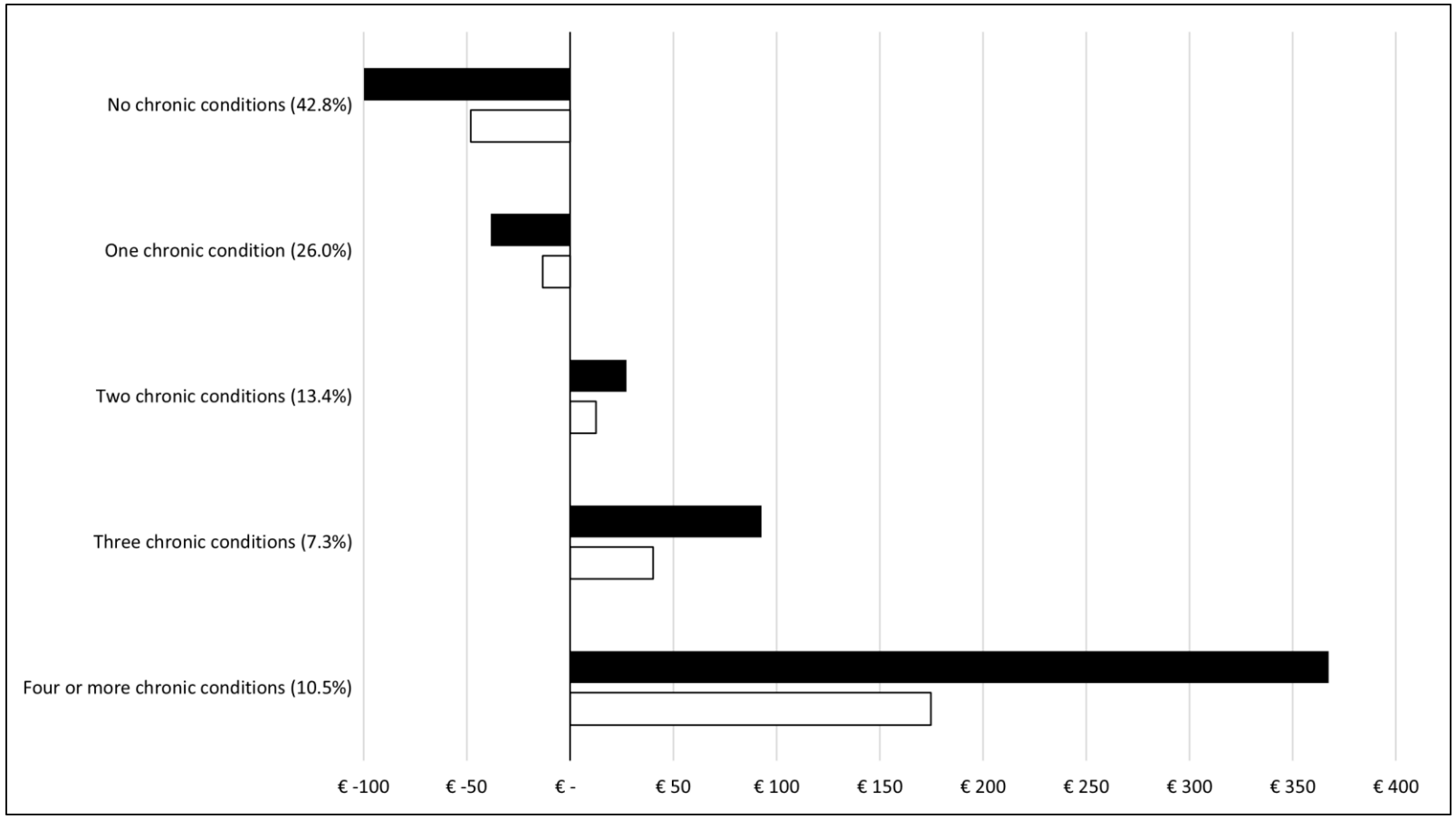
Figuur: gemiddelde residuele kosten van aandoeningen met grootste macro-ondercompensatie



Resultaten op subgroepen

HRV o.b.v. Administratieve gegevens

Figuur: gemiddelde residuele kosten per aantal aandoeningen volgens de huisarts



Resultaten op subgroepen

HRV o.b.v. Administratieve gegevens

	Ondergecompenseerd	**Statistisch significant ondergecompenseerd**	**GGAA**
Vereveningsmodel 2021	97/109	92/109	€182
Vereveningsmodel 2021 + HRV	75/109	57/109	€107

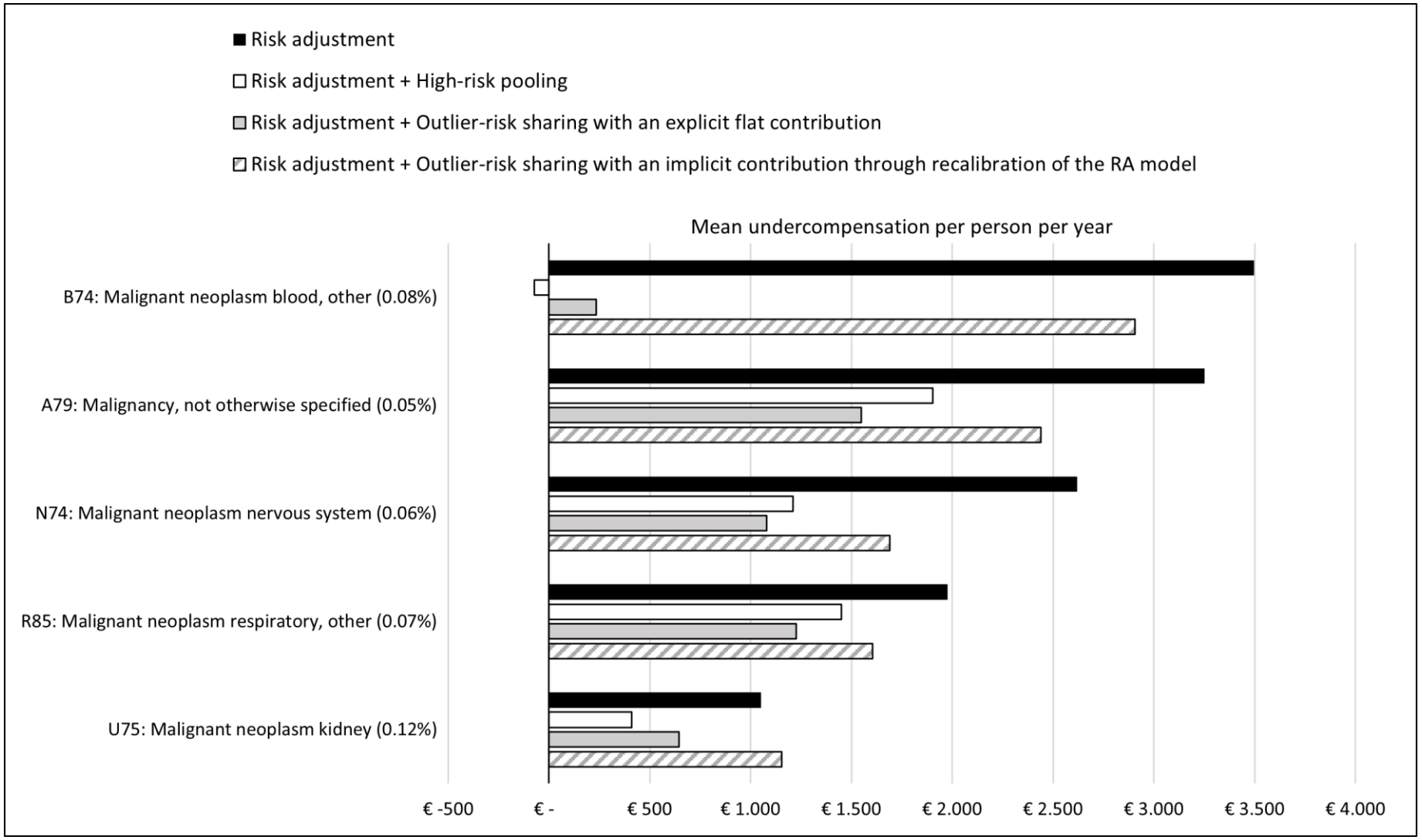
Verschillen in risicodeling

HRV o.b.v. Administratieve gegevens

Risicodeling	**Compensatie**	**Financiering**
HRV (High-risk pooling)	Terugbrengen residuele kosten tot drempel	Gelijke contributie van iedereen buiten pool
HKC (Outlier-risk sharing) – a	Terugbrengen zorgkosten tot drempel	Gelijke contributie van iedereen buiten pool
HKC (Outlier-risk sharing) – b	Terugbrengen zorgkosten tot drempel	Herschatting van het vereveningsmodel op kosten *onder* de kostendrempel

Resultaten op subgroepen

HRV o.b.v. Administratieve gegevens



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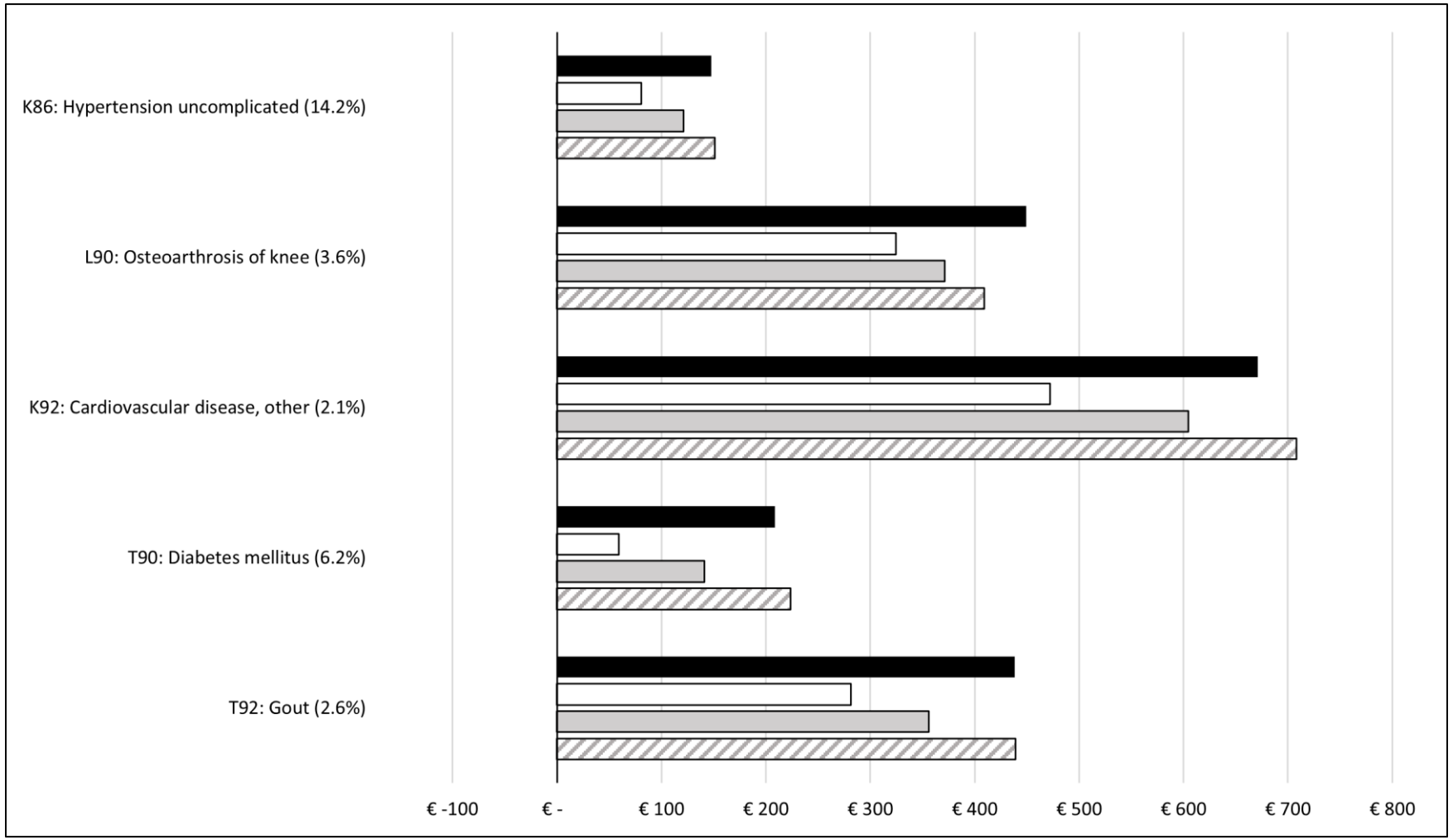

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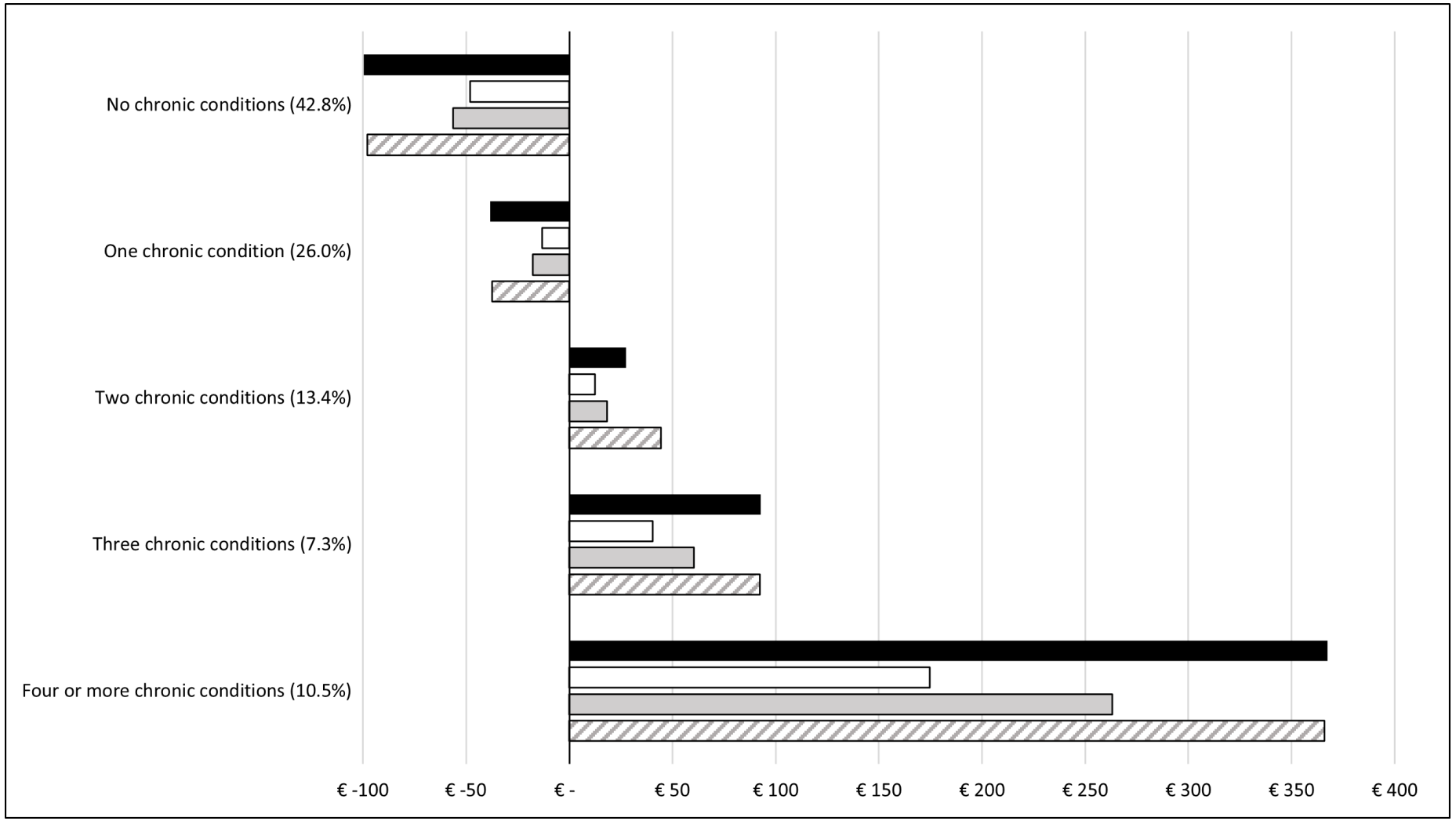

Conclusie

- HRV kan een groot deel van de selectieprikkels verminderen
  - **1%** van de populatie geïdentificeerd als hoog risico
  - Herverdeling van **2,6%** van het totale budget
  - Reduceert selectieprikkels met **42%**

- HRV presteert substantieel beter dan HKC.

Peilingen onder deelnemers

LIVE Poll: Names not recorded | Results shared

1. Het is interessant om de mogelijkheden voor toepassing van HRV in de Nederlandse basisverzekering verder te verkennen.

Eens	90%
Oneens	7%
Geen idee	3%

29 responses

LIVE Poll: Names not recorded | Results shared

2. Stel: we besluiten HRV in te voeren. Welke partij zou dan de verzekerden voor de HRV-pool moeten aanwijzen?

Overheid (e.g. ZIN)	52%
Verzekeraars	31%
Anders	17%

29 responses