Evaluation of the effects of maximum billing on consumption and financial access of health care

KCE reports 80A

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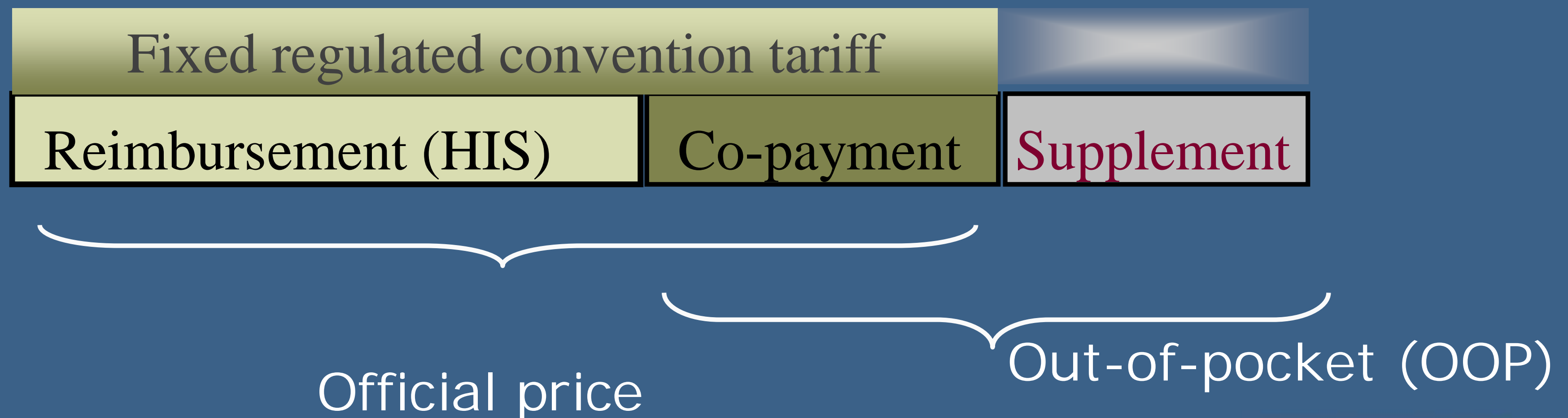
Universiteit Antwerpen

Background

- Belgian health care system:
  - compulsory health insurance;
  - (dominantly) fee for service remuneration;
  - Fees are regulated and with patient payments



Background

<u>Social Protection measures</u>

Preferential treatment: vulnerable groups pay reduced co-payments

Maximum Billing (MAB): yearly ceiling on co-payments

- at the household level
- not complete (supplements + some co-payments are not taken into account)
- various ceilings

What is MAB?

	Social MAB	Income MAB	Fiscal MAB
Who	Preferential treatment	Low and modest income	other
Ceiling	€450	€450 or €650	€1000, €1400, €1800, €2500
Household	sociological		fiscal
Reimbursement	immediate via sickness fund		after 2 years via taxation
Income check	no	year t-3	year t

Child MAB=€650 for children<19y

General background data year 2006

- Total:
  - HIS reimbursements: €17.7 billion
  - Co-payments : €1.65 billion before MAB; €1.35 billion after MAB
- Per individual:
  - €1720 HIS reimbursements;
  - €160/€132 co-payments before/after MAB
- supplements: ?????

General background data

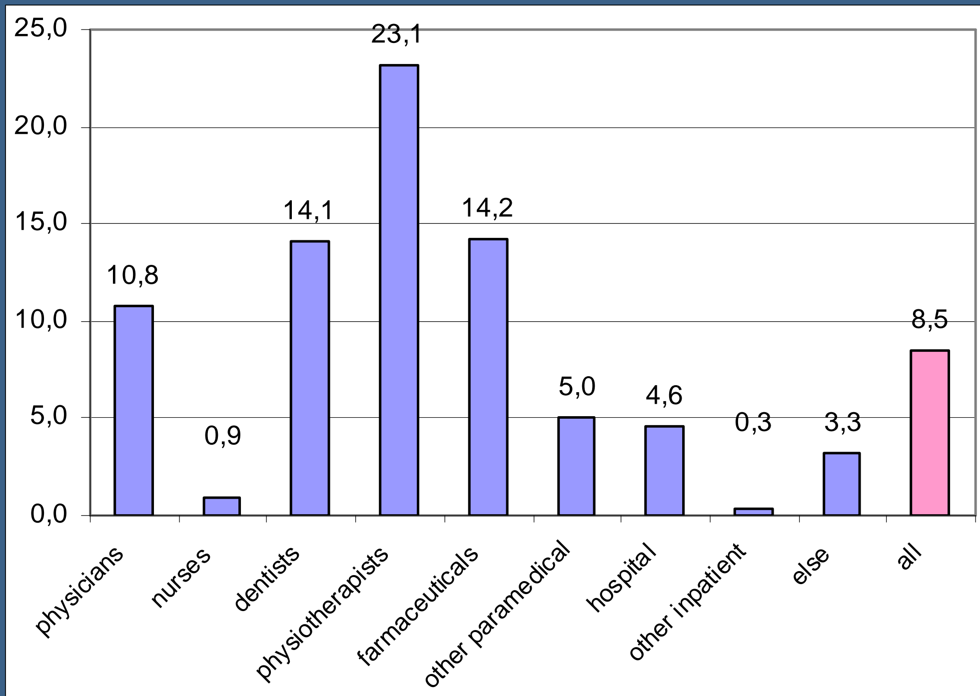
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0

billion €

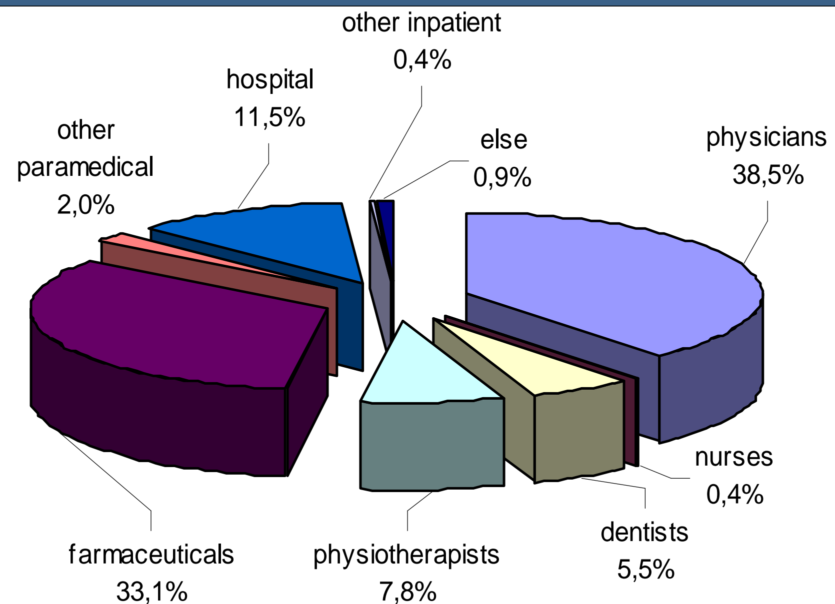
12
%
10
8
6
4
2
0

1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006

co-payments in billion euro
HIS reimbursements in billion euro
% co-payment before MAB
% co-payment afer MAB



co-payment as % of fee for different categories



co-payments for different category as % of total co-payments

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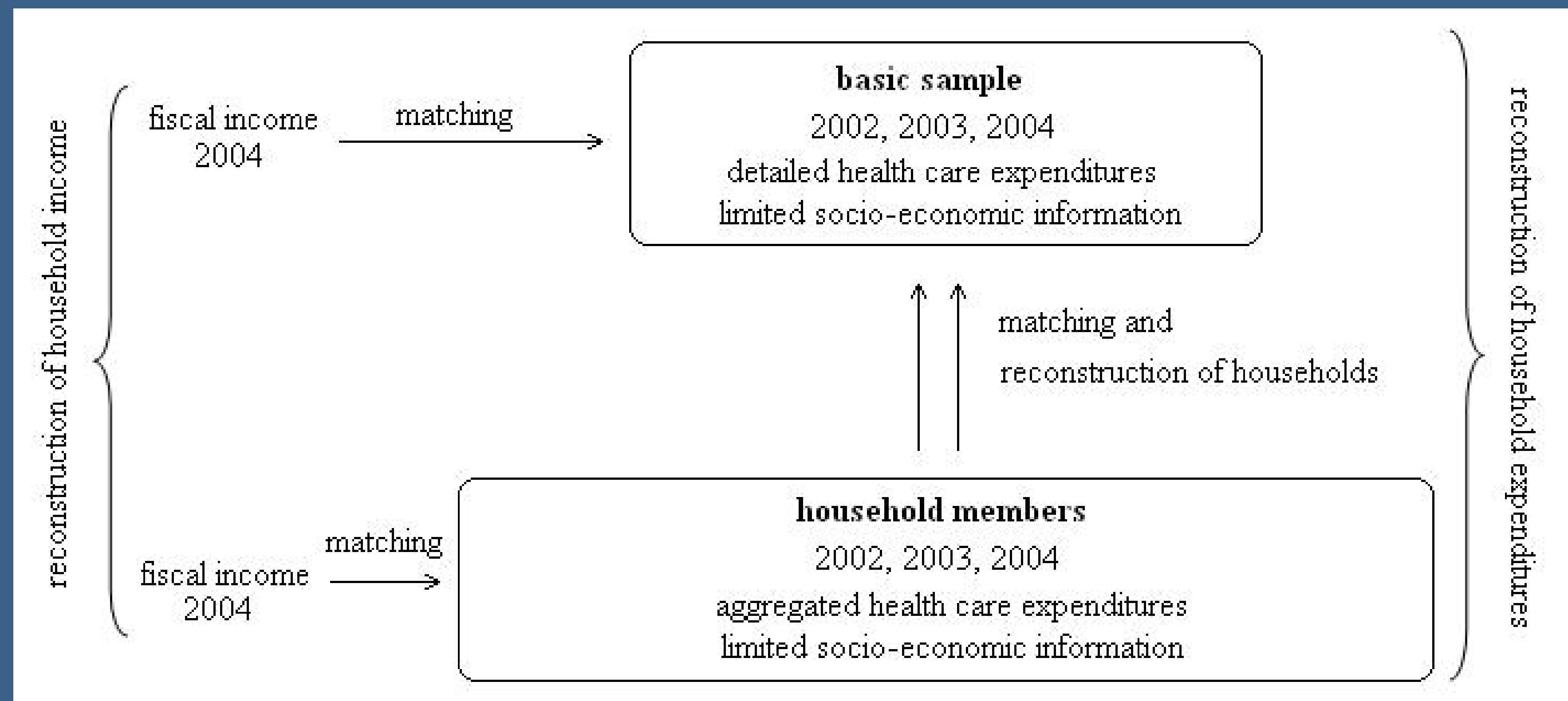
Research questions

EFFECTS OF THE MAXIMUM BILLING SYSTEM ON HEALTH CARE CONSUMPTION AND FINANCIAL ACCESS TO HEALTH CARE

- How effective is the MAB as a social protection mechanism? Which groups are well protected and for which groups do OOP remain problematic?
- Does the MAB influence behavior of patients and providers?
- How would costs and patient protection change if the structure of the MAB would change?

Data

- Dataset + year:
  - IMA (2002-2003-2004): administrative
  - Fiscus (2004): administrative
- Sample
  - Basic sample (=random sample + oversampling elderly): about 300.000 individuals
  - Other members of the MAB-family: about 550.000 individuals
- Level
  - Individual data
  - Household data can be composed
    - Except for some types of health care expenditures


reconstruction of household income
fiscal income 2004
matching
basic sample
2002, 2003, 2004
detailed health care expenditures
limited socio-economic information
matching and
reconstruction of households
fiscal income 2004
matching
household members
2002, 2003, 2004
aggregated health care expenditures
limited socio-economic information
reconstruction of household expenditures

Data

- Variables
  - Demographic
  - Sociological
  - Income (as known with fiscus)
  - Expenditures (HIS-reimbursements, co-payments, supplements)

- But, for householdmembers not in original sample: aggregated data for expenditures

Data

- No information on
  - hospitalization cost in terms of HIS-reimbursement
    - Due to financing rule since 2002
    - OOP are correct!
  - minor risks for self-employed
    - Dropped in analysis (12.7% of the households)
    - Since January 1st 2008: covered in compulsory system
  - some categories of expenditures
    - Supplements in ambulatory setting
    - Non-prescription drugs
    - Items not in nomenclature (e.g. acupuncture)
  - supplemental insurance

Overall impact

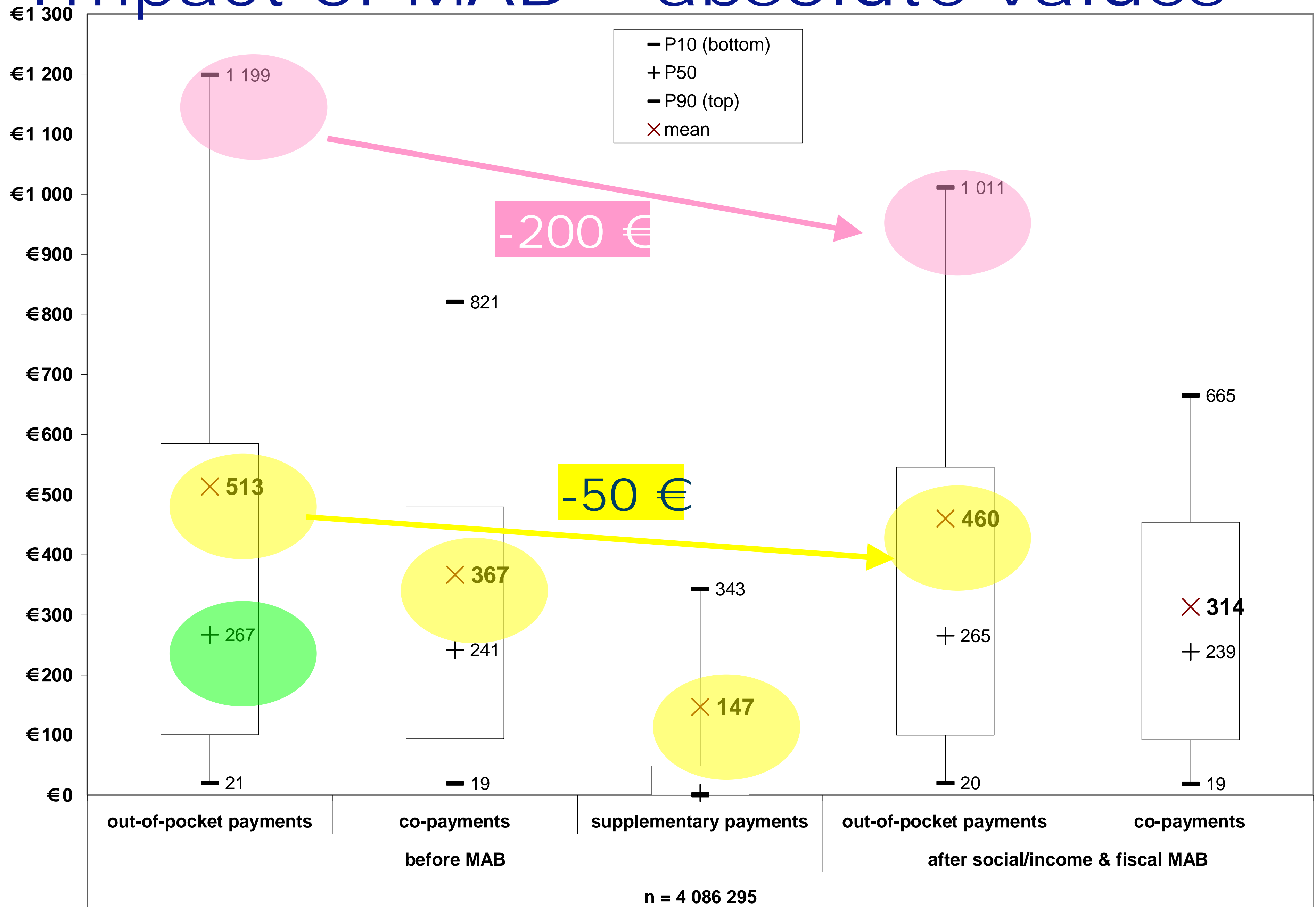
Methodological choices

- At the level of the sociological household (hh)
- Extrapolations are made to the total Belgian population
- For 2004
- Hh with self-employed are left out of the analysis

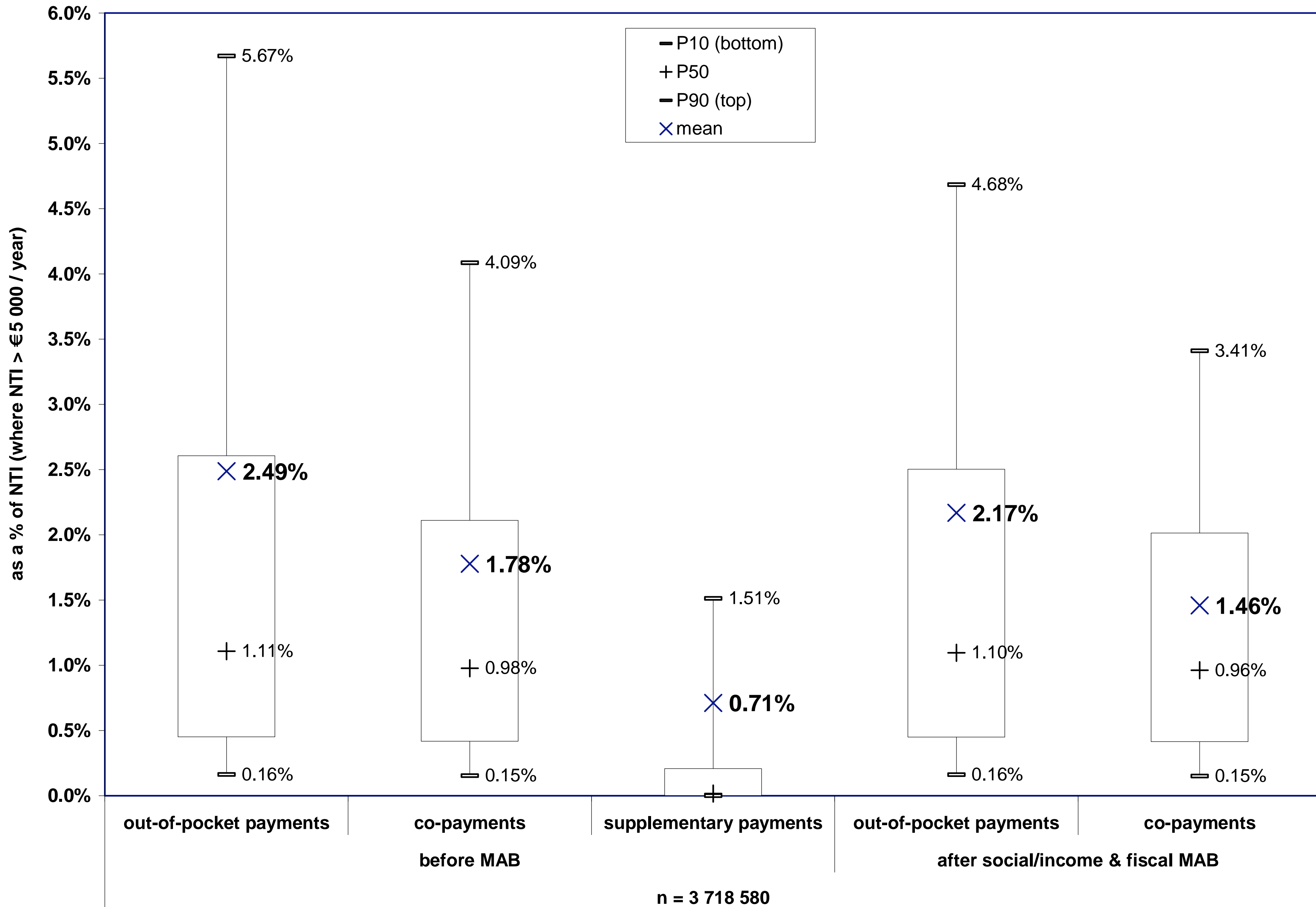
Methodological issues

- How to define financial burden? (absolute/ relative to income; OOP/co-payments; no correction for hh size)

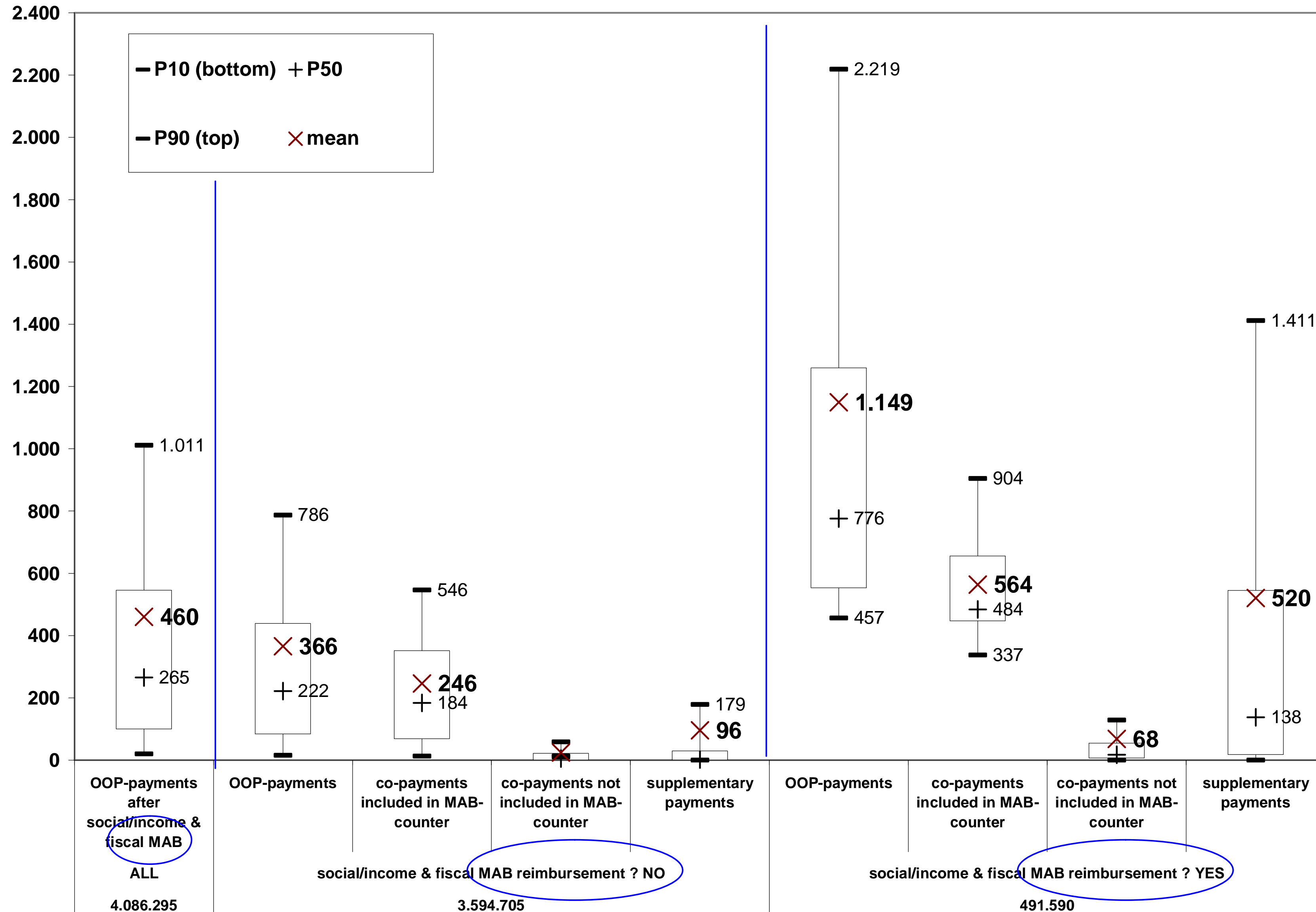
Impact of MAB – absolute values



Impact of MAB – as % of NTI



Components of OOP after MAB



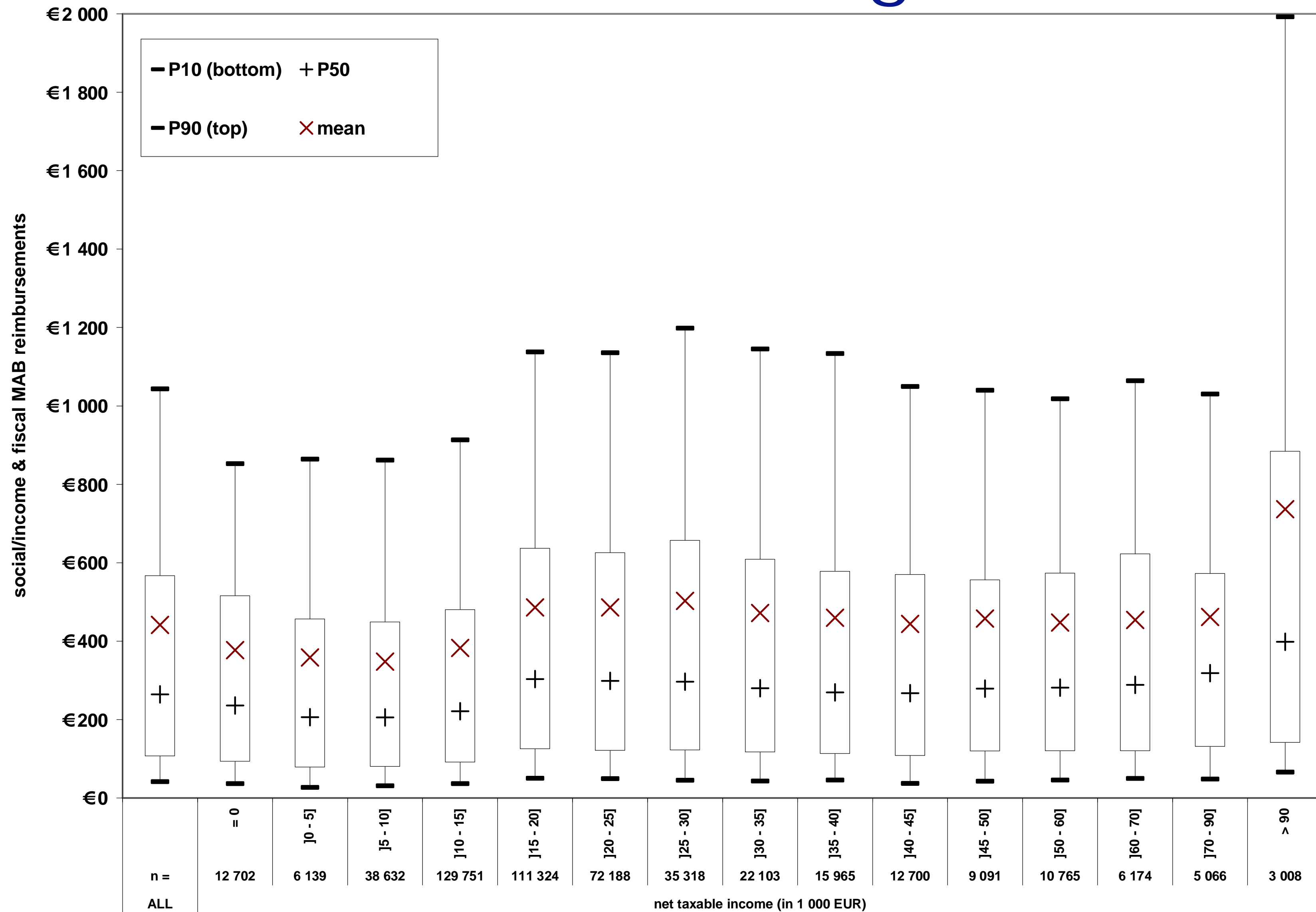
How selective is the MAB?

- According to income
- According to other socio-economic and morbidity indicators

Number of households with positive MAB reimbursements according to income

using weights	(1)	(2)	(3)	(4)			
		# households with reimbursements (>0) from			%		
	# households	social/income MAB	fiscal MAB	social/income & fiscal MAB	= (2) / (1)	= (3) / (1)	= (4) / (1)
Income bracket / ALL	**4 044 468**	**374 077**	**184 276**	**490 925**	**9.25%**	**4.56%**	**12.14%**
] €0 - €5 000]	**72 219**	**4 190**	**2 962**	**6.139**	**5.80%**	**4.10%**	**8.50%**
] €5 000 - €10 000]	**321 498**	**32 244**	**15 370**	**38.632**	**10.03%**	**4.78%**	**12.02%**
] €10 000 - €15 000]	**730 359**	**113 061**	**45 628**	**129.751**	**15.48%**	**6.25%**	**17.77%**
] €15 000 - €20 000]	**494 792**	**99 760**	**28 955**	**111.324**	**20.16%**	**5.85%**	**22.50%**
] €20 000 - €25 000]	**412 313**	**54 285**	**25 313**	**72.188**	**13.17%**	**6.14%**	**17.51%**
] €25 000 - €30 000]	**317 899**	**15 498**	**20 665**	**35.318**	**4.88%**	**6.50%**	**11.11%**
] €30 000 - €35 000]	**257 792**	**11 067**	**11 670**	**22.103**	**4.29%**	**4.53%**	**8.57%**
] €35 000 - €40 000]	**228 698**	**7 707**	**8 631**	**15.965**	**3.37%**	**3.77%**	**6.98%**
] €40 000 - €45 000]	**196 331**	**5 975**	**6 948**	**12.700**	**3.04%**	**3.54%**	**6.47%**
] €45 000 - €50 000]	**162 328**	**4 300**	**4 917**	**9.091**	**2.65%**	**3.03%**	**5.60%**
] €50 000 - €60 000]	**230 770**	**6 015**	**4 875**	**10.765**	**2.61%**	**2.11%**	**4.66%**
] €60 000 - €70 000]	**139 270**	**3 445**	**2 757**	**6.174**	**2.47%**	**1.98%**	**4.43%**
] €70 000 - €90 000]	**134 535**	**3 153**	**1 978**	**5.066**	**2.34%**	**1.47%**	**3.77%**
> €90 000	**91 995**	**1 884**	**1 144**	**3.008**	**2.05%**	**1.24%**	**3.27%**

Positive MAB-reimbursements according to income



MAB as protection mechanism

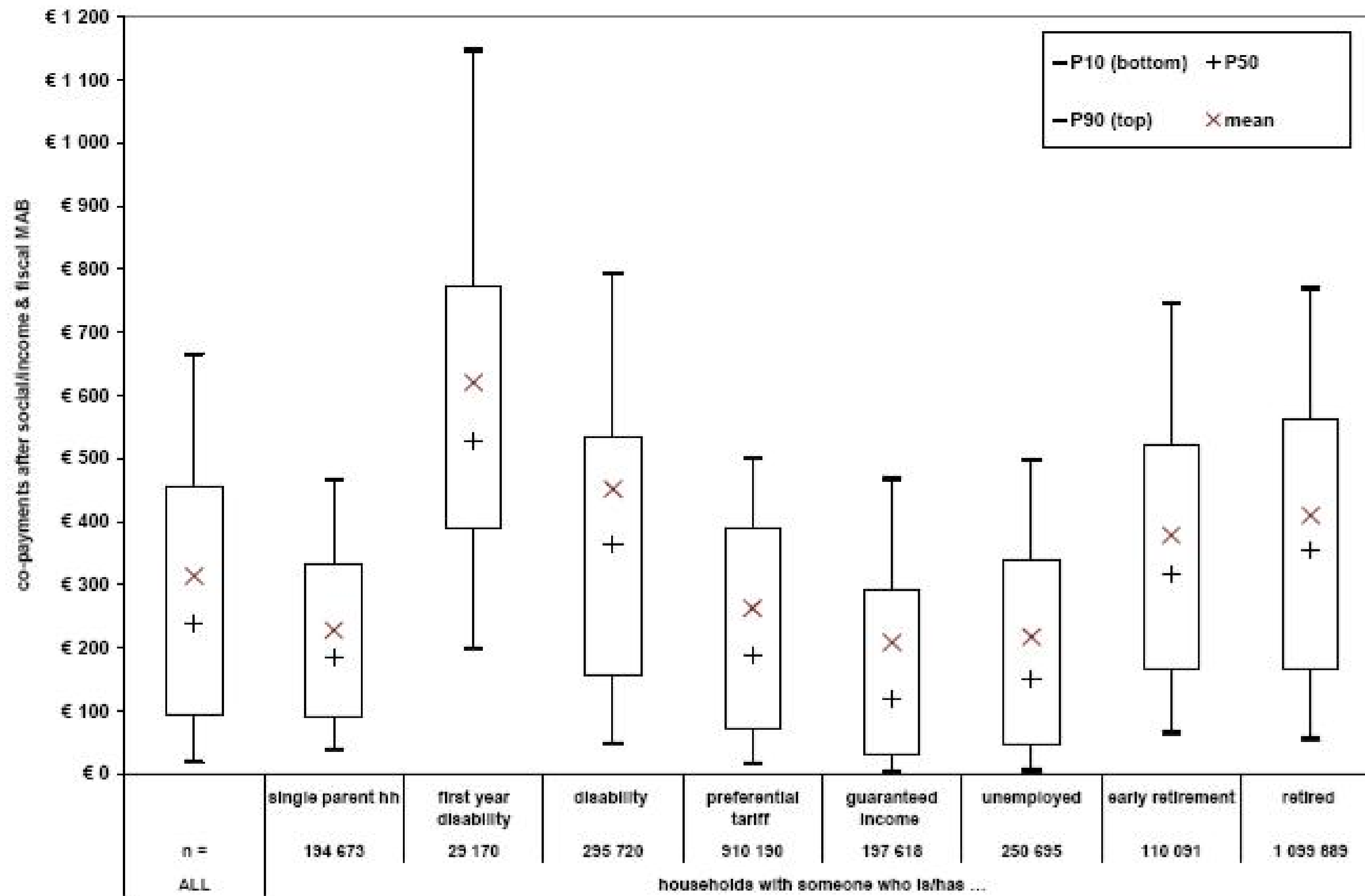
- Based on socioeconomic characteristics
  - Single parent households
  - Unemployed
  - Entitled to the guaranteed minimum income, the guaranteed income for elderly or receiving a subsistence income from the Social Services (OCMW/CPAS)

Relatively well protected

% of hh with positive MAB-reimbursements according to socio-economic characteristics

All	**12.03%**
one single parent	9,66%
first year disability (more than 180 days)	41,79%
disability (ct1 = x2x / more than 1 year)	26,98%
preferential tariff (ct1 = xx1)	18,83%
guaranteed income or help from OCMW	12,77%
fully unemployed	12,32%
early retirement	13,18%
retired (ct1 = x3x)	23,86%

Co-payments after MAB for different socio-economic groups



MAB as protection mechanism

- Based on morbidity characteristics
  - Lump sum B or C
  - Lump sum physiotherapy E
  - Multiple hospitalisations (>=6)
  - Long hospitalisation (>=120 days)

Well protected

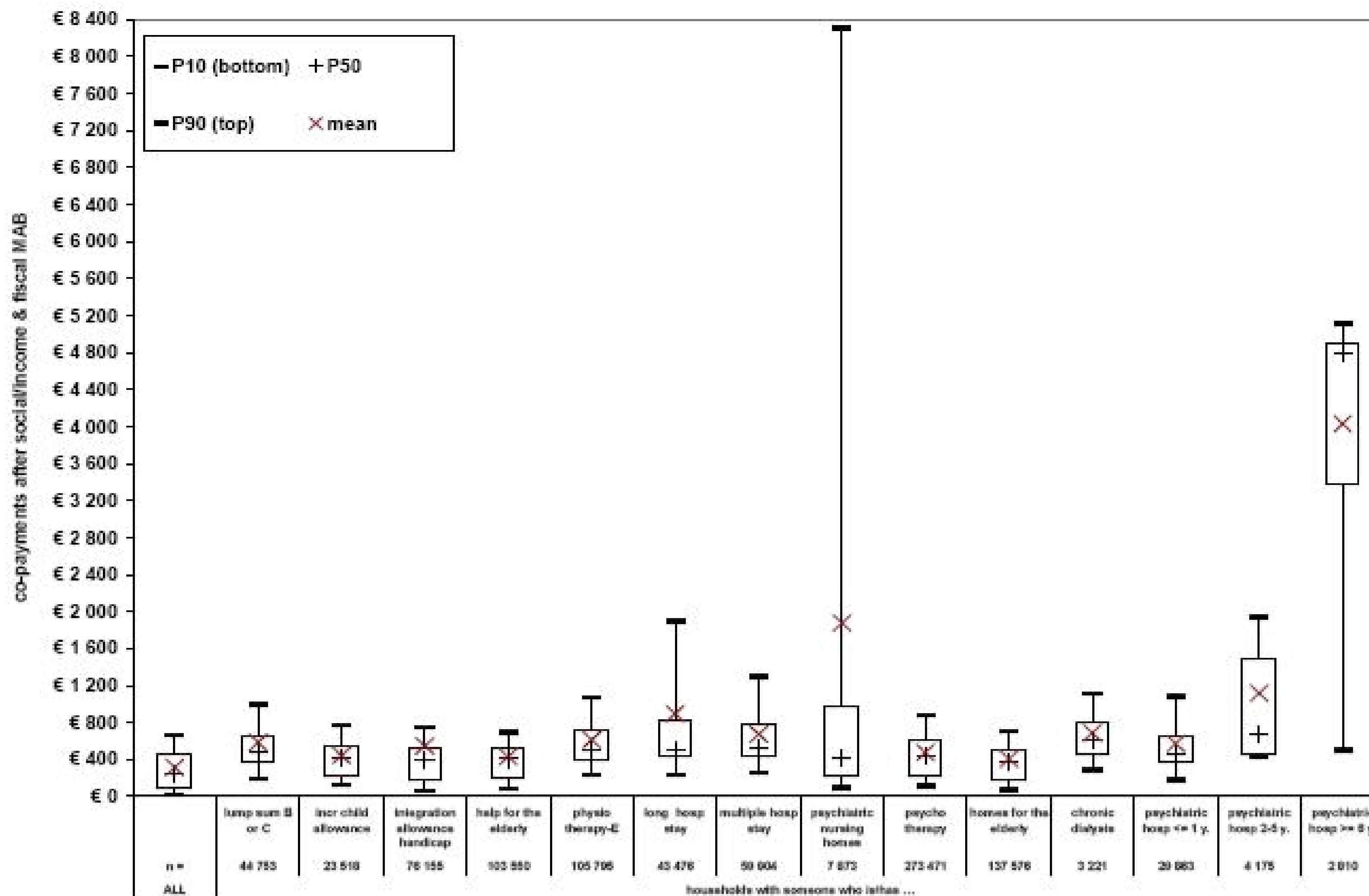
But still high OOP after MAB-reimbursements

Psychiatric patients!

% of hh with positive MAB-reimbursements according to morbidity characteristics

All		12.03%
lump sum B or C		64,86%
increased family allowances because of a handicap		25,86%
integration allowance for the handicapped		39,23%
allowance for help at the elderly (handicapped).		44,38%
physiotherapy-E		53,82%
long hospital stay (>=120 d.)		69,71%
multiple hospital stays (>=6)		69,43%
psychiatric care homes (PVT)		30,00%
psychotherapy		27,82%
rest and nursing homes for the elderly (rob,rvt)		39,16%
chronic dialysis		73,57%
psychiatric hospital	<= 1 y.	60,84%
	2 - 5 y.	65,43%
	>= 6 y.	17,09%
antibiotics DDD>=	1	16,41%
	30	26,05%
	90	43,58%
	180	49,36%

Co-payments after MAB for different socio-economic groups



MAB as protection mechanism: poverty incidence

% households	30%	40%	50%	60%
% households with NTI below poverty line (1)	8.64%	10.67%	14.49%	20.93%
% households with (income – OOP-payments before MAB) below poverty line (2)	9.02%	11.38%	15.79%	22.43%
(2) – (1)	0.38%	0.71%	1.31%	1.50%
% households with (income – OOP-payments after social/income MAB) below poverty line (3)	8.96%	11.27%	15.63%	22.16%
% households with (income – OOP-payments after social/income/fiscal MAB) below poverty line (4)	8.95%	11.25%	15.60%	22.13%
(2) – (3)	0.06%	0.11%	0.17%	0.27%
(2) – (4)	0.07%	0.12%	0.20%	0.30%

About 0.20% of the households not in poverty thanks to the MAB

Behavioural effects of MAB?

The MAB makes health care cheaper for some individuals: does this have an impact on consumption?

- International literature: prices do matter. Decrease of patient price -> increase of consumption, and vice versa
- Interpretation of higher consumption after MAB in Belgium?
  - Inefficient over-consumption
  - or, correction for poorer people

Possible behavioral changes

Keeler, Newhouse and Phelps (1977):

- Rational: anticipation of exceeding MAB
- Myopic: changes occur after exceeding MAB
- Inflexible: no changes

- Postponing
- Bring future costs to current year

Methodology

- Comparison over time
- At the individual level (household composition may change; detailed information only for basic sample)
- Difficult methodological problem: price = endogenous
  - Research question: does a lower price (= an individual who exceeds the MAB) lead to increased consumption?
  - But higher consumption: MAB ceiling will be reached and hence price is lower
- Do people know when they exceed the MAB?

Individual co-payments 2003-2004

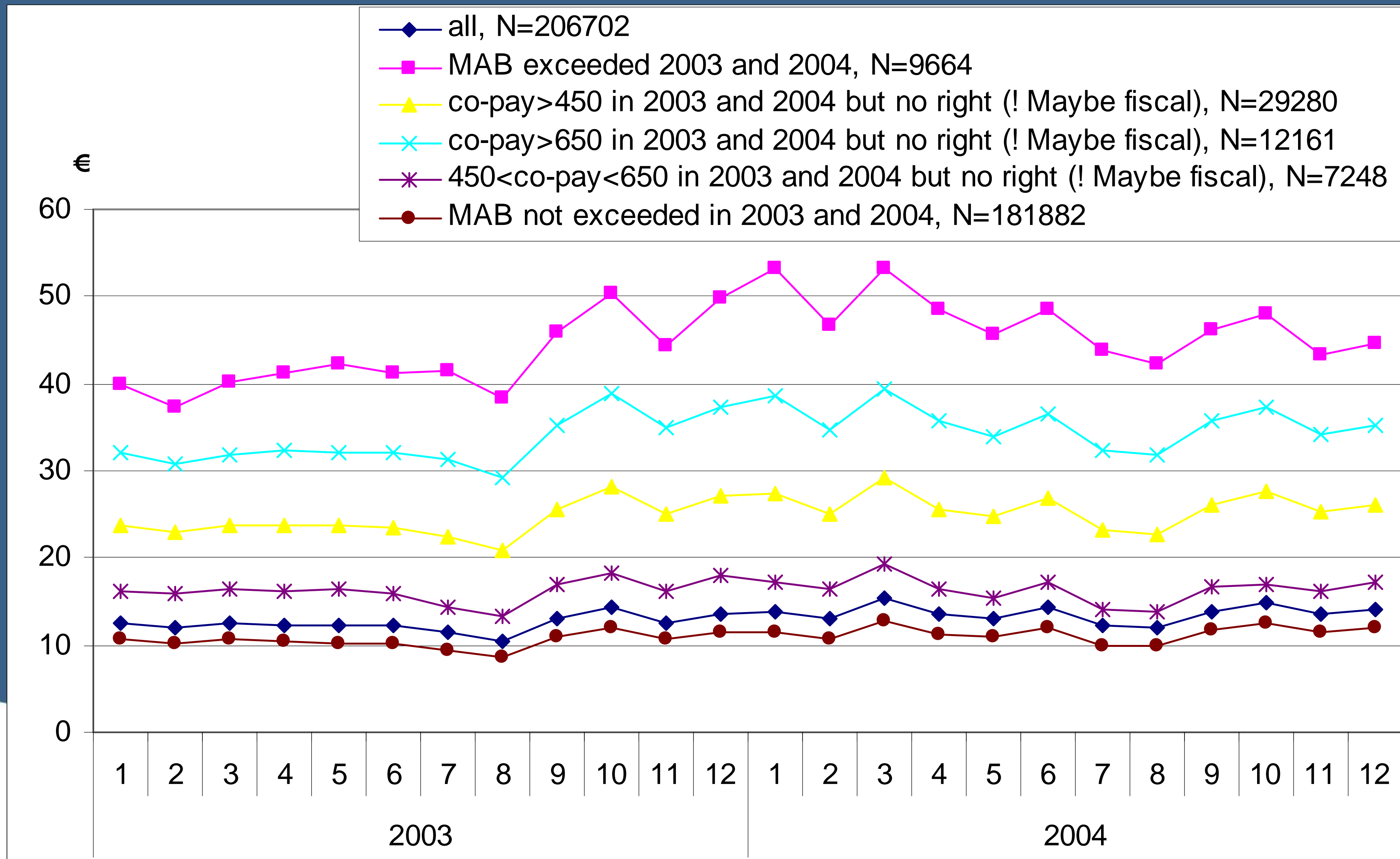
€

Series	2003-1	2003-2	2003-3	2003-4	2003-5	2003-6	2003-7	2003-8	2003-9	2003-10	2003-11	2003-12	2004-1	2004-2	2004-3	2004-4	2004-5	2004-6	2004-7	2004-8	2004-9	2004-10	2004-11	2004-12

MAB 2003 exceeded but MAB 2004 not exceeded	10,932
MAB 2003 not exceeded but MAB 2004 exceeded	11,826
MAB 2003 exceeded and MAB 2004 exceeded	15,498
MAB 2003 not exceeded and MAB 2004 not exceeded	215,828

Uni

Evolution of co-payments for different subgroups (without preferential treatment)



The effect of including drugs of type C in the MAB (2003)

- Drugs of type C: what?
  - drugs against coughing and expectorating (middel tegen hoesten en fluimen)
  - 50% reimbursement, 50% co-payment (with cap)

- Included in MAB-counter since January 1st 2003

Methodology

- difference-in-difference methodology: comparing the change in consumption of drugs of type C in the pre-policy period (2002) with the post policy period (2003) between a treatment group (those exceeding the MAB) and a control group.
- include several proxies for initial morbidity to take differences between the groups into account
- Logistic regression to estimate the impact on the probability to consume (expectation to exceed the MAB)
- Estimation of the impact on the volume of consumption in case of use : IV-technique: use former quantities and current prices as an instrument

Results on probability to consume

- increasing time trend: over the years, the likelihood of consuming drugs of type C increases;
- the expectation to exceed the MAB-ceiling has a significantly positive coefficient: patients who expect to exceed their MAB-ceiling are more likely to consume drugs of type C
- interaction term between the time dummy and the expectation to exceed, is significantly negative: the effect of including drugs of type C in the MAB leads to a *decrease* in consuming those drugs.

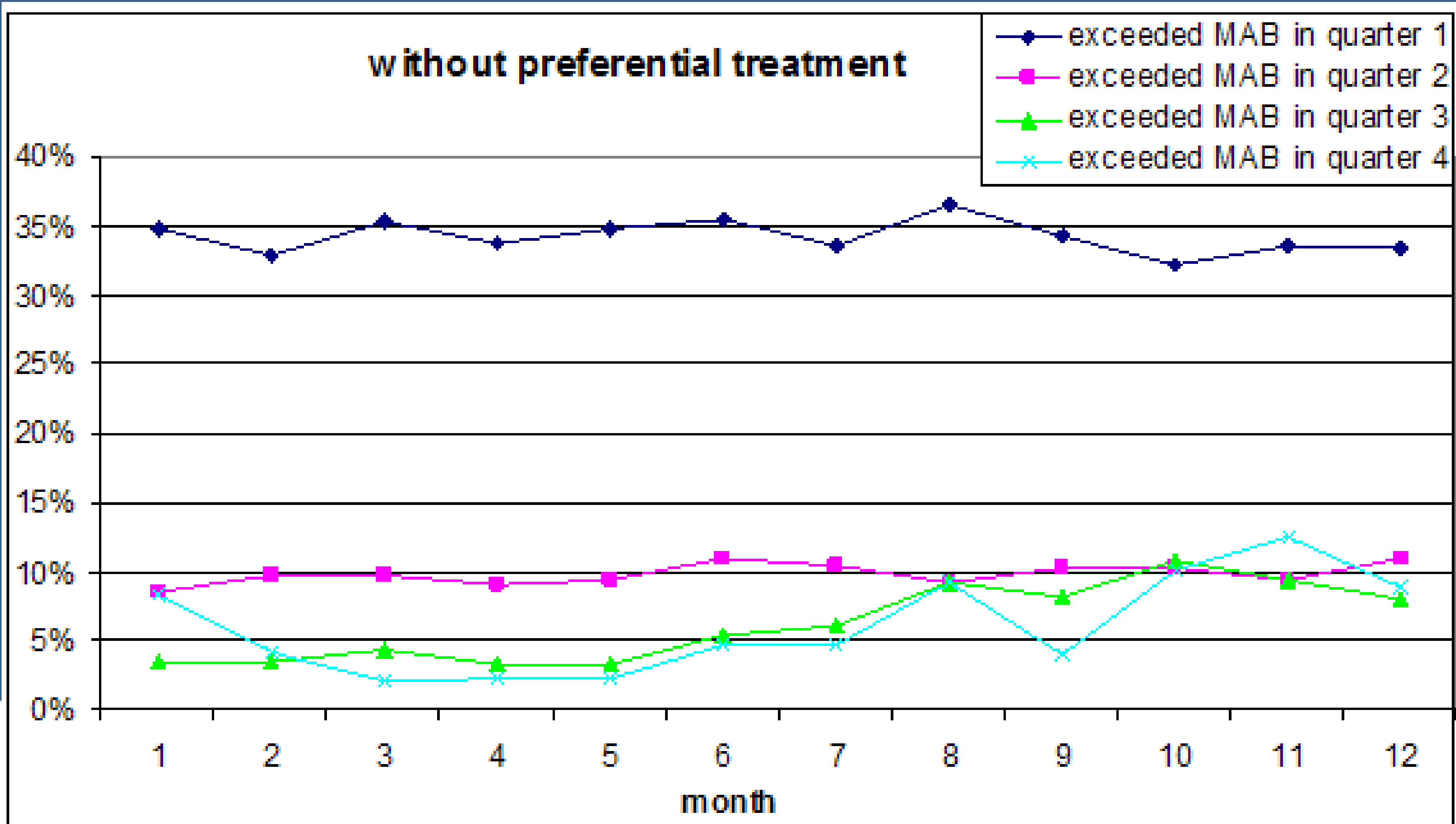
Results on volume of consumption

- No significant price coefficient: users of drugs of type C are not responsive to price changes due to the inclusion in the MAB-counter

Impact on provider behaviour

- Nursing care
- Not obliged to ask co-payments
- Co-payments in MAB-counter
- Copay with preferential treatment: about 0%
- Copay without preferential treatment: 25%

Number of individuals paying co-payments



Impact on provider behaviour

- Myopic behaviour probably does not exist
- There is some evidence for rational behaviour

How would costs and patient protection change if the structure of the MAB would change?

- On the basis of microsimulations
- Without behavioral reactions

- Step 1: simulate changes between 2004 and 2007
- Step 2: simulate additional policy measures

Policy changes since 2004

	Total MAB reimbursements	Number of households with			
		OOP >5%	OOP >10%	Co-payments >5%	Co-payments >10%
Begin situation (2004)	€203 443 666	391 670	155 465	133 001	50 668
Integration fiscal MAB (2005)	€214 160 478 (+5.3%)	377 392 (-3.6%)	152 522 (-1.9%)	111 081 (-16.5%)	50 123 (-0.9%)
Reduction social MAB (2006)	€202 774 854 (-5.3%)	379 074 (+0.4%)	152 753 (+0.2%)	111 267 (+0.2%)	50 123 (+0%)
Integration delivery margin (2006)	€218 036 109 (+7.5%)	369 758 (-2.5%)	148 237 (-3.0%)	103 315 (-7.1%)	49 292 (-1.7%)
Introduction OMNIO (2007)	€196 764 343 (-9.8%)	344 611 (-6.8%)	140 460 (-5.2%)	82 885 (-19.8%)	42 759 (-13.3%)
inclusive lowering co-payments	*€255 689 772 (+17.3%)*				
Integration safety margin (2008)	€204 914 343 (+4.1%)	339 025 (-1.6%)	137 701 (-2.0%)	81 236 (-2.0%)	42 072 (-1.6%)
Total change (in %) inclusive lowering co-payments	+0.7% *(+29.7%)*	-13.4%	-11.4%	-38.9%	-17.0%

Simulation of other changes

- Enlargement of coverage
  - Including all co-payments
  - Including supplements
  - Psychiatric patients
- Income ranges and MAB ceilings
  - 1 absolute ceiling
  - Indexing
  - Introduction of extra ceiling €250
- Income definition
  - Correcting for family size
  - Gross income
- Abolishing preferential treatment
- Chronically ill

General conclusions

- Very complex system
- Limitations (still many households with OOP >10% of income, psychiatric patients, persistence)
- Relative little evidence of behavioral changes due to exceeding MAB

	budgettaire kost (nieuwe plafonds)	Verandering N OOP >10%	Verandering N Co-pay >5%
psychiatrische patiënten	€26 645 888	- 2 579	- 3 827
alle remgelden in de MAF-teller	€53 326 023	- 7 497	- 22 504
alle supplementen in de MAF-teller	€430 928 001	/	/
alle supplementen in de MAF-teller - budget-neutraal	€1 498 252 (1 395, 2 015, 3 100, 4 340, 5 580)	+ 20 958	/
Eén absoluut plafond - budget-neutraal	€85 294 (760)	+ 13 458	+ 72 688
Indexatie van de MAF-plafonds	- €8 725 263 (465, 671,1 033,1 446,1 859)	+ 1 239	+ 3 862
Afschaffing sociale MAF	- €12 433 406	+ 584	+ 658
Invoering extra plafond van €250 voor zeer lage inkomens	€20 203 047	- 7 466	- 29 803
Afschaffing soc. MAF + plafond €250 – NETTO EFFECTEN	€7 769 641	- 6 882	- 29 145
Equivalente inkomens: OECD-schaal – budget-neutraal	€92 765 (599, 865, 1 330, 1 862, 2 394)	+ 6 500	+ 37 995
Equivalente inkomens: vaste aftrekken – budget-neutraal	- €12 213 (488, 705, 1 085, 1 519, 1 913)	+ 1 104	+ 7 398
Bruto i.p.v. netto inkomens – budget-neutraal	€1 150 147 (378, 546, 840, 1 176, 1 513)	- 492	+ 10 680
Afschaffing verhoogde tegemoetkoming – budget-neutraal	€1 113 926 (300, 433, 667, 933, 1 200)	+ 25 968	+ 51 584
Vermindering MAF-plafond voor gezinnen met een chronisch zieke – brede definitie van chronisch zieke	€47 025 204	- 11 627	- 27 071