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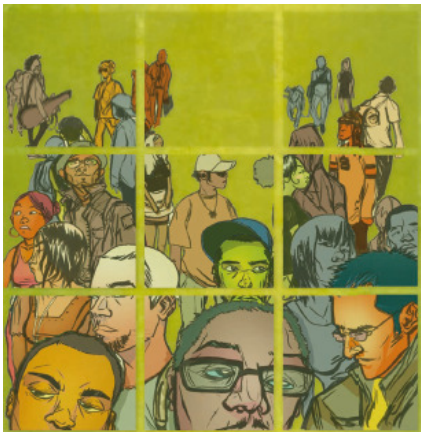

The drivers of catastrophic expenditure: outpatient services, hospitalization or medicines?

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Introduction

Universal coverage and a reorientation towards primary health care is an international goal. Financial risk protection is a cornerstone of universal coverage along with access to care. Health spending through out-of-pocket payment (OOP) is not always easy to cope with. Households may encounter financial hardship and poverty as a result (1-5). Indeed, effective and equitable health systems and universal coverage ensures that citizens are able to access needed care without suffering financial hardship. As such all strategies in moving towards universal coverage need to fundamentally address financial risk protection (6).

However, in choosing a strategic direction, there may be tradeoffs, especially in the short-run while further resources have not been harnessed fully (7). Benefit packages can take on distinctly different flavours and in some systems, they have focused on making complex interventions available when needed at low or no cost to the beneficiaries (8). In these systems, OOP may be low for complex procedures but relatively high for other interventions. Other benefits packages may provide a broader range of services, but may require a higher cost sharing. These packages clearly differ in their degrees of service and cost coverage. It is not possible to out rightly comment on which may be preferred. Nor is it necessarily important whether services are provided through specific insurance systems or generalized public provision. The degree of financial protection as well as access to care offered under the different scenarios will determine which choices may be preferable. On a broader scale, larger health financing systems parameters such the degree of reliance on OOP in financing can similarly be expected to play a direct role in the degree of financial protection (9;10).

At the micro-level, building from previous literature, we can also posit that households with certain characteristics face a higher financial risk due to health payments. Indeed, in addition to poorer households, studies have documented a vast group of vulnerable households who need more protection to benefit fully from health systems and health care services (11-13). These essential micro-level vulnerabilities also need to be accounted for in national policy and global health policy to truly develop systems that are for the people.

The study will provide an overview on what types of OOP drive catastrophic health expenditure and household and national level factors that are associated with catastrophic expenditure. Catastrophic health expenditure is a key measure of the degree of financial risk protection as it assesses whether a system is able to protect its citizens from extreme financial hardship (14). Arguably, extreme financial hardship is the worse financial and economic outcome possible for a household to have to endure as a result of seeking care. Catastrophic health expenditure is a also a reliable measure of financial risk protection as it has been well developed in the literature and documented for many countries (15;16). The analysis in this paper is carried out using a unique dataset, the World Health Surveys from 51 countries. This analysis provides new and robust evidence on the linkages between health systems financing parameters and financial risk protection. This research can help guide policymakers on how to design of the benefit packages to protect disadvantaged

populations against financial risk from OOP and what strategies towards universal coverage may be the most suitable in different circumstances.

Methodology

We are particularly interested in understanding what types of health expenditure create a financial burden for households and drive catastrophic expenditure. Spending on inpatient services, outpatient services, and medicines are examined more closely in addition to total OOP. We also examine what household and country-level characteristics may be associated with financial burden.

Variables

The measure of financial burden and catastrophic health expenditure from OOP is based on the concept of health spending relative to household non-subsistence expenditure (or household capacity to pay, *ctp*), which has been used previously in the literature (17;18). The latter was defined on the basis on food expenditure, whereby all household expenditure exceeding a particular food expenditure threshold was considered to be non-subsistence expenditure. The paper presents the OOP as a share of household capacity to pay. Additionally, a household is defined as facing catastrophic health expenditure if its health spending exceeds 40% of its capacity to pay. For example, for the case of inpatient OOP or *oop_inp*, the following measures were constructed:

Measure 1. $\frac{oop\_inp}{ctp}$ across all households

Measure 2. $\frac{oop\_inp}{ctp}$ among households with *oop_inp*>0

For each household, *cata_inp*= 1 if $\frac{oop\_inp}{ctp} > 0.4$, otherwise *cata_inp*= 0

Measure 3. Mean *cata_inp* for all households

Measure 4. Mean *cata_inp* among households with *oop_inp*>0

Similarly to inpatient OOP, the burden and the incidence of catastrophic health expenditure from the other types of OOP - outpatient OOP (*oop_out*) and medicines OOP (*oop_drug*) as well as total OOP, (*total_oop*) were calculated and are the dependent variables in this paper.

These dependent variables (in the inpatient OOP example above measures 1,2,3, and 4) are examined with respect to household-level as and country-level variables to understand what factors may associated with them. The household level co-variates were: whether the household had members under 5 years of age (*age05_dum*); whether the household had members over 60 years of age (*age60_dum*); whether there were

any disabled (*disability*); the education level of the household head (*edu_head_cat*); the sex of the household head (*male_head*); whether the household lives in an urban area (urban); and household expenditure quintile (*quintile*). The country-level covariates were: the percentage of OOP in total health expenditure (*oops_the*); total health expenditure as share of GDP (*the_gdp*); and the Gini coefficient of expenditure (*b_gini*).

Data source

Data used in this study were from the World Health Surveys (WHS) from 51 countries. The data was collected in the 2002-2003 period. All WHS data are nationally representative, with sample size from 660 to 38424 households. The sample size exceeds 1000 households in 90% of the surveys used. The standardized questionnaires provide in-depth breakdown of health expenditure on a range of items such as hospitalizations, medicines, outpatient care tests and dental care. As noted earlier, in this paper, OOP on inpatient care, outpatient care and medicines are considered. All the expenditure variables including health and non-health spending were reported based on a 4 week recall period in the survey. Country-level indicators of *oops_the* and *the_gdp* are from the National Health Accounts database from 2007. The Gini coefficient of expenditure was derived from the WHS themselves for each country.

Methods

The main methodological question was to understand the levels and variation of catastrophic health expenditure both within as well as across countries, and across a range of covariates. A combination of non-parametric and multilevel regression techniques were used to examine this more closely. Firstly, the burden from health expenditure on households, arising from total OOP, as well the types of OOP is presented by different socio-economic groups. The burden among all households and just households with spending were considered as in measures 1 and 2 above.

To explore the factors that may be associated with the incidence of catastrophic health expenditure, a pooled cross-country multi-level regression model was then applied. This model took into account the nesting of households within countries. The random-intercept probit model took on the form:

$$\Pr(y_{ij} \neq 0 \mid x_{ij}) = \Phi(\beta x_{ij} + \omega_j) + \varepsilon_{ij}$$

Where i is a particular household, j is a particular country. ω_j is the error specific to country j, and an error ε_{ij} that is independent of country and household. Φ is the standard normal cumulative distribution function and Pr is the probit function, while x_{ij} are household and country level covariates. Once again, all households as well as just households with spending on OOP were considered as in measures 3 and 4 above.

Results

General findings

Table 1 (Tables and Figures in Annex) shows the national incidence of catastrophic health expenditure arising from total OOP, inpatient OOP, outpatient OOP and OOP on medicines. It separates the incidence of catastrophic health expenditure among all households and just among households reporting spending (as in measures 3 and 4 above respectively). Between 1.32% and 33.6% of households across the different countries suffered from catastrophic health expenditure from all sources of OOP. The average incidence was 13.1% across all countries. Among households that incurred OOP, the incidence ranged from 1.92% to 56.8%, with an average of 26.2%.

The incidence of catastrophic health expenditure solely from OOP on inpatient services if all households are included is from 0% to 3.5%, with an average of 1.1% (as in measure 3). However, among households who had spent on OOP for inpatient services, between 0% and 63.7% faced catastrophic health expenditure as a direct result, with an average of 27.5% (as in measure 4). For outpatient OOP, the incidence of catastrophic expenditure as a direct result was from 0% to 3.8%, with an average of 1.1% for all households. The incidence among just households that had positive OOP on outpatient services ranged from 0% to almost 37.7%, with an average of 9.6%. OOP on medicines resulted financial catastrophe for 0% to 19.2% of all households across the different countries, with an average of 6.1%. The incidence among just households with spending on medicines was between 0% and 42.2% and averaged at 15%.

Figure 1 shows the distribution of total OOP, inpatient OOP, outpatient OOP and medicines OOP as a share of household capacity to pay for all households across the countries in the sample (as in measure 1 above). The distribution is plotted using a box plot. The horizontal line within the boxes represents the median, whereas the boxes themselves represent the 25^{th} and 75^{th} percentiles, also known as the inter-quartile range. Finally, the horizontal lines on above and below box represent range within one and half times the inter-quartile range. OOP as a share of household capacity to pay was skewed in many countries. Cross-country variation ranged from 10% to 27% across the different types of OOP. The other aspect that is particularly striking in this representation is that inpatient expenditure does not seem to pose a significant burden on households in general. Indeed, reinforcing the summary statistics data, the inpatient OOP distribution is not very visible in figure 1. Similarly, the overall burden from outpatient expenditure is less pronounced than that from OOP on medicines. Indeed, from this figure it becomes apparent that in some countries, the major financial burden on households from OOP is directly due to spending on medicines.

Figure 2 shows the distribution of OOP as a share of household capacity to pay among those with non-zero spending on the respective type of OOP (as in measure 2 above). This shows a very different picture from figure 1. Indeed, as would be expected among households with non-zero inpatient OOP, the financial burden from inpatient spending is considerable. In almost half of the countries, 25% or more households incur

catastrophic expenditure from inpatient OOP if they have spending on inpatient OOP. The cross-country variation ranges from 34% to 38%.

Distribution of financial burden by socio-economic groups

Household quintile

Huge variations were observed across countries, between quintiles within the same country and even within quintiles in the same country. Figure 3 and figure 4 present the distribution of OOP as a share of household capacity to pay in quintile 1 and quintile 5 with figure 3 showing the distribution among all households (i.e. measure 1 above) and figure 4 among just households reporting OOP (i.e. measure 2 above). Among all households the burden from OOP is higher for the poorest quintile than for the richest quintile for most of the countries, although the difference is relatively small in some cases. However, when only households with OOP are considered, those in the poorest quintile carried a much heavier burden from OOP. This result is consistent across all countries.

It is also interesting to note the potentially different drivers of catastrophic health expenditure among households in quintile 1 and quintile 5. Figures 5, 6 and 7 show the burden from OOP among households with positive OOP respectively from: outpatient, medicines and inpatient OOP. The data suggest that for the outpatient and medicines OOP, quintile 1 households face a considerably heavier burden compared to quintile 5 households in all but one country, while no consistent pattern emerged for inpatient OOP.

Urban and rural households

The comparison between urban and rural locations revealed that households located in rural areas had a bigger burden from OOP compared to households living in the urban areas (figure 8). Figures 9 and 10 show the burden from medicines and inpatient OOP respectively among households with spending on these items. Urban households' burden from spending on medicines is considerably smaller than rural households' burden. On the other hand, for inpatient OOP, the results didn't show much difference between households in urban and rural areas.

Education level of household head

The data shows linkages between education level and the burden from OOP. Figure 11 shows the burden from total OOP among households with heads who had completed primary school education and those who had not. Households headed by a person without primary level education had a higher burden from OOP. This result holds across almost all countries. In fact, this pattern is also holds for the different types of OOP as well as among just households who had OOP.

Disability

Results show that when all households are considered, those with disabled members had a higher burden than other households (figure 12).However, this pattern is not repeated when just households with spending on particular types of OOP are considered. Figures 13 ,14 and 15 show the burden among the households with spending on outpatient OOP, medicines OOP and inpatient OOP respectively. No consistent difference was found for outpatient or inpatient OOP while the differences for medicines OOP are less striking than the differences seen in figure 12 .

Demographic characteristics

Demographic composition of households may also be related to the incidence of catastrophic health expenditure. Figure 16 and 17 present the burden from total OOP among all households with members under 5 years of age and households with members over 60 years of age. These figures show that households with children or elderly members tend to face a slightly
higher burden but the difference is not very large in most countries.

Among the components of OOP, once again there were no particularly striking differences. However households with elderly members appeared to have a higher burden from spending on medicines in most countries as suggested by figure 18. The patterns among just households with medicines OOP also exhibit these differences. However, these are not as apparent for households with children under 5 years of age or for spending on outpatient and inpatient OOP.

Finally, the sex of the household head may also play a role. Figure 19 shows the distribution of total OOP as a share of household to capacity for all households with female heads and all households with male heads. Households with female heads tend to have a slightly higher overall burden. For outpatient and medicines OOP, this pattern also holds. However, this pattern does quite hold for inpatient OOP among households with spending are considered as shown in figure 20.

Regression results: factors associated with catastrophic health expenditure

Four sets of multilevel regression models were run on catastrophic expenditure for total, outpatient, inpatient and medicines OOP against the same set of household level and country level covariates. The results are shown in table 2. For each set, the model applied to total households and households reporting OOP, respectively. These respectively correspond to measures 3 and 4 highlighted in the methodology section. Both household level and the system level covariates are associated with catastrophic expenditure but their significance and magnitude are not always the same.

The results show that being in a higher quintile is generally associated with lower incidence of catastrophic health expenditure among households who spend on OOP. However, this is not generally the case when all

households are considered. In fact, among all households, being in richer quintile is sometimes positively associated with facing catastrophic expenditure.

Results for the education level of household head and household geographical location were consistent across all regression equations. Households with heads with a higher level of education were less likely to incur catastrophic health expenditure. Similarly, households living in urban areas consistently seemed to be better protected against catastrophic health expenditure. However, the sex of a household head was only significant at 0.1% level for medicines models with a negative sign and significant at 5% level for inpatient OOP when all households are considered. However, in the latter, the sign was positive.

In terms of epidemiological or need factors, the models found that having children under 5 years of age or elderly members in the household are positively associated with catastrophic expenditure when all households are considered. When the models are applied to just households with non-zero OOP, the coefficients for the variable indicating an elderly member in the household stayed positive and significant for all models, but the level of significance decreased for inpatient OOP. On the other hand, the coefficients for the children variable were not statistically significant, except in the case of inpatient OOP. Having a disabled member in the household was associated with a higher probability of catastrophic expenditure when all households are considered. However, when only households with non-zero OOP are considered, the significance decreases for outpatient OOP and becomes insignificant for inpatient OOP, while remaining as significant for medicines OOP.

For country level factors, out-of-pocket payments as a share of total health expenditure in the country, a indicator of the general degree of prepayment in the health financing system had a positive relationship with catastrophic health expenditure in almost all of the specifications. All the coefficients were statistically significant, except for outpatient OOP when only households with non-zero OOP are considered. However, total health expenditure as a share of GDP did not have a significant relationship at the 5% percent in all specifications. Income inequality was associated with higher incidence of catastrophic expenditure in most of the specifications.

Discussion

Our paper presents the results from a complex analysis of a rich dataset. Indeed, it has some very interesting findings. However, these findings need to be considered within the limitations of the methodology and dataset. Different interpretations of categories of OOP may exist. It is possible that some spending on medicines has been misclassified as spending on outpatient services. Unfortunately, there is no way to correct for this possibility. Additionally, it does not affect the key findings of this study. Health expenditure from WHS may be high compared to non-health household surveys. However, there is no reason to believe that there would any systematic differences in the reporting of health expenditure in different countries as well as across different groups of people. As such, any effects on the results are likely to be minor.

Firstly, this study shows that medicines expenditure poses a considerable financial burden. Spending on medicines causes more households to face financial catastrophe than spending on inpatient or outpatient services in almost all countries included in this study. Indeed, while the cost of medicines may be small as compared to inpatient services, medicines spending can accumulate quickly, especially for people with chronic conditions. This result supports evidence from previous studies (19;20). Nonetheless, big ticket items such as inpatient care are also problematic. Indeed, among those with spending, inpatient OOP is key driver of catastrophic health expenditure. The findings strongly suggest that benefit packages need to find ways ensure that households do not face financial risks as a result of medicines expenditure. At the same time, benefits still need to deepen the level of protection offered to those accessing care at health care facilities, both at the primary as well as secondary and tertiary levels.

We also find that certain types of households may be more vulnerable to catastrophic health expenditure, largely irrespective of the country in which they reside. Vulnerable households include households with members who are elderly, children under 5 years of age or disabled as well as poor and rural households. These types of households may be inherently disadvantaged in many systems as their health needs may the greatest, but their economic resources the most constrained. On the other hand, households with more educated heads were less likely to face catastrophic expenditure. This may be related to better management of household budgets in more educated households as well as better networks of accessing funds during times of need. The results also suggest that utilization patterns differed by household income, demographic characteristics and disability status. Indeed, confirming findings from previous literature, the results also find that poorer households are less likely to access care (21). This suggests that health systems as a whole have not fully succeeded in providing care to those who may in fact be in the most need. Of course, these aspects cannot be generalized completely across countries or across different services as our results show. Nonetheless, countries need to carefully examine their own policies with respect to vulnerable populations. Fundamentally, these basic questions of equity need to be addressed by policymakers around the world so people can universally benefit from health care.

While the study identified both household level and country level indicators associated with catastrophic health expenditure, the variation across countries was greater than variation within countries. This simple fact inherently shows the importance of health systems. However, total health expenditure as a share of GDP was not associated with catastrophic health expenditure in the regression models. It is possible that this indicator of the relative importance of the health becomes too crude at this micro-level of analysis. Indeed, it may alternatively indicate a higher preference for health care or well developed health systems, which may yield contradictory coefficients.

However, OOP as a share of THE had a positive significant relationship with catastrophic health expenditure in almost all of the specifications. This establishes a clear link between national health financing systems and financial risk protection. Among just households who had spent on outpatient OOP, general level of OOP as

a share of THE was not associated with higher incidence of catastrophic expenditure from outpatient OOP. This may be due to allocation of nationwide prepayment for health to a broad range of services. Nonetheless, it is clear that more households face financial catastrophe in systems with a higher reliance on out-of-pocket payments. Strategies to decrease OOP and ensure that they remain as tertiary financing instruments must a key policy objective in all countries.

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Table 1 - Mean incidence of catastrophic health expenditure

		Total OOP		Inpatient OOP		Outpatient OOP		Medicines OOP	
Code	Country	All households	Households with non-zero spending	All households	Households with non-zero spending	All households	Households with non-zero spending	All households	Households with non-zero spending
ARE	United Arab Emirates	4.70%	9.86%	0.71%	14.25%	0.70%	3.95%	0.39%	1.39%
BFA	Burkina Faso	20.20%	39.66%	1.02%	35.22%	1.08%	12.83%	13.38%	32.95%
BGD	Bangladesh	29.96%	33.01%	0.58%	22.65%	0.19%	0.74%	21.29%	24.19%
BIH	Bosnia and Herzegovina	9.71%	23.58%	0.13%	4.91%	0.00%	0.01%	3.78%	11.47%
BRA	Brazil	14.27%	22.37%	0.21%	20.71%	0.24%	4.04%	6.51%	11.64%
CHN	China	14.39%	27.55%	1.65%	70.12%	5.00%	18.82%	4.62%	14.70%
CIV	Côte d'Ivoire	17.53%	38.85%	2.88%	34.50%	2.48%	14.18%	5.92%	21.54%
COG	Congo	21.89%	47.01%	4.22%	40.75%	2.48%	16.91%	8.84%	26.85%
COM	Comoros	33.48%	54.38%	2.70%	21.41%	2.95%	7.11%	14.79%	26.67%
CZE	Czech Republic	2.09%	2.71%	0.00%	0.00%	0.00%	0.00%	0.61%	0.85%
DOM	Dominican Republic	20.03%	33.83%	1.20%	38.07%	1.42%	9.26%	12.47%	24.33%
ECU	Ecuador	10.71%	39.93%	0.85%	36.36%	0.84%	10.39%	5.03%	24.11%
ESP	Spain	6.81%	17.15%	0.00%	1.59%	0.29%	21.30%	0.92%	3.31%
EST	Estonia	12.45%	19.41%	0.05%	1.98%	0.10%	1.69%	6.22%	10.95%
ETH	Ethiopia	9.35%	29.38%	0.67%	24.86%	1.67%	13.04%	3.45%	13.73%
GEO	Georgia	25.11%	45.70%	1.13%	50.14%	0.74%	9.68%	16.08%	33.47%
GHA	Ghana	16.99%	23.23%	2.83%	40.96%	1.88%	10.81%	6.32%	10.10%
GTM	Guatemala	19.04%	39.78%	0.61%	42.65%	0.59%	5.96%	15.04%	34.40%
HRV	Croatia	2.96%	5.74%	0.11%	10.80%	0.00%	0.00%	0.79%	1.86%
HUN	Hungary	10.50%	13.06%	0.63%	24.69%	0.24%	5.78%	4.14%	5.36%
IND	India	28.59%	44.12%	2.16%	36.39%	4.27%	13.93%	13.73%	27.46%
KAZ	Kazakhstan	12.22%	17.80%	0.48%	42.36%	0.05%	3.59%	7.56%	12.02%
KEN	Kenya	9.85%	17.27%	1.19%	34.38%	1.73%	9.78%	3.84%	9.45%
LAO	Lao People's Dem. Republic	23.58%	39.61%	2.25%	51.36%	2.60%	26.07%	13.14%	27.15%
LKA	Sri Lanka	12.29%	22.00%	0.97%	24.14%	1.18%	5.57%	5.24%	13.92%
LVA	Latvia	10.39%	15.19%	0.19%	6.77%	0.00%	0.00%	5.12%	8.36%
MEX	Mexico	18.63%	44.30%	1.89%	58.33%	0.65%	12.66%	8.10%	26.18%
MLI	Mali	19.14%	55.45%	2.14%	46.87%	3.82%	36.32%	7.35%	41.17%
MMR	Myanmar	10.22%	17.35%	0.48%	41.82%	1.75%	6.47%	3.56%	7.27%
MRT	Mauritania	12.23%	39.02%	1.80%	32.12%	1.51%	17.47%	4.85%	23.55%
MUS	Mauritius	8.21%	12.74%	0.58%	17.50%	0.45%	1.74%	1.90%	3.14%
MWI	Malawi	7.15%	15.47%	1.02%	34.94%	1.86%	18.80%	3.08%	8.20%
MYS	Malaysia	3.42%	6.45%	0.67%	27.54%	0.30%	2.22%	0.68%	1.85%
NAM	Namibia	4.00%	21.06%	1.14%	19.71%	1.22%	14.88%	0.52%	11.03%
NPL	Nepal	14.16%	30.27%	0.56%	26.30%	0.21%	2.55%	10.61%	23.58%

		Total OOP		Inpatient OOP		Outpatient OOP		Medicines OOP	
Code	Country	All households	Households with non-zero spending	All households	Households with non-zero spending	All households	Households with non-zero spending	All households	Households with non-zero spending
PAK	Pakistan	23.94%	32.81%	1.29%	32.01%	2.65%	7.69%	12.52%	22.49%
PHL	Philippines	13.62%	24.72%	1.70%	47.20%	0.85%	8.41%	6.89%	14.41%
PRY	Paraguay	14.25%	23.74%	0.77%	30.14%	0.34%	2.58%	7.69%	14.91%
RUS	Russian Federation	15.10%	25.24%	0.13%	22.47%	0.11%	5.69%	8.50%	15.85%
SEN	Senegal	16.18%	40.24%	1.69%	26.89%	1.60%	15.55%	6.05%	23.12%
SVK	Slovakia	0.62%	1.02%	0.00%	8.89%	0.00%	0.00%	0.20%	0.38%
SVN	Slovenia	3.94%	8.78%	0.00%	0.00%	0.00%	0.00%	0.30%	0.83%
SWZ	Swaziland	9.57%	26.36%	1.28%	16.86%	1.36%	10.81%	1.73%	10.61%
TCD	Chad	12.16%	49.76%	3.06%	37.13%	1.74%	26.57%	2.07%	26.09%
TUN	Tunisia	20.20%	36.38%	1.37%	28.92%	1.73%	5.49%	8.36%	18.03%
UKR	Ukraine	18.64%	28.68%	0.58%	23.76%	0.06%	1.96%	10.60%	19.15%
URY	Uruguay	1.65%	5.35%	0.10%	13.74%	0.04%	2.14%	0.49%	2.16%
VNM	Viet Nam	13.06%	24.69%	2.02%	57.43%	3.08%	17.37%	4.38%	10.87%
ZAF	South Africa	7.32%	22.75%	1.11%	17.11%	0.72%	4.95%	0.50%	3.87%
ZMB	Zambia	4.59%	13.70%	0.84%	18.57%	0.46%	8.87%	1.47%	6.48%
ZWE	Zimbabwe	7.19%	20.79%	0.96%	15.68%	2.15%	12.10%	1.87%	10.40%

Figure 1 - Distribution of OOP as a share of household capacity to pay for all households across countries

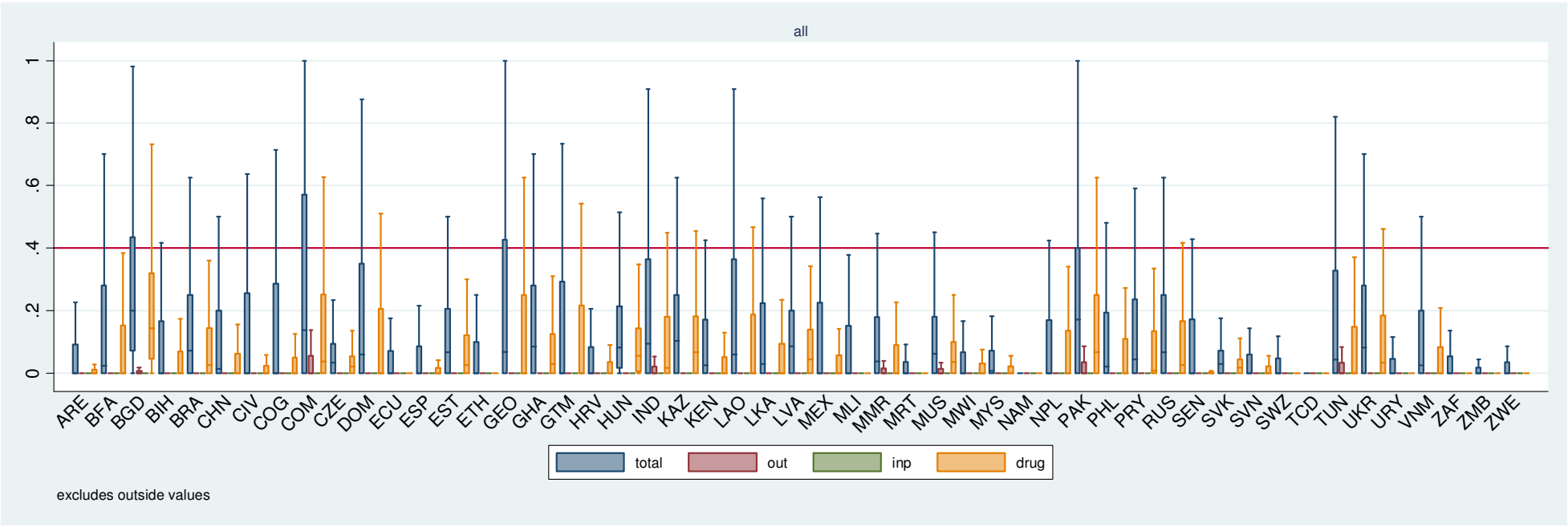

Figure 2 - Distribution of OOP as a share of household capacity to pay among households with non-zero OOP across countries

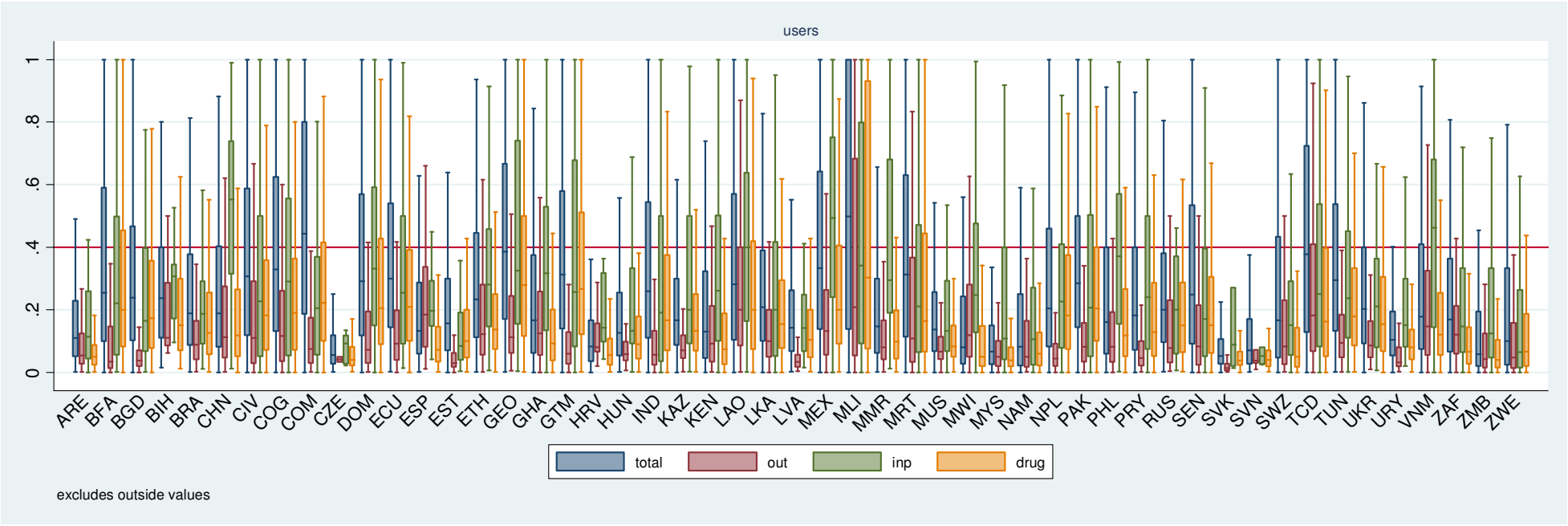

Figure 3 - Distribution of OOP as a share of household capacity to pay among all households in quintile 1 and quintile 5

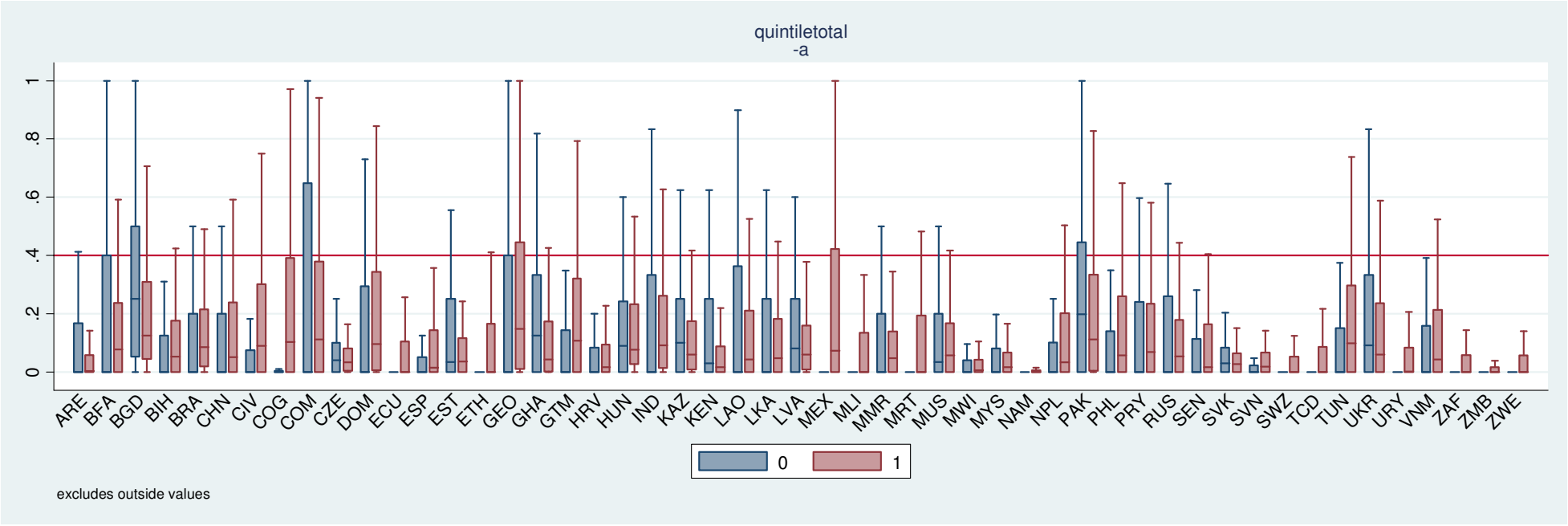

Figure 4 - Distribution of OOP as a share of household capacity to pay among households in quintile 1 and quintile 5 with non zero OOP

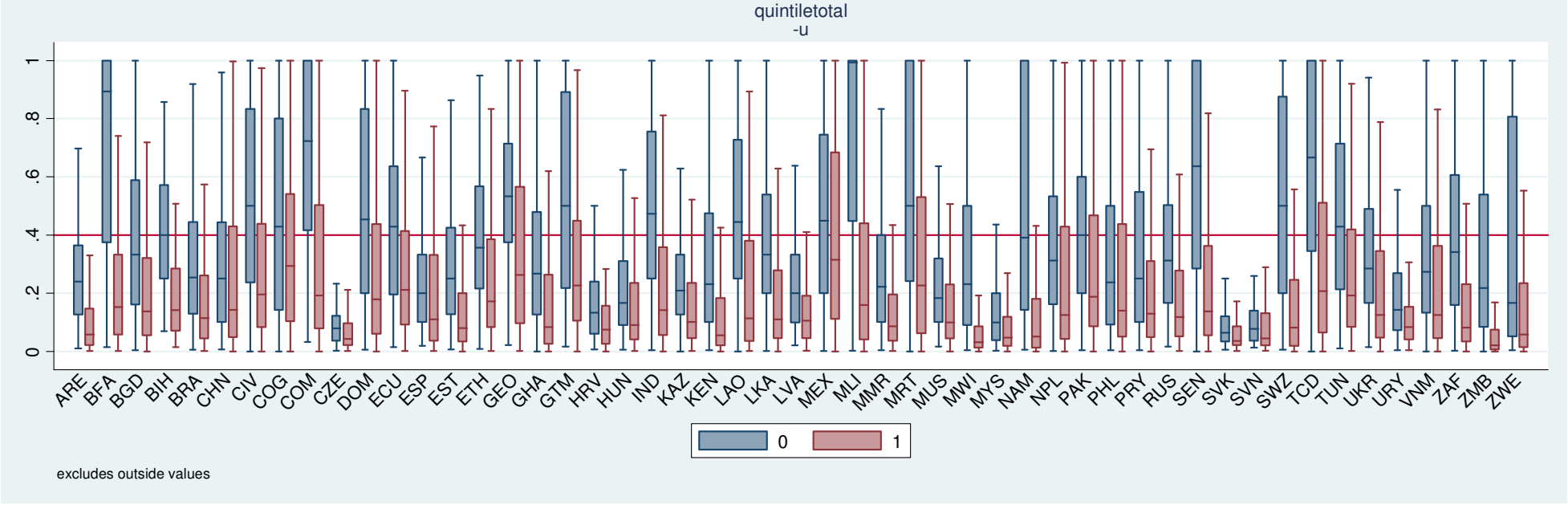

Figure 5 - Distribution of outpatient OOP as a share of household capacity to pay among households in quintile 1 and quintile 5 with non zero outpatient OOP

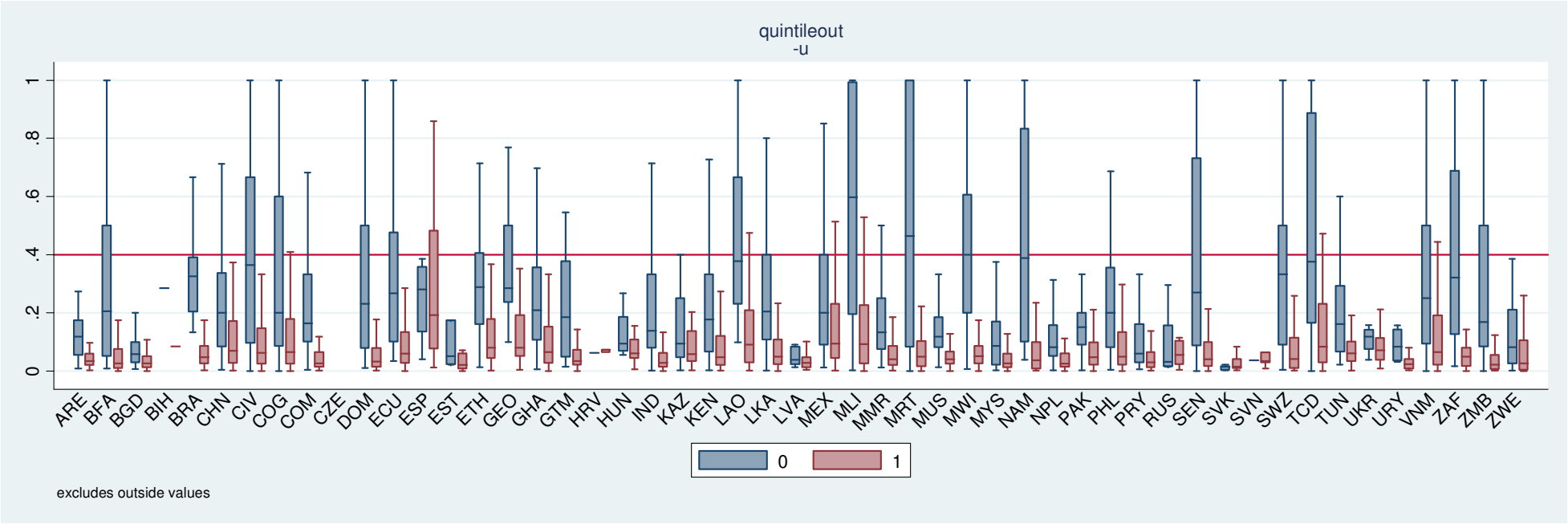

Figure 6 - Distribution of medicine OOP as a share of household capacity to pay among households in quintile 1 and quintile 5 with non zero medicine OOP

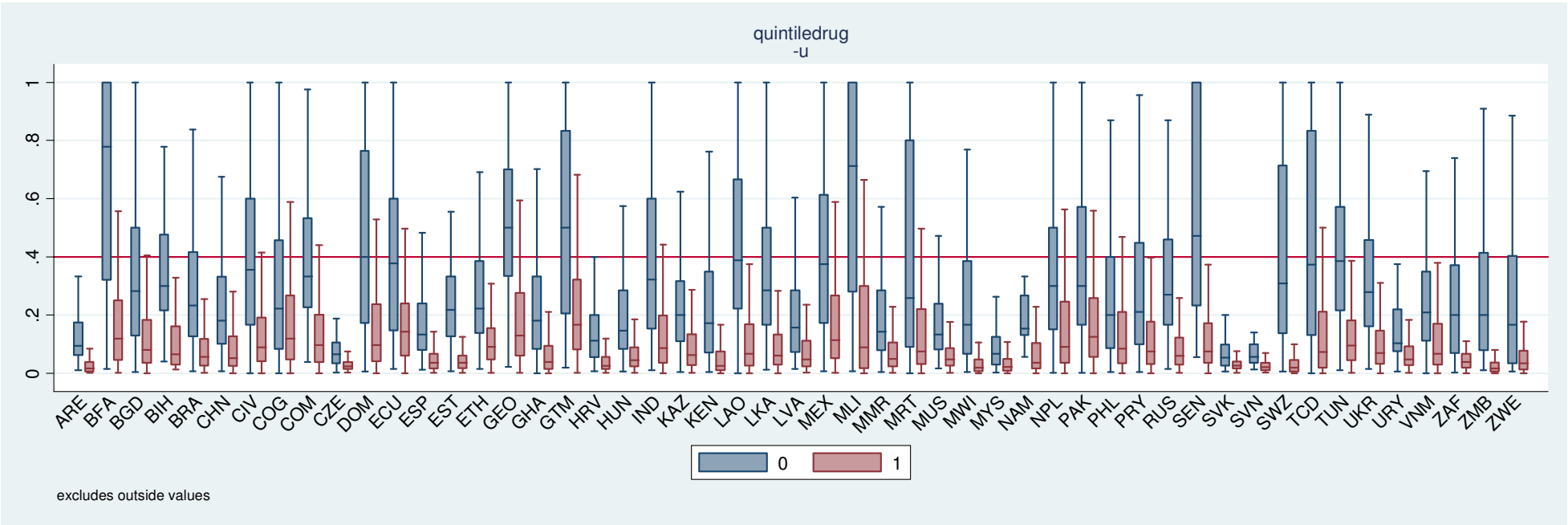

Figure 7 - Distribution of inpatient OOP as a share of household capacity to pay among households in quintile 1 and quintile 5 with non zero inpatient OOP

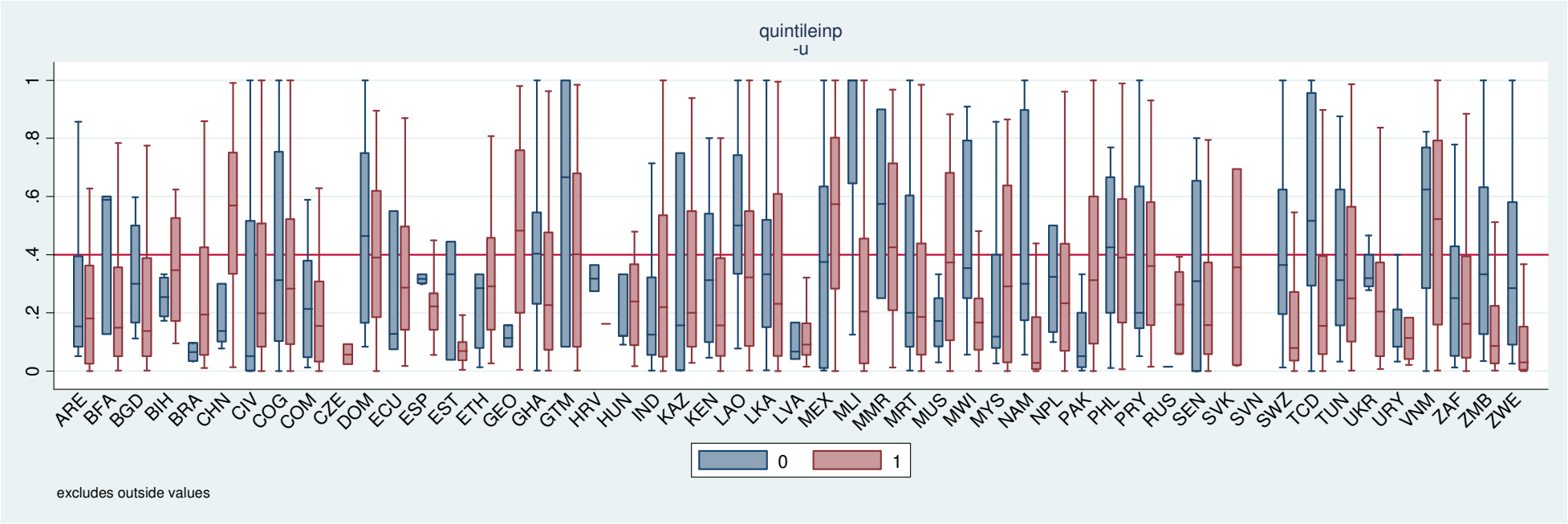

Figure 8 - Distribution of OOP as a share of household capacity to pay among all households in rural and urban

Figure 9 – Distribution of medicine OOP as a share of household capacity to pay among households in rural and urban with non zero medicine OOP

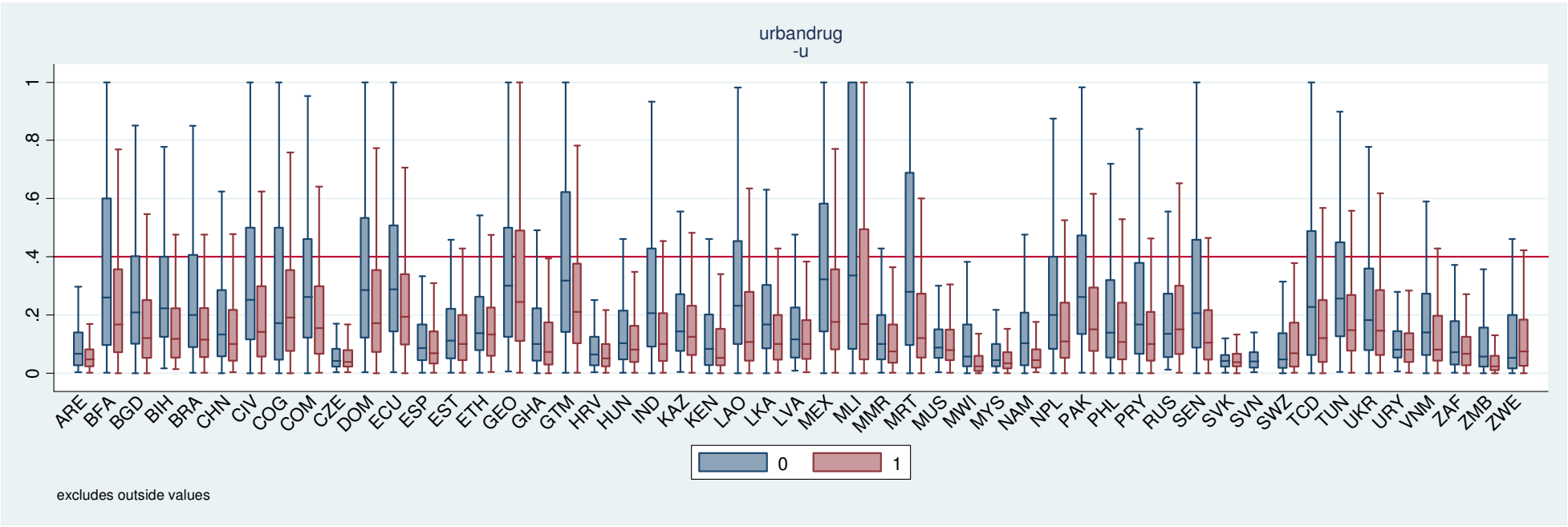

Figure 10 – Distribution of inpatient OOP as a share of household capacity to pay among households in rural and urban with non zero inpatient OOP

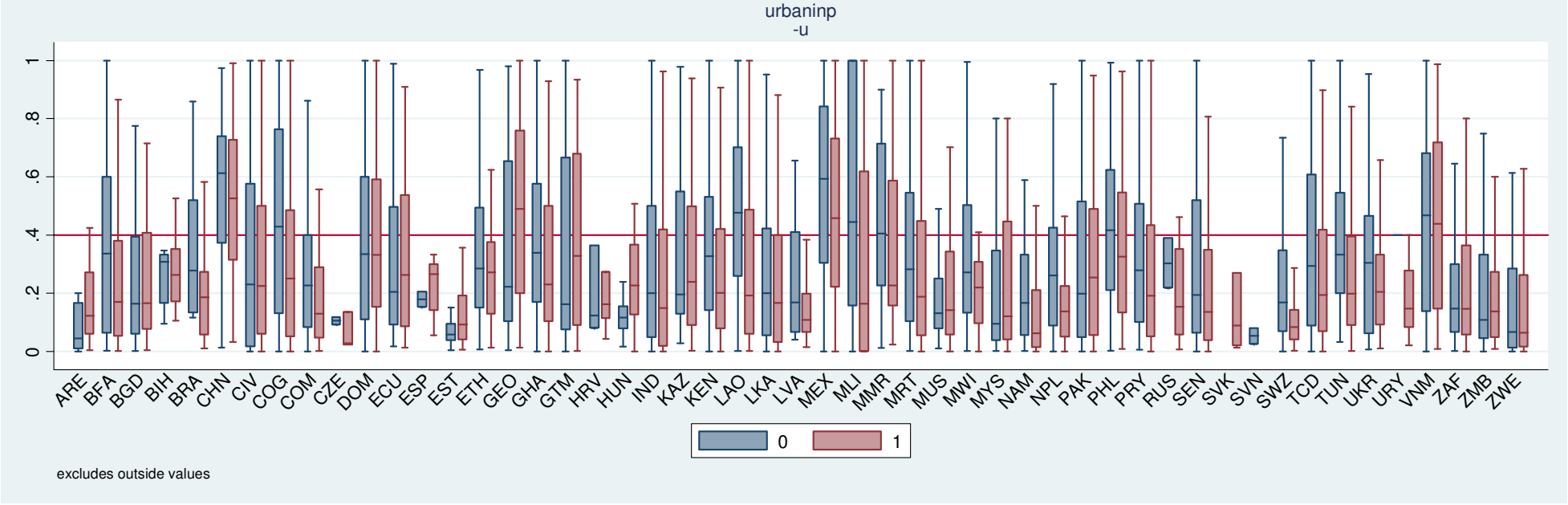

Figure 11 – Distribution of OOP as a share of household capacity to pay among all households with and without heads with primary education

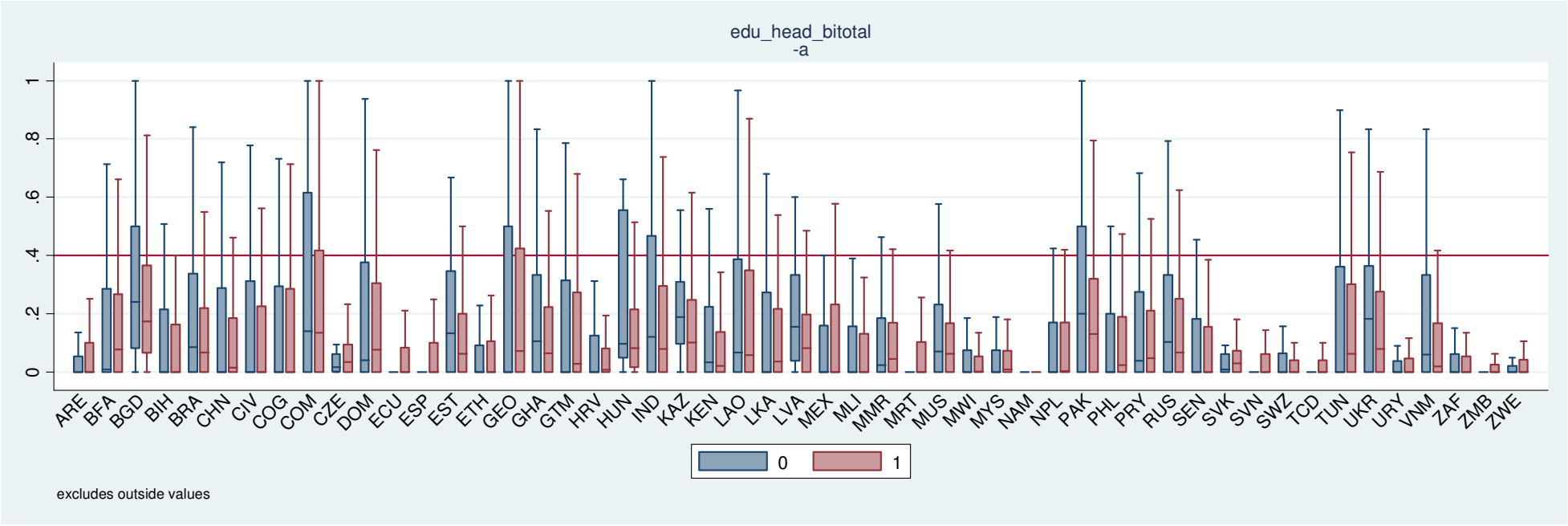

Figure 12 – Distribution of OOP as a share of household capacity to pay among all households and all households with disabled members

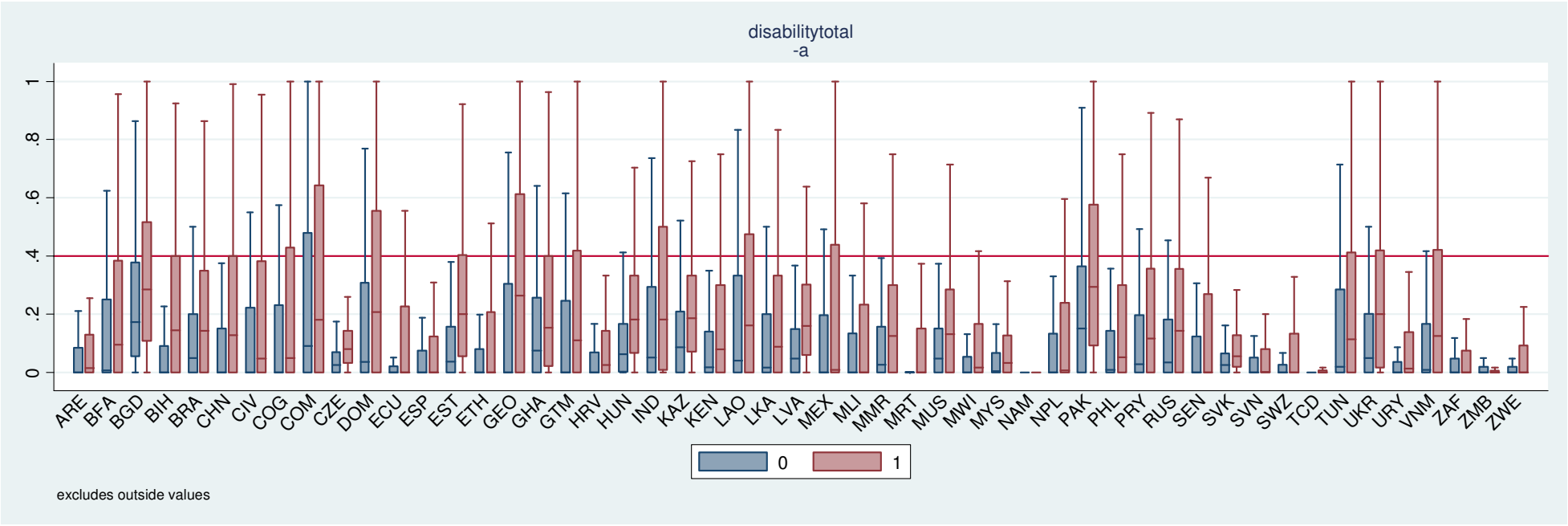

Figure 13 – Distribution of outpatient OOP as a share of household capacity to pay among households with no disabled members and households with disabled members and non zero outpatient OOP

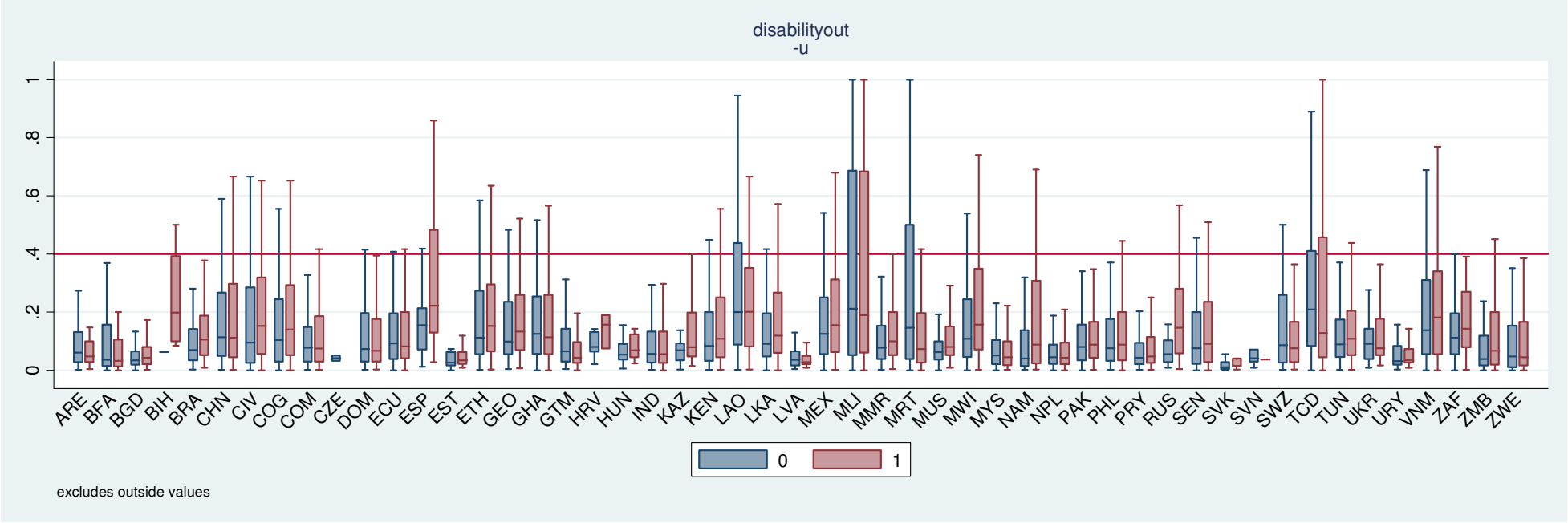

Figure 14 – Distribution of inpatient OOP as a share of household capacity to pay among households with no disabled members and households with disabled members and non zero medicine OOP

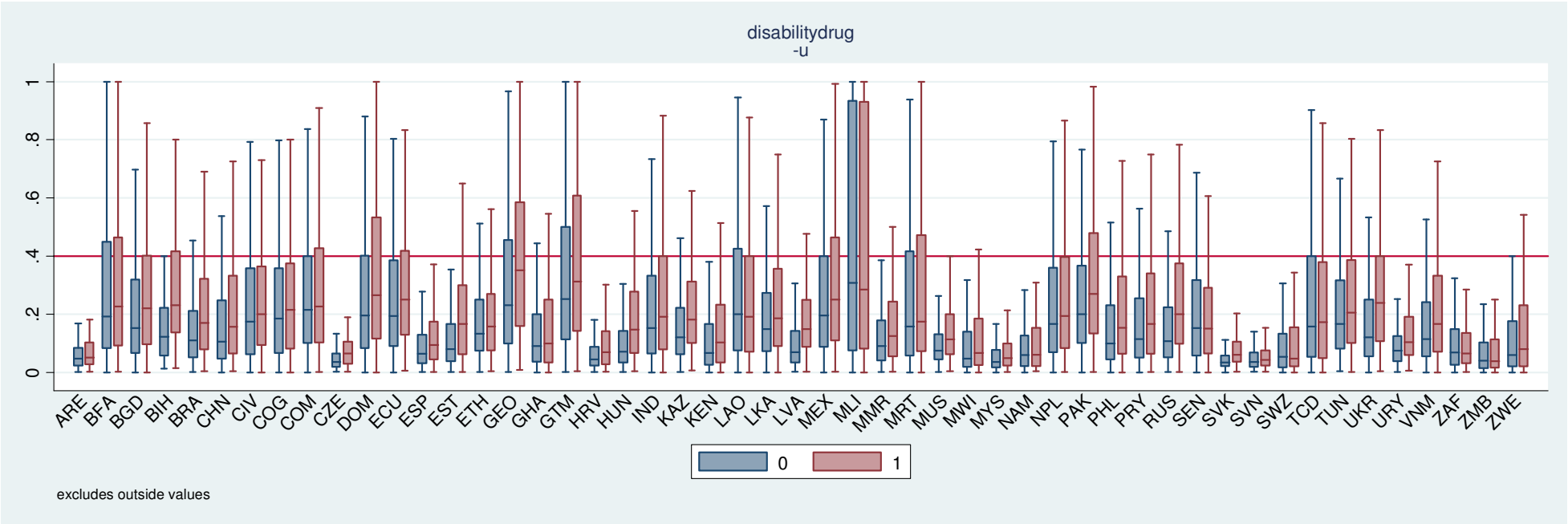

Figure 15 – Distribution of inpatient OOP as a share of household capacity to pay among households with no disabled members and households with disabled members and non zero inpatient OOP

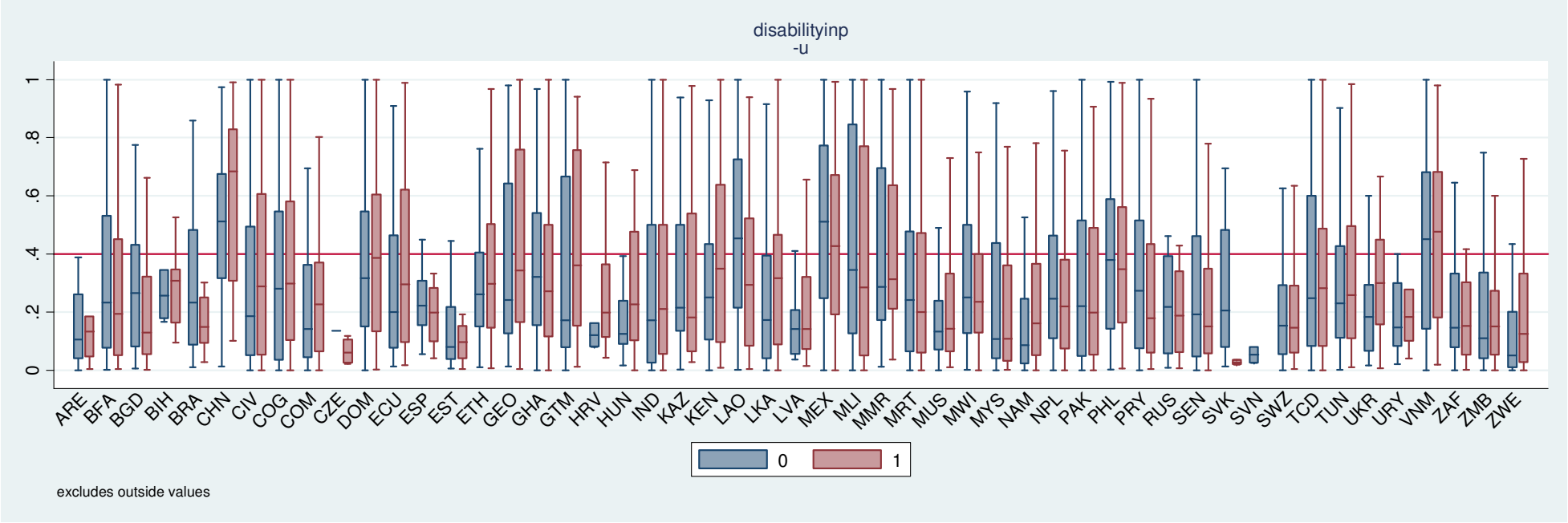

Figure 16 – Distribution of OOP as a share of household capacity to pay among all households and all households with children under 5 years of age

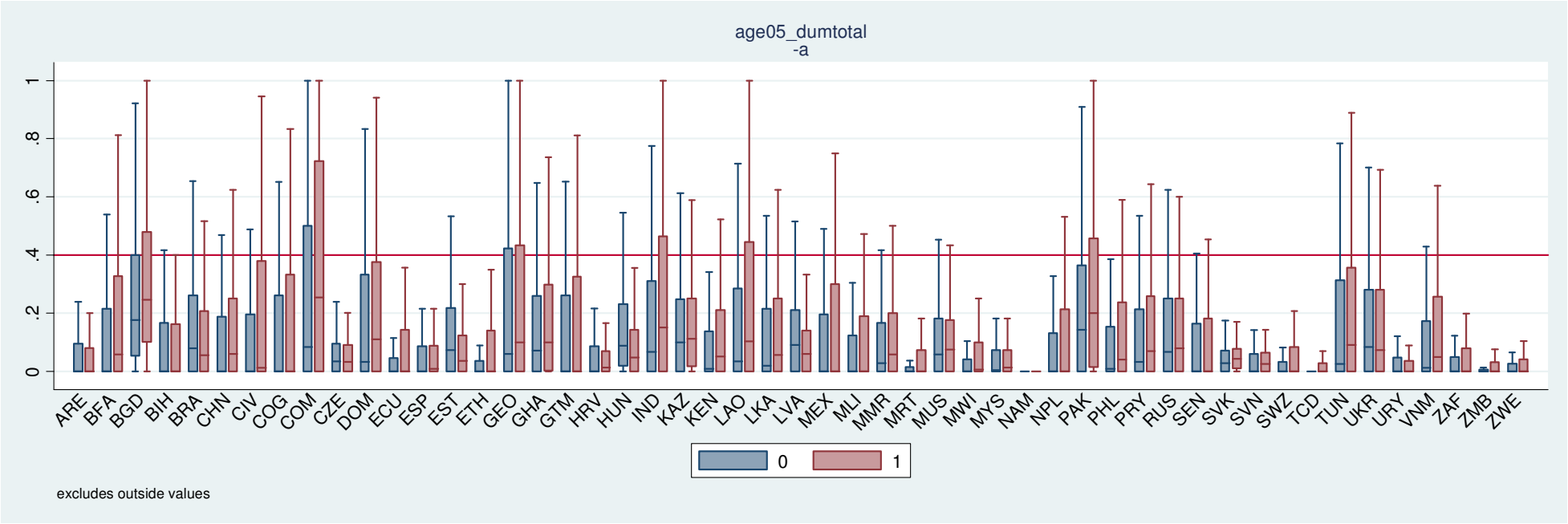

Figure 17 – Distribution of OOP as a share of household capacity to pay among all households and all households with members over 60 years of age

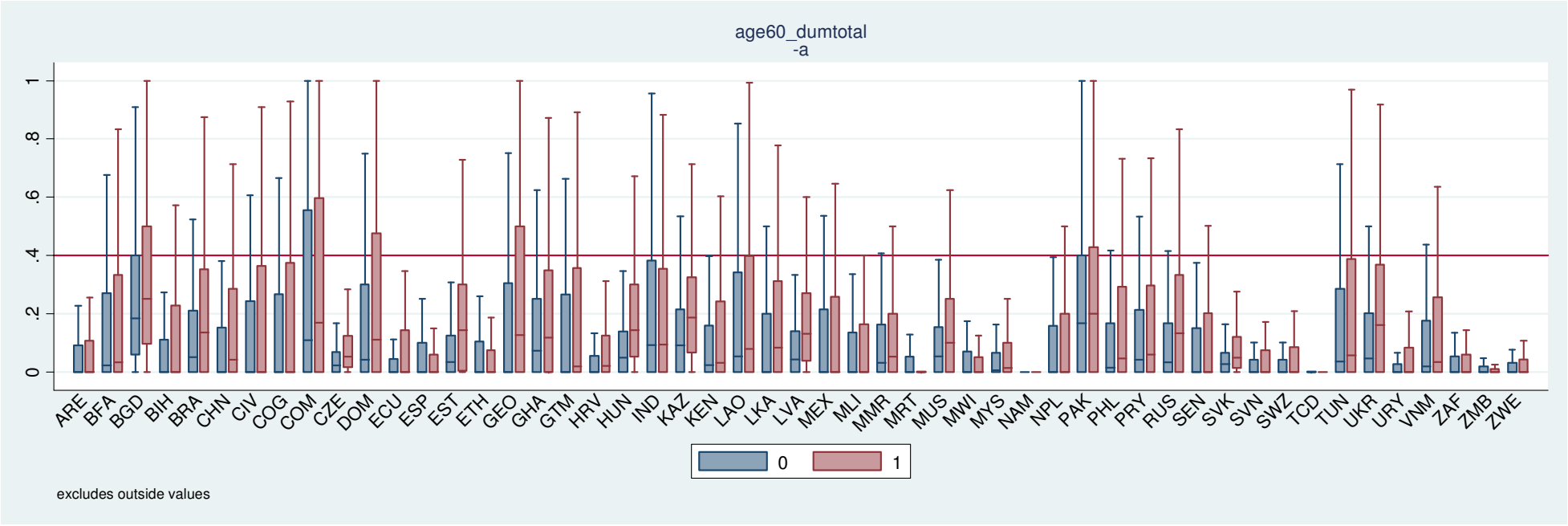

Figure 18 – Distribution of medicine OOP as a share of household capacity to pay among for all households without members over 60 years of age and all households with members over 60 years of age

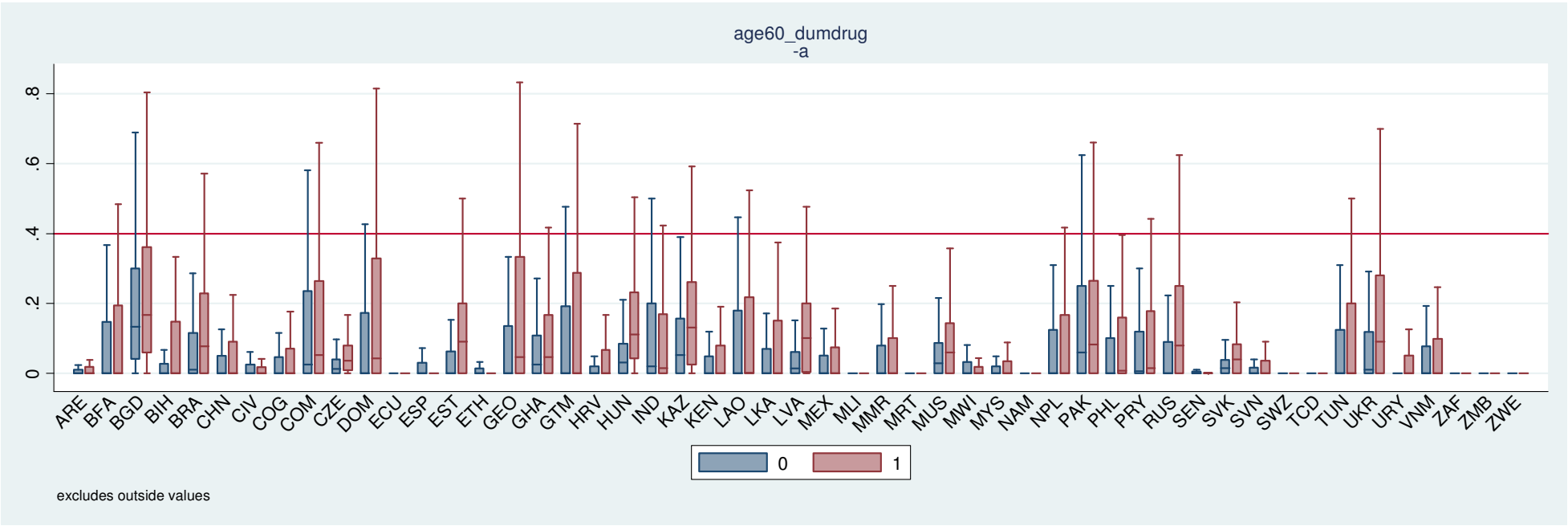

Figure 19 – Distribution of OOP as a share of household capacity to pay among all households with female and male heads

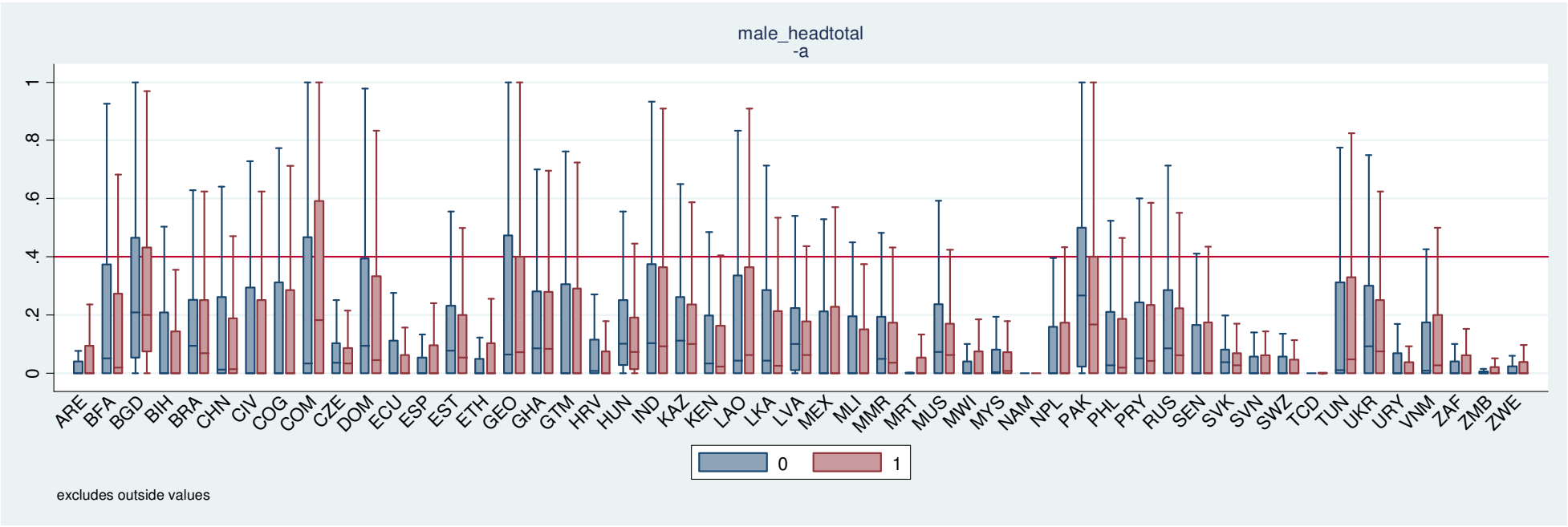

Figure 20 – Distribution of inpatient OOP as a share of household capacity to pay among households with female and male heads and non zero inpatient OOP

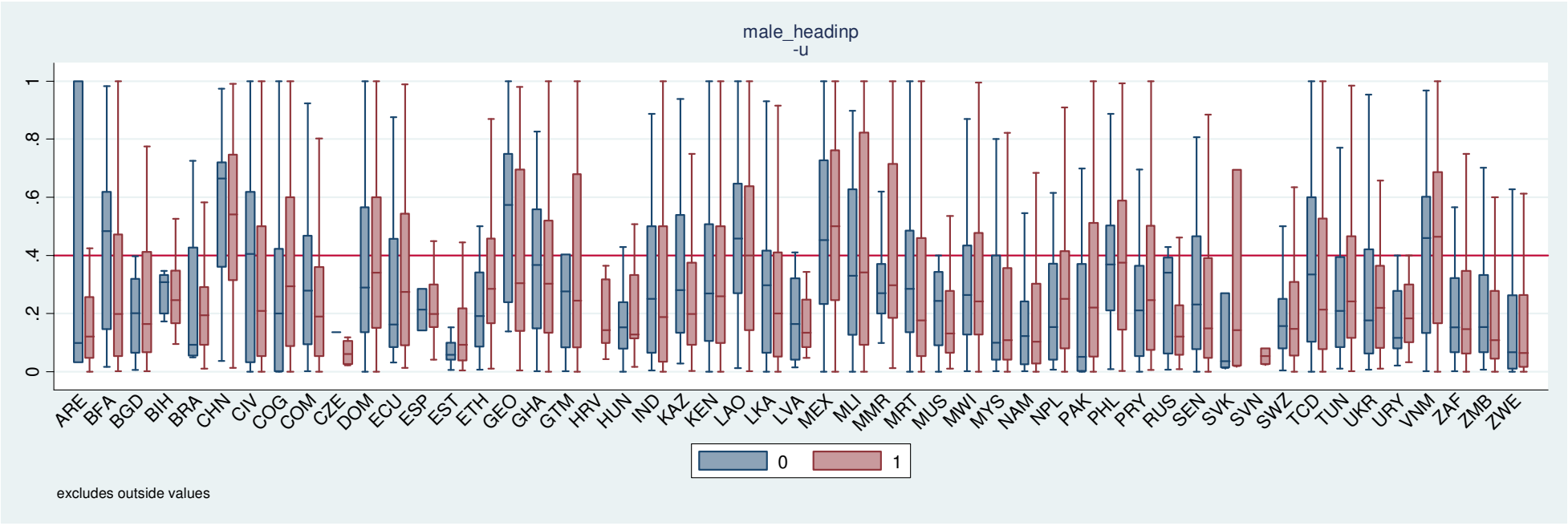

Table 2 – Regression of catastrophic expenditure resulting from total OOP among all households

	Catastrophic expenditure from total OOP						Catastrophic expenditure from inpatient OOP					
	All households			Among households with OOP>0			All households			Among households with inpatient OOP>0		
Variables	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Household level												
age05_dum			0.185***			0.069***			0.326***			0.1000***
age60_dum			0.120***			0.141***			0.0728***			0.0784*
edu_head_cat2			-0.0938***			-0.170***			-0.112***			-0.0970**
edu_head_cat3			-0.216***			-0.297***			-0.304***			-0.246***
male_head			-0.0112			-0.046***			0.0516*			0.0117
disability			0.343***			0.251***			0.224***			-0.0493
urban			-0.204***			-0.248***			-0.199***			-0.222***
q2			0.106***			-0.139***			0.134***			-0.139*
q3			0.0972***			-0.287***			0.263***			-0.221***
q4			0.0465***			-0.465***			0.399***			-0.271***
q5			0.190***			-0.423***			0.884***			-0.0574
Country level												
oops_the		1.418***	1.321***		1.441***	1.268***		0.860***	0.685***		1.543***	1.463***
b_gini		0.779**	0.407		2.201***	1.996***		1.905***	1.480***		0.983*	0.736
the_gdp		-0.173	0.713		-0.835	-1.174		-2.557	-1.871		2.165	2.7
rho	0.1453	0.0596	0.0613	0.189	0.081	0.080	0.1153	0.0599	0.0618	0.1174	0.0708	0.0760
sigma_u	0.4124	0.2519	0.2556	0.483	0.297	0.296	0.3611	0.2523	0.2567	0.3648	0.2760	0.2868

* p<0.05, ** p<0.01, *** p<0.001

	Catastrophic expenditure from outpatient OOP						Catastrophic expenditure from medicines OOP					
	All households			Among households with outpatient OOP>0			All households			Among households with medicines OOP>0		
Variables	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Household level												
age05_dum			0.148***			-0.00061			0.132***			0.00776
age60_dum			0.0346*			0.0498*			0.129***			0.143***
edu_head_cat2			-0.0500**			-0.0979***			-0.0851***			-0.163***
edu_head_cat3			-0.189***			-0.239***			-0.221***			-0.296***
male_head			0.00338			-0.0175			-0.0305**			-0.0606***
disability			0.182***			0.0601*			0.276***			0.182***
urban			-0.186***			-0.242***			-0.189***			-0.239***
q2			0.0357			-0.232***			0.0446***			-0.211***
q3			-0.00787			-0.446***			-0.0298*			-0.429***
q4			-0.0865***			-0.694***			-0.183***			-0.711***
q5			-0.0283			-0.791***			-0.249***			-0.883***
Country level												
oops_the		0.873***	0.716**		0.484	0.416		1.945***	1.754***		2.009***	1.960***
b_gini		2.221***	1.915***		1.920**	1.688**		0.685*	0.244		2.408***	2.445***
the_gdp		-4.367	-4.171*		1.645	2.605		2.332*	2.215		3.338*	3.2
rho	0.1657	0.0993	0.0852	0.1641	0.1431	0.1474	0.2341	0.1011	0.1078	0.2621	0.0962	0.1092
sigma_u	0.4457	0.3321	0.3051	0.4430	0.4087	0.4158	0.5528	0.3353	0.3477	0.5960	0.3262	0.3501

* p<0.05, ** p<0.01, *** p<0.001