

AN EXPERIMENTAL STUDY FOR THE ESTIMATION OF
PER CAPITA CONSUMPTION OF TOTAL CEREALS
IN RURAL HOUSEHOLDS, YEAR 1960-61

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SUMMARY. This is a study on the estimation of the per capita rate of cereal consumption based on an accounting period of one day and a larger period of one month both obtained through the interview method. The length of accounting period does not seem to have affected the results appreciably, but both of them underestimate in comparison to more objective estimates obtained through an actual weighment of quantities consumed in one day. The variability in the weighment data is also found to be higher. One possible explanation might be that (i) some of the quantities are actually missed at the time of interview and besides, (ii) the informant may have a tendency to furnish somewhat smoothed out figures representing his 'typical' or average consumption, while in weighment the actual consumptions were recorded. The second conjecture is borne out by an analysis of material specially collected in an auxiliary survey, relating to the mode of reporting by individual informants. It is found that for an item like rice, only 1.58% of households maintain any sort of daily accounts, while 43.25% report not on actuals but on the basis of a notional per head requirement. And yet, the average over a large number of households are not widely divergent from results based on more objective surveys.

1. INTRODUCTION

1.1. *Object.* The object of these experiments was to ascertain the appropriate length of accounting period (a.p.) needed for a proper estimation of the per capita rate of cereal consumption per day. The conventional, i.e. the most usual practice in consumption surveys is to adopt an accounting period of one month, either a calendar one last completed or a moving period of last 30 days. Smaller accounting periods like one 'week' or one 'day' have often been tried out in India but the general choice seems to be in favour of the former one. An accounting period smaller than a month is suspected to overestimate the rates of consumption. Whether the larger period underestimates or whether a shorter period overestimates is, till now, a matter of pure guess. A final verification by reference to some correct standard is however, an extremely difficult proposition. Any data collected by the method of interview has its obvious limitations. In absence of a systematic accounting of the day-to-day household expenses, validity of the collected data depends ultimately on the ability of the informant to recall the past details and on his honest attempt to do so. *Prima facie*, the larger the accounting period, the greater is the chance of memory lapses. On the other hand, there might be an attempt, either deliberate or unconscious on the part of the informant to fill up the missing gaps with fictitious returns. In this performance, he may be inclined either to show off a higher level of living or to make out a miserable plight that he is really in. These two attitudes will be guided on his interpretation of the real object of such enquiries.

1.2. In these respects, a shorter period of accounting has distinctly one advantage over the larger ones, namely that the accounts would be relatively fresh in memory and hence liable to much less errors. On the other hand, an accounting period of one calendar month, as has often been pointed out, has one practical advantage, namely, that a calendar month is likely to be the natural accounting period for

a household. Thus although the day-to-day details may be forgotten, the informant should be in a better position to report for the month as a whole. Households dependent principally on monthly, weekly or daily wages, should thus be able to report more correctly, if the accounting periods are made to correspond to the respective wage-earning periods. In urban and industrial areas, where practically everything has to be purchased for consumption, we may use different types of schedules with an accounting period coinciding with the different wage-earning periods. But in rural areas, where households are dependent primarily with non-wage occupation or with irregular and intermittent wages, this special advantage does not exist. Besides, in large-scale extensive surveys, it is difficult to visit all the sample households just after or shortly after the accounting period has expired.

1.3. As regards the practice of reporting on the last 30 days prior to the date of visit, it is more than likely that the report is made on the basis of the last calendar month or more probably on the basis of an average month in the particular season. Since daily accounts are practically never maintained, it is apparently impossible to arrive at the total of any given thirty days, unless it coincides with a broad budget period, where such budgets are conceivable. A special investigation described in Section 8 of this note, had in fact been made during these experiments, specifically with the object of studying the informants' reactions and the mental computation involved in furnishing his consumption accounts for one calendar month or for a month comprised of any set of 30 successive days. It was found that in the majority of cases, the informant is guided by the average daily/weekly purchases of cereals, if purchases were made or by an indirect calculation on the basis of a notional per-day requirement of the household. In the latter case, it seems that a direct collection of such guess figures would give us, on compilation, an average rate of consumption in no way less valid than we would be getting by computation in a round about way.

1.4. With short accounting periods referring to very recent times, let us say regarding consumption actually made on the day before interview, memory will be fresh and the details can be further confirmed by consultation with the womenfolk of the household.

1.5. Consumption rates based on a shorter accounting period should obviously have a higher percentage of variability compared to the same based on a larger accounting period. But the "space" correlation within a time-field, i.e. between day-to-day consumptions within the same set of households, is expected to be very high. As a result, a reduction in variability by increasing the length of accounting period from one day to a month of thirty days will not be in the ratio $1 : (30)^{0.4}$ but as $1 : (30)^g$, where g is likely to be very much less than 0.5.

1.6. The relative merits and demerits of a shorter and a larger accounting period discussed above are however based on mere *a priori* considerations. The final and only test of the superiority of one over the other, lies in their comparison with absolute data based on the direct weighments of foodstuff on the very day of their consumption. To meet this essential requirement, direct weighments were also car-

PER CAPITA CONSUMPTION OF TOTAL CEREALS

ried out simultaneously on a sample of household-days along with two other samples of household-months and household-days the last two being surveyed by the method of interview.

1.6. *Coverage.* A compact block of 3 villages, (1) Daaghara, (2) Srikrishnapur and (3) Digir with a total area of 4.5 sq. miles and containing about a thousand households was selected and this represented the total coverage. A complete list of all households within this area, along with the size of each household and some other particulars was then prepared by a house to house visit.

2. PLAN OF THE EXPERIMENTS

2.1. *Day-reference by the interview method and weighing method.* Two samples of 120 independent households, i.e. sample-1 and sample-2, each in 10 independent instalments spread over the entire area were drawn with a probability proportionate to the size of households and with replacement. Two subsamples, one from sample-1 and one from sample-2 were allotted to each of the six investigators for a period of 3 days. The total period of 30 days was split up into ten sub-periods of 3 days and fresh samples were selected for each of the ten sub-periods, which may be conceived as ten strata into which the entire accounting period was out up. In sample-1 households, the investigators were asked to fill in the schedule by a personal interview with 'yesterday' as the accounting period. In sample-2 households, the investigators were required to take direct measurement in respect of rice and atta either cooked at home or cooked preparations received and disposed of, and also of cheera-muri-khai etc., as consumed on the day, separately for each quarter of the day, namely morning, noon, afternoon and evening. The enquiry was to be made on the very day when these quantities were to be consumed and the weighments were to be taken just before the articles of food were going to be prepared for actual consumption.

2.2. In each 3 days-period, 2 households belonging to sample-1 (interview) and 2 households belonging to sample-2 (weighment) were allotted to each investigator. The enquiry was confined to the consumption of cereals and cereal products only. The selection of sample households was made with replacement subject to one restriction, namely, that the same household was not permitted to fall both in sample-1 and in sample-2 on the same sub-period and that the interview-survey was to precede with the weighment survey by at least one day.

2.3. Great attention was paid to the weighment-enquiry survey. To obtain the best results, the investigators were instructed to interview all the households on the first day of a sub-period and notify about the weighment programme in advance to the households concerned. For weighment enquiry, only one household and not more was to be attempted in a day. In order to facilitate the weighing investigations, which required free access to the kitchen-door several times in a day, and contacting the women in the household when the male members happened to be absent, young boys mostly from the local H.E. School were engaged as pilots or guides sometimes on payment of a small pocket money. This arrangement proved very helpful as the investigator had often to wait for long hours till the meal-preparations were started.

Thanks to the good office of these young guides and the helpful cooperation which the villagers ungrudgingly accorded, very few casualties had to be encountered. Our workers were cordially invited inside the household, offered seats and not infrequently treated with a cup of tea. Much preparation was made in advance to win the heart of the villagers, where our work was to continue for more than six weeks, and about 300 households out of one thousand, i.e. about one in every three were to be visited and dealt with. The office bearers of the Union Board, leaders of the different political groups, doctors and such persons of importance were individually approached and the object of the enquiry was explained to them in every details. As a result of continuous spade work carried out by the technical and supervising staff, a genuine interest for the success of the scheme was aroused and fullest cooperation was promised by all. Advance preparation on such a scale is not normally to be achieved in large scale operations. With a small coverage and a limited objective in view, it was both possible and necessary that an ideal atmosphere of willing cooperation was guaranteed.

2.4. *Month reference by the interview method.* On completion of sample-1 and sample-2 households, a third sample of 108 households drawn with a probability proportionate to size of households with replacement was taken up. The household belonging to this sample was to be interviewed at the end of the month and was allotted to 6 workers. The accounting period referred to the calendar month just completed and the enquiry was to be completed within 6 days.

3. DEFINITIONS AND CONCEPTS

3.1. In estimating consumption rates per capita, it is necessary first of all to have a clear and unambiguous definition of the number of persons constituting the household on the day. The demography blocks in all the schedules have been drawn up in great detail, from which the household size can be built up on any concept we may choose. The household members have been grouped into categories (a) usual and (b) casual. The 'usual' members have been further sub-grouped into (i) those related to the head or of the same social rank as the head and (ii) those of a menial or serving rank. The second category, i.e. 'casual' members have likewise been split up into (i) persons of the same rank as the head and (ii) menials. The convention adopted by the National Sample Surveys in defining the household size refers to (a) only. In addition to this, a meal register had been drawn up, where all information regarding the different meals, morning, noon, afternoon and evening, were collected for each individual member of all categories. In case a particular member has not taken a particular meal within the household, he may or may not have taken it outside; if he has taken that meal outside, it may have been within the survey coverage or outside it. A 'usual' member was to be counted in full, whether he does or does not take his meal in the household on the day, so long as he has not taken any meal outside. In all cases, a man taking one principal meal is counted as half a man-day, and two principal meals constitute a full man-day, ignoring breakfasts and tiffins taken elsewhere. On this basis we may build up the effective household-size. This applies for all households where the accounting period was taken as one day, whatever the form

PER CAPITA CONSUMPTION OF TOTAL CEREALS

of enquiry, interview or weighment. As for the month-accounting schedules, the meal register has been kept in a slightly different form. The number of days on which meals were taken by each individual out of thirty days, have been recorded. The total number of man-days registered for meal-taking within a household divided by thirty, gives us the average effective size of meal-taking household. A person not a 'usual' member has been admitted within the household, if on a particular day, he has taken the major meals inside the household.

3.2. Now, whichever unit is adopted as the 'divisor' i.e., 'usual' size or the average 'effective' size (based on man-days) for a household, the results were expected to even out and tend to be the same in the long-run. One of our objects was to study if any possible bias creeps in estimating the size of household itself, and to estimate the mean consumption rate as accurately as possible by making a very pointed enquiry by recording in as much detail as possible.

4. WEIGHING PROCEDURE

4.1. The investigators were each provided with an accurate balance and weighing pieces correct to the nearest decimal of a tola. Besides, each worker was supplied with a local 'batua', a small volumetric measure commonly used for measuring muri-cheera-khai and such other dry cereal products. Quantities of such items sold or purchased are usually referred in terms of 'batuas'. In case of cooked rice or 'bhat', rice grains made ready for cooking were weighed up correct to the tenth of a tola then and there. Muri-cheera-khai etc., were measured correct to a quarter 'batua' and these were subsequently converted into equivalent tolas. The investigators, generally accompanied by his local 'guide' had often to wait for considerably long hours to ensure his personal presence immediately before the cooking was started. Although, cooking of the major meals are broadly done in specified hours of the day, yet on certain occasions, they were delayed due to various circumstances. This was especially troublesome in the case of morning and afternoon tiffins, and the investigators had to attend as many times as the children in the house cared to have their tiffins and snacks at all odd intervals.

4.2. Disposal of boiled rice, baked *roti* or other cooked preparations by gift or sale were carefully noted and reconciled. In case of *atta*/flour, the raw quantities at the time of preparation were weighed on the balance. But for prepared foods purchased or received as gifts, the number of pieces disposed of, were noted. The number of such pieces that could be prepared out of a seer of *atta* was also recorded. A technological rate was then applied to convert the number of pieces into tolas. To maintain a reasonable check on these factors, an experiment was arranged with a *local shop* and pieces of various sizes were experimentally prepared out of a given quantity of *atta*. Similar experiments were conducted also for the determination of boiled rice by volume from a given weight of unboiled rice. The workers were thus initially trained in the eye-estimation of the likely contents by weight in a given piece of any size. In short, every precaution was taken for ensuring that the data may be as correct as possible and a maximum of vigilance was exercised in all matters.

4.3. The data collected in the weighing scheme may thus be considered to be of a very high precision normally unattainable in large scale extensive surveys. The success must also be attributed to the very earnest and zealous team-work of the investigating party working together and living in a common messing. The technicians living in the same camp were in constant touch with the individual worker and the evenings were spent in discussions on the day's achievements, the difficulties, and the next day's tasks. The supervising and technical staff not only visited the worker engaged in enumeration, but also kept a constant contact with the village elders and leaders of the younger generation. The individual workers were thus enthused with a scientific spirit and worked with an unusual interest which is difficult to maintain under ordinary survey conditions.

4.4. It may be noted however that the coverage was small and this had made it possible to attain the high level that was generally reached. The preparatory work for the census of 1961 was going on at the time. We had to convince the villagers, sometimes with great difficulty, that we do not represent Census authorities nor any other government department. In spite of that or perhaps because of that, the villagers felt very much at ease with us in their day-to-day dealings. They had apparently believed that our findings will not lead to any enhancement of taxes.

5. RESULTS OF THE EXPERIMENT

5.1. *Relative importance of different items in the cereal diet.* For each of the Schedules total quantity of cereal consumed by the household was obtained by converting the individual components into tolas and then pooling up. Of all the components, cooked rice represents the largest share, *roti*, being the next in importance, while the other components are very minor ones. Table 1 shows the relative importance of the cereal ingredients of an average diet in the Dasghara locality.

TABLE 1. PERCENTAGE CONTRIBUTION OF THE DIFFERENT CEREAL ITEMS TO TOTAL CEREALS CONSUMED IN THE HOUSEHOLD

cereal items	p. c. composition by weight of individual components to total over all cereals		
	interview enquiry on		weighment on day account
	day account	month account	
(1)	(2)	(3)	(4)
1. rice (boiled)	79.00	82.14	77.67
2. roti (baked)	7.77	6.68	10.00
3. other rice products	11.20	9.38	10.74
4. other wheat products	1.25	0.57	0.46
5. other cereals	0.78	1.37	1.14
total cereals	100.00%	100.00%	100.00%

PER CAPITA CONSUMPTION OF TOTAL CEREALS

5.2. Total quantity of rice consumed in the household is practically same as the quantity of rice boiled in the household, all other disposals being small and practically balancing themselves. In the case of 'roti' also, the ratio of quantity baked at home to total consumed is equally high. The comparisons based on the day-accounting data obtained by an interview and by actual weighings are given in Table 2. The corresponding results are not however available for the month-accounting enquiry.

TABLE 2. PREPARATION OF CEREAL FOOD PREPARED
AT HOME TO TOTAL CONSUMED

component cereals	quantity prepared at home as percent to quantity consumed	
	interview with day-accounting	weightment with day-accounting
(1)	(2)	(3)
1. rice (boiled)	99.79	98.01
2. roti (baked)	99.13	99.70

5.3. So far as the weightment enquiry is concerned, it is the home prepared portion that was ascertained with the greatest accuracy by direct measurements. As for the disposals and receipts, the quantities were indirectly obtained through the intermediary of volumetric measures, namely, the 'batua'. Besides, such transactions may have been less controlled in spite of our best vigilance. But that constitutes a very negligible proportion of the overall cereal consumption.

5.4. *Average size of household.* We have already discussed about the alternative definitions of an 'average' household size, one being the average number of the 'usual' members (as defined in the National Sample Surveys) and the other being the 'effective' size, i.e. the average of actual man-days registered for the principal meals within individual households. On a day-accounting basis, a member, unless he is an 'usual' one is not taken into account if he has taken no meal on the day in the household. But in case of an 'usual' member, he is counted even if he has not taken his meals inside the household, provided, he has not taken it outside. Both these average are expected to equalise on a large sample of households.

5.5. As already discussed, the reckoning of man-days for the month-accounting schedule was slightly different. Here, a registration of the day to day meal practice was obviously not possible. The informant was asked to report for each individual member, the number of days for which he took his meals inside the household, and the number of days he took his meals outside, considering one principal meal as half-a-day. Total number of man-days divided by 30 would give the average meal-attendance-days for the households.

SANKHYĀ : THE INDIAN JOURNAL OF STATISTICS : SERIES B

5.6. It will be interesting here to examine, how the 'usual' size of household compares with a more critically defined household size, namely on the basis of a meal register. Table 3 gives the estimates as obtained from the three separate types of enquiry for comparison.

TABLE 3. AVERAGE SIZE OF HOUSEHOLDS COMPUTED ON THE BASIS OF 'USUAL' MEMBERSHIP AND AVERAGE MEAL ATTENDANCE

enquiry type	average size of households	
	'usual' member basis	meal-attendance basis
(1)	(2)	(3)
<i>interview</i>		
day accounting	6.71	6.84
month accounting	6.64	6.41
<i>weighment</i>		
day accounting	7.43	7.41

5.7. It will be seen that the average size of household does not differ much, whatever the basis of reckoning, namely, according to the 'usual' membership basis or to the meal-attendance basis. But the weighment enquiry gives a larger household size than those obtained by either of the interviews, with a day or a month as the period of accounting. The three samples were independently drawn with replacements, so that there is no reason for any of the sample getting biased. The only explanation that suggests itself is that in weighing experiments, where the enquiry had been carried out more closely, even the most casual of the meal-takers could not escape enumeration, which might have been left out in the interview enquiries.

6. CONSUMPTION OF TOTAL CEREALS

6.1. *Estimation procedure.* The mean rates of consumption and their standard errors were estimated on a procedure appropriate to the sampling design, namely unistage selection with probability proportionate to the size of household with replacements. The ratios per capita per day were computed for each individual household and an average of these ratios gave the sample mean. The variance were correspondingly estimated.

6.2. Considering that there may be a time-pattern in the ratios of consumption (for instance, the rates at the beginning of a month and at the end may be different due to financial reasons), a stratification of the total period of 30 days was made. Table 4 does not however bring out any marked pattern, so far as the cereals are concerned. The mean per capita rates in Table 4 were computed for each 3-day sub-period by pooling up the six worker-sub-samples, an aggregate of 12 households.

PER CAPITA CONSUMPTION OF TOTAL CEREALS

TABLE 4. MEAN CONSUMPTION OF TOTAL CEREALS IN TOLAS PER CAPITA PER DAY BY THREE-DAY SUB-PERIODS (HOUSEHOLD-SIZE ON MEAL-ATTENDANCE)

sr. no.	sub-periods	mean in tolas per capita per day	
		interview enquiry	weightment enquiry
(1)	(2)	(3)	(4)
<i>day-accounting</i>			
(12 households in each sub-period)*			
1.	17 Nov. - 19 Nov.	55.38	47.63
2.	20 Nov. - 22 Nov.	58.98	60.35
3.	23 Nov. - 25 Nov.	53.48	56.13
4.	26 Nov. - 28 Nov.	54.41	51.32
5.	29 Nov. - 1 Dec.	54.00	48.52
6.	2 Dec. - 4 Dec.	54.11	66.11
7.	5 Dec. - 7 Dec.	65.85	62.59
8.	8 Dec. - 10 Dec.	57.71	59.43
9.	11 Dec. - 13 Dec.	56.83	58.51
10.	14 Dec. - 16 Dec.	52.57	55.44
total day a/c		56.16	57.60
<i>month-accounting</i>			
(54 households in each sub-period)			
11.	17 Dec. - 19 Dec.	51.90	—
12.	20 Dec. - 22 Dec.	67.01	—
total month a/c		54.48	—

*except in sub-period - 3 of day-accounting, where n=10.

The stratification of the total enquiry into sub-periods of three days for the two day-accounting enquiries, namely by interview and by weightment, has however been ignored for purposes of estimation in all the basic tables.

6.3. *Mean consumption* of total cereals per capita per day.* Mean consumption rates for total cereals were computed for each enquiry over the whole of the month and the results have been given in Table 5 along with their standard errors. Columns (2)-(4) give the mean rates based on (a) day-accounting by interviews (b) month-accounting by interview and (c) day-accounting by weightment method of enquiry, while columns (5) and (6) give the differences of (a) and (b) from (c) i.e. weightment method being taken as the standard.

SANKHYĀ : THE INDIAN JOURNAL OF STATISTICS : SERIES B

TABLE 5. MEAN CONSUMPTION OF TOTAL CEREALS PER CAPITA PER DAY AS OBTAINED FROM DIFFERENT ENQUIRIES WITH AN AVERAGE HOUSEHOLD SIZE BASED ON (i) USUAL MEMBERSHIP AND (ii) MEAL ATTENDANCE

basis for computing household size	interview enquiry			difference	
	(a) day-accounting (n=118)	(b) month-accounting (n=108)	(c) weighment on day-accounting (n=120)	(c)-(a) (d.f.=236)	(c)-(b) (d.f.=226)
(1)	(2)	(3)	(4)	(5)	(6)
meal attendance	67.65±1.62	63.23±2.34	68.03±2.23	0.38±2.88	4.80±3.23
usual membership	66.18±1.48	64.46±1.74	67.60±2.11	1.44±2.68	3.14±2.74

6.4. It will be seen that the weighment basis gives a higher mean rate with a corresponding higher sampling error, specially with the 'usual' membership as the basis of household size. The analysis of variance discussed hereafter brings out this peculiarity in a clear relief. That is quite interesting. While the higher rate of mean consumption obtained in the weighment enquiry can be explained by a more complete and exhaustive enumeration of all cereal quantities consumed in the household, the increase in the variability in the calculated rates is difficult to explain. It may be surmised however, that in an interview enquiry, the answers are relatively more artificial, and although the quantities are to refer strictly to the particular days' consumptions, the informant may unconsciously be furnishing figures that in reality relate to an average day's consumption rather than to the particular day's consumption. This hypothesis could explain the increased variability in the rate of consumption obtained from an weighment enquiry, where day to day variations have not been suppressed or smoothed out to any extent. Further studies are of course necessary to explain this phenomenon in its true light.

6.5. The mean differences give in columns (5) and (6) indicate that one of the estimates based on an interview method differs significantly from the weighment results, which may be accepted as the standard. The position remains unaltered, whatever basis is adopted for computing the household size.

6.6. *Sub-sample estimates.* It may be remembered that the day-accounting by interview and the day accounting by weighments were both spread over all the sub-periods of three days, such that the first of the three days was spent on filling two day-schedules by interview and the subsequent two days in filling two day-schedules by weighments. These two enquiries were thus interspersed and spread over the whole month, such that the dates numbered 1, 4, 7, 10... , 28 were spent on interview and the dates numbered 2-3, 5-6, 8-9, .. 29-30 were spent in weighments. On each day assigned for interview each investigator filled in two schedules in the order of selection. Thus for all the six investigators, it is possible therefore to form two independent sub-samples by picking up the first households out of all the six investigators and similarly by picking up the second households in order from each, in individual

PER CAPITA CONSUMPTION OF TOTAL CEREALS

sub-periods, thus giving a total of 20 model sub-samples of six households in all. The month-schedules may also likewise be grouped into eighteen model sub-samples, taking the first household out of each investigator and then the second household etc, in each of the sub-periods. It will be interesting to compute the mean rates of consumption by such sub-samples for these enquiries separately and review the pattern of their behaviour more closely, as a breakdown into a number of small sub-samples is likely to give a better insight. Table 6 gives the average size of household computed on the basis of 'usual' membership and also on the basis of meal attendance, while Table 7 gives the corresponding rates of consumption by sub-sample breakdowns.

6.7. From Table 6, it will be seen that sub-sample-3 and specially sub-sample -13 has seriously misbehaved in the weightment sample, the average size of household being much larger compared to the estimates based on the other methods of enquiry.

TABLE 6. AVERAGE SIZE OF HOUSEHOLD ON 'USUAL' MEMBERSHIP BASIS AND AS MEAL-ATTENDANCE BASIS BY SUB-SAMPLES OF SIX HOUSEHOLDS (ONE FROM EACH INVESTIGATOR) FOR THE DIFFERENT TYPES OF ENQUIRY

sub-sample	average size of household					
	day account				month-account	
	interview		weightment		by interview	
	usual membership basis	meal attendance basis	usual membership basis	meal attendance basis	usual membership basis	meal attendance basis
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	5.50	5.33	9.00	8.00	5.83	5.35
2	6.50	6.25	9.00	7.33	6.50	5.62
3	7.33	7.02	8.33	8.08	5.83	5.19
4	6.17	6.42	9.63	9.50	8.83	8.87
5	7.75	7.75	6.17	6.83	5.33	5.08
6	5.17	5.25	9.33	8.42	4.67	4.72
7	7.83	7.83	5.83	5.83	6.00	5.47
8	8.83	9.08	9.00	8.92	7.67	7.57
9	4.67	5.08	8.33	8.83	6.50	6.40
10	6.33	6.50	6.67	6.50	8.83	8.69
11	8.50	8.75	4.83	5.00	6.00	6.98
12	7.00	6.75	6.17	6.67	5.67	5.02
13	5.67	5.75	11.00	12.58	7.83	7.43
14	7.17	7.25	4.67	4.83	7.33	7.21
15	4.60	4.67	6.33	6.25	5.67	5.58
16	8.00	8.00	8.50	7.83	4.83	4.77
17	8.88	8.42	6.17	6.58	8.50	8.72
18	4.17	4.67	6.17	6.17	7.67	7.88
19	7.00	7.25	6.00	5.67	—	—
20	8.17	8.25	4.33	8.42	—	—
all	6.71	6.84	7.43	7.41	6.64	6.41

SANKHYĀ : THE INDIAN JOURNAL OF STATISTICS : SERIES B

The overall average size has consequently gone up and these two sub-samples seem to be responsible for this divergence. Table 7 on the other hand does not reveal the unusual behaviour in individual sub-samples. The average consumption rates obtained in the weighment enquiry are at a higher level than those obtained by the two other enquiries in 12 out of 20 cases. The higher average in the weighment sample appear therefore to be due to an inherent characteristic of the mode of enquiry itself than a case of chance occurrence.

TABLE 7. MEAN CONSUMPTION OF TOTAL CEREALS IN TOLAS PER CAPITA PER DAY CALCULATED ON THE 'USUAL' MEMBERSHIP BASIS AND MEAL ATTENDANCE BASIS BY SUB-SAMPLES OF SIX HOUSEHOLDS (ONE FROM EACH INVESTIGATOR) FOR THE DIFFERENT TYPES OF ENQUIRY

sub-sample	per capita per day in tola					
	day account				month account	
	interview		weighment		by interview	
	usual membership basis	meal attendance day basis	usual membership basis	meal attendance day basis	usual membership basis	meal attendance day basis
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	62.87	64.09	39.06	45.18	45.97	49.12
2	45.75	46.87	46.06	50.11	39.02	45.31
3	51.09	48.71	59.51	62.76	41.66	44.03
4	72.32	65.27	56.54	57.93	55.81	56.39
5	58.88	57.50	80.50	75.76	62.00	66.78
6	51.06	50.73	53.06	56.51	41.91	41.29
7	53.86	53.44	56.18	56.18	51.16	57.72
8	50.40	55.38	46.81	46.47	53.18	52.06
9	52.32	47.54	61.08	58.97	54.38	54.35
10	56.65	60.47	37.99	38.06	47.96	46.61
11	62.21	56.21	75.22	73.63	66.99	66.62
12	50.26	53.01	62.40	58.59	51.93	55.45
13	77.46	67.35	55.76	51.96	53.17	56.06
14	65.31	64.45	77.17	72.63	56.67	54.89
15	61.93	59.98	57.13	54.23	55.00	54.27
16	54.63	58.47	63.03	64.63	66.64	66.70
17	58.30	60.77	56.67	62.93	58.31	54.11
18	58.09	62.49	65.48	64.10	56.32	54.40
19	53.44	49.55	57.02	59.57	—	—
20	56.79	55.58	54.07	51.30	—	—
all	57.65	56.16	58.03	57.50	53.23	54.46

Note : number of households in each sub-sample is 6, except in sub-sample 5 of the 'day' interview, which is 4.

PER CAPITA CONSUMPTION OF TOTAL CEREALS

7. ANALYSIS OF VARIANCE

7.1. Total variance in the household consumption rates for total cereals may be broken up into two components, namely between enumerators and the residual. Similarly, this can also be split up into 'stages' namely, between sub-periods and within. The results have been shown in Table 8.

TABLE 8. ANALYSIS OF VARIANCE IN THE RATE OF CEREAL CONSUMPTION PER CAPITA PER DAY IN TOLAS (MEAL ATTENDANCE BASIS OF HOUSEHOLD SIZE) BETWEEN ENUMERATORS AND BETWEEN SUB-PERIODS

components of variance	d.f.			variance		
	day interview	month interview	day weightant	day interview	month interview	day weightant
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.1 enumerators	5	5	5	92.76	578.76	646.72
1.2 residual	112	102	114	267.62	315.23	530.84
total	117	107	119	280.15	327.64	635.66
2.1 between sub-periods	9	1	9	171.38	705.79	643.94
2.2 within	108	106	110	267.65	323.98	534.99
total	117	107	119	280.15	327.64	635.66
coefficients of variation				28.7%	33.2%	40.2%

It will be seen that the variation between enumerators is not significant in any of the enquiries, while the sub-period variation is just significant for the month interview only. The last line gives the coefficients of total variation for each of the enquiries, being 28.7%, 33.2% and 40.2% for day-interview, month-interview and day weightant respectively. In an earlier experiment in Giridih (Bihar), the consumption of a number of selected food items was observed continuously from day to day for one complete year on a sample of sixty households. The results have been discussed in an earlier paper. It was found, that the "between household" component of variation was large. As a result, the proportionate reduction in total variability by increasing the accounting period within a household was negligible; a variability of 26.8% for total cereals with one-day accounting was reduced to only 22.2% with 4 weeks as the accounting period, although the "within household" variability fell down from 16.3% to 7.8% at the same time. This study of the variance as a function of the size of accounting period was however carried out by model sampling experiments from the daily data relating to the sixty households, i.e. by artificially building up the one week, two week, four week totals etc. from the daily consumption figures. In this case, the sampling was actual and a new factor, namely the differential ascertainment errors with different size of accounting period, has also entered. A variation

of 33.2% with one-month accounting against 28.7% with one-day accounting, both of them being conducted by the method of interview (weighting method may be kept out of this comparison, as this method is altogether different, and has already been reviewed in para 8.3) clearly demonstrates that there is no special gain by increasing the size of accounting period, so far as the variability in the consumption rates of cereals is concerned. The gain may be considerable in other items of food, for instance meat, where the variability falls from 581% with a day accounting to 134% based on one-month accounting, given in the same paper mentioned above. It is on the relative magnitudes of the "between household" and "within" components that the relative gains can be judged.

7.2. It is however the relative cost of enumeration on which the actual merits of the size of accounting period would ultimately depend. The cost for enumerating with a month accounting, i.e. the schedule filling time would be about twice that needed for working with a day-accounting period. This has been observed in an earlier experiment at Sainthia (Birbhum) and Calcutta, and the results have been discussed in elsewhere.* Detailed time records of field performance were not however maintained in this experiment. Obviously, the largest and most important component of cost, i.e. journeys from household to household and from village to village would be identical in both cases on a per household basis. Thus, by and large, the overall field cost is likely to remain practically of the same order irrespective of the size of accounting period, item coverage and all other factors remaining the same.

8. AUXILIARY STUDIES ON THE MODE OF REPORTING OF CONSUMPTION DATA BY HOUSEHOLD INFORMANTS

8.1. *Object.* Along with the consumption surveys conducted at Dasghara, a special investigation regarding the process adopted by individual informants in reporting the consumption data during an interview, was carried out. The object of this scheme was to follow up the mental process of computation involved in recalling and building up the last months' (calendar, or the last 30 day's) consumption figures. Daily accounts of purchases or consumptions are rarely maintained in a household, and yet, in all consumption enquiries, the informants furnish some sort of data when interviewed by an investigator. Our object was to study as to how it was done.

8.2. *Coverage and sampling design.* This special enquiry was conducted in the same villages about Dasghara, immediately after the main enquiry was completed. The population and the time-reference were thus practically identical in the two cases. But to reduce the load of work, a portion of the total coverage was cut off for purposes of this enquiry. All households within a compact block of about 3 square miles were listed, and the names of the heads along with their principal occupations were noted down. The households were then grouped into three broad classes, as follows :

*See J. M. Sen Gupta (1964): A Study of the field cost for the collection of household consumption data by an interview method. *Contributions to Statistics*, Presented to Professor P. O. Mahalanobis on the occasion of his 70th birthday. Pergamon Press, Oxford and Statistical Publishing Society, Calcutta.

PER CAPITA CONSUMPTION OF TOTAL CEREALS

Type 1 : principal income mainly from regular wages in non-literate occupations, comprised primarily of agricultural labour, un-skilled labour, domestic services, artisans etc.,

Type 2 : principal income mainly from literate occupations including unearned incomes comprising teachers, literate service, doctors, pleaders etc.,

Type 3 : rest, constituted mainly of cultivators, share-croppers, trades people etc.,

Fifty households from each of the above groups were selected at random in the form of two equal and independent samples. In one of the samples, the households were interviewed and information regarding cereal consumption in the preceding Bengali calendar month was collected, while in sample-2 information was collected regarding cereal consumption in the preceding 30 days.

The schedule itself was short and covered only a few important food items as follows : (1) rice, (2) muri, (3) oil, (4) fish, (5) potato, (6) onion, (7) pulses, (8) milk, (9) clothing, (10) tea, (11) sugar and gur.

8.3. *Operational procedure.* The investigator was to approach a sample household and carry out his investigation in two separate stages. In the first stage a schedule was to be filled up, enumerating the quantities of individual cereal items consumed in the household by a direct interview with the informant, as in an ordinary consumption survey.

In the second stage, and as soon as the consumption schedule was filled up the informant was personally appealed to, to reveal as to how he had arrived at the figures furnished by him item by item.

The informant was asked whether he has maintained a day-to-day account of the quantities consumed over the whole period of one month. The answer in most cases was likely to be negative. The investigator was then to try to bring out by tactful conversation, the mental computation by which the informant had actually arrived at the reported figures as entered into the schedule. Such an investigation was not easy and it is hardly possible to lay down a mechanical procedure for putting the necessary questions and supplementary queries in their most effective sequence. The success would depend entirely on the investigator's effectively breaking the natural shyness or diffidence on the part of the informant and invoking an easy and cooperative attitude such that an intimate confidence is created between the two.

The investigator was particularly instructed to keep in mind that under no circumstances, the informant should be made to feel that these talks were possibly intended to check up the correctness of the data already reported in the first stage. He was to tell the informant frankly, that these supplementary queries have nothing to do with the verification of the filled-in data (and in fact, the original returns were not to be modified in the light of the subsequent discussions). He was to explain his object in more or less the following vein :

"Since most of the households in our villages do not maintain a day to day accounting of the daily consumptions, with which daily purchases and other acquisitions or disposals are involved, we want to investigate how the households usually arrive at the consumption figures even if approximately. We have observed that it is possible to give a reasonable though rough indication of these quantities, for averages based on such interview material have been found to agree fairly with 'averages' based on more rigorous methods, namely by actual weighing of food materials taken on the spot. It is true that it will vary widely in individual households but taken over a large number of households the two methods are reasonably close. We have thus concluded that an informant can usually give a roughly correct account although no detailed accounting may have been kept. We want now to investigate, how he arrives at those figures, during an interview.

(a) Does he actually keep a *daily* or weekly account on his own ?

(b) Or, perhaps he has rough guess of the consumption rates per head or per day and multiplying these rates by the number of heads or the number of days, he arrives at a monthly figures *not* far from correct ?

(c) Or, does he recall and sum up all the purchases and disposals and has an idea of the stock in hand and thereby deduces the quantity already consumed ?

(d) Does he calculate the actual consumption as in the last calendar month or last 30 days or simply reports his figures on the basis of an average of one typical month, i.e., an affluent month (just after harvest) or a lean month (before the major harvest) ? We want to study the various procedures adopted by a large number of informants and on that basis evolve a workable technique for the collection of consumption data. For, it is obvious that actual weighing of foodgrains or other consumption quantities on the spot, though most accurate, cannot be carried out on a large scale.

Our object is not to verify the figures you have already reported but we want to make a note of the way in which you argued with yourself in arriving at the figures. In other words, please try to recall what you had been progressively thinking while answering to my questions regarding, say the quantity of rice consumed. We shall note down that faithfully, as if we have tape-recorded while you were loudly thinking.

It is very likely that different households would try to account for its total consumption when interviewed in quite different ways. For instance in a household which has little production of cereal crops, and has to depend mainly on purchases etc., the process might be to try to recall the various purchases over the month and build up from that. Then again a household may be dependent mainly on monthly earnings and his purchases will be only once or a few times in the month. Another household depending on daily or weekly wages may have to purchase every day or every week. So, we want to know how the different types of households could roughly have their own estimates of monthly consumptions."

PER CAPITA CONSUMPTION OF TOTAL CEREALS

The informants were not however asked specifically as to which of the above categories, he considers himself to belong. The above are mere illustrations intended for our investigators. The informant's views however expressed, were noted down as such and naturally that has coincided with one or other of the above or their combinations, and sometimes unexpectedly new categories have also turned up. Only in extreme cases, where the informant was unable to express his thoughts or analyse them the investigator had to suggest if one or other of the categories, or something like that was his approach. Such 'leading' suggestions were however to be avoided as much as possible.

The most important thing was to convince the informant of our purely scientific interest in studying the various estimating techniques adopted by individual household-informants. It would be assumed that by a proper persuasion and respectful confidence (an approach completely free from any superiority complex over the less literate informants), appropriate scientific interest can be aroused almost in every man. And we must appreciate that each informant on his own is a little "Statistician", who has ostensibly estimated a quantity from stray data, whatever be his method of estimation.

8.4. *Field Staff.* The investigators entrusted with this job were carefully selected, the requisite qualities being that they should be intelligent, sympathetic, polite and above all enthused with a little spirit of scientific research. It should be remembered, that the type of investigation was quite different from the routine task of filling in questionnaires by usual interviews. As a matter of fact, the staff had to be picked out exclusively from trained technicians and experienced inspecting staff. Five workers were engaged in the enumeration work and each had to interview an average of about 30 sample households within the working period of ten days. The work was strenuous, usually taking up 2-3 hours in each sitting and the enumerator had often to contact his informant in the paddy fields where he would be working or in the market place i.e., "hats", wherever he could be cornered.

8.5. *Distribution of the household informants by different procedures of estimation adopted by them.* Table A.3 gives the percentage distribution of households according to the types of answers received regarding the method or procedure adopted by the informants in furnishing the consumption returns, i.e. by the various modes of recall.

It may be remembered that the households were grouped into three categories and three samples of equal size were taken from each. Table A.3 gives the overall results by pooling the three categories. In combining, due weights have been given according to the total number of households in each category. The detailed frequency distribution of the households, separately for each category have been given in Appendix Tables A.1 and A.2.

It will be seen that very few, only 1.68% maintain a daily account for rice while this percentage varies from 0.18% to 4.55% for other items. 48.34% of households has estimated rice by recalling the periodical purchases and 43.25% has based their

calculation on daily requirements. For other items these percentages widely vary, but in majority of cases, the estimates are based either on recalled purchases or on an average requirement basis. There are even cases, where the informant frankly confesses, that he is unable to explain how he had arrived at those figures, which must have been given then through some sort of a hunch.

The situation varies to some extent from one item to another but are broadly of a similar pattern. The picture revealed in the table is unnerving, although this represents the true state of affairs. It is remarkable how those 'shaky' returns, duly dressed are not as worthless as one would apprehend. For, we have always experienced that averaged over a large number of households, the results are not very much at variance with more dependable data based on direct weightments. It is apparent that majority of the data are from guesswork, not of course from 'outsiders', but from persons directly involved and who must have a long experience of their household affairs. An average over a large number of such concrete guesses may not be very far from a good approximation after all.

The most natural deduction from the various types of answers received seems to boil down to this. If approximate guess figures from the persons directly concerned serve our purpose for all practical purposes, we could very well reduce our accounting reference to a small space of recent time and thereby gain in two respects :

- (1) guesses based on old memory blurred by the passage of time would be much better replaced by recalling fresh incidences direct from memory.
- (2) much less time will be taken to recall the few transaction over a small period of time and hence the whole interview would be finished very quickly.

8.6. *Calendar month versus a month of thirty successive days.* Table 10 gives the estimated mean rates of consumption for a few selected items based on schedules referring to (a) last calendar month of thirty days and (b) last thirty days, presented side by side for comparison. The estimates are in good agreement although the reference periods are not identical. The distinction between a completed calendar month (month of thirty one days scaled down to thirty days) and any set of thirty days are not significantly marked. It seems that the average condition prevailing at the time of enquiry determines the answers. In other words, the informant answers according to his current impressions for a period of the order of a month, and fine distinctions regarding the exact definition of the month is hardly taken into account. It may be noted here that the ensuption of boiled rice is comparatively low in the second phase of the enquiry, as might appear from the all-cereal consumption rate in the earlier enquiry, for, rice represents about 80% of total cereal consumption. The reason may have been due to the fact that while the first enquiry was conducted in November-December, the latter was conducted in the leanest month of the year, namely in August-September. The population surveyed were also not identical in the enquiries.

PER CAPITA CONSUMPTION OF TOTAL CEREALS

TABLE 10. MEAN RATES OF CONSUMPTION PER CAPITA IN TOLAS PER DAY FOR A FEW FOOD ITEM BASED ON
(a) CALENDAR MONTH (b) THIRTY SUCCESSIVE
DAYS AS THE PERIOD OF REFERENCE

food items	calendar month		thirty days	
	number of household	mean	number of household	mean
(1)	(2)	(3)	(4)	(5)
1. rice	76	32.34	71	32.60
2. muri	76	2.26	71	3.60
3. pulses	75	2.31	71	2.36

8.7. *Ad hoc* figures directly reported by informants, versus figures built up from a detailed recall. Table 11 on the other hand gives the estimated mean rates of consumption relating to (a), i.e. a calendar month, based on (i) *ad hoc* consumption figures directly supplied by the informant in the first stage of enquiry and (ii) figures built up from a detailed accounting of purchases or other sources of consumption recalled by the informant in the second stage of enquiry.

TABLE 11. MEAN CONSUMPTION RATE PER CAPITA IN TOLAS PER DAY BASED ON (a) AD HOC FIGURES DIRECTLY REPORTED BY THE INFORMANT AND (b) FIGURES BUILT UP FROM DATA BROUGHT OUT WHILE RECALLING IN DETAILS

food items	number of household	mean based on	
		<i>ad-hoc</i> figures directly reported	figures built up from the recall details
(1)	(2)	(3)	(4)
1. rice	27	30.63	30.82
2. muri	25	2.36	2.42
3. pulses	30	2.48	2.48

It may be remembered that in filling the schedule, the data obtained in the first stage was never modified in the light of findings in the second stage. In many cases however no direct return could be furnished by the informant in the first stage and the only data obtained was through a detailed searching of memory in the second stage. Table 11 has however been constructed upon those cases only where both the sets of figures were available. The estimates seem to agree satisfactorily.

9. SUMMARY OF OBSERVATION

1. It may be taken for granted that a direct weighment of the quantities of cereal products daily consumed in a household gives us the best data for the estimation of per capita consumption rates. It is however a very costly operation and calls for the services of a large body of energetic and thoroughly reliable workers. The investigation is very difficult and bothersome and thus there is always some danger of slackening in vigilance and of rigour which must be exercised. It is however conceivable to have a small sub-sample for weighing experiments linked up with a large sample surveyed by the method of interviews. The small sample would serve as control over the field data and as an adjustment factor for the entire survey.

2. Our present object of the weighing experiments was however somewhat different. Our intention was to find out an absolute standard against which merits of the interview method with small and large accounting periods were to be judged.

3. It has been seen that a day-accounting as also a month-accounting by the method of interviews more or less agrees with the weighment method of enquiry in the estimation of consumption rates for total cereals. No significant tendency of a so-called overestimation is noticed with the shorter accounting period. This degree of agreement may partly be ascribed to the quality of field work under intense supervision and to a specially detailed itemisation of the cereal components in the questionnaire schedule.

4. The interview enquiries, irrespective of the size of their accounting periods are found to underestimate, although not significantly, in comparison to the day-weighment results. The average size of household, estimated from the weighment data was found to be somewhat larger. The mean rate of cereal consumption was also higher compared to the interview estimates. These perhaps could be explained by presuming that some of the data missed in the interviews could not escape the enumerators attention by the very detailed nature of enumeration involved in an weighment experiment.

That a higher variability for the consumption rates was observed in the weighment enquiry may have been due to the fact that in this experiment, the data referred strictly to the particular day of enumeration, while in the interviews the informant is likely to have unconsciously furnished figures that relate to an average month rather than to the particular day or particular month. This is however a surmise and must be followed up.

5. Apart from deliberate exaggerations or suppressions of the true levels of the quantities consumed, a small accounting period merely on *a priori* grounds, has greater claims than a large accounting period, specially as day to day accounts are practically never maintained in the villages, while the memory factor more seriously affects the latter.

PER CAPITA CONSUMPTION OF TOTAL CEREALS

6. A shorter accounting period might have one apparent drawback namely, its higher variability and hence a larger size of sample may be needed for attaining a given level of sampling precision. With a high time-correlation in the consumption habits in individual households, the gain by increasing the length of accounting period was known to be relatively small for most of the food items. In the present experiment, the interview with a *day-accounting* has given a lower variability, perhaps as a result of sampling fluctuations, and/or due to an unconscious smoothing of the daily figures returned by the informants.

7. It has also been seen that the average size of a household on the basis of 'usual' membership as reported by the informant agrees very closely with the average size calculated on a detailed meal-attendance basis.

8. As a side study, a special investigation was carried out in the same area immediately after the main enquiry. A household was interviewed and consumption data for the last (a) calendar month just completed and (b) thirty successive days just expired, was collected by interview. The informant was then requested to explain the procedure by which he had arrived at the figure just furnished. It was seen that :

(i) daily accounts were kept by only 1.58% of households in respect of cereals, while it varied from item to item, the largest being 4.55% for pulses;

(ii) for rice in 48.34% cases, the recall was made on the basis of periodic purchases and in 43.25% cases, the figures were calculated on the basis of a notional per day requirement of the households and in some cases the informant could not explain himself and confessed that the figure must have been given on a sort of hunch;

(iii) the basis of one calendar month or any run of thirty days did not materially affect the returns, as both were found to give more or less the same result although the period of reference was shifted by about ten days.

From this it appears that short of weighing experiment such enquiries should always refer to a very recent time and should be on a very short accounting period; for, whatever refinement might be introduced into the questionnaire schedule, the replies will be rather artificial based on broad and necessarily blurred impressions regarding an average month around the season of enquiry.

10. ACKNOWLEDGEMENT

This enquiry was conducted by the special studies unit working in a team. Special mention may be made of Shri J. N. Taluqdar and Shri T. Sen in organising and supervising the field work. Senior workers participated as investigators in the auxiliary studies are Sarbari Malay Chanda, Radhasbam Nath, T. Sen, Shrinath Paul, B. Sarbajna, Sudhir Chakravarty, Makhan De. Finally, mention must be made of Sri Biswanath Roy, who had kindly provided us with an accommodation and used all his influence for the success of our enterprise.

Appendix

TABLE A.1. DISTRIBUTION OF THE ESTIMATED HOUSEHOLDS ACCORDING TO THE PROCEDURES ADOPTED FOR ESTIMATING THE QUANTITIES CONSUMED FOR INDIVIDUAL ITEMS

procedures of estimation as reported by the informants ¹	distribution of households for different items of consumption														
	rice	atta	muri	oil	fish	potato	onion	pulses	milk	clothing	tea	sugar	gar	gur	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
household type 1: principal income mainly from regular wages, daily, weekly or monthly in non-literate occupations															
1. monthly account book	123	4	26	122	-	-	-	110	35	-	101	63	22	-	
2. daily purchases	-	4	9	18	123	93	119	13	-	38	-	-	37	-	
3. 'last' purchases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
4. irregular purchases	-	18	44	26	0	-	12	27	4	9	9	32	24	8	
5. irregular purchases (specified)	13	4	28	-	18	4	6	40	9	13	-	-	8	9	
6. irregular purchases (unspecified)	5	-	-	-	-	-	-	-	-	-	-	-	-	-	
7. home stock (old purchases)	79	9	22	31	9	9	4	18	18	-	25	9	9	9	
8. daily requirements rates	-	-	9	9	4	35	4	4	-	-	-	-	4	9	
9. daily requirements standard	-	-	9	9	4	35	4	4	-	-	-	-	4	9	
10. do not know how ¹	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11. not consumed	-	172	71	-	23	110	66	-	164	159	75	128	101	-	
13. total	210	220	220	230	210	210	230	220	220	220	220	220	220	220	
household type 2: principal income mainly from literate occupations including unearned income															
1. monthly account book	9	9	-	12	1	4	-	10	-	3	3	11	4	0	
2. daily purchases	1	2	3	3	-	1	-	4	46	-	5	5	6	0	
3. 'last' purchases	0	1	1	6	46	21	36	9	-	22	7	6	9	0	
4. irregular purchases	2	19	10	28	0	8	3	16	-	3	27	28	15	3	
5. irregular purchases (specified)	1	1	4	2	4	-	1	-	19	3	3	3	3	0	
6. irregular purchases (unspecified)	0	0	0	0	0	12	0	0	0	0	0	0	0	0	
7. home stock (old purchases)	12	12	16	10	5	5	4	12	-	16	13	11	1	1	
8. daily requirements rates	12	12	16	10	5	5	4	12	-	16	13	11	1	1	
9. daily requirements standard	12	12	16	10	5	5	4	12	-	16	13	11	1	1	
10. do not know how ¹	-	-	6	-	11	-	-	-	-	-	-	-	-	-	
11. not consumed	-	13	8	-	1	6	11	-	3	21	1	3	13	-	
22. total	74	74	74	74	74	74	74	74	74	74	74	74	74	74	

PER CAPITA CONSUMPTION OF TOTAL CEREALS

TABLE A.2. DISTRIBUTION OF ESTABLISHED HOUSEHOLD BY PROCEDURE OF ESTIMATION OF QUANTITY CONSUMED OF DIFFERENT ITEMS

procedure of estimation	items of consumption													
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	household type 3 : others													
1. monthly account book	-	86	11	6	11	89	17	-	8	11	6	-	5	6
2. daily purchasing	-	11	-	6	89	17	-	-	94	67	-	-	89	17
3. 'hot' purchasing	-	11	-	11	11	149	117	144	11	-	-	-	17	33
4. monthly purchase (specified)	6	16	-	-	44	62	6	5	-	-	-	-	6	6
5. irregular purchase (unspecified)	45	10	-	-	10	17	17	6	32	5	-	-	60	59
6. irregular purchase (unspecified)	11	-	-	31	46	17	44	6	62	5	32	17	17	6
7. home stock (old purchase)	228	-	-	39	-	-	-	-	-	-	-	-	-	6
8. daily consumption rates	122	16	85	94	11	33	33	78	78	78	-	44	17	17
9. monthly consumption standard	6	11	23	11	6	22	6	11	6	-	-	-	6	5
10. do not know how to	-	-	-	11	6	22	6	11	6	-	-	-	6	5
11. not consumed	-	172	208	6	30	61	67	11	110	138	68	68	69	105
12. total	277	277	277	277	277	277	277	277	277	277	277	277	277	277
	all household types combined													
1. monthly account book	9	15	17	44	23	17	12	4	6	96	6	3	8	13
2. daily purchasing	213	6	23	32	318	238	299	30	21	148	9	174	146	43
3. 'hot' purchasing	17	6	23	32	318	238	299	30	21	148	9	174	146	43
4. monthly purchase (specified)	14	39	1	6	-	1	14	13	21	13	-	162	13	18
5. irregular purchase (unspecified)	25	8	113	98	27	14	12	66	14	50	14	24	120	140
6. irregular purchase (unspecified)	39	5	113	98	27	14	12	66	14	50	14	24	120	140
7. home stock (old purchase)	290	37	83	135	25	51	43	106	121	121	-	82	30	32
8. daily consumption rates	18	17	63	30	6	16	16	16	16	16	-	17	17	10
9. monthly consumption standard	-	-	-	145	6	68	6	10	16	16	-	-	6	10
10. do not know how to	-	-	-	145	6	68	6	10	16	16	-	-	6	10
11. not consumed	-	367	145	6	68	177	144	11	273	318	142	215	218	218
12. total	671	671	671	671	671	671	671	671	671	671	671	671	671	671

TABLE A.3. DISTRIBUTION OF HOUSEHOLDS ACCORDING TO THE PROCEDURES ADOPTED FOR THE ESTIMATION OF QUANTITIES CONSUMED AS PERCENTAGES TO TOTAL HOUSEHOLDS SEPARATELY FOR EACH FOOD ITEM

procedure of estimation (1)	percentage of households to total households													
	rice (2)	ata (3)	muri (4)	oil (5)	fish (6)	potato (7)	onion (8)	pulses (9)	milk (10)	clothing (11)	tea (12)	sugar (13)	gut (14)	
1. account book	1.53	2.63	—	4.02	0.18	0.70	1.05	4.55	1.05	0.53	1.40	2.80	2.10	
2. daily purchase	37.30	2.98	7.71	39.24	2.88	2.10	—	36.98	25.92	—	30.47	25.57	7.63	
3. 'bat' purchase	2.98	0.88	4.03	5.60	55.68	41.67	52.38	5.25	—	1.68	4.38	3.50	11.65	
4. monthly purchase	2.45	6.30	0.18	1.05	—	0.18	3.68	3.28	—	26.62	2.28	0.98	3.15	
5. irregular purchase (specific)	1.23	14.36	19.79	17.15	6.49	2.45	2.80	11.38	0.70	4.20	14.01	17.51	17.61	
6. irregular purchase (unspecific)	4.38	0.88	7.18	1.40	6.83	0.70	2.10	16.76	2.45	11.38	3.50	2.88	7.00	
7. home stock (old purchase)	6.83	—	8.23	—	—	9.81	0.88	—	—	—	—	—	1.23	
8. daily requirements basis	40.10	6.48	14.54	23.65	4.38	8.93	7.63	16.39	21.19	—	14.36	5.25	5.50	
9. monthly requirement standard	3.15	2.98	9.28	5.25	—	0.88	2.63	2.80	—	—	3.68	2.98	3.50	
10. do not know how ?	—	—	3.68	1.68	11.91	1.68	1.76	0.70	0.88	—	1.05	0.88	2.63	
11. not consumed	—	92.51	25.38	1.05	11.56	31.00	25.22	1.93	47.81	55.69	54.87	37.65	35.19	
12. total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	