



# The Impact of Household Welfare on Response Behavior at Cluster Level

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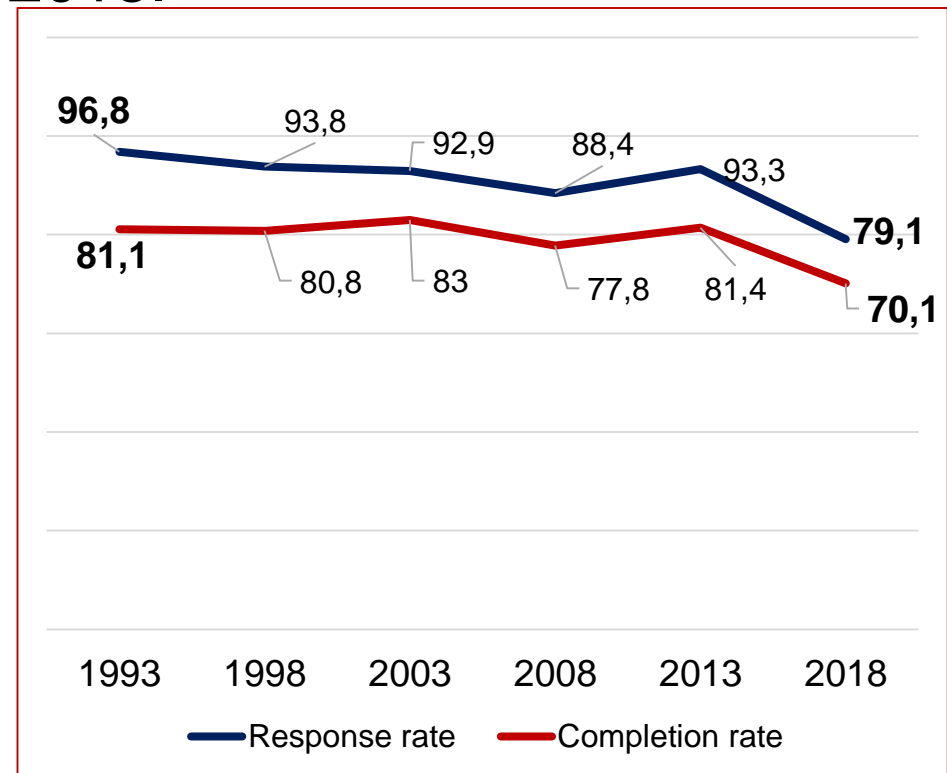
Reducing and measuring nonresponse bias in times of crisis:  
Challenges, opportunities, and new directions 2

*Milan Italy*  
July 19, 2023



# Response rate trends in Turkey

- Household response rates in demographic surveys are on the decline over time in Turkey.
- The household response rate declined from 97 percent in 1993 to 79 percent in 2018.
- Especially, this decline is more visible for clusters in urban areas and clusters with high socio-economic status.

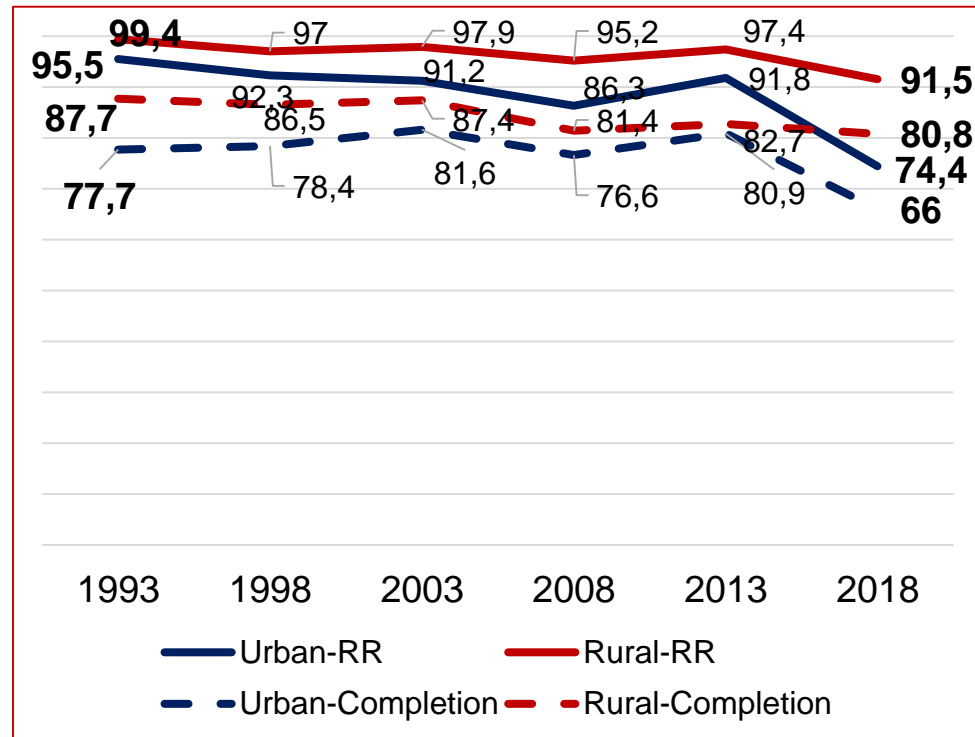


Source: Turkey Demographic and Health Survey, 1993-2018



# Response rate trends in Turkey

- Household response rates and completion rates in urban and rural areas are on the decline over time.
- However, there are lower response rates in urban settlements compared to rural settlements for all survey years.
- Household response rate in urban areas in 1993 decreased from about 96 percent to 74 percent in 2018.



Source: Turkey Demographic and Health Survey, 1993-2018



# Response rate trends in Turkey

- The response decline in higher socio-economic groups and response resistance in lower socio-economic groups increase the need for methodological studies on the reliability of survey estimates.
- For instance, the infant mortality rate which is on the decline consistently starting from 1993 TDHS, and was estimated as 13 per thousand in 2013 TDHS, increased to 17 per thousand in 2018 TDHS while it decreased to under 10 per thousand according to the registration system of the country.
- Similar circumstances appears to be related with the increase in the interviews conducted with households with lower socio-economic status.

# Literature review

- Researchers agree with keeping response rates at a high level due to its impact on survey estimates as well as representation of the target population.
- The close relationship between the nonresponse rates and nonresponse bias confirms the effect of nonresponse on survey estimates.
- In recent years, quite high nonresponse rates in surveys conducted in developed countries draw attention (de Leeuw and de Heer, 2002; Tolonen et al., 2006).
- In Turkey, interview outcomes between 1993 and 2013 were examined at the regional and residential levels descriptively (Saraç and Adalı, 2019).
- Urbanisation, increased attainment in education and labor force, increase in single-person households among all households are among the reasons behind household nonresponse (Goyder et al., 2002; Groves and Couper, 1992).
- There are also some studies that examine the impact of higher response coming from households with lower socio-economic groups on the socio-economic status indicators, and using various resources to improve such estimates (Goyder et al., 2002).

# Study objectives

- To investigate the impact of household welfare level on response behavior
- To present methodological advices in order to reach households with higher welfare level and distinguish these households from households with lower welfare level

between 1993 and 2018.



# Data source

- 1993, 1998, 2003, 2008, 2013, and 2018 Turkey Demographic and Health Surveys
- Multi-staged, stratified, cluster sampling approach (complex sampling design)
- Sample surveys with national and regional representativeness
- Inclusion of certain variables such as household welfare, region, type of residence, number of visits and main characteristics of household members that could potentially affect household response behavior
- Comparable surveys due to the similarity on sampling and questionnaire designs across the years



# Methods

## **Descriptive analyses**

The examination of completed household interviews according to

- 1- Cluster level
- 2- Household welfare level
- 3- Other variables

## **Multivariable analyses**

The examination for the impact of household welfare level on the response behavior under the control of selected covariates using stepwise logistic regression modeling

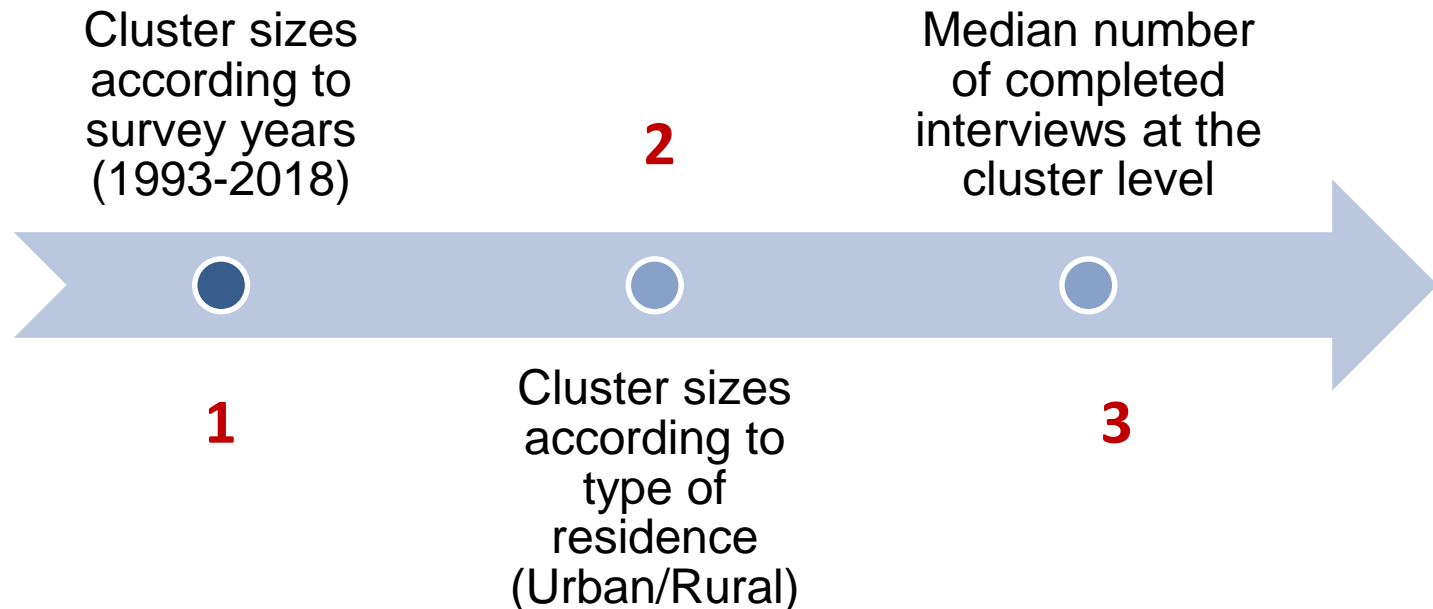






# Methods

- The calculation of completed interviews at the cluster level
- The assumption of similarity between response behaviors of households and clusters where the households are located in
- In order to determine the outcome variable





# Methods

Cluster sizes and median number of completed interviews by survey years and type of residence

The probability of high household response

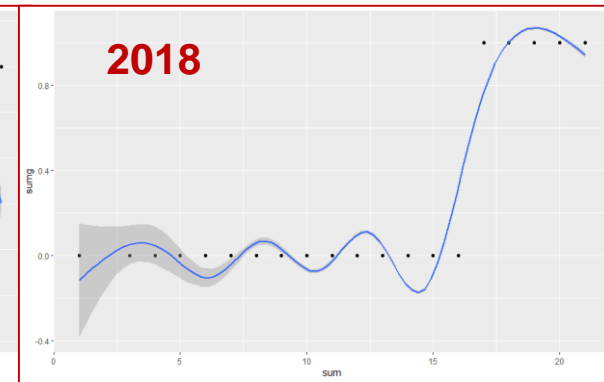
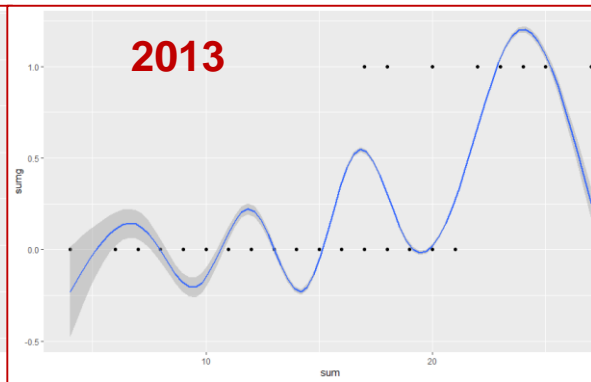
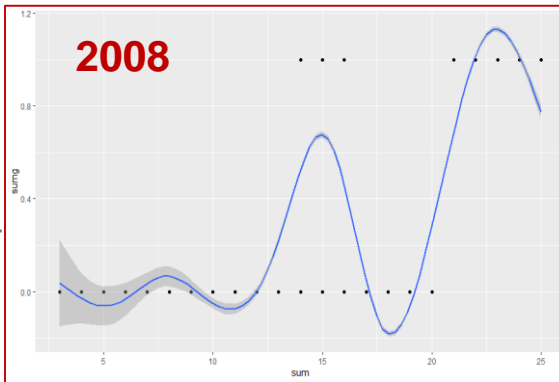
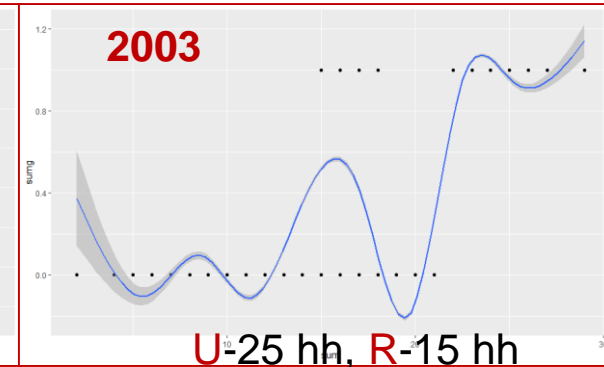
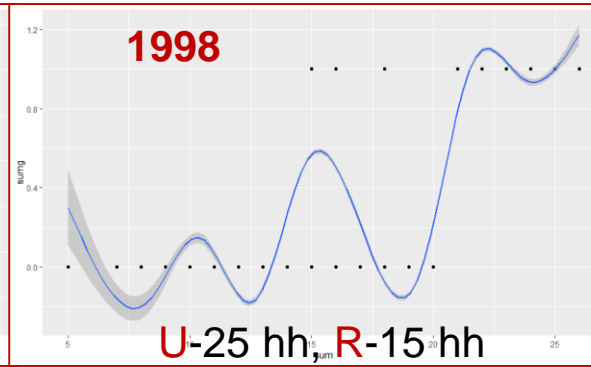
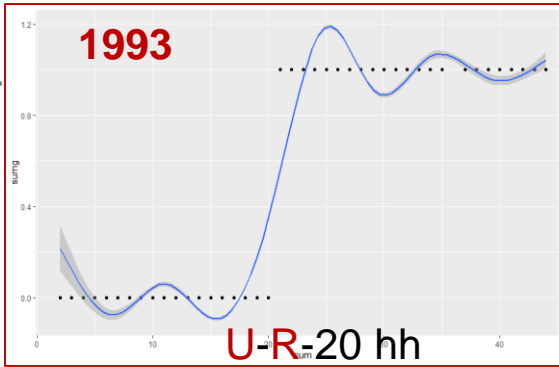
	Cluster sizes		Median number of completed interviews	
	Urban	Rural	Urban	Rural
	1993	20	20	20
1998	25	15	20	14
2003	25	15	21	14
2008	25	15	20	13
2013	25	18	21	16
2018	21	21	16	16

	0		1	
	Urban	Rural	Urban	Rural
	1993	<20 interviews		>20 interviews
1998	<21	<15	>20	>14
2003	<22	<15	>21	>14
2008	<21	<14	>20	>13
2013	<22	<17	>21	>16
2018	<17 interviews		>16 interviews	



# Methods

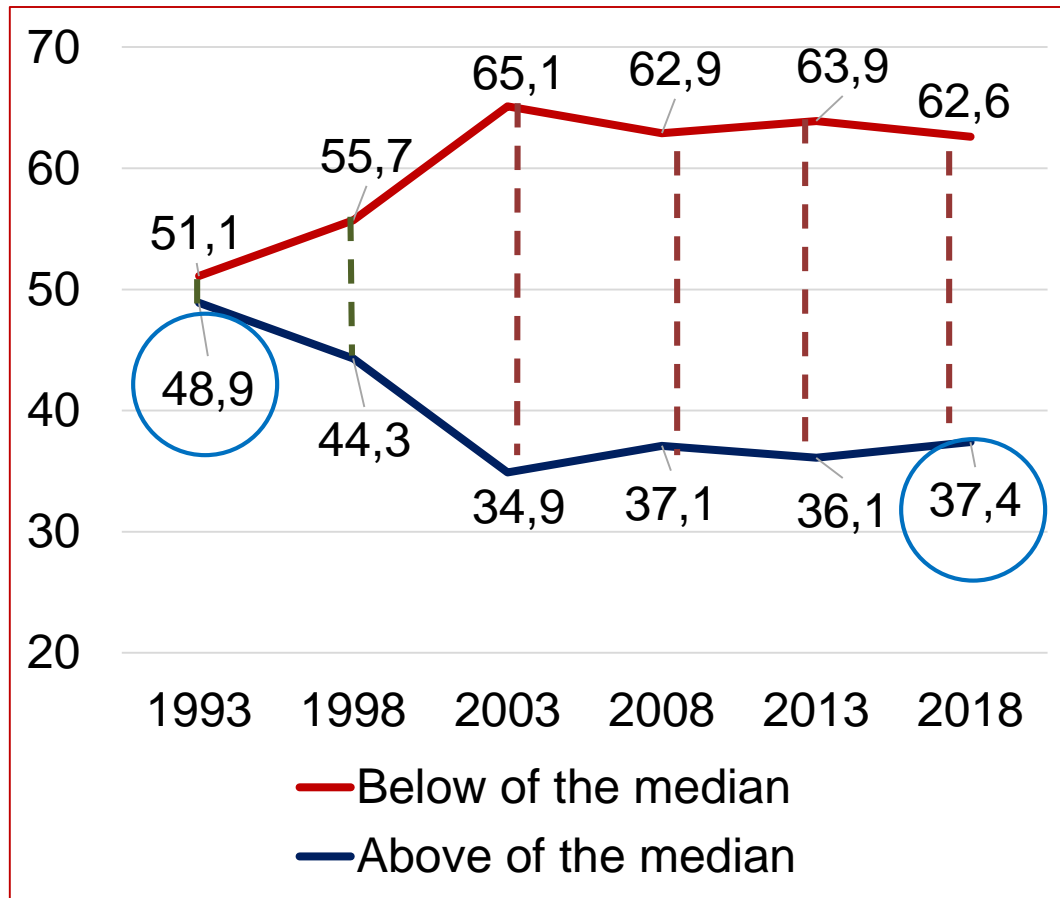
Aggregating number of completed interviews at the level of cluster where household located in, and classification of interviews according to the median value



# Statistical model

<b>Model 1 Main model</b>	<b>Model 2 +Contextual variables</b>	<b>Model 3 +Number of visits</b>	<b>Model 4 +Household size</b>	<b>Model 5 +Socio- economic variables</b>
<b>Household welfare</b> Lowest Low Middle High Highest	<b>Region</b> West South Central North East  <b>Residence</b> Urban Rural	<b>Number of visits</b> 1 2 3 and more	Number of women aged 15-49 in the household  Number of children under 5  Household size	Number of household members who are working in a paid job  Mean years of education for household members

# Percentages of completed interviews which are at the level below and above the median value, 1993-2018

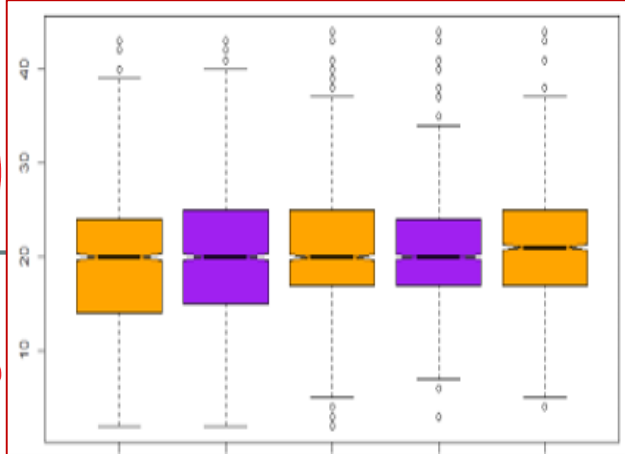


About half of the interviews were conducted in the clusters with above of the median value in 1993, while it declined to about 37 percent in 2018.

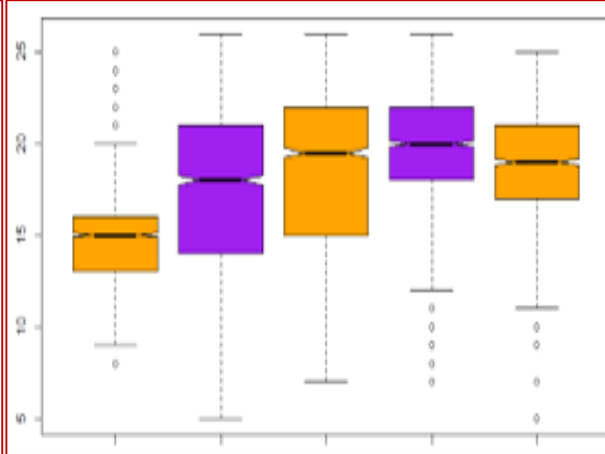


# Number of completed interviews at cluster level by household welfare, 1993-2018

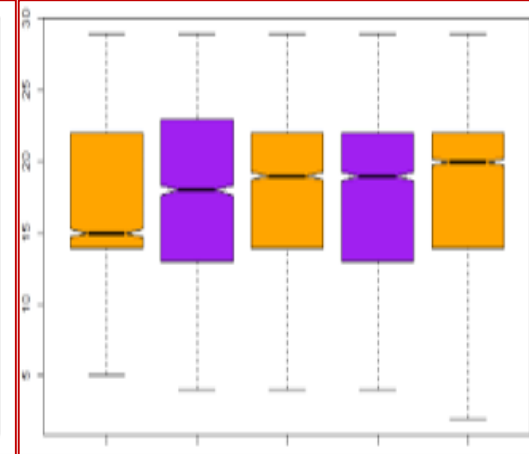
1993



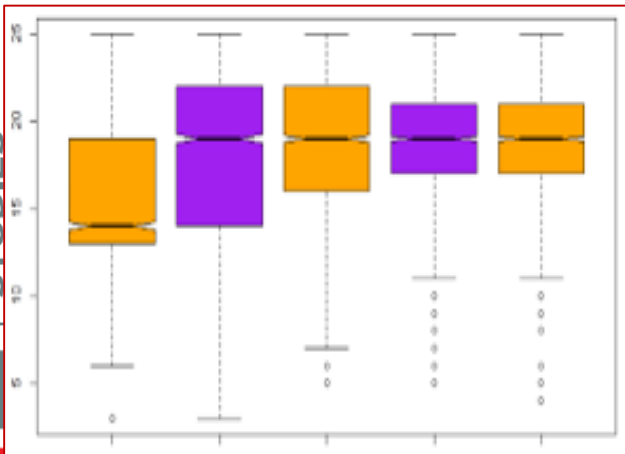
1998



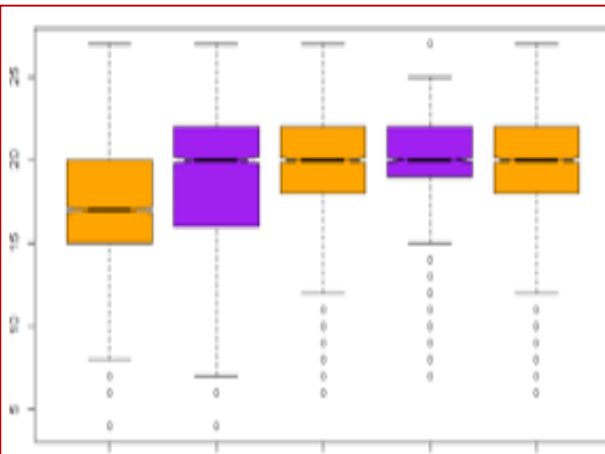
2003



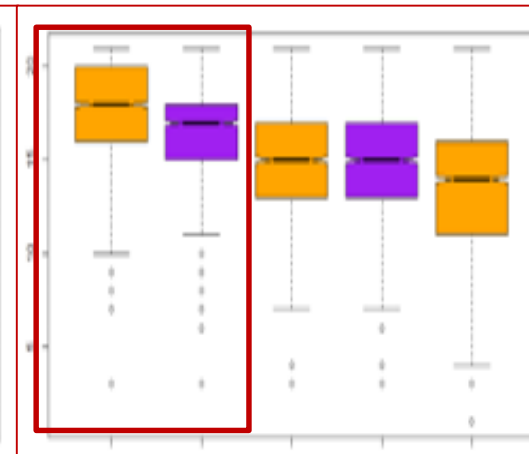
2008



2013



2018



Poorest

Poorer

Middle

Richer

Richest

Poorest

Poorer

Middle

Richer

Richest

Poorest

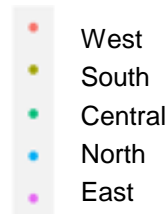
Poorer

Middle

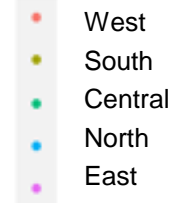
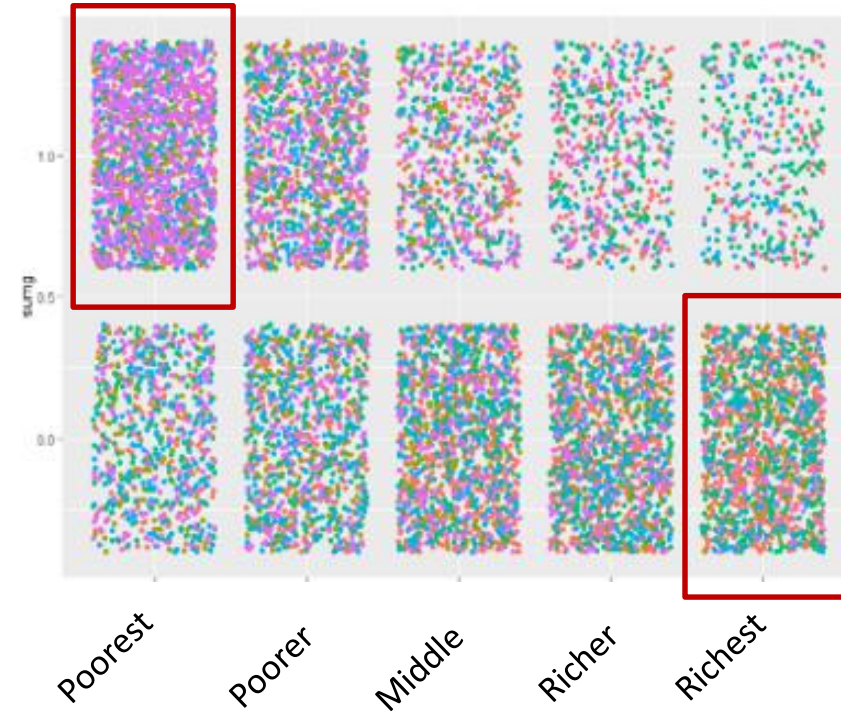
Richer

Richest

# Number of completed interviews by household welfare and region, 2018

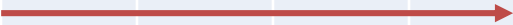



Number of completed interviews



An indicator variable computed according to the median number of interviews

# Multivariable analysis-Model 1

	1993	1998	2003	2008	2013	2018
<b>Household welfare</b> <i>(ref. Richest)</i>						
Poorest	0.9	0.8	<b>2.3*</b>	<b>3.7*</b>	<b>2.3*</b>	<b>10.3*</b>
Poorer	0.8	1.1	<b>1.8*</b>	<b>3.1*</b>	<b>1.9*</b>	<b>5.2*</b>
Middle	0.9	1.1	<b>1.6*</b>	<b>2.3*</b>	<b>1.6*</b>	<b>2.1*</b>
Richer	0.9	1.2	<b>1.3*</b>	<b>1.6*</b>	<b>1.4*</b>	<b>1.7*</b>
Constant	1.08	0.8	0.4*	0.3*	0.4*	0.2*
<b>R<sup>2</sup></b>	0.001	0.007	0.03	0.06	0.02	0.18



- Household welfare has no effect on the response behavior in 1993 and 1998.
- The impact of household welfare on the response behavior of the poorest households are on the increase since 2003, from 2.3 times in 2003 to 10.3 times in 2018.



# Multivariable analysis-Model 5



	1993	1998	2003	2008	2013	2018
<b>Household welfare (ref. Richest)</b>						
Poorest	1.2**	1.9*	2.0*	2.4*	2.5*	2.4*
Poorer	1.1	1.6*	1.5*	2.3*	1.8*	2.0*
Middle	1.1	1.2**	1.4*	1.9*	1.4*	1.3*
Richer	0.9	1.1	1.1***	1.4*	1.3*	1.4*
<b>Region (ref. West)</b>						
South	1.1***	0.6*	2.7*	1.4*	1.5*	1.6*
Central	0.7*	0.4*	2.0*	0.8*	1.4*	1.7*
North	0.4*	0.1*	1.5*	0.5*	1.2**	1.1
East	0.4*	0.3*	5.6*	2.8*	2.0*	3.9*
<b>Residence (ref. Urban)</b>						
Rural	1.3*	0.3*	0.5*	0.8*	0.5*	4.7*
<b>Number of visits</b>	1.2*	1.0	0.9*	1.0	1.0	1.1*
<b>Number of women aged 15-49</b>	1.1**	1.1**	1.0	1.3*	1.0	1.2*
<b>Number of children under 5</b>	0.9**	1.2*	1.0	1.0	1.0	0.9
<b>Household size</b>	0.9*	1.0**	1.0*	1.1*	1.1*	1.0
<b>Number of household members who are working in a paid job</b>	-	0.8	1.1*	1.3	-	1.1**
<b>Mean years of education for household members</b>	1.0*	0.9*	1.0*	1.0*	1.0*	0.9*
Constant	1.0	2.0*	0.3*	0.3*	0.3*	0.2*
<b>R<sup>2</sup></b>	<b>0.07</b>	<b>0.18</b>	<b>0.15</b>	<b>0.14</b>	<b>0.08</b>	<b>0.30</b>

The poorest households has **2.4 times more tendency** to respond compared to the richest households.

The likelihood of response is at most in the East for all years since 2003. Particularly, Central and South regions follows it in the last two surveys.

Moreover, number of household visits and number of eligible women to interview increases the likelihood of response, mean years of education for hh members decreases the likelihood of response.



# Conclusions

To reach households with high welfare and distinguish these households from others,

- Taking required measures to gain cooperation with the households with high security in urban areas
- Conducting interviews with only selected households (not allowing to substitution) during the follow-up field work
- Special training sessions for field work staff to reduce nonresponse
- Sending pre-notification letters to households prior to field work
- Increasing awareness of members in the selected households through local and national media
- Collecting paradata (e.g., type of dwelling and interviewer observations) from nonresponded household





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