THE GOVERNMENT OF YEMEN, THE WORLD BANK, AND THE UNITED NATIONS DEVELOPMENT PROGRAM

YEMEN POVERTY ASSESSMENT

(IN FOUR VOLUMES)

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TABLE OF CONTENTS

TABLES Table A.10. 1: The Accounts in our SAM for Yemen and its Structure

FIGURES

BOXES

ANNEX 1 SAMPLING DESIGN

I YEMEN HOUSEHOLD BUDGET SURVEY 2005-2006 SAMPLE DESIGN

1. The 2005-06 Household Budget Survey (HBS) is an important resource to estimate poverty, its proximate causes and effects of public action on poverty. The HBS provides the database for monitoring poverty as Yemen has just started implementing its second PRSP (2006-2010). This is the third HBS since the unification is 1990.

2. The main objectives of the HBS 2005/2006 are:

- Producing aggregates of the statistical indicators at the level of the urban and rural communities of each governorate in order to serve the purposes of economic and social development-planning on the central and local levels.
- Updating the National Accounts estimates in order to enable specialists and development planners to determine each governorate's share in the GDP, through the household's consumption structures.
- Collecting information about the variation in living standards between the urban and rural communities of each governorate, and between those of different governorates.

Sample Frame and Stratification

3. The sample frame for the HBS was the 2004 Population Census. Yemen consists of 21 governorates. The study population was sorted into 38 strata. 17 governorates were represented by two strata (urban and rural,) whereas Sana'a City and Aden are only urban and Raima and Sana'a Region are only rural. This resulted in 19 urban strata and 19 rural strata.

4. Within each stratum, the sample was selected in two stages. In the first stage, a certain number of Census Enumeration Areas (EAs) were selected with probability proportional to size (*pps*,) using as a measure of size the number of households according to the pre-census estimates available in January 2005. In the second stage, 12 households were picked from each EA by systematic equal probability sampling (*seps*).[1]

5. In order to produce estimates of consumption in all governorates of both rural and urban populations, the total sample of 1,200 EAs was distributed across strata by a combination of allocation proportional to size and equal allocation (see Box 1.) The final sample allocation is as show in Figure 1.

1 This design varies significantly from that used for the HBS 1998, where the study community was allocated in 12 strata, 7 of which were urban and 5 were rural, and each stratum consisted of several governorates, except the capital (Sana'a) and the city of Aden, which were considered two distinct urban strata. The sample size of the HBS 1998 was set at 15120 households drawn from 420 PSUs, cluster size was set at 18 households.

Box 1: Allocation of Sample Across Strata

The results of the 1998 Household Budget Survey were used to assign the sample size that needed to obtain accurate data at governorate level. The procedure used in allocating the sample households for the HBS 2004/2005 had the following steps:

1. 50% of the total sample was distributed proportional to the household counts of the strata.
2. 50% of the total sample size was distributed uniformly amongst strata.
3. Since the larger variation of the living conditions in urban communities result in higher expected standard error for these communities (based on data from HBS 1998), the sample was redistributed between urban and rural strata to achieve uniform expected relative standard errors for overall urban and rural strata (RSE 1.1%). The total sample allocation had total of 9,228 urban and 5,172 rural households.
4. The results were adjusted to make the number of households in each governorate a multiple of 144 (12 EAs of 12 households each,) to facilitate the random allocation of the sample into the 12 months of fieldwork.

Figure 1: Yemen Household Budget Survey 2004-2005

(Sampling strata, allocation of the sample and Relative Standard Errors for Per Capita Consumption)

Governorate	HH counts (2994)			PSUs			Nominal Sample (HHs)			R S E (%)		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
11 Ibb	50,404	249,674	**300,078**	43	41	**84**	516	492	**1,008**	6.98	11.81	**9.42**
12 Abyan	13,795	42,332	**56,127**	30	18	**48**	360	216	**576**	5.71	7.32	**5.29**
13 Sec. of the Capital	247,668		**247,668**	156		**156**	1,872		**1,872**	4.44		**4.44**
14 Al Baydha	13,424	53,004	**66,428**	29	19	**48**	348	228	**576**	7.70	10.98	**7.95**
15 Taiz	79,029	283,521	**362,550**	56	40	**96**	672	480	**1,152**	6.14	10.13	**7.51**
16 Al Jawf	7,682	47,940	**55,622**	22	14	**36**	264	168	**432**	7.51	13.52	**11.33**
17 Hajjah	17,416	174,819	**192,235**	30	30	**60**	360	360	**720**	10.93	8.79	**7.73**
18 Al Hodiedah	109,974	236,347	**346,321**	75	33	**108**	900	396	**1,296**	7.07	5.85	**4.52**
19 Hadramout	56,084	63,137	**119,221**	41	19	**60**	492	228	**720**	17.92	24.68	**15.67**
20 Dhamar	24,639	161,267	**185,906**	31	29	**60**	372	348	**720**	11.92	5.98	**5.40**
21 Shabwah	8,657	41,101	**49,758**	21	15	**36**	252	180	**432**	7.83	13.94	**11.75**
22 Saadah	13,620	70,513	**84,133**	28	20	**48**	336	240	**576**	5.41	5.65	**4.77**
23 Sanaa		116,086	**116,086**		24	**24**		288	**288**		6.76	**6.76**
24 Aden	89,605		**89,605**	72		**72**	864		**864**	4.61		**4.61**
25 Lahaj	9,057	93,661	**102,718**	25	23	**48**	300	276	**576**	8.21	10.18	**8.82**
26 Marib	3,728	23,653	**27,381**	22	14	**36**	264	168	**432**	9.21	13.34	**10.79**
27 Al Mahweet	4,647	63,785	**68,432**	27	21	**48**	324	252	**576**	4.61	5.48	**5.00**
28 Al Mahrah	5,459	5,705	**11,164**	12	12	**24**	144	144	**288**	14.90	12.38	**9.63**
29 Amran	19,073	85,919	**104,992**	27	21	**48**	324	252	**576**	6.86	4.91	**4.23**
30 Al Dhalea	8,094	51,010	**59,104**	22	14	**36**	264	168	**432**	11.21	6.54	**5.84**
31 Raimah		55,086	**55,086**		24	**24**		288	**288**		6.40	**6.40**
Total	**782,055**	**1,918,560**	**2,700,615**	**769**	**431**	**1,200**	**9,228**	**5,172**	**14,400**	**2.49**	**2.98**	**2.07**

ANNEX 2: CONSTRUCTING THE HBS DATABASE

I DETECTION AND AUTOMATIC CORRECTION OF OUTLIERS

1. We tried to fix the most extreme inconsistencies still remaining in the databases generated from the anthropometric and food consumption sections of the HBS. In order to automatically detect outliers we often used the same tools that will be used by subject matter specialists with analytic purposes later. We specifically used

- the World Health Organization (WHO) standard anthropometric tables, in order to assess the consistency between height, weight and age measures;
- food composition tables, in order to detect suspiciously low or high levels of food consumption, by way of the households' per capita energy intake; and
- specially developed unit price tables, in order to detect errors in the recording of quantities or amounts purchased.

2. Although our tools may have been the same, our objectives at this stage were very different from those that will be pursued by the thematic specialists in the analytic phase. For instance, in anthropometrics, we scrutinized the measures of children who seemed to be too heavy or too light for their age or height, but when doing this we were not trying to assess or qualify the nutritional status of Yemeni children – this will be the job of nutritional experts later on. We only wanted to detect possible measurement or recording errors. Similarly, we considered as doubtful the households who appeared to be consuming too few or too many calories, and the transactions with too small or too large unit prices, but our intention was not to assess the households' poverty status or the inter-regional or seasonal variation of prices – this will be done by poverty analysts and economic statisticians in the future.

3. Unwilling to qualify as *inconsistent* observations that are merely *unlikely*, but not necessarily *impossible*, our quality control criteria were in general much more lenient than those that specialists will use later to sort their subjects into analytic categories. For instance, whereas nutritionists will qualify as "wasted," "stunted," or "underweight" the kids for whom some of the measures are more that two standard deviations below their average values, we qualified as "inconsistent" the anthropometric measures beyond five standard deviations from the mean. In other words, very few, if any, of the kids we considered as outliers are likely to be genuinely small or large children – they are almost certainly outliers indeed.

Non-standard conventions for missing values

4. In spite of instructions, some interviewers filled questionnaire fields with numbers such as "999" when they were unable to record the precise answers (they fortunately didn't have many opportunities to use this outdated convention to indicate that a question was *not applicable*, because the HBS questionnaire was explicitly designed to avoid such cases.) Such numbers can be very annoying at the analytic stage because they distort most results, including averages and standard errors.

5. We thoroughly scanned the HBS databases to detect these 999s and replace them with blanks (or periods, in their Stata and SPSS versions.) This was not trivial because the non-standard convention was not used uniformly (sometimes "99", "9.99" or other variants were used instead of "999",) and also because some of the 99s could occasionally represent genuine amounts (such as supermarket promotions.)

Anthropometrics

6. The objective of this phase was to replace by blanks the values with strong evidence of being wrongly recorded in the field. However, we kept the ones for which we cannot affirm that they are incorrect or whether they simply reflect the reality in Yemen. Certainly the nutritional analysts who will work with these data will make further analysis using advanced nutritional techniques and they may decide to remove other values as well.

7. For identifying anthropometric outliers we worked in close collaboration with Dr Abdul Baki Alzaemey, who defined the corresponding criteria. The criteria – based on the most recent World Health Organization Anthropometric tables, released in June 2006, were the following:

For children up to 60 months:

- Replace the weight by a blank if the Z-score of weight for age is less than -6 or greater than +5.
- Replace the height by a blank if the Z-score of height for age is less than -6 or greater than +6.

For children 61 to 216 months (18 years)[2]:

- Replace the weight by a blank if the Z-score of weight for age is less than -5 or greater than +5.
- Replace the height by a blank if the Z-score of height for age is less than -4 or greater than +5.

For individuals older than 18 years:

- Replace both weigh and height by blanks if the Body Mass Index (BMI) is less than 14.4 or greater than 44.

8. It is important to emphasize that we did not modify the original data on "Section 6: Anthropometrics" nor deleted any individual records. Instead we created two new variables with the values dictated by the above criteria: the new *weight* and *height* variables will be either equal to the originals or blanks.

Food consumption

9. Section 14 contains the bulkiest and the most important part of the data collected by the HBS – the consumption and acquisition of food and some frequently purchased non-food items,

[2] The HBS measured all children younger than 5 years throughout the year. In the last month of fieldwork (March 2006,) all household members were measured.

reported on a weekly basis. The detection and automatic correction of outliers in this section was concurrent with various other actions of data analysis and scrutiny, performed with the help of a dedicated program developed over the Excel/VBA platform. The program did not need to hold the whole database in memory. Instead it read the file twice on a record-by-record basis. The actions performed in each of the two program passes are described below.

10. The supporting workbook (Fix_S14B.xls) contains a spreadsheet with reference and summary data for all items in Section 14. Figure 2 below shows the first and last rows:

Figure 2: Reference and Summary Data Used for Scrutiny of Section 14

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	Code	Name	Field Unit	Reference Unit	Rial / RU	Kcal / RU	Kcal / FU				881,186	Log (Amount)		Log (Quantity)		Log (Price)		Median	Log (Cons)		
2											Count	Mean	SD	Mean	SD	Mean	SD	Price	Mean	SD	
3	101	Wheat (local)	1				3,230.0				291	2.59110	0.75590	0.67832	0.84461	1.91278	0.36842	69.9	0.29866	0.80228	
4	102	Wheat (imported)	1				3,430.0				11,303	3.18072	0.49452	1.43416	0.53815	1.74657	0.08187	54.0	0.97886	0.48147	
5	103	Barley	1				800.0				252	2.62178	0.67682	0.62616	0.88871	1.99562	0.37944	80.0	0.29822	0.79333	
6	104	Corn(Roman)	1				800.0				861	2.54811	0.65265	0.63371	0.78177	1.91440	0.23025	80.6	0.38826	0.56673	
7	105	Corn(thin)	1				800.0				861	2.81784	0.50060	0.89307	0.55961	1.92476	0.19548	80.0	0.51186	0.51814	
8	106	Millet	1				3,410.0				371	2.59576	0.41812	0.64214	0.43385	1.95362	0.12348	100.0	0.38257	0.48619	
9	107	Sorghum	1				3,450.0				61	2.43837	0.67622	0.54226	0.71802	1.89611	0.23744	70.0	0.50880	0.50057	
10	108	Other Grains	1				800.0				115	2.28514	0.60064	0.17602	0.73659	2.10912	0.32346	120.0	0.10154	0.63993	
11	109	Basmati Rice	1				3,630.0				5,308	2.75320	0.54615	0.64327	0.57317	2.10993	0.08597	120.0	0.45297	0.41187	
12	110	American Rice	1				3,630.0				5,600	2.47857	0.44890	0.51090	0.46148	1.96767	0.09484	92.2	0.30484	0.41161	
13	111	Other varieties Rice	1				3,630.0				14,765	2.57829	0.43284	0.61945	0.45973	1.95884	0.07769	100.0	0.44347	0.36966	
14	112	Flour	1				3,410.0				13,178	2.89618	0.54772	1.11134	0.58743	1.78484	0.08183	55.3	0.78677	0.46625	
138	2004	Drug expenses	4				0.0				7,424	2.77353	0.60162	0.00000	0.00000	2.77353	0.60162	600.0	2.77356	0.60215	
139	2005	Physical/Medical expenses (Physican f	4				0.0				990	2.61603	0.44063	0.00000	0.00000	2.61603	0.44063	400.0	2.61919	0.44144	
140	2006	Medical invesstigation expenses (lab, r	4				0.0				562	2.65972	0.46656	0.00000	0.00000	2.65972	0.46656	400.0	2.65610	0.46701	
141	2007	Medical appliances (eye glasses, hear	4				0.0				327	3.07265	0.50416	0.00000	0.00000	3.07265	0.50416	1,200.0	3.07540	0.50670	
142	2008	prescription Drugs	4				0.0				58	2.63784	0.67229	0.00000	0.00000	2.63784	0.67229	380.0	2.63784	0.67229	
143	2009	Medical paraphernalia (cotton, syringe	4				0.0				183	2.27106	0.53915	0.00000	0.00000	2.27106	0.53915	200.0	2.27106	0.53915	
144	2010	Medical Services (injections, nurse, aic	4				0.0				250	2.34975	0.59676	0.00000	0.00000	2.34975	0.59676	200.0	2.36328	0.61104	
145	2314	Magazines & newspapers	4				0.0				1,684	2.07579	0.34265	0.00000	0.00000	2.07579	0.34265	120.0	2.07820	0.34640	
146	2315	Buying or Renting Video and Music Ca	4				0.0				113	2.47835	0.43848	0.00000	0.00000	2.47835	0.43848	300.0	2.48671	0.44550	
147	2316	Tickets for Movi Theater, Plays and Fe	4				0.0				77	2.81374	0.64164	0.00000	0.00000	2.81374	0.64164	600.0	2.84141	0.62253	
148	2403	Ready made food	4	1	3,000	3,000	1.0				26,468	2.69236	0.56532	0.00000	0.00000	2.69236	0.56532	470.0	2.73938	0.57177	
149	2404	Drinky juices tea outside house	4	1	100	320	3.2				22,463	2.68828	0.55398	0.00000	0.00000	2.68828	0.55398	200.0	2.68847	0.55085	
151																					

11. Columns C to G contain external technical coefficients used to estimate the energy supplied by each item. For most items, the number of Kilo-calories is reported in column G, in reference to the so-called field unit used to record the quantities, coded in Column C as 1 (kilos,) 2 (pieces) or 3 (liters.) For certain items (such as bread or spices) for which the HBS only recorded the amounts spent, not the quantities, columns D to F contain conversion coefficients used to estimate the quantities and energy intakes from the amounts.

12. The other columns contain internal coefficients, obtained by the program from the database itself during the first pass:

- Columns **G** to **R** refer to weekly purchases. Column **G** contains the number of weekly transactions reported, and Column **R** the median unit price. The other columns contain the mean and the standard deviation of the decimal logarithms of, respectively, the amounts spent, the quantities purchased, and the unit prices.
- Columns **S** and **T** contain the mean and the standard deviation of the decimal logarithm of the quantity consumed in the week.

13. During the second pass, the program uses these internal coefficients to detect unlikely combinations of item codes, amounts and quantities (when applicable,) and to eventually fix the problems so detected. (All operations are done with decimal logarithms, but this will not be said explicitly in the rest of this explanation, for the sake of simplicity.) If the unit price of a transaction is more than 4 standard deviations away from the mean, it is considered to be an outlier, and then either the amount or the quantity is fixed, depending on which of the two is farther from its respective mean, and as long as the other one is less than 3 standard deviations from its mean. The magnitude to be fixed is estimated from the correct one using the median price, unless there are reasons to assume that the problem is due to an accidental shift in the location of the decimal point (a common error of both interviewers and data entry operators,) in which case the correction is done by multiplying the incorrect magnitude by an adequate power of 10.

14. The process will be illustrated with an example. One of the HBS interviewers reported that Household Number 2301801 purchased 1.5 kilos of imported wheat (food item code 102) for 7,400 Rials in the fourth survey week – an implicit unit price of almost 5,000 Rials per kilo. Based on the 11,303 purchases of imported wheat reported by the HBS for all households in the whole survey year, the program found that the mean and standard deviation of Log_{10} (unit price) for imported rice were, respectively, 1.74657 and 0.08187 (see row 4 in Figure 2,) meaning that the lower and upper bounds for the acceptable unit prices are $10^{1.74657 - 4 \times 0.08187}$ and $10^{1.74657 + 4 \times 0.08187}$, or 26.25 and 118.59 Rials per kilo. The implicit unit price of 5,000 Rials per kilo is therefore too high to be credible. Either the amount paid must have been less that 7,400 Rials or the quantity purchased must have been more than 1.5 kilos. To decide which of the two is more likely to have been the case, the program considers that the average amount paid in all 11,303 purchases is $10^{3.18072} = 1{,}516$ Rials and the average quantity purchased is $10^{1.43416} = 27.17$ kilos. Since the 7,400 Rials amount spent in the suspicious transaction is only +1.4 standard deviations above the average, whereas the 1.5 kilos are -2.3 standard deviations below the average, the program decides that the quantity must be wrong and needs to be fixed. The median unit price of all 11,303 purchases is 54 Rials per kilo, which suggests that the real quantity purchased must have been around 7,400 / 54 = 137 kilos. Since this is close to 150, the program decides that the quantity must have been 150.0 kilos, but was wrongly recorded as 1.500.

15. 2,970 of the 1.5 million transactions reported on Section 14 were fixed with this algorithm. As in the case of anthropometric measures, we did not modify any of the original data in Section 14. We just added three additional fields to each record – for the (eventually fixed) values of the amount spent, the quantity purchased and the quantity consumed from all sources (market, self-production or gifts.)

16. As a by-product of the scrutiny of Section 14, the program computed the total per capita energy intake, the total per capita food expenditure and the share of food in total expenditure for each of the 13,227 present at that moment in the HBS databases. In agreement with Mr. Srinivasan and Ms El-Laithy, we subsequently dropped from the HBS databases the households for which all three indicators were low enough to make further analyses unreliable. We sorted into this category 91 households reported as consuming less than 800 Kcal/capita/day, spending less than 1,000 Rials/capita/month on food and less than 10 percent of their budget on food.

II HOUSEHOLDS CONSERVED IN THE FINAL DATABASES

17. The target sample size was 14,400 households. Four questionnaires never arrived to the data entry office, therefore only 13,396 were entered. Of those, 996 households were qualified by the field workers as either (1) interview not complete, (2) household empty or destroyed or (3) refusal; and were subsequently dropped from the databases by the CSO prior to our arrival. The same was done with 173 households without any food consumption recorded in the diary.

18. As said before, during the course of this mission we identified and removed form the databases an additional 91 households with extremely low food consumption. Figure 3 below gives the distribution of the remaining 13,136 households by Governorate and survey month.

Figure 3: Distribution of the Households in the HBS Databases
(by Governorate and Survey Month)

		Result of HH interview				Food consumption		
	Total	Partial completed	Refused	HH destroyed	HH empty	Not reported	Low consumption	Usable households
Governorate								
Ibb	1,008	17	4	1	27	18	8	933
Abyan	576	10	3	1	28	13	2	519
Sana'a City	1,872	76	14	7	69	37	14	1,655
Al-Baida	576	6	1	1	15	3	1	549
Taiz	1,152	44	13	5	32	13	13	1,032
Al-Jawf	431	4	1	3	38	0	0	385
Hajja	720	5	1	10	19	0	0	685
Al-Hodeida	1,296	20		2	25	20	11	1,218
Hadramout	720	19		2	31	0	2	666
Dhamar	720	11	4	1	17	2	4	681
Shabwah	432	28	7	3	24	11	0	359
Sa'adah	573	5		1	19	4	1	543
Sana'a Region	288	1		1	18	1	0	267
Aden	864	32	14	3	61	27	11	716
Laheg	576	15	6	3	19	7	7	519
Mareb	432	17	4	4	17	7	1	382
Al-Mahweet	576	6			22	2	8	538
Al-Maharh	288	1		1	3	1	1	281
Amran	576	13	2	2	18	3	1	537
Al-Dhale	432	12	2		19	4	6	389
Remah	288	3		1	2			282
Month								
1	1,200	39	2	3	30	6	11	1,109
2	1,200	35	7	4	32	9	6	1,107
3	1,200	42	8	8	38	14	7	1,083
4	1,200	48	8	2	47	11	6	1,078
5	1,197	37	11	2	55	14	9	1,069
6	1,200	28	12	2	50	15	3	1,090
7	1,200	29	11	4	47	15	5	1,089
8	1,200	29	2	6	48	18	7	1,090
9	1,200	16	3	8	42	11	6	1,114
10	1,200	16	6	3	42	20	9	1,104
11	1,199	10	3	7	46	18	10	1,105
12	1,200	16	3	3	46	22	12	1,098
Total	14,396	345	76	52	523	173	91	13,136

III SAMPLING WEIGHTS

19. (For a better understanding of this section we reproduce in Appendix 2 a summary description of the HBS sampling design prepared by Mr Srinivasan.)

20. During the course of this mission, we computed the sampling weights (or raising factors,) needed to produce unbiased estimates from the survey. We first computed the probability pijh of selecting household ijh in Enumeration Area (EA) jh of stratum h as

$$p_{ijk} = \frac{k_h n_{jh}}{n_h} \frac{m_{jh}}{n'_{jh}}$$

where

k_h is the number of EAs selected in stratum h;

n_{jh} is the number of households in EA jh, according to the pre-census estimates available at the time the EAs were selected;

n_h is the number of households in stratum h, according to the pre-census estimates;

m_{jh} is the number of households in the final database in EA jh; and

n'_{jh} is the number of households in EA jh, according to the final census figures.

We then computed the nominal weight w_{ijh} of household ijh as the inverse of its selection probability:

$$w_{ijk} = \frac{1}{p_{ijh}}$$

We finally computed the *adjusted* weight ω_{ijh} of household ijh as

$$\omega_{ijh} = w_{ijh} \frac{n'_h}{\sum_h w_{ijh}}$$

Where n'_h is the number of households in stratum h, according to the final census figures.

The final adjustment intends to have the HBS *sum of weights* match the official CSO number of households figures in all strata.

IV STRUCTURE OF THE DATABASES

21. All data files were organized into 14 themes and delivered to CSO in three formats: SPSS (.sav), Stata (.dta) and dbf. Each theme corresponds to a specific statistical unit:

1. *Households: contains data on the cover, dwelling conditions and household-level information on agriculture and credits.*
2. *Individuals: demographics, education, health and unemployment.*

3. *Enterprises: general information about each family enterprise*
4. *Jobs: information on each job conducted by a household member during the past 12 months.*
5. *Wages: specific information on each job conducted by a household member for wages.*
6. *Crops: crops grown during the past 12 months.*
7. *Types of land: information on various types of agricultural land owned or operated by the household during the past 12 months.*
8. *Enterprise incomes/expenditures: income and expenditures on specific items for each family enterprise.*
9. *Other sources of income: information on non-work income received by household members during the past 12 months.*
10. *Durable goods: durable goods owned by the household.*
11. *Credits: Credits or loans obtained by household members.*
12. *Food consumption: Acquisition and consumption of food and other frequently purchased items.*
13. *Non-food consumption: Acquisition of non-food items*
14. *Anthropometrics: Weight and height of children up to 6 years old (and all household members during the last survey month.)*

22. All records in the fourteen files contain the following key information:
    - Household identification number
    - Sampling weight
    - Stratum (governorate and urban/rural)
    - Cluster
    - Governorate
    - Area (urban/rural)
    - Survey month
    - Household size
    - The complete content of each file is given in Appendix 1.

V CONCLUSIONS AND RECOMMENDATIONS

No more data cleaning

23. The activities and actions developed during this mission are generally considered to be a part of the "data cleaning" phase of a household survey project. Two questions that can naturally be asked at this point are [1] Is the HBS database now totally consistent? and, [2] does

it need more "cleaning" before being delivered to end users for tabulation and analysis? The answer to the first question is probably not. The answer to the second question is definitely not.

24. We have already taken care of the most serious inconsistencies – those that could have led to wrong conclusions in poverty and nutritional analyses. Survey analysts are very likely to find more inconsistencies as a part of their endeavors, but this is not a reason for spending additional time and efforts to further refine the HBS data. There are in fact three powerful reasons for not doing this and delivering the HBS database to users as soon as possible.

- The first reason is that the databases generated by a survey as large and complex as the Yemen HBS can never be considered as perfect – there will be always something else that could be done, but the opportunity cost of doing it as a prerequisite for further tabulation is just too high. The database already represents a reality that is more than a year old, and it looses its policy-making value with each month that passes. Delivery is urgent.
- Another reason is that serious data analysts do understand that datasets from complex surveys are imperfect. They have analytic tools and expertise to deal with this situation and they prefer to do it themselves rather than relying of somebody else's criteria, especially when the later is not properly documented.
- The third reason is that solving the remaining inconsistencies may occasionally imply making imputations, which at this point – many miles and months away from the place and time where the data were collected – can only be made by guesswork.

We strongly recommend not to submit the HBS to further "data cleaning."

Use statistical software

25. The CSO has traditionally used tailor-made computer programs for tabulating census and survey data. We recommend that the institution evolves towards the use of standard statistical software (such as Ariel, Stata or SPSS) for this purpose. This will reduce the time and human resources needed to prepare tables and make the tables much more reliable. It will also foster analytic thinking throughout the institution, allow analysts to directly interact with the data, without intermediaries, and open the way to advanced models and techniques that can hardly be programmed on a case-by-case basis.

26. A simple illustration of the superiority of statistical software over tailor-made programs is the need to obtain weighed estimates from survey data. This is a non-trivial challenge for any programmer, but is easily solved by anyone using standard statistical software.

Recommendations for future surveys

27. A key factor for the success of complex surveys is the effective integration of computer-based quality controls to fieldwork. This can be achieved by implementing a high-quality data entry program and deploying dedicated data entry operators and PCs to perform data entry and consistency controls on a household-by-household basis as a part of field operations, so that

errors and inconsistencies are solved by means of eventual revisits to the households. The direct benefits of this methodology are:

- it significantly improve the quality of the information collected by the survey, because the errors and inconsistencies will be detected while the interviewers are still in the field rather than by office "cleansing" later.
- it generates databases that are ready for tabulation and analysis in a timely fashion; in fact, as the survey is conducted, thus giving the survey managers the ability to effectively monitor field operations.
- it fosters the application of uniform criteria by all the interviewers and throughout the whole period of data collection,

28. The improvements in quality and timing of this alternative are such that we strongly recommend that the CSO considers using it for future rounds of the HBS and in any other complex surveys.

29. In future rounds of the HBS, the CSO may also consider to re-visit some of the same households already visited by the survey in 2004-2006. A panel survey of this kind would have many analytic advantages. If this is to an option, we strongly recommend entering the names of household members in the HBS database now. This is almost costless, very easy to do now that the paper forms are still in good conditions and the names are legible, and it would facilitate enormously the organization of a panel survey in the future. (The names should obviously be kept in the CSO's internal database only – not delivered to external data users.)

APPENDIX 1YEMEN HOUSEHOLD BUDGET SURVEY 2005-2006
STRUCTURE OF THE DATABASES

1. Data file: S00_HHOLD

Section	Variable	Label
KEY INFORMATION	***HH_ID***	*Household identification number*
	Weight	*Sampling weight*
	Stratum	*Stratum*
	Cluster	*Cluster number*
	Govern	*Governorate code*
	Area	*Area (Urban / Rural)*
	Month	*Survey month*
	HH_size	*Size of the household*
Cover	HH	HH number in cluster
Cover	DISTRICT	District
Cover	RESULT	Result of HH interview
Section 3. Dwelling Conditions	Q0301	Type of house
Section 3. Dwelling Conditions	Q0302	Main material used for external walls
Section 3. Dwelling Conditions	Q0303	Main material used for ceiling
Section 3. Dwelling Conditions	Q0304	Main material used for floor
Section 3. Dwelling Conditions	Q0305	Main Way of water services to house
Section 3. Dwelling Conditions	Q0306	Main source of water (4-9 in ques. 305)
Section 3. Dwelling Conditions	Q0307_1C	Person ID #1 (responsible of fetching water)
Section 3. Dwelling Conditions	Q0307_2C	Person ID #2 (responsible of fetching water)
Section 3. Dwelling Conditions	Q0307_3C	Person ID #3 (responsible of fetching water)
Section 3. Dwelling Conditions	Q0307_4C	Person ID #4 (responsible of fetching water)
Section 3. Dwelling Conditions	Q0307_5C	Person ID #5 (responsible of fetching water)
Section 3. Dwelling Conditions	Q0307_6C	Non HH member 98 code (responsible of fetching water)
Section 3. Dwelling Conditions	Q0307_1N	Person #1 (Number of times of fetching water)
Section 3. Dwelling Conditions	Q0307_2N	Person #2 (Number of times of fetching water)
Section 3. Dwelling Conditions	Q0307_3N	Person #3 (Number of times of fetching water)
Section 3. Dwelling Conditions	Q0307_4N	Person #4 (Number of times of fetching water)
Section 3. Dwelling Conditions	Q0307_5N	Person #5 (Number of times of fetching water)
Section 3. Dwelling Conditions	Q0307_6N	Non HH member #6 (Number of times of fetching water)
Section 3. Dwelling Conditions	Q0308	The average time(in minutes) for collecting water (for one time/one person
Section 3. Dwelling Conditions	Q0309	Is the main water supply sufficient?
Section 3. Dwelling Conditions	Q0310	How do you address shortage in water supply
Section 3. Dwelling Conditions	Q0311	Ways of treatment drinking water
Section 3. Dwelling Conditions	Q0312	Type of sewage disposal
Section 3. Dwelling Conditions	Q0313	Describe type of toilet you have
Section 3. Dwelling Conditions	Q0314	Place of toilet
Section 3. Dwelling Conditions	Q0315	Main source of lighting
Section 3. Dwelling Conditions	Q0316	Power supply duration(days/month)
Section 3. Dwelling Conditions	Q0317	Power supply duration(hrs/day)
Section 3. Dwelling Conditions	Q0318	Kitchen status
Section 3. Dwelling Conditions	Q0319	The main energy sources used for cooking
Section 3. Dwelling Conditions	Q03201	Exposed to (Smoke from cars)
Section 3. Dwelling Conditions	Q03202	Exposed to (Smoke from cooking)
Section 3. Dwelling Conditions	Q03203	Exposed to (Animals' odor)
Section 3. Dwelling Conditions	Q03204	Exposed to (Sewer system odor)
Section 3. Dwelling Conditions	Q03205	Exposed to (Garbage odor)
Section 3. Dwelling Conditions	Q03206	Exposed to (Dust from factories)
Section 3. Dwelling Conditions	Q03207	Exposed to (Dust or odors from other sources)
Section 3. Dwelling Conditions	Q03208	Exposed to (Bad ventilation)
Section 3. Dwelling Conditions	Q03209	Exposed to (Dampness)
Section 3. Dwelling Conditions	Q032010	Exposed to (Stagnant water pool)
Section 3. Dwelling Conditions	Q032011	Exposed to (noise)
Section 3. Dwelling Conditions	Q032012	Exposed to (no nothing)
Section 3. Dwelling Conditions	Q0321	Main means of garbage disposal
Section 3. Dwelling Conditions	Q0322	Number of rooms in total in house
Section 3. Dwelling Conditions	Q0323	Number of sleeping rooms in house
Section 3. Dwelling Conditions	Q0324	The legal status of the dwelling
Section 3. Dwelling Conditions	Q0325	Ability to sell dwelling
Section 3. Dwelling Conditions	Q0326	Cost of dwelling if sold(Riyals)
Section 3. Dwelling Conditions	Q0327	Monthly rent of dwelling if rented(Riyals)
Section 3. Dwelling Conditions	Q0328	Monthly rent of renting other dwelling like the current(Riyals)

1. Data file: S00_HHOLD

Section	Variable	Label
KEY INFORMATION	***HH_ID***	*Household identification number*
	Weight	*Sampling weight*
	Stratum	*Stratum*
	Cluster	*Cluster number*
	Govern	*Governorate code*
	Area	*Area (Urban / Rural)*
	Month	*Survey month*
	HH_size	*Size of the household*
Cover	HH	HH number in cluster
Cover	DISTRICT	District
Cover	RESULT	Result of HH interview
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Section 3. Dwelling Conditions	Q0307_3C	Person ID #3 (responsible of fetching water)
Section 3. Dwelling Conditions	Q0307_4C	Person ID #4 (responsible of fetching water)
Section 3. Dwelling Conditions	Q0307_5C	Person ID #5 (responsible of fetching water)
Section 3. Dwelling Conditions	Q0307_6C	Non HH member 98 code (responsible of fetching water)
Section 3. Dwelling Conditions	Q0307_1N	Person #1 (Number of times of fetching water)
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Section 3. Dwelling Conditions	Q0315	Main source of lighting
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Section 3. Dwelling Conditions	Q0318	Kitchen status
Section 3. Dwelling Conditions	Q0319	The main energy sources used for cooking
Section 3. Dwelling Conditions	Q03201	Exposed to (Smoke from cars)
Section 3. Dwelling Conditions	Q03202	Exposed to (Smoke from cooking)
Section 3. Dwelling Conditions	Q03203	Exposed to (Animals' odor)
Section 3. Dwelling Conditions	Q03204	Exposed to (Sewer system odor)
Section 3. Dwelling Conditions	Q03205	Exposed to (Garbage odor)
Section 3. Dwelling Conditions	Q03206	Exposed to (Dust from factories)
Section 3. Dwelling Conditions	Q03207	Exposed to (Dust or odors from other sources)
Section 3. Dwelling Conditions	Q03208	Exposed to (Bad ventilation)
Section 3. Dwelling Conditions	Q03209	Exposed to (Dampness)
Section 3. Dwelling Conditions	Q032010	Exposed to (Stagnant water pool)
Section 3. Dwelling Conditions	Q032011	Exposed to (noise)
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Section 3. Dwelling Conditions	Q0327	Monthly rent of dwelling if rented(Riyals)
Section 3. Dwelling Conditions	Q0328	Monthly rent of renting other dwelling like the current(Riyals)

Section 9: Agriculture and fishing activities	Q0901	Manage plots of land
Section 9: Agriculture and fishing activities	Q0902	Measuring unit
Section 9: Agriculture and fishing activities	Q0903	Total area of the plots
Section 9: Agriculture and fishing activities	S0916	Did you hire non-household members in agric activities during the past 12M
Section 9: Agriculture and fishing activities	S0917M	How many hire non-household members? (males)
Section 9: Agriculture and fishing activities	S0917F	How many hire non-household members? (females)
Section 9: Agriculture and fishing activities	Q0918	Any livestock producing activities?
Section 9: Agriculture and fishing activities	Q0919_01	Number of Camels
Section 9: Agriculture and fishing activities	Q0919_02	Number of Cows
Section 9: Agriculture and fishing activities	Q0919_03	Number of Sheep&Goats
Section 9: Agriculture and fishing activities	Q0919_04	Number of Chicken
Section 9: Agriculture and fishing activities	Q0919_05	Number of Bee-hives
Section 9: Agriculture and fishing activities	Q0919_06	Number of Donkeys
Section 9: Agriculture and fishing activities	Q0919_07	Number of Horses
Section 9: Agriculture and fishing activities	Q0919_08	Number of Pigeon
Section 9: Agriculture and fishing activities	Q0919_09	Number of Rabbit
Section 9: Agriculture and fishing activities	Q091910	Number of other animals
Section 9: Agriculture and fishing activities	Q0920	Did the HH sell any animals during the last 12 months?
Section 9: Agriculture and fishing activities	Q0921	How much did your HH receive from sales of animals during the past 12M
Section 9: Agriculture and fishing activities	Q0922	Did any agricultural extension officers provide you with technical advice?
Section 9: Agriculture and fishing activities	Q0923_01	Expenses on Fertiliser
Section 9: Agriculture and fishing activities	Q0923_02	Expenses on Pesticides
Section 9: Agriculture and fishing activities	Q0923_03	Expenses on Seeds and seedlings
Section 9: Agriculture and fishing activities	Q0923_04	Expenses on Bags and tarpaulins
Section 9: Agriculture and fishing activities	Q0923_05	Expenses on Farm tools
Section 9: Agriculture and fishing activities	Q0923_06	Expenses on Fuel for drying crops
Section 9: Agriculture and fishing activities	Q0923_07	Expenses on Tractor hire (including fuel cost)
Section 9: Agriculture and fishing activities	Q0923_08	Expenses on Hire Irrigation equipment
Section 9: Agriculture and fishing activities	Q0923_09	Expenses on Transportation
Section 9: Agriculture and fishing activities	Q0923_10	Expenses on Agricultural credit repayment
Section 9: Agriculture and fishing activities	Q0923_11	Expenses on Seeds and young plants
Section 9: Agriculture and fishing activities	Q0923_12	Expenses on Workers
Section 9: Agriculture and fishing activities	Q0923_13	Expenses on Fuel (for vehicles, drying crops, irrigation, etc.)
Section 9: Agriculture and fishing activities	Q0923_14	Expenses on Irrigation (do not include fuel)
Section 9: Agriculture and fishing activities	Q0923_15	Expenses on Storage facilities
Section 9: Agriculture and fishing activities	Q0923_16	Expenses on Improvements on land or buildings
Section 9: Agriculture and fishing activities	Q0923_17	Expenses on Repair and maintenance of equipment
Section 9: Agriculture and fishing activities	Q0923_18	Expenses on Fodder
Section 9: Agriculture and fishing activities	Q0923_19	Expenses on Veterinary
Section 9: Agriculture and fishing activities	Q0923_20	Expenses on Repayment of loans
Section 9: Agriculture and fishing activities	Q0923_21	Expenses on Other 1
Section 9: Agriculture and fishing activities	Q0923_22	Expenses on Other 2
Section 9: Agriculture and fishing activities	Q0923_23	Expenses on Other 3
Section 9: Agriculture and fishing activities	Q0923_24	Expenses on TOTAL
Section 9: Agriculture and fishing activities	Q0924	Is any of the HH members works in fishing during the last 12 months?
Section 9: Agriculture and fishing activities	Q0925	Owner of the boat you work on?
Section 9: Agriculture and fishing activities	Q0926	What kind of technologies do you use for fishing?
Section 9: Agriculture and fishing activities	Q0927	Does the boat you work on allow for overnight fishing?
Section 9: Agriculture and fishing activities	Q0928	Does the boat have storage facility?
Section 9: Agriculture and fishing activities	Q0929	What is the total storage capacity of the boat(KG)
Section 9: Agriculture and fishing activities	Q0930	Do you use any referigeration facilities?
Section 9: Agriculture and fishing activities	Q0931_1	Expenses on (Worker fees(cash&in-kind))during the past 12 months
Section 9: Agriculture and fishing activities	Q0931_2	Expenses on (Ice)during the past 12 months
Section 9: Agriculture and fishing activities	Q0931_3	Expenses on (Repair and maintenance of nets and traps)during the past 12M
Section 9: Agriculture and fishing activities	Q0931_4	Expenses on (Boat Fuel and repair and maintenance of boat)during the past
Section 9: Agriculture and fishing activities	Q0931_5	Expenses on (Boat rent (cash))during the past 12 months
Section 9: Agriculture and fishing activities	Q0931_6	Expenses on (Transportation of fish to market)during the past 12 months
Section 9: Agriculture and fishing activities	Q0931_7	Expenses on (Services(technical assistance))during the past 12 months
Section 9: Agriculture and fishing activities	Q0931_8	Expenses on (Other)during the past 12 months
Section 9: Agriculture and fishing activities	Q0931_9	Expenses on (Total)during the past 12 months
Section 9: Agriculture and fishing activities	Q0932_1	Receive from (Proceeds from sale of fish) during the past 12 months
Section 9: Agriculture and fishing activities	Q0932_2	Receive from (Value of fish,shrimp consumed in household) during the past
Section 9: Agriculture and fishing activities	Q0932_3	Receive from (Value of fish given away as gift, charity,barter) during the past

Section 9: Agriculture and fishing activities	Q0932_4	Receive from (Value of fish used for drying) during the past 12 months
Section 9: Agriculture and fishing activities	Q0932_5	Receive from (Value of fish sauce) during the past 12 months
Section 9: Agriculture and fishing activities	Q0932_6	Receive from (Value of fish used for animal feed) during the past 12 months
Section 9: Agriculture and fishing activities	Q0932_7	Receive from (Value of fish used for other) during the past 12 months
Section 9: Agriculture and fishing activities	Q0932_8	Receive from (Total) during the past 12 months
Section 13: Loans and credits	Q1301	Does the HH have outstanding loans,debts to the others
Section 13: Loans and credits	Q1312	If the HH need a loan can get it?
Section 13: Loans and credits	Q1313	From which source they can get the Loan

2. Data file: S01_INDIV

Section	Variable	Label
KEY INFORMATION	***HH_ID***	*Household identification number*
	Weight	*Sampling weight*
	Stratum	*Stratum*
	Cluster	*Cluster number*
	Govem	*Governorate code*
	Area	*Area (Urban / Rural)*
	Month	*Survey month*
	HH_size	*Size of the household*
Section 1: Demographic Information	**IND_ID**	Individual identification number
Section 1: Demographic Information	Q0102	Sex
Section 1: Demographic Information	Q0103M	Age(months)
Section 1: Demographic Information	Q0103Y	Age(year)
Section 1: Demographic Information	Q0104M	Birth date(months)
Section 1: Demographic Information	Q0104Y	Birth date(year)
Section 1: Demographic Information	Q0105	Relationship
Section 1: Demographic Information	Q0106	Nationality
Section 1: Demographic Information	Q0107	Born in this place
Section 1: Demographic Information	Q0108_V	Village/City of birth
Section 1: Demographic Information	Q0108_D	District of birth
Section 1: Demographic Information	Q0108_G	Governorate/Countery of birth
Section 1: Demographic Information	Q0109	Marital Status
Section 1: Demographic Information	Q0110	Spouse's id code
Section 1: Demographic Information	Q0111	Mother id
Section 1: Demographic Information	Q0112	Father id
Section 1: Demographic Information	Q0113	Person away from HH during the past 12 months
Section 1: Demographic Information	Q0114	Reasons for been away
Section 1: Demographic Information	Q0115	Number of months been away during the past 12 months
Section 4. Health	Q0401	Suffer from a disability or chroinc illness
Section 4. Health	Q0402	Kind of disability
Section 4. Health	Q0403	Kind of chroinc illness
Section 4. Health	Q0404	How did name become disabled or chronically ill
Section 4. Health	Q0405	When did name become disabled or chronically ill YEAR
Section 4. Health	Q0406_1	Source of support (1)
Section 4. Health	Q0406_2	Source of support (2)
Section 4. Health	Q0406_3	Source of support (3)
Section 4. Health	Q0406_4	Source of support (4)
Section 4. Health	Q0406_5	Source of support (5)
Section 4. Health	Q0406_6	Source of support (6)
Section 4. Health	Q0406_7	Source of support (7)
Section 4. Health	Q0407	Was(name) sufferd from an accident or illness during the past month(not include
Section 4. Health	Q0408	What type of illness or accident did name suffer during the last month (illnesses
Section 4. Health	Q0409	What type of illness or accident did name suffer during the last month (accidents
Section 4. Health	Q0410	Did name receive medical care because of this illness or accident
Section 4. Health	Q0411_1	Where did receive medical care
Section 4. Health	Q0411_2	Establishment name
Section 4. Health	Q0412	Where is this health facility?
Section 4. Health	Q0413_1	Transportation cost to the health facility(Money spent during past month)
Section 4. Health	Q0413_2	Medicine's cost(Money spent during past month)
Section 4. Health	Q0413_3	Medical fees(Money spent during past month)
Section 4. Health	Q0413_4	Total(Money spent during past month)
Section 4. Health	Q0414	Why(name) didn't receive medical care for this illness or accident?

Section 4. Health	Q0415	Does name smoke?
Section 4. Health	Q0416	Does name chew qat?
Section 4. Health	Q0417	How many days does name chew
Section 4. Health	Q041ŝ	Has the name been exposed to chemical fertilizer or pesticides during the past
Section 4. Health	Q0419	Has name ever suffered from a lesion/diseas due to job
Section 4. Health	Q0420_1	type of diseases(job related)
Section 4. Health	Q0420_2	type of injuries from accidents(job related)
Section 4. Health	Q0421	With regard to the worst accident/disease/injury, how severe was it?
Section 4. Health	Q0422	Do you regulary see a health professional?
Section 4. Health	Q0423	Recived any medical care during delivery(women 10-49 ever married)
Section 4. Health	Q0424	Suffered from delivery complication(women 10-49 ever married)
Section 4. Health	Q0425	Currently pregnant(women 10-49 ever married)
Section 4. Health	Q0426	Depended totaly on breast feeding the first six months(child 5 years and less)
Section 4. Health	Q0427	Has the child immunization(child 5 years and less)
Section 4. Health	Q042ŝ	Does (child) have immunization card(child 5 years and less)
Section 4. Health	Q0429	Has the child taken TB vaccination(child 5 years and less)
Section 4. Health	Q0430	Has the child taken Polio vaccination(child 5 years and less)
Section 4. Health	Q0431	How many times the child take vaccination against Polio(child 5 years and less)
Section 4. Health	Q0432	Has the child taken DPT(child 5 years and less)
Section 4. Health	Q0433	How many times the child take vaccination against DPT(child 5 years and less)
Section 4. Health	Q0434	Has the child taken measle(child 5 years and less)
Section 4. Health	Q0435	Has the child taken hapatities(child 5 years and less)
Section 5. Education	Q0501	Attended school
Section 5. Education	Q0502	Reasons not attended school
Section 5. Education	Q0503	ead and write
Section 5. Education	Q0504	Ever attended literacy classes
Section 5. Education	Q0505_C	Last class the name complete it succefuly
Section 5. Education	Q0505_L	Educational level
Section 5. Education	Q0506	What's the highest grade (name) has completed?
Section 5. Education	Q0507	Years the name spend in studying including the repating
Section 5. Education	Q050ŝ	Currently enrolled in school or other educational organization
Section 5. Education	Q0509	Was name enrolled in school in the past 12 months
Section 5. Education	Q0510_C	Class is currently enrolled in school
Section 5. Education	Q0510_L	Educational level
Section 5. Education	Q0511	Write the school name which (name) currently enrolled
Section 5. Education	Q0512	School Type
Section 5. Education	Q0513	Old was (name) when entered first class
Section 5. Education	Q0514	Is (name) still enrolled in school, unversity or droped out
Section 5. Education	Q0515	The main reason for dropped out or not enrolled
Section 5. Education	Q0516	Receive a scholarship and/or financial assistance from out of the household
Section 5. Education	Q0517	Receive in total value of all benefits from out of school in the past 12 months
Section 5. Education	Q051ŝ	Receive in total value of all benefits from school in the past 12 months
Section 5. Education	Q0519_1	HH Spend on education in the past 12 months(School fees)
Section 5. Education	Q0519_2	HH Spend on education in the past 12 months(Uniform school)
Section 5. Education	Q0519_3	HH Spend on education in the past 12 months(sport clothes)
Section 5. Education	Q0519_4	HH Spend on education in the past 12 months(Books and school supplies)
Section 5. Education	Q0519_5	HH Spend on education in the past 12 months(Food, board and lodging)
Section 5. Education	Q0519_6	HH Spend on education in the past 12 months(Transport)
Section 5. Education	Q0519_7	HH Spend on education in the past 12 months(Others)
Section 5. Education	Q0519_ŝ	HH Spend on education in the past 12 months(Total)
Section ŝ. Unemployment and job search	Q0ŝ01	Working houres during the past seven days
Section ŝ. Unemployment and job search	Q0ŝ02	Reasons for not working during the past seven days
Section ŝ. Unemployment and job search	Q0ŝ03	don't want more work (exclude household work in won home)
Section ŝ. Unemployment and job search	Q0ŝ04	Why don't you want want work(more work)
Section ŝ. Unemployment and job search	Q0ŝ05	When did you last take any action to look for work of any type
Section ŝ. Unemployment and job search	Q0ŝ06_1	Steps to find work or more work (first answer)
Section ŝ. Unemployment and job search	Q0ŝ06_2	Steps to find work or more work (2nd answer)
Section ŝ. Unemployment and job search	Q0ŝ06_3	Steps to find work or more work (3nd answer)
Section ŝ. Unemployment and job search	Q0ŝ06_4	Steps to find work or more work (4nd answer)
Section ŝ. Unemployment and job search	Q0ŝ07	Was this person a wage job during the past 12 months
Section ŝ. Unemployment and job search	Q0ŝ08	Have you ever had a full-time wage job
Section ŝ. Unemployment and job search	Q0ŝ09	Type of anther work did the person do before the last 12 months
Section ŝ. Unemployment and job search	Q0ŝ10_M	When (month) did the person stop the last full time job he had?
Section ŝ. Unemployment and job search	Q0ŝ10_Y	When (years) did the person stop the last full time job he had?

3. Data file: S02_Entreprises

Section	Variable	Label
KEY INFORMATION	***HH_ID***	*Household identification number*
	Weight	*Sampling weight*
	Stratum	*Stratum*
	Cluster	*Cluster number*
	Govern	*Governorate code*
	Area	*Area (Urban / Rural)*
	Month	*Survey month*
	HH_size	*Size of the household*
Section 2. Activities	**ENT_NB**	Entreprise Number
Section 2. Activities	Q0205	Activity Code
Section 2. Activities	Q0206_1	Person ID (Main responsible)
Section 2. Activities	Q0206_2	Person ID (2nd responsible)
Section 2. Activities	Q0206_3	Person ID (3rd responsible)
Section 2. Activities	Q0206_4	Person ID (4th responsible)
Section 2. Activities	Q0206_5	Person ID (5th responsible)

4. Data file: S02_Jobs

Section	Variable	Label
KEY INFORMATION	***HH_ID***	*Household identification number*
	Weight	*Sampling weight*
	Stratum	*Stratum*
	Cluster	*Cluster number*
	Govern	*Governorate code*
	Area	*Area (Urban / Rural)*
	Month	*Survey month*
	HH_size	*Size of the household*
Section 2. Activities	**IND_IN**	Individual ID
Section 2. Activities	**JSN**	Job serial number
Section 2. Activities	Q0201	Occupation Code
Section 2. Activities	Q0202	Type of work
Section 2. Activities	Q0202_C	Enterprise code
Section 2. Activities	Q0203_T	Number of working months(during the past 12 months)
Section 2. Activities	Q0203_01	January
Section 2. Activities	Q0203_02	February
Section 2. Activities	Q0203_03	March
Section 2. Activities	Q0203_04	April
Section 2. Activities	Q0203_05	May
Section 2. Activities	Q0203_06	June
Section 2. Activities	Q0203_07	July
Section 2. Activities	Q0203_08	August
Section 2. Activities	Q0203_09	September
Section 2. Activities	Q0203_10	October
Section 2. Activities	Q0203_11	November
Section 2. Activities	Q0203_12	December
Section 2. Activities	Q0204_1	Working hours on Saturday
Section 2. Activities	Q0204_2	Working hours on Sunday
Section 2. Activities	Q0204_3	Working hours on Monday
Section 2. Activities	Q0204_4	Working hours on Tuesday
Section 2. Activities	Q0204_5	Working hours on Wednesday
Section 2. Activities	Q0204_6	Working hours on Thursday
Section 2. Activities	Q0204_7	Working hours on Friday
Section 2. Activities	Q0204_T	Total number of Working hours during the past week

5. Data file: S07_Wage

Section	Variable	Label
KEY INFORMATION	***HH_ID***	*Household identification number*
	Weight	*Sampling weight*
	Stratum	*Stratum*
	Cluster	*Cluster number*
	Govern	*Governorate code*
	Area	*Area (Urban / Rural)*
	Month	*Survey month*
	HH_size	*Size of the household*
Section 7. Wage earnings	**IND_ID**	Individual ID
Section 7. Wage earnings	**JSN**	Job serial number from field(q201)
Section 7. Wage earnings	S0702	Economic Activity
Section 7. Wage earnings	S0703	Economic Sector
Section 7. Wage earnings	S0704	Temporary job funded by the one of the instituations of teh social security netw
Section 7. Wage earnings	S0705	Program funded temporary job
Section 7. Wage earnings	S0706	Hours of work(hrs/week)
Section 7. Wage earnings	S0707M	Since when have (name) worked for this employer(months)
Section 7. Wage earnings	S0707Y	Since when have (name) worked for this employer(years)
Section 7. Wage earnings	S0708	How to get the job
Section 7. Wage earnings	S0709	Period of getting salery
Section 7. Wage earnings	S0710_1	Benefts getting from job(Health care coverage)
Section 7. Wage earnings	S0710_2	Benefts getting from job(Pension)
Section 7. Wage earnings	S0710_3	Benefts getting from job(Paid leave)
Section 7. Wage earnings	S0711	Last pay (Riyals)
Section 7. Wage earnings	S0712	Usual amount (Riyals)
Section 7. Wage earnings	S0713	Total additional fees either in cash or in-kind(Riyals)

6. Data file: S09_Crops

Section	Variable	Label
KEY INFORMATION	***HH_ID***	*Household identification number*
	Weight	*Sampling weight*
	Stratum	*Stratum*
	Cluster	*Cluster number*
	Govern	*Governorate code*
	Area	*Area (Urban / Rural)*
	Month	*Survey month*
	HH_size	*Size of the household*
Section 9: Agriculture and fishing activities	**S09_CC**	Crop code
Section 9: Agriculture and fishing activities	S0911	1 Yes
Section 9: Agriculture and fishing activities	S0912_Q	How much did you produce (Quantity)
Section 9: Agriculture and fishing activities	S0912_U	How much did you produced (Unit)
Section 9: Agriculture and fishing activities	S0913	How much did you sell or expect to sell (Quantity)?
Section 9: Agriculture and fishing activities	S0914	Price per units specilized in Q.(912) Riyals/Unit
Section 9: Agriculture and fishing activities	S0915	Total sales(Riyals)

7. Data file: S09_Type Of Land

Section	Variable	Label
KEY INFORMATION	***HH_ID***	*Household identification number*
	Weight	*Sampling weight*
	Stratum	*Stratum*
	Cluster	*Cluster number*
	Govern	*Governorate code*
	Area	*Area (Urban / Rural)*
	Month	*Survey month*
	HH_size	*Size of the household*
Section 9: Agriculture and fishing activities	**Q0904**	Type of ownership
Section 9: Agriculture and fishing activities	Q0905	Area of the plots
Section 9: Agriculture and fishing activities	Q0906	ID CODE of owner
Section 9: Agriculture and fishing activities	Q0907	Expected amount for similar land
Section 9: Agriculture and fishing activities	Q0908	Number of cultivated seasons during the past 12 months

8. Data file: S11_Other Income

Section	Variable	Label
KEY INFORMATION	***HH_ID***	*Household identification number*
	Weight	*Sampling weight*
	Stratum	*Stratum*
	Cluster	*Cluster number*
	Govern	*Governorate code*
	Area	*Area (Urban / Rural)*
	Month	*Survey month*
	HH_size	*Size of the household*
Section 10: Private Business Activities	**ENT_NB**	Enterprise Number
Section 10: Private Business Activities	S10_LN	Line number (Cost / Revenue / others)
Section 10: Private Business Activities	S10_AMNT	Cost / Number

9. Data file: S11_Other Income

Section	Variable	Label
KEY INFORMATION	***HH_ID***	*Household identification number*
	Weight	*Sampling weight*
	Stratum	*Stratum*
	Cluster	*Cluster number*
	Govern	*Governorate code*
	Area	*Area (Urban / Rural)*
	Month	*Survey month*
	HH_size	*Size of the household*
Section 11: Other income	**IND_ID**	Individual ID
Section 11: Other income	**S11_SC**	Source code
Section 11: Other income	S11_INCOME	Income during 12 months (Riyals)

10. Data file: S12_Durables

Section	Variable	Label
KEY INFORMATION	***HH_ID***	*Household identification number*
	Weight	*Sampling weight*
	Stratum	*Stratum*
	Cluster	*Cluster number*
	Govern	*Governorate code*
	Area	*Area (Urban / Rural)*
	Month	*Survey month*
	HH_size	*Size of the household*
Section 12: Inventory of durable goods	**Q1201C**	Durable good
Section 12: Inventory of durable goods	Q1201N	Number owned
Section 12: Inventory of durable goods	Q1202	The cost if presented (Riyals)

11. Data file: S13_Credits

Section	Variable	Label
KEY INFORMATION	***HH_ID***	*Household identification number*
	Weight	*Sampling weight*
	Stratum	*Stratum*
	Cluster	*Cluster number*
	Govern	*Governorate code*
	Area	*Area (Urban / Rural)*
	Month	*Survey month*
	HH_size	*Size of the household*
Section 13: Loans and credits	**LN**	Loan number
Section 13: Loans and credits	Q1302	Source of the loan
Section 13: Loans and credits	Q1303	Main reason for borrowed the money
Section 13: Loans and credits	Q1304_M	When you get the loan? (month)
Section 13: Loans and credits	Q1304_Y	When you get the loan? (year)
Section 13: Loans and credits	Q1305	Period in months to settle the loan
Section 13: Loans and credits	Q1306	What was the total amount of the loan?(no interset(
Section 13: Loans and credits	Q1307	What's the type of loan?
Section 13: Loans and credits	Q1308_C	How everage monthly/YY/TOT interest? (code)
Section 13: Loans and credits	Q1308_R	How everage monthly/YY/TOT interest? (Average %)
Section 13: Loans and credits	Q1309	How much estimited amount from loan payment (including interests)?
Section 13: Loans and credits	Q1310_1	Person (1) ID of HH responsible for paying-back
Section 13: Loans and credits	Q1310_2	Person (2) ID of HH repbonsible for paying-back
Section 13: Loans and credits	Q1310_3	Person (3) ID of HH responsible for paying-back
Section 13: Loans and credits	Q1311	Could you borrow from the same source again

12. Data file: S06_Anthropo

Section	Variable	Label
KEY INFORMATION	***HH_ID***	*Household identification number*
	Weight	*Sampling weight*
	Stratum	*Stratum*
	Cluster	*Cluster number*
	Govern	*Governorate code*
	Area	*Area (Urban / Rural)*
	Month	*Survey month*
	HH_size	*Size of the household*
Section 6: Anthropometrics	**IND_ID**	Individual ID
Section 6: Anthropometrics	MEASURED	Was the (name) measured?
Section 6: Anthropometrics	REASON	Reason not measured
Section 1:	Gender	Gender
Calculated	AgeMonths	Age in months
Section 6: Anthropometrics	Q0604_H	Height in CM from S6
Section 6: Anthropometrics	Q0606_W	Weight in KG from S6
Calculated	ZWA	ZScore Weight by Age
Calculated	ZSA	ZScore Stature by Age
Calculated	ZWS	ZScore Weight by Stature
Calculated	BMI	Body mass index
Section 1:	DoB_M	Birth date (Months)
Section 1:	DoB_Y	Birth date (Year)
Calculated	ACTION	Action proposed'
Calculated	HEIGHT_CM	Height CM
Calculated	WEIGHT_KG	Weight KG

13. Data file: S14_Diary

Section	Variable	Label
KEY INFORMATION	***HH_ID***	*Household identification number*
	Weight	*Sampling weight*
	Stratum	*Stratum*
	Cluster	*Cluster number*
	Govern	*Governorate code*
	Area	*Area (Urban / Rural)*
	Month	*Survey month*
	HH_size	*Size of the household*
Section 14: Weekly consumption of food	**WEEK**	Week number
Section 14: Weekly consumption of food	**CODE**	Item code
Section 14: Weekly consumption of food	P_AMNT	Purchases (amount in Ryals)
Section 14: Weekly consumption of food	P_QTY	Purchases (quantity)
Section 14: Weekly consumption of food	UNIT	Unit of measurement
Section 14: Weekly consumption of food	C_MKT_Q	Quantity consumed from the Market
Section 14: Weekly consumption of food	C_SELF_Q	Quantity consumed from the Self production
Section 14: Weekly consumption of food	C_GIFT_Q	Quantity consumed from the Gifts
Section 14: Weekly consumption of food	V_SELF_AMNT	Value of what was Self-produced
Section 14: Weekly consumption of food	V_GIFT_AMNT	Value of what was received free
Section 14: Weekly consumption of food	ACTION	ACTION
Calculated	Purch_V	Old or Adjusted value of purchases
Calculated	Purch_Q	Old or Adjusted quantity purchased
Calculated	Consu_Q	Old or Adjusted quantity consumed

14. Data file: S151617_Non-food

Section	Variable	Label
KEY INFORMATION	***HH_ID***	*Household identification number*
	Weight	*Sampling weight*
	Stratum	*Stratum*
	Cluster	*Cluster number*
	Govern	*Governorate code*
	Area	*Area (Urban / Rural)*
	Month	*Survey month*
	HH_size	*Size of the household*
Sections 15/16 AND 17: Expenditures on Non-Food Services and Commodities	SECT	Section number
Sections 15/16 AND 17: Expenditures on Non-Food Services and Commodities	CODE	Commodity / Service CODE
Sections 15/16 AND 17: Expenditures on Non-Food Services and Commodities	UNIT	Measuring Unit
Sections 15/16 AND 17: Expenditures on Non-Food Services and Commodities	P_QTY	Bought form the market (Quantity)
Sections 15/16 AND 17: Expenditures on Non-Food Services and Commodities	P_AMOUNT	Bought form the market (Amount)
Sections 15/16 AND 17: Expenditures on Non-Food Services and Commodities	G_QTY	Gift (Quantity)
Sections 15/16 AND 17: Expenditures on Non-Food Services and Commodities	G_AMOUNT	Gift (Amount)
Sections 15/16 AND 17: Expenditures on Non-Food Services and Commodities	T_QTY	Total (Quantity)
Sections 15/16 AND 17: Expenditures on Non-Food Services and Commodities	T_AMOUNT	Total (Amount)

APPENDIX 2 CONSTRUCTING THE HOUSEHOLD BUDGET SURVEY DATABASE

1. The 2005-06 Household Budget Survey (HBS) is an important resource to estimate poverty, its proximate causes and effects of public action on poverty. The HBS provides the database for monitoring poverty as Yemen has just started implementing its second PRSP (2006-2010). This is the third HBS since the unification is 1990.

2. The main objectives of the HBS 2005/2006 are:

    1. Producing aggregates of the statistical indicators at the level of the urban and rural communities of each governorate in order to serve the purposes of economic and social development-planning on the central and local levels.
    2. Updating the National Accounts estimates in order to enable specialists and development planners to determine each governorate's share in the GDP, through the household's consumption structures.
    3. Collecting information about the variation in living standards between the urban and rural communities of each governorate, and between those of different governorates.

Sample Frame and Stratification

3. The sample frame for the HBS was the 2004 Population Census. Yemen consists of 21 governorates. The study population was sorted into 38 strata. 17 governorates were represented by two strata (urban and rural,) whereas Sana'a City and Aden are only urban and Raima and Sana'a Region are only rural. This resulted in 19 urban strata and 19 rural strata.

4. Within each stratum, the sample was selected in two stages. In the first stage, a certain number of Census Enumeration Areas (EAs) were selected with probability proportional to size (*pps*,) using as a measure of size the number of households according to the pre-census estimates available in January 2005. In the second stage, 12 households were picked from each EA by systematic equal probability sampling (*seps*).[3]

5. In order to produce estimates of consumption in all governorates of both rural and urban populations, the total sample of 1,200 EAs was distributed across strata by a combination of allocation proportional to size and equal allocation (see Box 2.) The final sample allocation is as show in Figure 3.

3 This design varies significantly from that used for the HBS 1998, where the study community was allocated in 12 strata, 7 of which were urban and 5 were rural, and each stratum consisted of several governorates, except the capital (Sana'a) and the city of Aden, which were considered two distinct urban strata. The sample size of the HBS 1998 was set at 15120 households drawn from 420 PSUs, cluster size was set at 18 households.

Box 2: Allocation of Sample across Strata

The results of the 1998 Household Budget Survey were used to assign the sample size that needed to obtain accurate data at governorate level. The procedure used in allocating the sample households for the HBS 2004/2005 had the following steps:

1. 50% of the total sample was distributed proportional to the household counts of the strata.
2. 50% of the total sample size was distributed uniformly amongst strata.
3. Since the larger variation of the living conditions in urban communities result in higher expected standard error for these communities (based on data from HBS 1998), the sample was redistributed between urban and rural strata to achieve uniform expected relative standard errors for overall urban and rural strata (RSE 1.1%). The total sample allocation had total of 9,228 urban and 5,172 rural households.
4. The results were adjusted to make the number of households in each governorate a multiple of 144 (12 EAs of 12 households each,) to facilitate the random allocation of the sample into the 12 months of fieldwork.

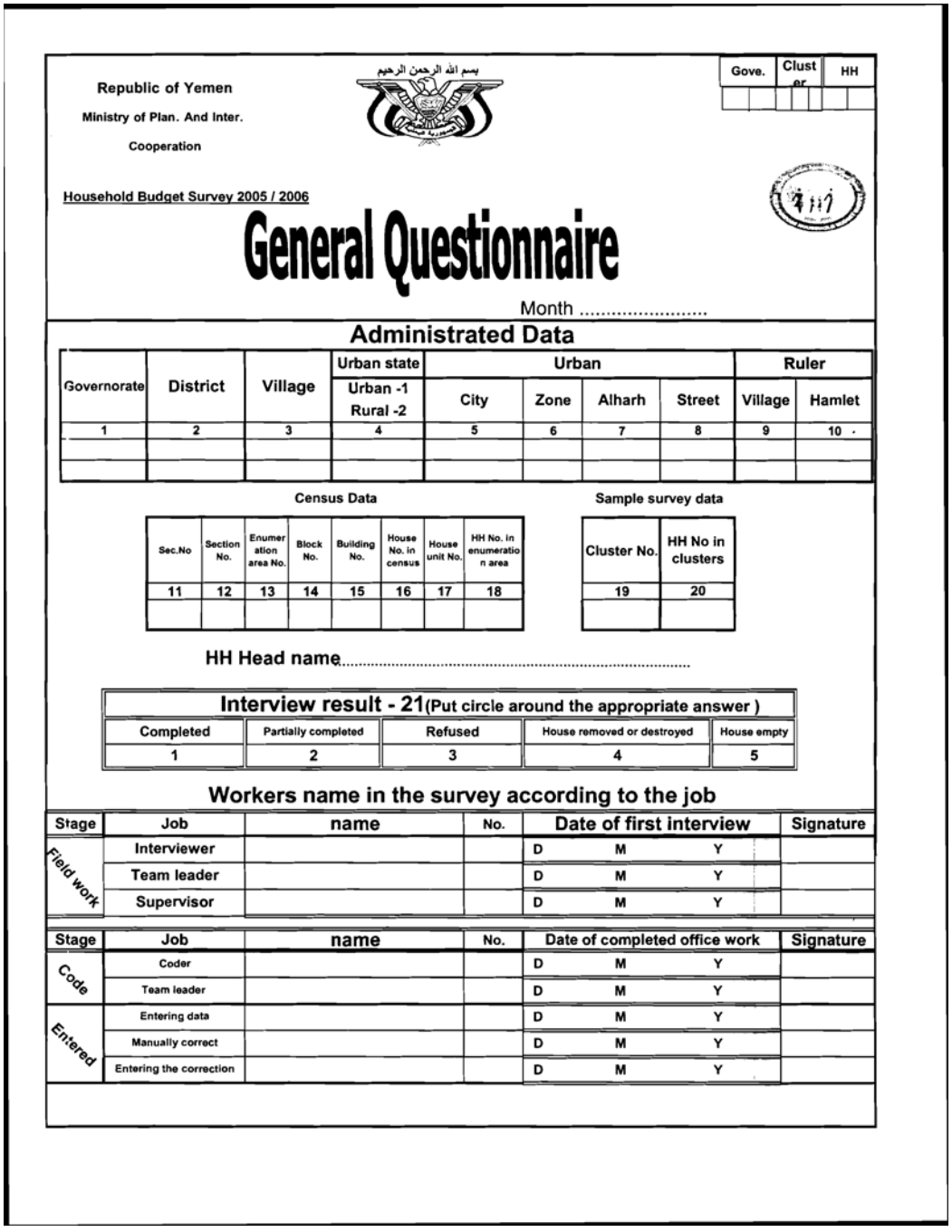
Figure 4: Yemen Household Budget Survey 2004-2005 Sampling Strata

(Allocation of the Sample and Relative Standard Errors for Per Capita Consumption)

Governorate	HH counts (2994)			PSUs			Nominal Sample (HHs)			R S E (%)		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
11 Ibb	50,404	249,674	**300,078**	43	41	**84**	516	492	**1,008**	6.98	11.81	**9.42**
12 Abyan	13,795	42,332	**56,127**	30	18	**48**	360	216	**576**	5.71	7.32	**5.29**
13 Sec. of the Capital	247,668		**247,668**	156		**156**	1,872		**1,872**	4.44		**4.44**
14 Al Baydha	13,424	53,004	**66,428**	29	19	**48**	348	228	**576**	7.70	10.98	**7.95**
15 Taiz	79,029	283,521	**362,550**	56	40	**96**	672	480	**1,152**	6.14	10.13	**7.51**
16 Al Jawf	7,682	47,940	**55,622**	22	14	**36**	264	168	**432**	7.51	13.52	**11.33**
17 Hajjah	17,416	174,819	**192,235**	30	30	**60**	360	360	**720**	10.93	8.79	**7.73**
18 Al Hodiedah	109,974	236,347	**346,321**	75	33	**108**	900	396	**1,296**	7.07	5.85	**4.52**
19 Hadramout	56,084	63,137	**119,221**	41	19	**60**	492	228	**720**	17.92	24.68	**15.67**
20 Dhamar	24,639	161,267	**185,906**	31	29	**60**	372	348	**720**	11.92	5.98	**5.40**
21 Shabwah	8,657	41,101	**49,758**	21	15	**36**	252	180	**432**	7.83	13.94	**11.75**
22 Saadah	13,620	70,513	**84,133**	28	20	**48**	336	240	**576**	5.41	5.65	**4.77**
23 Sanaa		116,086	**116,086**		24	**24**		288	**288**		6.76	**6.76**
24 Aden	89,605		**89,605**	72		**72**	864		**864**	4.61		**4.61**
25 Lahaj	9,057	93,661	**102,718**	25	23	**48**	300	276	**576**	8.21	10.18	**8.82**
26 Marib	3,728	23,653	**27,381**	22	14	**36**	264	168	**432**	9.21	13.34	**10.79**
27 Al Mahweet	4,647	63,785	**68,432**	27	21	**48**	324	252	**576**	4.61	5.48	**5.00**
28 Al Mahrah	5,459	5,705	**11,164**	12	12	**24**	144	144	**288**	14.90	12.38	**9.63**
29 Amran	19,073	85,919	**104,992**	27	21	**48**	324	252	**576**	6.86	4.91	**4.23**
30 Al Dhalea	8,094	51,010	**59,104**	22	14	**36**	264	168	**432**	11.21	6.54	**5.84**
31 Raimah		55,086	**55,086**		24	**24**		288	**288**		6.40	**6.40**
Total	**782,055**	**1,918,560**	**2,700,615**	**769**	**431**	**1,200**	**9,228**	**5,172**	**14,400**	**2.49**	**2.98**	**2.07**

ANNEX 3 QUESTIONNAIRE

QUESTIONNAIRE PAGE 1



بسم الله الرحمن الرحيم

Republic of Yemen

Ministry of Plan. And Inter. Cooperation

Gove.	Cluster	HH

Household Budget Survey 2005 / 2006

General Questionnaire

Month .....

Administrated Data

Governorate	District	Village	Urban state	Urban				Ruler	
			Urban -1 Rural -2	City	Zone	Alharh	Street	Village	Hamlet
1	2	3	4	5	6	7	8	9	10

Census Data

Sec.No	Section No.	Enumeration area No.	Block No.	Building No.	House No. in census	House unit No.	HH No. in enumeration area
11	12	13	14	15	16	17	18

Sample survey data

Cluster No.	HH No in clusters
19	20

HH Head name.....

Interview result - 21 (Put circle around the appropriate answer)

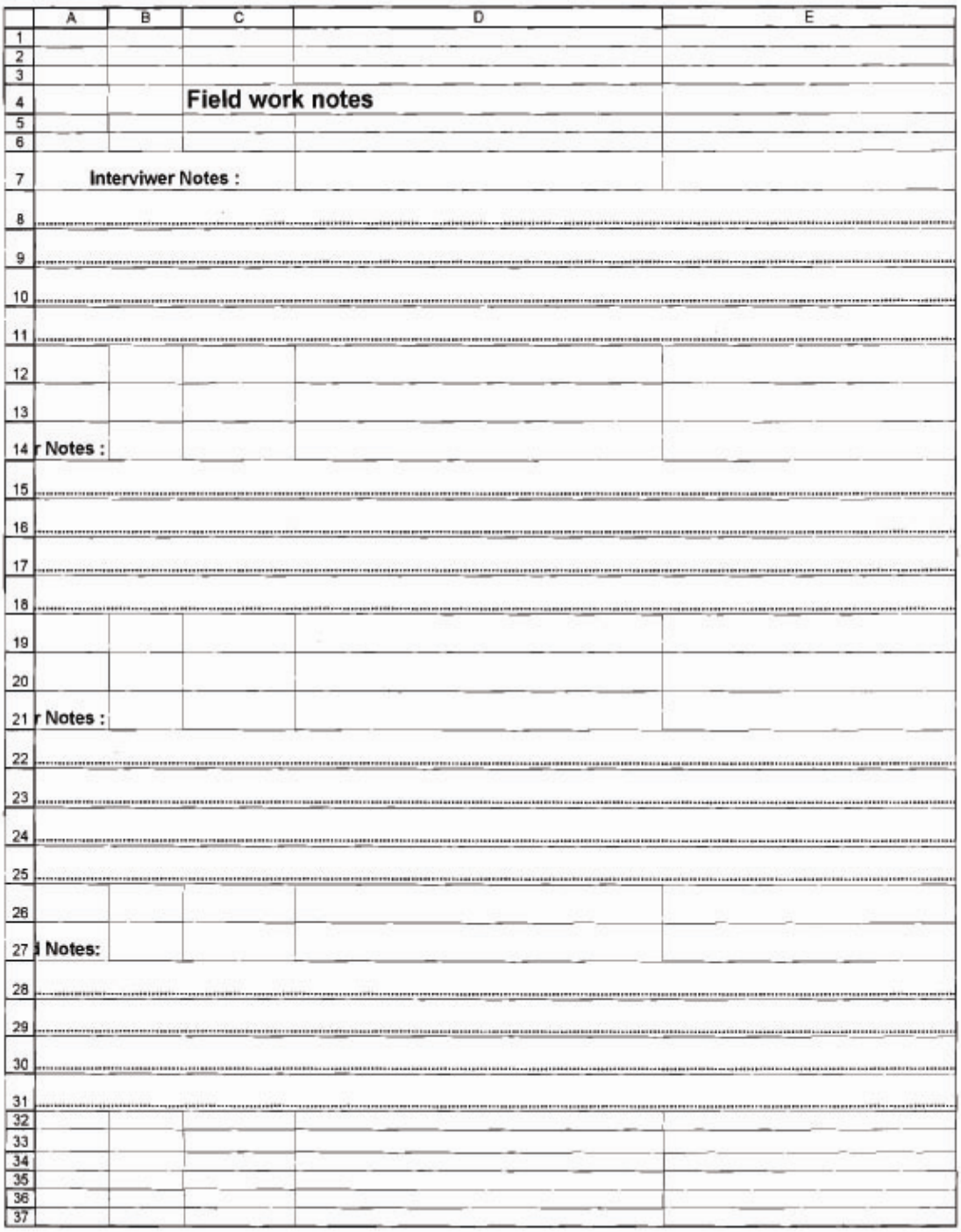
Completed	Partially completed	Refused	House removed or destroyed	House empty
1	2	3	4	5

Workers name in the survey according to the job

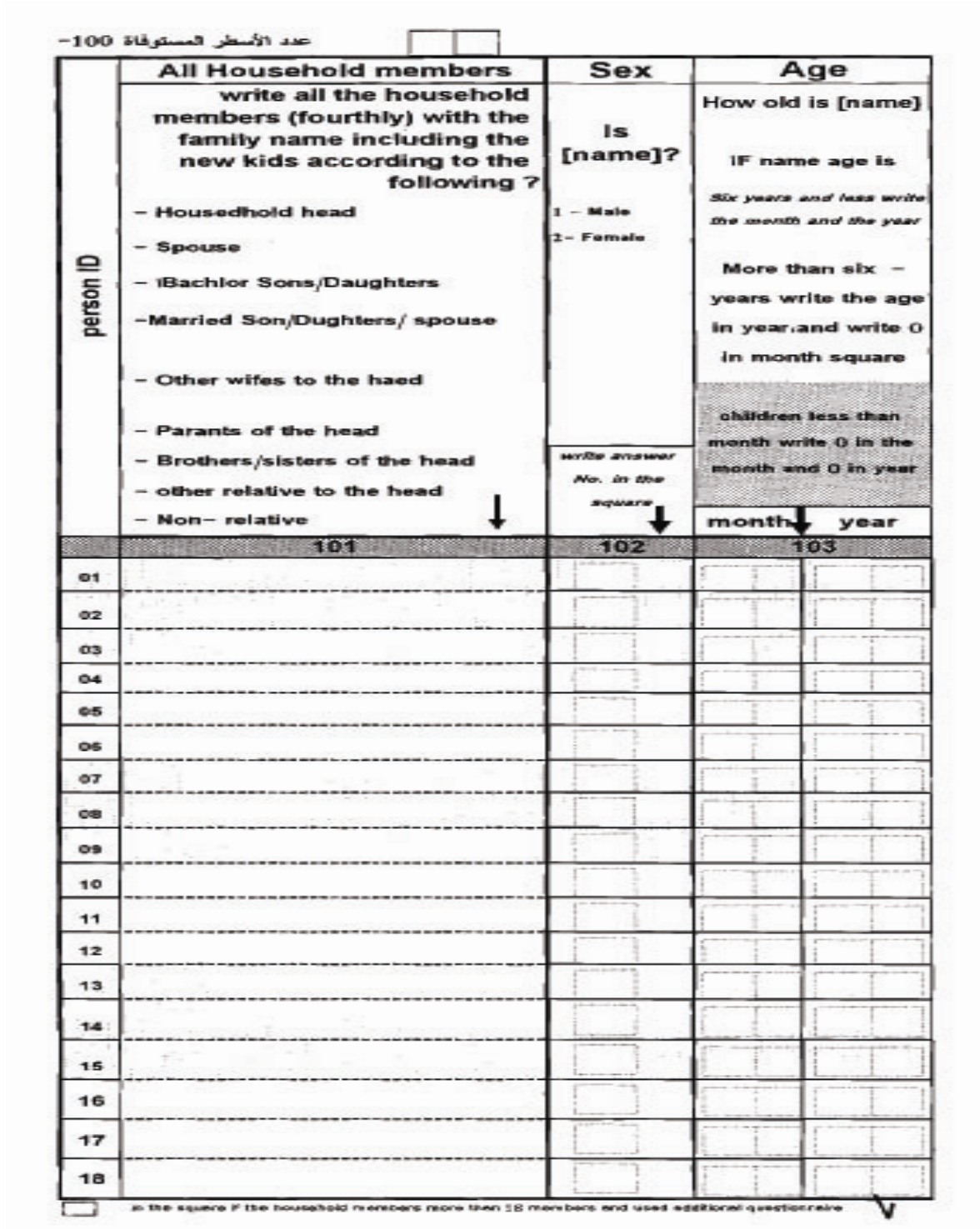
Stage	Job	name	No.	Date of first interview	Signature
Field work	Interviewer			D M Y	
	Team leader			D M Y	
	Supervisor			D M Y	

Stage	Job	name	No.	Date of completed office work	Signature
Code	Coder			D M Y	
	Team leader			D M Y	
Entered	Entering data			D M Y	
	Manually correct			D M Y	
	Entering the correction			D M Y	

QUESTIONNAIRE PAGE 2



QUESTIONNAIRE PAGE 3



-100 عدد الأسطر المستوفاة

person ID	All Household members write all the household members (fourthly) with the family name including the new kids according to the following ? – Housedhold head – Spouse – Bachlor Sons/Daughters –Married Son/Dughters/ spouse – Other wifes to the haed – Parants of the head – Brothers/sisters of the head – other relative to the head – Non– relative	Sex Is [name]? 1 – Male 2– Female write answer No. in the square	Age How old is [name] IF name age is Six years and less write the month and the year More than six – years write the age in year,and write 0 in month square children less than month write 0 in the month and 0 in year month	year
	101	102	103	
01				
02				
03				
04				
05				
06				
07				
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15				
16				
17				
18				

in the square if the household members more than 18 members and used additional questionnaire

QUESTIONNAIRE PAGE 4

Section one : Household roster

person ID	Birth date		Relationship	Nationality		Place of birth		
	What's [name]'s date of birth?		what's [name]relationship to the head of the household? (00–Head, 01 –Spouse, 02 – Son/daughter, 03 –Son/daughter in law, 04 – Grandchild, 05 –parents, 06 – parent in law, 07 –brother/sister, 08 – Grand father/ mother, 09 –other relative, 10 – non-relative)	what's [name]'s nationality?	was[name] born in this place	where is [name]was born?		
	If same age			put circle- around No. one (for yemenis	1- yes → write No.1 and move (to Q. [109	write the village or the city name where s/he was born	write the district name where/he <was born	in case the name]was] born in yemen write the governorate name , in case was born out side yemen write the country name
	(six years and less) write birth date is month and year) – More than six years write the year and write 0 in month – square			Non Yemeni – delete (1) and write nationality	2- no → Write No.2 and continue			
	Month	Year	in the square	Nationality	write answer No.	village/city	District	Governorate or country
	104		105	106	107	108		
01			zero	1				
02				1				
03				1				
04				1				
05				1				
06				1				
07				1				
08				1				
09				1				
10				1				
11				1				
12				1				
13				1				
14				1				
15				1				
16				1				
17				1				
18				1				

QUESTIONNAIRE PAGE 5

Section one: Household Roster

Person ID	only for household members aged 10 and above		All household members				
		Married only	mother ID	Father ID			
	1- Married 2- never 3- divorced 4-Widowed move to Q.111	spouse's id code Interviwer 1- if the [name has more than one wife write only the first one 2- if no spouse at home write No.98	Mother ID - if mother - is not a household member code 98 if mother - is dead code 99	Father ID - if father is - not a household member code 98 if father is - dead code 99	is the [name] has been away from this household during the past 12 months? 1 - yes continue 2- No (move to the second	write the reason ? 01- Study 02- work 03- medicine 04- visiting family 05- family problems 06- dilvery 07- palson 08- tourism 09-Accompnay patient 10- other	how many months during the past 12 months has[name] been away from this household for more than 12 - months don't complete in the other sections for less than one-month write 0 move to the second person
	Write the answer No.	*write the answer No.*	*write the answer No.*	*write the answer No.*	write the aswer No.	write the answer No.	
	109	110	111	112	113	114	115
01							
02							
03							
04							
05							
06							
07							
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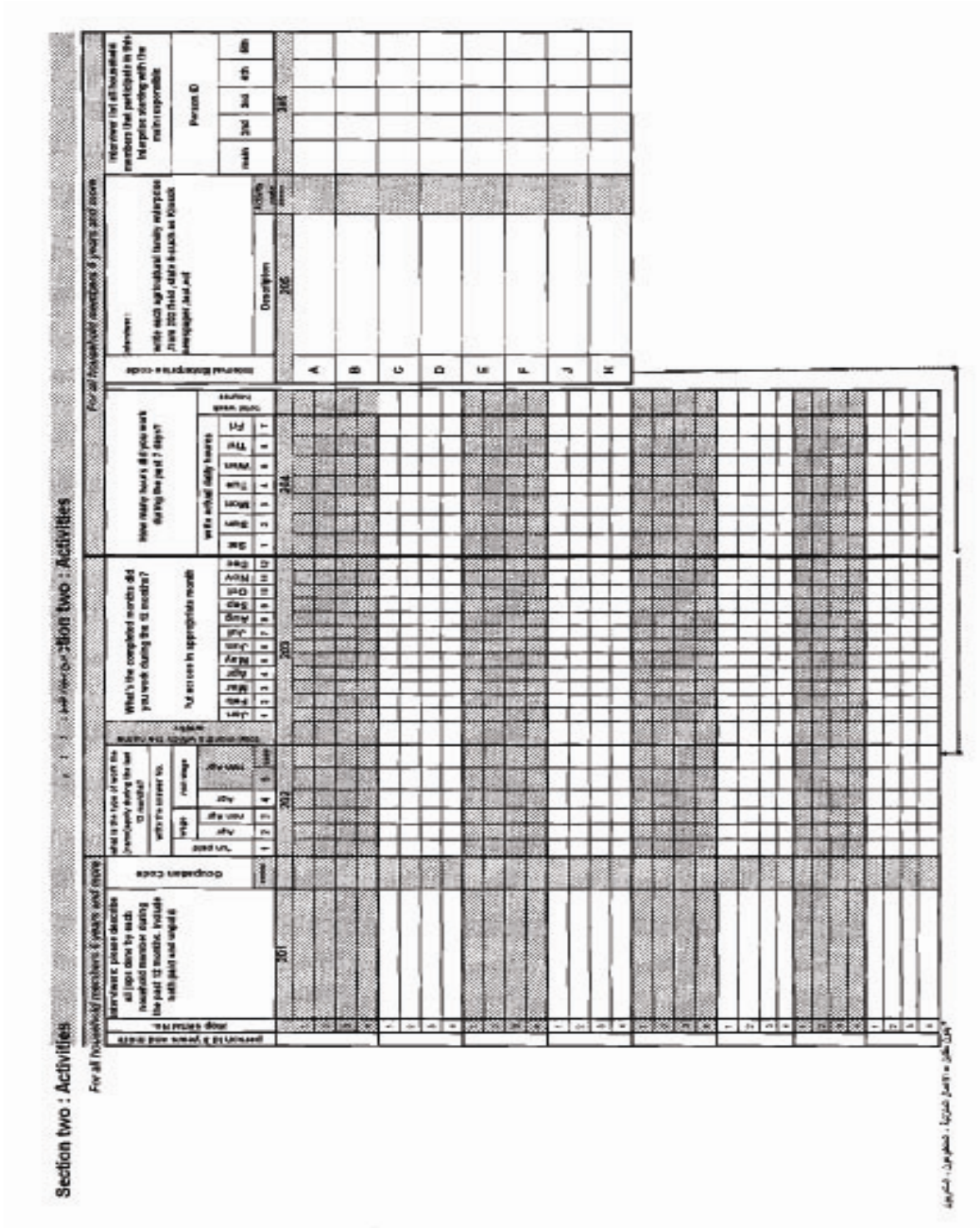
QUESTIONNAIRE PAGE 6



QUESTIONNAIRE PAGE 7

Section Three :Dwelling Conditions

تاريخ إستيفاء الفصل : /

	Question	Answer	
301	interviwer : What's the type of household?	1- House 2- Apartment 3- Villa 4- Habitable establishment 5- wood or iron clad shelter 6- Hut 7- Tent 8- other specify	Write answer .No
302	What's the main metrial used for external walls?	1-cut stone 2- regular stone 3-Cement block 4-sun dried brick 5-cooked bured brik 6- mud 7- Hay 8- Fabrics 9- other	Write answer No
303	What's the main matrial used for ceiling?	1- Reinforced concrete 2- wood and concrete 3- wood and mud 4- wood 5- metal sheets 6- Hay 7- mud and hay 8- metal sheets and mud 9- other	Write answer No
304	What's the main matrial used for floor?	1- concrete 2- floor tiles 3-mud/ soil 4- stone 5- Marable 6- otjer	Write answer No
305	What's the main source of water supply?	1-Public network 2- Cooperative network 3-Private network 4- water tap outside the house 5- on foot 6- Riding animals 7- Private car 8-water tank vecale 9- other	write the No. and move to Q (308) Continue

	Question	Answer	
306	What's the main source of water to HH?	1- ertesian well 2-normal well 3- Stream 4- Covered Tank 5-open tank 6- Dam 7- Traditional way in collecting the rain 8-other	Write answer No
307	which household members are responsible of fetching water? *interviwer : don't ask this quaestion in case they bring the water by taxi in Q.305* from outside household write (98)	persond bring water 1 rson ID 2 rson ID 3 son ID 4 rson ID 5 rson ID (rtside household	Times No.
308	How much time is spent by name collecting water for the household for one time?	write time with minutes	minute
309	is the water sufficient?	1-Yes write No. (1) and move to Q. (311) 2- No Continue	
310	How do you face shortage in water?	1- Purchase 2- other	Write answer No
311	Is the HH using Processed water?	1-Yes boilling 2-Yes Filter 3- Yes Cemical processing 4- Yes purches from the Market 5- No Never	Write answer No
312	Type of sewage disposal system?	1- Public network 2- Close pot 3- open pot 4- nothing 5- other	Write answer No
313	What's type of toilet you have?	1- Flushed toilet 2-Non flushed toilet 3-other used of facility 4 – no toilet (move to Q 315)	Write answer No
314	What's the	1- Private inside the HH 2- Private outside th HH 3- public outside the HH 4- no there is no bathroom	Write answer No

QUESTIONNAIRE PAGE 8

Section Three: Household Roster

	Question	Answer	
315	What's the main source of lighting?	1- Public network 2- Cooperative network 3- private network 4- house generator 5- Kerosene lantern 6-Gas lamp 7- Other (specify)	Write No. and continue write the No. & move to Q318 Write answer No.
316	How many days the electricity available during the month?	record day No.	day
317	how many days the electricity available in the day?	record houres No.	Houre
318	what's the Kitchen status?	1- Indoors private 2- Outdoors private 3- indoors & shared 4- Outdoors & shared 5- there is no kitchen	Write answer No.
319	what are the main sources used for cooking?	1- Wood 2- Coal 3- Gas 4- Kerosene 5- electricity 6- Garbage 7- Animals dung 8- other specify	Write answer No.
320	is the house or part of it , has any of the following enviorment? (More answers)	1- Cars odor and smoke 2-Smoke from cooking 3-Animals odor 4- Bad smile from Bathroom 5- Bad smile from garbage 6- smokes from factories 7- smile, smokes from other 8- bad airing 9-Humidity 10- The house near dull water 11- noise 12- nothing from this enviroment	put circle around the appropriate answer 1 2 3 4 5 6 7 8 9 10 11 12

	Question	Answer	
321	how you remove the garbage disposal?	Thrown out in the -1 (allocated spot(barrel Taken out to the -2 garbage collection car Thrown out in the -3 nearest sopt, stree	Write answer No.
322	How many rooms in the house exclude bathrooms and kitchens?	record rooms No.	
323	How many bedrooms are in the house?	record bedrooms No.	
324	What's the legal status of the dewlling?	1-Owned Continue next section ated bwment move to Q.328 ccupied free ther specify	Write answer No.
325	Could you sell this dwelling if you wanted to?	1- Yes 2- No	
326	IF you sold this dwelling today,how much you receive for it?	Riyals	
327	What's the monthly rent expected to receive it in case you let this dwelling to another person?	Riyals Next Section	
328	How much you will pay if you haired similer house?	Riyals	

QUESTIONNAIRE PAGE 9

Section Four: A Health(Diseases and illnesses)

تاريخ إستيفاء الفصل :

401- Is there any of the household members suffer from a disability or chronic illness 1- Yes Continue

2-No- Move to Que.(407)

person ID	what type of illness or accident ?did name suffer from Disabilities 01-Blindness 02- Hearing Difficulty 03- Speaking difficulty 04- Deaf/ dumb 05-Hemiplegia 06- Paralyzation 07- Catching& moving difficulty 08- mental retardation 09- many disabilities 10- other (specify) Chronic Illnesses: 01- diabetes 02- Hypertension 03-Arthritis 04- Cancer 05-TB 06- Leprosy 07-Heart Diseases 08-Respiratory infection 09- Gastric ulcer 10- kidney diseases 11- Anaemia 12- other specify	How did name become disabled or chronically ill 1- Born like this (move to Que 406) 2- At work 3- land mine 4- other accident 5- work related 6- illness reason 7- more than one illness 8-other Specify *if more than one disability or ,chronic illness refer to the most serious one*	when did name become disabled or chronically ill Write the YEAR	Is name receiving help for this illness/disability in any of these ways 1- Cash transfer from the welfare fund 2- Support from the disability fund 3-Education/vocational training through an NGO 4- Educational /vocational training through a Gov. programm 5- Free provision of health services,medicines or equipment through an NGO 6-Free provision of health services,medicines or equipment through Gov.Programm 7- didn't get any help/support
	Code 402	code illnesses 403	write the answer 404	Year 405	put circle around the suitable answer 406
01					1 2 3 4 5 6 7
02					1 2 3 4 5 6 7
03					1 2 3 4 5 6 7
04					1 2 3 4 5 6 7
05					1 2 3 4 5 6 7
06					1 2 3 4 5 6 7
07					1 2 3 4 5 6 7
08					1 2 3 4 5 6 7
09					1 2 3 4 5 6 7
					1 2 3 4 5 6 7
11					1 2 3 4 5 6 7
12					1 2 3 4 5 6 7
13					1 2 3 4 5 6 7
14					1 2 3 4 5 6 7
15					1 2 3 4 5 6 7
16					1 2 3 4 5 6 7
17					1 2 3 4 5 6 7
18					1 2 3 4 5 6 7

QUESTIONNAIRE PAGE 10

Section Four:B Health(Accidents and Diseases)

for all household members

person ID	was name suffered from an accident or illness during the past month(don't include chronic illnesses or disabilities) 1 - yes continue 2 - No (move to Que. 415)	what type of illness or accident did name suffer during the last month illnesses: 1 - Malaria/ Fever; 2 - Diarrhea; 3 - Skin disease/rash; 4 - Eye disease; 5 - Nose,ear and throat diseases; 6 - Rheumatism and bones diseases; 7 - teath disease; 8 - other Specify accidents: 1-Wounds/cuts; 2- Burns; 3- Fractures; 4-Intoxication; 5- other specify write the approprite answer (in case many diseases and accidents write first the most dangrous, if the answer is other write disease and (accident name		Did name receive medical care because of this illness or accident 1 - Yes write No.1 and continue 2 - No write No.2 and move to Q 414	where did name receive medical care? 01-Public health center; 02- Private clinic; 03- Public hospital; 04- Private hospital; 05- Pharmacy; 06- Private doctor consultation certified health professional; 08- traditional medicine; 09- other; 10- out of yemen → move to Que. 413	
		illnesses	accidents		code	write the establishment name
	407	408	409	410	411	
01						
02						
03						
04						
05						
06						
07						
08						
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QUESTIONNAIRE PAGE 11

Section Four:B: Health (illness and accidents)

person ID	*for all household members*						*members 10 years and more*			
	where is this health facility? 1- same area of residanec 2-same distric distriot within same Gove. 4- In another Governorate	how much was spent in total for this accident/illness during the past month? write the cost and move to Q.415				why(name)didn't receive medical care for this illness or accident? 1- cannot affored it 2- Travel is too difficult 3-No female doctor/nurse available no male doctor nurse available 5-Services not available 6- illness was minor 7- bad services 8- social reasons 9- other specify	Does name smoke? 1 - Yes 2 - No	Does name chew qat? 1 - Yes continue 2 - No move to Q.418	how many days does name chew 1-Daily 2- three days a week 3- two days a week 4-once in the week 5-once month 6- in events	Has the name been exposed to chemical fertilizer or pesticides during the past 12 months either in or out of the house? 1 - Yes 2 - No
		Transportation cost to the health facility	medicineine s cost	Medical fees	Total					
	Write the answer No.	Riyals	Riyals	Riyals	Riyals	write the answer No.	Write the answer	Write the answer No.	Write the answer No.	Write the answer No.
	412	413				414	415	416	417	418
01										
02										
03										
04										
05										
06										
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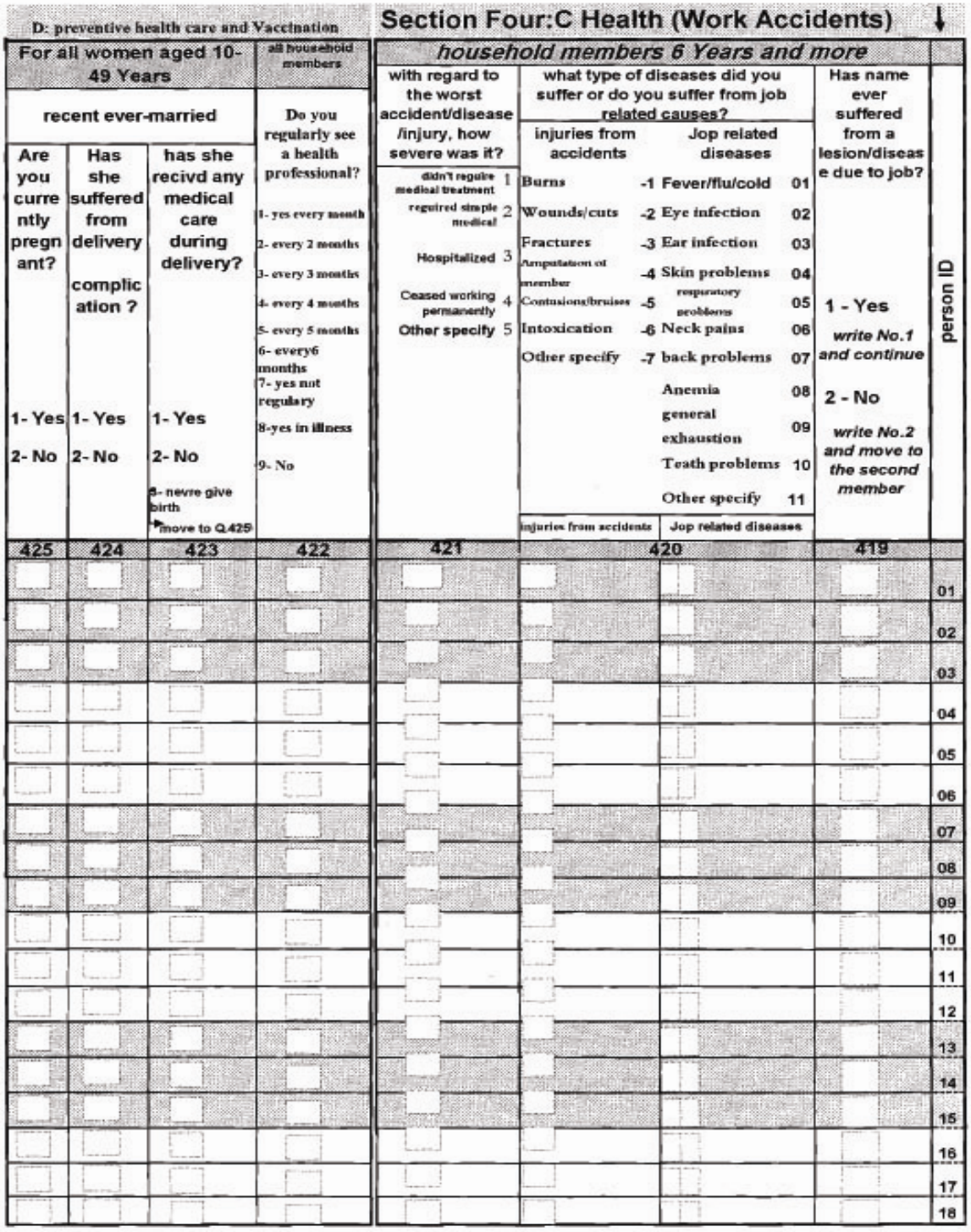
18										

QUESTIONNAIRE PAGE 12



D: preventive health care and Vaccination

Section Four:C Health (Work Accidents)

For all women aged 10-49 Years			all household members	household members 6 Years and more				
recent ever-married				with regard to the worst accident/disease /injury, how severe was it?	what type of diseases did you suffer or do you suffer from job related causes?		Has name ever suffered from a lesion/disease due to job?	person ID
Are you currently pregnant?	Has she suffered from delivery complication ?	has she recivd any medical care during delivery?	Do you regularly see a health professional?		injuries from accidents	Jop related diseases		
1- Yes 2- No	1- Yes 2- No	1- Yes 2- No 3- nevre give birth → move to Q.425	1- yes every month 2- every 2 months 3- every 3 months 4- every 4 months 5- every 5 months 6- every6 months 7- yes not regulary 8-yes in illness 9- No	didn't require medical treatment 1 required simple medical 2 Hospitalized 3 Ceased working permanently 4 Other specify 5	Burns -1 Wounds/cuts -2 Fractures -3 Amputation of member Contusions/bruises -5 Intoxication -6 Other specify -7	Fever/flu/cold 01 Eye infection 02 Ear infection 03 Skin problems 04 respiratory problems 05 Neck pains 06 back problems 07 Anemia 08 general exhaustion 09 Teath problems 10 Other specify 11	1 - Yes *write No.1 and continue* 2 - No *write No.2 and move to the second member*	
425	424	423	422	421	420		419	
								01
								02
								03
								04
								05
								06
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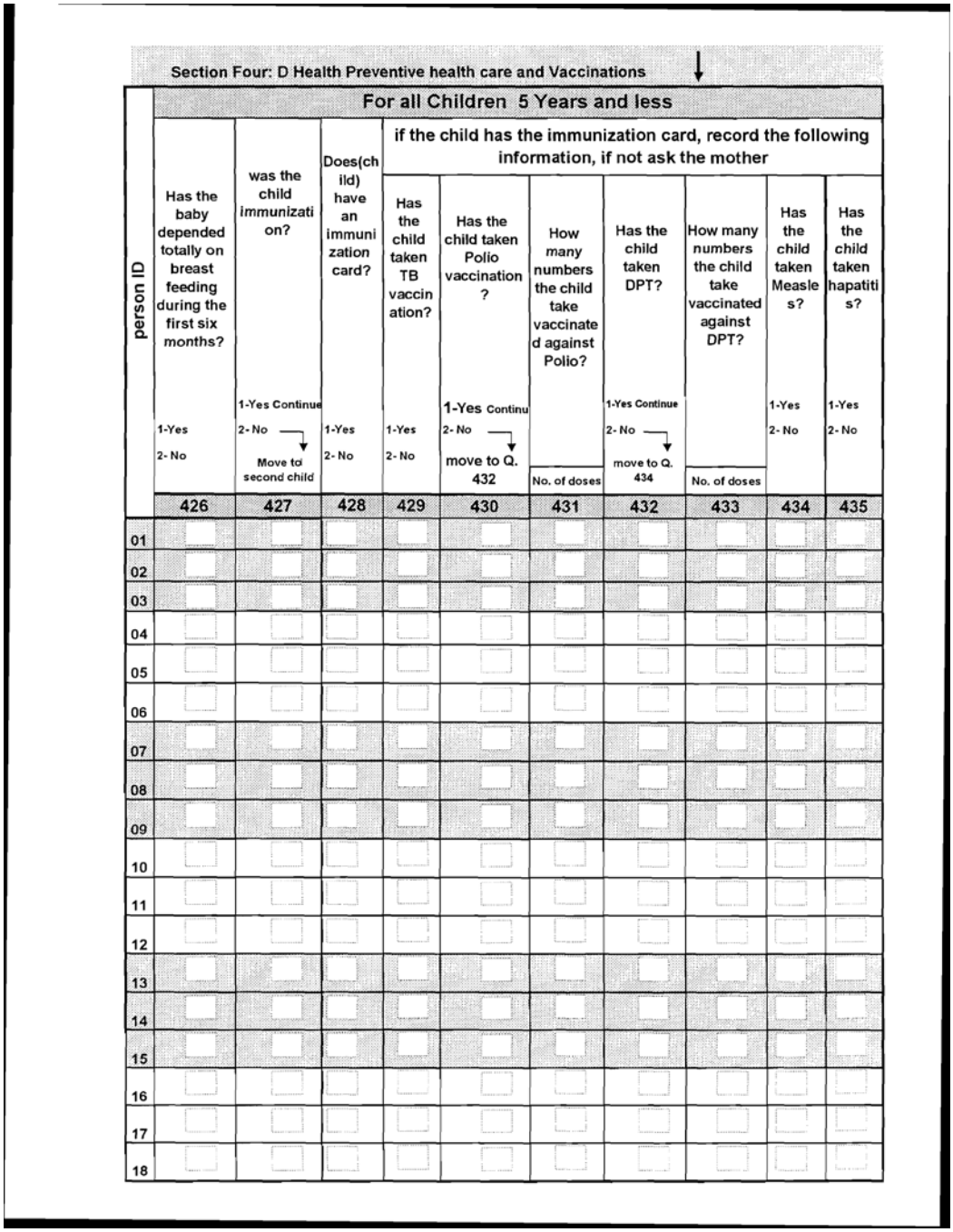
								18

QUESTIONNAIRE PAGE 13



Section Four: D Health Preventive health care and Vaccinations

person ID	For all Children 5 Years and less									
	Has the baby depended totally on breast feeding during the first six months?	was the child immunization?	Does(child) have an immunization card?	if the child has the immunization card, record the following information, if not ask the mother						
				Has the child taken TB vaccination?	Has the child taken Polio vaccination?	How many numbers the child take vaccinated against Polio?	Has the child taken DPT?	How many numbers the child take vaccinated against DPT?	Has the child taken Measles?	Has the child taken hapatitis?
	1-Yes 2- No	1-Yes Continue 2- No → Move to second child	1-Yes 2- No	1-Yes 2- No	1-Yes Continu 2- No → move to Q. 432	No. of doses	1-Yes Continue 2- No → move to Q. 434	No. of doses	1-Yes 2- No	1-Yes 2- No
	426	427	428	429	430	431	432	433	434	435
01										
02										
03										
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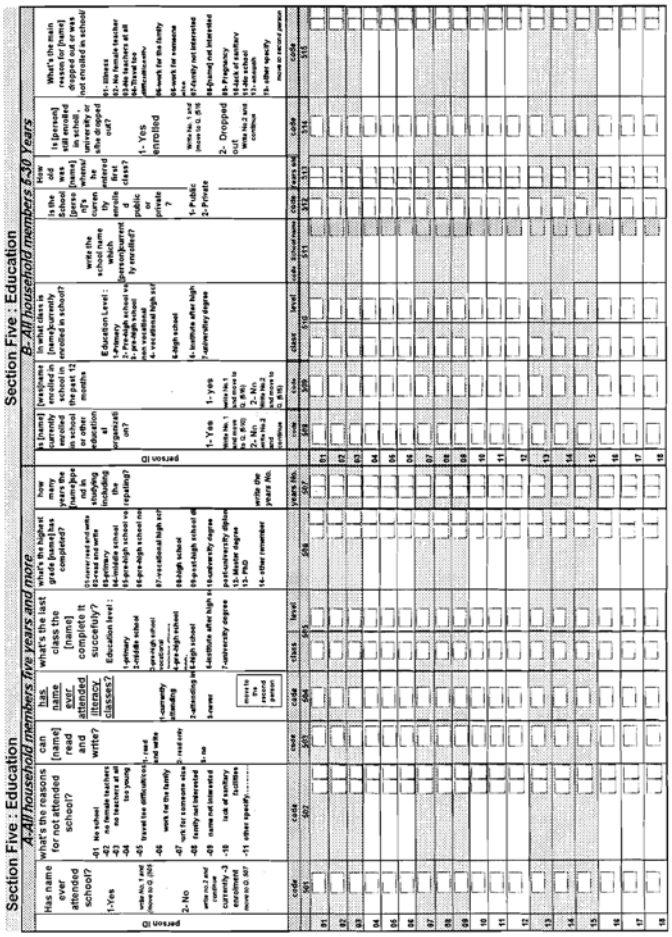
QUESTIONNAIRE PAGE 14



Section Five : Education

A-All household members five years and more

B- All household members 6-30 Years

	Has name ever attended school? 1-Yes / 2-No	what's the reasons for not attended school?	can [name] read and write?	has name ever attended literacy classes?	what's the last class the [name] completed it succefuly?	what's the highest grade he has completed?	how many years the [name]has not in schooling including the repeating?	Is [name] enrolled in school in the past 12 months	In what class is [name]now enrolled in school?	write the school name which [person]enrolled by enrolled?	Is the school [person] enrolled by public or private?	How old was [name] when he entered first class?	Is [person] still enrolled in school, university or she dropped out?	What's the main reason for [name] dropped out or was not enrolled in school
Person ID	code	code	code	code	class level	code	years No.	code	class level	code	code	years old	code	code
	501	502	504	505	506	507	508	509	510	511	512	513	514	515
01														
02														
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QUESTIONNAIRE PAGE 15

Section five: Education

B - For all household members 5 -30 Years

person ID	Did [name] receive a scholarship and/or financial assistance from out of the household during the pats 12 months? 1-Yes 2- No ▼ move to Q.	How much did name receive in total for scholarship abd or/ financial assistance from out of the household during the past 12 months	what's the total value of all benefits(name) has received in cash or in kind at school during the past such as school feeding benefits or food transfer conditonal	How much did this household spend in the past 12 months on [name]'s education?							
				School fees	Uniform school	sport clothes	Books and school supplies	Food,board and lodging	Transport	Others	Total
	code	Riyals	Riyals	1	2	3	4	5	6	7	8
	516	517	518	519							
01											
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QUESTIONNAIRE PAGE 16

Section six : Anthropometrics

For all children 6 years and less

Person ID	interviwer : was [name] measured? 1 Yes — *write No. one and move to Q. 603* 2 No — *write No. (2) and continue*	Why [name]was not measured ? -1 not at home -2 Sick -3 other — *move to the second child*	Write date of measurment			write hight measured	was this hight measured standing up or lying down 1 up 2 wn	weight measured
	code	code	day	month	year	Centimeters	code	Kilograms
	601	602	603			604	605	606
01								
02								
03								
04								
05								
06								
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17								
18								

QUESTIONNAIRE PAGE 17

Section Seven: wage earnings

تاريخ إستيفاء الفصل : / / م

for all jobs with fees(agriculture and non-agriculture written in section 2 Q.202 state (2,3)

Interviewer: *Copy the person ID code and the job serial number from section two (activities) state(2,3) field (202)*		Economic Activity Write in detail, the economic activity practiced by name		**Ownership** Who did you work for? 01 - Goverment 02 - Government/public 03 - Join Sector 04 - Cooperative 05 - Private Sec. local 06 - Private Sec.Forgin 07 - Private Sec. Cooperative 08 - endowment 09 - NGO 10 - Charity organization	Is this jop a temporary job funded by the one of the instituations of the social Security network? 1- Yes *write No. 1 and continue* 2- NO *write No.2 and move to Q. (706)*
Person id code	Job serial No. from field 201	*Activity*	*Activity code*	*write answer No.*	*Write answer No.*
701				703	704

QUESTIONNAIRE PAGE 18

Section Seven: wage earnings

for all jobs with fees(agriculture and non-agriculture written in section 2 Q.202 state (2,3)

Persdon ID	Throuh which program was this temporary job funded? 1- Public work project 2- Social fund for development project 3- Southern Governoratees Dev. Program 4- Agric. and fisheries production promotion fund 5- Social Welfare fund 6- pension fund 7- other international or local Dev. Programs *Interviwer : Read all the works names*	How many houres do you usually work per week?	Since when have you worked for this employer		How do you get this job 1- Through Civil Services off 2- Through labour office 3- Through Employee(privat Business) 4- Asked employers 5- Through friends 6- Job transfer 7-other specify	what period did you get your salerv 1-daily 2-weekly 3-half month 4-monthly
	code write answer	Houre / week	Months No	Years No.	code write answer	code
	705	706	707		708	709

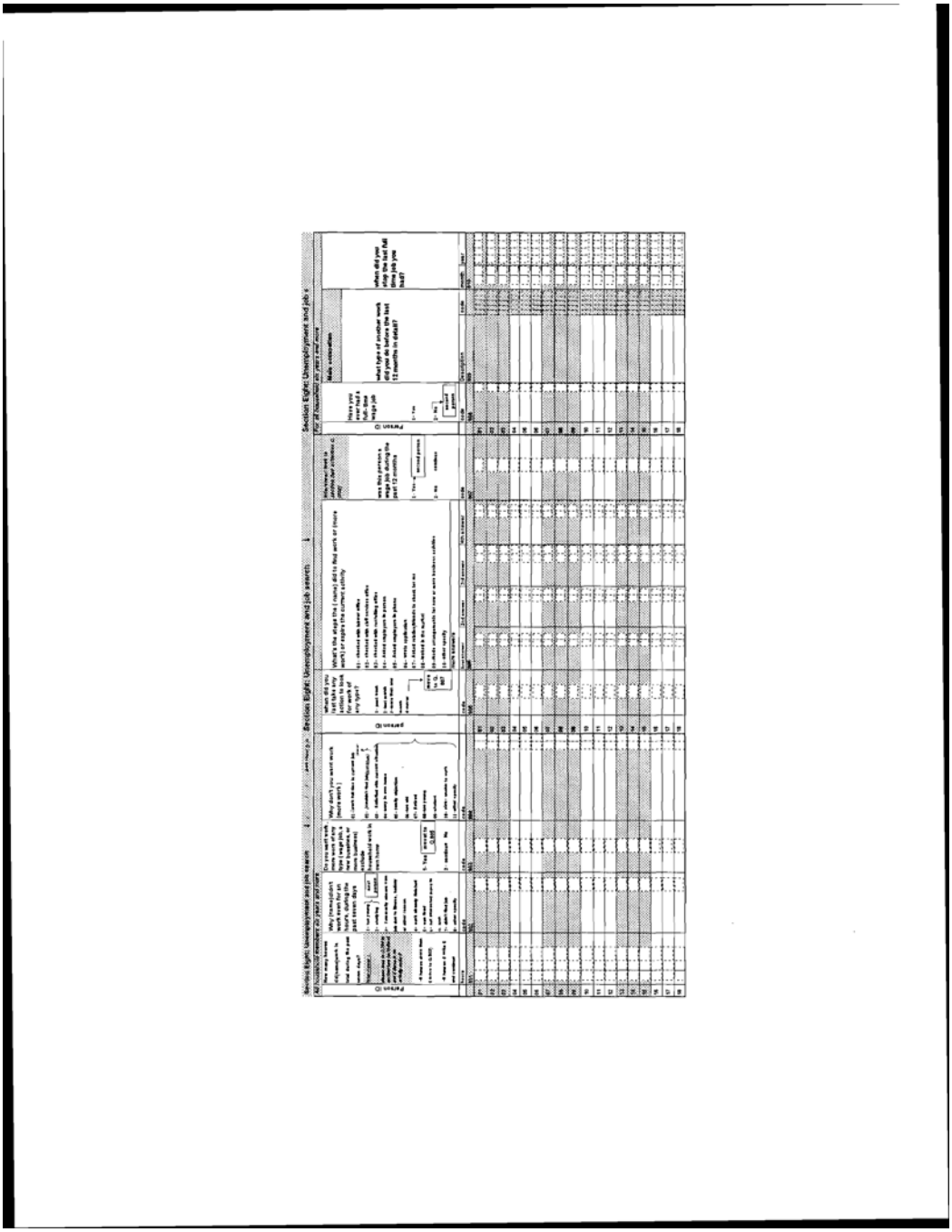
QUESTIONNAIRE PAGE 19

(section seven . Wage earnings

'for all jobs with fees(agriculture and non-agriculture written in section 2 Q.202 state (2,3)

person ID	Does this job provide you any of the following benefts			How much your last pay?	What's the usual amount you get?	total additional fees either in cash or in-kind
	Health care coverage 1- yes 2- no	Pension? 1- yes 2- no	Paid leave? 1- yes 2- no	(net of tax and any other deducation)	net tax only	(house,clothes,food)
	code	code	code	Riyals	Riyals	Riyals
	710			711	712	713

QUESTIONNAIRE PAGE 20



QUESTIONNAIRE PAGE 21

Section Nine: Agriculture and fishing activities

A- Ariculture Activities

تاريخ إستيفاء الفصل : / / م

901 Does the houshold or any memebre own or manage plots of land

1- Write No. 1 and continue Yes ☐

2 -Write No. 2 and move to Q. 918 No

902 - put circle around the measuring units used for measuring the land in place you work on.

1 -Lebna	6 -habl	11 - Madrh	16 - A step	21 - Donam
2 -A cane	7 -Mad	12 - Salog	17 - Sahb	22 - Ba square
3 -Hablh	8 -Madirh	13 - Worked day	18 - An arm	23 - Alsrh
4 -Shaklh	9 -An acre	14 - Plowed day	19 -M2	24 - Aldih
5 -Damd	10 -Ahectare	15 - blames day	20 - Hosal	25 - Darbh

903 -!Write the total area of the plot ☐☐☐☐☐

What's the type of ownership?		Who in the household owns the plot?	if you are interset to buy land similar to what you have what's the amount you expected?	How many cultivated seasons during the past 12 months?	What's the cultivited area of this holding during the past 12 months?	what's the main source of irrigation water for this plot?
Ownership	Total Area write the area if the eare 0 move to the second state	write ID person owner for the holding and if there is more than one owner for the same holding write in Person ID No. (90)				1 Rain 2 Streams 3 Wells 4 plugging 5 other specif
Put circel around the appropriate Answer		Person ID	Riyal		Area	
904	905	906	907	908	909	910
1- HH owners						
2- hired from other						
3- hired to other						
4- cooperative from other						
5- cooperative to other						
6- endowment						
7- countery owners						
8- other						

QUESTIONNAIRE PAGE 22

Section Nine:Agriculture and Fishing Activities

A- Agriclture Activities

	Crop /produce name	did the household or member produce any of the following during the past 12 months? yes continue the other questions	No move to the other crop	How much did you produce 1-Kg 2-Lt. 3-No. 4- Koha 5- other specify: Quantity	Unit	How much did you sell or expect to sell? Quantity	price per units specilized in Q. (912) price: Riyals / Unit	write the total sales? Riyals
		put circle around the appropriate answer	911		912	913	914	915
A	grainsε	1	2					
B	fruits	1	2					
C	vegetables	1	2					
D	saseme	1	2					
E	cotton	1	2					
F	coffee bean	1	2					
G	tabacco	1	2					
H	Qat	1	2					
I	Animal feed	1	2					
J	Legume	1	2					
K	other crop							
L		1	2					
M		1	2					
N		1	2					
O	eggs	1	2					
P	milk	1	2					
Q	honey	1	2					
R	Local Ghee	1	2					
S		1	2					
T		1	2					
U		1	2					
							total	

916 did you hire non-household members in aqriculture activities during the past 12 months? -1 ☐ No -2 (move to Q (918))

917 how many hire non-household members? Male ☐ Female ☐

QUESTIONNAIRE PAGE 23

Section Nine: Agriculture and fishing activities

B - Animals Activities

918 IS the HH or any members husbandry the tamed animals? ؟

1-Write No. (1) and continue Yes ☐

2 - write No.(2) and move to Q. 922 No

919 How many of theseanimals did the HH own during the past 12 months :

item	No.	item	No.	item	No.
1- Camels		4- Chicken		8- Pigeon	
2- Cows		5- Bee-hives		9- Rabbit	
3- iSheep&Goats		6- Donkeys		10- Other	
		7- Horses			

920 Did the HH sell any animals during the last 12 months?

1- Continue Yes

2 - Move to Q. 922 No ☐

921 How much did your HH receive from sales of animals during the past 12 months?

Riyals

Interviwer:Look to Q. 901,918 if you finf the answer in one of the Q.or both of them (Yes) continue otherwise move to Q.924

922 Did any agricultural extension officers provide you with technical advice during the past 12 months?

1-Yes

2 - No ☐

923 How much did you spend on the following during the past 12 months?

Service/commodity	Riyals	Service/commodity	Riyals
1- fertiliser		13- Fuel	
2- Pesticides		14- Irrigation (water)	
3- Seeds		15- Storage	
4- Bags and tarpaulins		16- Improvenments on land or buildings	
5- Farm tools		17- repair and maintenance of equipment	
6- Fuel (drying crops)		18-Fooder	
7-Tractor hire		19- Veterinary	
8- Hire of irrigation equipment		20- Repayment of loans	
9- Cartage and freight		21-other specify ☐	
10- Agricultureal loan repayment		22- other specify ☐	
11- Seeds and young plants		23- other specify ☐	
12- workers fees		23- other specify	

QUESTIONNAIRE PAGE 24

Section Nine: Agriculture and Fishing Activities

C - Fishing Activities

924	Is any of the HH members works in fishing during the last 12 months?	1 - Continue Yes 2 - move to the second section No
925	Owner of the boat you work on?	1- Owned 2- Rented 3- work for a daily rate → make sure that s/he data apears in section 7 and move to the next section
926	What kind of technologies do you use for fishing?	1- Traditional 2- Modern
927	Does the boat you work on allow for overnight fishing?	1 - Yes 2 - No
928	Does the boat have storage facility?	1 - Yes 2 - No move to Q. (931)
929	What is the total storage capacity of the boat(KG)?	
930	Do you use any referigeration facilities?	1 - Yes 2 - No

931 How much did you spend on the following items during the past 12 months?

Item	Amount spent	Item	Amount spent
1- Worker fees(cash& in-kind)		6- Transportiation of fish to market	
2- Ice		7- Services(technical assistance)	
3-Repair and maintenance of nets and traps		8- other	
4- Boat Fuel and repair and maintenance of boat		9- Total	
5- Boat rent (cash)			

932 -How much did you receive under the following item during the past 12 months

Item	Amount spent	Item	Amount spent
1- Proceeds from sale of fish		5-Value of fish sauce	
2- Value of fish,shrimp consumed in household		6- Value of fish used for animal feed	
3- Value of fish given away as gift, charity,barter		7- Value of fish used for other	
4- Value of fish used for drying		8- Total	

QUESTIONNAIRE PAGE 25

Section ten: Private Business Activities

تاريخ إستيفاء الفصل : / / ٢٠

do not include agriculture and Fishing activities already recorded in section 9

1001 production cost during the past 12 months

Write activity code officialy (From section Two Q. 205) *

No.	item	Activity code	Activity (A) Riyal	Activity code	Activity(B) Riyal	Activity code	Activity (C) Riyal	Activity code	Activity (D) Riyal
1	Raw materials								
2	Commidity bought for sale								
3	water								
4	electricity								
5	fuel and oil								
6	packaging meterial								
7	telegram/mail/telephone								
8	rent/maintenance and equipment repairs								
9	rent of facilities								
10	transportiation								
11	facilities repairs and maintenance								
12	interest paid								
13	employees cash pay								
14	employees in kind pay								
15	direct tax								
16	other expenses								
	Total								

1002 production revennue during the past 12 months

No.	item	Activity (A) Riyal	Activity(B) Riyal	Activity (C) Riyal	Activity (D) Riyal
	in case of goods				
17	resale of goods				
18	private consumption of produced goods				
	in case of services				
19	cash earning on services				
20	private consumption of produced services				
	Total				

work force during the past 12 months' 1003

21- number of paid employees	1- owners				
	2- family members				
	3- other				
22- number of non-paid employees	1- owners				
	2- family members				
	3- other				
23- seasonal employees	1- employees No.				
	2- days No.				
24- What's % of this property is owned by HH from this activity					

* Activities and works from section Two

QUESTIONNAIRE PAGE 26

Section Eleven: other income during the past 12 months

write 0 if nothing income تاريخ إستيفاء الفصل : م / /

1101 -		person ID	Person ID	Person ID	person ID
No.	Item	Cash & in-kind income	Cash & in-kind income	Cash & in-kind income	Cash & in-kind income
		Amount in Riyals	Amount in Riyals	Amount in Riyals	Amount in Riyals
1	Retirement payment(pension)				
2	cash assistance from Social security Fund				
3	cash assistance from Social Welfare Fund				
4	Income cash assistance from general authoruity for the care Martiyr familys				
5	Assistnce from the fund of prmotion of Agric. And fishing productions				
6	Assistance from international and local programs				
7	In-kind support from the medicine fund for the Disabled or Chronically				
8	cash assistance from Tribes authority affires				
9	cash and in-kind assistance from carity organization				
10	Remittances from relatives or other outside the pepublic				
11	Remittances from relatives or other outside the pepublic				
12	Bank interest				
13	Income from sharing private business owners				
14	Income from equipments and transportiation and animals rent				
15	Sales of stocks				
16	Selling own farm land				
17	Sales of own transportiation vehicle				
18	Sales of Gold				
19	sales other things(Janbih,...etc)				
20	Sales of household appliances				
21	land rental				
22	Rented of buildings				
23	income fromcultivited area rent				
24	income from the return from bonds				
25	Income cash from dowry				
26	Income cash from inheritance				
27	other specify				
28	other specify				
29	other specify				
30	Total				

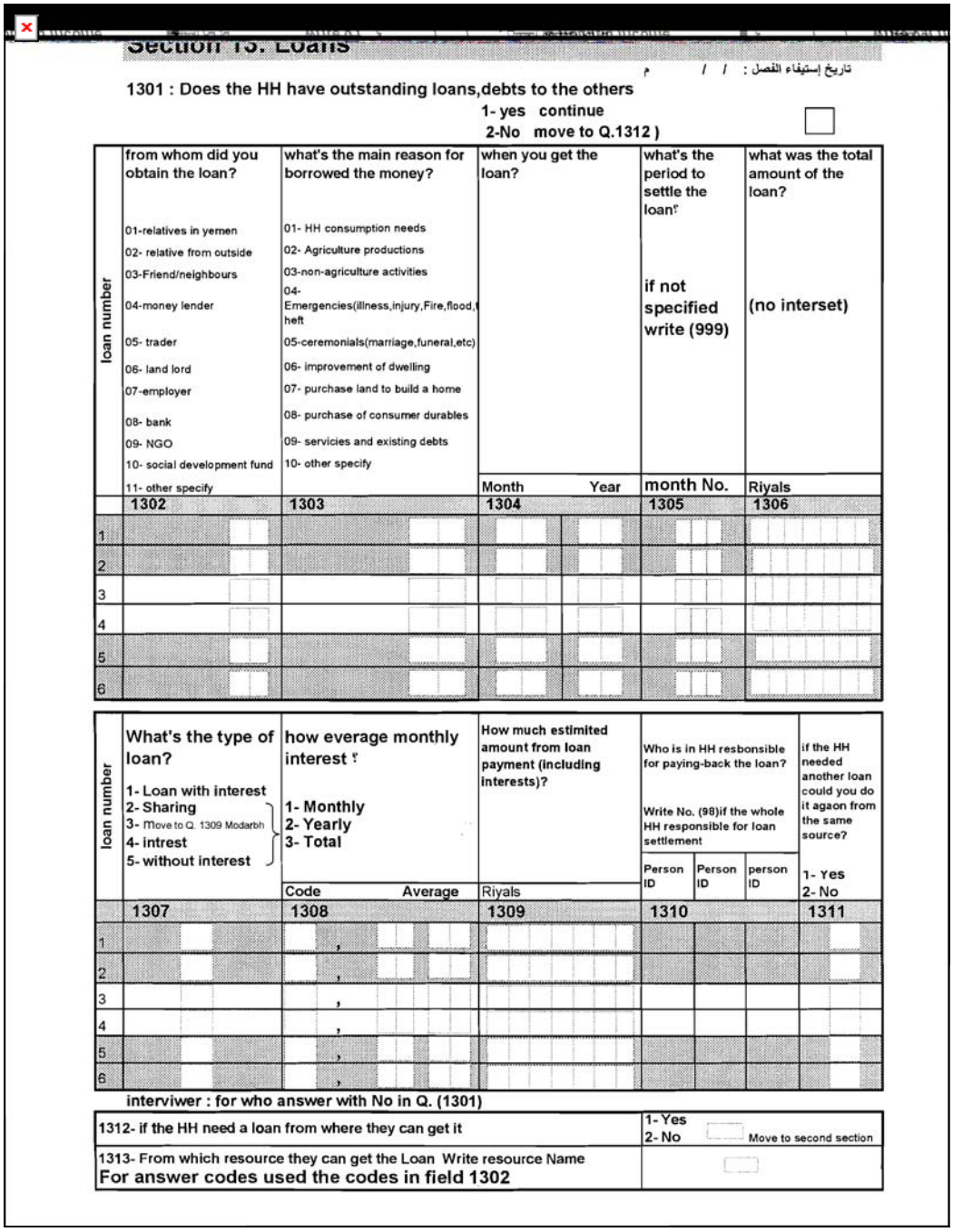
* Interviwer : complet this section to all household members .

Section 12: Inventory of durable goods

تاريخ إستيفاء الفصل : / / م

does this household or any of it's members own any of the following items *Put circle around the commidty and the number*			IF this commodity presented for sale what's the expected amount?
No.	Description	Number	Payment (Riyal)
1201			1202
1	private car		
2	Taxi		
3	Autobus		
4	Consh/wagon		
5	small truck		
6	Truck		
7	bicycle		
8	motor bike		
9	Gas stove		
10	Mixer		
11	Refrigerator		
12	washing machine		
13	Iron		
14	Electrical water worm		
15	sun water worm		
16	Radio/cassette recorder		
17	color TV		
18	black/white TV		
19	Video		
20	Satellite Dish		
21	telephone		
22	mobile telephone		
23	Sewing machine		
24	Power generator		
25	electrical fan		
26	airconditioner		
27	personal computer		
28	motor boat		
29	row boat and sail boat		
30	Other Specify		
31	Other Specift		
32	Other Specify		
		Total	

QUESTIONNAIRE PAGE 28



Section 13: Loans

تاريخ إستيفاء الفصل : / / م

1301 : Does the HH have outstanding loans,debts to the others

1- yes continue
2-No move to Q.1312)

loan number	from whom did you obtain the loan?	what's the main reason for borrowed the money?	when you get the loan?		what's the period to settle the loan?	what was the total amount of the loan?
	01-relatives in yemen 02- relative from outside 03-Friend/neighbours 04-money lender 05- trader 06- land lord 07-employer 08- bank 09- NGO 10- social development fund 11- other specify	01- HH consumption needs 02- Agriculture productions 03-non-agriculture activities 04-Emergencies(illness,injury,Fire,flood,theft 05-ceremonials(marriage,funeral,etc) 06- improvement of dwelling 07- purchase land to build a home 08- purchase of consumer durables 09- servicies and existing debts 10- other specify	Month	Year	if not specified write (999) month No.	(no interset) Riyals
	1302	1303	1304		1305	1306
1						
2						
3						
4						
5						
6						

loan number	What's the type of loan? 1- Loan with interest 2- Sharing 3- Move to Q. 1309 Modarbh 4- intrest 5- without interest	how everage monthly interest ? 1- Monthly 2- Yearly 3- Total		How much estimited amount from loan payment (including interests)?	Who is in HH resbonsible for paying-back the loan? Write No. (98)if the whole HH responsible for loan settlement			if the HH needed another loan could you do it agaon from the same source?
		Code	Average	Riyals	Person ID	Person ID	person ID	1- Yes 2- No
	1307	1308		1309	1310			1311
1			,					
2			,					
3			,					
4			,					
5			,					
6			,					

interviwer : for who answer with No in Q. (1301)

1312- if the HH need a loan from where they can get it	1- Yes 2- No Move to second section
1313- From which resource they can get the Loan Write resource Name For answer codes used the codes in field 1302	

QUESTIONNAIRE PAGE 29

'Weekly consumption of food and other freuenty purchased commodities

Fourth week (days 22 - 28)

	Item	Bought from the market		Measuring Unit	Consumer		
		Amount Rials	Quantity		Bought from the market Quantity	self-consumption Quantity	Gift Quantity
0100	**Grains & Derivatives :**						
0101	Wheat(local)			Kg.			
0102	Wheat(imported)			Kg.			
0103	Barly			Kg.			
0104	Corn (Roman)			Kg.			
0105	Corn(thin)			Kg.			
0106	Millet			Kg.			
0107	Sorghum			Kg.			
0108	other grains			Kg.			
0109	Basmati Rice			Kg.			
0110	American Rice			Kg.			
0111	other varieties of rice			Kg.			
0112	Flour			Kg.			
0113	Bread			Riyal			
0114	Grind charges			Riyal			
0115	Macaroni			Kg.			
0116	Vermicalli			Kg.			
0117	Biscuits			Riyal			
0118	Other			Riyal			
0199	Total						
0200	**Dried& Preserved legume:**						
0201	Fenugreek			Kg.			
0202	dired Beans			Kg.			
0203	dired Beans(local)			Kg.			
0204	Dired Beans(imported)			Kg.			
0205	Lentils/crushed Lentils			Kg.			
0206	Beans(cans)			Kg.			
0207	European Beans(cans)			Kg.			
0208	Pees(cans)			Kg.			
0209	other Legume(Dired& canned)			Riyal			
0299	Total						
0300	**Fresh and preserved vegtables:**						
0301	Tomatoes			Kg.			
0302	Potatoes			Kg.			
0303	Onions			Kg.			
0304	green onions			Kg.			
0305	Dried Garlic			Kg.			
0306	Green Garlic			Kg.			
0307	Okra			Kg.			
0308	Green Beans			Kg.			
0309	Squash/pumbkin			Kg.			
0310	Eggplant			Kg.			
0311	Mallow/spinach			No.			
0312	leek/salad/watercress			Riyal			
0313	Cabbage/cauliflower			Riyal			
0314	Carrot			Kg.			
0315	cucumber			Kg.			
0316	papper			Kg.			
0317	Hot green papper			Kg.			
0318	Mint/Coriander/parsley			Riyal			
0319	Tomato Paste			Kg.			
0320	other fresh, dired or canned vegtables excluding (legumes)			Riyal			
0399	Total						

QUESTIONNAIRE PAGE 30

I'Weekly consumption of food and other freuenty purchased commodities

Fourth week (Days 22 - 28)

	Item	Bought from the market		Measuring Unit	Consumer		
		Amount Rials	Quantity		bought from the market Quantity	self-consumption Quantity	Gift Quantity
0400	**Fresh and preserved Fruits:**						
0401	Bananas			Kg.			
0402	grapes			Kg.			
0403	Oranges			Kg.			
0404	Tangerines			Kg.			
0405	Lemons			No.			
0406	other specify			Kg.			
0407	apples			Kg.			
0408	watermelons			No.			
0409	Melons			No.			
0410	Unripe dates			Kg.			
0411	dates			Kg.			
0412	papaya			No.			
0413	Pomegranate			Kg.			
0414	Apricot			Kg.			
0415	Fig			Kg.			
0416	Quince			Kg.			
0417	Peach			Kg.			
0418	Pears			Kg.			
0419	mangos			Kg.			
0420	Guava			Kg.			
0421	Raisin			Kg.			
0422	Pineapple			Kg.			
0423	Canned peach			Kg.			
0424	other Preserved & canned or fresh f			Kg.			
0425	Almonds and Nuts(pistachio,Almon			Kg.			
0499	Total						
0500	**Meat**						
0501	fresh Lamb/Goat meat			Kg.			
0502	Frozen Lamb/goat meat (imported)			Kg.			
0503	Fresh Veal			Kg.			
0504	Fresh beef			Kg.			
0505	Frozen Beef(imported)			Kg.			
0506	Camel meat			Kg.			
0507	Ground beef rosen			Kg.			
0508	Fresh poultry			No.			
0509	Frozen Poultry(imported)			No.			
0510	Other fresh /Frozen meat(Duck,Geese)			Kg.			
0511	Preserved and canned meat			Kg.			
0512	preparation expenses meat			Riyal			
0599	Total						
0600	**Fish**						
0601	Fresh or frozen king fish			Kg.			
0602	other types of fresh or frozen fish			Kg.			
0603	Dired/smoked fish			Kg.			
0604	Canned (tuna)			Kg.			
0699	Total						

QUESTIONNAIRE PAGE 31

'Weekly consumption of food and other freuenty purchased commodities

Fourht week (Days 22 - 28)

	Item	Bought from the market		Measuring Unit	Consumer		
		Amount Riyals	Quantity		Bought from the market Quantity	self-consumption Quantity	Gift Quantity
0700	**Dairy products**						
0701	frash milk			Liter			
0702	canned mailk			Liter			
0703	condensed milk			Liter			
0704	dry milk			Kg.			
0705	Yogurt			Liter			
0706	Cheese			Kg.			
0707	Eggs			No.			
0708	Ice cream			Kg.			
0709	other			Riyal			
0799	Total						
0800	**Shortenings:**						
0801	local ghee			Kg.			
0802	commercial ghee			Kg.			
0803	sesame oil			Kg.			
0804	vegtable oils			Liter			
0805	Butter			Kg.			
0806	other			Riyal			
0899	Total						
0900	**Suger and Suger products:**						
0901	All types of suger			Kg.			
0902	Natural honey			Kg.			
0903	Commercial Honey			Kg.			
0904	Jam			Kg.			
0905	Sesame sweets			Kg.			
0906	other sweets			Kg.			
0907	other suger products			Riyal			
0999	Total						
1000	**Spices&Other food products:**						
1001	Table salt			Kg.			
1002	Cardamom			Kg.			
1003	Cumon,Pepper,Cinomon,Black			Kg.			
1004	Red Hot dry papper			Kg.			
1005	Vinegar			Liter			
1006	snacks			Riyal			
1007	Spices and other food products			Riyal			
1099	Total						
1100	**Tea and Coffee**						
1101	Tea			Kg.			
1102	Coffee			Kg.			
1103	Coffee Flakes			Kg.			
1104	Niscafe			Kg.			
1105	other			Riyal			
1199	Total						

QUESTIONNAIRE PAGE 32

'Weekly consumption of food and other freuenty purchased commodities

Fourht week (Days 22 - 28)

	Item	Bought from the market		Measuring Unit	Consumer		
		Amount Rivals	Quantity		Bought from the market Quantity	self-consumption Quantity	Gift Quantity
1200	Spring Water& Soda:						
1201	Spring Water			Liter			
1202	Carbonated Drinks			Liter			
1203	canned juices			Liter			
1204	Fruits Syrups			Liter			
1205	Ice			Kg.			
1206	Other drinks			Liter			
1299	Total						

Code	Item	Amount Paid from the market (Riyal)	Self-consumpation (Riyal)	Recived as a gift ,payment in-kind (Riyal)
1301	Cigarettes			
1302	Tobacco			
1303	other Tobacco products			
1304	Qat			
1835	Jasmine, flowers, etc			
1901	Private car (Gas,oil)			
1904	Transportiation Expenses within Yemen(to place of residence or between governorates)			
2004	Medicine			
2005	Medical expenses(Doctor fee)			
2006	Mediacl investigations expenses			
2007	Mediacl Appliances			
2008	Prescription drugs			
2009	Medical paraphemalia(cotton,syringes)			
2010	Medical services(injections,nurse aid,circumcision,etc…)			
2314	Newspapers & magazines			
2315	buying or Renting Video or CD			
2316	Tickets for movie Theater, plays and festivals			
2403	ready made food(outside house)			
2404	Drinky juices tea outside house			
2499	Total			

Weekly consumption of food and other freuenty purchased commodities

Third week (Days 15 - 21)

	Item	Bought from the market		Measuring Unit	Consumer		
		Amount Rials	Quantity		Bought from the market Quantity	self-consumption Quantity	Gift Quantity
0100	**Grains & Derivatives :**						
0101	Wheat(local)			Kg.			
0102	Wheat(imported)			Kg.			
0103	Barly			Kg.			
0104	Corn (Roman)			Kg.			
0105	Corn(thin)			Kg.			
0106	Millet			Kg.			
0107	Sorghum			Kg.			
0108	other grains			Kg.			
0109	Basmati Rice			Kg.			
0110	American Rice			Kg.			
0111	other varieties of rice			Kg.			
0112	Flour			Kg.			
0113	Bread			Riyal			
0114	Grind charges			Riyal			
0115	Macaroni			Kg.			
0116	Vermicalli			Kg.			
0117	Biscuits			Riyal			
0118	Other			Riyal			
0199	Total						
0200	**Dried& Preserved legume:**						
0201	Fenugreek			Kg.			
0202	dired Beans			Kg.			
0203	dired Beans(local)			Kg.			
0204	Dired Beans(imported)			Kg.			
0205	Lentils/crushed Lentils			Kg.			
0206	Beans(cans)			Kg.			
0207	European Beans(cans)			Kg.			
0208	Pees(cans)			Kg.			
0209	other Legume(Dired& canned)			Riyal			
0299	Total						
0300	**Fresh and preserved vegtables:**						
0301	Tomatoes			Kg.			
0302	Potatoes			Kg.			
0303	Onions			Kg.			
0304	green onions			Kg.			
0305	Dried Garlic			Kg.			
0306	Green Garlic			Kg.			
0307	Okra			Kg.			
0308	Green Beans			Kg.			
0309	Squash/pumbkin			Kg.			
0310	Eggplant			Kg.			
0311	Mallow/spinach			No.			
0312	leek/salad/watercress			Riyal			
0313	Cabbage/cauliflower			Riyal			
0314	Carrot			Kg.			
0315	cucumber			Kg.			
0316	papper			Kg.			
0317	Hot green papper			Kg.			
0318	Mint/Coriander/parsley			Riyal			
0319	Tomato Paste			Kg.			
0320	other fresh, dired or canned vegtables excluding (legumes)			Riyal			
0399	Total						

QUESTIONNAIRE PAGE 34

Weekly consumption of food and other freuenty purchased commodities

Third week (Days 15 - 21)

	Item	Bought from the market		Measuring Unit	Consumer		
		Amount Riyals	Quantity		Bought from the market	self-consumption	Gift
					Quantity	Quantity	Quantity
0400	**Fresh and preserved Fruits:**						
0401	Bananas			Kg.			
0402	grapes			Kg.			
0403	Oranges			Kg.			
0404	Tangerines			Kg.			
0405	Lemons			No.			
0406	other specify			Kg.			
0407	apples			Kg.			
0408	watermelons			No.			
0409	Melons			No.			
0410	Unripe dates			Kg.			
0411	dates			Kg.			
0412	papaya			No.			
0413	Pomegranate			Kg.			
0414	Apricot			Kg.			
0415	Fig			Kg.			
0416	Quince			Kg.			
0417	Peach			Kg.			
0418	Pears			Kg.			
0419	mangos			Kg.			
0420	Guava			Kg.			
0421	Raisin			Kg.			
0422	Pineapple			Kg.			
0423	Canned peach			Kg.			
0424	other Preserved & canned or fresh f			Kg.			
0425	Almonds and Nuts(pistachio,Almonc			Kg.			
0499	Total						
0500	**Meat**						
0501	fresh Lamb/Goat meat			Kg.			
0502	Frozen Lamb/goat meat (imported)			Kg.			
0503	Fresh Veal			Kg.			
0504	Fresh beef			Kg.			
0505	Frozen Beef(imported)			Kg.			
0506	Camel meat			Kg.			
0507	Ground beef rosen			Kg.			
0508	Fresh poultry			No.			
0509	Frozen Poultry(imported)			No.			
0510	Other fresh /Frozen meat(Duck,Geese			Kg.			
0511	Preserved and canned meat			Kg.			
0512	preparation expenses meat			Riyal			
0599	Total						
0600	**Fish**						
0601	Fresh or frozen king fish			Kg.			
0602	other types of fresh or frozen fish			Kg.			
0603	Dired/smoked fish			Kg.			
0604	Canned (tuna)			Kg.			
0699	Total						

QUESTIONNAIRE PAGE 35

Weekly consumption of food and other freuenty purchased commodities

Third week (Days 15 - 21)

	Item	Bought from the market		Measuring Unit	المستهلك		
		Amount Riyals	Quantity		Bought from the market	self-consumption	Gift
					Quantity	Quantity	Quantity
0700	**Dairy products**						
0701	frash milk			Liter			
0702	canned mailk			Liter			
0703	condensed milk			Liter			
0704	dry milk			Kg.			
0705	Yogurt			Liter			
0706	Cheese			Kg.			
0707	Eggs			No.			
0708	Ice cream			Kg.			
0709	other			Riyal			
0799	Total						
0800	**Shortenings:**						
0801	local ghee			Kg.			
0802	commercial ghee			Kg.			
0803	sesame oil			Kg.			
0804	vegtable oils			Liter			
0805	Butter			Kg.			
0806	other			Riyal			
0699	Total						
0900	**Suger and Suger products:**						
0901	All types of suger			Kg.			
0902	Natural honey			Kg.			
0903	Commercial Honey			Kg.			
0904	Jam			Kg.			
0905	Sesame sweets			Kg.			
0906	other sweets			Kg.			
0907	other suger products			Riyal			
0999	Total						
1000	**Spices&Other food products:**						
1001	Table salt			Kg.			
1002	Cardamom			Kg.			
1003	Cumon,Pepper,Cinomon,Black			Kg.			
1004	Red Hot dry papper			Kg.			
1005	Vinegar			Liter			
1006	snacks			Riyal			
1007	Spices and other food products			Riyal			
1099	Total						
1100	**Tea and Coffee**						
1101	Tea			Kg.			
1102	Coffee			Kg.			
1103	Coffee Flakes			Kg.			
1104	Niscafe			Kg.			
1105	other			Riyal			
1199	Total						

QUESTIONNAIRE PAGE 36

Weekly consumption of food and other freuenty purchased commodities

Third week (Days 15 - 21)

	Item	Bought from the market		Measuring Unit	المستهلك		
		Amount Rivals	Quantity		Bought from the market Quantity	self-consumption Quantity	Gift Quantity
1200	Spring Water& Soda:						
1201	Spring Water			Liter			
1202	Carbonated Drinks			Liter			
1203	canned juices			Liter			
1204	Fruits Syrups			Liter			
1205	Ice			Kg.			
1206	Other drinks			Liter			
1299	Total						

Code	Item	Amount Paid from the market (Riyal)	Self-consumpation (Riyal)	Recived as a gift ,payment in-kind (Riyal)
1301	Cigarettes			
1302	Tobacco			
1303	other Tobacco products			
1304	Qat			
1835	Jasmine, flowers, etc			
1901	Private car (Gas,oil)			
1904	Transportiation Expenses within Yemen(to place of residence or between governorates)			
2004	Medicine			
2005	Medical expenses(Doctor fee)			
2006	Mediacl investigations expenses			
2007	Mediacl Appliances			
2008	Prescription drugs			
2009	Medical paraphemalia(cotton,syringes)			
2010	Medical services(injections,nurse aid,circumcision,etc...)			
2314	Newspapers & magazines			
2315	buying or Renting Video or CD			
2316	Tickets for movie Theater, plays and festivals			
2403	ready made food(outside house)			
2404	Drinky juices tea outside house			
2499	Total			

QUESTIONNAIRE PAGE 37

Weekly consumption of food and other freuenty purchased commodities

Second Week (Days 8 - 14)

	Item	Bought form the market		Measuring unit	Consumer bought from the Market	Self-consumpation	Gift
		Amount Riyal	Quantity		Quantity	Quantity	Quantity
0100	**Grains & Derivatives :**						
0101	Wheat(local)			Kg.			
0102	Wheat(imported)			Kg.			
0103	Barly			Kg.			
0104	Corn (Roman)			Kg.			
0105	Corn(thin)			Kg.			
0106	Millet			Kg.			
0107	Sorghum			Kg.			
0108	other grains			Kg.			
0109	Basmati Rice			Kg.			
0110	American Rice			Kg.			
0111	other varieties of rice			Kg.			
0112	Flour			Kg.			
0113	Bread						
0114	Grind charges			Riyal			
0115	Macaroni			Kg.			
0116	Vermicalli			Kg.			
0117	Biscuits			Riyal			
0118	Other			Riyal			
0199	Total						
0200	**Dried& Preserved legume:**						
0201	Fenugreek			Kg.			
0202	dired Beans			Kg.			
0203	dired Beans(local)			Kg.			
0204	Dired Beans(imported)			Kg.			
0205	Lentils/crushed Lentils			Kg.			
0206	Beans(cans)			Kg.			
0207	European Beans(cans)			Kg.			
0208	Pees(cans)			Kg.			
0209	other Legume(Dired& canned)			Riyal			
0299	Total						
0300	**Fresh and preserved vegtables:**						
0301	Tomatoes			Kg.			
0302	Potatoes			Kg.			
0303	Onions			Kg.			
0304	green onions			Kg.			
0305	Dried Garlic			Kg.			
0306	Green Garlic			Kg.			
0307	Okra			Kg.			
0308	Green Beans			Kg.			
0309	Squash/pumbkin			Kg.			
0310	Eggplant			Kg.			
0311	Mallow/spinach			No.			
0312	leek/salad/watercress			Riyal			
0313	Cabbage/cauliflower			Riyal			
0314	Carrot			Kg.			
0315	cucumber			Kg.			
0316	papper			Kg.			
0317	Hot green papper			Kg.			
0318	Mint/Coriander/parsley			Riyal			
0319	Tomato Paste			Kg.			
0320	other fresh, dired or canned vegtables excluding (legumes)			Riyal			
0399	Total						

QUESTIONNAIRE PAGE 38

Weekly consumption of food and other freuenty purchased commodities

Second Week (Days 8 - 14)

	Item	Bought form the market		Measuring unit	Consumer		
		Amount Rial	Quantity		Bought from the Market Quantity	Self-consumpation Quantity	Gift Quantity
0400	**Fresh and preserved Fruits:**						
0401	Bananas			Kg.			
0402	grapes			Kg.			
0403	Oranges			Kg.			
0404	Tangerines			Kg.			
0405	Lemons			No.			
0406	other specify			Kg.			
0407	apples			Kg.			
0408	watermelons			No.			
0409	Melons			No.			
0410	Unripe dates			Kg.			
0411	dates			Kg.			
0412	papaya			No.			
0413	Pomegranate			Kg.			
0414	Apricot			Kg.			
0415	Fig			Kg.			
0416	Quince			Kg.			
0417	Peach			Kg.			
0418	Pears			Kg.			
0419	mangos			Kg.			
0420	Guava			Kg.			
0421	Raisin			Kg.			
0422	Pineapple			Kg.			
0423	Canned peach			Kg.			
0424	other Preserved & canned or fresh f			Kg.			
0425	Almonds and Nuts(pistachio,Almonc			Kg.			
0499	Total						
0500	**Meat:**						
0501	fresh Lamb/Goat meat			Kg.			
0502	Frozen Lamb/goat meat (imported)			Kg.			
0503	Fresh Veal			Kg.			
0504	Fresh beef			Kg.			
0505	Frozen Beef(imported)			Kg.			
0506	Camel meat			Kg.			
0507	Ground beef rosen			Kg.			
0508	Fresh poultry			No.			
0509	Frozen Poultry(imported)			No.			
0510	Other fresh /Frozen meat(Duck,Gees			Kg.			
0511	Preserved and canned meat			Kg.			
0512	preparation expenses meat			Riyal			
0599	Total						
0600	**Fish"**						
0601	Fresh or frozen king fish			Kg.			
0602	other types of fresh or frozen fish			Kg.			
0603	Dired/smoked fish			Kg.			
0604	Canned (tuna)			Kg.			
0699	Total						

QUESTIONNAIRE PAGE 39

Weekly consumption of food and other freuenty purchased commodities

Second week (Days 8 - 14)

	Item	Bought form the market		Measuring unit	Consumer		
					Bought from the Market	Self-consumpation	Gift
		Amount Riyal	Quantity		Quantity	Quantity	Quantity
0700	**Dairy products**						
0701	frash milk			Liter			
0702	canned mailk			Liter			
0703	condensed milk			Liter			
0704	dry milk			Kg.			
0705	Yogurt			Liter			
0706	Cheese			Kg.			
0707	Eggs			No.			
0708	Ice cream			Kg.			
0709	other			Riyal			
0799	Total						
0800	**Shortenings:**						
0801	local ghee			Kg.			
0802	commercial ghee			Kg.			
0803	sesame oil			Kg.			
0804	vegtable oils			Liter			
0805	Butter			Kg.			
0806	other			Riyal			
0899	Total						
0900	**Suger and Suger products:**						
0901	All types of suger			Kg.			
0902	Natural honey			Kg.			
0903	Commercial Honey			Kg.			
0904	Jam			Kg.			
0905	Sesame sweets			Kg.			
0906	other sweets			Kg.			
0907	other suger products			Riyal			
0999	Total						
1000	**Spices&Other food products:**						
1001	Table salt			Kg.			
1002	Cardamom			Kg.			
1003	Cumon,Pepper,Cinomon,Black			Kg.			
1004	Red Hot dry papper			Kg.			
1005	Vinegar			Liter			
1006	snacks			Riyal			
1007	Spices and other food products			Riyal			
1099	Total						
1100	**Tea & coffee**						
1101	Tea			Kg.			
1102	Coffee			Kg.			
1103	Coffee Flakes			Kg.			
1104	Niscafe			Kg.			
1105	other			Riyal			
1199	Total						

QUESTIONNAIRE PAGE 40

Weekly consumption of food and other freuenty purchased commodities

Second Week (Days8 - 14)

	Item	Bought form the market		Measuring unit	Consumer		
		Amount Riyal	Quantity		Bought from the Market	Self-consumpation	Gift
					Quantity	Quantity	Quantity
1200	**Spring Water& Soda:**						
1201	Spring Water			Liter			
1202	Carbonated Drinks			Liter			
1203	canned juices			Liter			
1204	Fruits Syrups			Liter			
1205	Ice			Kg.			
1206	Other drinks			Liter			
1299	Total						

Code	Item	Amount Paid from the market (Riyal)	Self-consumpation (Riyal)	Recived as a gift ,payment in-kind (Riyal)
1301	Cigarettes			
1302	Tobacco			
1303	other Tobacco products			
1304	Qat			
1835	Jasmine, flowers, etc			
1901	Private car (Gas,oil)			
1904	Transportiation Expenses within Yemen(to place of residence or between governorates)			
2004	Medicine			
2005	Medical expenses(Doctor fee)			
2006	Mediacl investigations expenses			
2007	Mediacl Appliances			
2008	Prescription drugs			
2009	Medical paraphernalia(cotton,syringes)			
2010	Medical services(injections,nurse aid,circumcision,etc...)			
2314	Newspapers & magazines			
2315	buying or Renting Video or CD			
2316	Tickets for movie Theater, plays and festivals			
2403	ready made food(outside house)			
2404	Drinky juices tea outside house			
2499	Total			

Weekly consumption of food and other freuenty purchased commodities

First week (Days 1 - 7)

	Item	Bought from the market		Measuring Unit	Consumer		
		Amount Riyals	Quantity		Bought from the market	self-consumption	Gift
					Quantity	Quantity	Quantity
0100	**Grains & Derivatives :**						
0101	Wheat(local)			KG			
0102	Wheat(imported)			KG			
0103	Barly			KG			
0104	Corn (Roman)			KG			
0105	Corn(thin)			KG			
0106	Millet			KG			
0107	Sorghum			KG			
0108	other grains			KG			
0109	Basmati Rice			KG			
0110	American Rice			KG			
0111	other varieties of rice			KG			
0112	Flour			KG			
0113	Bread			Riyal			
0114	Grind charges			Riyal			
0115	Macaroni			KG			
0116	Vermicalli			KG			
0117	Biscuits			Riyal			
0118	Other			Riyal			
0199	Total						
0200	**Dried& Preserved legume:**						
0201	Fenugreek			KG			
0202	dired Beans			KG			
0203	dired Beans(local)			KG			
0204	Dired Beans(imported)			KG			
0205	Lentils/crushed Lentils			KG			
0206	Beans(cans)			KG			
0207	European Beans(cans)			KG			
0208	Pees(cans)			KG			
0209	other Legume(Dired& canned)			Riyal			
0299	Total						
0300	**Fresh and preserved vegtables:**						
0301	Tomatoes			KG			
0302	Potatoes			KG			
0303	Onions			KG			
0304	green onions			KG			
0305	Dried Garlic			KG			
0306	Green Garlic			KG			
0307	Okra			KG			
0308	Green Beans			KG			
0309	Squash/pumbkin			KG			
0310	Eggplant			KG			
0311	Mallow/spinach			No.			
0312	leek/salad/watercress			Riyal			
0313	Cabbage/cauliflower			Riyal			
0314	Carrot			KG			
0315	cucumber			KG			
0316	papper			KG			
0317	Hot green papper			KG			
0318	Mint/Coriander/parsley			Riyal			
0319	Tomato Paste			KG			
0320	other fresh, dried or canned vegtables excluding (legumes)			Riyal			
0399	Total						

Weekly consumption of food and other freuenty purchased commodities

First Week (Days 1 - 7)

	Item	Bought from the market		Measuring unit	Consumer		
					Bought from the market	self-consumption	Gift
		Amount Riyals	Quantity		Quantity	Quantity	Quantity
0400	**Fresh and preserved Fruits:**						
0401	Bananas			KG			
0402	grapes			KG			
0403	Oranges			KG			
0404	Tangerines			KG			
0405	Lemons			No.			
0406	other specify			KG			
0407	apples			KG			
0408	watermelons			No.			
0409	Melons			No.			
0410	Unripe dates			KG			
0411	dates			KG			
0412	papaya			No.			
0413	Pomegranate			KG			
0414	Apricot			KG			
0415	Fig			KG			
0416	Quince			KG			
0417	Peach			KG			
0418	Pears			KG			
0419	mangos			KG			
0420	Guava			KG			
0421	Raisin			KG			
0422	Pineapple			KG			
0423	Canned peach			KG			
0424	other Preserved & canned or fresh f			KG			
0425	Almonds and Nuts(pistachio,Almond			KG			
0499	Total						
0500	**Meat**						
0501	fresh Lamb/Goat meat			KG			
0502	Frozen Lamb/goat meat (imported)			KG			
0503	Fresh Veal			KG			
0504	Fresh beef			KG			
0505	Frozen Beef(imported)			KG			
0506	Camel meat			KG			
0507	Ground beef rosen			KG			
0508	Fresh poultry			No.			
0509	Frozen Poultry(imported)			No.			
0510	Other fresh /Frozen meat(Duck,Gees			KG			
0511	Preserved and canned meat			KG			
0512	preparation expenses meat			Riyal			
0599	Total						
0600	**Fish**						
0601	Fresh or frozen king fish			KG			
0602	other types of fresh or frozen fish			KG			
0603	Dired/smoked fish			KG			
0604	Canned (tuna)			KG			
0699	Total						

QUESTIONNAIRE PAGE 43

Weekly consumption of food and other freuenty purchased commodities

First week (days 1 - 7)

	Item	bought from the market		Measuring Unit	Consumer		
					Bought from the market	Self- consumption	Gift
		Amiunt Riyal	Quantity		Quantity	Quantity	Quantity
0700	**Dairy products**						
0701	frash milk			Liter			
0702	canned mailk			Liter			
0703	condensed milk			Liter			
0704	dry milk			KG			
0705	Yogurt			Liter			
0706	Cheese			KG			
0707	Eggs			No.			
0708	Ice cream			KG			
0709	other			Riyal			
0799	Total						
0800	**Shortenings:**						
0801	local ghee			KG			
0802	commercial ghee			KG			
0803	sesame oil			KG			
0804	vegtable oils			Liter			
0805	Butter			KG			
0806	other			Riyal			
0899	Total						
0900	**Suger and Suger products:**						
0901	All types of suger			KG			
0902	Natural honey			KG			
0903	Commercial Honey			KG			
0904	Jam			KG			
0905	Sesame sweets			KG			
0906	other sweets			KG			
0907	other suger products			Riyal			
0999	Total						
1000	**Spices&Other food products:**						
1001	Table salt			KG			
1002	Cardamom			KG			
1003	Cumon,Pepper,Cinomon,Black			KG			
1004	Red Hot dry papper			KG			
1005	Vinegar			Liter			
1006	snacks			Riyal			
1007	Spices and other food products			Riyal			
1099	Total						
1100	**Tea & coffee**						
1101	Tea			KG			
1102	Coffee			KG			
1103	Coffee Flakes			KG			
1104	Niscafe			KG			
1105	other			Riyal			
1199	Total						

Weekly consumption of food and other freuenty purchased commodities

First Week (Days1 - 7)

	Item	Bought from the market		Measuring Unit	Consumer		
		Amount Riyal	Quantity		Bought from the market	Self-consumption	Gift
					Quantity	Quantity	Quantity
1200	**Spring Water& Soda:**						
1201	Spring Water			liter			
1202	Carbonated Drinks			liter			
1203	canned juices			liter			
1204	Fruits Syrups			liter			
1205	Ice			kg			
1206	Other drinks			liter			
1299	Total						

Code	Item	Amount Paid from the market (Riyal)	Self-consumpation (Riyal)	Recived as a gift ,payment in-kind (Riyal)
1301	Cigarettes			
1302	Tobacco			
1303	other Tobacco products			
1304	Qat			
1835	Jasmine, flowers, etc			
1901	Private car (Gas,oil)			
1904	Transportiation Expenses within Yemen(to place of residence or between governorates)			
2004	Medicine			
2005	Medical expenses(Doctor fee)			
2006	Mediacl investigations expenses			
2007	Mediacl Appliances			
2008	Prescription drugs			
2009	Medical paraphernalia(cotton,syringes)			
2010	Medical services(injections,nurse aid,circumcision,etc...)			
2314	Newspapers & magazines			
2315	buying or Renting Video or CD			
2316	Tickets for movie Theater, plays and festivals			
2403	ready made food(outside house)			
2404	Drinky juices tea outside house			
2499	Total			

QUESTIONNAIRE PAGE 45

Section 15: Expenditures on non-food services and commodities during the past month

تاريخ إستيفاء الفصل : / / م

Past Month

code	Service/ Commodity	Bought form the market Amount Paid Riyals	Recived as a Gift Imputed value Riyals
1400	**House Expenses:**		
1401	Monthly paid rent		
1402	Expenses on Domestic water supply (not mineral water)		
1403	House Maintenance and Repairs expenses(house on-going repairs,water and sewage system maintenance and electricity repairs)		
1404	Lodging expenses (exclude the hotels)		
1405	Servants and cook fees		
1406	other house expenses		
1407	Electricity Expenses		
1408	Dry& Liquide Batteries(including Batteries recharging fees)		
1409	Refill propane gas cylinders		
1410	Wood		
1411	Charcoal		
1412	Kerosene		
1413	expenses on other means of fuel & lighting		
00	Total		
	Other		
1701	Clothes detergent		
1702	HH Cleaners(clorox/flash) and disinfectants(Detol)		
1703	Pestisides		
1704	Metal wool cleaning sponge		
1705	Paper tissue		
1706	Mobs,sweepers, ash-trays		
1707	other cleaner		
1708	candles, matches sigrarette uguters		
1801	wair- dressing charge for men		
1802	Dressing charges for women		
1803	Dry clean charges		
1804	Maintenance of personal belonging(i.e. watches,cameras)		
1805	charges for other personal services		
	Total		

QUESTIONNAIRE PAGE 46

Section 16 : Expenditures on non-food services and commodities during the past 3 months

عدد الاسطر المستوفاه ☐ تاريخ إستيفاء الفصل : / / م (القيمة بالريال)

code	Service/ Commodity	Unit	Total Expenses					
			bought form the market		Gift		Total	
			quantity	Amount	Quantity	Amount	Quantity	Amount
1	2	3	4	5	6	7	8	9
1500	Fabric & Clothes							
1501	Men suits	No.						
1502	Men Jackets, Coats	No.						
1503	Men Shirts	No.						
1504	Men Local gwns	No.						
1505	Men underwear	No.						
1506	Men Pajamas	No.						
1507	Men Trousers	No.						
1509	Men Belts	No.						
1510	other Clothes for men (Local wear,a apparel)	No.						
1511	Women Dresses	No.						
1512	Women Skirts	No.						
1513	Women Sweaters	No.						
1514	Women jackets	No.						
1515	Women Shirts	No.						
1516	Women Underwear	No.						
1517	Women Sleeoing gowns	No.						
1518	Vails& women covers	No.						
1519	Women Coats	No.						
1520	Women germent	No.						
1521	Women Trousers/pants	No.						
1522	Women Socks	No.						
1523	Other Women clothes	No.						
Total								

Section 16 : Expenditures on non-food services and commodities during the past 3 months

عدد الاسطر المستوفاه ☐ (القيمة بالريال)

code	Service/ Commodity	Unit	Total Expenses					
			bought form the market		Gift		Total	
			quantity	Amount	Quantity	Amount	Quantity	Amount
1	2	3	4	5	6	7	8	9
Total								
1524	Girls Dresses	No.						
1525	Girls Jackets	No.						
1526	Girls Sleeing gowns	No.						
1527	Girls underwear	No.						
1528	girls Socks	No.						
1529	Boys Suits	No.						
1530	boys Shirts	No.						
1531	Bpys jackets	No.						
1533	Boys underwear	No.						
1534	Trousers/Pants(boys& girls)	No.						
1535	Sportswear (boys&girls; not school uniforms)	No.						
1536	Boys Stocks	No.						
1537	Infants Underwear	No.						
1538	Other boys/girls clothes	No.						
1539	Men fabrics	M						
1540	Women fabrics	M						
1541	Men Clothes Tailoring Expenses	Riyal						
1542	Women Clothes Tailoring Expenses	Riyal						
1543	Kid's clothes Tailoring Expenses	Riyal						
1544	Wool (yarn)	No.						
1545	cotton & Silk Threads	No.						
1546	Other clothes	Riyal						
	Sub Total							

QUESTIONNAIRE PAGE 47

Section 16 : Expenditures on non-food services and commodities during the past 3 months

عدد الاسطر المستوفاه [ ] (القيمة بالريال)

code	Service/ Commodity	Unit	Total Expenses					
			bought form the market		Gift		Total	
			quantity	Amount	Quantity	Amount	Quantity	Amount
1	2	3	4	5	6	7	8	9
1700	Furniture & Domestic supplies							
1709	Bedroom	No.						
1710	Wooden furniture(beds,cupbords...etc)	No.						
1711	Metal Furniture(beds, cupbords...etc)	No.						
1712	Suitcases	No.						
1713	Silverware/metal utensils(plates,cups,gla	No.						
1714	Plastic utensils(plates,cups,glasses)	No.						
1715	Glass Utensils (plates ,cups, jugs , etc)	No.						
1716	Porcelain China ware (plates , cups , etc	No.						
1717	Tea Flasks	No.						
1718	Light bulbs Gas and kerosene lamps	No.						
1719	Carpets and Rugs	M						
1720	Mats and Floors covers (plastic material	M						
1721	Blankets , Comforters and Bed sheets	No.						
1722	Mattresses (sponge and cotton)	No.						
1723	Curtains & Drapers	M						
1724	Cushions & Pillows	No.						
1725	Art works , Painatings , Clocks ,Table La	No.						
1726	Hookah , Tubes , Tweezers & Coal Heart	No.						
1727	Furniture Repairs & Maintenance Fees	Riyal						
1728	other expenses	Riyal						
00	Total							

QUESTIONNAIRE PAGE 48

Section 16 : Expenditures on non-food services and commodities during the past 3 months

عدد الاسطر المستوفاه ☐ (القيمة بالريال)

code	Service/ Commodity	Unit	Total Expenses					
			bought form the market		Gift		Total	
			quantity	Amount	Quantity	Amount	Quantity	Amount
1	2	3	4	5	6	7	8	9
1600	**Shoes:**							
1601	Men Shoes	No.						
1602	Men Sandals	No.						
1603	Women shoes	No.						
1604	Women Sandals	No.						
1605	Girls Shoes	No.						
1606	Girls Sandals	No.						
1607	Boys shoes	No.						
1608	Boys Sandals	No.						
1609	Slippers	No.						
1610	Shoes Menditing & Repair Expenses	Riyal						
1611	Other(Shoe Polish, Laces)	Riyal						
00	Total							

QUESTIONNAIRE PAGE 49

Section 16 : Expenditures on non-food services and commodities during the past 3 months

عدد الاسطر المستوفاه [ ] (القيمة بالريال)

code	Service/ Commodity	Unit	Total Expenses					
			bought form the market		Gift		Total	
			quantity	Amount	Quantity	Amount	Quantity	Amount
1	2	3	4	5	6	7	8	9
1800	Miscelaneous services & Commodities							
1806	Shaving machine	Riyal						
1807	Shaving Cream & Brushes	No.						
1808	Hair Combs & Brushes	No.						
1809	Hair Dryers & Curling Irons	No.						
1810	Tweezers & Nail Clippers	No.						
1811	Accessories	No.						
1812	Hair Folds & Pleats	No.						
1813	Hair Pins & Accessories	No.						
1814	Tooth Paste & Brushes	No.						
1815	Perfumes & Incenses	No.						
1816	Sandal Wood	KG						
1817	Makeup	No.						
1818	Dyestuff	No.						
1819	Oils & Hair Creams	No.						
1820	Shampoo	No.						
1821	Hair Dyes & Henna	Riyal						
1822	Body Soap	No.						
1823	Baby Diapers	Riyal						
1824	Women Sanitary Pads	Riyal						
1825	Skin Creams	No.						
1826	Ladies Hand Bags	No.						
1827	Wrist Watches	No.						
1828	Sun Glasses and Binoculars	No.						
1829	Cameras & Films	Riyal						
1830	Umbrellas	No.						
1831	Gold Jewelry	KG						
1832	Jambias (daggers) and Ammunitions	Riyal						
1833	Travel Suitcases	No.						
1834	Other	Riyal						
00	Total							

Section 16 : Expenditures on non-food services and commodities during the past 3 months

عدد الاسطر المستوفاه ☐ (القيمة بالريال)

code	Service/ Commodity	Unit	Expenses Total					
			bought form the market		Gift		Total	
			quantity	Amount	Quantity	Amount	Quantity	Amount
1	2		3		4		5	
1900	Transportiation and Communication							
1902	oil charge, grease and wash of private car							
1903	Private car maintinance							
	including burches matrials amount							
1905	Non-business or medical international transportiation (Airfare tickets)							
1906	Telephone Expenses(Subscribtion(including Celluar phone),Telephone bill pay including celluular phone cards),repairs non-business related							
1907	Other Transportation & Communication expenses (e.g. Driving School, Mail, Telegraph and Internet)no-business related							
00	Total							

Note :

Commodities (1901 , 1904) in commodities group and services which collectind weekly .

عدد الاسطر المستوفاه ☐ (القيمة بالريال)

Code	Service/ Commodity	Expenses total		
		Bought from the market	Gift	Total
1	2	3	4	5
2000	Health care and services			
2001	Medical supplies(Glasses, Hearing eids...etc)			
2002	Fees for surgical opreations			
2003	Hospital Stay Expenses			
2011	Midwife & delivery Expenses			
2012	Medical treatment outside Yemen(with air ticket)			
2013	Other health care expnses (not included in Section 4)			
00	Total			

Section 17: Expenditureson Non-food services and commodities during last Year(past 12 Months)

عدد الاسطر المستوفاه [ ] (القيمة بالريال)

Code	Service/commodity	Unit	Total Expenses					
			Bought from the Mar		Gift		Total	
			Quantity	Amount	Quantity	Amount	Quantity	Amount
1	2	3	4	5	6	7	8=6+4	9=7+5
2300	expenses on entertiment and cultural commodities							
2301	Cultural books	No.						
2302	Social fees	Riyal						
2303	Sport fees	Riyal						
2304	Satalite channel fees	Riyal						
2305	other equipment and expenses including Children toys	Riyal						
2306	Radio and cassette player	No.						
2307	T.V	No.						
2308	Musical Instruments	No.						
2309	Video player	No.						
2310	Video game equipment	No.						
2311	satalite disk and accessories	No.						
2312	maintinance and repair of long life intertiment commodities	Riyal						
2313	fees for film and printing	Riyal						
00	Total							
2400	Hotels and resturents							
2401	Hotel	No.						
2402	traditional accom (lokanda)	No.						
00	other long life commodities							
1729	Refrigerator	No.						
1730	washing machine	No.						
1731	Cookstove	No.						
1732	Ovan Kirosin	No.						
1733	Warmer	No.						
1734	electrical fan	No.						
1735	electrical warm	No.						
1736	airconditioner	No.						
1737	Sewing machine	No.						
1738	Iron	No.						
1739	Mixer	No.						
1740	Spotlight	No.						
1741	Vacuum cleaner/sweeper	No.						
1742	Gas Cylinder	No.						
1743	Cookstove	No.						
1744	Oven	No.						
1745	Telephone (Mobile)	No.						
1746	Repair and maintinance of long life commodities	Riyal						
	including burches metrials amount	Riyal						
1747	other long life commodities	Riyal						
00	Total							

Section 17: Expenditureson Non-food services and commodities during last Year(past 12 Months)

عدد الاسطر المستوفاه [ ] (القيمة بالريال)

code	Service and Commodity	Amount Paid
1	2	3
2500	**Transfer and other expenditures**	
2501	Zakat, Charity	
2502	Contributions, cash gifts (given to others)	
2503	Transfer for dependent relatives/non-relatives(excluding students)	
2504	Transfer for dependent students (residing inside governorate)	
2505	Transfer for dependent students (residing outside governorate)	
2506	Transfer for dependent students (residing outside Yemen)	
2507	other money transfers(paid to non-dependent relatives during holidays and special occasions	
2508	Wedding cash expenses (e.g. dowry value and other expenses for marriage ceremony	
2509	Cash Funeral expenses(e.g. tomb expenses, Koran Reciter)	
2510	Ownership transfer expenses (personal)	
2511	Expenses on acquiring personal documents(passports,personal and family ID cards,personal recorde and certificates)	
2512	Expenses on acquiring permits and permits renewal	
2513	Life insurance	
2514	health insurance	
2515	Non-Commercial real estate insurance	
2516	private household transportiations insurance	
2517	Pilgrimage expenses(excluding air tickets)	
2518	Customs Tax (private autos and non-commercial goods)	
2519	Other expenses for (e.g. international tourism (excluding air tickets),immolations...etc.	
00	Total	

Section 17: Expenditureson Non-food services and commodities during last Year(past 12 Months)

عدد الاسطر المستوفاه ☐ (Mount Riyal)

Code	Service/commodity	Unit	Total Expenses					
			Bought from the Mark		Gift		Total	
			Quantity	Amount	Quantity	Amount	Quantity	Amount
1	2	3	2	5	6	7	8	9
2100	long-life Transportiation							
2101	Private Car	No.						
2102	Private Motor Bike	No.						
2103	Private Bicycle	No.						
00	Total							

عدد الاسطر المستوفاه ☐ (Amount Riyal)

Code	Service/commodity	Unit	Total Expenses					
			Bought from the Mark		Gift		Total	
			Quantity	Amount	Quantity	Amount	Quantity	Amount
1	2	3	4	5	6	7	8	9
2200	Education Expenses							
2201	Kind. Gartent child care fees	Riyal						
2202	Private Gartent child care fees	Riyal						
2203	Public School fees	Riyal						
2204	Private primery school fees	Riyal						
2205	private high school fees	Riyal						
2206	Public University fees	Riyal						
2207	Private university fees	Riyal						
2208	school books	No.						
2209	university books	No.						
2210	private tuturing fees	Riyal						
2211	writing/painting supplies	Riyal						
2212	school bags	No.						
2213	School & university activities expenses (trips,sports)	Riyal						
00	Total							

ANNEX 4: POVERTY LINE METHODOLOGY

I MEASURING POVERTY

1. Poverty analysis and assessment in Yemen has been driven by the concern to design appropriate poverty reduction strategies. However, debates about methods of poverty measurement are common because poverty is an elusive concept and no single measure can properly or adequately reflect its magnitude and features. Views differ on how individual welfare should be measured, how poverty lines should be set, and what poverty measures should be used.

2. The household raw data, for 1997 and 2005/06, provide a unique opportunity to evaluate the evolution of living standards over the period under consideration.

3. In what follows is a brief discussion of some of the conceptual issues underlying the practice of poverty measurements and comparisons, which will form the basis for our subsequent analysis on the size, evolution and profile of poverty in Yemen.

4. Poverty has traditionally been defined as a discrete characteristic- either one is poor or one is not. Given a particular indicator of welfare, a certain line or standard is drawn, and an individual or household falls on one side or the other. Analysis of poverty takes place at two different levels. Defining poverty consists of classifying the population into poor and non-poor. Measuring poverty seeks to aggregate the "amount" of poverty into a single statistic.

5. Constructing a poverty profile to show how poverty varies across sub-groups of a population is typically the first step in designing an anti-poverty policy. So how should a poverty profile be constructed? One appealing guiding principle is that within a given standard of living, poverty should not depend on which sub-group in the poverty profile the person with that standard of living happens to belong. Following Ravallion 1991, a poverty profile would be "consistent" if it respects this principle. Consistency requires that the poverty line is fixed in terms of the indicator of living standards used. Consistent poverty comparisons imply that two persons at the same real consumption level are deemed to be either "poor" or "not poor" irrespective of the time or place under consideration, or the presence or absence of policy change within the relevant domain.

1 Measuring Welfare

1.1 Welfare Indicator

6. There are different approaches to measuring welfare or well-being (Ravallion, 1994). For a given society, poverty exists if an individual (or household) is unable to attain a certain standard of living, or well-being, at the minimum levels accepted by the standards of that society. The issue is which factors or indicators constitute well-being or welfare? The approach we adopt is to measure welfare in terms of a money metric indicator, defined as the amount of money required - given a set of prices and the assumption of utility maximization - to attain a particular level of utility. This allows us to compare household's welfare levels, which cannot be observed, by comparing their observable consumption levels. Thus, consumption bases approach becomes particularly suited for measuring poverty in developing countries, since it

bases poverty comparisons in terms of deprivation from certain commodities and resources (both food and non-food) considered essential for a minimum level of well-being within a given society. However, there are other factors determining the standard of living and affecting welfare that cannot be readily reduced to a single monetary measure. Examples of such factors are access to education, access to basic health services, and access to safe potable water and basic housing amenities. Strictly interpreted, poverty means the inability of individuals to attain adequate or minimum nutrition, clothing, or shelter. More broadly, it encompasses those factors that *enable* the Individuals' command over resources, such as being healthy and literate. Poverty in this latter sense would constitute deprivation in capabilities, as measured by the UNDP Human Poverty Index. To measure poverty in this sense, the money metric welfare indicator should therefore be supplemented by other social indicators of well-being, such as infant mortality, school enrolment, life expectancy at birth, etc.

1. 2 Income versus expenditure

7. There are several conceptual and empirical considerations favoring the use of expenditure/ consumption, as opposed to income, as the basis for the welfare indicator in developing countries (Hentshcel and Lanjouw, 1996). One consideration is that since all income is not consumed, nor is all consumption financed out of income, consumption is arguably a more appropriate indicator if we are concerned with realized welfare. Expenditures/ consumption better reflect what households can command in terms of current income. They also reflect their access to credit markets or past savings when incomes are low or negative. A second consideration relates to the consumption options and income sources of the poor. Whereas poor households are likely to be purchasing and consuming only a narrow range of goods and services, their incomes may well derive from a variety of sources, many of which can be seasonal in nature. Expenditures/ consumption, are therefore a better indicator of longer run living standards than current income, since consumption tends to smooth variability and fluctuations in income streams. Thirdly, the practical problem of using income to indicate welfare lies in the measurement of incomes of individuals who operate their own business, where records of family businesses are often not kept. Lastly, survey respondents may be more willing to reveal their consumption patterns rather than their income.

1.3 Units of Measurement

8. Household budget surveys provide the most important source of data for poverty comparisons. These surveys record information on household income and consumption expenditures on various goods and services, and they are considered, therefore a good source of information on the distribution of welfare within society. In measuring poverty, a few issues must be considered when deploying household budget surveys.

9. After a comprehensive measure of household consumption is constructed, the critical issue of adjustment of household welfare for differences in household composition must be discussed.

10. Household surveys typically record aggregate outlays made by the household on various commodities. Poverty comparisons have thus tended to use the household - as

opposed to the individual as a unit of measurement. Total household consumption is likely to overstate the welfare level of persons in large households, since the goods and services consumed must be divided among more people. The most common adjustment made is to use per capita consumption. This may under-estimate welfare levels because households have very different compositions, and small children have smaller needs for food and some other items relative to adults. Further, there may be economies to scale in consumption for certain commodities. To correct for this, one can estimate household equivalence scales. ***Adult equivalence scales*** are therefore used to adjust the welfare measure for individuals to take into account differences in the age and gender structure of the household. Applying an adult equivalence scale means that household members are assigned a weight between zero and unity, depending on their age and gender. Adult equivalence scales typically assign a value of one to adult males and less than one to adult females and children (Ravallion, 1992).

11. However, calculating such scales is controversial. In this report, this controversy is overcome by controlling for difference in household composition and estimating household specific poverty line, as will be discussed in the following section.

12. Through out our analysis we used actual household consumption[4] as welfare measures where actual consumption is the sum of values of market purchased goods, own produced goods and freely received goods.

1.4 Poverty Lines

13. Poverty lines can be absolute, relative or subjective. Much of the literature on poverty has been concerned with the respective merits of absolute and relative measures of poverty.

14. The choice of poverty lines is very critical as different methods can produce different rates of poverty and can sometimes cause a reverse in ranking, either between sub-groups or between different dates. When the purpose is to monitor progress in reducing absolute consumption poverty- defined in terms of command over basic consumption needs- one should not consider a person who chooses to buy fewer and more expensive calories poorer than another person who lives, for example, in a village, if both can afford exactly the same standard of living. (Ravallion, 1996).

15. One of the most common approaches is the Basic Needs Approach. By this approach, the poverty line is set as the cost in each sector and at each date of a normative "basic needs" bundle of goods. The difficulty is in identifying what constitutes "basic needs". For developing countries, the most important component of a basic needs poverty line is generally the food expenditure necessary to attain some recommended food energy intake. Thus, the food bundle is typically chosen to be sufficient to reach the predetermined calorie requirement, with a composition that is consistent with the consumption behavior of the poor. This bundle is then evaluated using prices prevailing in each sub-group (region) and at each date. Poverty lines can be then interpreted as Laspeyres cost-of-living numbers. Ravallion (1996) explained that the most compelling argument in favor of CBN method for making poverty comparisons is that it explicitly aims to control for differences in purchasing power over basic consumption needs. The CBN method can at least claim to provide a first order approximation of what we are trying to measure. The cost of bundle is known as the food poverty line.

[4] See Annex __ for definitions and calculations of household income, expenditure and consumption

16. One could argue that sufficient calories intake does not ensure that basic food needs are met. However, Lipton (1986) argued that shortfalls in nutrients other than calories are almost always due to inadequate caloric intake or are not related to income increases. Protein deficiency is almost always cured once caloric needs are met. Deficiencies of vitamin, iron, magnesium iodine and other micronutrients occur on a large scale even without caloric shortage. However, cost-effective cures are likely to be achieved not by measures to raise income, intake or unit requirements of some or all foods, but by public action.

17. Another alternative is to set an ideal cheap diet to attain basic nutrition requirements and find its cost. However, attaining adequate nutrition is not the sole motive for human behavior (not even for most of the poor), nor is it the sole motive of food consumption.

18. Food poverty line is augmented by an allowance for expenditure on essential non-food goods. Following Engel's law, the non-food allowance can be estimated in two ways; (i) regressing the food share against total expenditures and identifying the non-food share in the expenditure distribution of households in which expenditure on *food* is equivalent to the food poverty line; or (ii) identifying the share of non-food expenditure for households in which *total* expenditure is equivalent to the food poverty line. The former approach yields an "upper" bound of the poverty line, while the latter yields a "lower" bound or the "ultra" poverty line, since it defines the total poverty line in terms of those households which had to displace food consumption to allow for non-food expenditures, is considered to be the minimum indispensable level of non-food requirements.

19. An alternative to this method is to estimate non food poverty line using non parametric approach, ***see Kakwani*** (2007). As explained by Kakwani 2007; select the households whose food expenditure lies between 90 percent and 110 percent of food poverty line. And then calculate the average non-food poverty line for the individuals belonging to these households. Adjustment to take account of economies of scale are also taken into account. Let θ_j is the economies of scale parameter for the jth component of the non-food poverty line, which takes value 1 if the jth component is a purely private good and takes value 0 if the jth component is a purely public good. Suppose $\overline{x}_j$ is the per capita mean poverty line for the jth non-food component and n_i is the size of the ith household, then the economies of scale adjusted consumption of the jth non-food component by the ith household will be given by

20. $$x_{ij} = k\overline{x}_j n_i^{(\theta_j - 1)}$$

21. Absolute poverty lines have been widely used in developing countries since poverty research is dominated by the concern for the attainment of basic needs and the achievement of well-being in absolute terms.

22. ***Relative poverty lines*** have been more widely used in developed countries. These define poverty in terms of a proportion of the national mean. For instance, the poverty line can be set at 50 percent of the national mean. The poverty line in this sense would be sensitive solely to changes in the relative distribution of welfare i.e. on the parameters of the Lorenz curve (Ravallion, 1994).

23. ***Subjective poverty lines*** on the other hand define poverty in terms of individual judgments about what constitutes a socially acceptable minimum standard of living in a

given society. This approach is usually based on survey responses to a typical question such as*: "What income level do you personally consider to be absolutely minimal?"* (paraphrased from Kapten et al 1988 in Ravallion, 1992). Poverty measures based on the subjective approach tend to be an increasing function of income. That is, the higher the income of the individual surveyed, the higher the standard of living he or she considers as minimum.

1.5 Poverty Measurements

24. It has become standard practice in poverty comparisons to use the Foster-Greer-Thorbecke class of decomposable poverty measurements. These include three indices: the head count, the poverty gap and the poverty severity indices.

25. The ***head count index*** (P0) is a measure of the prevalence of poverty. It denotes the percentage of households that are poor – as defined by the poverty line - as a proportion of total population. This measure however, is insensitive to the distribution of the poor below the poverty line. This is captured by the following two indices, P1 and P2. The ***poverty gap index*** (P1) is a measure of the depth of poverty and denotes the gap between the observed expenditure levels of poor households and the poverty line. Assuming perfect targeting, the poverty gap index indicates the amount of resources (transfers) needed to bring all poor households up to the poverty line. The ***poverty severity index*** (P2) measures the degree of inequality in distribution below the poverty line and gives greater weight to households at the bottom of the income (or expenditure) distribution.

26. To illustrate, we suppose that as a result of a policy change, 10 percent of income is redistributed from a poor household whose income level places it at 30 percent below the poverty line to another household placed at 50 percent below the poverty line. The head count index in this case would not change, since the size of the redistribution does not enable either household to move up to the poverty line. The poverty gap index would not change either, since the redistribution occurred at levels below the poverty line. The effect of this redistribution policy will be captured by the P2 index, as the position of the lower level household in the distribution would improve.

2. Estimation of poverty lines in Yemen

27. The choice of the welfare indicator used in the estimation of the poverty line is a critical factor in making poverty assessments. Adjustments to spatial and time differentials can significantly influence the conclusions derived. Given the importance of correctly targeting poverty alleviation interventions at the regional level, this study has adopted a strong regional focus. Yemen is divided 20 governorates each is subdivided into urban and rural areas except Sanaa region and Aden. The estimated poverty lines ensure that regional differences in factors such as relative prices, activity levels, as well as size and age composition of poor households. This results in a rank distribution that is consistent with the chosen indicator of household welfare. Several poverty lines have been estimated to obtain a wide range of poverty comparisons among regions between 1997 and 2005/06. We present below methodologies used to estimate these poverty lines.

II HOUSEHOLD SPECIFIC POVERTY LINES

28. The report follows the cost of basic needs methodology to construct household region-specific poverty lines. The food poverty line varies for each household and for each region. Differences in poverty lines reflect variations in the food and non-food prices across regions. They also incorporate household differences in the size and age composition, and their food and non-food consumption preferences.

2.1 Caloric Requirements

29. The FAO has been concerned with the issue of determining the nutritional norms of individuals in different age and sex groups. These norms vary from country to country (and even different groups within a country) depending on factors such as race, climatic conditions, etc.

30. The nutritional needs of individuals are the starting point to construct food poverty line. It must be emphasized that these needs of individuals depend on several factors such as age, sex, location conditions and activity levels.

31. We adopted norms appropriate for Yemen. First we obtained the average weight and height of the Yemeni population 18 years old and over. Weights and heights data were collected for all household members surveyed during the last month of HBS.

Table 1: Weight and Height by age, sex and location

	Urban				Rural			
	Male		Female		Male		Female	
AGE_CAT	Height	Weight	Height	Weight	Height	Weight	Height	Weight
from 18 to less than 30	162.64	58.30	153.10	53.69	161.82	57.18	155.30	51.96
from 30 to less than 60	164.02	66.06	154.38	61.76	163.59	61.03	154.91	55.61
60 and older	160.63	62.04	147.55	52.71	159.11	57.00	147.30	48.65

1. BMR is calculated for each individual 18 years and above, using equations in table 3, provided in "Energy and Protein Requirements; Report of a Joint FAO/WHO/UNU Expert Consultation", see table 2.

Table 2: Equations to Calculate BMR by Sex and Age

	Age range (years)	BMR
Men	10–18	(16.6W + 77H + 572)
	18–30	(15.4W - 27H + 717)
	30–60	(11.3W + 16H + 901)
	> 60	(8.8W + 1 128H - 1 071)
Women	10–18	(7.4W + 482H + 217)
	18–30	(13.3W + 334H + 35)
	30–60	(8.7W - 25H + 865)

2. Individual caloric requirements are calculated by multiplying BMR by a factor to reflect an individual's activity level. Following WHO, we assumed that the activity levels for both males and females are moderate in urban areas and heavy in rural areas. Thus caloric requirements for individuals of age 18 years and above are obtained. For younger individuals, caloric requirements were obtained directly from WHO report, see Table 3.

Table 3: Average Daily Energy Requirement of Adults
Whose Occupational Work is Classified as Light, Moderate, or Heavy, Expressed as a Multiple of BMR

	Light	**Moderate**	**Heavy**
Men	1.55	1.78	2.10
Women	1.56	1.64	1.82

3. Thus, for each household its own caloric requirements can be calculated, depending on its location, age of its members and their gender composition.

Table 4: Calculations for Caloric Requirements

	حضر		ريف	
العمر	ذكور	اناث	العمر	ذكور
<1	335	335	<1	335
1_	950	850	1_	950
2_	1125	1050	2_	1125
3_	1250	1150	3_	1250
4_	1350	1250	4_	1350
5_	1474	1325	5_	1474
6_	1575	1425	6_	1575
7_	1700	1550	7_	1700
8_	1825	1700	8_	1825
9_	1975	1850	9_	1975
10_	2200	1 950	10_	2200
11_	2200	1 950	11_	2200
12_	2400	2 100	12_	2400
13_	2400	2 100	13_	2400
14_	2650	2150	14_	2650
15_	2650	2150	15_	2650
16_	2650	2150	16_	2650
17_	2750	2150	17_	2750
18_<30	2796	2180	18_<30	2796
30_60	2979	2237	30_60	2979
>60	2291	1841	>60	2291

2.2 Food Poverty Line:

4. Once the minimum caloric needs have been estimated, the next step is to determine the cost of obtaining the minimum level of calories. Cost is determined by how the calories are obtained on average by the first two quintiles, rather than by pricing out the cheapest way of obtaining the calories or following a recommended diet. For the first two quintile of households ranked by nominal per capita consumption, average quantities of all food items is constructed. Total calories generated by this bundle are calculated using calories contents in every food item. These quantities represent the bundle used to estimate the food poverty lines, which reflect consumption preferences of the poor. The bundle was priced using median market prices prevailing in each region, When market price of certain item in specific region is not available, we used median unit prices [5] derived from household questionnaire. Dividing cost of the chosen bundle by calories generated by it, the costs per calorie in each region were obtained. Household specific food poverty line is derived by multiplying calorie requirements for all household members by relevant cost of calories. Food poverty line takes into account household gender and age composition as well as its residential region. Food poverty line is used define extreme poverty, where households whose total actual consumption are below their food poverty lines, are considered ultra poor.

[5] Unit values are obtained by dividing the reported value by its corresponding quantity.

5. This stage can be explained mathematically as follows: let Z denote the actual food consumption vector of the reference group of households initially considered poor; first two quintiles. The corresponding caloric values are represented by the vector k, and the food energy intake of the reference group is then k_z = k.Z'. Let cost of this bundle for region r is ***P_r and caloric requirements of household h is C_h.*** Food poverty line for household h is then given by (k_z /Pr)* C_h , thus the relative quantities in the diet of the poor are preserved in setting the poverty line.

Table 5: Cost of 1000 Calories by Region

	Urban	Rurak
Ibb	49.497	49.43
Abyan	52.586	53.57
Sana'a City	53.357	0.00
Al-Baida	54.704	51.47
Taiz	55.387	52.96
Al-Jawf	51.67	49.52
Hajja	55.72	57.95
Al-Hodeida	49.854	51.84
Hadramout	54.965	57.50
Dhamar	51.884	58.51
Shabwah	53.244	59.98
Sa'adah	54.319	50.90
Sana'a Region	52.522	0.00
Aden	53.324	0.00
Laheg	49.083	49.89
Mareb	52.199	54.61
Al-Mahweet	51.11	51.41
Al-Maharh	51.753	56.41
Amran	55.614	64.70
Al-Dhale	52.462	50.00
Remah	53.824	0.00

2.3 Non food Poverty Line:

6. While the cost of the minimum food bundle is derived from estimated physiological needs, there is no equivalent methodology for determining the minimum non-food bundle. Following Engel's law, food shares are regressed against logarithm of total household expenditure relative to food poverty line and its square, logarithm of household size and its square, share of small and older children, share of adult males and females, and share of elderly.

7. That is

$$s_i = \alpha + \beta \log(x_i / z^f) + \gamma(\log(x_i / z^f))^2 + \delta h_i , \quad (1)$$

1. Where s_i denotes food share of household i, x_i is its actual consumption, z^f if the food poverty line and h_i is vector of household demographic characteristics.

2. The non-food allowance for each household can be estimated in two ways: (i) regressing the food share against total expenditures and identifying the non-food share in the expenditure distribution of households in which expenditure on *food* is

equivalent to the food poverty line; or (ii) by identifying the share of non-food expenditure for households in which *total* expenditure is equivalent to the food poverty line. The former approach yields an "upper" bound of the poverty line, while the latter yields a "lower" bound, since it defines the total poverty line in terms of those households which had to displace food consumption to allow for non-food expenditures, considered to be a minimum indispensable level of non-food requirements.

Thus lower poverty line $=(2-s_i)*z^f$ *(2).*

Upper poverty line is obtained by solving equation (1) iteratively.

3. By this approach household regional specific poverty lines are estimated (households with the same gender and age composition in each region have the same poverty lines). Obviously this approach takes into account location, age and gender composition as well as economies of scale, as food shares and hence non food estimates vary according to household size, age and gender composition. Hence differences in food shares result from the addition of members of specific age and gender. The sharing behaviors among household members are also reflected.

Poverty Mapping in Yemen[6]

I INTRODUCTION

1. This report describes how the poverty mapping method developed in Elbers, Lanjouw and Lanjouw (2002a), abbreviated with ELL, is implemented using data from Yemen. The idea is to measure consumption-based poverty at the disaggregated regional level by combing the information from the General Population, Housing, and Establishment Census in 2004 and the Household Budget Survey (HBS) in 2005-06 from Yemen.

2. Yemen has 21 governorates and 313 districts. The aim of this mission is to produce a poverty map at district level using the ELL method. The following tasks have been done to achieve this aim:

- Select a set of variables that are common to the Census and the HBS,
- Estimate models of household consumption per capita using HBS data for all the urban and rural areas,
- Predict household consumption per capita using the Census data for all the urban and rural areas and estimate poverty indicators at district level.

3. The third reason is that solving the remaining inconsistencies may occasionally imply making imputations, which at this point – many miles and months away from the place and time where the data were collected – can only be made by guesswork.

4. In this report, section 2 provides a brief summary of the ELL method. Section 3 describes the data used. Section 4 describes the three tasks which have been implemented on the data and presents the results of the poverty estimates. Section 5 lists the remaining issues with the results. Poverty indicators are also estimated based on food consumption. The details of food poverty estimates are listed in Appendix A.

II METHODOLOGY

5. The idea of the ELL method[7] is to first estimate the joint distribution of y_h, a variable on which the indicators of poverty are based, and a vector of variables x_h using a smaller and richer sample (e.g. data from a survey). By restricting x_h to be the variables on which a larger sample (e.g. data from a census) also provides

[6] The author thanks P. Lanjouw from the World Bank for his guidance during all stages of this work, T. G. Srinivasan for providing access to the census and HBS data, and the staff of the Development Research Group at the World Bank, Washington D.C. for their help at the early stage of this work.
[7] This paragraph is drawn from Elbers et. al. (2002b).

information, the distribution of y_h for any sub-sample of the large sample can be generated by using the estimated distribution and the observed x_h in the larger sample. This generated distribution of y_h can then be used to generate the poverty indicators. The following is a brief summary of the method.

A Consumption Model

6. Consumption per capita is often used to measure poverty. An estimated joint distribution of consumption per capita y_h and a vector of observed variables x_h is obtained using the ELL method by developing a linear model of y_h on x_h:

$$\ln y_{ch} = x_{ch}^{'}\beta + u_{ch},$$

where y_{ch} is the household consumption per capita for household *h* in location *c*, x_{ch} is the vector of explanatory variables, and u_{ch} is an error term. It should be noted here that this model is only used for predicting y_{ch} but not to measure the direct effect of x_{ch} on y_{ch}, so the endogeneity of the explanatory variables is not of concern here. As the results of this model are going to be used to predict y_{ch} in the census, it is preferred that the model fits most closely to the observations that represent a large part of the census population. Therefore population expansion factors are used as weights in this regression.

The residual term u_{ch} is defined as:

$$u_{ch} = \eta_c + \varepsilon_{ch},$$

where η_c is a location component, and ε_{ch} is a household component of the residual. The location component η_c is used to capture the part of the error term which is due to the location characteristics common to all households in that location. The household component of the residual ε_{ch} reflects unobserved household characteristics which are not correlated with the location effect.

7. The variances of these two components of the error term reflect how much the household's predicted consumption deviates from its actual consumption. This deviation is one of the sources of the prediction error of the poverty indicators. The

idiosyncratic component ε_{ch} falls approximately proportionately in sample size (Elbers et. al. 2002a), so for a large enough sample the idiosyncratic component of the error term does not cause serious problems to the precision of the estimates of poverty indicators. The location component η_c does not fall in sample size, so it is important to capture as much of the location effect in the consumption model as possible. One way to do this is to calculate the means of the observed variables (e.g. average level of education) at certain location level (e.g. enumeration area) using the census data, insert these variables into the survey data and use them as regressors in the consumption model. These variables of census means can often do a good job in capturing the location effect.

8. This consumption model is estimated using Generalized least squares (GLS). An Ordinary least squares (OLS) estimation is first performed to obtain the variance-covariance matrix of the error term. The residuals $\hat{u}_{ch}$ from the OLS estimation can be decomposed into two parts:

$$\hat{u}_{ch} = \hat{u}_{c.} + (\hat{u}_{ch} - \hat{u}_{c.}) = \hat{\eta}_c + e_{ch},$$

where a subscript "." indicates an average over that index.

The variance of the location component $\hat{\sigma}_\eta^2$ can be estimated non-parametrically using $\hat{\eta}_c$.

The component e_{ch} can be used to estimate the variances of ε_{ch}. A logistic form is used in this estimation:

$$\ln[\frac{e_{ch}^2}{A - e_{ch}^2}] = z_{ch}^T \hat{\alpha} + r_{ch},$$

where $\mathbf{z}_{ch}$ are the variables which best explain variation in e_{ch}^2. In this way the prediction is bounded between zero and a maximum *A*. If A is set equal to $(1.05) * \max\{e_{ch}^2\}$ and $B = \exp\{z_{ch}^T \hat{\alpha}\}$, using the delta method the variance of ε_{ch} is estimated as:

$$\hat{\sigma}^2_{\varepsilon,ch} = [\frac{AB}{1+B}] + \frac{1}{2} Var(r)[\frac{AB(1-B)}{(1+B)^3}].$$

9. Once these two variances are calculated, they can be plugged into the variance-covariance matrix of the error term and the model can be estimated by GLS.

B Poverty Indicators

10. The second set of tasks in the ELL method is to apply the estimates from the regression of the consumption model to the census data, predict the consumption from the census data and calculate the poverty indicators.

11. This task is done by simulation. For each simulation a vector of the parameters $\tilde{\beta}$ is drawn from the multivariate normal distribution described by the GLS estimates of the consumption model and the associated variance-covariance matrix. The location component of the error term $\tilde{\eta}_c$ is drawn randomly with replacement from the set of $\hat{\eta}_c$. To draw the household component $\tilde{\varepsilon}_{ch}$, $\tilde{\varepsilon}^*_{ch}$ is first drawn for each household with replacement from the set of all standardized residuals[8], or from the standard residuals that correspond to the cluster from which the household's location effect is derived. The household component is then set to $\tilde{\varepsilon}^*_{ch} \times \hat{\sigma}_{\varepsilon,ch}$. For each simulation, with the drawn values of $\tilde{\beta}$, $\tilde{\eta}_c$, and $\tilde{\varepsilon}_{ch}$, the value of per capita consumption $\hat{y}_{ch}$ is estimated as:

$$\hat{y}_{ch} = \exp\left(x'_{ch}\tilde{\beta} + \tilde{\eta}_c + \tilde{\varepsilon}_{ch}\right).$$

12. Finally, the full vector of simulated consumption per capita $\hat{y}_{ch}$ is used to calculate the mean and standard deviation of each poverty indicator.

III DATA

C Census data

13. The General Population, Housing, and Establishment Census was conducted by the Central Statistical Organization, Ministry of Planning & International Cooperation, Republic of Yemen in December 2004. The total number of households

[8] Standardized residuals are calculated using the formula:

$$e^* = \frac{e_{ch}}{\hat{\sigma}_{\varepsilon,ch}} - [\frac{1}{H}\sum_{ch}\frac{e_{ch}}{\hat{\sigma}_{\varepsilon,ch}}].$$

covered in the census is 2,831,929[9]. For urban households, the administration contains six levels: governorate, district, sub-district, city, zone and neighborhood. The administration for rural households contains five levels: governorate, district, sub-district, village and sub-village. Table 1 lists the number of administrative levels in each governorate. All the administrative areas are then divided into 21,582 enumeration areas (EAs). Table 1 also lists the number of EAs in each governorate. We can see from Table 1 that for urban areas, the number of EAs is in between of the number of zones and neighborhoods for some governorates and smaller than the number of neighborhoods for other governorates. For rural areas the number of EAs is between the number of subdistricts and the number of villages.

14. Two kind of questionnaires are used in the census: the short questionnaire and the long questionnaire. The short questionnaire has seven components: housing unit properties, transport vehicles and durable goods, general & social data, data of disabled household members, married status and educational data. The long questionnaire is used for 10% of the households and it contains all the sections in the short one plus three sections: economic data, fertility data and mortality data. The long questionnaire provides richer information, but since it is only used by 10% of the households using the household level data from the long questionnaire often increases the standard errors of the estimates of the poverty indicators. In the case of Yemen the three extra sections covered in the long questionnaire provide little common information compared to the survey data. Therefore they are not used in generating variables at the household level. However, the economic data provided by the long questionnaire can be useful in predicting consumption and they can be used in generating variables of census means about average economic status at a certain location.

D Survey Data [10]

15. The Household Budget Survey 2005-06 was also conducted by the Central Statistical Organization of Yemen. The sample frame for the HBS was the 2004 General Population, Housing, and Establishment Census. Yemen consists of 21 governorates. The study population was sorted into 38 strata. The 17 governorates were represented by two strata (urban and rural), whereas Sana'a City and Aden are only urban and Remah and Sana'a Region are only rural. This resulted in 19 urban strata and 19 rural strata.

16. Within each stratum, the sample was selected in two stages. In the first stage, a certain number of Census Enumeration Areas (EAs) were selected with probability proportional to size (using as a measure of size the number of households according to the pre-census estimates available in January 2005). In the second stage, 12 households were picked from each EA by systematic equal probability sampling.

17. In order to produce estimates of consumption in all governorates of both rural and urban populations, the total sample of 1,200 EAs was distributed across strata by

[9] Among these households, 231,565 households only contain data on dwelling because the houses were not occupied or the household does not have a household head. These households are dropped from later analysis.
[10] The description of the design of the HBS is drawn from Godoy and Muñoz (2006).

a combination of allocation proportional to size and equal allocation. The final sample allocation is as shown in Table 2.

18. The HBS data contain information on household roster, activities, dwelling conditions, health, education, anthropometrics, income, durable goods and consumption. Among these, information on household roster, dwelling conditions, education and durable goods is also available in the census.

IV IMPLEMENTATION

E Select a Set of Variables that are Common to the Census and the HBS

19. All the common information in the census and the survey are listed in Table 3. Table 4 lists all the variables generated using the information listed in Table 3. The variables are in four categories: dwelling, durables, demography and education. Variables from these four categories are all very likely to be correlated to household consumption and can be good predictors of it. The high degree of comparability of selected variables is crucial for getting accurate estimates of poverty indicators. Two things need to be checked before a variable can be used as a candidate of the regressors in the consumption model. First, the questions in the questionnaires, on which a certain variable is based, must be truly the same in the census and the survey. This requires investigating the wording of questions in the questionnaires carefully. For example, in the Yemen case about the main source used for cooking, the survey questionnaire lists all the choices separately (i.e. 1 wood, 2 coal, 3 gas etc.) while the census questionnaire combines choices (e.g. 3 wood/coal/both, 4 wood/gas). One may want to generate a variable such as "the main source of cooking is coal", which will be equal to 1 if the answer is 2 in the survey and 3 in the census. Variables like this are problematic and should not be used in the analysis. Sometimes it is not very clear if the questions in the census and the survey are indeed the same, especially for the names of durable goods. Thus after being generated, the variables of durables were checked again to make sure that the names of the durables are the same in the census and the survey. Three variables were excluded (durable7, durable13 and durable14).

20. Second, the variables must have similar distributions in the census and the survey, such that the survey is representative. It is sometimes hard to judge if the distributions are similar. Experience from cases of other countries shows that the means of variables are the most important. In the analysis of the case of Yemen, means are also used as the most important property to judge if the distributions are the same. Whether the variables can have similar distributions depends mainly on the original design of the survey and the survey data. However, sometimes the way of generating the variables is also important. For example, for the durable goods one can generate integer variables "the number of a certain durable good owned by the household" or dummy variables "whether the household owns a certain durable good". It turns out that the later is a better idea. First, for most of the durables few households own more than one, so using the number of durables doesn't bring much more information than the dummy variables. Second the number of durables in general has a much wider range in the census than that in the survey; these outliers can change the mean and other properties of the distribution dramatically. Dummy variables only have values 0 and 1, so they do not have this problem. The distributions

of all the variables generated are compared in each stratum to make sure that a variable has similar distributions (especially means) in the census and the survey. The variables which pass this check are set as candidates which can be used as regressors in the consumption model.

21. As mentioned in section 2, unlike the idiosyncratic component the variance of the location component in the error term does not fall with the sample size. Thus it is essential to capture the location effect as much as possible in the consumption model. Variables of census means for each location are often used to achieve this.

22. Since households in the survey are drawn from the households in the EA of the census, it is natural to calculate the means at the EA level. In order to do this, it is required to be able to map each household in the survey and the census to the EAs. It is possible that the data do not provide enough information to do so. In such cases, the variables of census means can also be generated at other levels. For example, in the case of Yemen it is also reasonable to calculate the census means at the subdistrict level for the rural areas and at the zone level for the urban areas. In this case, one should be able to know which subdistricts/zones the households in the survey and the census belong to. Both EA level and subdistrict/zone level have been experimented with. It turns out that the former is better. First, for the urban areas variables of means calculated at EA level are much better in capturing the location effect. Second, for the rural areas the number of districts is not much more than the number of subdistricts for some governotes. Thus the variables of census means do not have much variation in some of the districts and these census means are often found to be able to change the estimates of poverty indicators dramatically.

23. Table 5 lists all the census means generated. It should be noted that these variables of census means can be generated not only for the variables which are common to both census and survey but also for the variables which only appear in the census but not in the survey. These variables of census means are then inserted into the survey. These variables in general have similar distributions in the census and in the survey but it is possible that for a certain variable the survey only covers the high/low range of the value of the variable. Thus it is also checked if the census means have similar means in the census and in the survey. Variables that pass this check are set to be the candidates of the regressors of the consumption model.

F Estimate models of household consumption per capita using HBS data

Consumption models are estimated for each stratum. Two criteria are used to evaluate the consumption models: the R square of the model and the ratio of the variance of the location effect to the variance of the error term. Table 6.1 to Table 6.38 show all the results of the regressions of the consumption models and the means and standard deviations of all the variables used in the models. For the 38 strata, the R squares vary from 0.38 to 0.70. The variables of census means calculated at EA level seem to capture the location effect well. The ratios of the variance of the location effect to the variance of the error term are below 0.078 for all strata except for rural Abyan. For some strata, the variables of census means can fully capture the location effect so it does not appear in the error term anymore. One principle of building these models is keeping the models simple. If a model can be built with reasonable R square and location effect without including interaction terms, interaction terms are not included. For strata with R squares lower than 0.40, interaction terms are included to get a better

fit. It is also noted that variables related to the size of households (e.g. hh_size, namales) sometimes contain outliers and bring high leverage to the model. If the variable (x) is not highly significant, it is deleted from the model. If it is highly significant, a variable equal to 1/(1+x) is generated to replace it.

G Predict household consumption per capita using the census

24. The results of the consumption models shown in Table 6 are applied to predict household consumption per capita using the census data. The location effect η is drawn semi-parametrically and the idiosyncratic component is drawn hierarchical semi-parametrically. If the simulated consumption per capita is higher than the highest consumption per capita or lower than the lowest one the survey, this draw is counted as missing and is not included in calculating the poverty indicators. The poverty line used is household specific.

25. I first produce the poverty indicators at the stratum level. Remember from the design of the survey that the survey is representative at this level, so the estimates calculated using the ELL method should be comparable to the estimates calculated directly from the survey data. Table 7 lists the estimates of headcount for each stratum using different data sources. For most of the strata, the estimates are close using the two data sources. Exceptions are estimates of rural Al-Jawf, rural Al-Maharh and urban Amran. The estimates of poverty indicators FGT0, FGT1 and FGT2 based on 100 simulations are listed in Table 8 and Table 9. The mean and plus/minus 2 standard errors of the estimates of headcount index are shown in Figure 1 and Figure 2 for rural and urban areas respectively.

V CONCERNS ON CURRENT RESULTS

26. There is one main point of concerns.

27. For a large portion of the urban districts the number of households in each district is small. This causes high standard errors in the estimates of the poverty indicators. It should be borne in mind when using these estimates at district level that these estimates are noisy. Thus one should not make pairwise comparisons of poverty across districts without taking into account the statistical imprecision.

VI REFERENCES

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Table 1: Number of households, administrative areas and EAs in each governorate in census data

Governorate	Urban							Rural					
	households	districts	subdistricts	cities	zones	neighb.	EAs	households	districts	subdistricts	villages	subvillages	EAs
11 Ibb	54,126	17	19	19	23	356	371	259,492	20	251	2,717	17,208	2,054
12 Abyan	15,524	7	7	11	27	89	106	43,446	11	11	2,978	2,979	356
13 Sana'a City	260,825	12	12	12	89	791	1,637	4,971	1	3	52	172	41
14 Al-Baida	14,023	9	9	10	10	105	91	55,774	19	109	1,478	3,171	441
15 Taiz	88,474	16	17	17	17	317	621	304,262	20	233	1,983	16,407	2,286
16 Al-Jawf	7,236	11	11	11	11	121	44	49,230	12	47	481	2,466	293
17 Hajja	17,275	19	19	20	20	216	135	169,586	31	161	3,780	13,830	1,503
18 Al-Hodeida	120,603	24	33	34	34	283	803	246,919	24	135	2,298	5,796	1,878
19 Hadramout	66,375	24	25	30	82	149	428	75,605	30	37	3,837	3,847	550
20 Dhamar	25,879	8	8	8	8	134	183	173,069	12	312	3,373	13,419	1,416
21 Shabwah	9,637	11	11	11	19	43	74	43,412	17	24	3,337	3,540	398
22 Sa'adah	12,924	11	13	13	13	157	91	68,529	15	121	1,194	6,438	606
23 Sana'a Reg.	3,653	9	10	10	10	67	29	112,119	16	145	2,156	7,218	913
24 Aden	97,289	8	8	8	44	242	633	0	0	0	0	0	0
25 Laheg	9,720	9	9	10	10	110	65	104,882	14	40	4,124	5,840	757
26 Mareb	3,962	5	5	5	5	29	29	24,029	14	59	467	2,162	208
27 Al-Mahweet	4,674	6	6	6	6	71	35	60,849	9	114	1,213	4,647	531
28 Al-Maharh	5,220	6	6	6	18	51	40	7,636	9	12	367	369	75
29 Amran	18,728	15	16	16	16	179	152	80,408	20	125	1,629	5,707	753
30 Al-Dhale	8,445	8	8	8	8	140	62	52,640	9	41	1,688	2,900	409
31 Remah	617	3	3	3	3	31	5	49,862	6	89	737	6,679	480

Table 2: HBS final sample allocation

	No. of clusters			No. of households		
Governorate	Urban	Rural	Total	Urban	Rural	Total
11 Ibb	43	41	84	516	492	1,008
12 Abyan	30	18	48	360	216	576
13 Sana'a City	156	0	156	1,872	0	1,872
14 Al-Baida	29	19	48	348	228	576
15 Taiz	56	40	96	672	480	1152
16 Al-Jawf	22	14	36	264	168	432
17 Hajja	30	30	60	360	360	720
18 Al-Hodeida	75	33	108	900	396	1,296
19 Hadramout	41	19	60	492	228	720
20 Dhamar	31	29	60	372	348	720
21 Shabwah	21	15	36	252	180	432
22 Sa'adah	28	20	48	336	240	576
23 Sana'a Region	0	24	24	0	288	288
24 Aden	72	0	72	864	0	864
25 Laheg	25	23	48	300	276	576
26 Mareb	22	14	36	264	168	432
27 Al-Mahweet	27	21	48	324	252	576
28 Al-Maharh	12	12	24	144	144	288
29 Amran	27	21	48	324	252	576
30 Al-Dhale	22	14	36	264	168	432
31 Remah	0	24	24	0	288	288
Total	769	431	1,200	9,228	5,172	14,400

Source: Figure 3, Godoy and Muñoz (2006)

Table 3: Common information in the census and the survey

	Census (question No. & code)	Survey (question No. & code)
Dwelling		
Type of house	Section 2, 201	Section 3, 301
house/villa	1: house	1: house; 3: villa
apartment	2: apartment	2: apartment
hut	6: hut; 7: tin hut	6: hut
tent	8: tent	7: tent
establishment	3: establishment for accommodation	4: habitable establishment
Main method of water supply	Section 2, 206	Section 3, 305
public network	1: public network	1: public network
private network	2: private network	3: private network
cooperative network	3: cooperative network	2: cooperative network
Main source of water supply	Section 2, 205	Section 3, 306
well	1: deep well; 2: well; 4: covered well	1: erteslan well; 2: normal well
rain collection	7: rooftop water harvest	7: traditional way in collecting rain
Type of sewage system	Section 2, 207	Section 3, 312
public network	1: public network	1: public network
close pot	2: covered pit	2: close pot
open pot	3: open pit	3: open pot
Main source of lighting	Section 2, 208	Section 3, 315
public network	1: public network	1: public network
cooperative network	3: cooperative network	2: cooperative network
private network	2: private network	3: private network
private generator	4: private generator	4: house generator
kerosene	5: kerosene	5: kerosene lantern
gas	6: gas	6: gas lamp
Main source for cooking	Section 2, 209	Section 3, 319
electricity	5: electricity	5: electricity
kerosene	2: kerosene	4: kerosene
Legal status of the dwelling	Section 2, 203	Section 3, 324
own	1: own	2: own
rent	2: rented	1: rented
Durables		
Durable goods	Section 3, 301, 302	Section 12, 1201
private cars	301, 1: private car	1: private car
taxi's	301, 2: taxi	2: taxi
buses	301, 3: bus	3: autobus
small trucks	301, 4: small truck	5: small truck
large trucks	301, 5: large truck	6: truck
motor bikes	301, 6: motorbike	8: motor bike
mixers	301, 8: concrete mixer	10: mixer
phones	302, 1: house phone	21: telephone
mobiles	302, 2: mobile	22: mobile telephone
refrigerators	302, 3: refrigerator	11: refrigerator

Table 3: Common information in the census and the survey (Continued)

	Census (question No. & code)	Survey (question No. & code)
washing machines	302, 4: washing machine	12: washing machine
TVs	302, 7: TV	17: color TV; 18: black TV
radios	302, 10: radio	16: radio/cassette recorder
water heaters	302, 11: water heater	14: electrical water worm; 15: sun water worm
sewing machines	302, 12: sewing machine	23: sewing machine
PCs	302, 6: PC	27: PC
satellite dishes	302, 8: satellite dish	20: satellite dish
air conditioners	302, 9: air conditioner	26: air conditioner
Demography		
Age of household members	Section 4, 408	Section 1, 103
Relation of household members to head	Section 4, 406	Section 1, 105
head	1: HH head	0: head
spouse	2: HH head spouse	1: spouse
Sex of household members	Section 4, 407	Section 1, 102
male	1: male	1: male
female	2: female	2: female
Marital status of household members	Section 6, 601	Section 1, 109
married	1: single	1: single
single	2: married	2: married
divorced	3: divorced	3: divorced
widowed	4: widowed	4: widowed
Education		
Education level of household members	Section 7, 704	Section 5, 506
illiterate	1: illiterate	1: never read and write
read/write	2: read/write	2: read and write
primary	3: primary	3: primary
university	8: university	10: university degree

Table 4: Household level variables generated using information common in both the census and the survey

Variable name	Definition
housetype1	The type of the house of the household is house/villa
housetype2	The type of the house of the household is apartment
housetype3	The type of the house of the household is hut
housetype4	The type of the house of the household is tent
housetype5	The type of the house of the household is habitable establishment
water1	The main source water supply is public network
water2	The main source water supply is private network
water3	The main source water supply is cooperative network
sewage1	The type of sewage disposal system is public network
sewage2	The type of sewage disposal system is close pot
sewage3	The type of sewage disposal system is open pot
light1	The main source of lighting is public network
light2	The main source of lighting is cooperative network
light3	The main source of lighting is private network
light4	The main source of lighting is private generator
light5	The main source of lighting is kerosene
light6	The main source of lighting is gas
cook1	The main source used for cooking is electricity
cook2	The main source used for cooking is kerosene
ownhouse1	The household owns the house
ownhouse2	The household rents the house
dum_durable1	The household owns private car(s)
dum_durable2	The household owns taxi('s)
dum_durable3	The household owns bus(es)
dum_durable4	The household owns small truck(s)
dum_durable5	The household owns large truck(s)
dum_durable6	The household owns motor bike(s)
dum_durable7*	The household owns mixer(s)
dum_durable8	The household owns phone(s)
dum_durable9	The household owns mobile(s)
dum_durable10	The household owns refrigerator(s)
dum_durable11	The household owns washing machine(s)
dum_durable12	The household owns TV(s)
dum_durable13*	The household owns radio(s)
dum_durable14*	The household owns water heater(s)
dum_durable15	The household owns sewing machine(s)
dum_durable16	The household owns PC(s)
dum_durable17	The household owns satellite dish(es)
dum_durable18	The household owns air conditioner(s)
headage	Age of the head
spouseage	Mean age of spouses of the head
spouseno	No. of spouses of the head
hh_size	Size of the household
namales	No. of adult males in the household (15≤age<60)
nafemales	No. of adult females in the household (15≤age<60)
nkids	No. of kids in the household (age<15)
nelderly	No. of elderlys in the household (age≥60)
malep	Percentage of males in the household
femalep	Percentage of females in the household
amalep	Percentage of adult males in the household
afemalep	Percentage of adult females in the household

Table 4: Household level variables generated using information common in both the census and the survey (continued)

Variable name	Definition
kidp	Percentage of kids in the household
elderlyp	Percentage of elderlys in the household
marriedp	Percentage of married people in the household
singlep	Percentage of single people in the household
divorcedp	Percentage of divorced people in the household
widowp	Percentage of widows in the household
illiterp	Percentage of illiterate members in the household
primaryp	Percentage of members who finish primary school in the household
universityp	Percentage of members with university diploma in the household
headilliter	The head is illiterate
headread	The head can only read and write
headprim	The head's highest education level is primary school
headsecond	The head's highest education level is higher than primary school and lower than university
headuniv	The head's highest education level is university or higher
highilliter	The person with highest level of education in the household is illiterate
highread	The person with highest level of education in the household can only read and write
highprim	The highest education level of the most well-educated person in the household is primary school
highsecond	The highest education level of the most well-educated person in the household is higher than primary school and lower than university
highuniv	The highest education level of the most well-educated person in the household is university

* The variable is dropped from later analysis.

Table 5: Variables of Census means

Variable name	Definition
housetype1_ea	The percentage of households whose type of the houses are house/villa
housetype2_ea	The percentage of households whose type of the houses are apartment
housetype3_ea	The percentage of households whose type of the houses are hut
housetype4_ea	The percentage of households whose type of the houses are tent
housetype5_ea	The percentage of households whose type of the houses are habitable establishment
water1_ea	The percentage of households whose main source of water supply is public network
water2_ea	The percentage of households whose main source of water supply is private network
water3_ea	The percentage of households whose main source of water supply is cooperative network
sewage1_ea	The percentage of households whose type of sewage disposal system is public network
sewage2_ea	The percentage of households whose type of sewage disposal system is close pot
sewage3_ea	The percentage of households whose type of sewage disposal system is open pot
light1_ea	The percentage of households whose main source of lighting is public network

Table 5: Variables of Census means (Continued)

Variable name	Definition
light2_ea	The percentage of households whose main source of lighting is cooperative network
light3_ea	The percentage of households whose main source of lighting is private network
light4_ea	The percentage of households whose main source of lighting is private generator
light5_ea	The percentage of households whose main source of lighting is kerosene
light6_ea	The percentage of households whose main source of lighting is gas
cook1_ea	The percentage of households whose main source used for cooking is electricity
cook2_ea	The percentage of households whose main source used for cooking is kerosene
ownhouse1_ea	The percentage of households who own their houses
ownhouse2_ea	The percentage of households who rent their houses
dum_eaurable1_ea	Percentage of households which own private car(s)
dum_eaurable2_ea	Percentage of households which own taxi('s)
dum_eaurable3_ea	Percentage of households which own bus(es)
dum_eaurable4_ea	Percentage of households which own small truck(s)
dum_eaurable5_ea	Percentage of households which own large truck(s)
dum_eaurable6_ea	Percentage of households which own motor bike(s)
dum_eaurable8_ea	Percentage of households which own phone(s)
dum_eaurable9_ea	Percentage of households which own mobile(s)
dum_eaurable10_ea	Percentage of households which own refrigerator(s)
dum_eaurable11_ea	Percentage of households which own washing machine(s)
dum_eaurable12_ea	Percentage of households which own TV(s)
dum_eaurable15_ea	Percentage of households which own sewing machine(s)
dum_eaurable16_ea	Percentage of households which own PC(s)
dum_eaurable17_ea	Percentage of households which own satellite dish(es)
dum_eaurable18_ea	Percentage of households which own air conditioner(s)
headilliter_ea	Percentage of households whose heads are illiterate
headread_ea	Percentage of households whose heads can only read and write
headprim_ea	Percentage of households whose heads only finish primary school
headsecond_ea	Percentage of households whose heads' highest education level is higher than primary school and lower than university
headuniv_ea	Percentage of households whose heads' highest education level is university or higher
Illiter_ea	Percentage of people who are illietrate
primary_ea	Percentage of people whose education level is primary school
university_ea	Percentage of people who finish university
employed1_ea*	Percentage of people who worked in the month before the census
employed2_ea*	Percentage of people who have worked before
employ_nonself_ea*	Percentage of prople who were emplyed by somebody else
employ_self_ea*	Percentage of prople who were self-emplyed
work1_ea*	Percentage of people who worked for gov. est./co.
work2_ea*	Percentage of people who worked for mixed est./co.
work3_ea*	Percentage of people who worked for private est./co.
work4_ea*	Percentage of people who worked for store/workshop/office
work5_ea*	Percentage of people who worked at home
work6_ea*	Percentage of people who worked as sidewalk salesman
work7_ea*	Percentage of people who worked as roaming salesman
work8_ea*	Percentage of people who worked as private construction site
work9_ea*	Percentage of people who worked as private farm
work10_ea*	Percentage of people who worked as private transport vehicle

* The variable is generated using section 8 (economic data) of the long questionnaire.

Table 6: Regression results of consumption models

Table 6.1: Rural Ibb

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_durable1	0.583	0.105	0.043	0.202	0.044	0.042
dum_durable1_ea	2.674	0.519	0.043	0.051	0.046	0.002
employed1	-0.846	0.242	0.220	0.094	0.223	0.010
employ_nonself	0.384	0.114	0.295	0.236	0.332	0.054
headread_d	1.433	0.285	0.156	0.097	0.157	0.008
headsecond_ea	-1.131	0.344	0.117	0.068	0.138	0.007
highsecond	0.129	0.050	0.352	0.478	0.363	0.232
housetype2	-0.308	0.172	0.019	0.137	0.014	0.014
housetype3_ea	1.681	0.517	0.013	0.047	0.014	0.002
light5	-0.294	0.049	0.447	0.497	0.420	0.244
nelderly	-0.104	0.035	0.398	0.660	0.370	0.404
ownhouse1_ea	0.712	0.164	0.839	0.135	0.851	0.017
primaryp	0.485	0.166	0.110	0.160	0.119	0.022
singlep	-0.886	0.109	0.588	0.231	0.595	0.044
intercept	11.110	0.177				
obs.	463					
R square	0.42					
location effect	0.083					

Table 6.2: Rural Abyan

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable1	0.323	0.121	0.080	0.272	0.062	0.058
dum_eaurable10	0.217	0.101	0.222	0.415	0.252	0.189
dum_eaurable12	0.115	0.074	0.396	0.489	0.418	0.244
dum_eaurable17	0.181	0.116	0.088	0.283	0.090	0.082
housetype1	-0.160	0.084	0.857	0.350	0.862	0.120
kidp	-0.585	0.158	0.383	0.230	0.376	0.055
ownhouse1_ea	1.384	0.716	0.932	0.107	0.931	0.003
primaryp	0.543	0.246	0.133	0.181	0.115	0.019
singlep	-0.654	0.168	0.587	0.213	0.576	0.048
water1	-0.311	0.090	0.140	0.347	0.150	0.128
intercept	10.497	0.713				
obs.	201					
R square	0.40					
location effect	0.148					

Table 6.3: Rural Al-Baida

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
amalep	0.594	0.201	0.238	0.157	0.226	0.020
dum_eaurable11	0.328	0.101	0.110	0.313	0.101	0.091
dum_eaurable11_ea	3.854	0.670	0.110	0.166	0.097	0.024
dum_eaurable14_ea	-4.819	0.734	0.055	0.097	0.052	0.008
dum_eaurable3_ea	-20.899	4.069	0.008	0.016	0.008	0.000
employed1	-9.877	1.380	0.245	0.094	0.263	0.010
employed2	13.265	1.734	0.261	0.092	0.281	0.009
headread_ea	1.209	0.268	0.226	0.127	0.202	0.014
headsecond_ea	5.487	0.755	0.099	0.068	0.097	0.006
headsingle	0.265	0.143	0.046	0.209	0.046	0.044
housetype1_ea	1.290	0.355	0.938	0.101	0.902	0.024
light5	-0.417	0.085	0.178	0.383	0.175	0.145
nafemales	-0.038	0.020	2.193	1.541	2.207	1.931
nelderly	-0.099	0.043	0.439	0.696	0.454	0.485
ownhouse1_ea	-1.589	0.438	0.906	0.080	0.895	0.020
singlep	-1.096	0.154	0.616	0.193	0.615	0.037
water4_ea	-0.387	0.145	0.913	0.180	0.901	0.047
work7	-1.466	0.325	0.069	0.132	0.075	0.012
intercept	10.546	0.477				
obs.	222					
R square	0.49					
location effect	-*					

*No location effect.

Table 6.4: Rural Taiz

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable12	0.176	0.049	0.332	0.471	0.346	0.227
dum_eaurable1_ea	-5.475	1.104	0.026	0.029	0.020	0.000
dum_eaurable4	0.243	0.131	0.018	0.133	0.021	0.021
femalep	-0.278	0.122	0.541	0.213	0.546	0.040
headiliter	-0.156	0.046	0.667	0.471	0.694	0.213
kidp	-0.898	0.082	0.409	0.255	0.414	0.064
light1	-0.348	0.079	0.194	0.395	0.151	0.128
light5	-0.333	0.063	0.654	0.476	0.698	0.211
nafemales	-0.063	0.019	1.835	1.325	2.022	1.984
namales	-0.089	0.020	1.387	1.321	1.405	1.791
sewage2	0.146	0.046	0.315	0.464	0.340	0.225
water2	0.336	0.079	0.060	0.237	0.070	0.065
work1	1.024	0.156	0.185	0.205	0.187	0.039
work10	2.326	0.455	0.038	0.079	0.030	0.003
work4	1.367	0.174	0.138	0.187	0.138	0.031
work5	-0.805	0.348	0.019	0.059	0.021	0.004
work6	0.905	0.279	0.035	0.084	0.034	0.007
work8	0.496	0.142	0.142	0.173	0.179	0.044
work9	1.037	0.155	0.209	0.234	0.202	0.040
intercept	11.646	0.150				
obs.	450					
R square	0.47					
location effect	0.067					

Table 6.5: Rural Al-Jawf

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable18	1.386	0.371	0.001	0.037	0.008	0.008
dum_eaurable8_ea	-1.690	0.996	0.012	0.044	0.013	0.001
headsecond_ea	0.989	0.349	0.138	0.136	0.124	0.009
housetype1_ea	0.444	0.109	0.733	0.292	0.698	0.080
light5	-0.181	0.076	0.732	0.443	0.717	0.204
marriedp	1.019	0.158	0.299	0.125	0.320	0.039
nafemales	-0.056	0.027	1.766	1.220	1.787	1.287
intercept	10.610	0.125				
obs.	148					
R square	0.42					
location effect	-*					

*No location effect.

Table 6.6: Rural Hajja

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
cook2_ea	-0.772	0.190	0.054	0.181	0.038	0.018
dum_eaurable15_ea	2.463	0.511	0.030	0.079	0.035	0.008
dum_eaurable1	0.334	0.093	0.043	0.203	0.060	0.056
dum_eaurable5	0.560	0.261	0.011	0.105	0.006	0.006
dum_eaurable6	0.325	0.152	0.014	0.116	0.021	0.021
dum_eaurable9_ea	-2.330	0.542	0.093	0.106	0.087	0.011
employed1	-0.707	0.331	0.258	0.112	0.277	0.007
employ_nonself	1.075	0.310	0.123	0.165	0.143	0.040
employ_self	1.698	0.350	0.829	0.193	0.794	0.049
headage	-0.006	0.002	41.659	14.961	42.337	228.559
headiliter_ea	0.535	0.315	0.709	0.158	0.697	0.026
headprim_ea	6.559	1.019	0.049	0.044	0.050	0.002
headread_ea	-2.035	0.577	0.121	0.092	0.128	0.006
headsecond_ea	1.570	0.534	0.138	0.112	0.153	0.008
highprim	-0.138	0.075	0.068	0.252	0.095	0.086
kidp	-0.873	0.143	0.458	0.242	0.452	0.053
light1	0.410	0.126	0.078	0.268	0.089	0.081
light1_ea	-0.924	0.207	0.076	0.237	0.072	0.050
light4_ea	1.113	0.546	0.032	0.081	0.034	0.006
nafemales	-0.099	0.021	1.844	1.554	1.709	1.352
namales	-0.068	0.019	1.788	1.428	1.809	1.782
sewage2	0.544	0.075	0.080	0.271	0.110	0.098
singlep	-0.572	0.154	0.598	0.225	0.604	0.049
work5	3.420	0.680	0.016	0.050	0.021	0.002
work7	-0.888	0.334	0.052	0.105	0.049	0.013
work9	-0.656	0.187	0.533	0.278	0.542	0.089
intercept	10.949	0.476				
obs.	346					
R square	0.58					
location effect	0.055					

Table 6.7: Rural Al-Hodeida

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
afemalep	0.370	0.172	0.256	0.187	0.264	0.020
amalep	0.473	0.157	0.261	0.171	0.257	0.022
dum_eaurable4	0.246	0.144	0.021	0.144	0.022	0.022
dum_eaurable5	0.461	0.192	0.006	0.075	0.012	0.012
dum_eaurable6	0.240	0.070	0.063	0.243	0.095	0.086
employed1	-7.410	1.490	0.328	0.115	0.346	0.016
employed2	8.002	1.430	0.342	0.113	0.356	0.017
headiliter_ea	-0.923	0.312	0.786	0.123	0.773	0.020
headread_ea	-1.392	0.407	0.106	0.069	0.132	0.015
headsingle	0.507	0.130	0.034	0.181	0.027	0.026
light1	0.646	0.188	0.035	0.184	0.033	0.032
light3_ea	1.965	0.286	0.022	0.102	0.030	0.020
light5_ea	1.237	0.200	0.862	0.243	0.890	0.043
marriedp	0.874	0.118	0.404	0.269	0.402	0.049
ownhouse2	0.712	0.280	0.008	0.091	0.002	0.002
water3	0.219	0.065	0.187	0.390	0.142	0.122
water3_ea	0.171	0.081	0.185	0.339	0.152	0.086
water4_ea	-0.323	0.146	0.911	0.206	0.929	0.037
work7	-0.595	0.224	0.076	0.118	0.072	0.012
intercept	10.372	0.281				
obs.	377					
R square	0.47					
location effect	0.035					

Table 6.8: Rural Hadramout

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable11	0.152	0.047	0.223	0.416	0.298	0.210
dum_eaurable14_ea	-1.733	0.266	0.113	0.182	0.131	0.027
dum_eaurable1	0.186	0.049	0.236	0.424	0.259	0.193
dum_eaurable2_ea	-5.818	1.852	0.013	0.023	0.015	0.000
dum_eaurable4	0.476	0.101	0.056	0.231	0.052	0.049
dum_eaurable9_ea	0.861	0.258	0.197	0.183	0.202	0.025
headdivorced	-0.337	0.177	0.017	0.129	0.008	0.008
kidp	-0.646	0.180	0.398	0.220	0.397	0.046
light1_ea	0.456	0.110	0.414	0.451	0.478	0.195
light4	0.243	0.092	0.057	0.233	0.048	0.046
namales	0.094	0.026	2.349	2.129	2.422	2.726
nkids	0.125	0.025	4.014	3.289	3.945	12.955
singlep	-0.454	0.129	0.568	0.208	0.580	0.037
hh_size	-0.118	0.017	9.199	5.868	9.574	34.513
water1	-0.507	0.084	0.307	0.461	0.292	0.208
water3	0.189	0.076	0.088	0.283	0.064	0.060
work1	-0.264	0.100	0.129	0.145	0.166	0.058
intercept	12.218	0.099				
obs.	203					
R square	0.58					

location effect	-*

*No location effect.

Table 6.9: Rural Dhamar

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
amalep	-0.504	0.217	0.213	0.167	0.232	0.023
dum_eaurable11	0.406	0.142	0.025	0.155	0.040	0.038
dum_eaurable3	-0.506	0.278	0.002	0.048	0.005	0.005
dum_eaurable4	0.265	0.119	0.026	0.160	0.038	0.037
dum_eaurable8	0.191	0.079	0.083	0.275	0.134	0.116
employed1	6.683	2.156	0.282	0.124	0.272	0.010
employed2	-6.017	2.280	0.290	0.123	0.279	0.009
employ_nonself	-0.926	0.223	0.263	0.242	0.297	0.068
employ_self	-0.758	0.244	0.700	0.249	0.663	0.061
headprim_ea	2.978	0.958	0.038	0.043	0.037	0.001
headread_ea	0.474	0.219	0.150	0.108	0.171	0.017
kidp	-0.902	0.139	0.439	0.239	0.440	0.053
light4	0.416	0.201	0.023	0.151	0.011	0.011
marriedp	0.343	0.135	0.371	0.229	0.366	0.041
nelderly	-0.141	0.039	0.436	0.699	0.462	0.498
primaryp	0.465	0.221	0.092	0.147	0.104	0.016
work3	-2.454	0.758	0.010	0.045	0.010	0.001
intercept	12.337	0.247				
obs.	315					
R square	0.40					
location effect	0.003					

Table 6.10: Rural Shabwah

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable1	0.411	0.089	0.256	0.437	0.245	0.186
light5_ea	-0.652	0.116	0.265	0.361	0.261	0.125
light6	-0.315	0.124	0.096	0.295	0.117	0.104
ownhouse2_ea	8.078	2.105	0.021	0.061	0.018	0.000
singlep	-0.705	0.226	0.615	0.184	0.616	0.026
hh_size	-0.024	0.007	10.481	6.339	10.435	32.939
water1_ea	-0.795	0.283	0.047	0.173	0.040	0.017
intercept	11.927	0.155				
obs.	151					
R square	0.69					
location effect	0.015					

Table 6.11: Rural Sa'adah

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
amalep	1.113	0.269	0.250	0.172	0.238	0.025
dum_eaurable10_ea	1.477	0.783	0.020	0.045	0.023	0.003
dum_eaurable12	0.163	0.058	0.306	0.461	0.352	0.229
dum_eaurable12_ea	-0.476	0.185	0.306	0.265	0.323	0.054
dum_eaurable1	0.228	0.076	0.197	0.398	0.166	0.139
dum_eaurable4	0.268	0.085	0.085	0.279	0.101	0.091
employed1	-3.431	1.029	0.309	0.118	0.330	0.018
employed2	3.454	1.046	0.320	0.117	0.342	0.017
femalehead	0.470	0.178	0.054	0.225	0.026	0.025
headiliter_ea	-1.242	0.327	0.734	0.184	0.748	0.022
headprim_ea	-3.218	1.210	0.048	0.043	0.049	0.002
kidp	-0.658	0.214	0.452	0.222	0.450	0.048
marriedp	0.371	0.160	0.347	0.199	0.363	0.037
namales	-0.094	0.032	2.153	1.784	2.050	2.286
nkids	0.043	0.019	4.522	3.544	4.309	8.128
work10	-3.715	0.767	0.023	0.049	0.026	0.002
work9	0.444	0.162	0.612	0.267	0.605	0.061
intercept	12.181	0.321				
obs.	218					
R square	0.41					
location effect	0.068					

Table 6.12: Rural Sana'a Region

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable1	0.238	0.058	0.141	0.348	0.162	0.136
dum_eaurable1_ea	0.367	0.124	0.141	0.161	0.157	0.032
dum_eaurable5	0.382	0.117	0.026	0.160	0.033	0.032
dum_eaurable6	0.255	0.105	0.027	0.163	0.041	0.039
dum_eaurable9	0.201	0.050	0.176	0.381	0.207	0.165
headiliter_ea	-0.739	0.139	0.610	0.180	0.646	0.032
kidp	-0.831	0.100	0.423	0.223	0.420	0.044
light1	0.230	0.046	0.497	0.500	0.478	0.251
nafemales	-0.082	0.016	2.078	1.607	2.151	2.140
namales	-0.059	0.016	2.091	1.863	2.052	2.195
primaryp	0.675	0.163	0.127	0.163	0.106	0.017
intercept	12.189	0.130				
obs.	256					
R square	0.65					
location effect	0.049					

Table 6.13: Rural Laheg

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable12	0.159	0.092	0.364	0.481	0.397	0.240
dum_eaurable12_ea	-0.901	0.187	0.364	0.337	0.388	0.124
dum_eaurable14	-0.937	0.279	0.026	0.159	0.010	0.010
dum_eaurable14_ea	-2.644	0.939	0.026	0.095	0.018	0.004
dum_eaurable1	0.488	0.166	0.063	0.242	0.043	0.042
dum_eaurable1_ea	3.506	0.572	0.063	0.091	0.057	0.008
dum_eaurable8_ea	2.164	0.517	0.099	0.198	0.081	0.028
elderlyp	1.160	0.217	0.091	0.204	0.094	0.039
employed1	5.318	1.253	0.207	0.095	0.214	0.011
employed2	-6.212	1.337	0.217	0.096	0.227	0.011
headread_ea	1.114	0.282	0.232	0.121	0.205	0.016
headuniv_ea	3.406	0.957	0.030	0.036	0.031	0.002
kidp	-0.309	0.148	0.380	0.246	0.371	0.057
light5	-0.379	0.128	0.464	0.499	0.455	0.249
light6	-0.541	0.175	0.089	0.285	0.070	0.066
marriedp	0.427	0.143	0.358	0.238	0.358	0.046
nelderly	-0.193	0.059	0.431	0.702	0.424	0.412
water3_ea	0.807	0.259	0.032	0.138	0.033	0.021
work1	-0.792	0.174	0.387	0.296	0.384	0.071
work4	-2.711	0.414	0.120	0.186	0.103	0.028
intercept	11.736	0.223				
obs.	246.000					
R square	0.44					
location effect	-*					

*No location effect

Table 6.14: Rural Mareb

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable11_ea	-1.455	0.777	0.091	0.138	0.077	0.017
dum_eaurable13_ea	0.678	0.132	0.509	0.295	0.463	0.081
dum_eaurable17	0.425	0.156	0.061	0.239	0.053	0.051
dum_eaurable1	0.289	0.093	0.189	0.392	0.208	0.166
employed2	-1.061	0.265	0.207	0.110	0.200	0.018
headage	-0.009	0.003	43.282	14.265	41.665	148.410
headiliter_ea	-3.714	0.794	0.635	0.174	0.646	0.044
headread_ea	-6.078	1.147	0.112	0.089	0.109	0.008
headsecond_ea	-3.330	1.026	0.204	0.127	0.193	0.011
headuniv	0.472	0.236	0.030	0.036	0.020	0.019
marriedp	0.544	0.216	0.310	0.177	0.337	0.040
nkids	-0.046	0.017	4.436	3.386	4.334	6.300
ownhouse1_ea	-2.788	0.706	0.881	0.144	0.895	0.016
primaryp	0.846	0.214	0.134	0.175	0.132	0.036
work7	2.985	0.786	0.024	0.071	0.022	0.003
intercept	17.631	1.207				
obs.	158					
R square	0.70					
location effect	0.024					

Table 6.15: Rural Al-Mahweet

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable10	0.355	0.108	0.038	0.190	0.056	0.053
dum_eaurable13_ea	0.187	0.096	0.658	0.241	0.620	0.060
dum_eaurable15	0.259	0.109	0.037	0.189	0.050	0.048
dum_eaurable2	-0.636	0.353	0.007	0.083	0.004	0.004
dum_eaurable6	0.635	0.340	0.003	0.056	0.004	0.004
headiliter_ea	-0.558	0.236	0.715	0.136	0.725	0.013
headmarried	-0.687	0.096	0.893	0.309	0.914	0.079
headuniv	0.336	0.154	0.032	0.176	0.026	0.025
light6_ea	-0.178	0.080	0.113	0.230	0.113	0.077
marriedp	0.978	0.116	0.360	0.221	0.380	0.051
primaryp	0.692	0.200	0.091	0.147	0.080	0.014
water3_ea	-0.243	0.121	0.060	0.207	0.041	0.034
work8	0.315	0.155	0.139	0.168	0.131	0.025
intercept	11.755	0.203				
obs.	249					
R square	0.41					
location effect	0.005					

Table 6.16: Rural Al-Maharh

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable1×nelderlyinv*	0.424	0.111	0.141	0.107	0.180	0.127
dum_eaurable13_ea	-0.834	0.173	0.332	0.066	0.392	0.054
dum_eaurable4_0 † ×nelderlyinv	-0.544	0.164	0.770	0.103	0.832	0.086
employed1	16.003	5.451	0.309	0.026	0.282	0.018
employed2	-14.516	5.455	0.313	0.026	0.286	0.019
light4_ea×nafemalesinv ‡	-1.152	0.373	0.029	0.007	0.046	0.013
nafemalesinv×nelderlyinv	0.729	0.323	0.379	0.050	0.359	0.025
nkids	-0.086	0.017	3.145	7.531	3.104	5.712
intercept	12.356	0.178				
obs.	132					
R square	0.42					
location effect	-					

*nelderlyinv=1/(1+nelderly); † dum_durable4_0=1-dum_durable4;

‡ nafemalesinv=1/(1+nafemales).

Table 6.17: Rural Amran

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable10	0.478	0.151	0.014	0.117	0.036	0.035
dum_eaurable15_ea	0.520	0.151	0.134	0.181	0.143	0.031
dum_eaurable2	-0.367	0.221	0.014	0.014	0.009	0.009
dum_eaurable9_ea	-0.361	0.146	0.207	0.151	0.232	0.036
headsecond	0.128	0.067	0.150	0.357	0.144	0.124
light5	-0.306	0.063	0.403	0.490	0.383	0.237
nelderly	-0.085	0.035	0.473	0.747	0.460	0.504
ownhouse1_ea	-0.805	0.376	0.946	0.226	0.924	0.005
singlep	-1.013	0.111	0.607	0.187	0.585	0.047
water2_ea	0.777	0.171	0.034	0.117	0.044	0.029
water3	-0.178	0.118	0.045	0.206	0.043	0.042
work4	-2.000	0.596	0.038	0.070	0.033	0.003
work6	-1.908	0.559	0.016	0.048	0.021	0.003
intercept	12.653	0.351				
obs.	224					
R square	0.46					
location effect	-*					

*No location effect

Table 6.18: Rural Al-Dhale

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable1×sizeinv*	3.271	1.156	0.012	0.001	0.007	0.001
dum_eaurable10×sizeinv	2.528	1.019	0.010	0.002	0.010	0.001
dum_eaurable10_ea	-0.725	0.281	0.093	0.020	0.106	0.030
dum_eaurable17	0.217	0.095	0.151	0.358	0.179	0.148
headsingle	0.427	0.173	0.043	0.041	0.031	0.030
headuniv	0.413	0.144	0.031	0.173	0.032	0.031
highsecond×sizeinv	1.514	0.507	0.057	0.006	0.056	0.005
housetype1×sizeinv	1.370	0.912	0.134	0.028	0.130	0.005
light1_ea	-0.196	0.118	0.331	0.189	0.311	0.193
light5	-0.231	0.084	0.418	0.493	0.412	0.244
marriedp×sizeinv	1.957	0.900	0.054	0.005	0.055	0.006
sewage3_ea	0.301	0.100	0.250	0.433	0.277	0.117
water2	-0.615	0.197	0.045	0.208	0.025	0.025
intercept	10.974	0.114				
obs.	156					
R square	0.40					
location effect	-†					

*sizeinv=1/(1+hh_size); † no location effect.

Table 6.19: Rural Remah

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable12	0.177	0.087	0.096	0.294	0.121	0.106
dum_eaurable15_ea	3.433	1.463	0.015	0.051	0.014	0.000
dum_eaurable17	-0.612	0.254	0.010	0.099	0.011	0.011
dum_eaurable4	0.758	0.181	0.007	0.085	0.019	0.019
dum_eaurable8_ea	-5.708	1.331	0.013	0.025	0.016	0.001
dum_eaurable9_ea	-1.363	0.433	0.069	0.086	0.067	0.005
headdivorced	0.519	0.221	0.011	0.104	0.011	0.011
headiliter_ea	-0.699	0.229	0.703	0.155	0.722	0.022
headread_ea	-0.486	0.272	0.183	0.116	0.192	0.018
headsingle	0.418	0.150	0.029	0.169	0.028	0.027
light4	0.591	0.178	0.026	0.160	0.026	0.025
light5_ea	-0.591	0.123	0.806	0.268	0.817	0.069
light6	0.245	0.107	0.078	0.269	0.052	0.049
ownhouse2	0.341	0.177	0.039	0.195	0.018	0.018
singlep	-1.047	0.106	0.579	0.231	0.556	0.053
work4	0.645	0.281	0.068	0.117	0.068	0.012
intercept	13.015	0.256				
obs.	270					
R square	0.43					
location effect	0.061					

Table 6.20: Urban Ibb

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable17_ea	0.606	0.229	0.357	0.145	0.356	0.019
dum_eaurable1	0.473	0.073	0.116	0.320	0.111	0.099
dum_eaurable5	0.886	0.210	0.011	0.104	0.011	0.011
dum_eaurable8	0.201	0.050	0.400	0.490	0.398	0.240
dum_eaurable9_ea	1.192	0.183	0.320	0.148	0.311	0.023
employed1	0.901	0.283	0.272	0.081	0.256	0.007
employ_nonself	-0.418	0.126	0.519	0.206	0.469	0.043
headread_ea	0.753	0.304	0.179	0.080	0.173	0.006
headsecond	0.188	0.054	0.240	0.427	0.209	0.165
headuniv	0.345	0.075	0.099	0.299	0.101	0.091
light1_ea	-0.541	0.139	0.893	0.213	0.890	0.049
light5	-0.353	0.161	0.018	0.134	0.019	0.019
nafemales	-0.043	0.016	1.931	1.494	2.094	2.200
nkids	-0.072	0.013	3.130	2.391	3.174	4.140
singlep	-0.740	0.142	0.593	0.227	0.611	0.034
work9	-1.173	0.406	0.038	0.065	0.038	0.004
intercept	12.036	0.161				
obs.	470					
R square	0.50					
location effect	-*					

*No location effect

Table 6.21: Urban Abyan

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable10_ea	0.555	0.241	0.677	0.467	0.647	0.052
dum_eaurable11_ea	0.815	0.299	0.386	0.487	0.375	0.040
dum_eaurable12_ea	-1.389	0.288	0.789	0.408	0.772	0.027
dum_eaurable15_ea	-1.004	0.390	0.157	0.364	0.165	0.012
dum_eaurable16_ea	-5.152	1.991	0.014	0.119	0.014	0.000
dum_eaurable17_ea	1.243	0.237	0.513	0.500	0.494	0.041
dum_eaurable1	0.638	0.092	0.073	0.260	0.084	0.077
dum_eaurable3	0.586	0.181	0.014	0.118	0.022	0.022
dum_eaurable4_ea	11.976	2.624	0.010	0.014	0.011	0.000
headiliter_ea	-0.716	0.353	0.332	0.107	0.323	0.009
headuniv	0.314	0.106	0.071	0.257	0.062	0.058
nafemalesinv*	0.898	0.165	0.404	0.045	0.363	0.025
nkids	-0.071	0.010	2.793	2.553	2.969	6.723
sewage2	0.190	0.061	0.256	0.436	0.266	0.196
intercept	11.368	0.186				
obs.	318					
R square	0.44					
location effect	- †					

*nafemalesinv=1/(1+nafemales) † No location effect

Table 6.22: Urban Sana'a City

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable15_ea	-0.703	0.196	0.200	0.088	0.210	0.009
dum_eaurable16	0.247	0.044	0.120	0.325	0.138	0.119
dum_eaurable17_ea	0.388	0.139	0.429	0.162	0.437	0.029
dum_eaurable18	1.460	0.250	0.012	0.111	0.003	0.003
dum_eaurable1_ea	0.887	0.172	0.199	0.110	0.199	0.014
dum_eaurable2_ea	2.642	0.531	0.046	0.027	0.046	0.001
dum_eaurable4	0.363	0.094	0.028	0.165	0.023	0.022
dum_eaurable5	0.265	0.134	0.008	0.092	0.011	0.011
dum_eaurable8	0.227	0.033	0.470	0.499	0.446	0.247
employ_self	-0.179	0.100	0.305	0.034	0.296	0.031
headprim	0.102	0.045	0.095	0.293	0.108	0.096
headuniv	0.138	0.048	0.195	0.396	0.225	0.175
housetype1_ea	-0.764	0.244	0.557	0.235	0.576	0.061
housetype2_ea	-0.658	0.247	0.352	0.215	0.353	0.054
nelderly	-0.113	0.027	0.238	0.609	0.254	0.273
nkids	-0.100	0.007	2.601	2.373	2.809	4.779
ownhouse1	0.062	0.033	0.468	0.499	0.453	0.248
sewage2	-0.101	0.040	0.377	0.485	0.392	0.239
sewage3_ea	0.649	0.213	0.012	0.064	0.012	0.004
singlep	-0.532	0.076	0.565	0.245	0.576	0.048
universityp	0.536	0.129	0.073	0.161	0.081	0.027
water1	0.118	0.041	0.604	0.489	0.584	0.243
water2	0.296	0.078	0.042	0.201	0.036	0.035
water4_ea	-0.208	0.071	0.887	0.213	0.895	0.040
work4	0.300	0.107	0.185	0.157	0.174	0.022
intercept	12.828	0.253				
obs.	1639					
R square	0.46					
location effect	0.049					

Table 6.23: Urban Al-Baida

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable10_ea	0.828	0.173	0.449	0.151	0.427	0.028
dum_eaurable13_ea	-1.177	0.191	0.641	0.143	0.613	0.016
dum_eaurable1	0.244	0.071	0.159	0.366	0.134	0.117
dum_eaurable8	0.092	0.051	0.455	0.498	0.444	0.248
headdivorced	0.648	0.187	0.013	0.112	0.019	0.019
headsecond	0.152	0.060	0.208	0.406	0.223	0.174
headuniv	0.284	0.095	0.062	0.240	0.078	0.072
kidp	-0.800	0.126	0.388	0.224	0.392	0.047
light1_ea	-0.834	0.174	0.929	0.123	0.907	0.033
marriedp	0.704	0.129	0.363	0.214	0.380	0.047
nelderly	-0.135	0.043	0.322	0.598	0.320	0.331
water1	0.230	0.049	0.524	0.499	0.549	0.248
intercept	12.650	0.209				
obs.	327					
R square	0.45					
location effect	0.062					

Table 6.24: Urban Taiz

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable10_ea	1.801	0.481	0.581	0.200	0.594	0.041
dum_eaurable11_ea	-1.253	0.542	0.481	0.195	0.498	0.043
dum_eaurable12_ea	-1.353	0.310	0.798	0.119	0.799	0.017
dum_eaurable14_ea	-0.648	0.366	0.134	0.101	0.141	0.010
dum_eaurable16	0.409	0.083	0.067	0.250	0.079	0.073
dum_eaurable17_ea	-1.026	0.337	0.435	0.159	0.451	0.029
dum_eaurable18	0.535	0.194	0.030	0.171	0.012	0.012
dum_eaurable18_ea	-1.311	0.601	0.030	0.045	0.028	0.001
dum_eaurable1	0.446	0.074	0.101	0.301	0.095	0.086
dum_eaurable3	0.320	0.133	0.020	0.138	0.022	0.021
dum_eaurable5_ea	5.330	2.606	0.007	0.010	0.007	0.000
dum_eaurable8	0.211	0.045	0.396	0.489	0.399	0.240
dum_eaurable8_ea	2.023	0.416	0.396	0.145	0.390	0.019
headage	-0.008	0.002	41.556	14.214	44.127	185.790
headprim_ea	-1.391	0.511	0.099	0.041	0.105	0.002
light5	-0.258	0.128	0.038	0.191	0.032	0.031
nelderly	-0.096	0.050	0.279	0.572	0.262	0.281
nkids	-0.110	0.012	2.500	2.249	2.447	4.089
sewage2_ea	-0.559	0.104	0.227	0.315	0.225	0.103
singlep	-0.831	0.105	0.576	0.251	0.586	0.051
water2_ea	1.343	0.356	0.021	0.083	0.023	0.005
intercept	13.328	0.187				
obs.	582.000					
R square	0.48					
location effect	0.057					

Table 6.25: Urban Al-Jawf

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
afemalep	1.674	0.316	0.261	0.155	0.254	0.014
dum_eaurable10	0.273	0.096	0.072	0.259	0.103	0.093
dum_eaurable18	0.671	0.150	0.028	0.164	0.040	0.038
dum_eaurable1_ea	0.482	0.189	0.156	0.132	0.141	0.020
headuniv_ea	3.752	1.347	0.024	0.028	0.022	0.000
highiliter	-0.248	0.072	0.197	0.398	0.183	0.150
highprim	-0.362	0.102	0.053	0.224	0.072	0.067
housetype1_ea	0.349	0.201	0.921	0.104	0.913	0.017
marriedp	0.472	0.156	0.311	0.145	0.303	0.033
nafemalesinv	2.249	0.272	0.391	0.026	0.364	0.018
intercept	9.516	0.265				
obs.	226.000					
R square	0.42					
location effect	0.089					

* nafemalesinv=1/(1+nafemalesinv)

Table 6.26: Urban Hajja

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable1	0.489	0.082	0.090	0.287	0.113	0.101
elderlyp	0.454	0.224	0.063	0.164	0.067	0.031
headiliter	-0.245	0.069	0.523	0.499	0.497	0.251
headmarried	-0.476	0.133	0.879	0.326	0.896	0.094
headprim	-0.342	0.123	0.076	0.265	0.082	0.076
headsingle	-0.343	0.167	0.060	0.237	0.048	0.046
highprim	0.235	0.121	0.075	0.263	0.078	0.072
housetype1_ea	-0.483	0.130	0.689	0.247	0.711	0.056
housetype4	-0.930	0.344	0.004	0.060	0.007	0.007
housetype5_ea	3.085	0.838	0.020	0.042	0.019	0.001
kidp	-0.762	0.141	0.377	0.248	0.380	0.063
marriedp	0.549	0.148	0.352	0.229	0.346	0.053
nelderly	-0.211	0.063	0.346	0.630	0.322	0.339
primaryp	0.423	0.153	0.218	0.247	0.199	0.047
sewage2_ea	0.551	0.097	0.350	0.322	0.360	0.113
work1	0.596	0.155	0.306	0.257	0.324	0.058
work9	0.908	0.158	0.102	0.158	0.135	0.049
intercept	12.050	0.170				
obs.	339.000					
R square	0.49					
location effect	0.034					

Table 6.27: Urban Al-Hodeida

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
cook2_1	-0.204	0.041	0.253	0.435	0.269	0.197
dum_eaurable1	0.534	0.086	0.049	0.216	0.044	0.042
dum_eaurable2_ea	7.390	2.179	0.006	0.009	0.006	0.000
dum_eaurable3_ea	-2.300	0.891	0.015	0.021	0.015	0.001
dum_eaurable8	0.225	0.041	0.255	0.436	0.281	0.202
dum_eaurable9_ea	0.360	0.215	0.216	0.158	0.237	0.033
employed2	0.417	0.218	0.350	0.085	0.353	0.006
employ_nonself	0.265	0.101	0.450	0.240	0.441	0.065
headiliter	-0.171	0.035	0.485	0.500	0.473	0.250
headiliter_ea	0.590	0.202	0.485	0.151	0.488	0.032
headmarried	-0.093	0.051	0.837	0.370	0.844	0.132
housetype2	0.171	0.054	0.094	0.291	0.130	0.113
kidp	-0.692	0.086	0.326	0.250	0.325	0.063
light1	0.225	0.055	0.727	0.445	0.732	0.197
light1_ea	-0.260	0.077	0.716	0.330	0.729	0.116
nafemales	-0.133	0.014	1.871	1.494	1.914	2.045
singlep	-0.528	0.092	0.567	0.253	0.584	0.055
universityp	0.916	0.178	0.030	0.106	0.029	0.010
university_ea	5.696	1.590	0.023	0.022	0.025	0.001
work9	-0.404	0.197	0.034	0.086	0.034	0.007
intercept	11.741	0.187				
obs.	841					
R square	0.57					
location effect	0.014					

Table 6.28: Urban Hadramout

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable11_ea	1.099	0.299	0.559	0.211	0.544	0.039
dum_eaurable14_ea	-1.502	0.219	0.170	0.267	0.176	0.075
dum_eaurable15_ea	0.911	0.246	0.328	0.195	0.315	0.038
dum_eaurable16	0.366	0.093	0.060	0.237	0.046	0.044
dum_eaurable18_ea	2.307	0.300	0.297	0.223	0.297	0.049
dum_eaurable2	-0.236	0.108	0.019	0.138	0.024	0.023
dum_eaurable3_ea	-4.124	1.860	0.016	0.029	0.013	0.000
dum_eaurable8_ea	-2.581	0.338	0.602	0.203	0.611	0.044
dum_eaurable9	0.130	0.040	0.375	0.484	0.413	0.243
employed1	-5.526	1.763	0.313	0.079	0.320	0.005
employed2	7.625	1.727	0.325	0.080	0.328	0.005
employ_self	1.393	0.212	0.434	0.220	0.449	0.039
headiliter	-0.167	0.044	0.279	0.448	0.314	0.216
headuniv_ea	4.546	0.874	0.067	0.056	0.064	0.004
housetype1	0.306	0.110	0.836	0.371	0.850	0.128
housetype1_ea	1.504	0.229	0.836	0.199	0.833	0.039
housetype2	0.436	0.129	0.124	0.329	0.116	0.103
kidp	-0.516	0.099	0.345	0.225	0.329	0.054
light1_ea	0.659	0.183	0.905	0.201	0.898	0.048
light4	-0.484	0.245	0.004	0.063	0.012	0.012
ownhouse2_ea	0.696	0.220	0.211	0.163	0.205	0.023
singlep	-0.490	0.100	0.557	0.214	0.539	0.049
universityp	0.659	0.240	0.028	0.092	0.027	0.007
university_ea	-11.177	2.756	0.024	0.017	0.025	0.000
water1_ea	-0.863	0.218	0.879	0.256	0.875	0.065
intercept	9.348	0.337				
obs.	463					
R square	0.48					
location effect	0.088					

Table 6.29: Urban Dhamar

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable14_ea	0.736	0.211	0.277	0.169	0.267	0.026
dum_eaurable15	0.136	0.075	0.216	0.411	0.218	0.171
dum_eaurable16	0.736	0.193	0.035	0.184	0.023	0.023
dum_eaurable1	0.547	0.109	0.115	0.319	0.082	0.076
dum_eaurable4	0.611	0.258	0.015	0.123	0.015	0.015
dum_eaurable5	0.448	0.215	0.011	0.104	0.019	0.018
dum_eaurable8	0.243	0.070	0.338	0.473	0.338	0.224
employed1	1.451	0.542	0.292	0.068	0.278	0.005
headsingle	0.292	0.144	0.054	0.226	0.047	0.045
nkids	-0.044	0.020	3.285	2.498	3.227	5.206
singlep	-0.576	0.176	0.589	0.223	0.579	0.048
hh_size	-0.045	0.012	7.454	4.323	7.557	12.963
work1	0.589	0.195	0.320	0.180	0.313	0.031
work9	0.961	0.303	0.071	0.109	0.077	0.018
intercept	11.345	0.217				
obs.	342					

R square	0.42
location effect	0.045

Table 6.30: Urban Shabwah

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable16	0.324	0.143	0.040	0.196	0.037	0.036
dum_eaurable17_ea	-0.672	0.160	0.561	0.216	0.572	0.028
dum_eaurable18	0.246	0.091	0.094	0.292	0.105	0.094
dum_eaurable1	0.353	0.072	0.218	0.413	0.202	0.162
headiliter	-0.242	0.063	0.293	0.455	0.297	0.210
highread	0.104	0.062	0.307	0.461	0.276	0.201
housetype1_ea	-0.954	0.092	0.701	0.323	0.679	0.112
marriedp	0.527	0.153	0.378	0.222	0.372	0.035
nkids	-0.046	0.011	4.011	3.554	4.106	7.311
sewage1_ea	0.448	0.091	0.231	0.334	0.246	0.117
intercept	12.304	0.144				
obs.	198					
R square	0.59					
location effect	-*					

*No location effect

Table 6.31: Urban Sa'adah

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable10	0.184	0.070	0.194	0.395	0.205	0.164
dum_eaurable11	0.182	0.065	0.252	0.434	0.297	0.209
dum_eaurable14_ea	-0.710	0.243	0.165	0.116	0.177	0.015
dum_eaurable1	0.390	0.061	0.202	0.402	0.222	0.173
employ_nonself	-0.913	0.145	0.440	0.249	0.450	0.065
headuniv_ea	2.335	0.704	0.076	0.265	0.073	0.003
housetype3	0.357	0.174	0.032	0.176	0.023	0.022
light1	0.386	0.073	0.726	0.446	0.720	0.202
light1_ea	-0.688	0.119	0.712	0.322	0.701	0.115
primary_ea	1.627	0.599	0.189	0.072	0.187	0.004
sewage3_ea	0.427	0.189	0.168	0.206	0.149	0.029
singlep	-1.111	0.118	0.571	0.222	0.573	0.038
water4_ea	-0.322	0.148	0.888	0.208	0.893	0.039
work5	-4.300	0.634	0.032	0.054	0.034	0.003
intercept	12.623	0.195				
obs.	324					
R square	0.43					
location effect	-*					

*No location effect

Table 6.32: Urban Aden

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable12_ea	-0.554	0.225	0.841	0.126	0.845	0.015
dum_eaurable13_ea	-0.314	0.092	0.517	0.210	0.503	0.046
dum_eaurable16	0.169	0.066	0.080	0.272	0.083	0.076
dum_eaurable18_ea	0.425	0.138	0.428	0.243	0.452	0.058
dum_eaurable1	0.306	0.051	0.165	0.371	0.149	0.127
dum_eaurable3	0.281	0.110	0.014	0.116	0.024	0.024
dum_eaurable9	0.239	0.036	0.412	0.492	0.417	0.244
headmarried	-0.213	0.042	0.803	0.398	0.785	0.169
housetype1_ea	0.186	0.071	0.726	0.281	0.729	0.076
light1_ea	0.403	0.241	0.938	0.115	0.952	0.008
nafemales	-0.093	0.013	1.927	1.548	1.958	1.758
singlep	-1.013	0.076	0.548	0.238	0.555	0.051
universityp	0.576	0.119	0.069	0.154	0.083	0.025
university_ea	2.123	0.695	0.057	0.037	0.061	0.002
water2	0.689	0.199	0.004	0.063	0.005	0.005
work10	-0.889	0.313	0.035	0.058	0.037	0.004
work3	0.492	0.187	0.087	0.091	0.098	0.009
intercept	12.363	0.199				
obs.	716					
R square	0.50					
location effect	0.006					

Table 6.33: Urban Laheg

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable2_ea	-21.974	3.829	0.009	0.011	0.010	0.0001
headage	0.006	0.003	44.828	13.877	45.183	160.152
headprim_ea	5.295	1.170	0.062	0.046	0.065	0.001
light1	0.433	0.136	0.824	0.381	0.853	0.126
light2_ea	1.032	0.181	0.064	0.225	0.052	0.043
nelderly	-0.120	0.053	0.368	0.666	0.409	0.496
ownhouse1	0.178	0.078	0.833	0.373	0.774	0.175
primaryp	1.092	0.143	0.331	0.274	0.292	0.065
singlep	-0.790	0.158	0.567	0.236	0.533	0.058
university_ea	5.359	1.420	0.039	0.024	0.036	0.001
water3_ea	-0.418	0.204	0.035	0.176	0.031	0.028
intercept	10.656	0.222				
obs.	273.000					
R square	0.46					
location effect	0.038					

Table 6.34: Urban Mareb

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable13_ea	-0.659	0.264	0.577	0.179	0.600	0.037
dum_eaurable16	0.512	0.214	0.037	0.188	0.032	0.031
dum_eaurable18	0.334	0.105	0.141	0.348	0.155	0.132
dum_eaurable18_ea	-3.348	1.140	0.141	0.069	0.131	0.005
dum_eaurable18_ea×sizeinv*	16.452	6.687	0.022	0.000	0.018	0.000
dum_eaurable5	0.408	0.164	0.027	0.162	0.051	0.049
headiliter_ea	-0.731	0.298	0.389	0.142	0.432	0.026
headsecond×sizeinv	1.194	0.504	0.050	0.010	0.044	0.007
light1_ea	2.557	0.776	0.895	0.062	0.896	0.004
light4	0.785	0.414	0.006	0.075	0.010	0.010
ownhouse1	0.383	0.081	0.482	0.500	0.520	0.251
sizeinv	1.732	0.947	0.158	0.011	0.136	0.006
water4_ea	-0.771	0.238	0.858	0.192	0.872	0.032
intercept	10.432	0.598				
obs.	224					
R square	0.40					
location effect	- †					

*sizeinv=1/(1+hh_size); † no location effect.

Table 6.35: Urban Al-Mahweet

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable14_ea	1.782	0.396	0.175	0.108	0.190	0.013
dum_eaurable2_ea	-4.391	1.453	0.015	0.021	0.015	0.001
dum_eaurable3	0.854	0.419	0.003	0.052	0.003	0.003
dum_eaurable3_ea	-21.371	8.416	0.003	0.005	0.003	0.000
dum_eaurable5_ea	7.384	2.691	0.011	0.010	0.011	0.000
dum_eaurable8	0.189	0.050	0.482	0.500	0.464	0.250
dum_eaurable8_ea	-0.817	0.360	0.482	0.104	0.489	0.012
employ_nonself	0.729	0.201	0.677	0.204	0.656	0.054
headage	-0.005	0.002	42.882	15.373	45.828	245.501
headdivorced	0.629	0.313	0.013	0.113	0.007	0.007
headread_ea	0.949	0.300	0.168	0.086	0.168	0.009
headuniv	0.159	0.079	0.128	0.335	0.117	0.104
highread	-0.145	0.068	0.177	0.382	0.165	0.138
marriedp	1.043	0.288	0.349	0.228	0.346	0.039
marriedp×nkidsinv*	-0.824	0.362	0.152	0.056	0.142	0.044
nkidsinv	1.033	0.155	0.387	0.102	0.352	0.078
nkidsinv×water3_ea	3.302	1.834	0.006	0.001	0.004	0.000
water1_ea	-0.228	0.111	0.697	0.353	0.679	0.131
work1	-1.017	0.204	0.518	0.241	0.508	0.062
intercept	11.162	0.248				
obs.	289					
R square	0.40					
location effect	- †					

* nkidsinv=1/(1+nkids); † no location effect.

Table 6.36: Urban Al-Maharh

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable10_ea	0.483	0.204	0.525	0.254	0.561	0.073
dum_eaurable16_ea	-14.151	6.538	0.011	0.017	0.011	0.0003
dum_eaurable18	0.639	0.192	0.049	0.216	0.031	0.030
employed1	1.042	0.439	0.344	0.142	0.347	0.021
headage	-0.006	0.002	43.065	13.993	47.476	217.166
headuniv_ea	9.756	2.554	0.056	0.064	0.057	0.003
marriedp	0.719	0.191	0.387	0.242	0.386	0.039
nkids	-0.091	0.017	3.292	3.025	3.372	4.982
university_ea	-37.644	4.958	0.016	0.020	0.016	0.0002
water1_ea	-0.527	0.194	0.301	0.386	0.288	0.158
water4_ea	1.007	0.177	0.793	0.240	0.794	0.072
intercept	11.189	0.269				
obs.	137					
R square	0.69					
location effect	-*					

*No location effect

Table 6.37: Urban Amran

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable13_ea	-0.459	0.171	0.734	0.169	0.733	0.027
dum_eaurable14_ea	1.098	0.202	0.193	0.134	0.197	0.020
dum_eaurable16	0.989	0.310	0.018	0.132	0.007	0.007
dum_eaurable1	0.473	0.073	0.156	0.363	0.169	0.141
dum_eaurable8	0.254	0.055	0.377	0.485	0.403	0.241
headuniv_ea	-1.609	0.615	0.098	0.048	0.096	0.003
nkidsinv×singlep	1.306	0.339	0.169	0.028	0.139	0.006
nkidsinv×work10	3.381	1.329	0.019	0.001	0.015	0.001
ownhouse1_ea	-0.680	0.223	0.659	0.142	0.667	0.017
singlep	-0.863	0.151	0.587	0.214	0.597	0.035
work1	0.479	0.166	0.286	0.161	0.273	0.033
intercept	12.042	0.222				
obs.	302					
R square	0.40					
location effect	0.071					

Table 6.38: Urban Al-Dhale

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable13_ea	0.322	0.147	0.578	0.234	0.577	0.078
dum_eaurable1_ea	-2.335	0.558	0.130	0.091	0.148	0.013
dum_eaurable4	0.485	0.193	0.016	0.126	0.022	0.022
dum_eaurable5	0.663	0.195	0.015	0.123	0.025	0.025
dum_eaurable9_ea	1.818	0.372	0.298	0.147	0.317	0.026
headdivorced	-0.613	0.229	0.010	0.099	0.017	0.016
headiliter_ea	1.776	0.452	0.310	0.121	0.309	0.010
headprim_ea	-1.112	0.687	0.045	0.065	0.046	0.003
headsecond_ea	0.781	0.410	0.324	0.118	0.325	0.010
headwidow	-0.702	0.143	0.046	0.210	0.051	0.048
light4	0.454	0.247	0.020	0.140	0.014	0.014
nafemales	-0.057	0.032	1.727	1.531	1.874	1.732
singlep	-0.870	0.159	0.583	0.244	0.600	0.055
hh_size	-0.035	0.013	7.598	4.709	7.765	14.183
water2	0.538	0.144	0.050	0.218	0.081	0.075
intercept	11.298	0.276				
obs.	233					
R square	0.50					
location effect	-*					

*No location effect

Table 7: Compare estimates of headcount using different data sources

Governorate	#hhno*	avg_FGT0	se_FGT0	FGT0 (survey)
Rural				
11 Ibb	233,491	0.304	0.023	0.328
12 Abyan	38,120	0.525	0.046	0.504
14 Al-Baida	49,667	0.583	0.015	0.598
15 Taiz	266,914	0.429	0.021	0.415
16 Al-Jawf	45,325	0.555	0.025	0.526
17 Hajja	154,183	0.488	0.017	0.500
18 Al-Hodeida	224,491	0.350	0.019	0.364
19 Hadramout	58,818	0.350	0.012	0.404
20 Dhamar	150,379	0.227	0.021	0.253
21 Shabwah	34,657	0.522	0.028	0.568
22 Sa'adah	61,965	0.147	0.029	0.162
23 Sana'a Region	99,572	0.277	0.021	0.281
25 Laheg	87,266	0.463	0.018	0.495
26 Mareb	21,181	0.493	0.018	0.501
27 Al-Mahweet	55,251	0.304	0.024	0.315
28 Al-Maharh	5,849	0.090	0.015	0.063
29 Amran	73,020	0.650	0.029	0.706
30 Al-Dhale	48,051	0.456	0.024	0.464
31 Remah	45,963	0.326	0.025	0.341
Urban				
11 Ibb	49,143	0.145	0.013	0.164
12 Abyan	13,473	0.348	0.017	0.314
13 Sana'a City	236,666	0.131	0.008	0.149
14 Al-Baida	12,786	0.157	0.023	0.167
15 Taiz	78,245	0.227	0.014	0.237
16 Al-Jawf	6,269	0.318	0.029	0.326
17 Hajja	16,137	0.221	0.022	0.209
18 Al-Hodeida	104,909	0.230	0.011	0.216
19 Hadramout	53,868	0.247	0.014	0.294
20 Dhamar	24,312	0.273	0.021	0.297
21 Shabwah	7,551	0.367	0.025	0.394
22 Sa'adah	11,549	0.195	0.013	0.182
24 Aden	82,967	0.159	0.012	0.169
25 Laheg	8,495	0.191	0.026	0.229
26 Mareb	3,325	0.184	0.021	0.180
27 Al-Mahweet	4,169	0.196	0.027	0.219
28 Al-Maharh	4,074	0.100	0.013	0.114
29 Amran	17,135	0.371	0.031	0.339
30 Al-Dhale	7,717	0.293	0.021	0.282

* The number of households in this table is different from the number listed in Table 1 because of two reasons: 1. The houses which are not occupied and/or do not have a household head are dropped (see note 3); 2. The households which have missing values in the variables used in the consumption model are dropped.

Table 8: Estimates of poverty indicators (rural areas)

Governorate	District	#hhno	avg_ $\hat{y}$	avg_FGT0	se_FGT0	avg_FGT1	se_FGT1	avg_FGT2	se_FGT2
11	1	14,541	72,875	0.371	0.040	0.092	0.013	0.0333	0.0054
11	2	15,868	88,021	0.253	0.026	0.056	0.008	0.0186	0.0034
11	3	8,163	81,666	0.298	0.038	0.069	0.013	0.0237	0.0055
11	4	7,522	104,515	0.183	0.024	0.036	0.007	0.0110	0.0027
11	5	4,061	157,866	0.095	0.022	0.018	0.005	0.0055	0.0020
11	6	9,971	81,745	0.272	0.028	0.058	0.008	0.0188	0.0034
11	7	14,423	79,836	0.333	0.029	0.090	0.012	0.0343	0.0055
11	8	13,985	72,499	0.338	0.033	0.080	0.011	0.0280	0.0045
11	9	12,050	86,754	0.261	0.030	0.060	0.008	0.0210	0.0032
11	10	14,598	71,842	0.365	0.040	0.083	0.013	0.0274	0.0054
11	11	19,768	69,875	0.389	0.034	0.097	0.012	0.0350	0.0051
11	12	12,551	85,870	0.264	0.026	0.061	0.008	0.0209	0.0035
11	13	13,153	109,372	0.192	0.022	0.043	0.007	0.0144	0.0027
11	14	8,929	89,138	0.313	0.027	0.082	0.010	0.0308	0.0048
11	15	13,775	84,457	0.299	0.027	0.069	0.009	0.0235	0.0036
11	16	15,231	75,501	0.372	0.030	0.094	0.011	0.0341	0.0051
11	17	10,972	78,069	0.320	0.028	0.084	0.011	0.0315	0.0051
11	18	1,878	82,728	0.266	0.044	0.057	0.014	0.0188	0.0055
11	19	3,820	84,555	0.287	0.035	0.071	0.012	0.0258	0.0055
11	20	18,232	75,108	0.349	0.032	0.088	0.012	0.0319	0.0055
12	1	2,649	71,801	0.542	0.069	0.133	0.028	0.0459	0.0127
12	2	2,986	78,890	0.468	0.048	0.133	0.020	0.0527	0.0100
12	3	1,351	51,284	0.793	0.053	0.282	0.040	0.1263	0.0255
12	4	8,473	70,567	0.538	0.051	0.150	0.020	0.0582	0.0100
12	5	1,827	70,233	0.526	0.079	0.127	0.030	0.0433	0.0132
12	6	5,178	78,668	0.456	0.049	0.127	0.019	0.0496	0.0088
12	7	2,049	71,841	0.507	0.072	0.124	0.026	0.0430	0.0115
12	8	2,861	72,270	0.522	0.057	0.142	0.025	0.0538	0.0121
12	9	2,583	66,003	0.507	0.086	0.121	0.031	0.0425	0.0142
12	10	838	63,623	0.626	0.072	0.215	0.042	0.0967	0.0238
12	11	7,325	73,526	0.528	0.040	0.161	0.019	0.0674	0.0105
14	1	791	81,282	0.636	0.013	0.365	0.013	0.2295	0.0134
14	2	1,500	35,906	0.838	0.027	0.472	0.020	0.3086	0.0153
14	3	657	43,997	0.696	0.027	0.347	0.019	0.2115	0.0166
14	4	4,523	113,595	0.415	0.025	0.193	0.010	0.1144	0.0070
14	5	2,351	56,238	0.736	0.022	0.308	0.021	0.1590	0.0161
14	6	2,262	106,801	0.480	0.026	0.175	0.015	0.0877	0.0101
14	7	2,728	37,440	0.863	0.018	0.441	0.021	0.2584	0.0188
14	8	4,656	91,850	0.509	0.020	0.236	0.010	0.1350	0.0087
14	10	4,728	105,567	0.376	0.025	0.146	0.012	0.0796	0.0088
14	11	2,341	45,088	0.847	0.014	0.478	0.018	0.3074	0.0193
14	12	1,924	69,623	0.609	0.029	0.257	0.017	0.1376	0.0130
14	13	538	73,400	0.531	0.031	0.202	0.021	0.0922	0.0141

14	14	3,209	97,023	0.398	0.025	0.151	0.009	0.0788	0.0063
14	15	2,218	129,514	0.454	0.028	0.171	0.012	0.0865	0.0070
14	16	3,763	155,288	0.354	0.016	0.124	0.011	0.0582	0.0082
14	17	3,089	74,986	0.569	0.031	0.246	0.014	0.1371	0.0100
14	18	2,203	81,814	0.607	0.029	0.255	0.022	0.1330	0.0169
14	19	3,354	52,617	0.739	0.022	0.341	0.017	0.1934	0.0141
14	20	2,832	34,785	0.872	0.015	0.483	0.018	0.3059	0.0172
15	1	19,220	75,623	0.417	0.034	0.113	0.012	0.0434	0.0057
15	2	15,875	83,465	0.373	0.024	0.100	0.009	0.0380	0.0045
15	3	20,313	78,412	0.430	0.024	0.123	0.010	0.0487	0.0055
15	4	26,858	76,190	0.436	0.024	0.125	0.011	0.0492	0.0055
15	5	8,747	73,656	0.495	0.033	0.147	0.015	0.0593	0.0077
15	6	1,920	55,325	0.654	0.048	0.238	0.025	0.1106	0.0144
15	7	4,844	65,293	0.545	0.044	0.162	0.017	0.0656	0.0085
15	8	16,356	76,597	0.430	0.027	0.118	0.011	0.0450	0.0053
15	9	3,401	93,501	0.295	0.050	0.072	0.016	0.0255	0.0066
15	10	14,674	77,023	0.417	0.028	0.117	0.011	0.0460	0.0054
15	11	12,472	77,383	0.415	0.041	0.113	0.016	0.0434	0.0073
15	12	13,286	71,181	0.471	0.028	0.139	0.014	0.0558	0.0073
15	13	6,950	73,155	0.448	0.024	0.136	0.012	0.0566	0.0070
15	14	21,870	80,420	0.396	0.029	0.109	0.012	0.0425	0.0058
15	15	4,163	68,827	0.492	0.037	0.137	0.015	0.0519	0.0071
15	16	10,885	80,877	0.396	0.022	0.115	0.009	0.0470	0.0048
15	20	28,595	69,256	0.505	0.031	0.149	0.015	0.0601	0.0082
15	21	16,083	83,952	0.360	0.025	0.098	0.010	0.0374	0.0050
15	22	15,438	85,348	0.369	0.022	0.105	0.009	0.0415	0.0051
15	23	4,964	67,966	0.504	0.031	0.150	0.014	0.0604	0.0069
16	1	9,328	64,267	0.592	0.026	0.180	0.015	0.0727	0.0086
16	2	2,440	66,831	0.619	0.029	0.172	0.016	0.0635	0.0088
16	3	3,293	61,796	0.652	0.031	0.196	0.015	0.0791	0.0086
16	4	2,805	79,070	0.509	0.032	0.149	0.012	0.0585	0.0063
16	5	1,980	63,470	0.691	0.025	0.210	0.018	0.0834	0.0110
16	6	2,759	85,114	0.445	0.042	0.098	0.013	0.0304	0.0055
16	7	1,064	64,347	0.634	0.031	0.179	0.016	0.0673	0.0089
16	8	469	60,078	0.776	0.041	0.257	0.036	0.1065	0.0231
16	9	873	65,805	0.676	0.035	0.191	0.018	0.0725	0.0093
16	10	6,542	75,366	0.486	0.040	0.130	0.014	0.0478	0.0069
16	11	7,097	70,545	0.409	0.033	0.102	0.011	0.0361	0.0053
16	12	6,675	60,142	0.648	0.033	0.199	0.018	0.0809	0.0104
17	1	2,926	79,818	0.462	0.041	0.148	0.019	0.0643	0.0101
17	2	9,557	64,992	0.559	0.033	0.213	0.021	0.1050	0.0136
17	3	1,544	53,770	0.638	0.048	0.240	0.025	0.1177	0.0145
17	4	14,088	78,559	0.463	0.027	0.161	0.013	0.0750	0.0077
17	5	1,949	85,755	0.403	0.041	0.132	0.020	0.0589	0.0116
17	6	5,883	76,955	0.427	0.030	0.134	0.014	0.0579	0.0076
17	7	8,327	80,922	0.500	0.047	0.184	0.026	0.0882	0.0155
17	8	3,641	58,984	0.624	0.038	0.236	0.022	0.1157	0.0133

17	9	2,889	79,628	0.515	0.037	0.209	0.020	0.1071	0.0128
17	10	4,789	78,412	0.461	0.044	0.175	0.021	0.0872	0.0116
17	11	8,315	82,476	0.432	0.024	0.149	0.010	0.0695	0.0060
17	12	7,542	83,276	0.416	0.027	0.135	0.013	0.0595	0.0074
17	13	5,454	62,849	0.622	0.030	0.248	0.018	0.1257	0.0115
17	14	3,641	77,404	0.453	0.031	0.157	0.015	0.0727	0.0087
17	15	3,354	118,246	0.394	0.032	0.143	0.015	0.0696	0.0090
17	16	2,761	148,306	0.349	0.030	0.136	0.014	0.0688	0.0082
17	17	5,671	66,079	0.496	0.030	0.173	0.013	0.0802	0.0072
17	18	3,662	82,258	0.480	0.028	0.176	0.015	0.0847	0.0092
17	19	1,767	66,716	0.557	0.029	0.200	0.020	0.0939	0.0127
17	20	6,093	79,911	0.491	0.052	0.171	0.027	0.0787	0.0152
17	21	3,215	70,650	0.590	0.051	0.236	0.030	0.1195	0.0191
17	22	9,301	77,831	0.477	0.026	0.164	0.015	0.0754	0.0091
17	23	1,174	103,619	0.328	0.035	0.108	0.013	0.0481	0.0071
17	24	8,112	74,825	0.462	0.036	0.148	0.016	0.0650	0.0087
17	25	6,049	77,113	0.448	0.031	0.135	0.014	0.0562	0.0078
17	26	3,319	100,385	0.347	0.035	0.109	0.014	0.0479	0.0069
17	27	4,704	71,388	0.568	0.047	0.212	0.027	0.1024	0.0166
17	28	1,931	60,292	0.598	0.059	0.241	0.034	0.1231	0.0208
17	29	3,381	67,265	0.534	0.027	0.200	0.014	0.0979	0.0084
17	30	6,356	87,064	0.445	0.030	0.155	0.013	0.0728	0.0066
17	31	2,788	47,232	0.716	0.036	0.298	0.024	0.1559	0.0161
18	1	20,361	82,573	0.354	0.024	0.091	0.009	0.0331	0.0042
18	2	14,985	79,037	0.366	0.025	0.096	0.009	0.0361	0.0042
18	4	681	40,082	0.794	0.043	0.334	0.034	0.1661	0.0228
18	5	4,468	88,012	0.391	0.026	0.109	0.012	0.0416	0.0058
18	6	10,499	84,045	0.397	0.038	0.114	0.015	0.0452	0.0071
18	7	11,608	76,024	0.396	0.021	0.112	0.009	0.0441	0.0046
18	8	5,316	121,577	0.201	0.019	0.044	0.007	0.0139	0.0028
18	9	5,073	77,316	0.366	0.029	0.089	0.011	0.0307	0.0048
18	10	19,422	82,389	0.333	0.027	0.080	0.010	0.0279	0.0042
18	11	1,328	135,460	0.234	0.036	0.059	0.012	0.0211	0.0057
18	12	6,577	85,103	0.370	0.038	0.110	0.014	0.0450	0.0064
18	13	15,704	91,413	0.271	0.022	0.065	0.007	0.0230	0.0030
18	14	8,510	104,729	0.262	0.021	0.063	0.008	0.0219	0.0034
18	15	9,965	93,729	0.274	0.020	0.066	0.007	0.0228	0.0035
18	16	5,594	80,398	0.341	0.026	0.085	0.010	0.0302	0.0047
18	17	29,568	83,729	0.330	0.022	0.083	0.008	0.0298	0.0037
18	18	7,869	87,948	0.330	0.033	0.083	0.011	0.0294	0.0048
18	19	4,683	73,273	0.384	0.031	0.098	0.012	0.0354	0.0053
18	20	3,014	63,591	0.485	0.030	0.160	0.012	0.0702	0.0066
18	21	444	91,259	0.260	0.089	0.069	0.027	0.0265	0.0115
18	23	461	69,421	0.456	0.056	0.116	0.019	0.0410	0.0089
18	24	17,998	78,941	0.396	0.022	0.113	0.010	0.0446	0.0050
18	25	11,604	73,430	0.421	0.029	0.114	0.011	0.0427	0.0051
18	26	8,759	73,380	0.394	0.035	0.103	0.013	0.0384	0.0060

19	1	538	118,005	0.098	0.022	0.015	0.004	0.0036	0.0013
19	2	225	98,910	0.208	0.034	0.042	0.008	0.0125	0.0030
19	3	271	91,163	0.238	0.046	0.042	0.011	0.0114	0.0036
19	4	198	89,358	0.188	0.045	0.031	0.010	0.0080	0.0033
19	5	300	98,535	0.221	0.039	0.043	0.011	0.0124	0.0044
19	6	302	139,296	0.047	0.033	0.009	0.012	0.0031	0.0065
19	7	4,672	104,762	0.290	0.020	0.069	0.006	0.0232	0.0021
19	8	3,827	69,593	0.531	0.017	0.153	0.009	0.0565	0.0046
19	9	1,616	102,404	0.179	0.033	0.032	0.008	0.0088	0.0025
19	10	4,793	60,356	0.656	0.019	0.200	0.012	0.0760	0.0060
19	11	4,060	50,784	0.689	0.022	0.211	0.011	0.0810	0.0055
19	12	1,116	79,937	0.303	0.029	0.071	0.008	0.0236	0.0033
19	13	3,769	101,413	0.251	0.020	0.050	0.007	0.0146	0.0026
19	14	1,276	83,432	0.345	0.032	0.078	0.011	0.0249	0.0043
19	15	1,734	77,736	0.433	0.025	0.108	0.009	0.0366	0.0039
19	16	2,724	82,091	0.357	0.019	0.086	0.008	0.0288	0.0036
19	17	1,603	70,643	0.540	0.025	0.150	0.012	0.0544	0.0060
19	18	5,189	95,129	0.249	0.023	0.048	0.006	0.0142	0.0022
19	19	2,703	105,037	0.225	0.018	0.044	0.005	0.0130	0.0017
19	20	900	123,242	0.141	0.024	0.031	0.006	0.0099	0.0023
19	21	2,246	107,631	0.155	0.021	0.024	0.005	0.0060	0.0015
19	22	2,094	87,712	0.184	0.022	0.028	0.005	0.0071	0.0014
19	23	994	78,912	0.357	0.035	0.078	0.010	0.0246	0.0038
19	24	2,468	72,054	0.431	0.032	0.091	0.010	0.0280	0.0039
19	25	1,636	73,856	0.425	0.030	0.092	0.010	0.0289	0.0038
19	26	3,391	84,754	0.243	0.026	0.041	0.006	0.0108	0.0020
19	27	525	72,895	0.381	0.045	0.070	0.010	0.0196	0.0034
19	28	1,916	157,317	0.026	0.009	0.004	0.001	0.0008	0.0004
19	29	265	91,409	0.234	0.042	0.041	0.010	0.0116	0.0038
19	30	1,467	80,934	0.359	0.033	0.077	0.011	0.0239	0.0043
20	1	15,481	97,470	0.230	0.029	0.045	0.007	0.0137	0.0027
20	2	7,695	110,482	0.174	0.031	0.036	0.009	0.0112	0.0033
20	3	8,483	113,260	0.191	0.023	0.038	0.006	0.0119	0.0024
20	4	6,968	102,810	0.196	0.025	0.038	0.006	0.0113	0.0023
20	5	20,563	92,728	0.264	0.027	0.052	0.008	0.0156	0.0030
20	6	22,908	92,479	0.271	0.024	0.057	0.008	0.0180	0.0030
20	7	20,894	89,862	0.313	0.031	0.072	0.011	0.0243	0.0046
20	8	3,521	102,383	0.234	0.024	0.046	0.007	0.0136	0.0028
20	9	7,430	124,510	0.124	0.018	0.023	0.004	0.0070	0.0016
20	10	14,268	121,806	0.139	0.018	0.027	0.005	0.0081	0.0016
20	11	15,304	102,743	0.236	0.024	0.048	0.006	0.0153	0.0024
20	12	6,864	102,765	0.184	0.028	0.032	0.007	0.0088	0.0023
21	1	849	53,941	0.728	0.038	0.266	0.022	0.1245	0.0145
21	2	1,049	56,956	0.783	0.041	0.267	0.027	0.1161	0.0171
21	3	879	61,504	0.674	0.046	0.233	0.027	0.1064	0.0167
21	4	980	65,579	0.656	0.038	0.232	0.022	0.1053	0.0140
21	5	2,460	137,873	0.338	0.035	0.108	0.015	0.0486	0.0079

21	6	2,204	79,137	0.506	0.032	0.177	0.015	0.0830	0.0090
21	7	3,184	103,718	0.369	0.034	0.117	0.014	0.0522	0.0078
21	8	2,842	52,062	0.750	0.030	0.293	0.021	0.1438	0.0146
21	9	2,807	84,892	0.451	0.033	0.144	0.014	0.0640	0.0079
21	10	2,708	80,482	0.513	0.027	0.177	0.015	0.0812	0.0094
21	11	1,137	51,629	0.794	0.027	0.328	0.023	0.1651	0.0169
21	12	2,810	82,461	0.452	0.040	0.159	0.017	0.0773	0.0103
21	13	1,413	95,357	0.350	0.045	0.103	0.018	0.0444	0.0091
21	14	2,347	81,105	0.492	0.042	0.160	0.019	0.0714	0.0100
21	15	1,760	80,846	0.452	0.049	0.139	0.020	0.0606	0.0107
21	16	3,125	139,876	0.489	0.038	0.167	0.020	0.0773	0.0118
21	17	2,103	58,140	0.765	0.027	0.310	0.023	0.1552	0.0168
22	1	1,934	87,662	0.216	0.042	0.044	0.014	0.0130	0.0055
22	2	1,767	100,967	0.136	0.052	0.027	0.010	0.0088	0.0033
22	3	5,257	91,786	0.136	0.044	0.018	0.008	0.0037	0.0022
22	4	2,047	86,626	0.177	0.058	0.032	0.012	0.0098	0.0036
22	5	5,136	87,911	0.232	0.067	0.045	0.019	0.0132	0.0067
22	6	1,122	95,685	0.156	0.043	0.027	0.012	0.0076	0.0041
22	7	2,696	89,468	0.136	0.055	0.019	0.011	0.0041	0.0032
22	8	6,267	95,683	0.108	0.037	0.014	0.007	0.0032	0.0018
22	9	5,770	102,804	0.081	0.027	0.010	0.004	0.0021	0.0010
22	10	5,411	92,406	0.153	0.030	0.026	0.007	0.0073	0.0026
22	11	12,144	104,571	0.136	0.032	0.026	0.007	0.0076	0.0025
22	12	5,867	109,299	0.128	0.037	0.021	0.009	0.0054	0.0027
22	13	1,430	99,339	0.176	0.038	0.041	0.010	0.0140	0.0039
22	14	4,414	105,168	0.175	0.029	0.040	0.009	0.0130	0.0037
22	15	703	88,063	0.192	0.060	0.050	0.014	0.0181	0.0062
23	1	9,172	109,266	0.134	0.021	0.022	0.005	0.0056	0.0015
23	2	8,575	93,837	0.283	0.022	0.060	0.007	0.0192	0.0027
23	3	4,070	80,993	0.331	0.034	0.066	0.010	0.0194	0.0038
23	4	7,862	122,172	0.070	0.014	0.010	0.002	0.0021	0.0006
23	5	9,234	123,803	0.073	0.017	0.011	0.003	0.0030	0.0008
23	6	3,722	100,347	0.150	0.026	0.026	0.005	0.0073	0.0016
23	7	9,954	93,050	0.214	0.034	0.038	0.007	0.0104	0.0024
23	8	8,360	67,606	0.486	0.037	0.111	0.013	0.0358	0.0052
23	9	7,905	71,576	0.411	0.038	0.082	0.011	0.0237	0.0041
23	10	9,272	73,010	0.418	0.030	0.092	0.009	0.0290	0.0037
23	11	4,708	67,774	0.508	0.032	0.115	0.012	0.0365	0.0052
23	12	2,696	67,025	0.511	0.031	0.131	0.013	0.0462	0.0058
23	13	3,327	82,036	0.380	0.028	0.089	0.009	0.0304	0.0040
23	14	1,943	71,431	0.433	0.036	0.092	0.012	0.0285	0.0047
23	15	3,467	87,049	0.259	0.030	0.046	0.008	0.0125	0.0026
23	16	5,304	97,713	0.189	0.026	0.033	0.006	0.0088	0.0019
25	1	4,369	154,699	0.296	0.020	0.107	0.013	0.0515	0.0089
25	2	7,343	161,506	0.415	0.028	0.195	0.018	0.1146	0.0126
25	3	4,208	266,645	0.383	0.017	0.183	0.011	0.1076	0.0079
25	4	3,672	59,458	0.645	0.021	0.312	0.012	0.1845	0.0085

25	5	4,938	69,387	0.514	0.046	0.181	0.023	0.0846	0.0132
25	6	2,741	85,405	0.466	0.024	0.183	0.012	0.0942	0.0083
25	7	4,442	67,618	0.575	0.042	0.194	0.023	0.0859	0.0128
25	8	3,899	77,823	0.442	0.036	0.135	0.017	0.0564	0.0094
25	9	3,563	63,127	0.544	0.031	0.186	0.016	0.0863	0.0093
25	10	14,745	65,523	0.550	0.023	0.202	0.011	0.0989	0.0072
25	11	6,776	90,119	0.417	0.033	0.128	0.014	0.0546	0.0070
25	12	8,308	65,066	0.526	0.025	0.209	0.013	0.1090	0.0081
25	13	6,139	74,507	0.472	0.036	0.141	0.017	0.0567	0.0092
25	15	12,123	148,671	0.350	0.032	0.114	0.014	0.0500	0.0079
26	1	919	48,490	0.777	0.031	0.377	0.036	0.2146	0.0290
26	2	266	95,663	0.390	0.077	0.108	0.032	0.0434	0.0163
26	3	850	93,048	0.392	0.053	0.122	0.024	0.0530	0.0132
26	4	667	41,962	0.820	0.032	0.400	0.023	0.2307	0.0173
26	5	2,292	62,899	0.670	0.031	0.273	0.022	0.1424	0.0146
26	6	2,186	84,289	0.524	0.043	0.177	0.024	0.0804	0.0139
26	7	1,790	114,905	0.363	0.032	0.124	0.015	0.0577	0.0087
26	8	783	70,882	0.584	0.042	0.213	0.025	0.1039	0.0162
26	9	2,687	90,355	0.498	0.029	0.171	0.017	0.0806	0.0103
26	10	943	81,838	0.621	0.036	0.243	0.023	0.1207	0.0163
26	11	1,282	69,810	0.576	0.034	0.266	0.015	0.1506	0.0112
26	12	1,814	238,929	0.072	0.025	0.013	0.006	0.0034	0.0018
26	13	3,702	87,620	0.524	0.031	0.222	0.021	0.1186	0.0145
26	14	1,000	111,863	0.348	0.047	0.117	0.017	0.0527	0.0101
27	1	3,181	89,721	0.285	0.030	0.064	0.009	0.0206	0.0036
27	2	4,788	76,587	0.352	0.031	0.073	0.010	0.0218	0.0039
27	3	7,748	83,124	0.290	0.026	0.059	0.008	0.0174	0.0030
27	4	8,220	98,596	0.193	0.026	0.035	0.006	0.0099	0.0021
27	5	10,264	70,199	0.399	0.032	0.080	0.011	0.0234	0.0045
27	6	4,708	93,283	0.215	0.032	0.039	0.007	0.0107	0.0024
27	7	9,305	76,159	0.326	0.029	0.062	0.009	0.0177	0.0033
27	8	694	101,088	0.177	0.032	0.033	0.008	0.0096	0.0027
27	9	6,343	78,189	0.328	0.044	0.067	0.014	0.0204	0.0055
28	1	478	260,038	0.139	0.033	0.026	0.009	0.0065	0.0027
28	2	351	234,228	0.027	0.014	0.004	0.003	0.0008	0.0008
28	3	296	209,043	0.014	0.012	0.002	0.002	0.0004	0.0007
28	4	1,025	189,409	0.047	0.020	0.007	0.003	0.0015	0.0008
28	5	689	173,372	0.082	0.017	0.015	0.004	0.0036	0.0012
28	6	994	170,901	0.070	0.014	0.012	0.003	0.0028	0.0008
28	7	683	147,921	0.134	0.031	0.022	0.007	0.0052	0.0018
28	8	575	173,139	0.029	0.014	0.004	0.002	0.0007	0.0005
28	9	812	132,010	0.177	0.034	0.031	0.007	0.0075	0.0021
29	1	4,325	51,660	0.819	0.023	0.244	0.021	0.0932	0.0129
29	2	1,501	59,548	0.726	0.030	0.204	0.018	0.0767	0.0103
29	3	4,512	53,098	0.828	0.026	0.228	0.026	0.0791	0.0141
29	4	3,577	54,638	0.813	0.039	0.209	0.029	0.0692	0.0143
29	5	4,395	65,368	0.617	0.043	0.137	0.020	0.0418	0.0090

29	6	2,339	67,842	0.572	0.058	0.119	0.021	0.0343	0.0082
29	7	2,461	50,827	0.901	0.033	0.258	0.034	0.0906	0.0188
29	8	3,616	53,875	0.830	0.033	0.224	0.025	0.0781	0.0131
29	9	2,741	76,119	0.441	0.045	0.099	0.012	0.0333	0.0044
29	10	3,949	67,447	0.567	0.066	0.130	0.019	0.0449	0.0066
29	11	3,291	67,198	0.580	0.058	0.117	0.019	0.0340	0.0078
29	12	8,470	67,047	0.615	0.041	0.142	0.015	0.0465	0.0071
29	13	2,785	57,231	0.746	0.033	0.192	0.022	0.0657	0.0115
29	14	2,637	58,830	0.757	0.031	0.191	0.019	0.0633	0.0105
29	15	2,013	78,484	0.391	0.057	0.077	0.011	0.0249	0.0044
29	16	3,474	66,866	0.565	0.056	0.133	0.015	0.0457	0.0059
29	17	2,575	52,780	0.848	0.044	0.258	0.044	0.1021	0.0271
29	18	5,433	79,902	0.457	0.038	0.100	0.012	0.0316	0.0056
29	19	5,765	73,073	0.526	0.041	0.119	0.014	0.0387	0.0066
29	20	3,161	62,903	0.680	0.049	0.187	0.020	0.0682	0.0099
30	1	3,879	75,991	0.454	0.034	0.113	0.011	0.0389	0.0042
30	2	5,326	86,244	0.354	0.034	0.077	0.009	0.0243	0.0033
30	3	8,344	73,367	0.484	0.029	0.106	0.010	0.0324	0.0037
30	4	3,700	87,756	0.351	0.026	0.073	0.008	0.0219	0.0031
30	5	3,492	70,979	0.545	0.034	0.129	0.014	0.0420	0.0059
30	6	7,249	76,545	0.490	0.040	0.113	0.014	0.0361	0.0054
30	7	2,483	76,034	0.470	0.047	0.097	0.015	0.0288	0.0053
30	8	5,528	75,611	0.459	0.039	0.094	0.011	0.0278	0.0038
30	9	8,050	74,946	0.473	0.037	0.101	0.011	0.0305	0.0038
31	1	4,837	87,046	0.274	0.037	0.056	0.011	0.0175	0.0042
31	2	8,699	82,691	0.329	0.032	0.080	0.011	0.0287	0.0048
31	3	9,127	104,889	0.308	0.026	0.072	0.009	0.0248	0.0043
31	4	8,087	84,519	0.337	0.028	0.080	0.010	0.0277	0.0044
31	5	6,676	83,196	0.379	0.025	0.099	0.011	0.0371	0.0057
31	6	8,537	89,629	0.304	0.032	0.070	0.010	0.0237	0.0045

Table 9: Estimates of poverty indicators (urban areas)

Governorate	District	#hhno	avg_ $\hat{y}$	avg_FGT0	se_FGT0	avg_FGT1	se_FGT1	avg_FGT2	se_FGT2
11	1	700	62,143	0.557	0.049	0.151	0.020	0.0537	0.0085
11	2	6,765	114,030	0.166	0.022	0.030	0.005	0.0080	0.0016
11	3	478	136,221	0.145	0.022	0.031	0.007	0.0097	0.0032
11	4	844	93,316	0.301	0.035	0.068	0.011	0.0214	0.0043
11	5	212	138,494	0.152	0.040	0.027	0.010	0.0069	0.0035
11	6	724	96,856	0.269	0.031	0.053	0.009	0.0148	0.0032
11	7	303	97,795	0.218	0.040	0.038	0.010	0.0100	0.0036
11	8	840	100,875	0.186	0.035	0.034	0.009	0.0093	0.0033
11	11	1,093	156,565	0.029	0.013	0.003	0.002	0.0007	0.0004
11	12	1,785	93,761	0.294	0.028	0.065	0.008	0.0207	0.0032
11	13	490	116,143	0.105	0.031	0.016	0.006	0.0039	0.0018
11	14	349	93,977	0.285	0.035	0.062	0.011	0.0189	0.0044
11	15	324	92,177	0.248	0.042	0.042	0.010	0.0104	0.0031
11	16	6,537	96,747	0.279	0.025	0.061	0.008	0.0191	0.0032
11	17	177	135,216	0.077	0.049	0.009	0.008	0.0018	0.0024
11	18	11,283	136,158	0.096	0.014	0.015	0.003	0.0037	0.0009
11	19	16,239	154,468	0.076	0.013	0.012	0.003	0.0029	0.0008
12	1	271	64,235	0.572	0.063	0.209	0.029	0.0974	0.0156
12	2	991	112,861	0.217	0.034	0.053	0.010	0.0190	0.0045
12	4	1,574	108,139	0.328	0.033	0.091	0.012	0.0356	0.0055
12	6	130	46,978	0.733	0.067	0.287	0.041	0.1388	0.0255
12	9	665	56,149	0.700	0.053	0.257	0.032	0.1186	0.0186
12	10	2,384	122,546	0.237	0.020	0.068	0.007	0.0272	0.0036
12	11	7,458	100,949	0.351	0.023	0.100	0.009	0.0402	0.0045
13	1	8,935	161,486	0.116	0.015	0.023	0.004	0.0069	0.0014
13	2	28,942	163,779	0.122	0.009	0.025	0.003	0.0080	0.0010
13	3	15,137	144,936	0.145	0.016	0.030	0.004	0.0095	0.0017
13	4	14,640	176,514	0.093	0.012	0.019	0.003	0.0057	0.0012
13	5	42,133	196,592	0.099	0.008	0.021	0.002	0.0066	0.0008
13	6	14,815	247,476	0.052	0.007	0.010	0.002	0.0029	0.0006
13	7	10,260	218,267	0.063	0.008	0.012	0.002	0.0036	0.0008
13	8	39,035	176,564	0.142	0.010	0.032	0.003	0.0105	0.0013
13	9	23,959	204,694	0.067	0.007	0.013	0.002	0.0038	0.0008
13	10	18,730	118,017	0.272	0.020	0.066	0.007	0.0228	0.0028
13	19	3,834	125,575	0.210	0.027	0.046	0.008	0.0148	0.0031
13	24	16,246	132,385	0.231	0.019	0.053	0.006	0.0178	0.0025
14	4	319	85,671	0.325	0.085	0.074	0.026	0.0240	0.0106
14	5	162	65,539	0.552	0.116	0.138	0.044	0.0462	0.0189
14	6	517	69,779	0.496	0.083	0.120	0.029	0.0399	0.0120
14	8	341	109,096	0.209	0.049	0.045	0.014	0.0144	0.0055
14	9	3,592	113,462	0.151	0.034	0.029	0.008	0.0087	0.0029
14	11	94	231,193	0.002	0.006	0.000	0.001	0.0001	0.0003
14	13	6,035	125,924	0.106	0.018	0.020	0.005	0.0059	0.0016

14	14	70	101,838	0.130	0.121	0.021	0.024	0.0053	0.0074
14	16	1,656	109,854	0.161	0.039	0.031	0.010	0.0093	0.0037
15	1	429	76,284	0.486	0.096	0.146	0.041	0.0593	0.0201
15	2	59	55,884	0.690	0.133	0.228	0.072	0.0968	0.0388
15	3	353	76,001	0.490	0.098	0.164	0.042	0.0717	0.0214
15	4	302	55,554	0.659	0.068	0.246	0.038	0.1153	0.0217
15	5	1,362	70,693	0.556	0.061	0.199	0.030	0.0909	0.0165
15	6	479	141,320	0.180	0.054	0.046	0.019	0.0170	0.0088
15	7	715	100,783	0.334	0.051	0.101	0.020	0.0413	0.0101
15	8	289	51,839	0.723	0.082	0.264	0.053	0.1196	0.0311
15	11	497	94,445	0.353	0.081	0.096	0.032	0.0366	0.0153
15	12	3,265	86,967	0.434	0.037	0.137	0.017	0.0579	0.0086
15	14	1,570	86,643	0.470	0.054	0.150	0.026	0.0632	0.0134
15	16	298	151,933	0.073	0.047	0.012	0.011	0.0032	0.0040
15	17	24,787	131,738	0.222	0.017	0.059	0.006	0.0227	0.0029
15	18	21,958	152,105	0.164	0.015	0.040	0.005	0.0145	0.0019
15	19	21,670	142,864	0.198	0.014	0.052	0.005	0.0195	0.0023
15	21	212	107,627	0.278	0.085	0.072	0.027	0.0268	0.0116
16	1	293	85,622	0.238	0.072	0.039	0.014	0.0098	0.0042
16	3	141	80,235	0.265	0.087	0.046	0.019	0.0123	0.0059
16	4	297	72,974	0.457	0.135	0.107	0.044	0.0346	0.0177
16	5	1,475	110,008	0.284	0.033	0.074	0.011	0.0268	0.0050
16	6	1,244	94,057	0.225	0.064	0.041	0.014	0.0119	0.0046
16	7	468	88,680	0.284	0.086	0.057	0.022	0.0164	0.0077
16	8	787	81,870	0.359	0.058	0.095	0.016	0.0346	0.0064
16	9	878	63,586	0.647	0.054	0.200	0.025	0.0782	0.0126
16	10	818	104,531	0.124	0.036	0.020	0.009	0.0051	0.0028
16	11	256	101,434	0.183	0.066	0.037	0.017	0.0110	0.0060
16	12	407	86,205	0.221	0.080	0.038	0.019	0.0101	0.0060
17	2	3,167	108,383	0.261	0.032	0.060	0.011	0.0207	0.0049
17	3	951	132,450	0.139	0.033	0.027	0.008	0.0082	0.0030
17	4	3,454	109,568	0.244	0.036	0.055	0.012	0.0184	0.0051
17	5	426	115,924	0.223	0.048	0.052	0.017	0.0178	0.0081
17	6	93	66,820	0.520	0.116	0.144	0.049	0.0540	0.0236
17	7	254	112,002	0.173	0.052	0.032	0.014	0.0092	0.0056
17	8	82	99,944	0.147	0.061	0.028	0.015	0.0080	0.0060
17	11	373	76,617	0.408	0.063	0.098	0.023	0.0335	0.0105
17	15	1,208	139,877	0.158	0.031	0.038	0.009	0.0141	0.0041
17	16	137	147,382	0.089	0.037	0.016	0.010	0.0045	0.0039
17	17	52	90,239	0.278	0.102	0.057	0.027	0.0167	0.0108
17	18	325	119,967	0.182	0.048	0.041	0.015	0.0134	0.0060
17	20	230	175,675	0.026	0.019	0.003	0.003	0.0007	0.0011
17	21	424	137,437	0.112	0.029	0.021	0.007	0.0062	0.0028
17	22	175	91,509	0.363	0.077	0.090	0.028	0.0321	0.0128
17	23	116	56,954	0.649	0.096	0.199	0.054	0.0794	0.0291
17	24	104	81,521	0.408	0.102	0.098	0.037	0.0330	0.0159
17	25	290	96,522	0.246	0.072	0.049	0.020	0.0145	0.0078

17	28	4,276	121,873	0.207	0.034	0.046	0.011	0.0150	0.0044
18	1	1,682	73,754	0.418	0.025	0.112	0.010	0.0421	0.0050
18	2	2,164	94,369	0.231	0.031	0.048	0.009	0.0149	0.0034
18	3	457	101,775	0.284	0.053	0.089	0.030	0.0390	0.0178
18	4	195	104,739	0.209	0.055	0.042	0.015	0.0122	0.0060
18	5	1,008	83,468	0.320	0.032	0.075	0.011	0.0253	0.0051
18	6	637	85,314	0.268	0.029	0.055	0.008	0.0167	0.0033
18	7	3,430	84,559	0.317	0.029	0.073	0.010	0.0243	0.0040
18	8	738	65,817	0.466	0.093	0.114	0.034	0.0389	0.0149
18	9	2,941	82,989	0.312	0.028	0.069	0.009	0.0223	0.0038
18	10	7,128	101,705	0.217	0.014	0.048	0.005	0.0159	0.0020
18	11	263	85,092	0.311	0.046	0.082	0.018	0.0307	0.0094
18	13	4,759	78,146	0.364	0.019	0.090	0.008	0.0316	0.0038
18	14	1,325	92,711	0.248	0.028	0.052	0.008	0.0157	0.0032
18	15	284	79,636	0.286	0.042	0.069	0.014	0.0247	0.0067
18	16	1,830	89,443	0.271	0.021	0.061	0.007	0.0197	0.0029
18	17	6,731	89,192	0.286	0.020	0.065	0.007	0.0216	0.0029
18	19	2,018	83,044	0.323	0.037	0.079	0.013	0.0280	0.0058
18	20	1,741	83,090	0.305	0.030	0.068	0.009	0.0222	0.0039
18	21	20,706	115,721	0.181	0.011	0.038	0.004	0.0119	0.0015
18	22	12,561	159,491	0.105	0.011	0.020	0.003	0.0061	0.0010
18	23	23,081	112,743	0.213	0.012	0.047	0.004	0.0154	0.0017
18	24	4,787	98,897	0.232	0.023	0.051	0.007	0.0166	0.0030
18	25	2,781	86,199	0.297	0.020	0.069	0.007	0.0229	0.0031
18	26	1,662	83,710	0.309	0.028	0.070	0.009	0.0231	0.0041
19	1	195	63,099	0.486	0.127	0.169	0.049	0.0756	0.0229
19	2	230	224,009	0.000	0.001	0.000	0.000	0.0000	0.0000
19	6	132	49,189	0.800	0.174	0.255	0.096	0.1022	0.0490
19	7	1,171	115,474	0.291	0.062	0.080	0.022	0.0304	0.0097
19	8	1,430	154,519	0.038	0.020	0.005	0.004	0.0011	0.0011
19	9	474	100,480	0.250	0.096	0.054	0.025	0.0175	0.0094
19	10	5,609	115,484	0.209	0.034	0.041	0.009	0.0117	0.0031
19	11	5,011	114,549	0.377	0.032	0.099	0.013	0.0356	0.0063
19	13	1,507	148,498	0.105	0.031	0.024	0.010	0.0083	0.0040
19	14	1,741	89,843	0.390	0.049	0.107	0.018	0.0406	0.0081
19	15	6,647	93,577	0.346	0.025	0.100	0.009	0.0392	0.0038
19	16	148	204,650	0.005	0.017	0.001	0.003	0.0001	0.0006
19	17	4,206	86,107	0.401	0.053	0.109	0.020	0.0404	0.0087
19	18	217	116,042	0.262	0.107	0.105	0.039	0.0504	0.0180
19	19	308	175,177	0.060	0.064	0.009	0.012	0.0022	0.0033
19	20	68	394,768	0.000	0.000	0.000	0.000	0.0000	0.0000
19	21	238	111,628	0.353	0.093	0.098	0.043	0.0356	0.0201
19	22	160	53,219	0.751	0.166	0.239	0.090	0.0946	0.0460
19	24	140	38,413	0.912	0.079	0.373	0.071	0.1751	0.0451
19	25	287	137,737	0.157	0.070	0.034	0.021	0.0109	0.0086
19	26	1,116	154,823	0.150	0.061	0.039	0.020	0.0138	0.0082
19	27	331	94,821	0.246	0.201	0.049	0.052	0.0142	0.0184

19	28	389	174,627	0.077	0.062	0.015	0.016	0.0046	0.0054
19	29	22,113	148,128	0.177	0.019	0.043	0.007	0.0150	0.0029
20	1	533	87,671	0.405	0.053	0.129	0.024	0.0550	0.0126
20	2	3,305	100,704	0.304	0.029	0.074	0.011	0.0259	0.0047
20	3	92	55,408	0.651	0.102	0.227	0.060	0.1001	0.0331
20	4	132	105,615	0.311	0.097	0.083	0.037	0.0306	0.0173
20	7	328	82,696	0.490	0.083	0.147	0.039	0.0597	0.0203
20	8	19,145	123,736	0.262	0.023	0.065	0.008	0.0234	0.0033
20	9	113	127,962	0.178	0.075	0.039	0.021	0.0123	0.0078
20	11	664	127,528	0.178	0.036	0.040	0.010	0.0135	0.0041
21	4	129	62,602	0.585	0.065	0.158	0.024	0.0590	0.0113
21	5	246	113,923	0.190	0.043	0.045	0.012	0.0153	0.0050
21	7	1,467	99,099	0.284	0.027	0.072	0.008	0.0266	0.0030
21	10	869	69,937	0.460	0.048	0.118	0.014	0.0442	0.0053
21	11	149	46,342	0.916	0.033	0.279	0.034	0.1043	0.0184
21	12	348	62,427	0.593	0.055	0.169	0.023	0.0650	0.0108
21	13	2,626	135,175	0.190	0.016	0.052	0.006	0.0198	0.0026
21	14	270	63,613	0.543	0.063	0.150	0.022	0.0573	0.0093
21	15	549	59,890	0.593	0.066	0.164	0.024	0.0622	0.0098
21	16	660	75,949	0.403	0.047	0.104	0.013	0.0389	0.0052
21	17	238	69,903	0.470	0.100	0.124	0.029	0.0469	0.0124
22	1	370	130,131	0.071	0.024	0.012	0.006	0.0029	0.0019
22	2	472	164,391	0.135	0.019	0.029	0.006	0.0092	0.0023
22	3	56	141,060	0.118	0.049	0.029	0.015	0.0108	0.0074
22	5	643	134,388	0.094	0.024	0.016	0.005	0.0044	0.0017
22	7	492	165,907	0.124	0.045	0.027	0.012	0.0088	0.0045
22	8	379	115,549	0.182	0.043	0.037	0.011	0.0114	0.0039
22	9	306	108,368	0.149	0.038	0.025	0.009	0.0065	0.0030
22	10	1,692	100,091	0.230	0.019	0.051	0.005	0.0166	0.0022
22	11	1,389	95,346	0.260	0.026	0.062	0.009	0.0205	0.0035
22	14	85	139,216	0.029	0.025	0.003	0.003	0.0006	0.0007
22	15	5,665	110,356	0.215	0.015	0.050	0.004	0.0168	0.0016
24	1	10,962	108,371	0.266	0.020	0.061	0.007	0.0204	0.0029
24	2	13,925	125,410	0.203	0.016	0.045	0.005	0.0146	0.0022
24	3	15,338	155,247	0.108	0.010	0.020	0.003	0.0060	0.0009
24	4	9,019	122,561	0.209	0.018	0.045	0.006	0.0143	0.0024
24	5	8,025	136,835	0.128	0.013	0.024	0.004	0.0070	0.0013
24	6	7,533	157,479	0.109	0.011	0.021	0.003	0.0062	0.0011
24	7	11,811	152,888	0.107	0.010	0.021	0.003	0.0061	0.0010
24	8	6,354	161,529	0.116	0.011	0.023	0.003	0.0071	0.0012
25	1	541	253,029	0.022	0.013	0.004	0.002	0.0012	0.0008
25	4	200	132,115	0.107	0.071	0.021	0.016	0.0065	0.0056
25	6	271	79,185	0.533	0.089	0.163	0.051	0.0605	0.0256
25	7	1,149	89,993	0.237	0.052	0.053	0.013	0.0179	0.0046
25	8	161	63,977	0.582	0.141	0.139	0.046	0.0459	0.0175
25	9	440	73,372	0.560	0.049	0.180	0.032	0.0714	0.0176
25	10	204	67,470	0.537	0.127	0.131	0.046	0.0439	0.0187

25	14	4,005	142,953	0.115	0.023	0.025	0.006	0.0082	0.0021
25	15	1,524	121,953	0.184	0.041	0.036	0.010	0.0108	0.0033
26	7	224	132,138	0.049	0.027	0.006	0.005	0.0013	0.0011
26	8	106	147,039	0.040	0.028	0.007	0.006	0.0019	0.0021
26	9	789	99,974	0.314	0.036	0.072	0.012	0.0239	0.0054
26	12	1,671	158,936	0.099	0.023	0.018	0.006	0.0053	0.0022
26	13	535	114,183	0.253	0.039	0.052	0.011	0.0159	0.0044
27	1	888	98,265	0.199	0.047	0.031	0.010	0.0074	0.0028
27	2	674	86,880	0.278	0.053	0.034	0.011	0.0079	0.0032
27	3	561	112,480	0.050	0.022	0.005	0.003	0.0008	0.0005
27	4	243	91,316	0.156	0.065	0.020	0.011	0.0039	0.0027
27	6	210	95,259	0.123	0.061	0.013	0.009	0.0023	0.0019
27	8	1,593	94,472	0.209	0.043	0.035	0.010	0.0091	0.0036
28	3	298	83,815	0.286	0.060	0.076	0.018	0.0300	0.0076
28	4	1,516	194,503	0.080	0.020	0.023	0.006	0.0092	0.0029
28	6	494	105,123	0.148	0.034	0.029	0.008	0.0088	0.0031
28	7	821	151,012	0.045	0.015	0.008	0.003	0.0022	0.0011
28	8	718	170,434	0.078	0.017	0.021	0.006	0.0082	0.0030
28	9	227	109,834	0.128	0.045	0.020	0.009	0.0050	0.0031
29	1	320	62,959	0.682	0.078	0.194	0.047	0.0704	0.0243
29	2	742	97,020	0.406	0.089	0.098	0.035	0.0335	0.0161
29	3	117	55,548	0.817	0.135	0.235	0.084	0.0850	0.0435
29	4	282	57,255	0.742	0.097	0.205	0.051	0.0720	0.0246
29	5	273	84,955	0.411	0.143	0.079	0.042	0.0223	0.0150
29	6	274	58,691	0.773	0.083	0.259	0.054	0.1082	0.0314
29	8	240	56,829	0.759	0.083	0.240	0.054	0.0950	0.0302
29	9	161	66,391	0.670	0.149	0.175	0.063	0.0610	0.0278
29	10	220	86,119	0.407	0.079	0.087	0.027	0.0257	0.0106
29	11	1,752	85,090	0.426	0.047	0.093	0.017	0.0289	0.0073
29	13	122	61,041	0.741	0.134	0.197	0.065	0.0677	0.0297
29	15	9,391	108,163	0.259	0.033	0.049	0.008	0.0141	0.0030
29	16	176	60,328	0.768	0.087	0.221	0.048	0.0801	0.0250
29	17	1,303	87,609	0.473	0.062	0.116	0.023	0.0390	0.0101
29	19	1,762	94,644	0.348	0.050	0.072	0.014	0.0212	0.0053
30	1	945	140,251	0.212	0.043	0.053	0.015	0.0191	0.0065
30	2	1,896	109,046	0.288	0.040	0.067	0.015	0.0227	0.0065
30	3	1,237	93,633	0.325	0.035	0.074	0.012	0.0249	0.0053
30	4	560	110,939	0.248	0.044	0.058	0.014	0.0199	0.0061
30	5	269	101,415	0.376	0.049	0.109	0.024	0.0424	0.0126
30	6	2,365	98,704	0.304	0.034	0.074	0.012	0.0267	0.0052
30	7	59	112,121	0.120	0.060	0.032	0.013	0.0127	0.0062
30	9	386	94,921	0.419	0.040	0.152	0.022	0.0722	0.0140

Figure 1

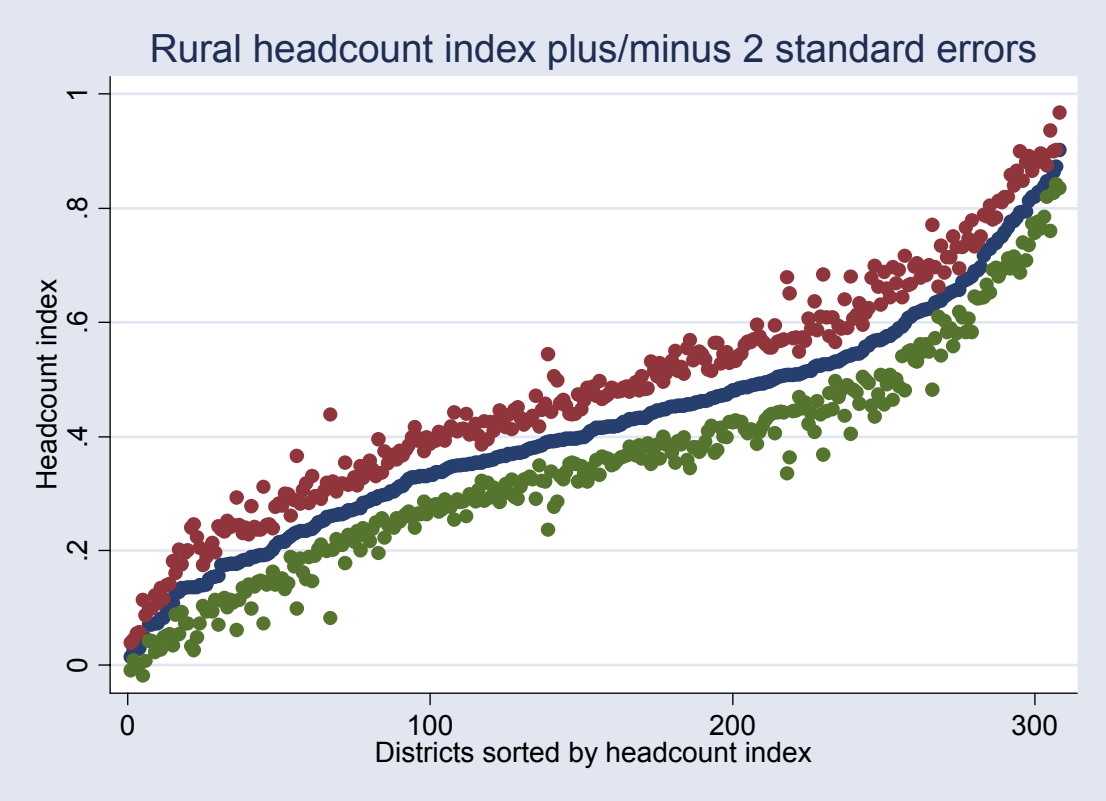
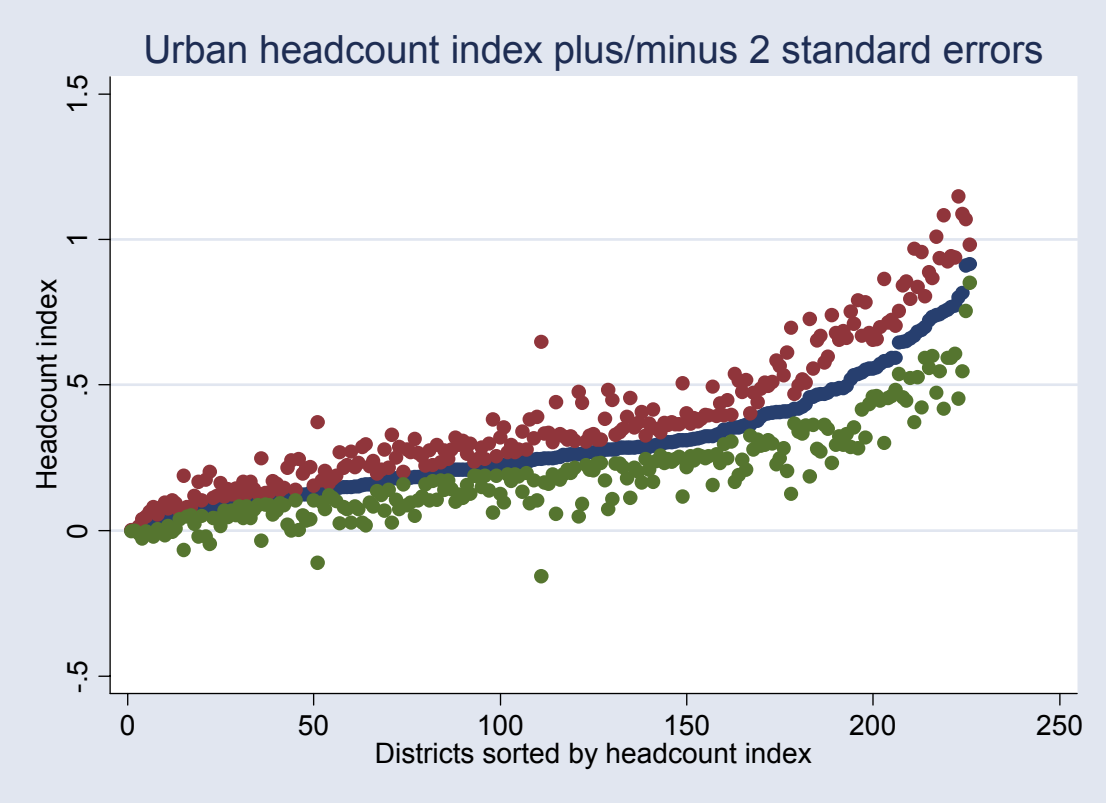


Figure 2



Appendix A

A.1. In this section, the ELL method described in the main text is applied to measure food poverty in Yemen. Food consumption per capita is used to replace consumption per capita in the main text to measure poverty. All the steps of implementing the method are as described in the main text. Table A1 shows the results of all the food consumption models. Table A2 compares the estimates of headcount at governorate level using two methods (ELL method and directly calculated using the survey data). Table A3 and A4 list the estimates of food poverty indicators for each district. Figure A1 and A2 show the mean and plus/minus 2 standard errors of the poverty indicators.

A.2. In general, the estimates of the food poverty indicators are less good than the total consumption indicators shown in the main text. This mainly comes from the difficulty to get good models to explain the food consumption per capita for some strata. It can be seen that the R squares of the food consumption models are in general lower than the ones of the total consumption models.

A.3. Sharing the same concern with the estimates of the poverty indicators using total consumption, the estimates of food poverty indicators have very big standard errors for the urban districts with a small number of households.

Table A1: Regression results of food consumption models

Table A1.1: Rural Ibb

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
afemalep	0.630	0.204	0.211	0.173	0.266	0.022
dum_eaurable1	0.212	0.089	0.043	0.202	0.043	0.041
dum_eaurable10_ea	-0.863	0.230	0.080	0.141	0.106	0.027
dum_eaurable15_ea	1.378	0.490	0.040	0.055	0.040	0.002
dum_eaurable1_ea	4.130	0.634	0.043	0.051	0.046	0.002
employed2	-1.733	0.248	0.233	0.095	0.237	0.012
headprim_ea	-2.162	0.561	0.049	0.036	0.055	0.002
headread_ea	1.597	0.244	0.156	0.097	0.156	0.008
headsecond_ea	-0.961	0.309	0.117	0.068	0.136	0.007
housetype3_ea	2.151	0.552	0.013	0.047	0.014	0.002
light1_ea	0.324	0.067	0.362	0.435	0.442	0.210
light2	0.468	0.135	0.027	0.163	0.021	0.021
nafemales	-0.097	0.023	1.828	1.283	1.943	1.553
nkids	-0.029	0.012	3.534	2.579	3.324	4.994
ownhouse1	0.129	0.059	0.854	0.353	0.885	0.102
ownhouse1_ea	0.492	0.147	0.839	0.135	0.852	0.017
primaryp	0.577	0.127	0.110	0.160	0.123	0.024
primary_ea	1.590	0.495	0.109	0.058	0.132	0.005
singlep	-0.410	0.114	0.588	0.231	0.593	0.046
water2_ea	0.294	0.142	0.075	0.196	0.059	0.026
work9	-0.251	0.126	0.298	0.248	0.254	0.042
intercept	10.258	0.159				
obs.	463					
R square	0.44					
location effect	0.046					

Table A1.2: Rural Abyan

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable12	0.149	0.075	0.396	0.489	0.424	0.245
dum_eaurable12_ea	-1.298	0.198	0.396	0.311	0.418	0.098
dum_eaurable16	3.042	0.528	0.002	0.044	0.005	0.005
dum_eaurable2_1	0.446	0.238	0.009	0.094	0.014	0.014
dum_eaurable9_ea	2.355	0.298	0.132	0.123	0.149	0.037
headiliter_ea	3.066	0.291	0.491	0.168	0.524	0.036
headsecond_ea	4.545	0.438	0.202	0.124	0.219	0.020
headsingle	0.308	0.114	0.057	0.231	0.069	0.065
housetype1_ea	0.358	0.148	0.857	0.233	0.896	0.047
kidp	-0.491	0.150	0.383	0.230	0.375	0.055
ownhouse1_ea	-3.108	0.701	0.932	0.107	0.929	0.003
singlep	-0.906	0.165	0.587	0.213	0.571	0.050
work8	-5.375	0.664	0.035	0.070	0.037	0.006
intercept	11.445	0.632				
obs.	201					
R square	0.59					
location effect	0.077					

Table A1.3: Rural Al-Baida

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable11	0.354	0.108	0.110	0.313	0.103	0.093
dum_eaurable11_ea	1.930	0.352	0.110	0.166	0.097	0.024
dum_eaurable14_ea	-2.771	0.594	0.055	0.097	0.053	0.008
headiliter_ea	6.977	1.097	0.646	0.171	0.684	0.025
headread_ea	8.451	1.214	0.226	0.127	0.204	0.014
headsecond_ea	7.764	1.005	0.099	0.068	0.097	0.006
headuniv	-0.389	0.181	0.015	0.120	0.027	0.027
malep	0.553	0.190	0.503	0.169	0.497	0.027
singlep	-0.913	0.161	0.616	0.193	0.612	0.038
water4_ea	0.584	0.167	0.913	0.180	0.899	0.048
work10	-6.599	0.790	0.030	0.057	0.026	0.003
work4	1.197	0.236	0.109	0.146	0.098	0.024
intercept	2.788	1.187				
obs.	222					
R square	0.46					
location effect	-*					

*No location effect

Table A1.4: Rural Taiz

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable12	0.131	0.049	0.332	0.471	0.323	0.219
dum_eaurable1_ea	-6.751	1.304	0.026	0.029	0.020	0.0003
employed1	10.611	1.546	0.186	0.097	0.200	0.014
employed2	-9.385	1.475	0.200	0.099	0.214	0.014
employ_nonself	1.145	0.165	0.372	0.258	0.369	0.050
kidp	-0.621	0.174	0.409	0.255	0.416	0.064
light1	0.149	0.064	0.194	0.395	0.158	0.133
light4	0.439	0.142	0.024	0.154	0.020	0.020
light6_ea	2.033	0.404	0.038	0.104	0.033	0.005
nafemales	-0.096	0.018	1.387	1.321	1.968	1.778
namales	-0.082	0.019	1.387	1.321	1.402	1.737
nkids	-0.037	0.019	3.135	2.440	3.076	5.139
ownhouse1_ea	0.672	0.296	0.929	0.089	0.932	0.018
sewage2	0.187	0.045	0.315	0.464	0.352	0.229
water2	0.479	0.092	0.060	0.237	0.078	0.072
water2_ea	-0.748	0.183	0.059	0.164	0.048	0.019
work10	3.437	0.444	0.038	0.079	0.028	0.003
work8	0.426	0.144	0.142	0.173	0.176	0.044
work9	1.337	0.176	0.209	0.234	0.199	0.039
intercept	9.560	0.354				
obs.	450					
R square	0.48					
location effect	0.083					

Table A1.5: Rural Al-Jawf

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
afemalep	1.376	0.248	0.228	0.137	0.247	0.019
dum_eaurable18	1.587	0.295	0.001	0.037	0.008	0.008
dum_eaurable1_ea	0.493	0.200	0.127	0.161	0.133	0.022
dum_eaurable8_ea	-3.987	0.815	0.012	0.044	0.012	0.001
headread_ea	-1.024	0.417	0.066	0.088	0.066	0.006
headsecond_ea	3.340	0.419	0.138	0.136	0.125	0.009
headuniv_ea	-8.282	1.515	0.017	0.038	0.019	0.001
housetype1_ea	0.293	0.093	0.733	0.292	0.691	0.082
light5	0.216	0.066	0.732	0.443	0.715	0.205
marriedp	0.432	0.144	0.299	0.125	0.324	0.038
nafemales	-0.226	0.031	1.766	1.220	1.783	1.249
ownhouse2	0.593	0.261	0.007	0.081	0.006	0.006
intercept	9.676	0.107				
obs.	148					
R square	0.63					
location effect	0.11					

Table A1.6: Rural Hajja

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
cook2_ea	-0.424	0.198	0.054	0.181	0.036	0.017
dum_eaurable1	0.174	0.102	0.043	0.203	0.058	0.055
dum_eaurable12_ea	-0.409	0.238	0.145	0.217	0.114	0.016
dum_eaurable15_ea	1.665	0.387	0.030	0.079	0.038	0.009
dum_eaurable5	0.630	0.280	0.011	0.105	0.006	0.006
dum_eaurable6	0.338	0.163	0.014	0.116	0.019	0.018
dum_eaurable9_ea	-1.437	0.356	0.093	0.106	0.086	0.011
employed1	-0.634	0.344	0.258	0.112	0.276	0.007
employ_self	1.046	0.189	0.829	0.193	0.795	0.050
headage	-0.005	0.002	41.659	14.961	42.754	221.164
headprim_ea	4.001	0.662	0.049	0.044	0.050	0.002
headuniv_ea	3.519	1.344	0.016	0.026	0.015	0.001
highprim	-0.209	0.083	0.068	0.252	0.093	0.085
kidp	-0.814	0.155	0.458	0.242	0.448	0.054
light4	-0.299	0.127	0.033	0.179	0.036	0.034
nafemales	-0.126	0.022	1.788	1.428	1.700	1.314
namales	-0.072	0.020	1.844	1.554	1.803	1.765
ownhouse1_ea	-0.959	0.212	0.925	0.103	0.904	0.019
sewage2	0.515	0.078	0.080	0.271	0.111	0.099
singlep	-0.595	0.166	0.598	0.225	0.603	0.048
work5	2.259	0.666	0.016	0.050	0.021	0.002
work9	-0.682	0.159	0.533	0.278	0.544	0.087
intercept	12.320	0.263				
obs.	346					
R square	0.56					
location effect	0.170					

Table A1.7: Rural Al-Hodeida

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
afemalep	0.489	0.186	0.261	0.171	0.261	0.021
amalep	1.040	0.228	0.256	0.187	0.254	0.022
dum_eaurable12_ea	1.502	0.202	0.155	0.168	0.168	0.030
dum_eaurable5	0.386	0.205	0.006	0.075	0.008	0.008
dum_eaurable6_ea	-4.515	0.563	0.063	0.071	0.060	0.004
employed1	-6.331	1.510	0.328	0.115	0.345	0.016
employed2	6.479	1.453	0.342	0.113	0.360	0.017
employ_nonself	-3.246	0.663	0.108	0.150	0.106	0.017
employ_self	-1.267	0.551	0.870	0.162	0.866	0.019
headage	0.006	0.002	43.742	16.789	42.535	203.554
headprim_ea	2.915	0.815	0.039	0.034	0.040	0.002
headsingle	0.369	0.144	0.034	0.181	0.037	0.035
housetype1	0.134	0.049	0.537	0.499	0.504	0.251
light1_ea	2.553	0.388	0.034	0.148	0.026	0.017
light3_ea	5.920	0.500	0.022	0.102	0.025	0.016
light5_ea	2.693	0.274	0.862	0.243	0.887	0.045
marriedp	0.316	0.139	0.404	0.269	0.399	0.051
namales	-0.168	0.029	1.446	1.180	1.525	1.087
ownhouse2	0.900	0.298	0.008	0.091	0.006	0.006
primaryp	0.486	0.215	0.053	0.129	0.053	0.013
water2_ea	0.427	0.108	0.104	0.236	0.136	0.083
water3_ea	-0.208	0.099	0.185	0.339	0.159	0.091
work7	-0.935	0.257	0.076	0.118	0.074	0.012
intercept	8.774	0.594				
obs.	377					
R square	0.52					
location effect	0.11					

Table A1.8: Rural Hadramout

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable11	0.186	0.053	0.223	0.416	0.278	0.202
dum_eaurable4_ea	-3.033	0.406	0.056	0.084	0.064	0.009
employed1	9.084	2.124	0.262	0.106	0.231	0.008
employed2	-9.895	2.005	0.274	0.106	0.242	0.008
employ_nonself	-1.002	0.144	0.328	0.230	0.366	0.063
kidp	-0.351	0.115	0.398	0.220	0.389	0.046
size	-0.026	0.004	9.199	5.868	9.353	34.503
water1_ea	-0.472	0.065	0.301	0.417	0.330	0.166
work5	3.523	0.533	0.021	0.057	0.035	0.006
intercept	11.930	0.145				
obs.	203					
R square	0.53					
location effect	0.047					

Table A1.9: Rural Dhamar

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable10	0.494	0.142	0.030	0.170	0.031	0.030
dum_eaurable10_ea	-1.901	0.530	0.030	0.066	0.035	0.004
elderlyp	1.313	0.211	0.091	0.203	0.076	0.027
employed2	1.680	0.260	0.290	0.123	0.277	0.008
employ_nonself	-0.342	0.101	0.263	0.242	0.305	0.068
headdivorced	0.628	0.199	0.010	0.098	0.013	0.013
headuniv_ea	6.894	1.175	0.023	0.029	0.028	0.001
kidp	-0.301	0.127	0.439	0.239	0.442	0.053
light1	-0.101	0.063	0.272	0.445	0.322	0.219
marriedp	0.489	0.134	0.371	0.229	0.375	0.042
nelderly	-0.241	0.044	0.436	0.699	0.438	0.484
water1	0.281	0.073	0.126	0.332	0.161	0.136
intercept	10.325	0.126				
obs.	315					
R square	0.41					
location effect	0.074					

Table A1.10: Rural Shabwah

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable1	0.187	0.104	0.256	0.437	0.250	0.189
dum_eaurable2_ea	17.972	3.335	0.008	0.014	0.009	2E-4
employ_nonself	-0.348	0.219	0.475	0.267	0.515	0.069
headiliter_ea	-1.754	0.320	0.502	0.183	0.478	0.037
headsingle	0.385	0.194	0.038	0.190	0.042	0.041
light2	0.292	0.155	0.098	0.297	0.081	0.075
light6	-0.492	0.135	0.096	0.295	0.090	0.082
nkids	-0.026	0.013	4.958	3.782	4.507	11.344
singlep	-0.865	0.269	0.615	0.184	0.617	0.025
water3_ea	-0.646	0.222	0.080	0.223	0.109	0.065
work1	-1.463	0.352	0.237	0.201	0.231	0.032
intercept	12.333	0.297				
obs.	151					
R square	0.50					
location effect	-*					

* No location effect

Table A1.11: Rural Sa'adah

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
afemalep	0.656	0.282	0.231	0.134	0.230	0.017
amalep×nafemalesinv*	1.120	0.382	0.109	0.147	0.095	0.014
dum_eaurable17×nafemalesinv	5.078	1.922	0.007	0.053	0.008	0.003
dum_eaurable1	0.276	0.073	0.197	0.398	0.168	0.141
dum_eaurable12	0.147	0.058	0.306	0.461	0.336	0.224
dum_eaurable15	0.279	0.101	0.057	0.231	0.074	0.069
dum_eaurable17	-1.596	0.704	0.019	0.137	0.021	0.021
dum_eaurable4	0.255	0.084	0.085	0.279	0.113	0.101
dum_eaurable5_ea	4.054	0.938	0.013	0.025	0.016	0.001
headiliter_ea	-0.516	0.192	0.734	0.184	0.751	0.023
kidp	-0.399	0.165	0.452	0.222	0.451	0.047
light5_ea	0.673	0.194	0.386	0.354	0.383	0.117
light5_ea×nafemalesinv	-1.517	0.474	0.161	0.181	0.153	0.024
malep	-0.481	0.185	0.516	0.172	0.516	0.025
nafemalesinv	3.922	1.140	0.404	0.188	0.403	0.030
nafemalesinv×ownhouse1_ea	-2.981	1.243	0.362	0.170	0.358	0.022
ownhouse1_ea	2.702	0.748	0.900	0.113	0.895	0.014
work10	-3.851	0.787	0.023	0.049	0.024	0.002
intercept	8.306	0.705				
obs.	218					
R square	0.45					
location effect	0.004					

*nafemalesinv=1/(1+nafemales)

Table A1.12: Rural Sana'a Region

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable1_ea	-0.306	0.120	0.141	0.161	0.155	0.032
dum_eaurable5	0.248	0.102	0.026	0.160	0.032	0.031
dum_eaurable9	0.118	0.043	0.176	0.381	0.208	0.166
headiliter_ea	-0.864	0.123	0.610	0.180	0.646	0.031
kidp	-0.720	0.095	0.423	0.223	0.419	0.043
light4	-0.492	0.166	0.023	0.151	0.011	0.011
marriedp	0.295	0.098	0.362	0.210	0.365	0.038
nafemales	-0.101	0.012	2.078	1.607	2.156	2.136
primaryp	0.493	0.145	0.127	0.163	0.107	0.018
work1	-0.445	0.096	0.245	0.233	0.223	0.043
work4	1.306	0.365	0.037	0.082	0.033	0.002
intercept	11.683	0.134				
obs.	256					
R square	0.52					
location effect	0.065					

Table A1.13: Rural Laheg

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
amalep	1.005	0.256	0.256	0.191	0.254	0.026
dum_eaurable1	0.555	0.175	0.063	0.242	0.047	0.045
dum_eaurable10_ea	0.700	0.202	0.193	0.292	0.169	0.079
dum_eaurable12	0.148	0.090	0.364	0.481	0.383	0.237
dum_eaurable12_ea	-0.862	0.184	0.364	0.337	0.393	0.123
dum_eaurable14	-0.900	0.299	0.026	0.159	0.012	0.012
dum_eaurable14_ea	-1.923	0.679	0.026	0.095	0.019	0.004
dum_eaurable15	0.196	0.118	0.095	0.293	0.104	0.094
dum_eaurable1_ea	3.125	0.593	0.063	0.091	0.057	0.008
elderlyp	1.039	0.184	0.091	0.204	0.088	0.034
employed1	-0.880	0.328	0.207	0.095	0.212	0.010
headmarried	0.161	0.098	0.863	0.344	0.873	0.111
headread_ea	1.255	0.293	0.232	0.121	0.204	0.015
headsecond_ea	-1.409	0.397	0.213	0.121	0.199	0.018
namales	-0.089	0.030	1.808	1.704	1.786	2.392
ownhouse1_ea	-4.135	0.921	0.939	0.109	0.961	0.002
work2	7.567	2.250	0.004	0.020	0.004	4E-4
work4	-1.567	0.285	0.120	0.186	0.109	0.030
intercept	14.476	0.920				
obs.	246					
R square	0.39					
location effect	0.03					

Table A1.14: Rural Mareb

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable11_ea	-3.259	0.984	0.091	0.138	0.076	0.017
dum_eaurable13_ea	1.267	0.155	0.509	0.295	0.465	0.081
dum_eaurable17	0.285	0.170	0.061	0.239	0.049	0.047
dum_eaurable18	0.540	0.215	0.033	0.178	0.034	0.033
employed1	-15.210	7.728	0.197	0.107	0.197	0.017
employed2	14.137	7.544	0.207	0.110	0.201	0.018
headage	-0.010	0.003	43.282	14.265	41.699	146.252
headiliter_ea	-4.312	0.942	0.635	0.174	0.642	0.044
headread_ea	-7.256	1.314	0.112	0.089	0.110	0.009
headsecond_ea	-3.108	1.176	0.204	0.127	0.193	0.011
headuniv	0.659	0.251	0.030	0.172	0.021	0.020
nkids	-0.087	0.015	4.436	3.386	4.341	6.313
ownhouse1_ea	-3.929	0.955	0.881	0.144	0.894	0.016
primaryp	0.877	0.218	0.134	0.175	0.137	0.036
sewage2	0.340	0.113	0.338	0.473	0.333	0.223
work7	4.287	0.844	0.024	0.071	0.023	0.003
intercept	18.473	1.527				
obs.	158					
R square	0.74					

location effect	-*

*No location effect

Table A1.15: Rural Al-Mahweet

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
Afemalep^2	0.540	0.221	0.090	0.126	0.095	0.014
dum_eaurable10	0.276	0.104	0.038	0.190	0.058	0.055
dum_eaurable13_ea	0.411	0.105	0.658	0.241	0.626	0.060
headiliter_ea	-0.795	0.276	0.715	0.136	0.723	0.013
headmarried	-0.379	0.117	0.893	0.309	0.905	0.086
headsecond_ea	-0.847	0.476	0.107	0.074	0.108	0.006
light6_ea×light6_ea	-0.208	0.085	0.066	0.192	0.088	0.069
malep	-1.287	0.350	0.495	0.185	0.509	0.029
Malep^3	1.982	0.407	0.171	0.176	0.172	0.022
marriedp	0.498	0.274	0.360	0.221	0.382	0.049
marriedp^3	0.468	0.245	0.111	0.223	0.121	0.051
primaryp	1.775	0.505	0.091	0.147	0.080	0.014
Primaryp^2	-2.894	1.415	0.030	0.095	0.022	0.002
water3_1	-0.364	0.104	0.061	0.239	0.050	0.048
work4^3	12.754	3.983	0.002	0.008	0.002	1E-4
intercept	11.390	0.245				
obs.	249					
R square	0.43					
location effect	-*					

*No location effect

Table A1.16: Rural Al-Maharh

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable1_1	0.175	0.080	0.171	0.377	0.214	0.169
dum_eaurable13_ea	-1.489	0.157	0.332	0.256	0.389	0.051
dum_eaurable4_0*×nelderlyinv †	-0.298	0.138	0.770	0.321	0.821	0.088
employed1	3.264	0.368	0.309	0.160	0.295	0.018
kidp	-0.774	0.153	0.373	0.244	0.404	0.052
light2_ea	-1.590	0.550	0.034	0.081	0.035	0.006
nafemalesinv ‡ ×nelderlyinv	1.552	0.294	0.379	0.223	0.363	0.024
ownhouse1_ea	3.283	0.550	0.865	0.163	0.897	0.010
intercept	8.053	0.592				
obs.	132					
R square	0.67					
location effect	0.14					

* dum_eaurable4_0=1- dum_eaurable4; † nelderlyinv=1/(1+nelderly);

‡ nafemalesinv=1/(1+nafemales)

Table A1.17: Rural Amran

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
amalep	0.430	0.200	0.234	0.148	0.231	0.016
dum_eaurable10	0.530	0.148	0.014	0.117	0.038	0.037
headdivorced	0.788	0.357	0.006	0.076	0.005	0.005
headmarried	-0.202	0.121	0.936	0.245	0.939	0.058
headsingle	-0.499	0.232	0.025	0.157	0.014	0.014
light1_ea	-0.470	0.093	0.183	0.355	0.194	0.127
light4_ea	-1.303	0.340	0.026	0.077	0.026	0.005
light5	-0.441	0.066	0.403	0.490	0.372	0.235
singlep	-0.864	0.118	0.607	0.187	0.590	0.046
work8	-0.638	0.271	0.059	0.094	0.053	0.009
work9	0.423	0.104	0.534	0.277	0.516	0.083
intercept	11.080	0.126				
obs.	224					
R square	0.40					
location effect	0.084					

Table A1.18: Rural Al-Dhale

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable10	0.178	0.096	0.093	0.290	0.096	0.087
dum_eaurable6_ea	-4.379	1.066	0.017	0.053	0.013	0.001
headage	0.004	0.002	44.002	14.971	43.662	195.229
headuniv_ea	6.282	1.515	0.031	0.034	0.026	0.001
housetype1×sizeinv*	4.785	0.419	0.134	0.091	0.123	0.004
light5	-0.281	0.062	0.418	0.493	0.405	0.243
namales	0.068	0.020	2.023	1.612	1.900	1.720
sewage3_ea	0.436	0.152	0.246	0.297	0.292	0.119
universityp	3.725	0.875	0.008	0.046	0.008	0.001
water2	-0.994	0.182	0.045	0.208	0.031	0.030
water2_ea	1.257	0.259	0.044	0.134	0.044	0.018
work9	0.264	0.107	0.437	0.306	0.432	0.155
intercept	9.209	0.156				
obs.	156					
R square	0.58					
location effect	- †					

*sizeinv=1/(1+hhsize); † No location effect

Table A1.19: Rural Remah

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable15_ea	-3.388	1.473	0.015	0.051	0.014	0.0004
dum_eaurable17_ea	4.059	1.290	0.010	0.029	0.011	0.001
dum_eaurable4	0.594	0.191	0.007	0.085	0.017	0.017
dum_eaurable7_ea	-78.122	23.662	3E-5	3E-6	3E-4	3E-6
dum_eaurable8_ea	-2.863	1.386	0.013	0.114	0.016	0.001
headdivorced	0.832	0.237	0.011	0.104	0.011	0.011
headiliter_ea	-1.403	0.302	0.703	0.155	0.723	0.022
headread_ea	-0.959	0.350	0.183	0.116	0.192	0.018
headsecond	0.134	0.085	0.130	0.337	0.108	0.097
headsingle	0.373	0.163	0.029	0.169	0.025	0.025
headuniv	0.431	0.241	0.021	0.144	0.011	0.010
highiliter	0.135	0.056	0.308	0.462	0.316	0.217
light4	0.409	0.167	0.026	0.160	0.025	0.024
light6	0.398	0.114	0.078	0.269	0.055	0.052
nkids	-0.040	0.012	3.996	3.285	3.527	8.277
ownhouse1_ea	-1.919	0.461	0.907	0.105	0.912	0.004
singlep	-0.652	0.149	0.579	0.231	0.559	0.053
intercept	14.116	0.523				
obs.	270					
R square	0.39					
location effect	0.170					

Table A1.20: Urban Ibb

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable1	0.303	0.073	0.116	0.320	0.112	0.100
dum_eaurable10_ea	1.691	0.374	0.510	0.216	0.520	0.054
dum_eaurable11_ea	-0.778	0.359	0.473	0.189	0.495	0.042
dum_eaurable18_ea	-9.050	2.387	0.009	0.014	0.010	1E-4
dum_eaurable3_ea	2.369	1.373	0.027	0.023	0.027	4E-4
dum_eaurable5	0.394	0.213	0.011	0.104	0.012	0.011
dum_eaurable8	0.176	0.050	0.400	0.490	0.395	0.240
dum_eaurable8_ea	-0.483	0.247	0.400	0.136	0.416	0.024
employ_nonself	-0.459	0.121	0.519	0.206	0.471	0.043
headprim_ea	-2.524	0.514	0.088	0.045	0.087	0.002
headsecond	0.153	0.055	0.240	0.427	0.213	0.168
headuniv	0.212	0.076	0.099	0.299	0.098	0.089
headuniv_ea	-2.011	0.672	0.099	0.052	0.102	0.002
housetype2_ea	-0.520	0.169	0.306	0.231	0.310	0.053
nafemales	-0.044	0.017	1.931	1.494	2.096	2.165
namales	-0.040	0.016	1.975	1.650	2.109	2.578
nelderly	-0.102	0.041	0.271	0.579	0.268	0.314
nkids	-0.062	0.013	3.130	2.391	3.186	4.185
ownhouse2_ea	0.581	0.236	0.370	0.141	0.363	0.016
singlep	-0.810	0.146	0.593	0.227	0.610	0.034
work9	-2.495	0.430	0.038	0.065	0.038	0.004

intercept	11.917	0.147				
obs.	470					
R square	0.42					
location effect	-*					

*No location effect

Table A1.21: Urban Abyan

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
afemalep	1.222	0.210	0.315	0.217	0.308	0.026
dum_eaurable1	0.566	0.098	0.073	0.260	0.084	0.077
dum_eaurable10_ea	0.791	0.300	0.677	0.175	0.641	0.053
dum_eaurable11_ea	2.629	0.561	0.386	0.181	0.377	0.040
dum_eaurable12_ea	-2.654	0.471	0.789	0.126	0.773	0.026
dum_eaurable13_ea	0.850	0.347	0.504	0.167	0.502	0.038
dum_eaurable15_ea	-2.893	0.683	0.157	0.097	0.162	0.012
dum_eaurable17_ea	2.390	0.394	0.513	0.173	0.491	0.042
dum_eaurable18_ea	-1.621	0.360	0.142	0.141	0.141	0.020
dum_eaurable4_ea	12.151	3.001	0.010	0.014	0.011	0.000
dum_eaurable8_ea	-1.857	0.431	0.382	0.151	0.374	0.029
headage	0.005	0.002	45.701	13.669	46.404	148.071
headiliter_ea	-2.269	0.500	0.332	0.107	0.321	0.009
headuniv	0.347	0.114	0.071	0.257	0.059	0.056
nafemalesinv*	1.772	0.222	0.404	0.213	0.363	0.025
ownhouse1	-0.136	0.075	0.834	0.372	0.830	0.142
sewage3_ea	0.782	0.196	0.139	0.249	0.147	0.077
work4	1.112	0.352	0.108	0.134	0.107	0.014
intercept	10.053	0.286				
obs.	318					
R square	0.42					
location effect	-†					

*nafemalesinv=1/(1+nafemales); † No location effect

Table A1.22: Urban Sana'a City

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable15_ea	-0.466	0.185	0.200	0.088	0.211	0.009
dum_eaurable16_1	0.164	0.041	0.120	0.325	0.141	0.121
dum_eaurable16_ea	1.969	0.850	0.120	0.097	0.123	0.013
dum_eaurable16_ea^2	-9.740	3.210	0.024	0.040	0.028	0.004
dum_eaurable16_ea^3	11.224	3.201	0.006	0.020	0.010	0.002
dum_eaurable18_1	0.901	0.232	0.012	0.111	0.003	0.003
dum_eaurable1_ea^3	2.537	0.585	0.016	0.033	0.017	0.002
dum_eaurable4_1	0.194	0.087	0.028	0.165	0.021	0.021
dum_eaurable8_1	0.160	0.028	0.470	0.499	0.444	0.247
dum_eaurable9_ea	0.480	0.197	0.507	0.141	0.508	0.021
employ_nonself^2	0.647	0.159	0.474	0.243	0.489	0.062
employ_self	0.466	0.228	0.305	0.185	0.293	0.030
headage	-0.003	0.001	40.369	13.570	43.251	165.235
headiliter_ea	0.727	0.269	0.267	0.107	0.261	0.009
headprim_1	0.106	0.042	0.095	0.293	0.110	0.098
headprim_ea^3	23.624	6.764	0.001	0.002	0.002	1E-4
headread_ea^2	3.043	0.734	0.030	0.032	0.031	0.001
headsecond_ea	4.552	0.991	0.292	0.062	0.291	0.004
headsecond_ea^3	-10.968	3.169	0.028	0.017	0.028	3E-4
headuniv_1	0.207	0.035	0.195	0.396	0.223	0.174
housetype1_1	-0.088	0.029	0.557	0.497	0.547	0.248
Marriedp^3	0.351	0.067	0.146	0.263	0.124	0.056
nelderly	-0.102	0.028	0.238	0.609	0.256	0.275
nkids	-0.223	0.025	2.601	2.373	2.825	4.804
nkids^2	0.022	0.005	12.393	42.780	12.653	402.126
nkids^3	-0.001	0.000	88.139	4189.858	75.438	74026.892
sewage1_ea^2	0.154	0.059	0.564	0.433	0.536	0.191
sewage3_ea	0.817	0.223	0.012	0.064	0.012	0.005
universityp^3	0.424	0.145	0.020	0.112	0.020	0.011
water1_1	0.136	0.048	0.604	0.489	0.589	0.242
water1_ea	-0.481	0.133	0.590	0.408	0.610	0.162
water1_ea^3	0.251	0.128	0.467	0.394	0.489	0.154
water2_1	0.154	0.078	0.042	0.201	0.034	0.033
water4_ea	-0.208	0.072	0.887	0.213	0.895	0.040
work1^2	-0.338	0.136	0.147	0.136	0.162	0.023
work7^2	6.502	3.262	0.006	0.018	0.006	4E-4
work7^3	-20.136	8.467	0.001	0.006	0.002	1E-4
intercept	9.449	0.357				
obs.	1639					
R square	0.39					
location effect	0.025					

Table A1.23: Urban Al-Baida

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable1	0.263	0.079	0.159	0.366	0.133	0.116
dum_eaurable12_ea	0.953	0.297	0.815	0.132	0.807	0.010
dum_eaurable13_ea	-0.652	0.222	0.641	0.143	0.612	0.017
dum_eaurable18_ea	-5.562	1.835	0.014	0.019	0.011	3E-4
dum_eaurable5_ea	16.432	3.039	0.016	0.015	0.015	1E-4
dum_eaurable8	0.118	0.057	0.455	0.498	0.439	0.247
employed2	1.623	0.405	0.322	0.092	0.319	0.005
headdivorced	0.471	0.206	0.013	0.112	0.017	0.017
kidp	-0.780	0.136	0.388	0.224	0.391	0.047
marriedp	0.776	0.139	0.363	0.214	0.378	0.046
nafemales	-0.115	0.020	2.017	1.540	2.130	2.027
university_ea	-6.277	2.963	0.015	0.009	0.016	1E-4
water1_ea	0.197	0.067	0.509	0.410	0.499	0.179
work10	2.141	0.669	0.039	0.047	0.030	0.002
work9	0.348	0.139	0.159	0.202	0.162	0.054
intercept	9.767	0.339				
obs.	327					
R square	0.42					
location effect	-*					

*No location effect

Table A1.24: Urban Taiz

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable12_ea^3	-1.5708	0.2795	0.539	0.187	0.546	0.043
dum_eaurable18_ea^2	403.0795	62.643	0.003	0.013	0.002	3E-5
dum_eaurable18_ea^3	-1636.106	262.7575	0.001	0.005	2E-4	1E-6
dum_eaurable1	0.2357	0.0808	0.101	0.301	0.092	0.084
dum_eaurable11_ea	1.2389	0.4416	0.481	0.195	0.495	0.043
dum_eaurable14_ea	-0.9563	0.4939	0.134	0.101	0.140	0.010
dum_eaurable16	0.4862	0.0897	0.067	0.250	0.081	0.075
dum_eaurable18	0.5874	0.2132	0.030	0.171	0.012	0.012
dum_eaurable18_ea	-23.8544	3.9038	0.030	0.045	0.028	0.001
dum_eaurable8	0.1328	0.05	0.396	0.489	0.400	0.240
dum_eaurable8_ea	2.4542	0.5339	0.396	0.145	0.390	0.019
employ_self^3	-1.0469	0.2871	0.074	0.128	0.079	0.027
headread_ea	1.9674	0.4284	0.143	0.067	0.151	0.006
headsecond_ea^3	-3.7498	2.1384	0.024	0.018	0.025	2E-4
headuniv_ea^3	25.8864	6.0094	0.005	0.007	0.006	1E-4
housetype3_ea	2.006	0.4704	0.017	0.059	0.019	0.006
kidp^2	0.6678	0.9237	0.168	0.170	0.181	0.030
kidp^2	0.4222	1.1325	0.095	0.120	0.102	0.015
nelderly	-0.1566	0.0474	0.279	0.572	0.256	0.281
nkids	-0.1607	0.0212	2.500	2.249	2.457	4.240
ownhouse1_ea	2.6185	0.7354	0.517	0.500	0.503	0.024
ownhouse2_ea	2.7389	0.7017	0.450	0.498	0.454	0.028
sewage2_ea	1.1529	0.448	0.227	0.315	0.229	0.104
sewage2_ea^2	-2.1528	0.5258	0.227	0.315	0.157	0.067
singlep^2	-3.3888	0.6401	0.394	0.244	0.396	0.044
singlep^2	3.0947	0.6946	0.285	0.236	0.278	0.037
university_ea	-13.292	2.6255	0.050	0.026	0.052	0.001
work4	-1.4352	0.3154	0.232	0.172	0.233	0.029
work4^3	2.4167	0.6503	0.037	0.067	0.036	0.005
work8^3	3.0032	1.2136	0.001	0.004	0.006	0.001
intercept	9.2042	0.6649				
obs.	582					
R square	0.43					
location effect	-*					

*No location effect

Table A1.25: Urban Al-Jawf

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
afemalep	1.902	0.300	0.261	0.155	0.255	0.014
dum_eaurable10	0.340	0.092	0.072	0.259	0.104	0.094
dum_eaurable16	-0.491	0.247	0.005	0.067	0.009	0.009
dum_eaurable18	0.410	0.144	0.028	0.164	0.041	0.039
dum_eaurable1_ea	2.009	0.290	0.156	0.132	0.143	0.020
dum_eaurable6	0.223	0.095	0.062	0.241	0.078	0.072
dum_eaurable9_ea	-1.103	0.213	0.270	0.176	0.256	0.043
headuniv_ea	6.030	1.357	0.024	0.028	0.023	4E-4
highiliter	-0.137	0.068	0.197	0.398	0.180	0.148
housetype1_ea	0.584	0.214	0.921	0.104	0.912	0.017
light5_ea	0.178	0.096	0.249	0.284	0.249	0.100
marriedp	0.269	0.146	0.311	0.145	0.301	0.033
nafemalesinv	2.074	0.258	0.391	0.161	0.365	0.018
sewage3_ea	-0.318	0.092	0.287	0.289	0.315	0.089
intercept	8.362	0.280				
obs.	226					
R square	0.47					
location effect	0.034					

Table A1.26: Urban Hajja

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
afemalep	-0.700	0.186	0.258	0.165	0.275	0.030
dum_eaurable1	0.263	0.085	0.090	0.287	0.116	0.103
dum_eaurable11_ea	-0.734	0.319	0.305	0.231	0.303	0.053
dum_eaurable17_ea	0.904	0.304	0.300	0.216	0.296	0.050
dum_eaurable1_ea	1.690	0.504	0.090	0.072	0.099	0.006
headiliter	-0.259	0.063	0.523	0.499	0.494	0.251
headmarried	-0.416	0.111	0.879	0.326	0.895	0.094
headprim	-0.362	0.126	0.076	0.265	0.081	0.075
highprim	0.293	0.125	0.075	0.263	0.078	0.072
housetype1_ea	-1.515	0.255	0.689	0.247	0.714	0.056
housetype3_ea	-1.131	0.256	0.175	0.249	0.162	0.065
kidp	-0.980	0.152	0.377	0.248	0.379	0.064
marriedp	0.772	0.149	0.352	0.229	0.344	0.053
nelderly	-0.135	0.051	0.346	0.630	0.321	0.336
ownhouse1_ea	0.323	0.168	0.728	0.182	0.760	0.032
sewage2_ea	0.340	0.112	0.350	0.322	0.359	0.114
water1_ea	-0.569	0.130	0.389	0.441	0.361	0.185
water3	0.829	0.190	0.046	0.209	0.035	0.034
intercept	12.577	0.266				
obs.	339					
R square	0.42					
location effect	0.037					

Table A1.27: Urban Al-Hodeida

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
amalep	0.490	0.099	0.275	0.179	0.319	0.049
cook2	-0.185	0.039	0.253	0.435	0.263	0.194
cook2_ea	0.399	0.100	0.246	0.213	0.252	0.051
dum_eaurable1	0.332	0.082	0.049	0.216	0.045	0.043
dum_eaurable2_ea	6.543	2.113	0.006	0.009	0.006	1E-4
dum_eaurable3_ea	-1.668	0.771	0.015	0.021	0.015	0.001
dum_eaurable8	0.160	0.039	0.255	0.436	0.282	0.203
headiliter	-0.131	0.034	0.485	0.500	0.476	0.250
headmarried	-0.119	0.049	0.837	0.370	0.844	0.132
headprim_ea	-1.149	0.321	0.098	0.050	0.086	0.002
housetype2	0.129	0.053	0.094	0.291	0.126	0.110
housetype2_ea	0.522	0.148	0.094	0.154	0.104	0.033
kidp	-0.325	0.107	0.326	0.250	0.325	0.063
light2	-0.724	0.162	0.027	0.161	0.011	0.011
nafemales	-0.109	0.014	2.032	4.080	1.907	2.008
ownhouse2_ea	-0.710	0.189	0.186	0.149	0.180	0.025
singlep	-0.614	0.094	0.567	0.253	0.585	0.055
universityp	0.723	0.167	0.030	0.106	0.030	0.010
university_ea	5.493	0.997	0.023	0.022	0.025	0.001
work9	-0.831	0.190	0.034	0.086	0.035	0.007
intercept	11.453	0.095				
obs.	841					
R square	0.51					
location effect	0.035					

Table A1.28: Urban Hadramout

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
amalep	0.388	0.137	0.313	0.207	0.295	0.029
dum_eaurable16	0.170	0.093	0.060	0.237	0.049	0.046
dum_eaurable2	-0.177	0.110	0.019	0.138	0.025	0.025
dum_eaurable3_ea	-3.081	1.317	0.016	0.029	0.013	2E-4
dum_eaurable6_ea	-0.914	0.096	0.164	0.209	0.182	0.048
employed2	0.896	0.331	0.325	0.080	0.329	0.005
employ_self	0.358	0.125	0.434	0.220	0.446	0.040
headiliter	-0.141	0.044	0.279	0.448	0.306	0.213
headiliter_ea	-0.665	0.205	0.279	0.123	0.274	0.018
headuniv_ea	3.193	0.643	0.067	0.056	0.066	0.004
highprim	0.240	0.105	0.035	0.185	0.032	0.031
kidp	-0.380	0.120	0.345	0.225	0.334	0.054
light1	0.377	0.210	0.930	0.255	0.936	0.060
light5	0.877	0.247	0.019	0.136	0.013	0.013
singlep	-0.345	0.105	0.557	0.214	0.529	0.054
universityp	0.529	0.245	0.028	0.092	0.027	0.007
university_ea	-8.246	2.158	0.024	0.017	0.025	4E-4

water2	0.581	0.219	0.053	0.224	0.056	0.053
intercept	10.456	0.253				
obs.	463					
R square	0.41					
location effect	0.14					

Table A1.29: Urban Dhamar

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable12_ea	-0.965	0.222	0.785	0.169	0.795	0.031
dum_eaurable17_ea	1.426	0.340	0.286	0.142	0.291	0.017
dum_eaurable1_ea	3.576	0.511	0.115	0.067	0.108	0.003
dum_eaurable3_ea	-5.906	1.338	0.023	0.022	0.023	0.001
dum_eaurable6_ea	6.048	1.655	0.020	0.023	0.018	3E-4
dum_eaurable8	0.196	0.058	0.338	0.473	0.337	0.224
employed2	1.812	0.442	0.300	0.068	0.285	0.005
headprim_ea	-3.383	0.703	0.080	0.052	0.079	0.002
headsingle	0.385	0.122	0.054	0.226	0.047	0.045
light6	-0.442	0.117	0.055	0.227	0.049	0.047
nkids	-0.047	0.017	3.285	2.498	3.281	5.204
singlep	-0.524	0.147	0.589	0.223	0.579	0.049
hhsize	-0.028	0.010	7.454	4.323	7.534	12.646
work9	1.047	0.271	0.071	0.109	0.077	0.018
intercept	10.914	0.184				
obs.	342					
R square	0.43					
location effect	0.047					

Table A1.30: Urban Shabwah

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable1	0.228	0.081	0.218	0.413	0.216	0.170
dum_eaurable16	0.304	0.164	0.040	0.196	0.038	0.037
dum_eaurable17_ea	-1.047	0.246	0.561	0.216	0.576	0.028
employed2	-1.422	0.423	0.297	0.104	0.325	0.014
headiliter	-0.212	0.075	0.293	0.455	0.297	0.210
headprim_ea	1.544	0.793	0.067	0.039	0.063	0.002
headsecond	0.184	0.074	0.300	0.458	0.342	0.226
housetype1_ea	-1.497	0.184	0.701	0.323	0.666	0.119
nkids	-0.031	0.014	4.011	3.554	4.126	6.894
sewage1_ea	0.621	0.137	0.231	0.334	0.250	0.120
singlep	-0.547	0.192	0.584	0.223	0.606	0.031
water3	-0.492	0.222	0.062	0.241	0.056	0.053
work5	1.520	0.582	0.034	0.073	0.034	0.006
intercept	12.842	0.324				
obs.	198					
R square	0.54					
location effect	-*					

*No location effect

Table A1.31: Urban Sa'adah

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable17_ea^3	4.757	1.339	0.020	0.032	0.021	0.001
dum_eaurable1	0.339	0.065	0.202	0.402	0.218	0.171
dum_eaurable10	0.227	0.066	0.194	0.395	0.209	0.166
dum_eaurable3	0.293	0.164	0.017	0.130	0.019	0.019
dum_eaurable3_ea^3	-2716.399	646.641	3E-5	6E-5	0.003	0.001
dum_eaurable8	0.084	0.055	0.338	0.473	0.331	0.222
employ_nonself^3	-1.855	0.263	0.169	0.211	0.180	0.052
headprim_ea	-0.941	0.501	0.095	0.049	0.093	0.003
light1	0.343	0.072	0.726	0.446	0.725	0.200
light1_ea^3	-0.363	0.149	0.538	0.331	0.538	0.113
light5_1	0.347	0.143	0.056	0.229	0.033	0.032
nafemales	-0.056	0.017	2.071	1.801	2.275	2.270
nkidsinv	0.328	0.111	0.365	0.311	0.305	0.064
primary_ea	2.257	0.718	0.189	0.072	0.189	0.004
sewage3	0.086	0.062	0.172	0.377	0.189	0.154
sewage3_ea^3	0.877	0.613	0.040	0.118	0.024	0.004
singlep^3	-0.640	0.165	0.258	0.195	0.244	0.025
work4^3	1.225	0.707	0.025	0.050	0.034	0.003
work5	-18.395	3.224	0.032	0.054	0.034	0.003
work5^2	222.834	53.169	0.004	0.011	0.004	1E-4
work5^3	-752.706	206.089	0.001	0.003	0.001	7E-6
intercept	10.792	0.156				
obs.	324					
R square	0.36					
location effect	-*					

*No location effect

Table A1.32: Urban Aden

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable1	0.142	0.053	0.165	0.371	0.144	0.123
dum_eaurable2_ea	-1.535	0.936	0.014	0.022	0.015	4E-4
dum_eaurable3	0.337	0.115	0.014	0.116	0.024	0.023
dum_eaurable6	0.966	0.453	0.001	0.033	0.001	0.001
dum_eaurable9	0.231	0.037	0.412	0.492	0.411	0.243
femalehead	0.116	0.047	0.164	0.371	0.181	0.148
kidp	-0.310	0.146	0.298	0.236	0.288	0.057
nafemales	-0.104	0.016	2.113	2.790	1.984	1.844
nkids	-0.027	0.016	2.290	2.263	2.148	4.713
ownhouse1_ea	-2.143	0.791	0.789	0.114	0.797	0.011
ownhouse2	0.130	0.050	0.183	0.387	0.157	0.133
ownhouse2_ea	-2.463	0.819	0.180	0.102	0.182	0.010
singlep	-0.525	0.087	0.548	0.238	0.555	0.051
universityp	0.663	0.118	0.069	0.154	0.082	0.025
water2	0.476	0.193	0.004	0.063	0.005	0.005
work3	0.804	0.182	0.087	0.091	0.098	0.010

work6	-1.291	0.318	0.023	0.047	0.023	0.003
intercept	13.450	0.777				
obs.	716					
R square	0.41					
location effect	0.12					

Table A1.33: Urban Laheg

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
afemalep	0.988	0.239	0.283	0.178	0.312	0.030
dum_eaurable2_ea	-30.626	3.611	0.009	0.011	0.007	1E-4
headage	0.005	0.002	44.828	13.877	44.852	174.849
headiliter_ea	0.879	0.435	0.311	0.116	0.303	0.017
headprim_ea	5.923	1.118	0.062	0.046	0.065	0.001
highprim	0.308	0.135	0.030	0.172	0.043	0.041
light1	0.511	0.117	0.824	0.381	0.791	0.166
light2_ea	0.499	0.213	0.064	0.225	0.093	0.078
nafemales	-0.156	0.034	1.872	1.518	1.915	1.684
ownhouse1	0.224	0.076	0.833	0.373	0.842	0.134
primaryp	0.753	0.142	0.331	0.274	0.344	0.071
singlep	-0.435	0.168	0.567	0.236	0.589	0.055
university_ea	6.651	1.386	0.039	0.024	0.047	0.001
intercept	9.327	0.257				
obs.	273					
R square	0.46					
location effect	0.079					

Table A1.34: Urban Mareb

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable10_ea	-0.822	0.275	0.442	0.144	0.450	0.028
dum_eaurable16	0.778	0.210	0.037	0.188	0.033	0.032
dum_eaurable18	0.220	0.105	0.141	0.348	0.140	0.121
headsecond×sizeinv*	1.305	0.495	0.050	0.099	0.046	0.007
headsecond_ea	1.535	0.433	0.289	0.088	0.276	0.010
light1_ea	3.653	0.742	0.895	0.062	0.898	0.004
light	0.938	0.399	0.006	0.075	0.010	0.010
ownhouse1	0.242	0.080	0.465	0.292	0.521	0.251
sizeinv	4.151	0.516	0.157	0.106	0.135	0.006
water4_ea	-0.642	0.248	0.858	0.192	0.871	0.032
work1	-0.521	0.213	0.350	0.191	0.390	0.041
intercept	7.510	0.581				
obs.	224					
R square	0.43					
location effect	- †					

*sizeinv=1/(1+sizeinv); † No location effect

Table A1.35: Urban Al-Mahweet

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable1	-0.213	0.091	0.100	0.300	0.076	0.071
dum_eaurable10_ea	0.749	0.316	0.324	0.119	0.327	0.018
dum_eaurable14_ea	1.430	0.414	0.175	0.108	0.189	0.013
dum_eaurable1_ea	-2.258	0.986	0.100	0.039	0.104	0.001
dum_eaurable3_ea	-31.660	8.094	0.003	0.005	0.003	2E-5
dum_eaurable8	0.114	0.050	0.482	0.500	0.453	0.249
headage	-0.004	0.002	42.882	15.373	45.183	226.657
headprim_ea	-1.838	0.634	0.048	0.044	0.049	0.002
highread	-0.119	0.069	0.168	0.374	0.163	0.137
nkidsinv*	0.553	0.120	0.387	0.319	0.343	0.075
nkidsinv×water3_ea	7.961	1.930	0.006	0.031	0.004	2E-4
ownhouse2_ea	0.620	0.275	0.308	0.097	0.290	0.010
singlep	-0.630	0.153	0.589	0.234	0.599	0.045
water1_ea	-0.484	0.095	0.697	0.353	0.685	0.131
work1	-0.763	0.161	0.518	0.241	0.514	0.064
intercept	11.361	0.224				
obs.	289					
R square	0.38					
location effect	- †					

*nkidsinv=1/(1+nkids); † No location effect

Table A1.36: Urban Al-Maharh

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable10_ea	0.779	0.147	0.525	0.254	0.563	0.072
dum_eaurable15_ea	-1.176	0.306	0.238	0.173	0.265	0.023
dum_eaurable16	1.287	0.349	0.011	0.105	0.007	0.007
employ_nonself	-1.990	0.435	0.459	0.251	0.443	0.056
headsecond_ea	1.810	0.533	0.239	0.133	0.250	0.018
headuniv_ea	12.504	2.026	0.056	0.064	0.058	0.003
marriedp	0.560	0.183	0.387	0.242	0.382	0.039
nafemales	-0.068	0.025	1.954	1.618	1.997	1.665
nkids	-0.045	0.016	3.292	3.025	3.388	5.077
university_ea	-43.844	5.232	0.016	0.020	0.016	2E-4
intercept	11.548	0.189				
obs.	137					
R square	0.67					
location effect	-*					

*No location effect

Table A1.37: Urban Amran

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable1	0.307	0.070	0.156	0.363	0.167	0.140
dum_eaurable13_ea	-0.514	0.165	0.734	0.169	0.733	0.027
dum_eaurable14_ea	2.028	0.338	0.193	0.134	0.198	0.021
dum_eaurable17_ea	-0.741	0.385	0.179	0.113	0.176	0.008
dum_eaurable3_ea	-5.083	1.968	0.021	0.020	0.020	4E-4
dum_eaurable8	0.216	0.055	0.377	0.485	0.404	0.242
headprim_ea	1.024	0.586	0.083	0.040	0.088	0.002
highread	-0.136	0.070	0.212	0.409	0.187	0.153
housetype1_ea	0.607	0.267	0.788	0.184	0.803	0.021
nelderlyinv	0.294	0.106	0.847	0.249	0.848	0.060
nkidsinv*×singlep	1.230	0.331	0.169	0.166	0.139	0.006
nkidsinv×work10	3.590	1.402	0.019	0.035	0.016	0.001
ownhouse1_ea	-1.034	0.274	0.659	0.142	0.667	0.018
singlep	-0.692	0.158	0.587	0.214	0.598	0.034
water4_ea	0.574	0.136	0.926	0.164	0.905	0.039
work5	-1.166	0.656	0.021	0.050	0.023	0.002
intercept	10.124	0.262				
obs.	302					
R square	0.38					
location effect	0.080					

*nkidsinv=1/(1+nkids)

Table A1.38: Urban Al-Dhale

Variable	Coefficient	Std. Err.	Mean (census)	sd (census)	Mean (survey)	sd (survey)
dum_eaurable17_ea	0.598	0.158	0.374	0.215	0.383	0.057
dum_eaurable4	0.521	0.195	0.016	0.126	0.025	0.024
dum_eaurable5	0.670	0.192	0.015	0.123	0.021	0.021
headdivorced	-0.516	0.231	0.010	0.099	0.016	0.016
headread_ea	-0.717	0.314	0.273	0.103	0.268	0.011
headwidow	-0.395	0.142	0.046	0.210	0.051	0.048
light4	0.551	0.251	0.020	0.140	0.014	0.014
nafemales	-0.152	0.025	1.727	1.531	1.874	1.697
nkids	-0.065	0.016	3.238	2.861	3.459	5.673
primary_ea	1.266	0.666	0.247	0.077	0.240	0.003
singlep	-0.407	0.170	0.583	0.244	0.600	0.054
water2	0.367	0.142	0.050	0.218	0.072	0.067
intercept	11.094	0.249				
obs.	233					
R square	0.42					
location effect	0.12					

Table A2: Compare estimates of headcount (food poverty) using different data sources

Governorate	#hhno*	avg_FGT0	se_FGT0	FGT0 (survey)
Rural				
11	233,491	0.603	0.016	0.625
12	38,120	0.761	0.020	0.725
14	49,667	0.774	0.025	0.805
15	266,914	0.642	0.019	0.660
16	45,325	0.801	0.033	0.852
17	154,183	0.662	0.027	0.672
18	224,491	0.547	0.022	0.529
19	58,818	0.606	0.025	0.614
20	150,379	0.505	0.031	0.504
21	34,657	0.781	0.030	0.792
22	61,965	0.449	0.037	0.407
23	99,571	0.667	0.025	0.657
25	87,265	0.651	0.031	0.662
26	21,181	0.586	0.032	0.639
27	54,322	0.573	0.031	0.608
28	5,903	0.221	0.029	0.233
29	73,020	0.917	0.026	0.899
30	48,051	0.795	0.023	0.810
31	45,963	0.553	0.029	0.564
Urban				
11	49,143	0.468	0.014	0.500
12	13,473	0.610	0.018	0.644
13	236,515	0.465	0.012	0.477
14	12,786	0.495	0.027	0.447
15	77,660	0.513	0.015	0.511
16	7,064	0.770	0.018	0.741
17	16,137	0.471	0.022	0.504
18	104,909	0.502	0.015	0.490
19	53,868	0.583	0.036	0.641
20	24,312	0.602	0.021	0.607
21	7,551	0.640	0.026	0.631
22	11,549	0.469	0.018	0.447
24	82,967	0.500	0.021	0.509
25	8,495	0.510	0.032	0.513
26	3,325	0.474	0.039	0.465
27	4,169	0.684	0.029	0.682
28	4,074	0.274	0.020	0.313
29	17,135	0.722	0.022	0.705
30	7,717	0.606	0.040	0.602

* The number of households in this table is different from the number listed in Table 1 because of two reasons: 1. The houses which are not occupied and/or do not have a household head are dropped (see note 3); 2. The households which have missing values in the variables used in the consumption model are dropped.

Table A3: Estimates of poverty indicators (Urban areas)

Governorate	District	#hhno	avg_ $\hat{y}$	avg_FGT0	se_FGT0	avg_FGT1	se_FGT1	avg_FGT2	se_FGT2
11	1	32,482	14,541	0.741	0.015	0.284	0.010	0.135	0.007
11	2	40,746	15,868	0.594	0.022	0.195	0.012	0.084	0.007
11	3	40,828	8,163	0.585	0.033	0.196	0.016	0.086	0.009
11	4	54,042	7,522	0.417	0.031	0.124	0.012	0.051	0.006
11	5	61,780	4,061	0.355	0.041	0.104	0.016	0.042	0.008
11	6	44,874	9,971	0.501	0.034	0.153	0.013	0.063	0.006
11	7	37,723	14,423	0.613	0.026	0.215	0.012	0.098	0.007
11	8	32,894	13,985	0.704	0.021	0.245	0.012	0.108	0.007
11	9	44,539	12,050	0.554	0.019	0.182	0.011	0.078	0.006
11	10	36,930	14,598	0.655	0.024	0.221	0.013	0.096	0.008
11	11	34,975	19,768	0.678	0.023	0.234	0.011	0.103	0.006
11	12	42,468	12,551	0.547	0.028	0.172	0.013	0.072	0.007
11	13	46,288	13,153	0.506	0.025	0.160	0.013	0.068	0.007
11	14	39,295	8,929	0.622	0.019	0.235	0.012	0.111	0.008
11	15	43,351	13,775	0.556	0.026	0.179	0.011	0.076	0.006
11	16	37,134	15,231	0.650	0.027	0.231	0.014	0.105	0.008
11	17	37,931	10,972	0.625	0.025	0.225	0.013	0.103	0.007
11	18	39,126	1,878	0.613	0.044	0.171	0.019	0.064	0.009
11	19	39,911	3,820	0.583	0.038	0.184	0.015	0.078	0.008
11	20	35,905	18,232	0.682	0.020	0.242	0.011	0.108	0.007
12	1	28,524	2,649	0.876	0.024	0.428	0.023	0.251	0.020
12	2	30,594	2,986	0.783	0.030	0.389	0.018	0.244	0.014
12	3	73,343	1,351	0.496	0.064	0.191	0.026	0.096	0.017
12	4	28,975	8,473	0.847	0.014	0.447	0.021	0.277	0.020
12	5	30,414	1,827	0.803	0.023	0.432	0.027	0.271	0.027
12	6	58,929	5,178	0.544	0.046	0.223	0.020	0.122	0.013
12	7	42,534	2,049	0.704	0.035	0.307	0.025	0.167	0.017
12	8	30,285	2,861	0.838	0.037	0.372	0.028	0.205	0.020
12	9	58,224	2,583	0.800	0.035	0.398	0.030	0.237	0.024
12	10	40,151	838	0.737	0.021	0.410	0.023	0.263	0.021
12	11	35,031	7,325	0.839	0.020	0.421	0.023	0.252	0.021
14	1	61,145	791	0.566	0.029	0.278	0.021	0.156	0.019
14	2	29,633	1,500	0.876	0.031	0.350	0.029	0.170	0.021
14	3	36,214	657	0.700	0.050	0.279	0.026	0.133	0.020
14	4	51,956	4,523	0.573	0.040	0.219	0.019	0.107	0.012
14	5	33,806	2,351	0.809	0.035	0.276	0.022	0.120	0.014
14	6	37,888	2,262	0.804	0.026	0.337	0.024	0.176	0.020
14	7	23,352	2,728	0.937	0.018	0.459	0.022	0.273	0.021
14	8	36,304	4,656	0.717	0.037	0.331	0.018	0.193	0.013
14	10	36,917	4,728	0.690	0.033	0.279	0.015	0.153	0.010
14	11	27,755	2,341	0.874	0.014	0.437	0.021	0.249	0.020
14	12	28,446	1,924	0.866	0.032	0.391	0.026	0.214	0.023
14	13	34,208	538	0.796	0.064	0.217	0.034	0.077	0.018
14	14	31,879	3,209	0.766	0.033	0.373	0.018	0.220	0.019

14	15	23,178	2,218	0.922	0.024	0.470	0.030	0.283	0.031
14	16	30,614	3,763	0.790	0.033	0.371	0.021	0.223	0.015
14	17	28,492	3,089	0.840	0.024	0.391	0.023	0.223	0.019
14	18	43,400	2,203	0.598	0.055	0.225	0.022	0.121	0.011
14	19	27,469	3,354	0.843	0.033	0.410	0.018	0.246	0.018
14	20	31,422	2,832	0.811	0.046	0.317	0.023	0.158	0.014
15	1	41,991	19,220	0.596	0.033	0.231	0.017	0.117	0.010
15	2	44,727	15,875	0.590	0.026	0.232	0.011	0.119	0.007
15	3	37,678	20,313	0.672	0.024	0.283	0.014	0.151	0.009
15	4	38,549	26,858	0.669	0.017	0.290	0.012	0.158	0.009
15	5	47,553	8,747	0.575	0.037	0.234	0.020	0.122	0.013
15	6	30,743	1,920	0.745	0.044	0.333	0.029	0.185	0.020
15	7	39,252	4,844	0.628	0.041	0.255	0.020	0.134	0.012
15	8	39,546	16,356	0.646	0.026	0.259	0.014	0.134	0.009
15	9	61,231	3,401	0.352	0.052	0.098	0.020	0.038	0.010
15	10	40,830	14,674	0.639	0.024	0.264	0.015	0.139	0.011
15	11	39,207	12,472	0.652	0.034	0.268	0.022	0.140	0.014
15	12	38,745	13,286	0.643	0.022	0.269	0.014	0.143	0.010
15	13	39,304	6,950	0.632	0.031	0.258	0.017	0.135	0.011
15	14	36,645	21,870	0.670	0.026	0.277	0.017	0.146	0.012
15	15	33,263	4,163	0.705	0.032	0.295	0.022	0.156	0.015
15	16	44,516	10,885	0.597	0.026	0.252	0.014	0.136	0.009
15	20	38,227	28,595	0.656	0.024	0.271	0.017	0.143	0.013
15	21	35,903	16,083	0.690	0.018	0.294	0.013	0.157	0.010
15	22	40,000	15,438	0.631	0.026	0.258	0.016	0.135	0.011
15	23	33,519	4,964	0.696	0.030	0.303	0.019	0.164	0.013
16	1	34,905	9,328	0.799	0.040	0.296	0.024	0.134	0.016
16	2	28,803	2,440	0.935	0.031	0.389	0.036	0.191	0.028
16	3	28,181	3,293	0.922	0.036	0.400	0.034	0.202	0.028
16	4	43,633	2,805	0.718	0.039	0.323	0.023	0.171	0.021
16	5	32,114	1,980	0.818	0.046	0.360	0.023	0.191	0.016
16	6	42,510	2,759	0.738	0.073	0.268	0.033	0.120	0.020
16	7	30,909	1,064	0.943	0.032	0.350	0.042	0.152	0.028
16	8	25,715	469	0.973	0.022	0.453	0.038	0.248	0.033
16	9	34,990	873	0.963	0.038	0.318	0.046	0.121	0.028
16	10	38,836	6,542	0.700	0.044	0.286	0.018	0.140	0.011
16	11	35,216	7,097	0.735	0.035	0.291	0.019	0.143	0.012
16	12	31,023	6,675	0.863	0.038	0.330	0.025	0.153	0.017
17	1	39,326	2,926	0.682	0.061	0.262	0.036	0.128	0.023
17	2	41,227	9,557	0.648	0.046	0.259	0.033	0.133	0.024
17	3	38,270	1,544	0.686	0.058	0.278	0.036	0.145	0.025
17	4	45,576	14,088	0.600	0.037	0.235	0.021	0.120	0.014
17	5	52,984	1,949	0.513	0.060	0.187	0.030	0.091	0.019
17	6	41,679	5,883	0.629	0.050	0.230	0.029	0.109	0.018
17	7	34,695	8,327	0.750	0.030	0.336	0.030	0.186	0.025
17	8	30,693	3,641	0.808	0.048	0.355	0.045	0.192	0.033
17	9	43,172	2,889	0.636	0.056	0.263	0.038	0.140	0.026

17	10	31,005	4,789	0.743	0.043	0.350	0.035	0.204	0.028
17	11	40,951	8,315	0.660	0.039	0.267	0.022	0.139	0.015
17	12	47,042	7,542	0.577	0.052	0.202	0.027	0.094	0.016
17	13	35,687	5,454	0.738	0.041	0.321	0.037	0.175	0.028
17	14	35,887	3,641	0.704	0.036	0.294	0.027	0.155	0.020
17	15	49,375	3,354	0.562	0.097	0.235	0.062	0.127	0.042
17	16	51,093	2,761	0.607	0.089	0.272	0.059	0.155	0.043
17	17	35,106	5,671	0.678	0.046	0.270	0.026	0.139	0.016
17	18	43,562	3,662	0.624	0.065	0.247	0.041	0.127	0.028
17	19	37,049	1,767	0.706	0.042	0.275	0.026	0.139	0.018
17	20	40,206	6,093	0.680	0.095	0.276	0.070	0.142	0.049
17	21	45,098	3,215	0.620	0.126	0.251	0.080	0.131	0.054
17	22	44,144	9,301	0.626	0.040	0.231	0.022	0.111	0.014
17	23	43,442	1,174	0.596	0.075	0.217	0.037	0.104	0.021
17	24	45,393	8,112	0.598	0.055	0.216	0.029	0.103	0.017
17	25	47,483	6,049	0.557	0.049	0.187	0.026	0.084	0.015
17	26	49,371	3,319	0.533	0.055	0.198	0.027	0.100	0.017
17	27	33,715	4,704	0.742	0.041	0.319	0.034	0.172	0.025
17	28	35,358	1,931	0.735	0.131	0.328	0.106	0.183	0.079
17	29	36,130	3,381	0.724	0.037	0.304	0.031	0.162	0.024
17	30	36,963	6,356	0.696	0.038	0.294	0.023	0.157	0.016
17	31	24,550	2,788	0.887	0.033	0.448	0.036	0.269	0.030
18	1	51,990	20,361	0.462	0.029	0.167	0.013	0.083	0.008
18	2	44,641	14,985	0.545	0.027	0.217	0.014	0.117	0.009
18	4	7,959	681	0.995	0.007	0.738	0.043	0.564	0.055
18	5	153,330	4,468	0.592	0.037	0.280	0.022	0.168	0.017
18	6	121,284	10,499	0.559	0.058	0.229	0.035	0.121	0.023
18	7	37,040	11,608	0.619	0.028	0.287	0.014	0.172	0.010
18	8	150,193	5,316	0.370	0.035	0.117	0.015	0.052	0.009
18	9	40,051	5,073	0.605	0.030	0.236	0.019	0.122	0.013
18	10	42,159	19,422	0.573	0.023	0.238	0.016	0.129	0.012
18	11	75,866	1,328	0.270	0.050	0.085	0.022	0.038	0.013
18	12	48,406	6,577	0.526	0.045	0.218	0.031	0.120	0.022
18	13	48,054	15,704	0.488	0.032	0.176	0.015	0.088	0.009
18	14	73,799	8,510	0.468	0.029	0.194	0.018	0.106	0.013
18	15	52,827	9,965	0.444	0.037	0.143	0.018	0.064	0.011
18	16	42,962	5,594	0.549	0.028	0.214	0.016	0.111	0.011
18	17	44,807	29,568	0.588	0.027	0.239	0.016	0.128	0.011
18	18	44,004	7,869	0.556	0.054	0.206	0.034	0.103	0.023
18	19	39,711	4,683	0.597	0.031	0.237	0.020	0.124	0.014
18	20	46,247	3,014	0.631	0.040	0.302	0.028	0.182	0.022
18	21	62,487	444	0.339	0.179	0.094	0.067	0.037	0.031
18	23	31,945	461	0.751	0.069	0.307	0.052	0.157	0.037
18	24	66,611	17,998	0.628	0.024	0.291	0.015	0.171	0.011
18	25	42,584	11,604	0.538	0.039	0.205	0.019	0.106	0.011
18	26	46,244	8,759	0.594	0.036	0.248	0.021	0.135	0.014
19	1	40,477	538	0.550	0.066	0.156	0.028	0.066	0.019

19	2	22,365	225	0.911	0.040	0.430	0.034	0.237	0.029
19	3	49,960	271	0.445	0.103	0.076	0.027	0.019	0.009
19	4	65,888	198	0.150	0.046	0.034	0.010	0.012	0.005
19	5	58,554	300	0.258	0.134	0.035	0.024	0.008	0.006
19	6	61,149	302	0.121	0.081	0.018	0.014	0.004	0.004
19	7	33,001	4,672	0.793	0.019	0.320	0.019	0.156	0.013
19	8	38,142	3,827	0.731	0.028	0.253	0.020	0.111	0.012
19	9	40,125	1,616	0.621	0.050	0.188	0.016	0.082	0.008
19	10	36,842	4,793	0.739	0.031	0.257	0.018	0.115	0.011
19	11	36,091	4,060	0.741	0.031	0.253	0.017	0.114	0.010
19	12	36,967	1,116	0.637	0.056	0.208	0.019	0.094	0.009
19	13	44,068	3,769	0.588	0.034	0.185	0.017	0.078	0.011
19	14	38,074	1,276	0.759	0.038	0.223	0.028	0.086	0.017
19	15	44,229	1,734	0.647	0.052	0.204	0.030	0.086	0.016
19	16	41,598	2,724	0.667	0.024	0.246	0.016	0.116	0.012
19	17	33,669	1,603	0.790	0.031	0.294	0.020	0.139	0.013
19	18	56,918	5,189	0.417	0.031	0.116	0.012	0.046	0.006
19	19	39,565	2,703	0.742	0.035	0.241	0.023	0.102	0.014
19	20	38,581	900	0.715	0.036	0.245	0.025	0.109	0.016
19	21	72,867	2,246	0.458	0.032	0.148	0.011	0.066	0.007
19	22	49,194	2,094	0.462	0.041	0.113	0.019	0.040	0.010
19	23	42,533	994	0.691	0.047	0.232	0.024	0.102	0.015
19	24	47,512	2,468	0.489	0.045	0.126	0.016	0.047	0.008
19	25	48,903	1,636	0.547	0.041	0.156	0.028	0.059	0.016
19	26	65,119	3,391	0.206	0.044	0.040	0.010	0.012	0.004
19	27	81,529	525	0.103	0.037	0.016	0.007	0.004	0.002
19	28	56,682	1,916	0.363	0.047	0.073	0.013	0.022	0.005
19	29	36,605	265	0.662	0.070	0.283	0.023	0.149	0.022
19	30	43,055	1,467	0.593	0.060	0.172	0.024	0.070	0.012
20	1	67,602	15,481	0.313	0.033	0.069	0.010	0.023	0.005
20	2	66,746	7,695	0.307	0.059	0.062	0.016	0.019	0.006
20	3	51,952	8,483	0.561	0.051	0.126	0.021	0.039	0.009
20	4	51,347	6,968	0.540	0.070	0.119	0.024	0.038	0.010
20	5	49,399	20,563	0.606	0.038	0.141	0.020	0.045	0.009
20	6	51,223	22,908	0.559	0.038	0.126	0.018	0.040	0.008
20	7	48,226	20,894	0.625	0.038	0.165	0.023	0.059	0.012
20	8	58,061	3,521	0.491	0.052	0.134	0.026	0.050	0.014
20	9	62,396	7,430	0.381	0.046	0.084	0.017	0.028	0.008
20	10	54,581	14,268	0.480	0.060	0.123	0.028	0.046	0.015
20	11	55,130	15,304	0.507	0.048	0.114	0.019	0.036	0.008
20	12	49,614	6,864	0.574	0.058	0.133	0.023	0.042	0.010
21	1	22,461	849	0.944	0.028	0.529	0.028	0.332	0.029
21	2	36,115	1,049	0.812	0.046	0.317	0.030	0.157	0.020
21	3	22,845	879	0.925	0.029	0.540	0.025	0.359	0.027
21	4	40,844	980	0.778	0.037	0.339	0.027	0.184	0.019
21	5	31,868	2,460	0.847	0.032	0.393	0.036	0.221	0.031
21	6	35,168	2,204	0.817	0.038	0.345	0.029	0.182	0.021

21	7	50,595	3,184	0.600	0.055	0.225	0.026	0.115	0.016
21	8	29,612	2,842	0.893	0.033	0.401	0.038	0.216	0.029
21	9	29,909	2,807	0.889	0.025	0.424	0.028	0.244	0.026
21	10	25,951	2,708	0.899	0.026	0.489	0.025	0.312	0.024
21	11	24,206	1,137	0.893	0.025	0.554	0.031	0.374	0.037
21	12	57,602	2,810	0.576	0.036	0.242	0.020	0.133	0.016
21	13	31,705	1,413	0.878	0.022	0.422	0.034	0.239	0.032
21	14	40,488	2,347	0.762	0.046	0.310	0.028	0.162	0.018
21	15	50,392	1,760	0.651	0.055	0.261	0.027	0.140	0.017
21	16	48,060	3,125	0.691	0.040	0.303	0.039	0.165	0.032
21	17	33,998	2,103	0.823	0.040	0.389	0.037	0.220	0.029
22	1	46,148	1,934	0.475	0.047	0.103	0.012	0.033	0.005
22	2	50,901	1,767	0.439	0.055	0.102	0.017	0.035	0.007
22	3	47,306	5,257	0.560	0.054	0.110	0.018	0.031	0.006
22	4	54,399	2,047	0.601	0.050	0.137	0.017	0.046	0.007
22	5	48,143	5,136	0.507	0.056	0.103	0.016	0.031	0.006
22	6	48,440	1,122	0.632	0.045	0.163	0.015	0.059	0.006
22	7	44,833	2,696	0.512	0.069	0.111	0.018	0.037	0.006
22	8	46,241	6,267	0.518	0.050	0.098	0.016	0.027	0.006
22	9	50,715	5,770	0.449	0.049	0.078	0.013	0.021	0.004
22	10	47,083	5,411	0.526	0.048	0.102	0.016	0.029	0.006
22	11	57,943	12,144	0.344	0.035	0.074	0.010	0.024	0.004
22	12	60,038	5,867	0.293	0.028	0.066	0.008	0.022	0.003
22	13	48,528	1,430	0.433	0.060	0.100	0.022	0.034	0.010
22	14	69,291	4,414	0.422	0.038	0.101	0.012	0.035	0.005
22	15	59,351	703	0.312	0.057	0.064	0.016	0.020	0.007
23	1	44,930	9,172	0.632	0.031	0.165	0.013	0.056	0.006
23	2	44,449	8,575	0.627	0.028	0.173	0.011	0.062	0.005
23	3	39,896	4,070	0.709	0.028	0.204	0.013	0.075	0.007
23	4	48,167	7,862	0.559	0.035	0.137	0.013	0.045	0.006
23	5	48,216	9,234	0.574	0.043	0.144	0.018	0.048	0.008
23	6	41,710	3,722	0.689	0.042	0.180	0.022	0.061	0.010
23	7	41,031	9,954	0.721	0.025	0.198	0.012	0.070	0.006
23	8	38,231	8,360	0.743	0.026	0.211	0.011	0.077	0.005
23	9	40,566	7,905	0.732	0.032	0.188	0.017	0.062	0.008
23	10	39,949	9,272	0.752	0.031	0.200	0.014	0.068	0.006
23	11	45,914	4,708	0.656	0.048	0.173	0.020	0.059	0.009
23	12	37,762	2,696	0.746	0.026	0.233	0.013	0.090	0.007
23	13	40,349	3,327	0.719	0.025	0.207	0.012	0.076	0.006
23	14	42,111	1,943	0.705	0.036	0.181	0.017	0.060	0.008
23	15	46,486	3,467	0.586	0.039	0.149	0.014	0.051	0.006
23	16	46,720	5,304	0.598	0.034	0.158	0.012	0.056	0.006
25	1	65,386	4,369	0.423	0.073	0.141	0.034	0.064	0.019
25	2	52,180	7,342	0.638	0.058	0.302	0.045	0.177	0.035
25	3	37,284	4,208	0.719	0.043	0.321	0.036	0.179	0.028
25	4	29,158	3,672	0.831	0.036	0.399	0.029	0.232	0.023
25	5	49,526	4,938	0.582	0.056	0.193	0.027	0.085	0.016

25	6	44,586	2,741	0.652	0.040	0.255	0.032	0.128	0.023
25	7	42,325	4,442	0.650	0.052	0.211	0.029	0.090	0.017
25	8	50,238	3,899	0.474	0.058	0.120	0.019	0.043	0.009
25	9	43,790	3,563	0.562	0.061	0.167	0.024	0.069	0.012
25	10	33,159	14,745	0.803	0.026	0.347	0.025	0.186	0.020
25	11	36,647	6,776	0.723	0.051	0.269	0.032	0.131	0.021
25	12	35,759	8,308	0.726	0.055	0.272	0.033	0.133	0.021
25	13	55,331	6,139	0.446	0.060	0.109	0.021	0.038	0.009
25	15	62,528	12,123	0.624	0.050	0.222	0.032	0.101	0.020
26	1	23,873	919	0.846	0.045	0.520	0.036	0.351	0.032
26	2	54,429	266	0.548	0.104	0.189	0.052	0.089	0.031
26	3	47,287	850	0.561	0.048	0.209	0.027	0.102	0.018
26	4	15,542	667	0.953	0.020	0.601	0.024	0.417	0.023
26	5	36,717	2,292	0.726	0.050	0.395	0.025	0.256	0.018
26	6	49,639	2,186	0.658	0.037	0.274	0.030	0.145	0.023
26	7	73,738	1,790	0.417	0.037	0.181	0.020	0.101	0.013
26	8	35,044	783	0.741	0.033	0.363	0.025	0.219	0.020
26	9	61,525	2,687	0.544	0.051	0.222	0.027	0.117	0.017
26	10	48,043	943	0.689	0.025	0.342	0.029	0.199	0.025
26	11	34,448	1,282	0.750	0.043	0.398	0.030	0.250	0.025
26	12	150,256	1,814	0.223	0.053	0.059	0.021	0.022	0.010
26	13	52,215	3,702	0.613	0.059	0.314	0.031	0.197	0.021
26	14	76,852	1,000	0.374	0.050	0.159	0.021	0.087	0.013
27	1	53,356	2,252	0.304	0.047	0.048	0.010	0.012	0.003
27	2	40,988	4,788	0.629	0.034	0.145	0.016	0.046	0.007
27	3	46,994	7,748	0.545	0.038	0.119	0.013	0.037	0.006
27	4	48,817	8,220	0.462	0.044	0.087	0.013	0.023	0.005
27	5	37,643	10,264	0.758	0.032	0.187	0.023	0.060	0.012
27	6	50,037	4,708	0.416	0.066	0.068	0.016	0.017	0.005
27	7	43,442	9,305	0.606	0.033	0.126	0.015	0.036	0.006
27	8	51,370	694	0.339	0.071	0.049	0.014	0.011	0.004
27	9	41,675	6,343	0.616	0.036	0.152	0.024	0.053	0.014
28	1	133,075	478	0.308	0.042	0.104	0.021	0.043	0.011
28	2	208,641	351	0.196	0.052	0.050	0.022	0.017	0.010
28	3	114,601	296	0.055	0.043	0.008	0.007	0.002	0.002
28	4	100,139	1,025	0.161	0.065	0.037	0.020	0.013	0.008
28	5	86,078	689	0.303	0.046	0.101	0.019	0.042	0.009
28	6	135,159	994	0.122	0.034	0.028	0.010	0.009	0.004
28	7	116,445	683	0.321	0.034	0.101	0.021	0.039	0.011
28	8	97,208	575	0.099	0.070	0.019	0.017	0.006	0.006
28	9	83,013	812	0.325	0.077	0.075	0.026	0.024	0.011
29	1	31,598	4,325	0.908	0.031	0.322	0.032	0.135	0.021
29	2	28,875	1,501	0.951	0.018	0.395	0.028	0.188	0.023
29	3	30,231	4,512	0.942	0.021	0.347	0.033	0.148	0.023
29	4	32,595	3,577	0.901	0.032	0.307	0.035	0.123	0.022
29	5	32,469	4,395	0.911	0.033	0.319	0.028	0.134	0.019
29	6	30,984	2,339	0.930	0.027	0.349	0.025	0.154	0.018

29	7	27,472	2,461	0.985	0.009	0.406	0.033	0.185	0.026
29	8	29,269	3,616	0.950	0.019	0.373	0.030	0.167	0.022
29	9	31,705	2,741	0.934	0.024	0.342	0.022	0.149	0.015
29	10	33,162	3,949	0.913	0.038	0.314	0.029	0.132	0.017
29	11	33,744	3,291	0.877	0.045	0.300	0.025	0.131	0.015
29	12	33,824	8,470	0.896	0.038	0.299	0.024	0.125	0.014
29	13	31,144	2,785	0.931	0.027	0.336	0.027	0.144	0.018
29	14	29,544	2,637	0.952	0.020	0.377	0.026	0.175	0.020
29	15	26,817	2,013	0.962	0.019	0.433	0.033	0.218	0.030
29	16	36,820	3,474	0.810	0.058	0.256	0.023	0.105	0.013
29	17	34,004	2,575	0.877	0.044	0.307	0.031	0.136	0.022
29	18	29,103	5,433	0.941	0.019	0.390	0.030	0.187	0.025
29	19	32,291	5,765	0.918	0.029	0.329	0.023	0.143	0.015
29	20	31,242	3,161	0.948	0.022	0.358	0.029	0.161	0.021
30	1	34,246	3,879	0.770	0.048	0.311	0.034	0.157	0.023
30	2	35,970	5,326	0.769	0.030	0.280	0.019	0.131	0.013
30	3	29,954	8,344	0.856	0.024	0.354	0.018	0.177	0.014
30	4	36,888	3,700	0.749	0.029	0.270	0.026	0.125	0.018
30	5	34,504	3,492	0.762	0.040	0.286	0.023	0.138	0.015
30	6	37,394	7,249	0.769	0.037	0.307	0.022	0.154	0.015
30	7	43,303	2,483	0.669	0.045	0.231	0.022	0.105	0.014
30	8	31,834	5,528	0.838	0.022	0.341	0.026	0.169	0.021
30	9	31,708	8,050	0.842	0.026	0.340	0.022	0.167	0.016
31	1	49,569	4,837	0.481	0.055	0.138	0.021	0.057	0.010
31	2	46,757	8,699	0.543	0.043	0.177	0.019	0.080	0.010
31	3	44,900	9,127	0.556	0.031	0.193	0.016	0.091	0.010
31	4	50,997	8,087	0.537	0.029	0.192	0.017	0.090	0.011
31	5	40,953	6,676	0.631	0.033	0.231	0.019	0.111	0.012
31	6	49,504	8,537	0.534	0.042	0.176	0.020	0.079	0.011

Table A4: Estimates of poverty indicators (urban areas)

Governorate	District	#hhno	avg_$\hat{y}$	avg_FGT0	se_FGT0	avg_FGT1	se_FGT1	avg_FGT2	se_FGT2
11	1	31,582	700	0.730	0.042	0.280	0.029	0.138	0.019
11	2	40,130	6,765	0.553	0.021	0.177	0.012	0.077	0.007
11	3	23,294	478	0.848	0.037	0.387	0.032	0.213	0.023
11	4	30,726	844	0.762	0.034	0.311	0.031	0.158	0.022
11	5	48,019	212	0.476	0.058	0.149	0.028	0.064	0.016
11	6	28,923	724	0.754	0.038	0.316	0.027	0.166	0.018
11	7	40,754	303	0.556	0.043	0.203	0.024	0.099	0.015
11	8	32,350	840	0.674	0.042	0.243	0.023	0.114	0.015
11	11	49,435	1,093	0.427	0.028	0.138	0.013	0.061	0.008
11	12	38,766	1,785	0.604	0.041	0.213	0.023	0.100	0.014
11	13	54,512	490	0.335	0.051	0.085	0.017	0.031	0.008
11	14	34,006	349	0.680	0.047	0.263	0.027	0.130	0.018
11	15	36,372	324	0.651	0.055	0.224	0.032	0.101	0.019
11	16	41,661	6,537	0.548	0.020	0.203	0.011	0.099	0.007
11	17	27,479	177	0.792	0.040	0.352	0.030	0.189	0.022
11	18	54,277	11,283	0.370	0.017	0.117	0.008	0.051	0.005
11	19	53,017	16,239	0.390	0.016	0.136	0.009	0.064	0.005
12	1	23,229	271	0.909	0.034	0.449	0.041	0.258	0.031
12	2	49,985	991	0.502	0.041	0.175	0.023	0.081	0.014
12	4	53,188	1,574	0.544	0.032	0.211	0.018	0.108	0.013
12	6	17,034	130	0.982	0.019	0.571	0.052	0.357	0.051
12	9	25,625	665	0.775	0.044	0.379	0.035	0.221	0.027
12	10	58,058	2,384	0.457	0.031	0.155	0.013	0.075	0.008
12	11	39,795	7,458	0.651	0.022	0.267	0.016	0.139	0.011
13	1	53,073	8,935	0.501	0.026	0.148	0.011	0.060	0.006
13	2	52,726	28,942	0.504	0.017	0.155	0.008	0.064	0.004
13	3	48,386	15,137	0.549	0.028	0.173	0.014	0.073	0.008
13	4	57,472	14,640	0.444	0.024	0.136	0.010	0.058	0.005
13	5	63,688	42,131	0.390	0.015	0.111	0.006	0.044	0.003
13	6	67,016	14,814	0.367	0.017	0.101	0.007	0.039	0.003
13	7	63,888	10,260	0.387	0.019	0.109	0.008	0.043	0.004
13	8	59,377	39,035	0.439	0.015	0.134	0.007	0.056	0.004
13	9	58,917	23,958	0.434	0.018	0.127	0.008	0.051	0.004
13	10	44,032	18,583	0.624	0.018	0.209	0.010	0.092	0.006
13	19	47,073	3,834	0.559	0.036	0.169	0.016	0.069	0.008
13	24	51,698	16,246	0.515	0.020	0.158	0.009	0.066	0.005
14	4	48,510	319	0.454	0.101	0.109	0.038	0.036	0.017
14	5	45,180	162	0.498	0.123	0.105	0.041	0.032	0.016
14	6	30,532	517	0.845	0.038	0.300	0.031	0.131	0.020
14	8	56,731	341	0.534	0.034	0.181	0.025	0.076	0.015
14	9	46,351	3,592	0.566	0.043	0.151	0.021	0.055	0.011
14	11	44,481	94	0.469	0.195	0.104	0.065	0.032	0.026
14	13	55,000	6,035	0.411	0.035	0.102	0.015	0.036	0.007

14	14	36,139	70	0.738	0.111	0.207	0.062	0.073	0.032
14	16	47,176	1,656	0.524	0.057	0.148	0.027	0.058	0.014
15	1	23,796	277	0.870	0.041	0.450	0.048	0.274	0.040
15	2	21,260	59	0.915	0.043	0.484	0.055	0.294	0.050
15	3	17,561	353	0.934	0.033	0.541	0.049	0.353	0.044
15	4	26,037	302	0.805	0.041	0.430	0.031	0.273	0.024
15	5	48,443	1,338	0.531	0.044	0.258	0.027	0.155	0.019
15	6	39,799	479	0.624	0.056	0.300	0.034	0.178	0.025
15	7	29,656	715	0.753	0.039	0.391	0.031	0.243	0.023
15	8	16,181	289	0.955	0.032	0.569	0.059	0.375	0.056
15	11	33,948	497	0.716	0.053	0.302	0.036	0.161	0.025
15	12	33,631	3,265	0.699	0.029	0.321	0.020	0.185	0.014
15	14	42,251	1,570	0.589	0.045	0.229	0.023	0.118	0.014
15	16	70,472	298	0.273	0.048	0.083	0.020	0.036	0.011
15	17	49,178	24,378	0.528	0.015	0.217	0.009	0.116	0.006
15	18	58,035	21,958	0.445	0.019	0.168	0.010	0.085	0.007
15	19	52,636	21,670	0.497	0.019	0.195	0.011	0.101	0.007
15	21	58,266	212	0.360	0.071	0.099	0.027	0.040	0.014
16	1	32,163	293	0.800	0.051	0.255	0.041	0.102	0.024
16	3	28,986	141	0.829	0.054	0.281	0.037	0.119	0.022
16	4	24,401	297	0.977	0.017	0.433	0.047	0.213	0.038
16	5	37,353	1,475	0.701	0.032	0.289	0.020	0.152	0.013
16	6	33,126	1,244	0.806	0.037	0.282	0.026	0.122	0.016
16	7	36,209	468	0.768	0.069	0.210	0.041	0.074	0.021
16	8	33,013	787	0.781	0.028	0.341	0.023	0.175	0.019
16	9	22,451	878	0.963	0.012	0.504	0.019	0.296	0.018
16	10	52,575	818	0.425	0.051	0.101	0.018	0.034	0.008
16	11	32,358	256	0.730	0.058	0.230	0.033	0.093	0.018
16	12	25,106	407	0.857	0.041	0.376	0.039	0.198	0.032
17	2	67,836	3,167	0.388	0.031	0.114	0.014	0.046	0.008
17	3	65,918	951	0.442	0.055	0.134	0.024	0.055	0.013
17	4	63,201	3,454	0.341	0.036	0.091	0.014	0.034	0.007
17	5	49,545	426	0.500	0.062	0.152	0.030	0.063	0.016
17	6	45,854	93	0.500	0.113	0.145	0.046	0.057	0.024
17	7	52,579	254	0.433	0.100	0.110	0.035	0.041	0.016
17	8	34,078	82	0.698	0.100	0.231	0.047	0.101	0.026
17	11	40,930	373	0.585	0.071	0.180	0.036	0.074	0.019
17	15	55,504	1,208	0.471	0.058	0.140	0.027	0.058	0.014
17	16	59,925	137	0.305	0.085	0.072	0.027	0.025	0.012
17	17	73,839	52	0.132	0.100	0.024	0.022	0.007	0.007
17	18	36,257	325	0.674	0.068	0.265	0.038	0.134	0.025
17	20	45,606	230	0.565	0.062	0.205	0.041	0.097	0.027
17	21	40,777	424	0.650	0.067	0.254	0.037	0.127	0.024
17	22	48,225	175	0.619	0.053	0.267	0.048	0.140	0.037
17	23	31,049	116	0.813	0.091	0.308	0.065	0.146	0.041
17	24	45,033	104	0.583	0.105	0.178	0.049	0.073	0.027
17	25	48,898	290	0.497	0.091	0.159	0.045	0.069	0.025

17	28	48,866	4,276	0.578	0.034	0.228	0.020	0.115	0.013
18	1	40,436	1,682	0.596	0.031	0.188	0.015	0.080	0.009
18	2	49,836	2,164	0.413	0.037	0.101	0.012	0.035	0.005
18	3	37,368	457	0.590	0.055	0.277	0.030	0.159	0.021
18	4	19,738	195	0.962	0.031	0.543	0.067	0.336	0.063
18	5	45,105	1,008	0.504	0.040	0.133	0.016	0.049	0.008
18	6	46,900	637	0.466	0.046	0.132	0.018	0.052	0.009
18	7	45,021	3,430	0.505	0.027	0.137	0.012	0.052	0.006
18	8	28,737	738	0.854	0.063	0.331	0.066	0.157	0.046
18	9	32,203	2,941	0.743	0.021	0.314	0.022	0.165	0.019
18	10	43,516	7,128	0.533	0.024	0.164	0.011	0.068	0.006
18	11	38,330	263	0.621	0.067	0.203	0.032	0.087	0.018
18	13	41,497	4,759	0.569	0.023	0.173	0.011	0.072	0.006
18	14	55,622	1,325	0.348	0.033	0.085	0.011	0.030	0.005
18	15	37,986	284	0.592	0.063	0.180	0.030	0.075	0.016
18	16	45,726	1,830	0.486	0.027	0.134	0.011	0.051	0.006
18	17	45,602	6,731	0.495	0.023	0.143	0.010	0.056	0.005
18	19	44,852	2,018	0.506	0.027	0.146	0.013	0.059	0.007
18	20	44,377	1,741	0.506	0.041	0.132	0.017	0.048	0.008
18	21	49,195	20,706	0.478	0.017	0.141	0.009	0.057	0.005
18	22	59,610	12,561	0.395	0.022	0.112	0.009	0.044	0.005
18	23	47,195	23,081	0.514	0.019	0.152	0.010	0.061	0.005
18	24	48,562	4,787	0.462	0.029	0.140	0.012	0.059	0.006
18	25	41,118	2,781	0.562	0.026	0.173	0.013	0.072	0.007
18	26	44,220	1,662	0.525	0.036	0.144	0.015	0.054	0.008
19	1	44,201	195	0.590	0.153	0.172	0.068	0.069	0.038
19	2	56,399	230	0.387	0.177	0.068	0.048	0.017	0.016
19	6	42,848	132	0.626	0.199	0.200	0.121	0.082	0.068
19	7	42,958	1,171	0.631	0.082	0.169	0.033	0.062	0.018
19	8	41,439	1,430	0.673	0.069	0.163	0.033	0.054	0.017
19	9	39,063	474	0.735	0.199	0.191	0.091	0.066	0.042
19	10	31,456	5,609	0.894	0.033	0.334	0.038	0.149	0.026
19	11	35,611	5,011	0.827	0.036	0.299	0.030	0.131	0.019
19	13	56,775	1,507	0.275	0.104	0.045	0.022	0.011	0.007
19	14	46,875	1,741	0.537	0.087	0.111	0.030	0.034	0.013
19	15	48,062	6,647	0.497	0.069	0.099	0.021	0.029	0.008
19	16	53,440	148	0.333	0.290	0.055	0.068	0.014	0.023
19	17	39,943	4,206	0.739	0.055	0.196	0.032	0.069	0.016
19	18	36,653	217	0.762	0.206	0.297	0.107	0.145	0.062
19	19	61,776	308	0.181	0.194	0.030	0.040	0.008	0.012
19	20	43,889	68	0.581	0.317	0.119	0.110	0.034	0.043
19	21	49,623	238	0.421	0.230	0.084	0.067	0.025	0.026
19	22	24,553	160	0.963	0.112	0.457	0.135	0.238	0.105
19	24	54,942	140	0.332	0.305	0.059	0.087	0.016	0.032
19	25	58,159	287	0.266	0.216	0.048	0.055	0.014	0.020
19	26	45,642	1,116	0.556	0.114	0.120	0.043	0.037	0.019
19	27	48,613	331	0.440	0.275	0.104	0.080	0.036	0.032

19	28	67,137	389	0.192	0.117	0.042	0.028	0.014	0.011
19	29	51,292	22,113	0.449	0.055	0.092	0.017	0.028	0.007
20	1	51,595	533	0.462	0.073	0.147	0.034	0.064	0.019
20	2	42,505	3,305	0.582	0.035	0.212	0.018	0.102	0.011
20	3	25,875	92	0.853	0.064	0.377	0.060	0.198	0.044
20	4	30,393	132	0.828	0.064	0.352	0.060	0.180	0.044
20	7	56,407	328	0.460	0.068	0.156	0.035	0.070	0.020
20	8	43,117	19,145	0.619	0.023	0.230	0.012	0.110	0.008
20	9	58,612	113	0.371	0.121	0.108	0.049	0.045	0.025
20	11	77,270	664	0.341	0.049	0.098	0.019	0.039	0.009
21	4	26,415	129	0.951	0.029	0.412	0.040	0.208	0.032
21	5	55,312	246	0.520	0.139	0.183	0.088	0.083	0.055
21	7	40,817	1,467	0.657	0.046	0.231	0.028	0.106	0.018
21	10	34,346	869	0.802	0.039	0.285	0.028	0.127	0.019
21	11	24,137	149	0.952	0.038	0.445	0.051	0.246	0.041
21	12	27,970	348	0.917	0.031	0.400	0.037	0.206	0.031
21	13	62,452	2,626	0.339	0.030	0.127	0.010	0.066	0.009
21	14	25,393	270	0.955	0.029	0.439	0.047	0.232	0.038
21	15	35,680	549	0.732	0.110	0.294	0.066	0.148	0.041
21	16	34,470	660	0.805	0.056	0.271	0.038	0.117	0.023
21	17	40,138	238	0.687	0.141	0.190	0.071	0.071	0.036
22	1	60,949	370	0.264	0.083	0.055	0.025	0.017	0.010
22	2	52,277	472	0.486	0.072	0.141	0.031	0.055	0.016
22	3	63,224	56	0.292	0.073	0.066	0.020	0.022	0.009
22	5	46,407	643	0.509	0.058	0.142	0.026	0.054	0.014
22	7	66,661	492	0.296	0.059	0.069	0.021	0.023	0.009
22	8	56,844	379	0.340	0.072	0.077	0.022	0.025	0.009
22	9	41,626	306	0.600	0.065	0.193	0.034	0.082	0.020
22	10	44,256	1,692	0.555	0.026	0.193	0.015	0.089	0.009
22	11	45,020	1,389	0.523	0.038	0.161	0.019	0.067	0.011
22	14	56,537	85	0.330	0.208	0.087	0.072	0.033	0.033
22	15	51,481	5,665	0.460	0.020	0.156	0.010	0.071	0.006
24	1	50,550	10,962	0.562	0.027	0.180	0.014	0.078	0.008
24	2	49,482	13,925	0.541	0.027	0.177	0.014	0.077	0.008
24	3	51,878	15,338	0.483	0.028	0.154	0.014	0.067	0.008
24	4	45,051	9,019	0.578	0.032	0.187	0.018	0.081	0.010
24	5	51,084	8,025	0.476	0.030	0.140	0.014	0.057	0.008
24	6	58,486	7,533	0.403	0.029	0.112	0.012	0.044	0.006
24	7	54,492	11,811	0.451	0.026	0.132	0.012	0.054	0.006
24	8	55,080	6,354	0.448	0.032	0.138	0.015	0.059	0.009
25	1	70,393	541	0.445	0.062	0.168	0.033	0.081	0.020
25	4	64,130	200	0.241	0.114	0.065	0.035	0.026	0.016
25	6	26,247	271	0.670	0.102	0.314	0.067	0.181	0.044
25	7	31,443	1,149	0.720	0.064	0.253	0.038	0.114	0.021
25	8	22,671	161	0.940	0.047	0.425	0.076	0.219	0.059
25	9	35,564	440	0.657	0.074	0.242	0.044	0.113	0.027
25	10	32,031	204	0.608	0.099	0.227	0.055	0.107	0.032

25	14	60,367	4,005	0.353	0.039	0.104	0.017	0.043	0.008
25	15	48,067	1,524	0.555	0.050	0.180	0.030	0.076	0.017
26	7	53,236	224	0.438	0.097	0.098	0.032	0.032	0.013
26	8	66,062	106	0.147	0.087	0.024	0.018	0.006	0.005
26	9	42,128	789	0.624	0.056	0.200	0.032	0.085	0.018
26	12	64,905	1,671	0.346	0.036	0.087	0.015	0.031	0.007
26	13	43,435	535	0.593	0.053	0.190	0.030	0.080	0.018
27	1	39,374	888	0.642	0.047	0.183	0.024	0.071	0.013
27	2	39,417	674	0.662	0.072	0.163	0.031	0.056	0.015
27	3	56,956	561	0.465	0.068	0.094	0.020	0.027	0.008
27	4	33,596	243	0.815	0.048	0.250	0.036	0.096	0.021
27	6	42,483	210	0.550	0.105	0.114	0.034	0.033	0.013
27	8	34,324	1,593	0.799	0.035	0.250	0.021	0.102	0.011
28	3	53,376	298	0.392	0.047	0.112	0.022	0.044	0.011
28	4	89,034	1,516	0.163	0.025	0.044	0.008	0.017	0.004
28	6	44,076	494	0.518	0.046	0.182	0.019	0.084	0.010
28	7	71,831	821	0.189	0.031	0.042	0.010	0.014	0.005
28	8	54,831	718	0.416	0.038	0.142	0.014	0.064	0.007
28	9	67,422	227	0.264	0.059	0.062	0.019	0.022	0.008
29	1	26,564	320	0.940	0.039	0.425	0.053	0.221	0.043
29	2	42,516	742	0.699	0.053	0.292	0.035	0.151	0.024
29	3	24,084	117	0.978	0.023	0.479	0.071	0.256	0.064
29	4	23,508	282	0.976	0.022	0.462	0.052	0.244	0.046
29	5	35,588	273	0.754	0.107	0.267	0.065	0.119	0.040
29	6	27,468	274	0.941	0.028	0.425	0.050	0.216	0.042
29	8	17,309	240	0.986	0.020	0.605	0.046	0.400	0.047
29	9	27,275	161	0.917	0.069	0.415	0.067	0.228	0.050
29	10	23,118	220	0.953	0.049	0.483	0.081	0.279	0.070
29	11	33,613	1,752	0.786	0.039	0.299	0.026	0.142	0.016
29	13	16,031	122	0.999	0.002	0.664	0.074	0.455	0.093
29	15	40,368	9,391	0.667	0.028	0.251	0.018	0.121	0.012
29	16	13,648	176	0.996	0.007	0.689	0.056	0.496	0.070
29	17	40,563	1,303	0.675	0.061	0.256	0.034	0.124	0.021
29	19	38,339	1,762	0.693	0.046	0.257	0.029	0.122	0.018
30	1	46,413	945	0.539	0.092	0.172	0.043	0.075	0.023
30	2	40,907	1,896	0.631	0.059	0.208	0.036	0.092	0.022
30	3	38,961	1,237	0.682	0.070	0.234	0.036	0.107	0.020
30	4	48,733	560	0.451	0.109	0.123	0.040	0.049	0.018
30	5	32,080	269	0.801	0.085	0.329	0.066	0.168	0.045
30	6	46,284	2,365	0.560	0.074	0.175	0.029	0.076	0.015
30	7	39,269	59	0.618	0.160	0.204	0.078	0.093	0.043
30	9	34,697	386	0.769	0.076	0.315	0.061	0.160	0.044

Figure A1

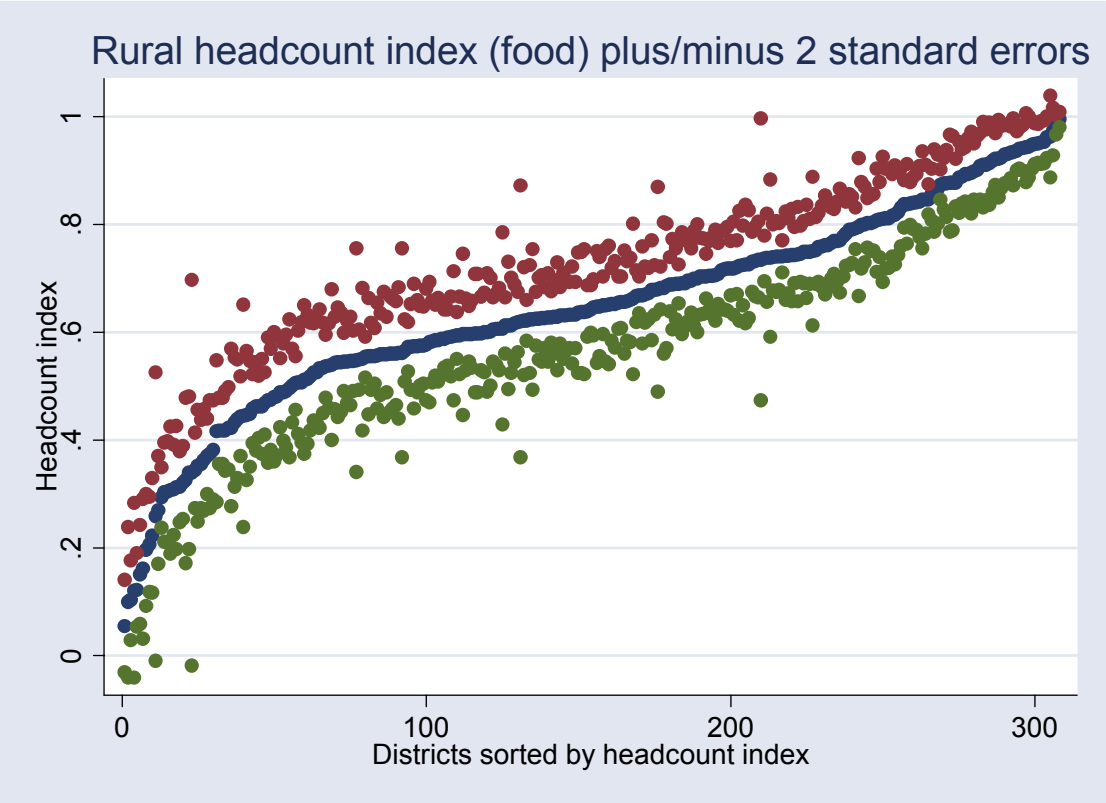
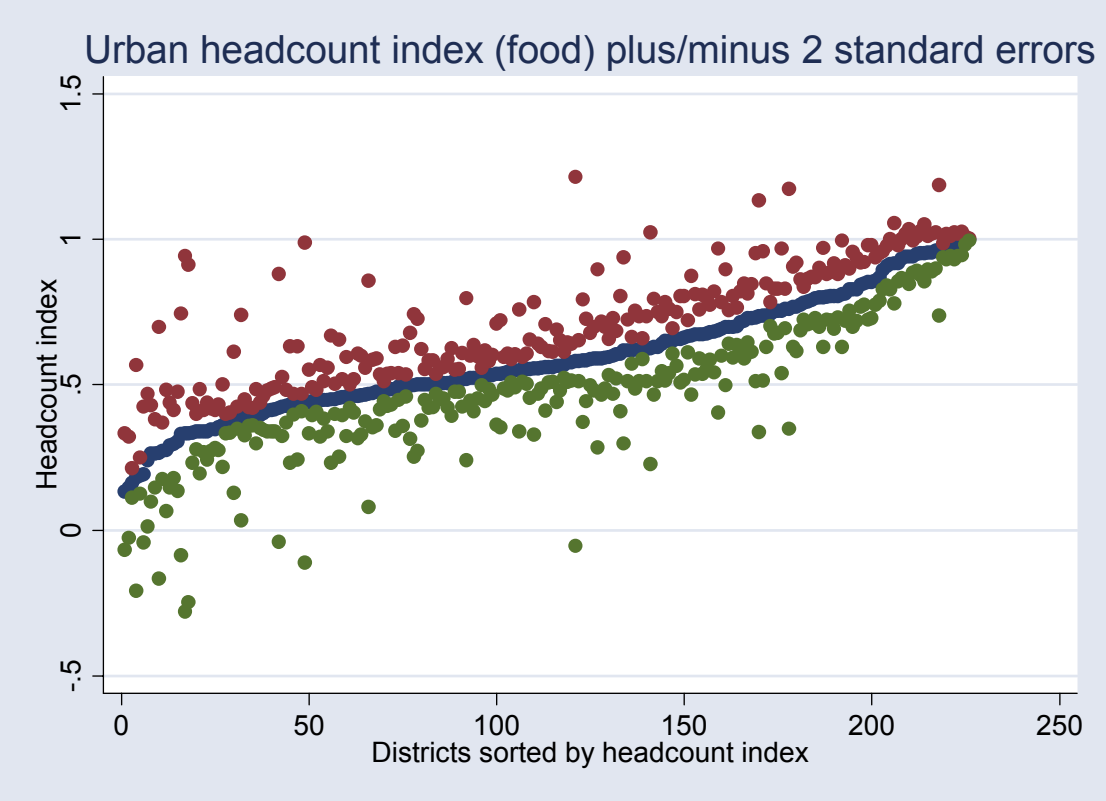


Figure A2



ANNEX 6: HEALTH

1. The Ministry of Population and Public Health (MOPHP) operates a four-tired health system which is comprised by health centers and health units at the village level and districts for primary health care, district and governorate hospitals for the secondary care and referral hospitals in Sana'a, Aden and other big cities. According to the latest data available from the MOPHP in 2002, there were 15 major hospitals, 22 governorate hospitals, 111 rural and district hospitals, 614 health centers and 2,025 health units under the MOPHP's system. Since 2002, the responsibilities of operating these health facilities have been shifted to the local level due to the implementation of decentralization policy of the Government, and additional numbers of health facilities were constructed. Available data show that the number of installed hospital bed was 0.6 per 1,000 population[11]. This is much lower than other countries in the MENA region. It must be noted that the number of operating health facilities with adequate equipment or health staff is much less than what physically exists. The National Health Account Study[12] found that Government expenditure on health was nearly 1.8% of Gross Domestic Product in 2003 and accounted 32% of the total health expenditure of the country. Per capita public health expenditure was only US $11. Government spending on health was 4.9%. Currently, Yemen does not have a compulsory health insurance system that provides financial protection to the poor in the case of catastrophic illnesses.

2. The MOPHP has initiated the Health Sector Reform Strategy in 1998 to improve the performance of their health system. The Strategy attempted to address improvement of management systems, decentralization of management functions, and cost sharing and strengthening the stewardship role of the MOPHP. The Strategy tried to improve critical issues in health sector such as improvement of efficiency, equity, and access to health care. In the last ten years, the Health Sector Reform Strategy has faced political and administrative challenges in its implementation process. In spite of high expectations from those who involved, there has not been so much progress witnessed over the last ten year. The Government of Yemen planed to reformulate the Health Sector Strategy of 1998 into the third five-year plan (2006-2010).

3. With respect to health outcomes, there have been gradual improvements in the recent years. However, Yemen continues to be one of the countries with the worst health outcomes. As of 2005, infant and under-five mortalities are 76 per 1,000 live births102 per 1,000 live births respectively[13]. They are the second highest in the MENA regions. Moreover, according to the most recent health survey[14], nearly 50% of under-five year old children are underweight. At this moment, most of the MDG targets related to health will not be achieved by 2015, provided that the current level of interventions continues.

[11] The data source is World Health Organization's World Health Report 2006. This figure is believed to be the bed capacity in the public sector. There was not an accurate estimate available at the time of writing this report.
[12] Yemen National Health Accounts: Estimate for 2003, National Health Accounts Team, Republic of Yemen, Partners for Health Reformplus, June 2006
[13] The data source is United Nations Children's Fund, State of the World Children 2007.
[14] Pan Arab Family Health Survey 2003

4. The previous Poverty Assessment in 2002 highlighted the need for increase both the access and the quality of services. The previous Poverty Assessment suggested that the priority interventions for Yemen would be to (i) strengthen maternal and child health programs in rural areas, (ii) redirect health care resources towards primary health care, and (iii) increase the public finance resource to the health sector. The World Bank's analysis, *Inequality in health, nutrition and population in Yemen*[15] in 2003 also recommended the Government of Yemen undertake more aggressive pro-poor targeting in their health service provisions and ensure the effectiveness of the targeting, particularly reduction of maternal and child mortality. The analysis supported introduction of health insurance program targeted the poor and emphasized needs for inter-sectoral approaches to improve transport, communication and educational attainment of women, particularly in relation to reduction of maternal and child mortality, and child malnutrition.

5. This chapter aims to examine if the health inequality between the poor and the rich has been alleviated over the course of years, due to the collective efforts of the government, donor agencies and other non-governmental agencies. This chapter does not necessarily intend to evaluate the past performance of the Health Sector Reform Strategy in place in the last ten years, as observed changes may not be only contribution of the Health Sector Reform Strategy. At the end of the section, a set of policy recommendations were made for future consideration.

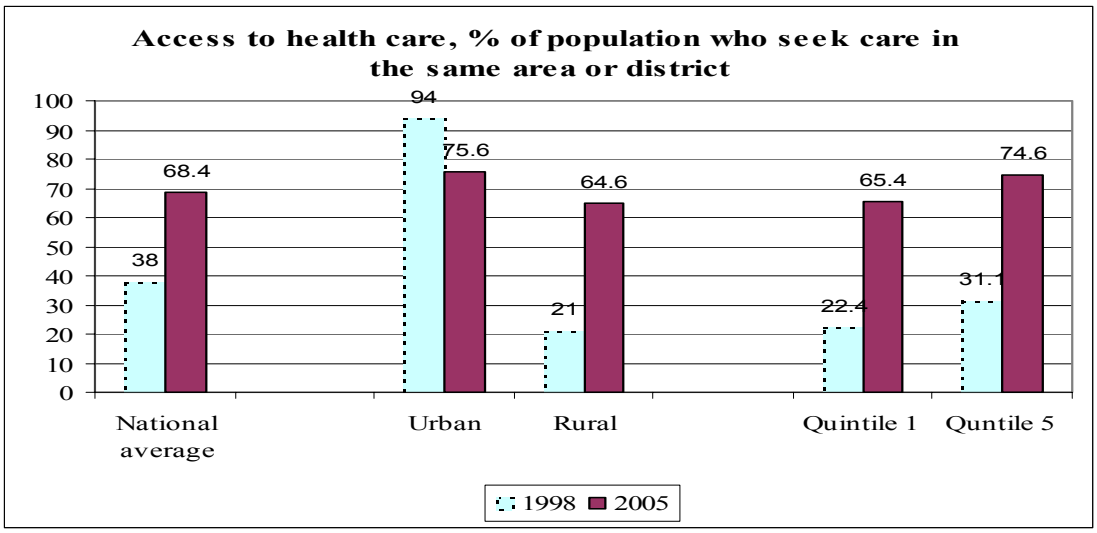
A ***Access to health care***

6. According to the 2005 HBS, on national average, nearly 70% of the surveyed individuals sought medical treatment at a health facility, either public or private, in the same district or area when ill. This indicates that the surveyed individuals have relatively good physical access to health care. Regarding the geographical disparity, the urban and rural gap was relatively small, only 10% point. Equally the different between the richest quintile and poorest expenditure quintile was not significantly large. In the previous Poverty Assessment used a slightly different measure to assess access to health care, percentage of population with at least one health functional health facility only in the same area[16]. In the previous Poverty Assessment, nationally, only 38% of the population lived in an area where at least one health facility, whether public or private. On average, some 94% of urban population lives in the area with at least one health facility, compared with 21% in the rural area.

[15] Preker A.S. Nandini Omman, Elizabeth Lule, Deeborah Vazirani, and Ritu Chhabra, Yemen Inequalities in Health, Nutrition and Population, World Bank June 2003

[16] The comparability in the definition of "area" between these two HBSs was not clear at the same of writing this section. Additionally, the 1998 HBS looked into only the distribution of health facilities by available data.

Figure A.6 1: Resident Access to Health Care, by District

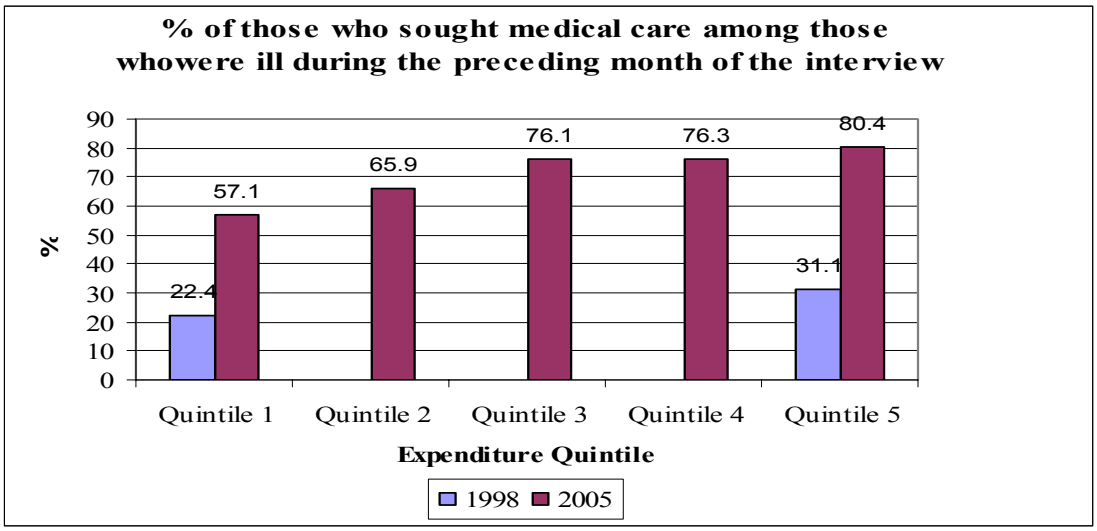


7. In addition to overall trend of the improved physical access to health care, more percentage of individuals seems to now seek medical care at the time of sickness. This trend is observed in both the poor and non-poor groups. In the previous Poverty Assessment, only 38.8% of the poor who were ill during the preceding month of the survey sought treatment. In the 2005 HBS, 61.5% of the poor sought treatment in case of illness. The access to health care seems to have improved further for the non-poor. The percentage of the non-poor individuals who were ill during the preceding the interview sought treatment has increased from 41.1% in 1998 to 76.8% in 2005.

8. Despite the overall upward trend, the percentage to seek medical care still varies by household's expenditure levels. In the 2005 HBS, the percentage of individuals who were ill during the preceding the survey and sought treatment ranges from 57.1% in the poorest quintile[17] to 80.4% in the richest quintile. Compared with the 1998 HBS figures, the difference of the percentages between the poorest and richest has widened. The percentage increase in seeking the care at the time of illness did not catch up the improved physical access to health facility for the individuals in the poorest expenditure group. What are reasons for the individuals in the poorest expenditure group not to seek the medical care, other than physical access to health facilities?

[17] Quintiles are defined by household expenditure divided by the total number of household members.

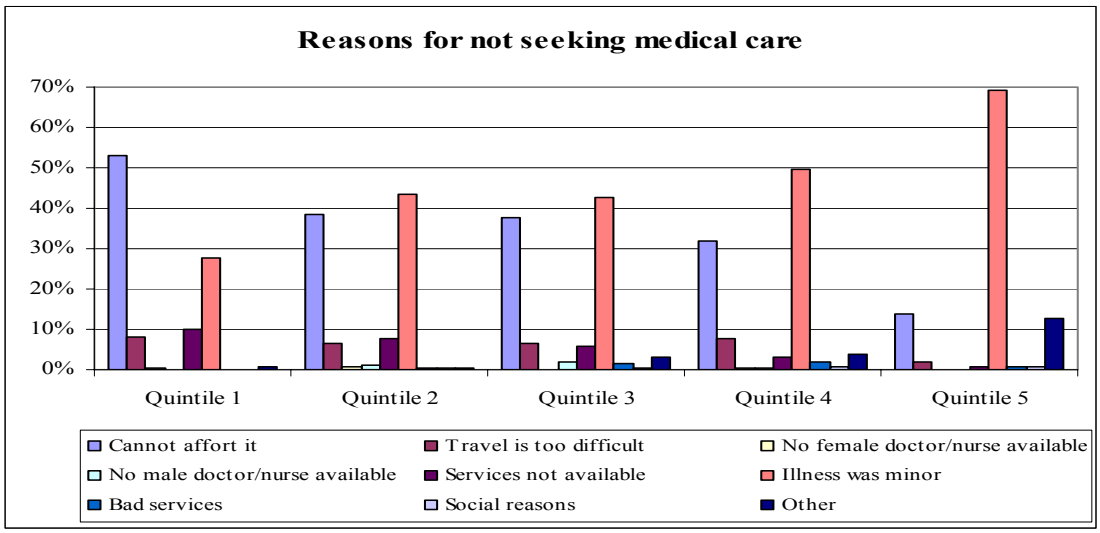
Figure A.6 2: Percentage of Residents Who Sought Medical Care



9. As show in Figure XXX, the reasons for not seeking medical care in case of illness demonstrate variations among the household expenditure groups. For the poor, inability to pay for care seems to be the most significant reason for not seeking the medical care. Unavailability of needed medical service and difficulty in physical access were the second and third reasons for not seeking the medical care[18]. This trend changes as the household expenditure increases. Inability to pay for medical care and unavailability of care become less significant barriers the expenditure level goes up. In the richest quintile, the major reason for not seeking care is that the illness was considered too minor to receive the medical attention.

[18] The 2005 HBS did not assess how many minutes it takes to go to a nearby health facility.

Figure A.6 3: Percentage of Residents Whom Did Not Seek Medical Care



10. This finding coincides with the result of the recent Bank financed qualitative research study, *Qualitative Assessment of Community Based Health Related Programs: Five Programs and Six Locations in Yemen*. The study conducted twenty four focus groups with community members who were beneficiaries of existing community-based development projects financed by different types of donors. The qualitative study indicates that the focus group participants raised concerned over lack or access or difficulties to health centers, lack of quality health services and financial barrier. The poor seems to have more difficulties in accessing health care, due to the cost-sharing schemes which were introduced in the early 1990s.

B Utilization of services/ Health Behavior

11. In regard to utilization of health services, the 2005 HBS indicated that throughout the expenditure groups, nearly 80% of individuals seek medical care only when they are ill. Some 10% of the surveyed individuals claimed that they do not visit a health professional at all. This trend indicates that Yemenis, whether the poor or the rich, do not have a custom of paying a preventive medical care visit.

Table A.6. 1: Frequency of Visiting Health Care Professionals

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Urban	Rural
Monthly	0.2%	0.2%	0.4%	0.5%	0.9%	0.7%	0.3%
Every 2 month	0.1%	0.1%	0.2%	0.2%	0.4%	0.3%	0.1%
Every 3 month	0.0%	0.1%	0.0%	0.1%	0.3%	0.2%	0.1%
Every 4 month	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%
Every 5 month	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Twice a year	0.1%	0.0%	0.0%	0.1%	0.2%	0.2%	0.0%
No regularity	0.2%	0.3%	0.4%	0.3%	0.9%	0.8%	0.3%
When ill	79.3%	82.9%	83.8%	84.6%	85.6%	87.9%	81.4%
Don't see health prpfessional	20.2%	16.4%	15.2%	14.2%	11.6%	9.8%	17.7%
	100.0%	100.0%	100.0%	100.0%	100%	100.0%	100.0%

Source: World Bank staff estimates from the 2005 HBS

12. In spite of the fact that more individuals seem to seek medical care when ill, the percentage of women who received assisted delivery remain very low in Yemen. The national average is less than one-third of women who delivered a child. The percentage increases from 19% in the poorest to 40% in the richest. A geographical gap between the urban and rural is also noticeably huge, 13% point difference. A comparison with the 1997 PAPCHILD data implies that there has been some improvement, in particular, in the poorest segments of women. Illiteracy and cultural norms among Yemeni women may limit their demand for utilizing the assisted delivery. Perceptions of risk during the periods of pregnancy, birth and postpartum affect strongly care seeking behavior of women. This impediment could be aggravated by lack of physical access to a facility or financial barrier. There was notable disparity among the governorates: the percentage of assisted delivery was extremely low in the governorates of Abyan (14.7%), Al-Jawf (11.4%), Hajja (9.8%), Dhamar (13.6%), Shabwah (18.0%), Sana'a (18.0%) and Al-Mahwe (17.6%).

Table: Assisted delivery by expenditure quintile (% of women)

	National average	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Urban	Rural
1997	21.7	6.8	13.2	15.6	28.7	49.7	n/a	n/a
2005	29.4	19.8	23.5	27.1	32.8	40.3	49.9	21.2

Source: PAPCHILD 1997 and HBS 2005

Note: The PAPCHILD figures are percentage of delivery by a medically trained person. The questionnaire of HBS 2005 did not clearly distinguish if the question meant to ask a delivery by a doctor, midwife or a medically trained professional.

13. Exclusive breast-feeding practice for the first six month after the birth seemed to be universally accepted among those who were interviewed. There was no noticeable disparity among the expenditure groups and the non-poor and the poor. However, several governorates have shown lower prevalence of this practice: Hajja (63.0%), Shabwah (64.9%), and Remah (53.9%).

14. Child malnutrition remained persistently a concerning issue in Yemen. Nearly one third of children two to five year old are severely stunting. There is a larger disparity between in the urban and rural area on the prevalence of severe stunting than other types

of malnutrition. Poverty is clearly associated to the prevalence of severe stunting and underweight. Since the WHO guideline for international reference population was revised in 2005, it was not possible to compare the prevalence of child malnutrition with the results of earlier health surveys. On the other hand, available data infers that the prevalence of child malnutrition has not been reduced over the course of years. Severe stunting was more prevalent in the governorates of Al-Jawf (52.0%), Al-Mahweet (43.2%), Amran (39.4%) and Sana'a (47.6%). Severe underweight was more common in the governorates of Al-Hodeida (19.9%), Mareb (14.8%), Amran (18.3%) and Al-Dhale (31.0%). More prevalent severe wasting was observed in the governorates of Al-Mahrh (27.7%), Al-Dhale (23.4%), Mareb (22.7%) and Laheg (22.9%).

Table: Prevalence of severe malnutrition (%)

	National average	Poor	Non-poor	Urban	Rural	Boy	Girl
Severe stunting	27.5%	33.3%	27.8%	23.5%	33.2%	29.2%	26.7%
Severe underweight	12.4%	14.4%	11.7%	10.7%	14.8%	12.4%	10.9%
Severe wasting	10.2%	10.4%	11.2%	10.6%	11.6%	11.0%	9.4%

Source: World Bank staff estimates from the 2005 HBS

Note: Following the new WHO guidelines, prevalence of stunting and wasting was calculated children between 2 to 5 years old. For underweight, the relevant age group remained children under five years old.

15. Immunization coverage of one year old children varies by geographical location as well as by the type of vaccine. For example, thanks to the aggressive eradication campaign by the Government, nearly 100% of coverage has achieved throughout different expenditure groups. There was no substantial disparity between the urban area and rural area or gender disparity was observed either.

Table: Immunization coverage by expenditure quintile (%)

	National average	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Urban	Rural
Polio	99.1	99.0	99.1	99.0	99.1	99.2	99.0	99.1
DPT3	86.4	84.3	84.1	85.6	88.8	89.0	91.2	84.3
Measles	74.9	70.1	71.9	77.1	77.0	79.2	83.4	72.0
Hepatitis	63.1	56.6	59.3	63.5	65.5	71.9	77.5	58.1

Source: World Bank staff estimates from the 2005 HBS

16. DPT3 had nearly 86% coverage at the national level and the disparity of the coverage between the richest and the poorest was only 5% point. The disparity in the urban and rural was equally small. The governorates of Abyan (60.5%), Sana'a (69.4%), and Remah (66.0%) have recorded lower coverage of DPT3.

17. The percentage of Measles immunization is one of the Millennium Development Goal Indicators. The national average was less than 80% and it appears that Yemen has a long way to go to achieve the target. There was a 9% point disparity between the richest and poorest. The gap between the urban and rural was 12% point, further noticeable. Measles vaccination coverage was much below the average in the governorate of Ibb (68.2%), Hajja (47.0%), Sa'adah (56.2%) and Sana'a (59.5%).

18. Hepatitis vaccine coverage is the most troublesome among the four vaccination types discussed in this section. The national average was only 63%. There were significant gaps in between the richest and the poorest (8% point) and between urban and rural (19% point). The governorates of Hajja (29.6%), Al-Jawf (33.9%), and Sana'a (42.9%) observed extremely low coverages. It appears that the coverage of Measles and Hepatitis vaccinations may be more closely correlated to the geographical location of governorate than the expenditure level of the household where children belong to.

*C **Household Health Expenditure***

19. According to the National Health Account Study 2003, during the period of 1999 and 2003, proportion of public expenditure on health remained steady, around 1.5 to 2% of GDP and 4 to 5% of the government expenditure. On the other hand, the proportion of the private source has slightly increased from 57% to 60% between 1998 and 2003. The 2005 HBS data indicated the proportion of out-of-pocket payments for health services against total expenditure have also increased between 1998 and 2005. At the same token, compared with the results of the 1998 HBS, on average, the proportion spent for health as of total household expenditure has slightly increased from 2.3% in 1998 to 2.9%. Based on the 2005 HBS, per capita household expenditure on health was 4,866 Yemeni Rials[19] which was equivalent to US$ 25.3[20]. The per capita household expenditure on health presents a very wide range of expenditure level from 752 Yemeni Rials in the poorest quintile to 17,273 Yemeni Rials in the richest quintile (Table XXX). On the other hand,

[19] The 2005 HBS questionnaire did not capture health care costs for chronic disease and disability. Thus, these estimates may be underreported.
[20] Official change rate in 2005, US$1 = 192 Yemeni Rials

the household expenditures on health in the urban and rural area were 7,379 Yemeni Rials and 3,919 Yemeni Rials respectively. This makes the urban and rural ratio, approximately 2:1.

20. The share of the household expenditure on health is progressive among expenditure groups. Households in the poorest quintile spent a lower percentage of their total household budget to health (2.0%) than the richest quintile (4.5%). This progressive spending pattern is observed both in urban and rural households. In urban areas, the budget share on health for the poor and the non-poor are 1.8% and 3.2% respectively, compared to 1.9% and 3.4% in rural areas.

21. In the 1998 HBS, the proportion of household expenditure on health was higher in the rural areas than the urban areas. Between 1998 and 2005, this trend was reversed by a sharp increase of the health share from 2.04% to 3.0% in the urban area than the rural area 2.4% to 2.8%. The analysis in this chapter does not allow us to examine reasons for the sharp increase of the share of household expenditure on health in the urban area. Nonetheless, one possible explanation might be a sharper increase of medical care cost in the urban areas over this time period.

22. Among different categories of medical expenses, medicine and prescription medicine absorb the highest share of total expenditure on health care for the poorest (46.8%). This large share of medicine and prescription drugs is observed among most of expenditure groups, except the richest quintile. In the richest quintile, the proportion is only 19.2%. In the 1998 HBS, a similar category, medicine and medical preparation took up 60 to 70% of the household expenditure on health. Since the comparable proportion was only 26.8% in 2005, it can be concluded that the burden of medicine and prescription drugs cost was somewhat reduced, on average, between 1998 and 2005. The situation of drug supply has long been regarded as unsatisfactory in Yemen. [21]As a large private sector dominates the supply of drugs with expensive prices, anecdotal evidence indicates that the very poor may be able to make drug purchase from the private sector by taking loans or selling personal possessions since the needed drugs are scarcely available from the public source[22]. The category of "other health care expenses[23]" was the second highest share (42.3%) in the poorest quintile.

23. Most noticeable spending pattern of the better off is a significantly high proportion of medical costs sought outside of Yemen. Even in the 1998 HBS, this tendency was

[21] Between 1996 and 2002, the Government of Yemen initiated Yemen Drug Action Programme (YEMDAP) and created "Drug Funds" in order to improve availability of medicine of good quality through the public sector. Until the Programme ended in 2002, a marked degree of improvement was indeed achieved. Following the end of "Drug Fund", National Drug Programme was created in the MOPHP to improve availability of drugs in the country. Although both of the programmes were not financially viable or successful, they might have reduced the burden of medicine costs among the household, compared with the time there was no such a programme.

[22] The Synthesis Report, The Pharmaceutical Sector in Yemen, Short-term and Long-term Plans for Action (Draft) by Dr. Graham Dukes

[23] According to the instruction book of the HBS 2005, it was not quite clear what to be categorized to "other health care expenses." It was possible that some interviewees, in particular, the poorer groups did not bother to disaggregate

observed, however, the proportion of household expenditure on health for treatment abroad was much less. The 2005 HBS indicated that the richest quintile spent nearly a half of their household spending on health. This is a significant increased from what was observed in the previous Poverty Assessment (around 10% among the non-poor.) Individuals in other quintiles did not seek medical treatment outside of Yemen. This clearer distinction on the treatment abroad implies that higher proportion of individuals in the richest quintile are willing to pay high cost for quality medical care available outside of Yemen than in 1998.

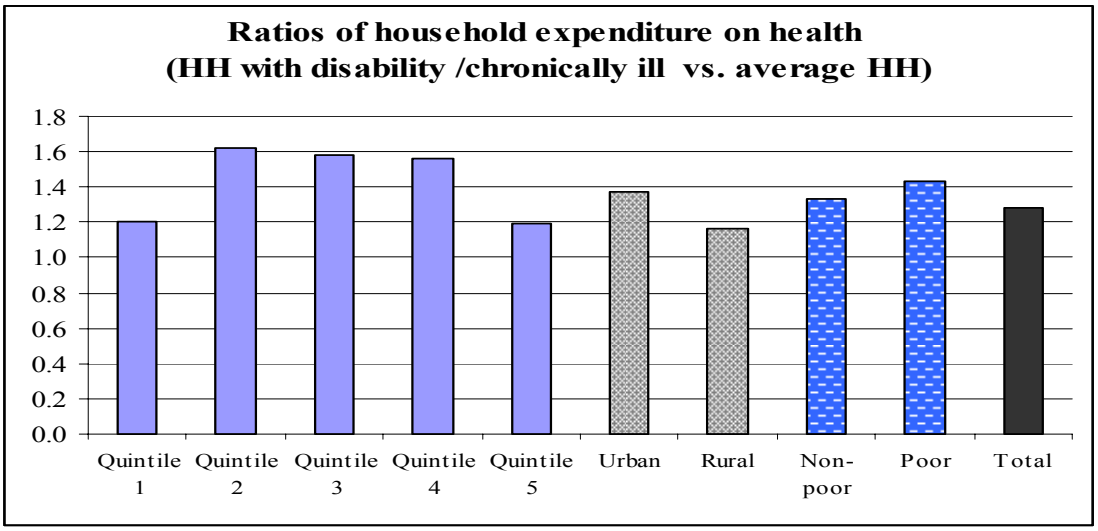
Table A.6. 2: Household Expenditures on Health Care Services

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Urban	Rural	Non-poor	Poor	*Total*
Per capita household expenditure on health (YR)	752	1,141	2,021	3,148	17,273	7,379	3,919	7,013	909	4,866
% of household expenditure on health	2.0%	2.0%	2.7%	3.1%	4.5%	3.0%	2.8%	3.4%	2.0%	2.9%
Composition of household expenditure										
Medicine and Prescription drugs	47.1%	48.3%	46.4%	47.4%	18.5%	25.1%	28.1%	25.5%	45.5%	26.8%
Doctor's fee	0.9%	3.0%	2.4%	2.0%	1.4%	2.7%	0.9%	1.6%	2.3%	1.7%
Hospital stay	2.8%	1.3%	8.4%	9.1%	4.8%	5.8%	5.2%	5.7%	2.3%	5.4%
Surgical fees	1.5%	10.9%	9.1%	6.7%	9.3%	9.9%	7.9%	8.9%	7.0%	8.7%
Medical services (injections, nurse aid)	0.0%	0.2%	0.8%	0.2%	0.5%	0.8%	0.2%	0.5%	0.2%	0.4%
Medical examinations	1.0%	1.4%	1.2%	1.4%	0.8%	1.5%	0.6%	1.0%	1.0%	1.0%
Medical supplies (glasses, hearing aids)	0.3%	0.2%	0.3%	2.2%	0.5%	0.8%	0.6%	0.7%	0.3%	0.7%
Medical appliances	1.0%	1.0%	1.6%	2.2%	1.5%	2.0%	1.3%	1.6%	0.9%	1.6%
Medical paraphernalia (cotton, syringes)	0.0%	0.1%	0.1%	0.1%	0.1%	0.2%	0.0%	0.1%	0.1%	0.1%
Midwife and delivery expense	3.1%	1.5%	0.8%	0.9%	0.4%	0.9%	0.5%	0.6%	1.9%	0.7%
Medical treatment outside Yemen	0.0%	0.0%	0.0%	0.0%	44.8%	36.9%	28.2%	34.1%	0.0%	31.8%
Other healthcare expenses	42.3%	31.9%	28.9%	27.7%	17.2%	13.6%	26.3%	19.8%	38.5%	21.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: World Bank staff estimates from the 2005 HBS

24. When a household has any disabled or chronically ill member, the household expenditure on health increases nearly by 20 to 40% (Table XXX). This trend is universal throughout the expenditure groups, however, third and forth quintiles observed much higher ratios than the national average. The ratio in the urban area is higher than the one in rural area. This may attribute to higher care cost for the disabled or chronically ill household members. Or the services needed for disable or chronically ill are not readily available in the rural areas.

Figure A.6 4: Increases in Household Expenditures on Health



25. On the contrary, households with children under 15 year old spend equivalent or slightly less amount on health, if compared with the spending of the average households. Interestingly, if such household is non-poor or located in the urban area, the household expenditure on health would be reduced by 10 to 25%.

Table A.6. 3: Household Expenditures on Health Care Services
(Household with members with disability or chronic illness)

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Urban	Rural	Non-poor	Poor	*Total*
Per capita household expenditure on health (YR)	904	1,849	3,192	4,915	20,544	10,122	4,546	9,372	1,306	6,243
Composition of household expenditure										
Medicine and Prescription drugs	39.0%	45.6%	42.3%	40.6%	23.5%	24.9%	34.3%	28.8%	39.5%	29.7%
Doctor's fee	0.7%	2.9%	2.1%	1.9%	1.3%	2.1%	1.0%	1.5%	2.4%	1.5%
Hospital stay	1.8%	1.5%	7.6%	13.2%	7.7%	6.9%	8.9%	8.4%	2.1%	7.9%
Surgical fees	0.6%	12.0%	9.7%	8.9%	12.5%	9.6%	12.9%	11.7%	6.4%	11.3%
Medical services (injections, nurse aid)	0.0%	0.3%	1.1%	0.2%	0.5%	0.8%	0.3%	0.5%	0.3%	0.5%
Medical examinations	0.9%	1.4%	0.9%	1.4%	1.1%	1.6%	0.6%	1.2%	0.9%	1.1%
Medical supplies (glasses, hearing aids)	0.5%	0.3%	0.3%	3.6%	0.7%	0.7%	1.3%	1.1%	0.4%	1.0%
Medical appliances	1.2%	1.1%	1.2%	2.1%	1.9%	2.0%	1.6%	1.9%	0.7%	1.8%
Medical paraphernalia (cotton, syringes)	0.0%	0.1%	0.1%	0.1%	0.1%	0.2%	0.0%	0.1%	0.1%	0.1%
Midwife and delivery expense	5.3%	0.7%	0.5%	0.5%	0.2%	0.3%	0.6%	0.3%	2.3%	0.5%
Medical treatment outside Yemen	0.0%	0.0%	0.0%	0.0%	29.6%	34.4%	5.2%	21.4%	0.0%	19.6%
Other healthcare expenses	49.9%	34.1%	34.4%	27.5%	20.9%	16.5%	33.1%	23.1%	44.9%	24.9%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: World Bank staff estimates from the 2005 HBS

Table A.6. 4: Household Expenditures on Health Care Services
(Household with children under 15 year old)

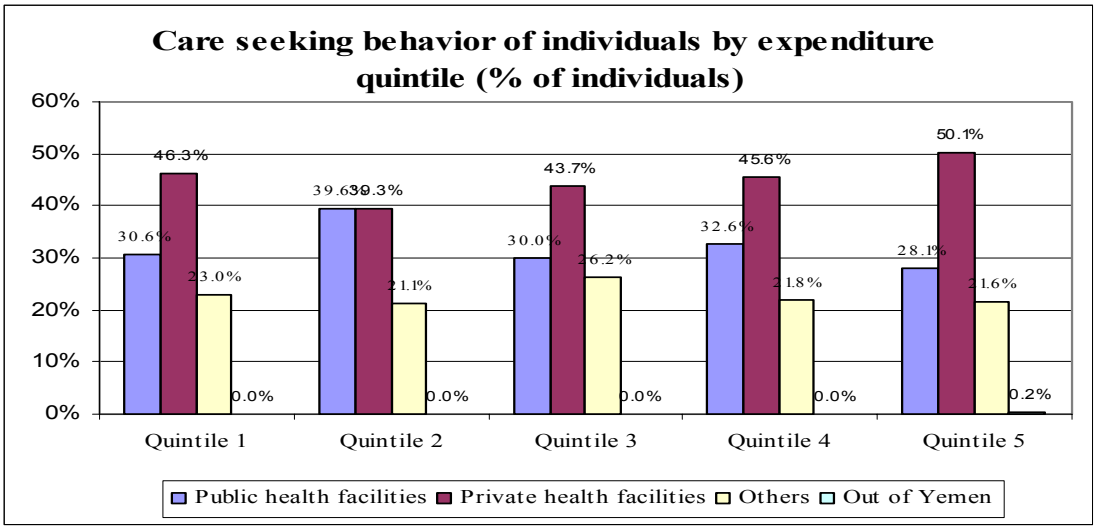
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Urban	Rural	Non-poor	Poor	*Total*
Per capita household expenditure on health (YR)	758	1,137	2,048	3,212	16,107	5,626	3,895	6,305	907	4,352
Composition of household expenditure										
Medicine and Prescription drugs	46.8%	47.7%	45.9%	47.3%	19.1%	31.0%	27.0%	27.1%	44.6%	28.4%
Doctor's fee	0.8%	3.1%	2.5%	2.0%	1.5%	3.3%	1.0%	1.7%	2.4%	1.8%
Hospital stay	2.8%	1.3%	8.9%	9.4%	5.1%	6.8%	5.3%	6.1%	2.3%	5.8%
Surgical fees	1.5%	11.3%	9.5%	6.9%	9.7%	11.7%	7.7%	9.2%	7.2%	9.1%
Medical services (injections, nurse aid)	0.0%	0.1%	0.8%	0.2%	0.6%	1.0%	0.2%	0.5%	0.1%	0.5%
Medical examinations	0.9%	1.5%	1.0%	1.4%	0.8%	1.7%	0.6%	1.0%	0.9%	1.0%
Medical supplies (glasses, hearing aids)	0.3%	0.2%	0.3%	2.4%	0.6%	1.1%	0.7%	0.8%	0.3%	0.8%
Medical appliances	1.0%	1.0%	1.7%	2.0%	1.6%	2.2%	1.3%	1.6%	0.9%	1.6%
Medical paraphernalia (cotton, syringes)	0.0%	0.1%	0.1%	0.1%	0.1%	0.3%	0.0%	0.1%	0.1%	0.1%
Midwife and delivery expense	3.1%	1.6%	0.8%	1.0%	0.5%	1.3%	0.5%	0.7%	2.0%	0.8%
Medical treatment outside Yemen	0.0%	0.0%	0.0%	0.0%	41.9%	24.2%	30.2%	30.4%	0.0%	28.1%
Other healthcare expenses	42.6%	32.1%	28.6%	27.5%	18.5%	15.5%	25.5%	20.7%	39.2%	22.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: World Bank staff estimates from the 2005 HBS

Benefit Incidence of the Government Health Service Provisions

26. In general, a benefit incidence analysis looks into (i) utilization patters of government's health services by expenditure groups and (ii) distribution of subsidy given to an individual in different expenditure groups who utilizes public health services. However, the 2005 HBS questionnaire did not capture the number of per capita visit and household health expenditure by different type of health facilities. Without these basic data, it was not possible to compute the patterns in utilization of public health facilities or distribution of health subsidies. In this chapter, the benefit incidence analysis is limited only to a question, if individuals in different expenditure groups seek medical care in public health facilities in case of illness and analyze the reasons for their preference.

27. According to the 2005 HBS, individuals in the poorest quintile do not necessarily receive their medical care from the public health facilities. In the poorest quintile, more individuals sought the care at the private health facilities, which include private clinic, private hospital, private doctor consultation, and private consultation with a certified health professional. Among the private facilities, private clinic visit represent 33% of the surveyed individuals in the poorest quintile. This percentage was outstandingly higher than the rest of expenditure groups. The percentages between the public facilities and private ones are slightly changed in the second poorest income quintile, however, in sum, this graph indicates that the government's health system does not effectively outreach to the poor. There is no clear evidence that the poor is a particular beneficiary of the government's health service provision.



Note: Public health facilities include public health center and public hospital. Private health facilities include private clinic, private hospital, private doctor consultation, private consultation with a certified health professional. Other includes pharmacy and traditional medicine. If we can desegregate pharmacy to public or private one, the percentage of the private facilities will go up further.

28. This finding is also endorsed by the qualitative research study mentioned earlier. In case of serious illness, the focus group participants showed their strong preference for seeking better quality health services at private health facilities rather than public ones. At the same time, the participants noted that the private treatment fees were so expensive that they could not afford the treatment easily. Table XX summaries the perceived benefits of visiting public health facilities versus private health facilities based on the focus group discussions. In public hospitals, patients have to pay only 40 Yemeni Rials[24], however they have to pay additional fees for medicines and examinations. This could possibly add up to a considerable financial burden even though they seek care in public hospitals. Focus group discussion also indicated that cases of medical doctors from public health facilities have their own private practices for making additional incomes. Thus, this leads to short operating hours of public health facilities and absenteeism of doctors or health workers.

Table: Perceived Benefits of Visiting Public or Private Health Facilities

	Public health facilities	Private health facilities
Reasons for visiting	• Shorter travel distance • Cheaper • Drugs are cheaper	• More available • More professionals/specialists • Shorter waiting times • Longer opening hours • Tests/exams are available • Better equipment
Reasons for not visiting	• Too many exams • Long waiting time • Unprofessional staff attitudes • No specialist available • Health unit close early • No female doctors in health units • No drugs and materials • Too many medical exams	• Expensive • Too far away

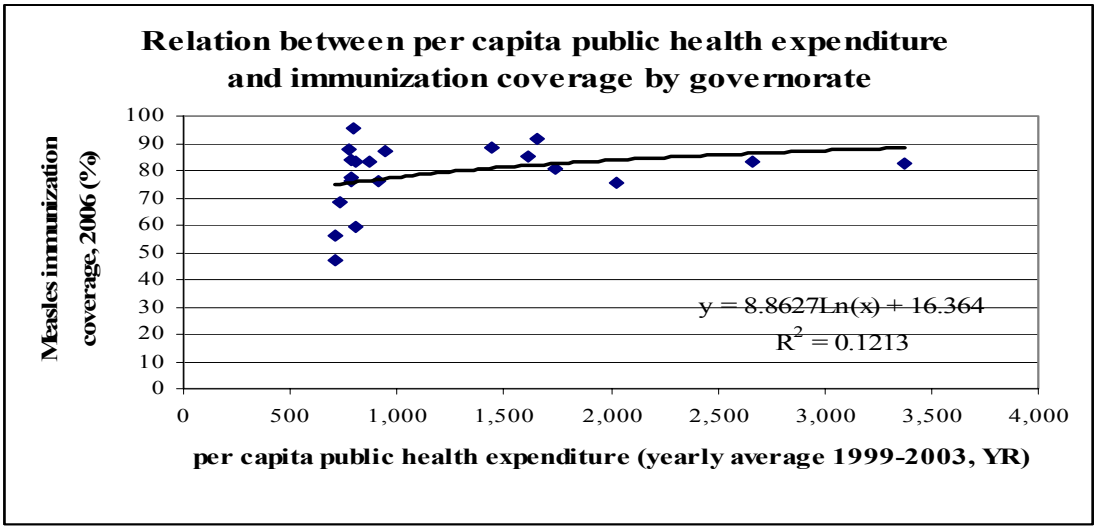
Source: Yoshimi Nishino, Qualitative Assessment of Community Based Health Related Programs: Five Programs and Six Locations in Yemen

29. The following figures present the relation between per capita public health expenditure and some of the measure health outcomes measured in the 2005 HBS. The per capita public health expenditure by governorate was a yearly average of the MOPHP and governorate expenditure on health between 1999 and 2003, taken from the NHA 2003 Study[25]. First of all, there is a large range in the per capita public health expenditure by governorate. This indicates that there might be lack of equity consideration in allocating the public health budget. Secondly, according to these figures, there seems to be lose correlations between the level of per capita public health expenditure and the level of measles immunization coverage or prevalence of severe underweight. However, at the same time, there are huge differences in the level of the immunization coverage or

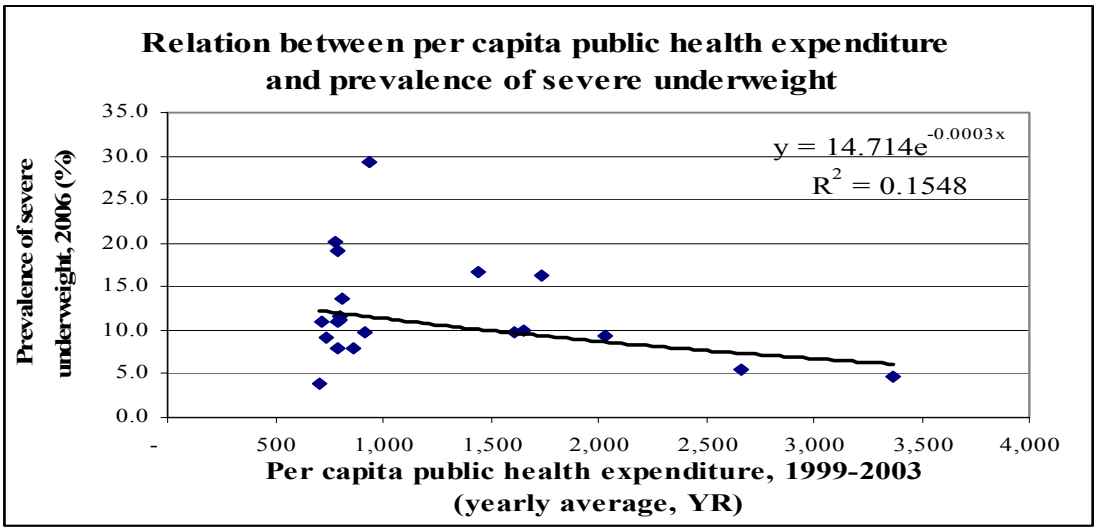
[24] The different report shows a much higher co-payment at the hospital. This could be due to the fact that in both public and private health facilities, the pricing for health services were at ad-hoc basis and not transparent.

[25] This was the most recent per capita public health expenditure available for this type of analysis.

prevalence of severe underweight among the governorates with comparable per capita public health expenditure. This implies that there exist huge gaps in the planning and implementation capacity of basic health services among governorates.



Source: The World Bank estimates from the 2005 HBS, National Health Accounts Study 2003



Source: The World Bank estimates from the 2005 HBS, National Health Accounts Study 2003

D Conclusions and Ways Forward

30. Based on the analysis from the 2005 HBS, it appears that the access to health facilities has improved over the course of the years. Nearly 70% of household has at least one health facility in the same area or district in 2005. The percentage of people who seek medical care in the case of illness both have increased. However, it must be noted that the gap between the richest group and the poorest group has widened. The access to health facility has improved more favor for the rich. As identified in the analysis, the poor find it difficult to access to health care in case of illness, due to their inability to pay for medical

services. In particular, increased share of household expenditure on health presents an alarming concern. The poor might be exposed to greater risks of deeper impoverishment in case of serious illness than before. Or they are less likely to seek care if they remain unable to pay for the cares. Given the analysis in this section, it appears that there has been slight improvement in access to health care, in particular physical access to a health facility, since the Health Sector Reform was initiated in 1998. Nonetheless, there still exist considerable challenges in improving in equity and efficiency in providing health care services. Additionally, the stewardship or leadership role of the MOPHP remains weak. The health section recommends three options for further consideration as below.

31. First, as the previous Poverty Assessment and the Bank's analysis of health inequality suggested, the Government of Yemen need to divert more of their resources to health sector and then apply more rigorous targeting to the poor segments of the society. This would be a policy option in a short-term. Currently, the government health program is still under funded with only 4.9%[26] of the government expenditure allocated to health. It would be advisable to increase the level of government expenditure to health close to some 10%. Provided that the level of the government funding is increased, efficiency of the government's health service provision must be strengthened and monitored at the same token. In the light of targeting the poor more aggressively, the current trend of decentralizing health care service provision would be beneficial and can encourage community level interventions. On the other hand, additional efforts need to be made to further streamline the planning and budgeting process and provision of basic health services, which often is one of the major bottle necks in the decentralization process. Continuous capacity building trainings would be pivotal for managers and health workers in the lower levels of the system. The disparity of geographical resource allocation and lack of rational methodology still persists. It is hoped that the analysis in this section provides a snapshot view of which segments of the society or which governorate needs priority interventions, especially in relation to improvement of assisted delivery, immunization and child malnutrition of which the 2005 HBS's questionnaire captured data.

32. Secondarily, in addition to strengthening the capacity of the MOHPH, it would be worthwhile examining efficacy of partnering with community-based organizations (CBOs) or non-governmental organizations (NGOs) for provisions of basic health care services. CBOs or NGOs are generally believed to effectively reach the poor or disadvantages groups of the society.

33. In regard to alleviating the financial barrier for the poor, one may argue that one option would be to introduce a national health insurance scheme. The Government of Yemen has been exploring possibilities of introducing a national health insurance program in the country with assistance from bilateral or multilateral donor agencies. The current version of Poverty Reduction Strategy Report and Five Year Plan support the idea of introducing the national health insurance plan. However, in reality, the country has experienced political and administrative setbacks in passing Health and Work Insurance

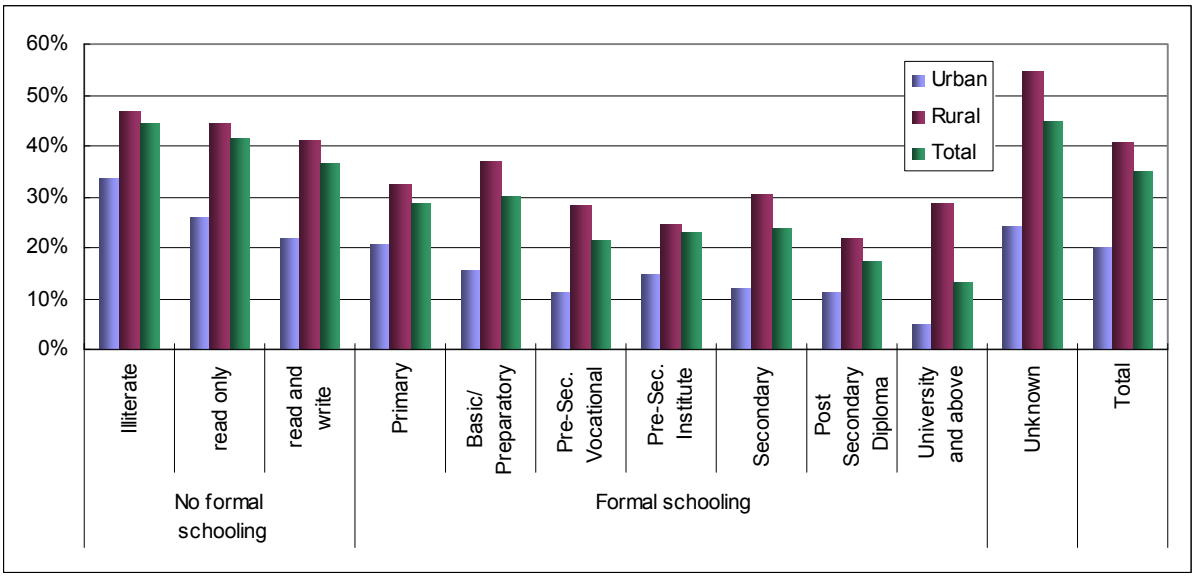
[26] Yemen National Health Accounts: Estimate for 2003, National Health Accounts Team, Republic of Yemen, Partners for Health Reformplus, June 2006

Law and Police Health Insurance Scheme and has not received sufficient support from the Cabinet and other parts of the society[27]. As a pilot basis, the Government of Yemen is trying to introduce a community-based health insurance in Al-Shamayatayn in the governorate of Taiz[28]. The initial results of the pilot scheme present that the community-based health insurance scheme may face a series of institutional constraints and challenges before it is becomes operational and is scaled-up to a larger population in context of Yemen. At this point of time, it appears that a cascaded approach, such as the short cycle of a formulation of framework, pilot scheme implementation, evaluation and adjustment of the framework will be more beneficial for Yemen at this point as the country still need to demonstrate a showcase to buy-in the interests and endorsement from relevant stakeholders. Provision of health insurance would be very important to remove the financial barriers to access health care among the poor, however, that will require a careful designing of the scheme and consensus building among the policy makers.

[27] Military Health Insurance Law was approved that requires contribution rates of 3% for soldiers and 5% for civilian officers.
[28] GTZ, WHO, World Bank and ILO, Towards a national health insurance in Yemen

ANNEX 7: EDUCATION

1. **Poverty rates are the highest for households headed by an illiterate person; the poverty rate decreased since 1998, but still remains large.** According to the 1998 HBS, the poverty rate for households headed by an illiterate person was 47.3% nationally, 48.8% in rural areas, 39.9% in urban areas. In 2005 HBS, these declined to 44%, 47%, and 34% respectively. The lowest poverty rate was found among the household headed by a person with university and above education although the poverty rate for urban and rural areas are very large: 5% to 29%.



2. **68.3% of the poor had no formal education.** Among the all the poor households, 49% of them are headed by the illiterate households, and cumulative share of households with household heads who has no formal education is 68.3%. The share decreased since 1998 when the cumulative share of this category was 86.7%.

Table 7.1: Educational attainment for the poor and non-poor by urban-rural status

		Non-poor			Poor		
		Urban	Rural	Total	Urban	Rural	Total
No formal schooling	***No formal education Total***	***35.9***	***58.2***	***50.7***	***59.9***	***69.9***	***68.3***
	Illiterate	21.6	39.3	33.4	43.5	50.1	49.1
	read only	2.3	4.7	3.9	3.2	5.4	5.1
	read and write	12.0	14.2	13.4	13.3	14.4	14.2
Formal schooling	***Formal education Total***	***61.8***	***40.3***	***47.6***	***37.2***	***27.4***	***29.0***
	Primary	14.2	13.1	13.5	14.9	9.1	10.0
	Basic/ Preparatory	11.9	9.7	10.5	8.7	8.3	8.4
	Pre-Sec. Vocational	0.9	0.6	0.7	0.5	0.3	0.3
	Pre-Sec. Institute	0.7	1.7	1.4	0.5	0.8	0.7
	Secondary	14.0	9.6	11.1	7.6	6.1	6.3
	Post Secondary Diploma	3.6	2.2	2.7	1.8	0.9	1.0
	University and above	16.5	3.5	7.8	3.3	2.0	2.2
Unknown		2.3	1.5	1.8	2.9	2.6	2.7
Total		**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

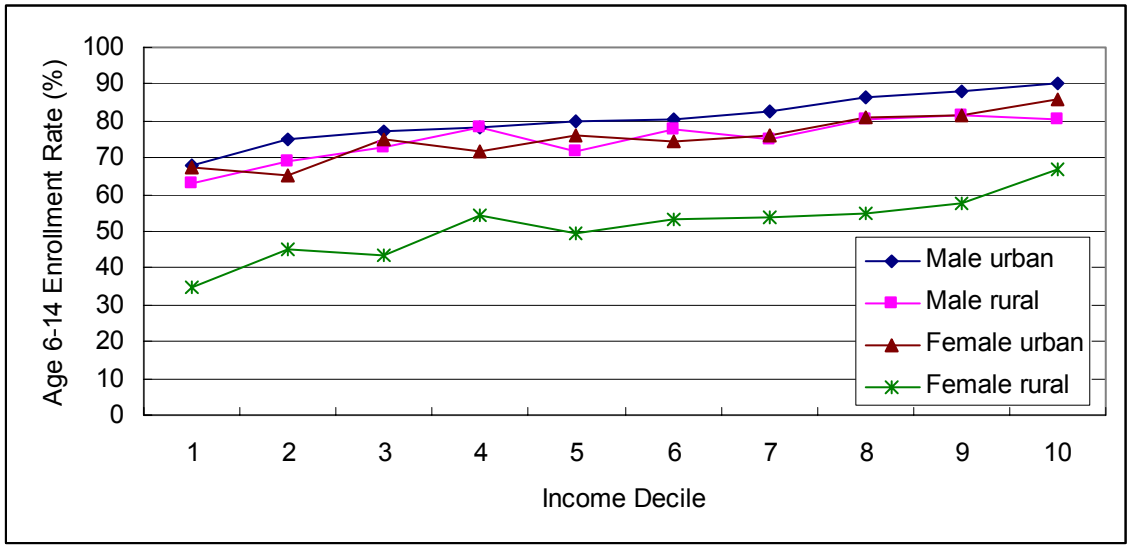
3. **The situation of enrollment among age 6-14 children improved overall with drastic pick up on rural girls' enrollment.** The overall enrollment rate of age 6-14 children increased from 60% in 1998 to 66% in 2005. This is achieved especially by an increase in the enrollment of rural girls. While the enrollment rate of boy increased from 75% to 76% between these two surveys, girls' enrollment increased from 43% to 56%. In the urban-rural perspective, while the urban enrollment rate remained at 81%, rural enrollment increased from 54% to 62%. This enrollment rate is not a gross enrollment rate (GER) nor a net enrollment rate (NER), but it is similar to NER[29]. It is important to note that the NER as calculated in MOE's statistics is slightly higher than what is discovered in the HBS. This difference implies that there are students who are officially registered in the schools, but they don't feel they are enrolled because they are not regularly attending school or they decided not to go to school anymore during the school year[30].

4. **Although the overall enrollment rate increased, the gap in enrollment rate between the poorest and the richest deciles are growing.** When the enrollment rate is calculated for each income decile, it is discovered that the enrollment rate for the poorest decile decreased and the richest declie increased. In 2005, 50 percent of the children aged 6-14 have access to school, which is down by 6 percentage point lower than HBS 1998 (56%). On the other hand the 82 percent of the richest children have access to school, which is up by 15 percentage point from HBS 1998 (67%). The trends in the urban-rural dimension gives a detailed description for this trend. While the enrollment rates in the poorest decile declined for both urban and rural areas by 5 percentage points each, the richest deciles increased enrollment by 1 percentage point in urban areas and by 21 percentage points in rural areas. From gender dimension, again the enrollment rate for the poorest decile declined for boys (by 6 percentage points) and girls (by 4 percentage points) whereas the enrollment rate of the richest decile increased for boys (by 3 percentage points) and girls (by 26 percentage points). From these patterns, the overall enrollment gain mainly occurred by the increase in enrollment of girls in rural rich households. As a number of schools are constructed in rural areas, rural population have gained more access to school. However, those who can go to school in the rural households are mainly the richest households.

5. **The reasons for not enrolling in school is widely unknown.** The statistics shows reasons for never enrolled and reasons for dropping out are 99% unknown for age 6-11. Although reasons for dropping out from school for age 12-14 children are reported, the responding behavior is too different from other questions. (It does not make sense that for age 12-14 children, reasons for never attending school shows 99% not-stated, and reasons for dropping out shows 9% not-stated.) The data quality must be re-checked.

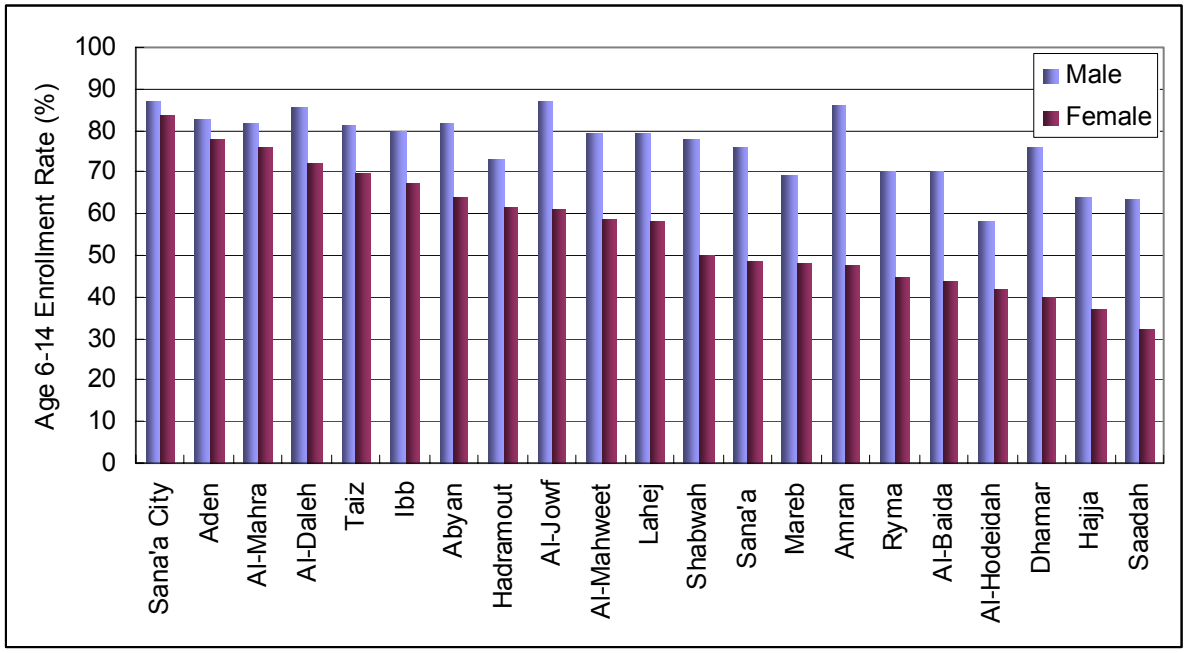
[29] It is not GER because it doesn't include enrollment of other ages (below 6 and above 14); it is not NER for basic education because some of the students registered as enrolled are in secondary schools.
[30] Another possible explanation is data error in either or both datasets. It is common to have different enrollment rates depending on the data source.

Figure 7.2: Age 6-14 Enrollment Rate by Income Decile, Gender, and Urban-Rural Status



6. **The gap in the enrollment rate by governorate still exists largely especially for girls.** Figure XX shows the enrollment rate of age 6-14 children by gender (Note this is not a basic education NER because it includes non-basic education students). Compared to NPS 1999, the gap between the highest and lowest girls' enrollment rate declined from 67 percentage points to 52 percentage points (Sana'a City 84%, Saadah 32%). Yet, disadvantage of certain governorates in terms of enrollment rate still persists. Boys' enrollment gap by governorate on the other hand is not as large, but it is still 29 percentage points (Sana'a City 87%, Al-Hodeidah 58%)

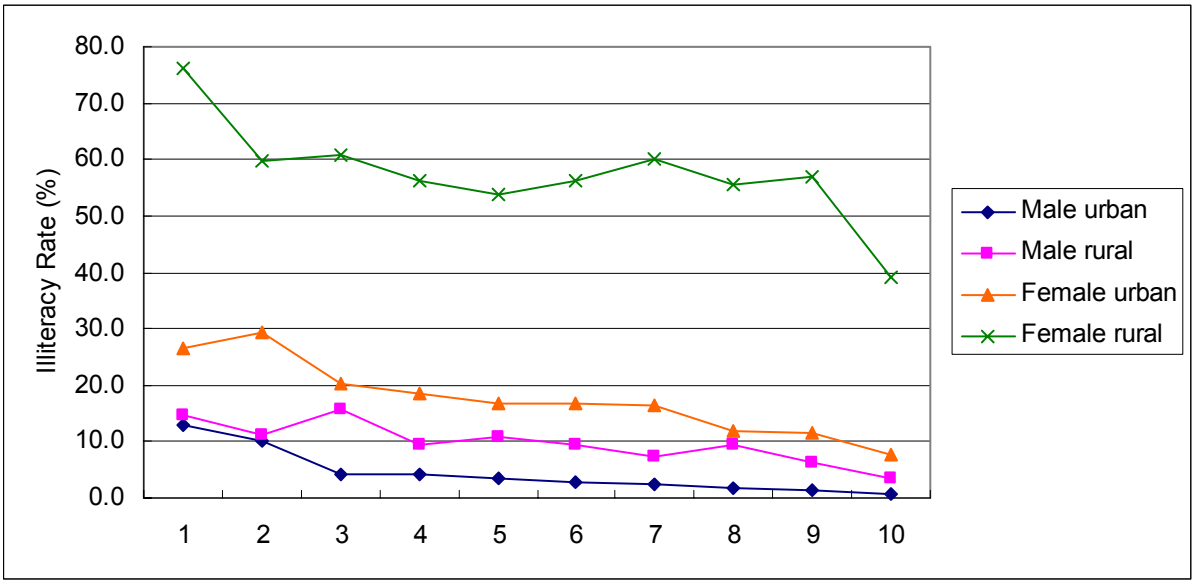
Figure 7.3: Age 6-14 Enrollment Rate by Governorate and Gender



Source: World Bank staff estimates based on 2005 HBS
Note: It is not an NER for Basic Education as it includes non-basic education students.

7. **Illiteracy rates for age 15-24 population has decreased overall due to significant decrease in illiteracy among rural females; however, urban illiteracy rate and male illiteracy rate have gone up.** Illiteracy rate among age 15-24 population decreased from 34.8% to 28.5% between 1998 and 2005 due largely to the decrease in the rural female illiteracy from 73.0% to 49.9%. However, male illiteracy rate has gone up both in urban (from 3.8% to 9.4%) and rural areas (from 14.9% to 19.1%).

Figure 7.4: Age 15-24 Illiteracy Rate by Income Decile, Gender, and Urban-Rural Status



Source: World Bank staff estimates based on 2005 HBS

ANNEX 8: IS PUBLIC EXPENDITURE TARGETING IN YEMEN PRO-POOR?

I IS PUBLIC EXPENDITURE TARGETING IN YEMEN PRO-POOR?

ABSTRACT

1. *Since 2000, Yemen has initiated an ambitious program of decentralization to strengthen roots of democracy. In this context, fears have been expressed that devolution of spending power could aggravate problems of fiscal management. However, decentralized authority in spending could help better target the poor in delivering public services. This paper is an attempt at examining targeting efficiency of aggregate public expenditure at decentralized levels. At the current stage of fiscal decentralization in Yemen, central government still makes budgetary decisions but only the execution is carried out locally. Examining targeting efficiency at decentralized levels requires data on expenditures and poverty at the decentralized level. Though expenditures at decentralized levels are readily available, reliable estimates of poverty are not. In the absence of a household survey designed to provide poverty estimates at sufficiently decentralized levels, the paper uses a method suggested by Ravallion (2000) to identify the latent differences in mean program allocations to the poor and non-poor using unmet basic needs measure of poverty constructed from census data (thus representative at any geographic level) .*

2. *The analysis finds evidence of anti-poor bias in public expenditure allocations. The poor receive YR 6290 (US $33) less than the non-poor in per-capita terms which is almost the same as the per-capita public expenditure on all Yemenis. Most of the anti-poor bias occurs at the level of governorates. At the governorate level, the poor get YR10,060 (US $52) per-capita less than the non-poor. Intra-governorate allocation of expenditures across districts offsets some of the anti-poor bias observed at the governorate level. Four of the 20 governorates (Taiz, Al-Hodeidah, Ibb and Hajjaah), accounting for about 40 percent of Yemen's population, allocate more to the poor than the non-poor, or, allocate equal amount. The worst five governorates in this respect are Shabwah, Amran, Sanaa, Lahj and Hadramout. To the extent that the observed inequity in governorate level expenditure allocation captures more than the higher cost of provision of services in inaccessible regions, Yemen could improve targeting efficiency of public expenditures.*

II BACKGROUND

3. Yemen, with its 20 million people and gross national income per-capita of US$ 510, is among the poorest countries in MENA. The incidence of poverty in Yemen was 41.8 percent at the national level, 45.0 percent in rural areas, and 30.8 percent in urban areas[31].

4. The country faces major constraints to sustainable and employment-generating growth as well as good public service delivery that stand in the way of rapid improvements in the quality of life of the poor[32]. The Government of Yemen is clearly committed to poverty reduction and has prepared a national poverty strategy that aims to reach the Millennium Development Goals (MDGs) by 2015. As a result of recent policy efforts, social indicators have gradually improved, but they still rank with some sub-Saharan African and South Asian countries.

5. Yemen faces the difficult challenge of ensuring the benefits of growth are distributed across poorer sections of society and improving the quality of public service delivery to the poor, particularly in rural areas. The recent poverty update for the country has concluded that though poverty is widespread nationally, it is pervasive in rural areas and concentrated in a few governorates. Public expenditures in education and health sectors were mildly pro-poor but did not address the magnitude of rural-urban and gender gaps. Almost all social programs were urban-biased and tended to benefit the non-poor. Benefit-incidence analysis of the social safety nets showed that their coverage was extremely limited, failed to address short-term downturns and vulnerability for the able-bodied poor and did not reach the poorest and most needy, especially children[33]. In this context, the effective targeting of public expenditures to the poor assumes critical importance.

[31] The figures refer to poverty estimates for 1998 reported in World Bank Poverty Update (2002a).

[32] See World Bank (2002b) – World Bank's most recent Country Assistance Strategy (CAS).

[33] Programs under the second phase of the Social Development Fund (SFD) were found to be pro-poor, but the inter-governorate distribution of both Public Work Programs(PWP) and Social Welfare Fund (SWF) allocations showed no signs of pro-poor targeting.

Box A.8. 1: Decentralization and the Promise of Equity

Yemen launched one of the most ambitious decentralization programs in the Middle East and North Africa when parliament passed the Local Authority Law in 2000. The law provides a mechanism for formalizing traditional democratic practices that have served Yemeni society well and can also help mitigate the trend in power concentration among a handful of shaykhs. Effective in May 2002, local councilors serve a five-year term; they represent 332 districts in 22 governorates. Teachers account for nearly 40 percent of those elected to district councils and shaykhs and civil servants each account for roughly 7 percent of office holders.[1] The overwhelming number of teachers among the ranks of council members suggests the electorate votes on the basis of perceived qualifications, rather than social status. Decentralized governance presents a potential for improved public delivery systems, is anchored in traditional systems of governance and has an important precedent in the popular Local Development Association movement that was active in the highlands during the 70s. The LDAs represented popularly elected councils established throughout the YAR. They collected funds and in-kind support from residents, non-resident migrant laborers, external donors and built schools, water projects, roads, health facilities with much greater reach than the state. Much of their funding came from locally collected zakat payments (5 percent of net resources calculated annually). The LDAs lost their earlier community based character and weakened as central control increased and zakat funds were transferred to the central government

Comparison of State and LDA Sponsored Development Projects[1]

Development Projects	**Development Projects**	**Development Projects**
Rural Projects, 1976	Rural Projects, 1976	Rural Projects, 1976
Roads, schools, water, 1981	Roads, schools, water, 1981	Roads, schools, water, 1981
Projects, 1986	Projects, 1986	Projects, 1986

6. Successful implementation of national poverty alleviation strategies is contingent on the effectiveness of regional governments. Even when a national government manages to redistribute its resources to relatively poor provinces, the capacity of regional governments to target the poor is an important factor. The outcome will depend on the behavior of provincial governments and the political economy they are confronted with, which will differ in relevant ways. Some governments will care more about the poor than others or will face different constraints in their efforts to reach the poor; indeed, simply having a high incidence of poverty can result in worse targeting by a local government as poorer provinces usually lack information about the identity of the poor (Ravallion 1999a). Not all regional governments are able to exploit the local information that decentralized decision making affords, while some will be better able to secure the gains.

7. In an effort to reform the public administration system, the Yemeni parliament approved the Local Authority Law (LAL) in 2000. LAL envisages local governance as one of the pillars of the state and provides the legal foundations for the Yemeni inter-governmental system. This shift from a centralized system that is being attempted, with ex ante controls, to a more decentralized system, with an emphasis on ex post monitoring, presents challenges as well as opportunities to fight poverty and improve the quality of public services. In this context, it is useful to understand the structure of inter-governmental fiscal system and the targeting efficiency of various levels of government and individual governorates. Such understanding would help better design incentive structures and exploit the opportunities offered by decentralization reforms in the near future for a stronger impact on poverty.

8. The potential benefits of fiscal decentralization in Yemen are considerable.[34] In a decentralized system, where locally elected governments have the power to pursue the agenda mandated by voters, citizen participation in decision-making processes cultivates a culture of democracy and transparency in public management system. Decentralized service delivery has the potential of reaching vulnerable groups and therefore reducing poverty. In order to address poverty and quality of service delivery, education and health are of vital importance. While social indicators in Yemen are improving, they still remain at low levels[35]. For instance, only 33 percent of rural girls are enrolled in school compared to 77 percent of rural boys and 78 percent of urban girls.[36] Improvement of rural girls enrollment is best addressed by local authorities – given that this is dependent not only on provision of schools but provision of sanitation as well. Rather than depending on the central ministries to coordinate these services together, sub-national governments are better able to identify these problems and the inter-linked services that are required to address these problems. Box 1 below explains the current status of fiscal decentralization in Yemen.[37,38,39]

9. The rest of this paper is organized in three sections. Section 2 presents the methodology used in this paper and derives from Ravallion's earlier work and provides the details of the decomposition of the national targeting differential into between and within governorate components. Section 3 describes the database created and used for the current analysis and explains the construction of the Unmet Basic Needs (UBN) Index that is used as a proxy to a

[34] Allen *et al* 2005 states a variety of reasons for which decentralization holds the promise of poverty alleviation and improved service delivery – a) Poverty is largely a rural phenomenon (in 1998 – half the rural population was poor compared to a third of urban population. 83 percent of Yemen's poor live in rural areas. b) The level of education has a strong correlation with poverty incidence, depth and severity. 87 percent of the poor are either illiterate or did not complete primary school. c) Geographic location significantly affects the risk of being poor. d) Children and women living in rural areas without access to education and health services rank highest among those people vulnerable to poverty. e) Almost all social programs are urban-biased and tend to benefit the better off.

[35] The case for fiscal decentralization in Yemen draws upon Allen *et al,* 2005.

[36] The rural-urban divide holds in other social sectors as well – While 80 percent of the urban population has access to health care services, only 25 percent of rural population is provided with health care. About 33 percent of the rural population has access to safe drinking water compared to 87 percent in urban areas.

[37] This box is based on Allen *et al*, 2005. We gratefully acknowledge the comments and clarifications provided by Richard Allen, Lead Public Sector Specialist and Monali Chowdhurie-Aziz, Senior Public Sector Specialist, MNSED, World Bank.

[38] In contrast to devolution , which is a transfer of authority for decision-making, finance and management to quasi-autonomous units of local government, deconcentration is a redistribution of decision making authority among different levels of the central government and is often considered the weakest form of decentralization and is used most frequently in unitary states. Within this structure, however, policies and opportunities for local input vary: deconcentration can merely shift responsibilities from central government officials in the capital city to those working in regions, provinces or districts, or it can create strong field administration or local administrative capacity under the supervision of central government ministries.

[39] The deconcentrated units are regarded as local organs and act as the administrative, technical, and executive organs of the local council and operate under the councils' supervision.

district level poverty index. Finally, section 4 concludes with the estimates of various targeting differentials and findings of the analysis.

Box A.8. 2: The Status of Fiscal Decentralization and Sub-National Expenditures in Yemen

The current Yemeni public administration system can be characterized as a from of deconcentration rather than one of devolved local self-government. Nevertheless, the system remains highly centralized, albeit equipped with an elaborate system of deconcentrated field offices of line agencies and democratically elected local councils. At this time, budget decisions for the most part are made by the central government and the role of sub-national authorities is largely confined to executing them and enjoy very limited fiscal autonomy.

The central government in Yemen is the senior partner in the intergovernmental relationship. The share of subnational government spending in Yemen compares favorably with other countries. However, this comparison is misleading because, although a large share of the expenditures is disbursed through subnational government, they have little decision-making power over current expenditures. Subnational government capital expenditures, in which they have a significant degree of autonomy, represents less than 1 percent of the GDP, which is very low by international standards. Table 1 below shows the share of subnational expenditures in GDP in Yemen. Sub-national expenditures in Yemen amounted for about 6.4 percent of GDP in 2004. Current expenditure is the largest item in local budgets. At 80 percent of current expenditures, and 70 percent of total expenditures, wages and salaries consume most of the budget

	2002*			2003**				2004***	
	Current	Capital	Total		Current	Capital	Total		Current
Expenditures	5.94	0.76	6.70	Expenditures	5.94	0.76	6.70	Expenditures	5.94

The Yemeni public administration system is divided into three levels: the center and sub national units--governorates and local districts. Following the LAL, Yemen was divided into local administrative units that include the Sana'a council, the governorates and the districts. As of today, there are 22 governorates and 332 districts both of which are called administrative units. Each administrative unit has its own local authority, which consists of the centrally appointed administrative head of the unit (either the governor at governorate level or the director at the district level), the elected local council at both governorate and district levels, and the "executive organs" (branch offices of the ministries and other government agencies).

As with the budget of central ministries, the MOF's budget circular provides general instructions to sub-national governments about their allocations using a process of incremental budgeting with a de-facto ceiling for wages and salaries, which are, by far, the largest share of current expenditures. These instructions are restrictive in that recurrent expenditures are given no flexibility to account for shifting sub-national government priorities. For example, they do not leave room for essential operation and maintenance (O&M) expenditures that has been historically under-budgeted.

III METHODOLOGY

10. Monitoring the performance of sub-national governments can provide the information base for the national government to design an incentive structure that encourages more equitable outcomes on poverty and provision of public services. However, the household level data necessary to examine the incidence and targeting effectiveness of public expenditures is not often available[40]. Ravallion (2000) addresses this problem by suggesting a method that allows an assessment of the degree to which spending tends to be targeted to the poor on an average. Targeting performance can be measured by exploiting the spatial variances in both public spending and poverty incidence across geographic areas.

11. The inter-regional targeting differential is estimated by regressing expenditure allocations across regions on the regional poverty measure. If a program is effectively reaching the poor, with little leakage to the non-poor, then the overall expenditure allocation across geographic areas will be highly correlated with the poverty rates across the same areas. Following Ravallion (2000), this property can be used to devise a measure of how well program allocations match the spatial poverty map in the form of an estimated mean difference in spending between the poor and non-poor. This national measure of targeting performance can also be decomposed into subgroups – between-region and within-region components - and thus help policymakers understand the sources of national targeting failures - between regions and within regions and further identifying the relative contribution of different provinces to the national targeting failure. Ravallion (2000) applied the method to assess Argentina's anti-poverty program's performance before and after reforms. Van de Walle (2005) has performed a similar analysis for Morocco on the basis of a provincial level database.

12. This paper applies the decomposition technique in the context of Yemen's public expenditure against the poverty map at the district level. The paper examines the distribution of spending across districts of Yemen and how well the poor are reached by public expenditure. This technique can be further extended to distinguish between differences in mean spending targeted to urban and rural areas as well as between North and South Yemen if one can demarcate these categories for all districts.

13. The equations to be estimated are:

(1) to estimate inter-district or national targeting differential:

$$G_{ij} - G = T^{D} (H_{ij} - H) + V_{ij}$$

(2) to estimate inter-governorate targeting differential:

$$G_{j} - G = T^{P}(H_{j} - H)$$

[40] See Alderman (2002) for an analysis of distributional and targeting outcomes of social expenditures in Albania on the basis of a household survey.

(3) to estimate intra-governorate targeting differentials (one equation for each governorate)

$$\mathbf{G_{ij} - G_j = T_j(H_{ij} - H_j) + V_{ij}}$$

Where G_{ij} = percapita allocation to district i in governorate j
G_j = percapita allocation to governorate j
G = national percapita allocation
H_{ij} = head count ratio in districti i in governorate j
H_j = head count ratio in governorate j
H = national headcount ratio
V_{ij} = error term
T_j = absolute difference between the average allocation to the poor and the the average allocation to the nonpoor in governorate j. Tj is also referred to as the intra-governorate targeting differential for governorate j.
T^P = Inter-governorate targeting differential
T^D = national targeting differential

A Decomposing the National Targeting Differential

14. We can estimate a national (inter-district) targeting differential, T^D, by regressing the values of Gij on Hij across all districts, irrespective of their governorate. The OLS estimate of the national targeting differential can be decomposed exactly into between-governorate and within-governorate components:

$$\hat{T}^D = S^P \hat{T}^P + \Sigma S_j \hat{T}_j$$

15. Where SP is the between-governorate share of the total (inter-district) variance in poverty rates, and Sj is the governorate-specific share. The first term on the right side of the equation is the "between-provinces" component, and the second term is the "within-province" component. Annex 1 provides the details including the calculation of the respective weights.

IV DATA ISSUES[41]

16. This method requires a disaggregated poverty map that predates and corresponds to expenditure disbursements for the same disaggregated geographic units. Since the available household budget survey data precludes analysis of public expenditure on poverty at the district

[41] All the public expenditure data used in the paper refer to fiscal allocations and not actual expenditures.

level, we infer expenditure incidence on poverty indirectly by juxtaposing the geographic distribution of public spending and the corresponding poverty map based on the Unmet Basic Needs (UBN) Index.

17. The empirical analysis draws on budget data from the Ministry of Finance (AFMIS Project Unit) for 2004[42]. Since further disaggregated data is not available on the expenditure side, the UBN index has been constructed using information from 1994 census data for 2126 sub-districts. From this data, a district level database (with 289 districts in all distributed across 20 governorates)[43] was created[44]. A concordance between the expenditure data for 2004 and UBN index for 1994 was constructed. [45] The population data used to obtain per-capita allocations was from 1994 census instead of 2004 census since a usable mapping of districts of the two censuses was not available[46]. The district classifications for 2004 budget data and the 2004 population census districts is not the same as they were created by different government agencies which were perhaps not coordinated.

B Construction of the UBN Index

18. The analysis requires data on disbursements by local government area and a corresponding poverty map. There are 289 districts in Yemen administered under 20 governorates. We do not have head count ratios (of consumption poverty) of districts based on household surveys that are designed to be representative at the district level. Hence we resort to

[42] Under the Civil Service Modernization Project being financed by a credit of $11.3 million from the World Bank, the Ministry of Finance has embarked on a project to design and implement and Accounting and Financial Management Information System (AFMIS). The AFMIS is expected to provide the full range of functionalities for budget preparation, execution, accounting and financial reporting. This is a tool and its effectiveness is dependent on a clear and coherent strategy for budget reform and fiscal decentralization. See, Allen *et al.*2005.

[43] However, the regressions were based on 287 districts only since expenditure data for two districts was missing. The districts with missing budget data are Attur in Hajja governorate and Khawlann in Sanaa governorate.

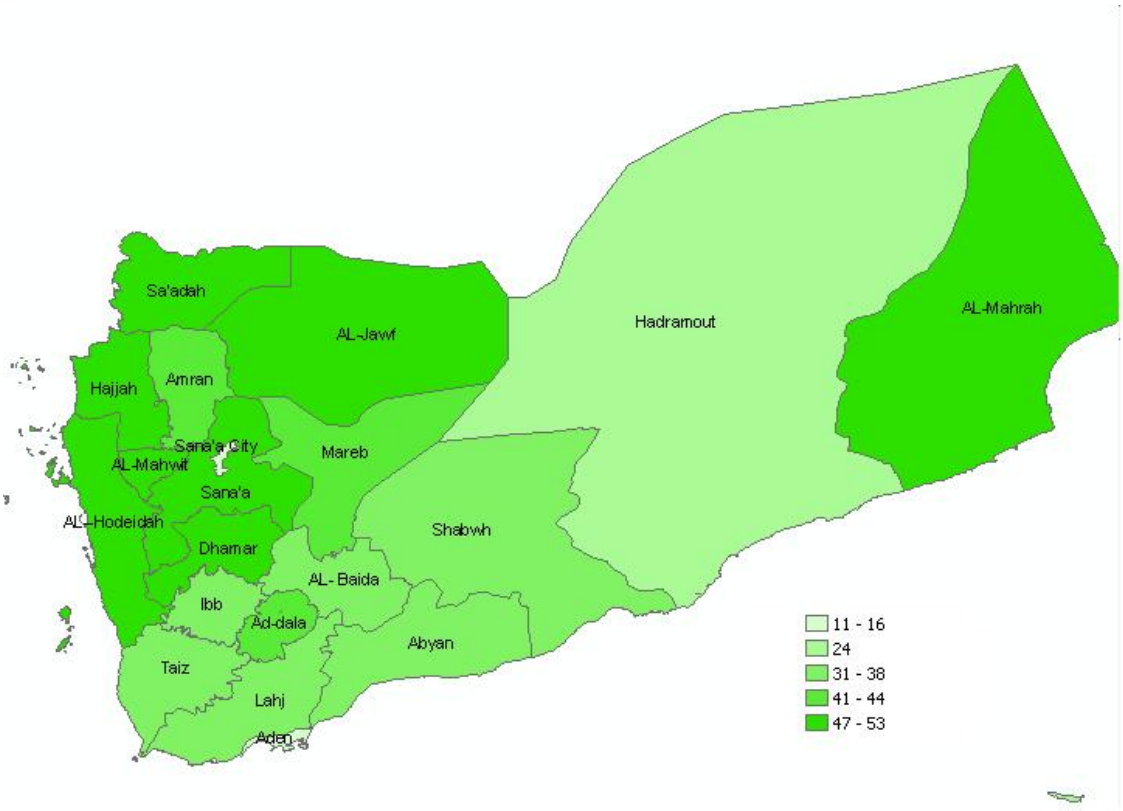
[44] Ideally, one would prefer to use a poverty index closer in time to the expenditure data as the assumption is that the current spending allocations are determined by the most recent information available regarding the poverty status of geographic areas. However, the Republic of Yemen came into existence as recently as 1991 and 1994 is the only year for which census data is available. The poverty estimates based on the household budget survey of 1998 can not be used since they are not representative at the district level.

[45] There have been several reclassifications and reassignment of territory in the intermittent period 1994-04. The district level concordance has been constructed after getting the original Arabic data files translated with some assistance from the Department of Statistics. However, for some governorates like Sanaa city, a near-perfect concordance was created, for several other governorates, the mapping may not be perfect. In cases, where a district that retained its name over the decade, may have lost territory in which case the expenditure is overstated. On the other hand, for districts that have gained territory expenditure would be understated.

[46] It is however, not possible to construct an exact concordance between the country classification in 1994 and 2004 without further assistance from GOY – There were 20 governorates and 289 districts in 1994 compared to 22 governorates and 332 districts in 2004.

a poverty measure that is possible to construct at the district level - the proportion of households with unmet basic needs (UBN), based on the 1994 census.

Figure A.8. 1: UBN Index by Governorate



Source: Staff estimates based on Republic of Yemen Census, 1994.
Note: The numbers indicate the percentage of population that does not have basic needs met.

19. The UBN index is constructed as a composite of housing quality, access to safe water, infant mortality, and educational attainment - literacy (of adults), school enrollment (of children). As opposed to a consumption measure of poverty, the UBN index measures the actual deprivation in select dimensions of quality of life (Box 2). All the four components are given equal weight age (with the subcomponents of education – literacy and enrollment sharing equal weights within educational attainment). Unmet basic need is measured against the benchmark need of 100 percent fulfillment. For example, the benchmark for safe water is that 100 percent of population should have safe water.

20. Since it is based on the census, the unmet basic needs index covers the whole population and is representative at the district level. (By contrast, none of the household surveys for

Yemen is representative at that level.)[47] The UBN index is the main poverty index we use as a proxy to the head count ratio of poverty for our analysis. This index has the advantage that one can safely treat it as exogenous to the public spending. While the composition and weighting of the component indicators are not beyond question, Ravallion (2000) has used this method for the analysis of Argentina's Trabajar program.

Box A.8. 3: Measuring Poverty

Poverty is pronounced deprivation in well-being. The commonly used consumption measure of poverty measures deprivation in the material (money-metric) dimension. Measuring deprivation in key social dimensions like health and education (as captured in the Unmet Basic Needs Index here) is an alternative and complementary measure of poverty. WDR (2000-01) extends the concept of deprivation beyond the aforementioned dimensions to include vulnerability to risk and exposure.

21. The relative positions of governorates on the basis of UBN index thus constructed (for 1994) and head count ratios (based on consumption poverty in 1998) do not exactly match. According the estimates of World Bank's 1998 poverty update for Yemen, the number of poor people as a percentage of the governorate population is highest in Taiz (56 percent), Ibb (55 percent), Abyan (53 percent), and Lahj (52 percent), but is also high in Dhamar (49 percent), Hadramout, Al-Mahrah and Shabwah (43 percent). The incidence of poverty is lowest in Al-Baida (15 percent) and Saddah (27 percent), and in the two major urban centers, Sana'a city (23 percent) and Aden (30 percent). The ranks match for some governorates like Sanaa city, Al-Mahrah, Sanaa and Dhamar. However, the classification of governorates for both these measures are not exactly comparable and the data do not belong to the same year.[48]

22. Expenditure data show that Al-Mahrah, Aden and Abyan have the highest expenditure allocations, Al-Baida Al- Jawf, and Al-Hodeidah seem to be allocated the least amount on a percapita basis (Table 3). In terms of the UBN index, Sanaa city and Aden are the best performers while Al-Hodeidah, Hajjah, Al-Jawf and Al-Mahwit have the highest UBN indices in the country[49] (Figure 1).

V FINDINGS

23. This section interprets the results of the regression analysis presented in Table 3 and summarizes the findings of the paper.

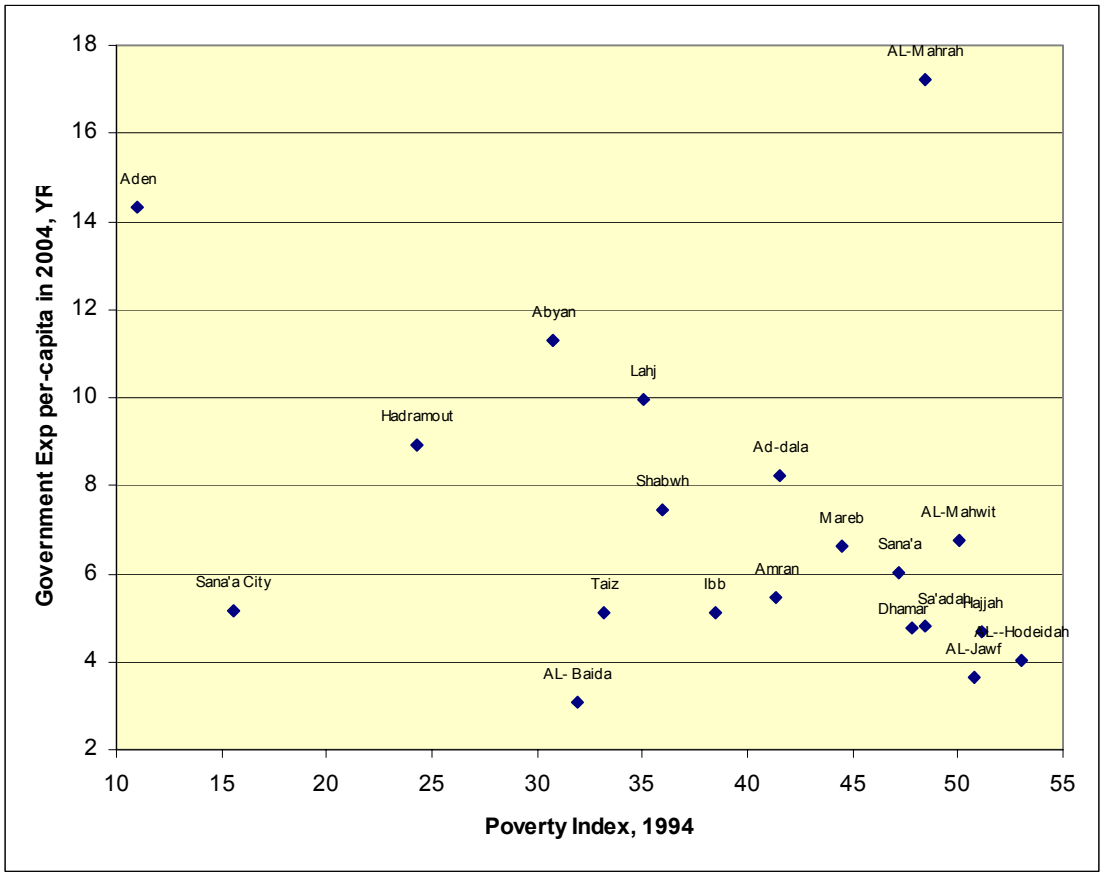
[47] Since the time of Yemen unification, the Central Statistical Organization (CSO) has implemented three household surveys: (i) the 1992 Household Budget Survey (HBS-92), (ii) the 1998 Household Budget Survey (HBS-98), and (iii) the 1999 National Poverty Phenomenon Survey (NPS-99).

[48] The head count ratios for consumption poverty in 1998 have been based on a classification of Yemen into 15 governorates and the UBN index for 1994 is constructed for a classification of Yemen into 20 governorates.

[49] See Annex 2 for exact estimates at the governorate level.

24. The analysis finds evidence of anti-poor bias in public expenditure allocations. The national targeting differential (T^D) for Yemen in 2004 is about 6290 Rials per person, i.e, the poor receive YR 6290 (US $33) less than the non-poor in per-capita terms which is almost the same as the per-capita public expenditure on all Yemenis[50] (Figure 3). The absolute level of targeting failure is substantial and there is a significant bias at the national level in government expenditure allocations against the poor. (t-ratio=-3.09) With a large of sample of 287 districts, the coefficient of targeting differential is negative and significant.

Figure A.8. 2: Public Expenditure per capita (2004) and UBN Index (1994)



Source: Department of Statistics (Census 1994) and Ministry of Finance (AFMIS Project Unit)

[50] This refers to public expenditure at the decentralized level and accounts for about 10 percent of all public expenditure in Yemen.

Table A.8. 1: Contributions to the National Targeting Differential
(in percent) [51]

Governorate	Contribution
Inter-governorate	**87.5**
Intra-governorate	**12.5**
Hadramout	6
Shabwh	4.3
Sana'a	4.2
Abyan	2.3
Lahj	2.3
AL-Jawf	1.9
Amran	1.8
AL-Mahwit	1.5
Aden	1.3
Mareb	1.3
SanaaCity	0.6
Ad-dala	0.4
AL- Baida	0.4
Ibb	0.2
Sa'adah	0.2
Hajjah	0
AL-Mahrah	-0.4
Dhamar	-2.1
AL—Hodeidah	-5.8
Taiz	-7.8
Yemen	**100**

Source: Staff estimates

25. The anti-poor bias at the governorate level can be evaluated through the inter-governorate regression[52,53].The results show that most of the anti-poor bias occurs at the level of governorates - the poor get YR 10,060 (US $52) per-capita less than the non-poor. The inter-governorate targeting differential (T^P) is significantly different from zero

[51] The decomposition of the national targeting differential into inter-governorate and intra-governorate components is exact and the contributions here are reported in percentages to offer magnitudes of relative importance and add up to 100 percent.

[52] This refers to equation 2 listed in the earlier section on methodology (Section 2).

[53] The estimate of T^P is weighted by the number of districts in each governorate. The weighting is done by multiplying all variables by the square root of the number of districts prior to running the regression of the Gjs on the Hjs across governorates. See Ravallion (1999) for details.

at the 10 percent level (t-ratio=-1.78)[54]. A scatter plot of expenditure per-capita (2004) and poverty index (1994) at governorate level (Figure 2) confirms the negative correlation (Correlation coefficient = -0.4553).

Table A.8. 2: Summary Results of the Regression Analysis by Govornate

	Targeting Differential	t-ratio	Per-capita expenditure allocations			N
			Total	Poor	Non-poor	
National	**-6.29**	**-3.09**	**5.94**	**2.12**	**8.41**	**287**
Inter-governorate	**-10.06**	**-1.78**				**20**
Intra-governorate						
AL-Mahrah	9.02	0.71	17.24	21.89	12.87	8
Taiz	7.25	1.34	5.1	9.94	2.69	18
Dhamar	5.05	0.74	4.79	7.42	2.37	9
AL--Hodeidah	3.1	1.46	4.03	5.49	2.39	22
Hajjah	0.09	0.03	4.67	4.72	4.62	28
Ibb	-0.57	-0.08	5.11	4.76	5.33	18
Sa'adah	-1.42	-0.29	4.79	4.06	5.48	14
AL- Baida	-2.11	-0.51	3.08	1.65	3.76	10
Ad-dala	-6	-0.52	8.22	4.71	10.71	9
Hadramout	-7.85	-2.02	8.92	2.98	10.83	28
Lahj	-11.48	-1.63	9.96	2.5	13.98	14
Sana'a	-12	-2.04	6.04	-0.29	11.71	18
AL-Mahwit	-13.34	-2.66	6.74	0.08	13.42	8
Amran	-16.35	-2.96	5.46	-4.13	12.22	19
Aden	-20.4	-1.59	14.34	-3.82	16.59	8
Mareb	-20.94	-1.07	6.63	-5	15.94	12
AL-Jawf	-21.38	-1.7	3.62	-6.9	14.48	12
Abyan	-23.31	-3.65	11.28	-4.86	18.45	10
Shabwh	-27.28	-3.69	7.47	-10	17.29	16
Sana'a City	-87.88	-1.3	5.17	-69.04	18.83	6

Source: Staff estimates

Notes:

1. Variables are regressed as deviations from relevant group means.
2. Negative sign means that targeting differential (TD) is against the poor. The poor get less than the non-poor.
3. Coefficient values (TDs) are in absolute units of 1000 Rials. For example, the second data row says that at the governorate level, the poor receive 10,060 Rials less than the non-poor.
4. N is the number of observations (districts/governorates) available for the regression.

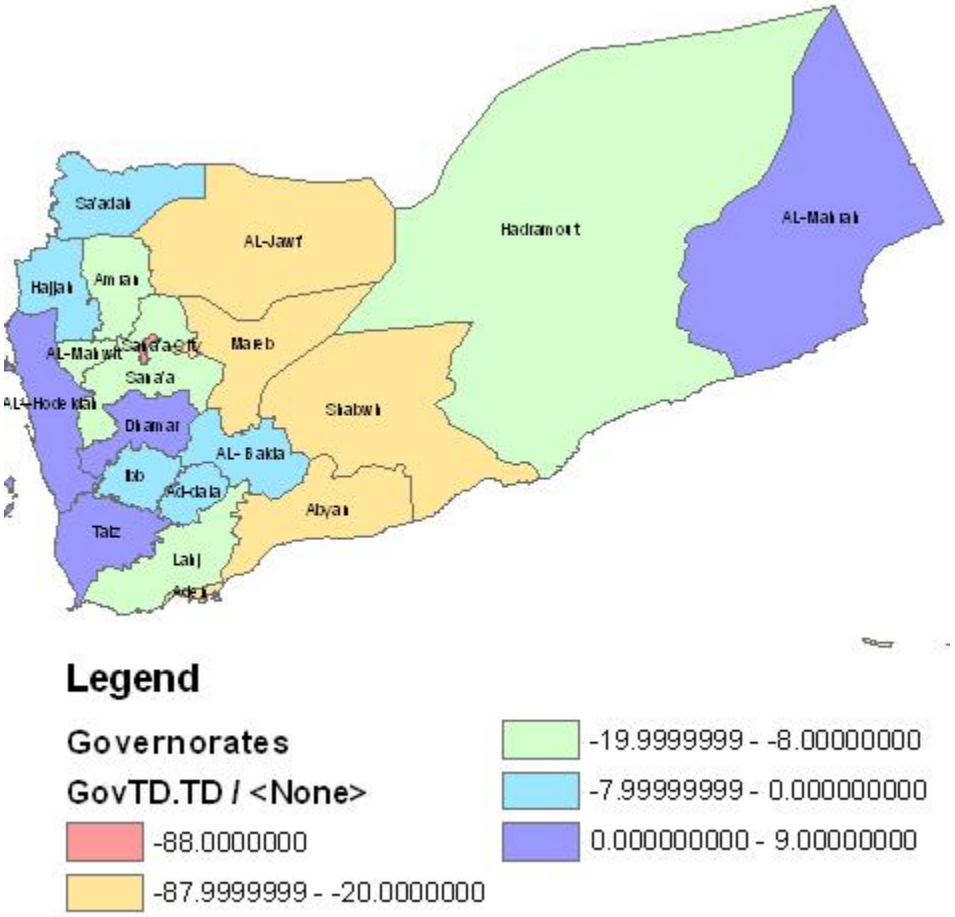
26. Intra-governorate allocation of expenditures across districts offsets some of the anti-poor bias observed at the governorate level. Four of the 20 governorates (Taiz, Al-Hodeidah, Ibb and Hajjaah), accounting for about 40 percent of Yemen's population, allocate more to the poor

[54] The regression is weighted for the purposes of decomposition of the total targeting failure into between and within governorate components.

than the non-poor, or, allocate equal amount. The worst five governorates in this respect are Shabwah, Amran, Sanaa, Lahj and Hadramout[55].

27. Analyses of public transfer programs in other countries also show that inter-regional targeting is often less pro-poor than intra-regional targeting (Alderman 2002 for Albania; Galasso and Ravallion 2005 for Bangladesh) which turns out to be the case in our analysis. Van de Walle (2002) assessed the incidence and targeting effectiveness of Yemen's safety net and poverty programs and arrived at a similar conclusion.

Figure A.8. 3: Targeting Differentials by Governorate *(in thousand Rials)*



Source: Staff estimates

[55] However, these results need to be used with caution because of the statistical significance of the results for some governorates. The coefficients for the inter-governorate targeting differential and those for Amran, Sanaa, Hadramout and Abyan are statistically significant (see Table 3).

Box A.8. 4: Explaining the Targeting Differentials: North-South and Urban-Rural Dimensions

Interesting insights emerge when the targeting differentials are analyzed from the North-South and rural-urban frames of reference. The Targeting differential is far more pronounced across the North-South dimension than the rural-urban dimension. While the North has bias neither for nor against the poor, the South has significantly anti-poor bias in per-capita allocation of expenditures.

North-South Dimension Historical factors could help explain this pronounced targeting differential along the North-South dimension. North and south Yemen were united into a single state - the Republic of Yemen - on 22 May 1990. This replaced the Yemen Arab Republic (YAR) in the north and the People's Democratic Republic of Yemen (PDRY) in the south. The South had lesser poverty at the time of unification compared to the North. We find that only 28.2 percent of the erstwhile PDRY's population was poor on the basis of the UBN index constructed for 1994 compared to 41.6 percent of the erstwhile YAR. However, public expenditure allocations for 2004 reveal that per-capita allocation to the South (YR 10,270) is nearly twice as much as that of the North (YR 4970). This could be due to the higher number of civil servants in the South that were inherited from the PDRY. Moreover, population is more dispersed raising the cost of public service delivery. Only about 2.64 million Yemenis (18 percent of total) live in the South (Table 4).

Figure 4 - UBN Index: North and South Yemen

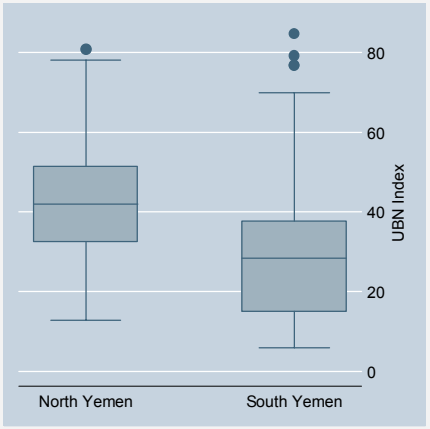
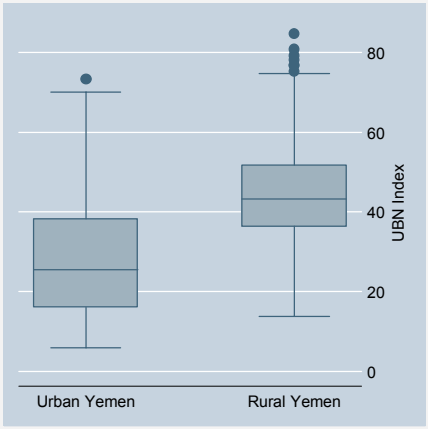


Figure 5 - UBN Index: Urban and Rural Yemen



Source: Staff estimates based on Dept. of Statistics (Census 1994) Data.
Note: The boxes contain the middle 50% of the data – the upper and lower hinges of the box indicates the 75th and 25th percentiles of the data. The line in a box indicates the median value and when it is not equidistant from the hinges, the data is skewed. The whiskers at the ends of the vertical lines indicate upper and lower adjacent values that are the extreme data points within 1.5 times the Inter-quartile Range of the nearer quartile.The points outside the ends of the whiskers are outliers. The UBN index across districts here is population-weighted.

Per-capita allocation of expenditure is significantly anti-poor in the south. The poor get YR 2020 per capita as against YR 13,510 that the non-poor receive. In the North, however, where 87 % of the total poor live, per-capita allocation is neutral between the poor and the non-poor. The main reason for the observed anti-poor bias of expenditures at the national level can be traced to the anti-poor allocations in the South.

Table A.8. 3: Summary Results of the Regression Analysis by North-South and Rural-Urban Districts

	Targeting Differential	t-ratio	Per-capita expenditure allocations			N	HCR	Population (in millions)
			Total	Poor	Non-poor			
National	-6.29	-3.09	5.94	2.12	8.41	287	39.2	14.38
Inter-group	-39.64					2		
Intra-group								
North Yemen	-0.19	-0.11	4.97	4.86	5.05	198	41.6	11.74
South Yemen	-11.49	-3.39	10.27	2.02	13.51	89	28.2	2.64
Inter-group	2.17					2		
Intra-group								
Urban	-9.50	-3.20	5.73	-0.98	8.51	51	29.3	5.07
Rural	-7.97	-5.25	6.06	1.64	9.61	236	44.5	9.31

Source: Staff estimates
Note: Targeting differential and per capita allocations in thousands of Rials.

28. Kanbur (2003) discusses the empirical and normative significance of such decompositions. It is suggested, based on a literature review, that whichever decomposition is done, it turns out that empirically, for gender (two groups) and race (usually less than five groups), the between group component is less than 15 percent. For space, it depends on how disaggregated a grouping is possible.[56] However, our results, based on spatial disaggregations, conclude otherwise[57]. Table 2 presents the relative contributions of between and within governorate components to the national targeting differential. The between-governorate component accounts for 87.5 percent of the national targeting differential. Thus, most of the anti-poor bias occurs at the level of allocations to the governorates.

29. It is instructive to look at the targeting differential along North-South and Urban-Rural dimensions. The North (capitalist) and South (socialist) Yemen had very different economic systems which were merged at the time of unification. Further, since two-thirds of Yemenis live in rural districts, it is also useful to investigate whether targeting differential has any urban-rural bias (Box 3).

30. While the results clearly indicate an anti-poor bias at the governorate level, it is not obvious why this is so. It will be worthwhile to know the decision making process behind the allocation of government expenditures to governorates and districts. In Yemen's case, there are several reasons that potentially explain the seemingly anti-poor bias of inter-governorate allocations. Big city infrastructure costs, lobbying, high cost of provision of public services in hilly governorates with dispersed population and bogus wage bills are among the factors that may explain some of this bias.

31. At the intra-governorate level, it is not surprising that some governorates are better at pro - poor allocation, since there is no uniformity and capacity varies across governorates. Since most of the spending at the governorate level is the de-concentrated line ministry spending, analysis and decomposition at the ministry level expenditures may offer better explanations.

32. The national government presumably has more control on redirecting resources to the poor governorates (relative to influencing targeting within governorates) and hence possesses greater leverage on influencing the national targeting differential through the inter-governorate targeting differential. To the extent that the observed inequity in governorate level expenditure allocation captures more than the higher cost of provision of services in inaccessible regions, Yemen could improve targeting efficiency of public expenditures.

[56] For example, for rural Peru, it requires going below Region, below Province, and below Canton to the Parroquia level (there are 915 of these units), for the between group component still to rise only to 15 percent. See Elbers *et al.* (2002)

[57] There is also a technical question of the extent to which the number of groups in any given classification affects the between groups component. Clearly, if groups are subdivided into further subgroups, the between group component will increase for this reason alone. See Kanbur (2003).

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ANNEX 1: DECOMPOSITION OF THE NATIONAL POOR-AREA TARGETING DIFFERENTIAL

Decomposition: $\hat{T}^D = S^P \hat{T}^P + \Sigma S_j \hat{T}_j$

Targeting differentials[a] Weights[b]

Inter-district $$\hat{T}^D \equiv \frac{\Sigma\Sigma(G_{ij} - G)(H_{ij} - H)f_{ij}}{\Sigma\Sigma(H_{ij} - H)^2 f_{ij}} \quad -1$$

Inter-governorate $$\hat{T}^P \equiv \frac{\Sigma M_j (G_j - G)(H_j - H) f_j}{\Sigma M_j (H_j - H)^2 f_j} \quad S^P \equiv \frac{\Sigma M_j (H_j - H)^2 f_j}{\Sigma\Sigma(H_{ij} - H)^2 f_{ij}}$$

Intra-governorate $$\hat{T}_j \equiv \frac{\sum_{i=1}^{M_j}(G_{ij} - G_j)(H_{ij} - H_j) f_{ij}}{\sum_{i=1}^{M_j}(H_{ij} - H_j)^2 f_{ij}} \quad S_j \equiv \frac{\sum_{i=1}^{M_j}(H_{ij} - H_j)^2 f_{ij}}{\Sigma\Sigma(H_{ij} - H)^2 f_{ij}}$$

Notes: G_{ij} is public expenditure percapita in the ith district of the jth governorate. The mean for that governorate is G_j, and the national mean is G. Governorate j contains M_j districts. H_{ij} is the Unmet Basic Needs (UBN) Index (used as a proxy for the head count ratio of consumption poverty) in the ith district of governorate j, with governorate mean H_j and national mean H. f_{ij} refers to the population of the ith district of the jth governorate and f_j refers to the population of governorate j. Indexing of the summations is only given when there is any ambiguity.

a. Regression coefficients of public spending on the UBN indices across geographic areas
b. Shares of the geographic variance of unmet basic needs.

Based on: Ravallion 2000.

ANNEX 2: UBN INDEX BY GOVERNORATE

Governorate	UBN Index
Abyan	30.8
Ad-dala	41.6
Aden	11.0
AL- Baida	31.9
AL--Hodeidah	53.0
AL-Jawf	50.8
AL-Mahrah	48.5
AL-Mahwit	50.1
Amran	41.4
Dhamar	47.8
Hadramout	24.3
Hajjah	51.2
Ibb	38.5
Lahj	35.0
Mareb	44.5
Sa'adah	48.5
Sana'a	47.2
Shabwh	36.0
Taiz	33.2
Sana'a City	15.5
YEMEN	**39.2**

Source: Department of Statistics (Census 1994)

ANNEX 9: CONSTRUCTION OF SOCIAL ACCOUNTING MATRIX

Social Accounting Matrix for Yemen Millions Rial, 2005			Activities 1	2	3	4	5	6
Receipts \ Payments			A-Agriculture	Mining and quarry	A-Food	everage and tobac	extile and clothe	ther and its produ
Activities	1	A-Agriculture						
	2	A-Mining and quarrying						
	3	A-Food						
	4	A-beverage and tobacco						
	5	A-textile and clothes						
	6	A-leather and its products						
	7	A-wood and its product						
	8	A-paper and printing						
	9	A-oil refineries						
	10	A-chemical and fertilizer						
	11	A-rubber industry						
	12	A-non-metallic						
	13	A-metal and iron products						
	14	A-electrical and medical equipments						
	15	A-transportation						
	16	A-furniture						
	17	A-Electricity, Water and Gas						
	18	A-Construction						
	19	A-trade						
	20	A-Restaurants and Hotels						
	21	A-Transport, Storage & Communications						
	22	A-Financial Institutions & Real Estate						
	23	A-Real Estate & Business Serv.						
	24	A-Other services						
	25	A-Public administration						
Commodit	1	C-Agriculture	106,345	32	34,926	490	382	231
	2	C-Mining and quarrying		33,571	92	0	5	
	3	C-Food	341		22,208	2,929	8	1
	4	C-beverage and tobacco		998		3,773		
	5	C-textile and clothes	1,039	25	203	18	1,126	0
	6	C-leather and its products					0	692
	7	C-wood and its product	57		3	1	2	0
	8	C-paper and printing	144	1,758	3,982	913	95	15
	9	C-oil refineries	38,458	98,113	6,705	686	546	26
	10	C-chemical and fertilizer	16,887	56	318	663	86	484
	11	C-rubber industry	498	1,070	345	126	35	2
	12	C-non-metallic	28	1,995	289	500		
	13	C-metal and iron products		14				
	14	C-electrical and medical equipments	533	341	358	43	10	2
	15	C-transportation	110	1,625	39	17	11	3
	16	C-furniture	1,451	2,147	459	114	171	3
	17	C-Electricity, Water and Gas	170	164	361	95	130	25
	18	C-Construction	10,267	7,518	6,686	496	431	24
	19	C-trade	51,013	78,942	10,369	4,247	2,568	726
	20	C-Restaurants and Hotels		5,605	958		28	
	21	C-Transport, Storage & Communications	19,813	32,849	13,871	1,261	890	134
	22	C-Financial Institutions & Real Estate	11,931	33,320	4,969	350	260	20
	23	C-Real Estate & Business Serv.	874	993	497	127	65	29
	24	C-Other services	3,376	1,938	890	14	36	1

		7	8	9	10	11	12	13
		A-wood and its produ	paper and printing	A-oil refineries	emical and fertiliz	-rubber industry	A-non-metallic	tal and iron produ
1	A-Agriculture							
2	A-Mining and quarrying							
3	A-Food							
4	A-beverage and tobacco							
5	A-textile and clothes							
6	A-leather and its products							
7	A-wood and its product							
8	A-paper and printing							
9	A-oil refineries							
10	A-chemical and fertilizer							
11	A-rubber industry							
12	A-non-metallic							
13	A-metal and iron products							
14	A-electrical and medical equipments							
15	A-transportation							
16	A-furniture							
17	A-Electricity, Water and Gas							
18	A-Construction							
19	A-trade							
20	A-Restaurants and Hotels							
21	A-Transport, Storage & Communications							
22	A-Financial Institutions & Real Estate							
23	A-Real Estate & Business Serv.							
24	A-Other services							
25	A-Public administration							
1	C-Agriculture	44	47		243	119	185	
2	C-Mining and quarrying	0	0	288,413	60	95	935	667
3	C-Food	4	26	11	51			2
4	C-beverage and tobacco							
5	C-textile and clothes	4	4		2	142	1	0
6	C-leather and its products				0	17		
7	C-wood and its product	2,395	57		22	0	3	5
8	C-paper and printing	2	5,379	82	51	31	875	126
9	C-oil refineries	84	32	76,248	118	98	512	184
10	C-chemical and fertilizer	34	165	3,724	1,277	1,489	33	65
11	C-rubber industry	276	2	255	59	780	62	36
12	C-non-metallic	16	9	5,405	56		6,426	1,150
13	C-metal and iron products	15			0	134	132	4,920
14	C-electrical and medical equipments	5	4	65	12	12	27	39
15	C-transportation	3	2	115	3	12	55	18
16	C-furniture	23	0	6,428	16	7	197	8
17	C-Electricity, Water and Gas	6	50	8,336	35	30	332	429
18	C-Construction	31	11	3,178	60	306	1,536	686
19	C-trade	446	447	53,184	1,629	2,984	1,585	1,287
20	C-Restaurants and Hotels			3,037		21		
21	C-Transport, Storage & Communications	204	161	23,895	176	548	2,474	1,447
22	C-Financial Institutions & Real Estate	9	7	1,348	30	115	1,371	815
23	C-Real Estate & Business Serv.	9	31	1,300	5	159	31	146
24	C-Other services	3	2	84	3	20	46	94
25	C-Public administration							
1	Paid-Public-Urban	21	141	1,893	28		715	

	21	22	23	24	25
	A-Transport, Storage & Comul	Institutions & R	Estate & Busines:	A-Other services	Public administrat
A-Agriculture					
A-Mining and quarrying					
A-Food					
A-beverage and tobacco					
A-textile and clothes					
A-leather and its products					
A-wood and its product					
A-paper and printing					
A-oil refineries					
A-chemical and fertilizer					
A-rubber industry					
A-non-metallic					
A-metal and iron products					
A-electrical and medical equipments					
A-transportation					
A-furniture					
A-Electricity, Water and Gas					
A-Construction					
A-trade					
A-Restaurants and Hotels					
A-Transport, Storage & Communications					
A-Financial Institutions & Real Estate					
A-Real Estate & Business Serv.					
A-Other services					
A-Public administration					
C-Agriculture	153			586	14,033
C-Mining and quarrying				0	
C-Food				315	9,134
C-beverage and tobacco	224		3	5	127
C-textile and clothes	19		1	313	4,096
C-leather and its products				211	954
C-wood and its product	15		5	24	1,596
C-paper and printing	2,426	581	527	1,685	4,274
C-oil refineries	58,900	36	332	7,052	21,561
C-chemical and fertilizer	1,040		433	6,534	1,869
C-rubber industry	13,991	16	70	308	41
C-non-metallic		1	1,931	59	18,097
C-metal and iron products				165	6,961
C-electrical and medical equipments	1,141		139	967	124
C-transportation	7,547	4	142	935	413
C-furniture	241	8	12	791	455
C-Electricity, Water and Gas	1,067	46	40	804	2,266
C-Construction	12,698	583	232	6,225	15,666
C-trade	68,250	73	1,594	22,507	11,326
C-Restaurants and Hotels	6,994	86		174	12,641
C-Transport, Storage & Communications	71,164	848	5,960	9,358	177,737
C-Financial Institutions & Real Estate	2,314	5,766	339	1,149	4,097
C-Real Estate & Business Serv.	8,261	196	1,116	2,355	14,390
C-Other services	484	51	2,649	5,341	1,238
C-Public administration					17,977
Paid-Public-Urban	6,864	3,332	68	3,308	139,747

or Yemen	Commodities						
	1	2	3	4	5	6	7
	C-Agriculture	Mining and quarryi	C-Food	everage and tobac	extile and clothe	ther and its produ	ood and its produ
A-Agriculture	597,291						
A-Mining and quarrying		1,454,669					
A-Food			185,882				
A-beverage and tobacco				30,427			
A-textile and clothes					19,703		
A-leather and its products						4,160	
A-wood and its product							10,216
A-paper and printing							
A-oil refineries							
A-chemical and fertilizer							
A-rubber industry							
A-non-metallic							
A-metal and iron products							
A-electrical and medical equipments							
A-transportation							
A-furniture							
A-Electricity, Water and Gas							
A-Construction							
A-trade							
A-Restaurants and Hotels							
A-Transport, Storage & Communications							
A-Financial Institutions & Real Estate							
A-Real Estate & Business Serv.							
A-Other services							
A-Public administration							
C-Agriculture							
C-Mining and quarrying							
C-Food							
C-beverage and tobacco							
C-textile and clothes							
C-leather and its products							
C-wood and its product							
C-paper and printing							
C-oil refineries							
C-chemical and fertilizer							
C-rubber industry							
C-non-metallic							
C-metal and iron products							
C-electrical and medical equipments							
C-transportation							
C-furniture							
C-Electricity, Water and Gas							
C-Construction							
C-trade							
C-Restaurants and Hotels							
C-Transport, Storage & Communications							
C-Financial Institutions & Real Estate							
C-Real Estate & Business Serv.							
C-Other services							

	8	9	10	11	12	13
	C-paper and printing	C-oil refineries	emical and fertiliz	-rubber industry	C-non-metallic	tal and iron produ
A-Agriculture						
A-Mining and quarrying						
A-Food						
A-beverage and tobacco						
A-textile and clothes						
A-leather and its products						
A-wood and its product						
A-paper and printing	16,827					
A-oil refineries		276,358				
A-chemical and fertilizer			6,369			
A-rubber industry				12,486		
A-non-metallic					59,914	
A-metal and iron products						38,093
A-electrical and medical equipments						
A-transportation						
A-furniture						
A-Electricity, Water and Gas						
A-Construction						
A-trade						
A-Restaurants and Hotels						
A-Transport, Storage & Communications						
A-Financial Institutions & Real Estate						
A-Real Estate & Business Serv.						
A-Other services						
A-Public administration						
C-Agriculture						
C-Mining and quarrying						
C-Food						
C-beverage and tobacco						
C-textile and clothes						
C-leather and its products						
C-wood and its product						
C-paper and printing						
C-oil refineries						
C-chemical and fertilizer						
C-rubber industry						
C-non-metallic						
C-metal and iron products						
C-electrical and medical equipments						
C-transportation						
C-furniture						
C-Electricity, Water and Gas						
C-Construction						
C-trade						
C-Restaurants and Hotels						
C-Transport, Storage & Communications						
C-Financial Institutions & Real Estate						
C-Real Estate & Business Serv.						
C-Other services						
C-Public administration						
Paid-Public-Urban						

	14	15	16	17	18	19	20
	C-electrical and medical eq	C-transportation	C-furniture	ctricity, Water an	C-Construction	C-trade	estaurants and Ho
A-Agriculture							
A-Mining and quarrying							
A-Food							
A-beverage and tobacco							
A-textile and clothes							
A-leather and its products							
A-wood and its product							
A-paper and printing							
A-oil refineries							
A-chemical and fertilizer							
A-rubber industry							
A-non-metallic							
A-metal and iron products							
A-electrical and medical equipments	2,340						
A-transportation		956					
A-furniture			8,390				
A-Electricity, Water and Gas				51,274			
A-Construction					367,714		
A-trade						462,004	
A-Restaurants and Hotels							82,704
A-Transport, Storage & Communications							
A-Financial Institutions & Real Estate							
A-Real Estate & Business Serv.							
A-Other services							
A-Public administration							
C-Agriculture							
C-Mining and quarrying							
C-Food							
C-beverage and tobacco							
C-textile and clothes							
C-leather and its products							
C-wood and its product							
C-paper and printing							
C-oil refineries							
C-chemical and fertilizer							
C-rubber industry							
C-non-metallic							
C-metal and iron products							
C-electrical and medical equipments							
C-transportation							
C-furniture							
C-Electricity, Water and Gas							
C-Construction							
C-trade							
C-Restaurants and Hotels							
C-Transport, Storage & Communications							
C-Financial Institutions & Real Estate							
C-Real Estate & Business Serv.							
C-Other services							
C-Public administration							
Paid-Public-Urban							

	21	22	23	24	25
	C-Transport, Storage & Comm	Institutions & R	Estate & Busines	C-Other services	Public administrat
A-Agriculture					
A-Mining and quarrying					
A-Food					
A-beverage and tobacco					
A-textile and clothes					
A-leather and its products					
A-wood and its product					
A-paper and printing					
A-oil refineries					
A-chemical and fertilizer					
A-rubber industry					
A-non-metallic					
A-metal and iron products					
A-electrical and medical equipments					
A-transportation					
A-furniture					
A-Electricity, Water and Gas					
A-Construction					
A-trade					
A-Restaurants and Hotels					
A-Transport, Storage & Communications	607,754				
A-Financial Institutions & Real Estate		95,374			
A-Real Estate & Business Serv.			133,059		
A-Other services				70,908	
A-Public administration					656,813
C-Agriculture					
C-Mining and quarrying					
C-Food					
C-beverage and tobacco					
C-textile and clothes					
C-leather and its products					
C-wood and its product					
C-paper and printing					
C-oil refineries					
C-chemical and fertilizer					
C-rubber industry					
C-non-metallic					
C-metal and iron products					
C-electrical and medical equipments					
C-transportation					
C-furniture					
C-Electricity, Water and Gas					
C-Construction					
C-trade					
C-Restaurants and Hotels					
C-Transport, Storage & Communications					
C-Financial Institutions & Real Estate					
C-Real Estate & Business Serv.					
C-Other services					
C-Public administration					
Paid-Public-Urban					

or Yemen	Labor				Capital	Households
	1	2	3	4	1	1
	Paid-Public-Urban	Paid-Public-Rural	Paid-Private-Urban	Paid-Private-Rural	Capital	Urban Households
A-Agriculture						
A-Mining and quarrying						
A-Food						
A-beverage and tobacco						
A-textile and clothes						
A-leather and its products						
A-wood and its product						
A-paper and printing						
A-oil refineries						
A-chemical and fertilizer						
A-rubber industry						
A-non-metallic						
A-metal and iron products						
A-electrical and medical equipments						
A-transportation						
A-furniture						
A-Electricity, Water and Gas						
A-Construction						
A-trade						
A-Restaurants and Hotels						
A-Transport, Storage & Communications						
A-Financial Institutions & Real Estate						
A-Real Estate & Business Serv.						
A-Other services						
A-Public administration						
C-Agriculture						220,525
C-Mining and quarrying						
C-Food						55,181
C-beverage and tobacco						13,267
C-textile and clothes						17,837
C-leather and its products						1,038
C-wood and its product						
C-paper and printing						2,125
C-oil refineries						13,100
C-chemical and fertilizer						14,797
C-rubber industry						5,038
C-non-metallic						3,304
C-metal and iron products						13,072
C-electrical and medical equipments						490
C-transportation						3,910
C-furniture						1,101
C-Electricity, Water and Gas						17,084
C-Construction						
C-trade						43,931
C-Restaurants and Hotels						28,795
C-Transport, Storage & Communications						164,161
C-Financial Institutions & Real Estate						
C-Real Estate & Business Serv.						50,271
C-Other services						17,915

or Yemen		Government			
	2	1	2	3	4
	Rural-Households	Government	Indirect Taxes	Subsidies	Duties
A-Agriculture				4,423	
A-Mining and quarrying					
A-Food				2,739	
A-beverage and tobacco					
A-textile and clothes					
A-leather and its products					
A-wood and its product					
A-paper and printing					
A-oil refineries				213,935	
A-chemical and fertilizer					
A-rubber industry					
A-non-metallic					
A-metal and iron products					
A-electrical and medical equipments					
A-transportation					
A-furniture					
A-Electricity, Water and Gas				17,497	
A-Construction				4,023	
A-trade					
A-Restaurants and Hotels					
A-Transport, Storage & Communications				1,691	
A-Financial Institutions & Real Estate					
A-Real Estate & Business Serv.					
A-Other services				41,691	
A-Public administration					
C-Agriculture	490,255				
C-Mining and quarrying					
C-Food	150,165				
C-beverage and tobacco	21,536				
C-textile and clothes	28,233				
C-leather and its products	2,112				
C-wood and its product	11,061				
C-paper and printing	937				
C-oil refineries	21,800				
C-chemical and fertilizer	23,109				
C-rubber industry	10,307				
C-non-metallic	3,876				
C-metal and iron products	8,868				
C-electrical and medical equipments	366				
C-transportation	2,822				
C-furniture	421				
C-Electricity, Water and Gas	18,075				
C-Construction					
C-trade	77,709				
C-Restaurants and Hotels	21,754				
C-Transport, Storage & Communications	150,350				
C-Financial Institutions & Real Estate					
C-Real Estate & Business Serv.	44,408				
C-Other services	26,142	8,956			

or Yemen	Capital account		Rest of World	Residual	Total
	1	2	1	1	
	Saving-Investment	Stock-variations	Row		
A-Agriculture					601,714
A-Mining and quarrying					1,454,669
A-Food					188,621
A-beverage and tobacco					30,427
A-textile and clothes					19,703
A-leather and its products					4,160
A-wood and its product					10,216
A-paper and printing					16,827
A-oil refineries					490,293
A-chemical and fertilizer					6,369
A-rubber industry					12,486
A-non-metallic					59,914
A-metal and iron products					38,093
A-electrical and medical equipments					2,340
A-transportation					956
A-furniture					8,390
A-Electricity, Water and Gas					68,771
A-Construction					371,738
A-trade					462,004
A-Restaurants and Hotels					82,704
A-Transport, Storage & Communications					609,445
A-Financial Institutions & Real Estate					95,374
A-Real Estate & Business Serv.					133,059
A-Other services				0	112,600
A-Public administration					656,813
C-Agriculture			28,351	7,248	916,602
C-Mining and quarrying		75,538	1,051,730		1,456,102
C-Food		52,172	24,256	2,106	324,324
C-beverage and tobacco			4,585	351	47,171
C-textile and clothes			267	465	54,799
C-leather and its products		2,072	1,377	32	8,510
C-wood and its product			26	118	31,750
C-paper and printing		23,115	784	30	60,548
C-oil refineries		48,799	78,789	-16,072	477,331
C-chemical and fertilizer		80	4,472	382	80,255
C-rubber industry			547	156	39,974
C-non-metallic			793	72	98,019
C-metal and iron products	120,000	9,510	30,449	215	217,161
C-electrical and medical equipments	97,208		1,215	8	103,817
C-transportation	71,116		455	66	90,513
C-furniture	14,782		678	15	29,801
C-Electricity, Water and Gas				350	51,274
C-Construction	275,346			0	367,714
C-trade				-1,012	462,004
C-Restaurants and Hotels				497	82,704
C-Transport, Storage & Communications			75,057	3,113	832,899
C-Financial Institutions & Real Estate			7,201		116,975
C-Real Estate & Business Serv.				936	133,059
C-Other services				443	70,908

ANNEX 10. UPDATES OF THE INPUT/OUTPUT TABLE FOR 2005

I IO AND SAM TABLES FOR THE YEMENI ECONOMY

I TECHNICAL NOTE

1. Properties and advantages of IO and SAM tables are well established in the recent literature on policy simulation modeling. They provide a comprehensive and consistent data foundation. An IO table describes quantitatively the sectoral transactions taking place in an economy during a specified period of time, generally one year. It consists of row and column accounts that represent the inter-industry transactions, payments to factors of production, expenditures of households and government, investment by commodity, and transactions with the rest of the world. Analytically, IO tables are widely used in the analysis of production, employment, trade, as well as issues of more recent interest, such as energy and the environment. Statistically, IO tables function as frameworks for data compilation that permit the statistician to check for quality and consistency.

2. On the other side, a SAM is a comprehensive, economy-wide data framework, typically representing the economy of a nation. A SAM is formatted as a square matrix in which each account is represented by a row and a column. Each cell shows the payment from the account of its column to the account of its row. Thus, the incomes of an account appear along its row and its expenditures along its column. The underlying principle of double-entry accounting requires that, for each account in the SAM, total revenue (row total) equals total expenditure (column total). A SAM may be viewed as an input-output table that has been extended to cover the full circular flow of incomes, linking GDP on the supply side, represented by incomes accruing to factors and the government (indirect taxes net of subsidies), to GDP on the demand side, defined as the sum of domestic and foreign final demands for the nation's outputs net of imports. This requires that the database include comprehensive budgets for domestic institutions (government and non-government) and the rest of the world (the current account of the balance of payments). In addition, compared to what is implied by the IO structure, a SAM typically has a more disaggregated treatment of factors, domestic non-government institutions (households and enterprises), indirect taxes, and subsidies. For each institution, these budgets cover all current revenues and expenditures, including savings. Given the requirements of the SAM structure, it is necessary that the institutional budgets be consistent in terms of disaggregations and values, both in their interface with the accounts that appear in the IO table (for example, the sum of household consumption demands for any commodity in the more detailed SAM must equal the value for aggregate household consumption demand for the same commodity in the IO table) and internally (for example, a transfer payment from the government to a household must appear with the same value and account name in the government and household budgets).

3. The construction of SAMs is driven by three motivations. First, it displays information in a manner that exhibits the structure of an economy in an illuminating way.

Secondly, by exposing inconsistencies between data from different sources, it contributes to improvements in the database. Thirdly, it provides all or at least a major part of the data needed for different types of models, most importantly fixed-price SAM-multiplier models and Computable General Equilibrium (CGE) models (Round 2003, pp. 301-302).

4. This technical note describes the estimation methods and the data used in the updating of the IO table and the development of a Social Accounting Matrix (SAM) for Yemen for the year 2005.

II THE IO TABLE

5. Drawing on the IO table for 2002 for Yemen and available data for 2005, we estimated a new IO table for the year 2005. The method used for the updating consists of simultaneous applications of RAS for account balancing. The data used for the updating has been drown from various sources including national accounts, government budget, household survey, industrial survey, trade statistics, and many other non-published documents produced by the Central Statistics Organization. The following list presents some of the key data sources used in the updating of the IO table for Yemen.

Central Statistical Organization (2006). "Household Budget Survey April 2005 – March 2006".

Central Statistical Organization (2006). "Results of the Labor Force Survey for the year 2001",

Central Statistical Organization (2006). "Statistical Year Book"

Central Bank of Yemen (2006). "Annual Report 2005"

T.G. . « An Input Output Table for Yemen 2002 ».

IMF (2006). "Republic of Yemen: Statistical Appendix".

COMTRADE DATABASE 2006

6. The final version of the Yemeni IO table developed in this study includes 25 activities. Table 1 presents a listing of these sectors. The methodology for updating the IO table for the year 2005 is documented in the next sections.

Table A.10. 2: Sectoral Dimension of the Yemeni IO Table for the year 2004

Sector Classification	Sector identification
Sector 1	Agriculture
Sector 2	Mining and inquiring
Sector 3	Food
Sector 4	Beverage and tobacco
Sector 5	Textile and clothes
Sector 6	Leather and its products
Sector 7	Wood and its products
Sector 8	Paper and printing
Sector 9	Oil refineries
Sector 10	Chemical and fertilizer
Sector 11	Rubber industry
Sector 12	Non-metallic
Sector 13	Metal and iron products
Sector 14	Electrical and medical equipments
Sector 15	Transportation
Sector 16	Furniture
Sector 17	Electricity, Water and Gas
Sector 18	Construction
Sector 19	Trade
Sector 20	Restaurants and Hotels
Sector 21	Transport, Storage & Communications
Sector 22	Financial Institutions
Sector 23	Real Estate & Business Service
Sector 24	Other services
Sector 25	Public administration

The updating of the IO table for Yemen has been realized following three major steps. In the first step, we have used aggregated data related to the national accounts to build an aggregated IO table with only one production sector. The data covers total public and private final consumption, gross output, GDP, intermediate consumption, wages, exports and imports, indirect taxes and subsidies, investment and changes in stocks, and import duties. These data are provided by the CSO. The aggregated IO table has served as a coherent accounting framework for the sectoral disaggregation carried out throughout this work. At a first stage, we have used the sectoral data on the production value, the intermediates consumption and the value added provided by the CSO for a given number of sectors. These sectors are the following: agriculture, oil and gas, other mining and quarrying, oil refining, other manufacturing, electricity water and gas, construction, wholesale and retail sale, restaurants and hotels, maintenance, transport and storage, communications, financial institutions, real estate and business services, social and personal services, government services, private non-profit services, and household services. For sectors listed in the original IO table for the year 2002 (manufacturing sectors) and no data is available on their respective GDP in 2005, we used the sectoral shares in the total manufacturing sector (excluding oil refining) drawn from the IO 2002. Once a table on sectoral GDP and intermediate consumption is established, we update the IO 2002 by imposing the new vectors on sectoral GDP and intermediate consumption in addition to data covering sectoral exports and imports, final private and public demand by commodity, investment by commodity, and taxes and subsidies. Data on sectoral exports and imports are drawn directly from COMTRADE database. Private and public final demand vectors as well as sectoral investment are calculated in two steps. In the first one, we used initial IO table for 2002 to derive coefficients on sectoral repartition of private and public final consumption as well as sectoral investment. In the second step, these coefficients are imposed to the respective value of total final consumptions and investment for 2005. A new vector of sectoral final demand and investment are than estimated. For indirect taxes, subsidies and tariff, the corresponding rates are calculated using the IO 2002. These rates are than imposed on total output at basic prices (for indirect taxes and subsidies) and on imports for tariffs. The total of indirect taxes, subsidies, and duties revenues calculated using these coefficients are different than those figuring in the national accounts. An adjustment was made on these rates to produce the exact values as reported in the national accounts. When the new IO table is estimated, many inconsistencies appears, mainly in the form of high variations (growth or decline) in stock variations. To avoid this shortcoming, an additional adjustment was applied on the estimated IO table. The adjustment of the IO table is a continuous process meant to ensure a greater representation of the Yemeni economy at the level of sectoral technologies as well as macro-economic balances. In this context, since the sectoral technologies for the 2005 IO table are, in the first place, estimated on the basis of the 2002 IO table, some adjustments have been introduced to improve this table given the structural changes in the economy, mainly as result of higher oil prices, reduction of subsidies on energy and food products… Thus, all the detailed information provided by the CSO on the cost

composition of certain activities, or even some enterprises have been used to refine the values of the technical coefficients, estimated earlier. Some balancing procedures have been applied whenever new specific data have been used, with the aim to maintain the equilibrium of the table, especially at the macro-economic level. In fact, the estimation of the value added and its distribution between its different components for the manufacturing sectors as well as the estimation of the total of intermediate consumption and its distribution between the different products and services of the sectors of the IO table has been enriched by additional sectoral data as well as at firm level. Similarly, we have proceeded to a new estimation of the commodity-structure of the household consumption using the results of the latest survey on income and expenses of Yemeni households.

III THE SOCIAL ACCOUNTING MATRIX

Table A.10. 3: The Accounts in our SAM for Yemen and its Structure

Account acronym	Description
ACT	Production activities. Paying (in its column) for inputs used and paid (in its row) for outputs produced.
COM	Commodities. Paying the supply side (including production activities and imports) and paid by the demand side (domestically and for exports)
LAB*	Labor. Paying the institutions to which the labor belongs and paid by the activities in which it is employed).
CAP*	Capital (other than capital owned abroad). Paying to the institutions that own the capital and paid by the activities in which it is employed
Households**	Domestic non-government institutions (including households, enterprises, and private non-profit institutions). Payments made cover consumption, transfers, direct taxes, and savings. Payments received consist of factor incomes and transfers from other institutions.
GOV**	Government. Payments made cover consumption, transfers, and savings. Payments received consist of factor incomes, transfers, and taxes.
Duties	Duties on imports from the rest of the world
I-TAX	Indirect taxes paid by activities and commodities and forwarded to the government.
SUBSIDIES	Treated as indirect taxes with negative values. Paid by activities and commodities and forwarded to the government.
ROW**	Rest of the world. Paid when Yemen imports and makes transfers to the rest of the world. Makes payments when Yemen exports and receives capital income from abroad and in the form of foreign savings (the current account deficit, which may be negative).
S-I	Savings-investment account. Collects savings from domestic institutions and the rest of the world and allocates these to domestic investment (gross fixed capital formation and stocks)

**Note:* Production factors.
**Institutions.

7. In addition to the IO table, building the SAM requires the following additional data: transfers between domestic institutions and the rest of the world (balance of payments), taxes paid by households to government, and transfers from government to households. Savings of the different institutions is residual. Various data sources are used for building the SAM. They include the balance of payments and government budget provided by CSO. The most important task in building the SAM was the disaggregaqtion of labor into four categories and households into two categories. For households, final consumption by commodity and household category are estimated using the result of the latest household survey on income and expenditures. Concerning labor disaggregation, the same survey is

used to estimate the number of workers by category and sector as well as their respective yearly wages.

Table A.10. 4: Price Vectors for the Following Simulations

	Price vector with new SAM for oil subsidy shock	Price vector with new SAM for tariff reduction	Price vector with new SAM for GST implementation	Price vector with new SAM for Civil Service Wage increase
	Assumptions: weighted % increase applied, 250% to oil refineries and 33% of Gas increase (100%)	Assumptions: overall average tariff reduction for commodities of -7.4% was implemented (excluding public administration)	Assumptions: flat increase of 10% on commodities was implemented (excluding public administration)	Assumptions: Paid Public Urban and Paid Public Rural sectors were shocked by 50%
C-Agriculture	21.8%	-16.0%	21.6%	2.0%
C-Mining and quarrying	28.8%	-16.2%	21.9%	2.6%
C-Food	13.9%	-14.3%	19.3%	1.2%
C-beverage and tobacco	11.0%	-14.1%	19.1%	1.1%
C-textile and clothes	7.7%	-11.2%	15.1%	1.2%
C-leather and its products	6.7%	-12.7%	17.2%	0.9%
C-wood and its product	4.0%	-10.2%	13.8%	0.6%
C-paper and printing	2.7%	-9.7%	13.1%	0.6%
C-oil refineries	250.0%	-16.5%	22.2%	1.5%
C-chemical and fertilizer	1.4%	-8.3%	11.2%	0.2%
C-rubber industry	4.5%	-10.9%	14.7%	0.6%
C-non-metallic	9.5%	-13.2%	17.8%	1.9%
C-metal and iron products	2.5%	-9.0%	12.2%	0.4%
C-electrical and medical equipments	0.6%	-7.7%	10.4%	0.1%
C-transportation	0.3%	-7.5%	10.2%	0.2%
C-furniture	5.3%	-10.2%	13.8%	0.5%
C-Electricity, Water and Gas	99.6%	-20.9%	28.3%	7.6%
C-Construction	15.3%	-18.6%	25.1%	2.3%
C-trade	12.5%	-14.4%	19.5%	1.8%
C-Restaurants and Hotels	17.1%	-18.3%	24.7%	2.1%
C-Transport, Storage & Communications	27.2%	-15.2%	20.5%	2.1%
C-Financial Institutions & Real Estate	10.4%	-13.9%	18.8%	3.6%
C-Real Estate & Business Serv.	12.7%	-14.9%	20.2%	2.1%
C-Other services	29.7%	-19.5%	26.3%	5.3%
C-Public administration	29.3%	-13.8%	18.7%	25.3%
Paid-Public-Urban	8.8%	-13.2%	17.9%	54.4%
Paid-Public-Rural	8.2%	-12.7%	17.2%	53.6%
Paid-Private-Urban	8.8%	-13.2%	17.9%	4.4%
Paid-Private-Rural	8.2%	-12.7%	17.2%	3.6%
Capital	4.2%	-6.5%	8.7%	1.9%
Urban Households	8.8%	-13.2%	17.9%	4.4%
Rural Households	8.2%	-12.7%	17.1%	3.5%

ANNEX 11. DEMAND SYSTEM ESTIMATION

Demand system estimation for Yemen

Preliminary report

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AIDS model and Estimation method

Our purpose is to estimate income and price elasticities for Yemen. In order to do so, we estimate the almost ideal demand system of Deaton and Mullbauer (1980a), AIDS. The main properties of this model is first that it belongs to the class of exactly aggregable demand system and flexible functional forms. Such forms have been define by Deaton and Mullbauer (1980b) as an approximation of the indirect(direct) utility function or the cost function "by some specific functional form with enough parameters to be regarded *as a reasonable approximation to whatever the true unknown function may be*". Another advantage is that Engel curves are linear in terms of log expenditure, but non-linear in terms of expenditure itself. It admits not only substitutes goods but also complementary ones (unlike the Linear Expenditure System, LES, which allows only for substitutions). Moreover it satisfies the adding up of budget shares, homogeneity and symmetry conditions. We could have considered a *Quadratic Almost Ideal Demand System* (QUAIDS) model, which allows goods to be non-linear in terms of log-expenditure as well. But, we have no reason to believe that such property is necessary in our context, given that households agricultural products, food and beverage constitute over 50% of their total expenditure.

The Almost Ideal Demand System (AIDS) has an indirect utility function of the form (2.11) with $\ln g(p) = \alpha_0 + \sum_{k=1}^{K} \alpha_k \ln p_k + \frac{1}{2}\sum_k \sum_j \gamma_{kj} \ln p_k \ln p_j$ and $b(p) = \prod_k p^{\beta_k}$, so that the log of the cost function and budget share are given by :

$$\ln C(p, u^h)_{AIDS} = \ln g(p) + u^h b(p) \tag{1}$$

$$\omega_{j,AIDS} = \alpha_j + \sum_{k=1}^{K} \gamma_{jk} \ln p_k + \beta_j \ln\left(\frac{x^h}{g(p)}\right) \tag{2}$$

$$\gamma_{ij} = \gamma_{ji}\,, \sum_k \gamma_{jk} = 0\,, \sum_j \beta j = 0\,, \sum_j \alpha_j = 1$$

The influence of household's social and demographic characteristics such as number of males, females, children, and living region are included with the translation method (Pollak and Wales, 1992), where $\alpha_j = \sum_{s=0}^{S} \delta_{sj} X_s$, δ_{sj} are parameters and δ_{0j} is the constant of the equation.

Each budget share equation for each month t can be written in a general compact notation :

$$\omega_{jt}^{i} = \phi_j^i(z_t, \beta) + v_t + \varepsilon_{jt}\,, \tag{3}$$

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$$j = 1, ..., K; \quad t = 1, \ldots, M$$

where ω_{jt}^{i} is the k_t-commodity budget share vector of the j^th good, N_t is the number of households per month t with $\sum_{t=1}^{M} N_t = N$, z_t is the $N_t \times (S + \frac{K*(K+1)}{2} + 1)$ matrix of explanatory variables and β the parameters to be estimated. ϕ denotes the relationship between the budget share ω and z which is nonlinear in our model. Since we have monthly time series of cross sections, temporal heterogeneity can be modelled using specific time effects. Therefore structural changes over month are additively included with the T-dimensional time effect vector v_t. Time effects are assumed to be fixed, since we have only 12 different surveys. In addition we suppose that $vec\varepsilon \sim (0, (\Sigma_K \otimes I_N))$ where $\varepsilon \equiv [\varepsilon_1 ... \varepsilon_K]$, which means that disturbance are uncorrelated across individuals and periods but correlated across commodities. The additivity restriction implies the singularity of Σ, therefore, one of the K demand equation is dropped form the system. The remaining (K-1) are estimated by *generalized non-linear least square* (GLS), and the parameters of the last equation are recovered using the parameters constraints of each model. The estimation method has the advantage of not requiring the normality of the errors, which would be a very strong assumption in this context. On the other hand, we are considering a demand system for 16 goods of which at least two have a large degree of censoring. The proportion of households not spending on transport, storage and communication services is as high as 54% in our sample. 43% of the households do not spend on oil refineries, table 5. We are also modelling demand for durable and non-durable goods at the same time, despite the fact that the estimation of demand for durable commodities requires to take into choice and timing decision. Several methods have been proposed to deal with consumer choice, corner solutions and frequency problems (Weliwita et al., 2003; Meyerhoefer et al., 2005) but they generally focus on demand system for specific goods and deal with a limited number of commodities (less than 10). We have to acknowledge the limitations of our econometric specification and we will pay a special attention to the goodness of fit of our model. Of course, in a second step it would be necessary to overcome these problems by looking at the demand for specific goods.

The estimation program of this nonlinear SUR model was written is TSP, unfortunately this program does not allow us to take into account the structure of the survey. Standards errors of the following preliminary results are only corrected for heteroscedasticity but not adjusted for intragroup correlation (cluster).

The Data

The data set and price indices are provided by the World Bank. They come from a cross-sectional household budget survey, conducted in Yemen between April 2005 and March 2006. The data covers 21 governorates and is representative of the entire population, in rural and urban areas.

Information about consumption expenditure is recorded each month for different households and has been grouped into 25 categories[2]. However, price indices are not available

[2]Transport; Storage and communication; Beverage and tobacco; Chemical and fertilizer; Electrical and medical equipment;, Electricity, water and gas; Food; Household services repair and unclassified; Metal and Iron Products; Non-metallic; Oil Refineries; Personal Services; Real Estate and Business

for 3 groups (wood, expenses related to the use of public administration and cultural services) and the CPI for transport charges related to a private car/motor bike and/or private bicycle is a proxy. Moreover some commodities such as furniture, paper and leather are not consumed by all households, so considering their related expenses would introduce problems of selection bias that we do not want to deal with in the present study. Therefore, in order to reduce any type of bias due to a decision making process, we include these expenditures in one of the other groups[3]. If the old category aggregated has a price index, the price index of the new category is calculated as the weighted average of each component, with weights equal to the median expenditure shares of each item[4]. Thus our estimated demand system consists of 16 commodities (see table 1).

Prices vary across governorates and months. We conducted (Kolmogorov-Smirnov) pairwise tests of the hypothesis that the prices are drawn form the same common distribution across periods and states. For all commodities, we reject the assumption of homogenous distribution across governorates. Across periods, for all items except Food, Transport/storage/communication and Beverage/tobacco, we could not reject the null at 5% level for the months of April and May, May and June, i.e between those months, the prices are not significatively different. There is only a significant variation of prices for electricity, water and gas between June and July, October and November. Agricultural prices on the other hand, significantly change between June and July, October and November, November and December, December and January. Prices for Oil refineries, Real Estate/business are not significantly different between July and August for the former commodity, August and September, February and March for the latter group.

Elasticities

We calculate expenditures elasticities as well as Marshallian and Hicksian price elasticities at the sample mean and at the population weighted mean[5] (table 1). The expenditure elasticity $\eta_i = \beta_i/\bar{w}_i + 1$; captures the percentage variation of the demand for the i^{th} good due to a 1% change in total expenditure. Demand of a "normal" good, should increase when the total expenditure increases ($\eta_i > 0$). If the variation is proportionally greater than the income growth ($\eta_i > 1$) and the good is qualified as a luxurious item.

The Marshallian price elasticity gives the "apparent" percentage variation of demand for the i^{th} good due to a 1% variation of either its own price (own price elasticity ϵ_{ii}) or the price of the j^th good (cross price elasticity ϵ_{ij}). This is an "apparent" change because it is a mixture of the income and substitution effect, namely a decrease in the price of the j^{th} good would, keeping the quantity purchased the same, would increase the amount

Service; Restaurants and hotels; Rubber industry; Textiles and its Products; Agriculture; furniture; paper; wood; public administration, cultural services, and leather expenses.

[3]*Non-metal expenditures includes expenses on furniture, paper and wood. Personal services includes transport charges, expenses related to the use of public administration and cultural services whereas textile includes leather expenses.

[4]if the median of a good is equal to zero because only a very few consume such good, we use the median of the positive expenses

[5]Population weighted mean take into account sample weights, stratification and standard errors are corrected for intragroup variation

available for consumption of other items and decrease demand of all substitute goods.

$\epsilon_{ij} = \frac{\gamma_{ij}}{\bar{w}_i} - \frac{\beta_i}{\bar{w}_i}(\bar{\alpha}_j + \sum_k log(\bar{p}_k)\gamma_{jk}) - \delta_{ij}$
where $\delta_{ij} = 1$ if $i = j$ and 0 otherwise, $\bar{\alpha}_j = \sum_{s=0}^{S} \delta_{sj}\bar{X}_s$.

The Hicks-compensated cross and own price elasticities ϵ_{ij}^h, identify the "pure" price effect once income has been compensated for the price increase. They are given by the Slustky equation : $\epsilon_{ij}^h = \epsilon_{ij} + \eta_i w_j$.
If $\epsilon_{ij}^h < 0$ goods i and j are complementary.
If $\epsilon_{ij}^h > 0$ goods i and j are substitutes.
If $\epsilon_{ij}^h = 0$ goods i and j are independent.

Estimation

In a first step, we experimented different types of socio-demographic variables in addition to the time dummies. Model 1 included the household size, the region of residence, the type of dwelling unit, the gender of the head of the household and information about idiosyncratic shocks[6]. We conducted ordinary linear least squares regression for each item to identify outlier observations[7]. In our second model, we decompose the size of the household by number of children, adult male and female between 15 and 60 years old and seniors (older than 60y). We also introduce 4 additional demographic variables, i.e the employment status of the head of the household, the proportion of members without formal education and the main source of water supply and lighting. While considering these characteristics considerably improved the overall fitting, unfortunately, it decreased the sample size because we can only keep in the analysis household with information about all the variables. Therefore, estimation of this model was drawn on 11'233 observation and no influential outlier was detected in the preliminaries OLS estimations. Table 1 shows the population weighted and sample average of all the regressors.

In a second step we estimated the second model on the rural and urban sample separately, table 5. Unfortunately, the goodness of fit in the urban sample was not good enough to consider the estimations results reliable. Therefore, we will focus on the pooled sample.

Goodness of fit

Table 2 shows our generalized least squares estimates of the nonlinear AIDS demand system for the pooled sample. Standard errors are corrected for heteroscedasticity and non-significant parameters are highlighted in green. We provide different statistics to analyze the empirical adequacy for each model (table 5). The correlation between observed and predicted share is the highest (≥ 0.45) for Electricity, gas and water; Food; Real Estates and Business services; Textile and Agriculture, in both models but sightly higher

[6]Idiosyncratic shocks have been defined as health problems needing treatment in other countries. Total expenditures for households suffering such events includes the related expenditures. In order to take into account only the expenses in Yemen, we have redefined their total cost as expenditures net of charges due to the shock.

[7]we regressed equation 3 separately for each commodity

in the second one. We also looked at the number of predicted negative shares as a proportion of observed positive values. Surprisingly, despite the fact that we have not imposed a nonnegativity constraint (Golan et al., 2001), the rate of negative prediction is below 1.5% for 11 out of the 16 commodities considered in the pooled sample, and above 10% for electrical equipment (11.5%), households services (24.8%) and metal (26.1%). The predictive power for the categories with the largest degree of censoring is pretty good, with only 1.1% of negative share for transport services and 8% for oil refineries.

The Pearson's correlation test is used to identify any systematic bias in the prediction of the budget share. We find a positive/negative significant correlation between residuals and predictions of the following 7/16 categories : Trasport, storage and communication; Electricity, gas and water; Food; Household services, repair and unclassified; Metal and Iron products; Personal services and Agricultural. There is no significant bias in the estimation of oil refineries. If we take into account the three statistics we have used, we would say that, we need to be particularly careful with the estimation results for Households services, repair and unclassified; Metal and Iron Products because they have the worst score for all "tests".

Demographic effects

Table 3 shows the percentage share variation of each consumption group due to a change in one exogenous variable[8], while holding all other regressors constant. A household headed by a woman spend respectively 6.6, 0.28 and 1.25 percentage points less on Beverage and tobacco, Oil refineries and Agriculture than one headed by a men. The same pattern is observed in a household where the head is away for more than a month and more than six month. Significantly less is spend on Beverage and tobacco and agriculture and the longer the head is away, more important is the effect. The share of a rural household on Transport services, Oil refineries, Food and Agriculture, is respectively 0.19, 0.54, 2.31 and 4.47 percentage points (pp) sig. higher than that of a comparable urban household. Relatively less is spend on Restaurant and Hotels (-1.9pp) and Real Estate -4.54. Households living in a wood/iron shelter, hut or tent, spend significantly more in particular on Beverage (+2.62pp), Food (+1.94pp) and Oil refineries (+0.77pp). An idiosyncratic shock decreases the consumption on Real Estate, Household services[9] and Metal by 1.46, -0.74 and -3.49 percentage points respectively. On the other hand, they spend much more on personal services (+10.16) and it has no significant consequence on consumption of all other goods. Compared to all these former characteristics, a change in the household size has only a small effect; the budget share of all commodities vary by less than 1 percentage point in absolute terms, even if the size is decomposed by age groups and gender.

Elasticities

Table 4 show the estimated Hicks-compensated price elasticities and expenditures elasticities, calculated at population weighted means (pwm). Standard errors are calculated

[8] If the variable is dichotomous, the impact is given by the corresponding dummy coefficient multiplied by 100. If the variable is continuous, the effect is calculated as an elasticity.

[9] This is the only socio-demographic variable that has an impact on this category

with the delta method and non-significant elasticities are highlighted in green. All the own elasticities have the expected sign and are significant at 5% level. As expected, the goods with low budget share means have relatively high own price elasticities (>1). In particular, if the price of transport services and oil refineries increase by 1%, their demand would respectively decreased by 1.27% and 1.24%. But, the highest price effect are found for Metal and non-metal. The estimated expenditure elasticity, calculated at the population weighted mean, is less than 1 for Electricity, Food, Chemical, Rubber and Agriculture. Again, Metal and non-metal have the highest expenditure elasticities. For transport services and oil refineries, if total expenditure increases by 1%, their demand would increase by 1.02% and 1.5% respectively.

Preliminary conclusions

So far we have attempt to model demand for 16 groups, most of which are durable but only 2 are relatively highly censored. The main consequence of having ignored those characteristics seem to translate in high price and expenditure elasticities. In a future work, we could reduce the number of commodities and focus specifically on some demand for some goods such as demand for energy in Yemen.

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Pooled sample — **Summary Statistics** — **Table 1**

	Sample Mean	95% CI		Population Weighted Mean	95% CI	
Expenditure shars of:						
Transport, storage and com	0.017	0.016	0.017	0.017	0.016	0.018
Beverage and Tobacco****	0.125	0.123	0.127	0.125	0.121	0.130
Chemical and Fertilizer	0.043	0.042	0.044	0.043	0.041	0.044
Electrical and medical equi	0.006	0.005	0.006	0.004	0.004	0.005
Electricity, Water and Gas	0.049	0.049	0.050	0.040	0.038	0.042
Food	0.117	0.116	0.119	0.135	0.130	0.140
Household services, repair :	0.010	0.010	0.011	0.009	0.008	0.010
Metal and Iron Poducts	0.006	0.006	0.007	0.006	0.005	0.006
Non-metalic*	0.013	0.012	0.013	0.013	0.012	0.015
Oil Refineries	0.014	0.014	0.015	0.016	0.015	0.017
Personal Services**	0.083	0.081	0.085	0.081	0.077	0.085
Real Estate and Business Se	0.101	0.099	0.103	0.072	0.069	0.075
Restaurants and hotels	0.060	0.059	0.062	0.049	0.046	0.053
Rubber industry	0.012	0.012	0.012	0.012	0.012	0.013
Textiles and its Products***	0.057	0.056	0.058	0.056	0.053	0.059
Agriculture	0.285	0.283	0.288	0.321	0.314	0.327
Total expenditure	8936	8700.555	9170	7957	7603.873	8311
Households with Idiosyncr	0.002	0.001	0.003	0.001	0.001	0.002
Number of girls <15y	1.652	1.623	1.681	1.670	1.629	1.712
Number of boys < 15y	1.776	1.746	1.806	1.805	1.757	1.853
Number of female 15y-60y	2.150	2.124	2.177	2.039	2.003	2.076
Number of male 15y-60y	2.049	2.021	2.077	1.917	1.875	1.960
Number of adults > 60y	0.347	0.336	0.358	0.350	0.333	0.367
Household is rural	0.414393	0.405	0.423512	0.756	0.749	0.762
Household head is female	0.069	0.064	0.074	0.077	0.067	0.087
Household head is unemplo	0.245	0.237	0.253	0.224	0.210	0.237
% members without formal	0.391	0.387	0.395	0.441	0.432	0.451
Dwelling unit is: wood/iron	0.050	0.046	0.054	0.077	0.062	0.091
Main source of water supply is: (ref: outside house, transport: on foot, riding animals)						
public network	0.404	0.395	0.413	0.228	0.208	0.248
cooperative/private ntw	0.132	0.125	0.138	0.153	0.129	0.177
outside house, transport: pr	0.154	0.147	0.161	0.105	0.091	0.120
Main source of lighting is: (ref: kerosene or gas lamp)						
public network	0.618	0.609	0.627	0.405	0.375	0.435
cooperative/private ntw, ho	0.069	0.065	0.074	0.064	0.050	0.079
other	0.007	0.006	0.009	0.007	0.004	0.010
Number of months the head is away from home (ref: never away or less than a 1 month)						
between 1 & 6 months	0.098	0.092	0.104	0.111	0.101	0.122
between 6 & 12 months	0.073	0.068	0.078	0.090	0.080	0.101
Sample size (number of ob	11'214					

*Non-metal expenditure include expenses on furniture, paper and wood.

Table 2 **GLS estimates of Nonlinear AIDS demand System** **Pooled sample**

	Transst	Bever	Chemic	Elec_eq	Electri	Food	Hhserv	Metal	Non metal	Oilref	Person	Realest	Rest_hot	Rubber	Textil	Agric
Intercept	0.022	0.165	0.043	0.012	0.009	0.092	0.016	0.014	0.020	0.013	0.147	0.106	0.075	0.010	0.077	0.179
Expenditure	2.6E-04	0.014	-0.004	0.002	-0.021	-0.026	0.011	0.007	0.002	0.008	0.044	0.008	0.013	-0.002	-1.6E-04	-0.056
Transst price	-0.005	0.007	0.001	0.001	0.006	0.008	-0.003	-0.003	-0.002	-0.003	-0.003	-0.001	0.001	0.002	0.005	-0.010
Bever price		0.009	-3.6E-04	0.000	-0.004	-0.013	-0.002	0.004	0.003	-0.002	2.9E-04	0.014	-0.003	0.001	-0.006	-0.009
Chemic price			0.005	0.018	-0.006	0.035	-0.016	-0.002	-8.6E-05	-0.006	-0.025	0.006	0.004	-0.008	0.013	-0.019
Elec_eq price				-0.001	0.001	0.005	-0.007	-0.001	0.004	-0.008	-0.005	-4.7E-05	2.3E-04	-0.001	-0.003	-0.002
Electri price					-0.008	0.001	0.003	0.004	0.004	0.007	0.005	0.001	-0.013	-0.003	-0.002	0.007
Food price						0.041	0.019	-0.011	-0.012	0.019	-0.019	0.027	-0.015	-0.008	0.035	-0.113
Hhserv price							0.002	0.006	0.005	-0.009	0.004	-0.002	-0.001	0.007	-0.009	0.002
Metal price								-0.002	-0.011	0.000	0.008	-0.003	0.003	0.003	-0.004	0.008
Non-met price									-0.004	0.002	-0.004	-0.003	0.002	-0.006	-0.005	0.028
Oilref price										-0.004	0.002	-0.011	-0.001	0.005	0.001	0.009
Person price											1.8E-04	-0.001	0.018	0.004	4.3E-04	0.014
Realest price												-0.019	0.014	0.001	0.003	-0.027
Resc_hot price													0.004	0.001	0.001	-0.015
Rubber price														0.000	0.004	-0.003
Textil price															0.006	-0.039
Agric price																0.169
Idiosync. shock	0.2E-03	-1.3E-02	-1.6E-03	8.5E-04	-3.7E-04	-8.6E-05	-0.015	-0.007	-3.0E-03	-5.6E-03	0.102	-0.035	-1.9E-02	4.8E-03	9.1E-03	-1.1E-02
Nb girls <15y	-0.001	-0.001	-2.3E-04	2.4E-06	-0.002	-0.002	0.001	0.001	-0.001	0.001	0.004	-1.1E-03	-0.001	-3.4E-05	0.001	2.4E-04
Nb boys < 15y	-0.001	5.4E-04	-4.1E-04	3.1E-06	-0.002	-0.001	0.002	-1.7E-04	6.6E-05	0.001	0.003	-0.002	-0.001	5.3E-05	6.1E-04	2.8E-04
Nb female 15y-60y	-4.0E-04	-0.004	0.001	1.2E-04	-0.001	-4.1E-04	0.001	0.001	0.001	0.001	0.005	-1.3E-03	-0.006	0.000	0.003	7.2E-04
Nb male 15y-60y	1.2E-04	0.009	-0.002	0.000	-0.002	-0.004	4.9E-04	-6.0E-05	-1.6E-04	1.7E-04	0.002	-0.004	0.004	0.000	3.4E-04	-0.003
Nb adults > 60y	-8.7E-04	-0.008	2.9E-04	-7.0E-05	-7.9E-05	1.6E-03	0.001	6.5E-04	0.001	0.001	2.6E-03	-1.4E-03	1.7E-03	1.4E-04	-1.7E-04	-2.4E-04
Hhd is rural	0.002	-0.017	-7.1E-04	-3.3E-04	-0.002	0.023	3.6E-04	-4.2E-04	0.002	0.005	-2.2E-03	-0.045	-0.019	0.002	0.009	0.045
Head of hhd is:																

Female	-1.9E-03	-0.067	0.007	3.7E-04	0.010	0.012	1.5E-03	-8.3E-04	0.002	-0.003	1.8E-03	0.037	0.013	-1.7E-04	-3.6E-04	-0.013
Unemployed	5.2E-04	-0.017	0.002	-1.3E-04	0.002	-2.2E-03	1.1E-03	-9.6E-04	7.5E-05	-0.002	0.008	0.012	-3.3E-04	-2.4E-04	1.1E-05	-4.3E-03
% no formal edu	-0.008	0.015	-0.006	-0.007	-0.005	0.017	-0.010	-0.004	-2.5E-05	-0.003	-0.039	0.015	9.3E-03	-0.003	-0.022	0.055
Dwelling*	0.004	0.026	0.004	5.1E-04	-0.010	0.019	-2.8E-04	-9.3E-04	-0.011	0.008	-0.009	-0.034	9.1E-05	-0.001	-3.2E-03	-2.0E-03
Main source of water supply is: (ref: outside house, transport: on foot, riding animals)																
public ntw	0.004	-0.021	0.004	6.7E-04	0.018	-0.007	-1.4E-03	-0.002	-0.005	-1.2E-04	-0.017	0.025	0.029	0.002	0.006	-0.035
private ntw**	-0.004	-0.015	0.002	-2.7E-04	0.012	-5.8E-03	1.5E-03	6.9E-04	-0.006	0.007	-0.018	0.007	0.014	0.001	9.6E-04	-4.9E-04
transport***	0.003	-0.020	0.003	-2.3E-04	0.034	-0.014	-2.1E-04	-0.002	-0.007	0.003	-0.020	0.021	0.011	1.8E-04	-1.5E-03	-0.011
Main source of lighting is: (ref: kerosene or gas lamp)																
public ntw	3.4E-04	-0.008	1.5E-03	0.002	0.024	-0.010	-1.9E-03	-7.5E-04	-0.008	-0.005	-1.5E-03	0.032	-3.2E-03	-0.001	4.4E-05	-0.020
private ntw**	-0.002	-0.019	0.004	0.003	0.028	-0.009	2.6E-03	4.1E-04	-0.003	5.0E-04	0.009	-5.6E-03	8.7E-04	0.001	0.009	-0.020
other	2.6E-03	-1.6E-02	-1.6E-05	0.3E-03	6.4E-03	-0.021	-2.0E-05	-1.6E-03	5.0E-03	-7.9E-04	1.4E-02	1.1E-02	2.3E-02	2.0E-03	8.9E-03	-0.033
Number of months the head is away from home (ref: never away or less than a 1 month)																
btw 1 & 6 mths	3.1E-04	-0.010	-4.5E-04	7.1E-04	1.7E-03	-1.4E-03	-7.9E-04	1.3E-03	1.5E-03	-9.6E-04	0.019	-3.2E-03	4.6E-03	0.001	0.004	-0.017
6> & <= 12 mths	-1.1E-03	-0.041	0.003	0.002	0.004	3.0E-03	-2.2E-04	0.003	1.9E-03	-3.6E-04	0.016	0.013	4.4E-03	0.002	0.013	-0.021
Months (ref: april 2005)																
May	-2.6E-03	0.011	2.6E-03	-1.2E-03	-7.0E-04	0.018	3.2E-04	5.7E-04	-0.003	2.0E-04	-5.8E-03	1.1E-04	0.010	-0.007	-0.047	0.025
Jun.	-2.4E-03	0.017	0.004	-6.8E-06	-1.7E-04	0.017	3.6E-03	-0.003	-1.7E-03	2.1E-03	-0.018	5.1E-05	5.1E-03	-0.007	-0.051	0.029
Jul.	4.2E-04	0.015	0.004	-1.4E-05	0.007	0.023	-4.5E-04	-2.1E-03	-2.4E-04	0.003	-0.019	-6.6E-03	-1.5E-03	-0.007	-0.050	0.036
Aug.	0.006	6.3E-03	0.005	9.1E-04	2.8E-03	0.019	3.2E-03	-1.8E-03	-7.9E-04	0.007	-0.029	-1.9E-03	1.5E-04	-0.009	-0.051	0.036
Sept.	0.006	7.4E-03	0.006	1.6E-03	0.006	0.020	2.2E-03	-1.9E-03	-2.9E-04	0.007	-0.027	1.0E-05	-1.4E-05	-0.008	-0.048	0.028
Oct.	2.5E-03	-7.3E-03	1.2E-03	8.5E-04	0.004	0.043	5.2E-04	-0.004	-9.0E-04	0.007	-0.045	9.4E-05	-0.009	-0.008	-0.052	0.058
Nov.	0.004	-1.3E-03	1.1E-03	-6.1E-04	8.6E-04	0.023	1.2E-03	-0.003	-0.005	0.007	-0.051	-0.012	-4.6E-03	-0.002	-0.008	0.050
Dec.	0.003	-2.8E-03	0.007	3.6E-04	-0.004	6.2E-03	-2.2E-04	-2.1E-03	-1.9E-03	0.009	-0.036	1.0E-03	-4.5E-03	5.4E-04	0.012	-9.9E-03
January 2006	0.005	-0.009	-5.0E-03	-8.6E-04	-0.004	-3.2E-04	-2.9E-03	-0.005	-2.4E-03	1.3E-05	-0.060	-0.022	-7.9E-03	-1.1E-03	-1.9E-03	0.114
Feb.	0.004	-5.4E-03	1.7E-03	-5.6E-04	1.7E-03	0.015	-1.0E-03	-1.8E-03	1.4E-04	4.0E-03	-0.037	-3.2E-03	-1.9E-03	-6.2E-04	-9.8E-03	0.025
March.	1.8E-03	-6.4E-03	2.3E-03	3.8E-04	0.003	0.016	-1.5E-04	-1.9E-03	-4.1E-04	4.3E-03	-0.039	-9.7E-04	-1.9E-03	-0.002	-0.010	0.038

Sample size: 11'214 households. *** Non-significant parameters are highlighted in green.

* Dwelling unit is: wood/iron shelter, hut or tent **private ntw includes cooperative ntw (and house generator for lighting)

Technical Annex to the Report on : Demand System Estimation for Yemen by Gabriela Flores and Jaya Krishnakumar[1]

Compensating Variation and Consumer Surplus (May 2007)

Compensating Variation (CV) is the change in cost/expenditure necessary, say in period $t = 1$, to preserve the utility level of the reference period $t = 0$:

$$CV = C(u^0, p^1) - C(u^0, p^0) \tag{1}$$

where $C(u, p^*) = e(u, p^*)$ and $e(u, p^*)$ is the equivalent expenditure, i.e the minimum expenditure a household would have to incur at prices p^* to attain the level of utility u. A positive CV indicates a welfare loss.

From Figure 1 it is obvious that

$$CV \cong \frac{\partial C(u^0, p^0)}{\partial p'} * dp \approx q' * dp \tag{2}$$

in the case of two goods

$$= q_1(u^0, p^0) * dp_1 + q_2(u^0, p^0) * dp_2 \tag{3}$$

$$= h_1(u^0, p^0) * dp_1 + h_2(u^0, p^0) * dp_2 \tag{4}$$

This is an approximate calculation using derivatives whereas using equivalent expenditures correspond to an exact calculation method.

Now, consider changes in welfare due to abolishment of a subsidy in a given market, say oil taken as good 1, denoted by $j = 1$. Let us once again take the simple case of only two goods, so that eliminating the subsidy will have a direct impact in the first market, due to changes in demand for good 1 because of price increase :

$$q_1^1 = q_1^0 + \frac{\partial q_1}{\partial p_1} * (p_1^1 - p_1^0) = q_1^0 + \frac{\partial q_1}{\partial p_1} * \triangle p_1 \tag{5}$$

Hence the loss in welfare for consumers is given by change in consumer surplus given by the shaded area in Figure 2 :

$$\triangle CS_1 = q^1 * \triangle p + \frac{1}{2}(q_1^1 - q_1^0)\triangle p = q^1 * \triangle p + \frac{1}{2}\triangle q \, \triangle p$$

But there is a gain in subsidy given by $q^0 * \triangle p$. The triangle CAD in Figure 1 is referred to as dead-weight loss that gets eliminated when the subsidy is abolished. Moreover, we have to

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take into account the indirect demand effect on oil. Therefore, demand for good 1 given the new price p_1 is given by :

$$q_1^1 = q_1^0 + \frac{\partial q_1}{\partial p_1} * \triangle p_1 + a * \frac{\partial q_2}{\partial p_1} * \triangle p_1 \quad (6)$$

$$q_1^1 = q_1^0 + \frac{\partial q_1}{\partial p_1} * \triangle p_1 + \frac{\partial q_2}{\partial p_1}(a * \triangle p_1) \quad (7)$$

$$= q_1^0 + \frac{\partial q_1}{\partial p_1} * \triangle p_1 + \frac{\partial q_1}{\partial p_2} * \triangle p_2 \quad (8)$$

where a is a coefficient based on the input-output matrix and $\frac{\partial q_1}{\partial p_2} = \frac{\partial q_2}{\partial p_1}$ due to the symmetry of compensated demand derivatives. Therefore, if we use compensated derivatives, then applying 'input-output' coefficients on prices of other goods (i.e. $\triangle p_2 = a * \triangle p_1$) should reflect the new demand taking account of both direct and indirect (intermediate) effects. In this way when we calculate CV, it will also incorporate the indirect effect.

What would be the consequences in the second market ? The price of good 2 also increases but changes in p_2 may be proportionately less than $\triangle p_1$. Hence both own price effect and substitution effect operate in this market :

$$q_2^1 = q_2^0 + \frac{\partial q_2}{\partial p_2} * \triangle p_2 + \frac{\partial q_2}{\partial p_1} * \triangle p_1 \quad (9)$$

For this good, changes in consumer surplus or welfare loss should also be calculated and added to the previous one to get the total welfare loss of consumers, given by : $\triangle CS = \triangle CS_1 + \triangle CS_2$ and this should be approximately the same as CV (if new demand levels are calculated using compensated derivatives).

Finally, note that the new demand for each good should be calculated from the new budget shares estimated by demand system estimation and applied to equivalent expenditure :

$$q_i^1 = \frac{w_i^1 * C(u^0, p^1)}{p_i^1}, \quad i = 1, 2$$

where w^1 is the budget share given new prices p^1 and $C(u^0, p^1)$ is the equivalent expenditure necessary to maintain the utility level of the reference period at new prices p^1.

Jaya Krishnakumar, Gabriela Flores

ANNEX 12: NATIONAL ACCOUNTS DATA

Yemen: Nominal GDP, Expenditure Side, millions of Yemeni Rials									
ITEM	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998***
1-Final Consumption Expenditure	113,237	160,683	191,237	257,695	306,016	508,353	640,681	748,736	838,855
public final consumption	**23,003**	**29,418**	**37,685**	**46,048**	**58,847**	**74,865**	**104,177**	**137,563**	**140,173**
private final consumption	90,234	131,265	153,552	211,647	247,169	433,488	536,504	611,173	698,682
2-Gross Investment	18,406	24,334	43,026	48,249	64,390	112,713	170,879	217,786	203,181
Gross Fixed capital formation	**15,074**	**20,955**	**38,157**	**41,627**	**58,267**	**106,227**	**158,016**	**188,237**	**194,526**
Change in stock	**3,332**	**3,379**	**4,869**	**6,622**	**6,123**	**6,486**	**12,863**	**29,549**	**8,655**
3-Balance of goods & services	-7,330	-33,860	-42,062	-66,927	-56,127	-101,493	-66,208	-77,864	-177,127
Exports of good & services	**18,060**	**19,416**	**22,513**	**32,833**	**42,091**	**115,957**	**285,587**	**320,822**	**228,025**
exports of goods	16,197	16,861	18,164	26,218	34,002	99,947	262,407	293,983	204,327
Exports of services	1,863	2,555	4,349	6,615	8,089	16,010	23,180	26,839	23,698
Imports of goods & services	**25,390**	**53,276**	**64,575**	**99,760**	**98,218**	**217,450**	**351,795**	**398,686**	**405,152**
imports of goods	17,400	40,997	48,184	77,975	77,102	172,660	285,035	311,112	311,002
Imports of services	7,990	12,279	16,391	21,785	21,116	44,790	66,760	87,574	94,150
4-GDP at market prices (1+2+3)	124,313	151,157	192,201	239,017	314,279	519,573	745,352	888,658	864,909
Non - Oil GDP	106,903	136,036	178,835	226,389	296,544	450,461	552,581	641,884	723,859
5-Consumption of fixed capital	5,276	8,615	11,927	15,245	19,884	28,845	42,080	57,346	78,691
6-indirect Taxes (net)	8,496	11,452	12,211	14,374	14,299	31,118	7,550	-19,705	-1,364
indirect Taxes	8,496	11,452	12,211	14,374	14,299	31,118	48,192	55,096	50,905
Subsidies							**40,642**	**74,801**	**52,269**
7-GDP at factor cost (4-6)	115,817	139,705	179,990	224,643	299,980	488,455	737,802	908,363	866,273
8-Domestic Demand (1+2)	131,643	185,017	234,263	305,944	370,406	621,066	811,560	966,522	1,042,036
9-Domestic Saving (4-1)	11,076	-9,526	964	-18,678	8,263	11,220	104,671	139,922	26,054
10-Net Factor income from abroad	-940	-5,832	-5,011	-4,901	-6,388	-22,535	-65,067	-69,775	-37,763
Labor income from abroad	4,380	166	146	85	85	908	7,688	8,201	9,358
Labor income to abroad	-960	-318	-273	-258	-333	-1,269	-390	-279	-324
Investment income from abroad	440	354	311	180	180	1,929	5,519	8,998	9,376
Investment income to abroad	-4,800	-6,034	-5,195	-4,908	-6,320	-24,103	-77,884	-86,695	-56,173
11-GNP at market prices (4+10)	123,373	145,325	187,190	234,116	307,891	497,038	680,285	818,883	827,146
12-Net current transfers from abroad	16,900	26,992	33,260	49,114	84,569	128,774	138,664	150,524	171,646
Received	17,180	29,100	34,972	51,168	86,441	132,458	146,080	155,817	177,803
Payment	-280	-2,108	-1,712	-2,054	-1,872	-3,684	-7,416	-5,293	-6,157
13-National Disposable Incom (11+12 - 5)	134,997	163,702	208,523	267,985	372,576	596,967	776,869	912,061	920,101
14-National Saving from NDI (13-1)	21,760	3,019	17,286	10,290	66,560	88,614	136,188	163,325	81,246
15-National Saving from GNP (11-1)	10,136	-15,358	-4,047	-23,579	1,875	-11,315	39,604	70,147	-11,709
* Provisional Actual									
** Provisional									
*** Comp									

GDP at Producers Prices, Nominal Prices, millions of Yemeni rials

	1990	1991	1992	1993	1994	1995	1996	1997	1998*
1-Agriculture, Forestry and Fishing	**29,877**	**33,017**	**44,126**	**50,550**	**69,888**	**100,840**	**122,492**	**140,839**	**168,677**
Agriculture & Foresty (with out qat)	18,483	19,542	28,175	31,173	42,755	64,818	76,996	88,347	109,875
Qat	10,598	12,092	14,050	17,312	21,319	27,190	34,796	39,236	44,188
Fishing	796	1,383	1,901	2,065	5,814	8,832	10,700	13,256	14,614
2-Mining and Quarrying	**17,660**	**15,393**	**13,753**	**13,162**	**18,488**	**70,166**	**194,046**	**248,088**	**142,461**
Mining and Quarrying	250	272	387	534	753	1,054	1,275	1,314	1,411
Oil and Gas	17,410	15,121	13,366	12,628	17,735	69,112	192,771	246,774	141,050
3-Manufacturing	**9,795**	**13,114**	**19,005**	**26,360**	**39,798**	**65,860**	**63,406**	**67,182**	**68,293**
Manufacturing	9,292	12,576	18,461	25,814	39,300	64,095	58,677	63,762	62,948
Oil Refining	503	538	544	546	498	1,765	4,729	3,420	5,345
4-Electricity, Water and Gas	**1,378**	**1,916**	**1,988**	**2,102**	**2,028**	**3,117**	**4,858**	**5,903**	**7,839**
5-Construction	**3,437**	**4,790**	**7,268**	**8,137**	**12,571**	**20,224**	**32,647**	**46,164**	**50,703**
6-Wholesale and Retail Trade, Rest. & Ho	**10,418**	**15,285**	**19,702**	**27,743**	**39,773**	**65,298**	**79,829**	**91,982**	**107,644**
Wholesale and Retail Trade	7,884	11,369	14,706	19,986	27,723	45,593	56,585	64,692	77,973
Restaurants and Hotels	1,166	2,017	2,650	4,192	7,007	11,568	13,727	17,105	18,518
Maintenance	1,368	1,899	2,346	3,565	5,043	8,137	9,517	10,185	11,153
7-Transport, Storage & Communications	**16,951**	**20,923**	**27,962**	**38,148**	**44,781**	**63,986**	**80,801**	**103,709**	**115,148**
Transportand Storage	16,003	19,755	26,404	36,037	42,294	60,444	76,196	98,003	108,611
Communications	948	1,168	1,558	2,111	2,487	3,542	4,605	5,706	6,537
8-Financial Institutions & Real Estate	**11,876**	**18,222**	**22,836**	**28,984**	**38,745**	**58,156**	**74,566**	**80,540**	**97,958**
Financial Institutions	4,174	7,858	8,832	11,164	16,078	21,541	21,429	23,536	33,602
Real Estate & Business Serv.	7,702	10,364	14,004	17,820	22,667	36,615	53,137	57,004	64,356
9-Community Social & Personal serv.	**1,390**	**1,821**	**2,179**	**3,026**	**4,141**	**6,173**	**6,987**	**8,032**	**9,054**
Total Of Industries	102,782	124,481	158,819	198,212	270,213	453,820	659,632	792,439	767,777
B-Producers Of Government Services	19,934	25,445	32,762	41,286	49,184	66,951	77,708	90,755	101,966
C-Household Sector (houses's Servecies)	300	310	320	340	360	380	390	400	410
D-Producers Of Private Non -Profit serv.	73	101	132	165	203	243	287	335	388
E- Import Duties	4,122	6,119	6,769	7,680	7,475	16,989	26,251	25,785	24,080
Less: Imputed Bank Services Charge	-2,898	-5,299	-6,601	-8,666	-13,156	-18,810	-18,916	-21,056	-29,712
G D P At Market Prices	**124,313**	**151,157**	**192,201**	**239,017**	**314,279**	**519,573**	**745,352**	**888,658**	**864,909**
Non -Oil GDP	106,903	136,036	178,835	226,389	296,544	450,461	552,581	641,884	723,859

* Provisional Actual

** Provisional

ANNEX 13: MARKET SHARE ANALYSIS

Constant Market Share Analysis: Yemen

	Manufacturing	Non-Oil	Total Exports
	98-05	**98-05**	**98-05**
Total Increase	100.0	100.0	100.0
World Trade Effect	13.1	32.1	43.6
Composition Effect	-0.8	-13.6	-41.9
Competitiveness	87.6	81.5	98.3

ANNEX 14: CALCULATION OF WELFARE GAINS

Figure 1

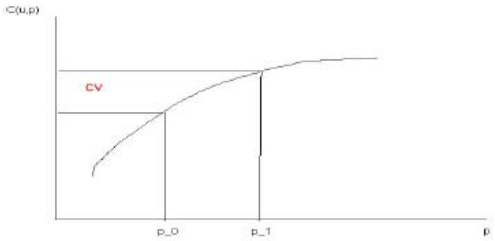

Figure 2