

STUDIES IN SAMPLE SURVEYS

I. ENQUIRY INTO THE PREVALENCE OF DRINKING TEA AMONG MIDDLE-CLASS INDIAN FAMILIES IN CALCUTTA: 1939

By P. C. MAHALANOBIS

INTRODUCTION

Of late there has arisen from Government and commercial bodies a growing demand for information collected by sample surveys. Statisticians have indeed been working on sample surveys for quite a time in all the advanced countries of the world. The Indian Statistical Institute in this country has also been actively interested in the subject and has carried out during the last five or six years by the sampling method a number of enquiries including crop area forecasts, yield of crops, labour family budgets, studies in public preference and many other aspects of our national life all by the sampling method. It is proposed to publish accounts of such surveys carried out by the Institute in the form of a series in this journal in as simple a language as possible, so that all interested people may have an idea of the large possibilities of sample surveys not only in supplying reliable information on important problems of our socio-economic life but also in giving what is called the margin of error, that is, obtaining a valid measure of the probable limits, positive and negative, within which the sample is representative of the population or universe under investigation.

Usually it is not possible to study the whole universe or population by arranging a complete census of each individual unit. First of all, the cost would be very high. Even if sufficient money is available, difficulties of organization would be great. Finally, mistakes and errors of various kinds are bound to creep in; and, once committed, cannot be detected so that we would be left practically in the dark regarding the reliability or otherwise of the results of a complete enumeration.

In most situations which occur in practice the sample survey has distinct advantages. The cost is only a fraction of that of a complete enumeration. Difficulties of organization are much less. Finally it is possible to arrange the sample survey in such a way that the information is collected in a number of instalments on the basis of which separate estimates can be prepared. Differences between such separate estimates supply an excellent check on the reliability of the sample survey as a whole. In fact if the work is carried out in accordance with proper statistical principles it is possible to obtain a valid estimate of the margin of error. In a sense this constitutes the greatest advantage of the sample survey as it gives a good idea as to how far our estimate is accurate which is never possible in a complete census.

The present report deals with the habits of drinking tea among middle class families in Calcutta which was taken up for study at the request of the Indian Tea Market Expansion Board with a view to enable the Board to organize its work on scientific lines. The present information would supply a datum line, and a later survey will indicate such changes, if any,

as may occur in such habits, at a future date owing to various causes including directed advertisement or propaganda to increase the consumption of tea. The business implications of this latter aspect are referred to later, but whatever they may be, this enquiry gives a good idea of the type of information which can be collected by sample surveys without difficulty.

DESCRIPTION OF THE SURVEY

Objects of the Enquiry : In November 1938 Mr. Griffiths, Vice-Chairman of the Indian Tea Market Expansion Board, enquired whether we could undertake a random Sample Survey for collecting information regarding the prevalence of drinking tea among Indian families in Calcutta. I sent him a rough scheme, and I suggested that the enquiry should be organized in the form of a diet survey covering in the first instance the middle-class (*bhadralok*) families of Calcutta ; and that I proposed collecting information for about 1000 families taken at random.

It was agreed that we should collect information regarding (i) the proportion of families and persons taking tea ; (ii) the number of times tea is taken per day ; and (iii) per capita consumption of tea ; and that the work should be done separately for (a) Bengali Hindu families ; (b) Bengali Muslim families ; and (c) non-Bengali Hindu families. It was desired that the influence of economic status on the above factors should also be investigated as far as practicable. It was further agreed that the question of accuracy of the result should be specially considered.

Organization of the Field Survey : A preliminary form had been designed in December 1938, and had been actually tried out in the field during January 1939 by two senior workers of the Statistical Laboratory, Atindra Nath Bose, and Satyabrata Sen. The form was revised in the light of the experience gained during this preliminary trial, and other arrangements including the recruiting of a staff of investigators were made in the first week of February. The investigators were then given some training for about 8 or 10 days ; and the actual field survey was started on the 13th February and was completed by the end of March 1939.

Owing to the limited time and resources at our disposal I decided to conduct the survey in seven Wards in the residential areas of the city. Ward 14 was selected as it was known to have a high percentage of Muslim families. In the same way Wards 5 and 6 were selected for Marwari families ; Wards 4 and 9 were predominantly Bengali Hindu in character ; while Wards 22 and 27 had a mixed population with a fair sprinkling of non-Bengali families. Within each Ward, the families surveyed were taken purely at random on the basis of the detailed Holdings' Register of the Calcutta Corporation. Our best thanks are due to Mr. Bhaskar Mukherjee, Secretary of the Corporation of Calcutta, for permitting us to use the Holdings' Register for this purpose.

One of the objects of the present enquiry was to gain some idea regarding the reliability or accuracy with which information of the present type could be gathered in actual practice. The field survey was, therefore, organized on a definite plan for this purpose. It was decided that roughly about 120 families would be surveyed in each Ward in this section ; and that information for these 120 families would be collected in the form of four sub-samples of 30 each. The investigators worked in pairs, and seven such pairs of investigators worked at the same time in the seven Wards. The four sub-samples in each Ward were collected independently by different pairs of investigators.

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The seven pairs of investigators mentioned above were all raw workers without any previous training who were recruited from outside the Laboratory, and consisted of one pair of Muslims, two pairs of Hindu women (one pair of whom resigned and was replaced by a new pair after one month's work), and four pairs of Bengali Hindus. This constituted section A; and its work was supervised by Atindra Nath Bose and Satyabrata Sen.

Besides Section A, another five pairs of investigators constituting Section B were started on the work from 14th February 1939 and continued the field work till 30th March 1939. These investigators were Bengali Hindu men with some training and experience and were mostly from within the Laboratory. They worked part-time on the field survey in addition to other duties in the Laboratory; and their work was supervised, also on a part-time basis, by Pranay Kumar Chatterjee, one of the senior workers of the Laboratory.

Psychological resistance: In approaching a house-holder the field workers emphasized the importance of a diet survey from the point of view of national welfare, and also pointed out that the work was being done on behalf of the Indian Statistical Institute. This was found most helpful in breaking down opposition. The names of the office-bearers of the Institute were also very useful in this connexion. In fact the field workers reported that had the survey not been organized by a scientific society like the Institute it was extremely doubtful whether it would have been possible to secure the required information.

The psychological resistance against supplying information, however, varied a good deal. Among Madrasis, Muslims and well-to-do Bengali Hindus there was very little difficulty in collecting the required information; among Punjabis also on the whole there was little resistance. The greatest difficulty was experienced among Marwari and the poorer section of Bengali Hindu families. Here the women investigators, in spite of their direct approach to the women of the household, fared no better; in fact the very sight of respectable women doing such outdoor work was sufficiently shocking to erect a barrier. In the case of refusals attempts were made, often quite successfully, to obtain the required information by subsequent visits by other investigators or supervisors. In certain cases, however, no information could be obtained in spite of repeated visits. Fortunately the total number of such final refusals was small and of the order of 6 per cent.

A parallel survey: At the request of Mr. Miles, the Commissioner for tea expansion work in India, we made arrangements for two Intelligence Officers of the Indian Tea Market Expansion Board to do some field work in the same Wards. One of them (who will be referred to as Mr. X in this Report) conducted a parallel survey on his own lines in Wards 4 and 27; and the results obtained by him have been compared in detail with the results obtained by Laboratory workers in Section 5. At a later stage these two Intelligence Officers worked in close association with our Supervisors for about one week and studied the methods followed by us.

Distribution of families by Community and by Wards: The total number of families surveyed by Communities and by Wards is shown in abstract form in Table (1). The schedules for all these families were scrutinized in the computing section of the Laboratory, and about 3.5 per cent of the cards had to be rejected on account of either incomplete entries or internal discrepancies. The proportion of rejections was not large and on the whole the quality of the material collected may be considered satisfactory.

TABLE (1). DISTRIBUTION OF FAMILIES BY COMMUNITIES AND WARDS

Wards	Bengali		Marwari Hindus	Punjabi Hindus	Madraasi Hindus	Total
	Hindus	Muslims				
4	183	2	1	1	—	187
5	94	1	78	2	—	175
6	142	1	24	6	—	173
9	159	17	1	—	—	177
14	99	67	—	2	1	169
22	154	1	1	13	5	174
27	106	7	3	6	10	132
Total	937	96	108	30	16	1187

SUMMARY OF RESULTS AND GENERAL OBSERVATIONS

Bengali Hindus : As regards the Bengali Hindu community we find that economic status has considerable influence on the habit of taking tea. The proportion of families which drink tea rose from about 30 per cent in the lowest expenditure level of Rs. 23 per month to over 85 per cent in the higher levels. Below an expenditure level of Rs. 200 per month tea is probably regarded as a kind of luxury. Between the expenditure levels of Rs. 200 and Rs. 500 per month the proportion of families taking tea is roughly of the order of 85 per cent, but above Rs. 500 the proportion decreases to some extent showing that tea is being increasingly replaced by other substitute drinks.

The proportion of persons who drink tea among families which take tea is, however, remarkably steady and of the order of about 62 per cent. This shows that although proportionately fewer families take tea in the lower expenditure levels, once any particular family begins to drink tea, over 60 per cent of its members are likely to do so.

The per capita consumption of tea by persons who take it increases to some extent as the level of expenditure rises, but on the whole from about the level of Rs. 50 per month it is practically steady and is about 0.41 pound per month per person. The consumption of tea per family increases in a steady and regular manner with increasing level of expenditure. This is due to two factors, the per capita consumption itself increases slightly in the lower range; secondly the size of the household increases very appreciably as the economic status improves. We thus find that family consumption per month increases from 0.16 pound in the lowest expenditure level to about 3 pounds per month in the higher groups.

For purposes of estimating the total consumption, it is worth noting that the proportion of persons who take tea among the whole population is roughly 42 per cent, and the per capita consumption is about 0.16 pound per month.

Bengali Muslims : We find that the prevalence of taking tea is appreciably higher among the Bengali Muslim families and was over 79 per cent against about 68 per cent among Bengali Hindus. The proportion of persons who take tea among families taking tea was also appreciably higher and was 74 per cent against 62 per cent among Bengali Hindus.

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The per capita consumption was, however, not appreciably different. The proportion of persons taking tea among the whole population is also naturally higher among the Mahomedans and was found to be about 59 per cent against 42 per cent among Hindus, while the per capita consumption was about 0.2 pound per month which is not significantly different from the corresponding value of 0.16 pound for the Hindus.

Punjabi and Madrasi Hindus : The number of families surveyed among the Madrasi and Punjabi Hindu communities was small. But the results are roughly similar to those obtained in the case of Bengali Hindus. The proportion of families taking tea were about 63 and 56 per cent respectively which were somewhat lower than the value of about 68 per cent among Bengali Hindus. The proportion of persons taking tea among families taking tea, and the per capita consumption are also in general agreement with the corresponding values for the Bengali Hindus.

Marwari Hindus : The results for the Marwari Hindu community are however entirely different. The proportion of families which take tea is much lower and less than 25 per cent. We thus find that while tea is taken roughly by four out of five Muslim families, and two out of three Hindu families, only one out of four Marwari families drink it. The proportion of persons who drink tea among Marwari families taking it was nearly 89 per cent and was appreciably higher than the proportion among other communities. We find therefore that it is rare for a Marwari family to take tea, but once it starts taking tea most of the members of the family begin to do so. The per capita consumption is practically the same and about 0.4 pound per head per month as in the case of all other communities.

Daily Frequency of Taking Tea : As regards frequency of taking tea, we find that on the whole about 77 per cent of persons who drink tea do so twice a day ; 17 per cent take tea once a day while a very small fraction, about 5 per cent, take it three times or more per day. In other words, in Bengal roughly one-sixth of the persons who drink tea do so once a day usually in the morning ; about four-fifths of the persons drink tea twice a day, once in the morning and once in the afternoon and very few take it three times or more per day.

Distribution by Age-groups : As regards the age distribution we find that among Bengali Hindus roughly 15 per cent of young children under five are given tea. The proportion rises to above 30 per cent in the age-group of 10-15 years. Between 20 and 40 years appreciably more than 50 per cent of the people of both sexes take tea. In the case of men, the proportion decreases after the age of 60. In the younger section of the population appreciably more than 50 per cent of the people of both sexes take tea. In the case of men, the proportion decreases after the age of 60. In the younger section of the population, namely up to 40 years, women take tea just as frequently as men. But in the older section above 40 years the proportion of women who take tea decreases appreciably and is much less than the proportion of men of the same age who drink it. This shows that among the older section of the population there was probably some prejudice against women drinking tea.

Among Muslims, tea is given much more frequently to infants under 5 years, as well as to young children between 5-15 years. We also find that even in older age-groups women drink tea as frequently as men. Among Marwaris, tea is taken rarely as a rule. But in the small group of families who happen to drink tea, children and adults, or men or women do so equally frequently.

Reliability of the Results : The accuracy of the results naturally depend on the number of families surveyed in the different communities. In the case of Bengali Hindus we had a fairly large sample of 937 families. This enabled us to make a detailed comparison between the results of the different Wards; and we found that there was satisfactory agreement showing that habits relating to tea did not differ from one part of the city to another. This, of course, is just what is to be expected, and gives us confidence in our results. In the case of Bengali Hindus, the final accuracy is estimated to lie between a little below 2 per cent and a little above 3 per cent for the different items. With a survey covering roughly about 1000 families, it should therefore be possible to discriminate between estimates differing by from 4 to 7 per cent. The margin of error was naturally much greater in the case of other communities as the number of families surveyed was much smaller.

General Conclusions : The present enquiry clearly shows that habits relating to drinking tea depend to an appreciable extent on the economic status as well as on the community to which a particular family happens to belong. In which part of the city the family happens to reside, however, makes no difference. Drinking tea is on the whole more prevalent among the Bengali Mahomedans than among the Bengali Hindus or among the Madrasi or Punjabi Hindus; and it is very rare among Marwari families.

Advantages of the Sample Survey : The enquiry also establishes, I think, the possibility of using the method of random sample survey for collecting information of the type discussed in the present report with scientific precision and with a degree of reliability which can be estimated with objective validity. On the other hand, results obtained by Mr. X by methods which are being used at present were found to be definitely unreliable and much in excess of the other estimates. It is also impossible in the case of orthodox methods to make any valid estimates of the accuracy. In order to reach reliable results, and also to obtain a valid estimate of the accuracy of the results, it is thus essential to use a sample survey in accordance with modern statistical principles.

Question of Cost : In conclusion I may add a few words regarding the cost of the survey. In Section A, in which we intentionally employed outside workers directly recruited for the purpose, the total inclusive cost of field operations based on 804 families came to practically Rs. 2 per family.

There was some loss of time due to lack of training and experience on the part of the investigators. In case similar surveys are undertaken in future and in case trained investigators can be employed for the work, it should be possible to bring down the cost to an appreciably lower figure.

The form used was also rather elaborate, and in future surveys it may be possible to simplify it to some extent. The question however presents certain difficulties. An enquiry restricted only to tea is likely to meet with considerable opposition. In fact the present enquiry could have scarcely been carried out unless it had been given the form of a comprehensive diet survey organised under the auspices of the Indian Statistical Institute. The investigators reported that it was only by emphasizing the scientific and national importance of the work, and also by mentioning the names of office-bearers of the Institute that they could succeed in obtaining the required information in many cases. I feel, therefore, that over-simplification of the form may render an objective enquiry impossible. Keeping these

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considerations in mind, and also taking into account the out-of-pocket expenses exclusive of salaries incurred by the workers in Section B, I doubt whether the gross expenditure can be reduced to much below Rs. 1-8 per family. In any case I do not think it will be possible to go below Rs. 1-4 per family.

I think, on the whole, it would be safe to estimate the cost of field operations in a place like Calcutta on the basis of about Rs. 1500 per thousand families. If the work is done outside Calcutta, a certain amount of additional expenditure will have to be incurred in the way of travelling expenses for sending trained workers and supervisors, although it would be possible to recruit most of the field investigators locally.

As regards the statistical analysis of the material, it will be necessary in future to investigate many of the technical details considered in connexion with the present material. The procedure may therefore be simplified considerably. But even then I think it will be necessary to provide roughly Rs. 500 per thousand families for the statistical portion of the work exclusive of overhead and superior direction. This will give a rough idea of the cost of surveys of the present type.

The Use of Test Surveys : I may point out at this stage that, apart from collecting basic information, such surveys can be used for purposes of assessing the results attained by any particular kind of propaganda. The present survey has given us, for example, in the case of the Bengali Hindu community certain basic estimates with an accuracy roughly of the order of 2 or 3 per cent. Let us assume that a special campaign of a particular kind is conducted for a reasonable period among the Bengali Hindu families of Calcutta. At the end of the trial period of propaganda, it is possible to carry out a second survey in the same area on similar lines. By comparing the results of the initial and the final survey we can assess the improvement, if any, brought about by the particular scheme of propaganda.

I have shown that in a survey covering about 1000 families it should be possible to detect differences amounting to roughly from 4 to 7 per cent. In other words, if the scheme of propaganda succeeds, for example, in increasing the proportion of families taking tea by about 5 or 6 per cent, it should be possible to establish this result with scientific precision by a second test enquiry on present line

I need scarcely point out that a higher order of accuracy can also be obtained provided the number of families covered by the survey is increased. For example, if the number of families is increased to about 4000 it will be possible to reduce the present margin of error by half. In other words, in any enquiry covering 4000 families the margin of error of the final results should be of the order of 1 or 2 per cent, so that with surveys on this scale it should be possible to detect critical differences of the order of three or four per cent.

PART ONE: RESULTS OF THE SURVEY

CONSUMPTION OF TEA IN THE BENGALI HINDU COMMUNITY

Homogeneity of the community : In this Section I shall discuss the chief results relating to the Bengali Hindu Community. It will be remembered that altogether 937 families were surveyed of which 634 belong to Section A and 304 to Section B. In the case of Section A the information for different Wards was collected in such a way as to make it possible to

investigate whether there were any significant differences between Wards. This question has been considered in detail in Section 5 where it has been shown that, so far as habits relating to drinking tea are concerned, the Wards may be considered to be homogeneous within the limits of errors of sampling. In other words, habits relating to tea are practically uniform in all the seven Wards covered in the present enquiry ; we may, therefore, pool together the families resident in different Wards and discuss the results for the community as a whole.

Economic status : The question of economic status is, however, of considerable importance in the present connexion. I did not consider it advisable to try to ascertain the total income of the families as any enquiry regarding the income is likely to arouse suspicion and create difficulties. I have however gathered information regarding expenditure under heads such as rent paid for residence, food, electricity, coal, gas, clothing, education, medicine and medical aid, etc., as well as the total monthly expenditure on an average. We found that in most cases there was no resistance against giving the information regarding expenditure either on particular items or the total monthly expenditure. It is convenient therefore to classify the families according to the expenditure level. In fact, this is probably a better index of the actual standard of living than the total income.

The material was classified according to the total monthly expenditure into eleven groups with ranges fixed in an arbitrary manner, namely : (1) Rs. 0—25. (2) 26—50, (3) Rs. 51—100, (4) Rs. 101—150, (5) Rs. 151—200; (6) Rs. 201—250, (7) Rs. 251—300, (8) Rs. 301—400, (9) Rs. 401—500, (10) Rs. 501—750, (11) Rs. 751 and above.

The different items relating to tea were then tabulated separately for these eleven expenditure levels, and the results are given in Table (2). The observed values were also graduated either by cubic equations by the method of least squares with weighting, or by freehand smoothing and the graduated values are given in Table (3A). Charts (1) to (8) show for each item the observed values and the corresponding graduated values.

Per capita expenditure : The expenditure per month per person is shown in column (1.3). It is practically steady in the two lowest groups and is about Rs. 8 or Rs. 9 per person per month. It then rises comparatively slowly at first to about Rs. 22 in the expenditure level of about Rs. 300, and then more rapidly with increasing level of expenditure. In fact there are several distinct strata. The per capita expenditure is very low and less than Rs. 10 per month up to about Rs. 50 per month ; between Rs. 50 and Rs. 100 is a transition stage the position being appreciably better with a per capita expenditure of about Rs. 13 ; a higher level is attained in the range Rs. 100 to Rs. 300 with a per capita expenditure of between Rs. 17 and Rs. 21. We next have the class between Rs. 300 and Rs. 750 with a per capita expenditure ranging between Rs. 27 and Rs. 32. Beyond Rs. 750 the situation changes radically with an average per capita expenditure of Rs. 70.

Size of Household : It is interesting to note that the size of the household steadily increases with the expenditure level. In the lowest group with an average of Rs. 23.3, the average size of the household is 2.82. It rises sharply to 4.76 for an expenditure level of Rs. 41.3 in class 2 ; and then almost proportionately with the increase in expenditure to 13.2 in class 7 with an average monthly expenditure of Rs. 289. Beyond this level there is a further rise in the size of household with increasing expenditure level, but at a much slower rate until we come to the highest expenditure levels where the average size is over 18.

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TABLE (2). CONSUMPTION OF TEA IN THE BENGALI HINDU COMMUNITY OF CALCUTTA : FAMILIES TAKING TEA

Expenditure in Rupees per month		Size of Household	Percentage of Families taking tea		Percentage of Persons taking tea		Daily frequency of taking tea		Consumption of tea in lbs. Per month	
Range	Mean (1.2)		N	Mean ± S.E. (2.1)	N	Mean ± S.E. (2.2)	N	Mean ± S.E. (2.3)	per person Mean ± S.E. (2.4)	per family Mean ± S.E. (2.5)
(1.1)	(1.3)	(1.4)								
0—25	23.30	2.82	17	29.41 ± 11.10	5	93.40 ± 6.62	11	1.45 ± 0.28	0.22 ± 0.08	0.55 ± 0.12
26—50	41.30	4.76	83	37.35 ± 5.30	31	63.74 ± 5.44	78	1.95 ± 0.04	0.35 ± 0.04	0.83 ± 0.09
51—100	80.12	6.32	203	58.02 ± 3.50	119	63.91 ± 2.72	468	1.82 ± 0.02	0.38 ± 0.02	1.29 ± 0.08
101—150	133.34	7.70	185	71.35 ± 3.30	132	61.21 ± 2.43	615	1.87 ± 0.03	0.42 ± 0.03	1.58 ± 0.08
151—200	182.11	9.66	145	73.10 ± 3.70	106	60.06 ± 2.88	564	1.98 ± 0.02	0.44 ± 0.03	2.00 ± 0.13
201—250	226.39	11.08	95	87.37 ± 3.40	83	59.35 ± 3.00	319	1.97 ± 0.03	0.43 ± 0.03	2.27 ± 0.13
251—300	289.19	13.20	69	76.81 ± 5.10	53	61.98 ± 3.49	413	1.91 ± 0.02	0.34 ± 0.03	2.47 ± 0.20
301—400	366.32	13.81	54	83.33 ± 5.10	45	63.64 ± 3.52	406	1.90 ± 0.03	0.43 ± 0.03	3.34 ± 0.29
401—500	474.84	14.52	35	85.71 ± 5.90	30	63.13 ± 4.66	253	1.91 ± 0.03	0.43 ± 0.03	3.20 ± 0.35
501—750	600.80	18.82	23	65.22 ± 9.90	15	64.53 ± 6.17	182	2.07 ± 0.00	0.41 ± 0.07	3.85 ± 0.60
751 & above	1274.44	18.00	28	64.29 ± 10.30	18	72.78 ± 8.20	238	1.97 ± 0.02	0.50 ± 0.08	5.78 ± 0.87
Total	211.87	9.28	937	67.98 ± 1.50	637	62.39 ± 1.11	3747	1.92 ± 0.01	0.41 ± 0.01	2.00 ± 0.07

In interpreting the results for different groups it will be necessary to keep in mind the increase in the size of the family and per capita expenditure noted above. Charts (1) and (2) show graphically the increase in the size of the family and per capita expenditure with increasing levels of expenditure, that is, with rising economic status.

Proportion of families taking tea : The proportion of families taking tea at different expenditure levels is given in column (2.1), and is shown graphically in Chart (3). In the lowest economic class the proportion is small and about 30 per cent. It then steadily increases with increasing levels of expenditure, and attains a maximum of about 87 per cent in class 6 in the expenditure range of Rs. 201-Rs. 250 with an average expenditure of Rs. 226 per month. From the smooth curve it will be noticed that the proportion is probably fairly steady and of the order of about 85 per cent between the expenditure levels of Rs. 200 and Rs. 500 per month. Beyond Rs. 500 per month, the proportion of families taking tea appears to fall slowly with increasing expenditure.

The facts observed here are on the whole quite plausible. Up to an expenditure level of about Rs. 200 per month, the proportion rises with increasing expenditure, which suggests that up to a level of Rs. 200 tea is considered to be a luxury among middle class Bengali Hindu families. Between the levels of Rs. 200 and Rs. 500 per month there is practically no change, which probably indicates that for most families in this range it is treated almost as a necessity. In the higher expenditure groups, substitute drinks probably begin to be important.

Proportion of persons taking tea : If we consider the proportion of persons taking tea on an average in each family taking tea, the results given in column (2.2) show entirely different features. The proportion is very high and over 90 per cent in the lowest expenditure level; but as the number of families taking tea in this group is only five, no special significance can be attached to this result. In all other expenditure classes we find that the proportion is remarkably steady and of the order of about 62 per cent. This proportion is thus practically independent of the expenditure or income level. It thus appears that, in case tea is consumed in a Bengali Hindu family, it is practically certain that nearly two-thirds of its members will drink it.

Proportion of persons taking tea among the general population. We have so far confined our attention to families and persons taking tea. For estimating the total consumption of tea it is however useful to consider the proportion of persons taking tea among the whole population. The relevant data are given in column (3.1) of Table (3). In the two lowest expenditure groups the proportion is roughly 25 per cent, but rises steadily in the higher expenditure levels, and beyond Rs. 200 is a little over 50 per cent. The over-all percentage for the sample as a whole is about 42 per cent.

Daily frequency of taking tea : The average number of times tea is taken per day by persons taking tea is shown in column (2.3). In the lowest expenditure level the frequency is about 1.45 but as the number of persons taking tea in this group is only eleven, this figure is not very reliable. The frequency is considerably higher and is just under two cups per day for practically all the other economic classes. It is clear then that if a person takes tea at all he is likely to do so on an average twice per day. A comparatively small number of persons drink tea only once a day; but as we have to take them also into consideration, the average frequency for all persons taking tea falls just below twice a day.

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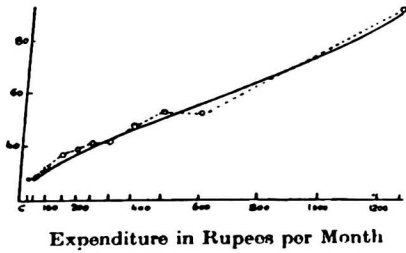


CHART (1). PER CAPITA EXPENDITURE IN RUPEES PER MONTH

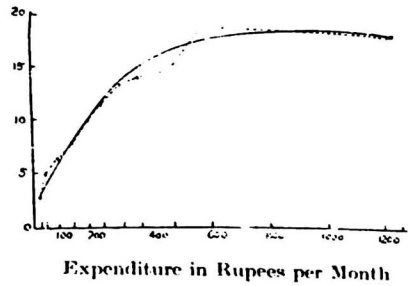


CHART (2). SIZE OF HOUSEHOLD

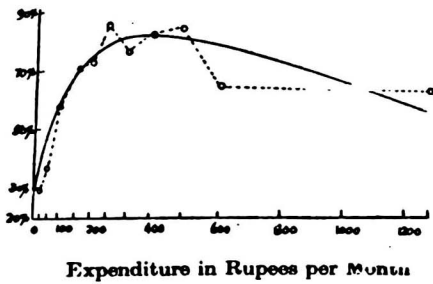


CHART (3). PERCENTAGE OF FAMILIES DRINKING TEA

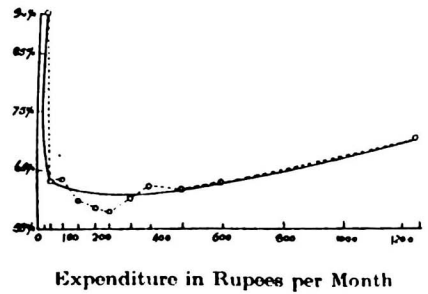


CHART (4). PERCENTAGE OF PERSONS DRINKING TEA (TEA-TAKING FAMILIES)

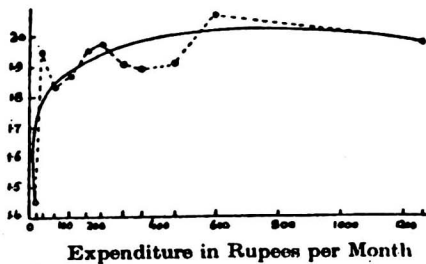


CHART (5). DAILY FREQUENCY OF TAKING TEA

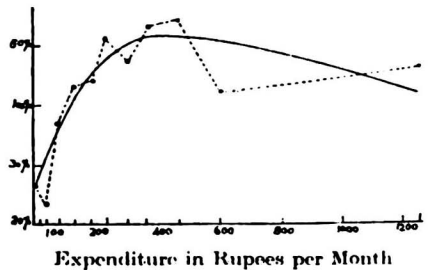
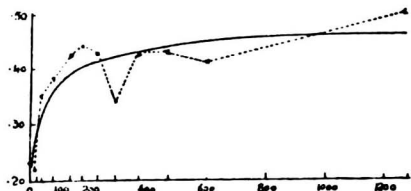
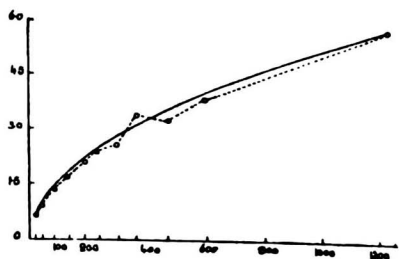


CHART (6). PERCENTAGE OF PERSONS DRINKING TEA (ALL FAMILIES)



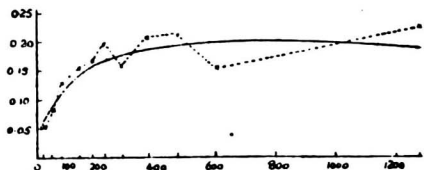
Expenditure in Rupees per Month

CHART (7). CONSUMPTION OF TEA IN POUNDS PER MONTH PER PERSON (TEA-TAKING FAMILIES)



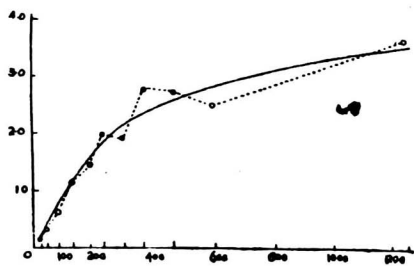
Expenditure in Rupees per Month

CHART (8). CONSUMPTION OF TEA IN POUNDS PER MONTH PER FAMILY (TEA-TAKING FAMILIES)



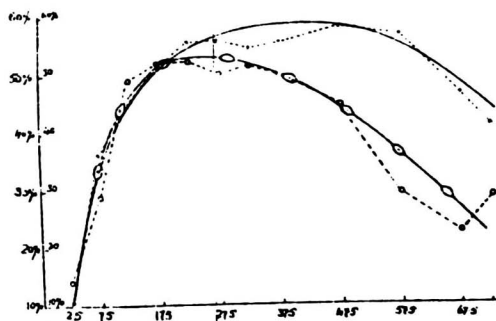
Expenditure in Rupees per Month

CHART (9). CONSUMPTION OF TEA IN POUNDS PER MONTH PER PERSON (ALL FAMILIES)



Expenditure in Rupees per Month

CHART (10). CONSUMPTION OF TEA IN POUNDS PER MONTH PER FAMILY (ALL FAMILIES)



Age in years.

CHART (11). PROPORTION OF MEN AND WOMEN DRINKING TEA (BENGALI HINDU FAMILIES)

PREVALENCE OF DRINKING TEA IN CALCUTTA

Consumption per month per person : The average consumption of tea in pounds per month per person taking tea is shown in column (2.4) of Table (2) and in Chart (7). It is about 0.22 pound per month in the lowest expenditure group, but owing to the small size of the sample this estimate is not reliable. It rises quite rapidly to 0.35 and 0.38 pounds per month per head in the next two groups with average monthly expenditures of Rs. 41 and Rs. 80 respectively. Beyond the level of about Rs. 100, the per capita consumption remains practically steady at about 0.42 pound per month. For the sample as a whole, we find that the average per capita consumption of tea for persons taking tea is about 0.41 pound per month.

Family consumption per month : The results for the average monthly consumption of tea for families taking tea is shown in column (2.5) and in Chart (8). It will be noticed that the family consumption rises steadily with increasing level of expenditure. In the lowest economic groups, with an average expenditure of about Rs. 23 per month, the consumption is only about 0.55 pound per month for the whole family. It rises to over 0.8 pound in the next economic group, and quite steadily beyond that to over 3.3 pounds per month in class 8 with an average monthly expenditure of Rs. 366 and rises still further in the higher levels of expenditure. Considering the sample as a whole we find that the consumption of tea for families taking tea is just over 2 pounds per month.

This result is, of course, just what is to be expected. We have already seen that the size of the household increases with increasing economic status, while the proportion of family members taking tea, and the per capita consumption of tea are practically steady. It follows naturally that the total consumption in the whole family should increase steadily with increasing economic level.

TABLE (3). CONSUMPTION OF TEA IN THE BENGALI HINDU COMMUNITY OF CALCUTTA.
ALL FAMILIES.

Expenditure in Rupees per month			Size of household	Percentage of persons taking tea		Consumption of tea in lbs. per month	
Range	Mean	Per person		N	Mean ± S.E.	Per person	Per family
(1.1)	(1.2)	(1.3)	(1.4)		(3.1)	(3.2)	(3.3)
0—25	23.30	8.26	2.82	17	27.47 ± 10.79	0.05 ± 0.02	0.16 ± 0.07
26—50	41.30	8.68	4.76	83	23.81 ± 3.95	0.08 ± 0.02	0.31 ± 0.06
51—100	80.12	12.68	6.32	203	37.46 ± 2.73	0.13 ± 0.01	0.76 ± 0.06
101—150	133.34	17.32	7.70	185	43.68 ± 2.68	0.15 ± 0.01	1.13 ± 0.08
151—200	182.11	18.85	9.66	145	43.90 ± 3.06	0.17 ± 0.02	1.47 ± 0.12
201—250	226.39	20.43	11.08	95	51.85 ± 3.31	0.20 ± 0.02	1.99 ± 0.13
251—300	289.19	21.91	13.20	69	47.61 ± 4.14	0.16 ± 0.02	1.89 ± 0.20
301—400	366.32	26.53	13.81	54	53.04 ± 4.38	0.21 ± 0.02	2.79 ± 0.29
401—500	474.84	32.70	14.52	35	54.11 ± 5.49	0.22 ± 0.04	2.74 ± 0.36
501—750	600.80	31.92	18.82	23	42.09 ± 7.67	0.16 ± 0.04	2.51 ± 0.55
751 & above	1274.44	70.80	18.00	28	46.79 ± 8.50	0.23 ± 0.05	3.71 ± 0.77
Total	211.87	22.83	9.28	937	42.41 ± 1.22	0.16 ± 0.01	1.42 ± 0.06

Per capita consumption of tea for all persons : I have already discussed the per capita consumption for persons taking tea, but we may also consider the per capita consumption for all persons irrespective of the fact whether they take tea or not. The results are given in column (3.2) of Table (3); and follow generally the results for the proportion of persons taking tea. This is quite natural; for, as we have already seen, consumption of tea for persons taking tea is remarkably steady.

For all persons, the per capita consumption rises from 0.05 pound per month in the lowest expenditure level to over 2 pounds per month in the higher expenditure levels. The over-all average is just over 0.15 pound per month per person. This gives a figure with the help of which the total consumption in any community of Bengali Hindus in a place like Calcutta can probably be estimated with considerable accuracy.

Consumption per month for all families. The results for the consumption of tea in pounds per month for all families, whether taking tea or not, are given in column (3.3). It rises from 0.16 pound per month in the lowest income level to over 3 pounds per month in the highest levels. The over-all consumption is just over 1.4 pounds per month per family.

CONSUMPTION OF TEA AMONG DIFFERENT COMMUNITIES

I have already pointed out that owing to the limited time and resources at our disposal it was not possible to collect sufficient material for communities other than Bengali Hindus to allow reliable estimates being made separately for different levels of expenditure. The average results for families taking tea in the different communities are given in Table (4) and shown graphically in charts (12) to (17).

Bengali Muslims : Let us first consider the Bengali Muslims for whom we have a sample of 96 families. It will be noticed that the average monthly expenditure of the Bengali Muslim families is Rs. 219 against Rs. 212 for the Bengali Hindu families. This shows that on an average the two groups belong to the same economic stratum. The size of the household is 7.55 in Muslim families, and is slightly lower than 9.28, the average size of Hindu families. The per capita expenditure in Muslim families is therefore higher and is Rs. 29.2 against an average expenditure of about Rs. 23 per person per month among Hindus.

The proportion of families taking tea is shown in column (2.1) of Table (4), and is slightly higher (79 ± 4.14 per cent) among Bengali Muslims than (67.98 ± 1.5) among Bengali Hindus. The difference of about 11 per cent probably shows a really higher incidence of taking tea among Muslim families. The proportion of persons taking tea among tea-taking families, shown in column (2.2), is also higher (74.20 ± 2.38) than the corresponding proportion among Hindus (62.39 ± 1.11); here also the difference of about 12 per cent appears to be significant. We find then that in Calcutta a larger proportion of Muslim families, as well as a larger proportion of family members, take tea as compared to Hindu families of the same economic status.

The frequency of taking tea is given in column (2.3), and is a little over 2.2 cups per day among the Muslims; and is again slightly greater than the average frequency of about 1.92 among Bengali Hindus. The per capita consumption per month, shown in column (2.4), is 0.36 ± 0.03 for Muslims and is slightly lower than the average consumption of 0.41 ± 0.01 for Bengali Hindus; the difference of 0.05 pound is, however, statistically

PREVALENCE OF DRINKING TEA IN CALCUTTA

CHART (12). MEAN LEVEL OF EXPENDITURE IN RUPEES PER MONTH.

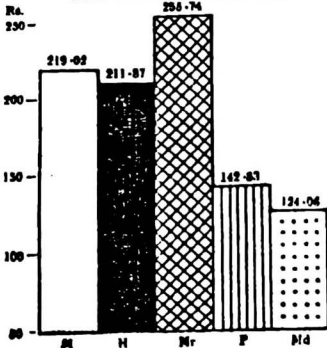


CHART (13). SIZE OF HOUSEHOLDS.

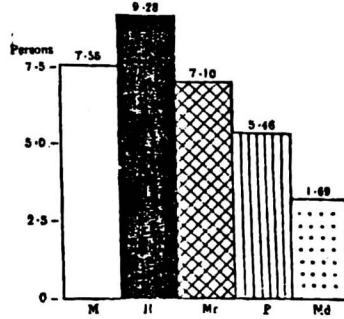


CHART (14). PER CAPITA EXPENDITURE IN RUPEES PER MONTH.

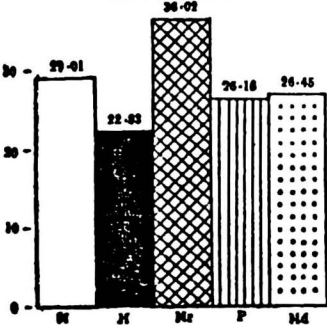


CHART (15). DAILY FREQUENCY OF TAKING TEA.

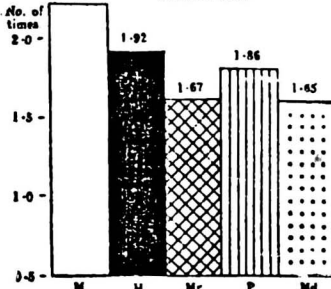


CHART (16). PERCENTAGE OF FAMILIES TAKING TEA.

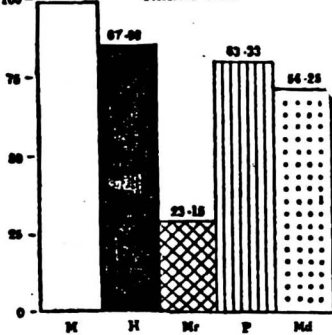
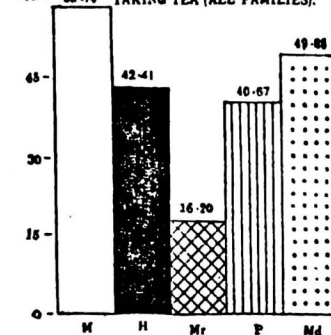


CHART (17). PERCENTAGE OF PERSONS TAKING TEA (ALL FAMILIES).



M
BENGALI
MUSLIMS

H
BENGALI
HINDUS

Mr
PARWARI
HINDUS

P
PUNJABI
HINDUS

Md
MADRASI
HINDUS

CHART (18). PERCENTAGE OF PERSONS TAKING TEA (TEA TAKING FAMILIES).

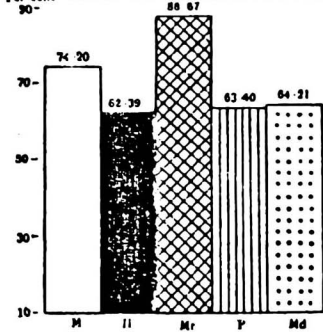


CHART (19). RATIO OF FEMALES TO MALE TAKING TEA.

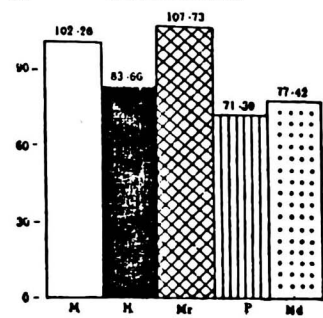


CHART (20). CONSUMPTION OF TEA IN POUNDS PER MONTH PER PERSON (TEA TAKING FAMILIES).

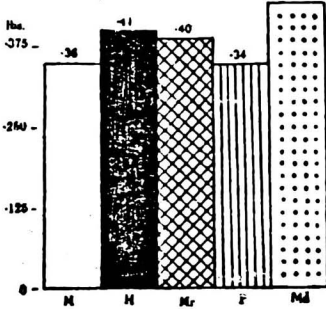


CHART (21). CONSUMPTION OF TEA IN POUNDS PER MONTH PER PERSON (ALL FAMILIES).

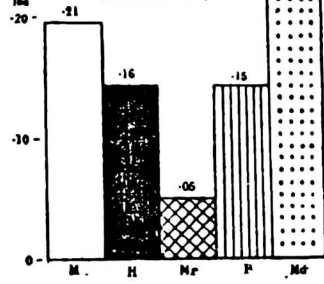


CHART (22). CONSUMPTION OF TEA IN POUNDS PER MONTH PER FAMILY (TEA-TAKING FAMILIES).

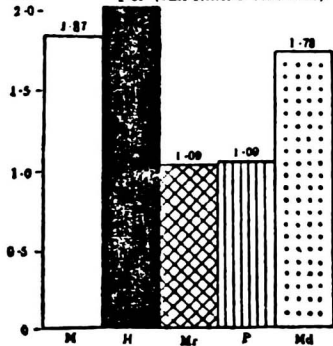
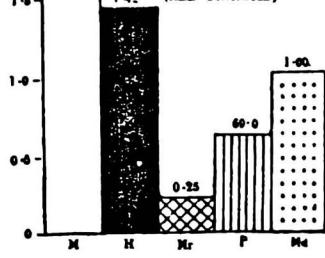


CHART (23). CONSUMPTION OF TEA IN POUNDS PER MONTH PER FAMILY (ALL FAMILIES).



M
BENGALI MUSLIMS

H
BENGALI HINDUS

Mr
MARWARI HINDUS

P
PUNJARI HINDUS

Md
MADRASI HINDUS

PREVALENCE OF DRINKING TEA IN CALCUTTA

TABLE (3A). GRADUATED VALUES CORRESPONDING TO OBSERVED VALUES IN TABLES (2) AND (3).

Range (1-1)	Expenditure in Rupees per month		Size of Household (1-4)	Families taking tea			All families			
	Mean (1-2)	Per person (1-3)		Percentage among all families (2-1)	Daily frequency of taking tea (2-3)	Consumption of tea in lbs. per month		Percentage of persons taking tea (3-1)	Consumption of tea in lbs. per month	
						Per person (2-4)	Per family (2-5)		Per person (3-2)	Per family (3-3)
0-25	23-30	8-00	3-00	32-00	1-75	0-28	0-55	24-00	0-053	0-13
26-50	41-30	9-00	4-20	41-00	1-77	0-35	0-75	25-00	0-078	0-40
51-100	80-12	12-00	6-00	55-00	1-82	0-39	1-29	34-50	0-120	0-80
110-150	133-34	16-00	8-00	72-00	1-88	0-41	1-65	41-50	0-151	1-15
151-200	182-11	19-00	9-50	78-00	1-91	0-42	2-00	46-20	0-171	1-45
201-250	226-39	22-00	12-00	82-00	1-94	0-42	2-29	47-60	0-182	1-73
251-300	289-19	24-00	12-50	84-00	1-96	0-42	2-60	50-20	0-190	2-06
301-400	366-32	28-00	14-20	84-00	1-98	0-42	2-98	51-00	0-192	2-38
401-500	474-84	31-00	15-70	82-00	2-00	0-42	3-40	51-50	0-195	2-69
501-750	600-80	34-00	17-00	78-00	2-00	0-42	3-85	50-80	0-198	2-90
751 & above	1274-44	71-00	19-00	56-00	2-00	0-44	5-75	41-60	0-189	3-30

TABLE (4). CONSUMPTION OF TEA AMONG DIFFERENT COMMUNITIES : FAMILIES TAKING TEA

Community	Expenditure in Rupees per month		Size of household (1-4)	Percentage among all families		Percentage of persons		Daily frequency of taking tea		Consumption of tea in lbs. per month		
	Mean (1-2)	Per person (1-3)		N	Mean ± S.E. (2-1)	N	Mean ± S.E. (2-2)	N	Mean ± S.E. (2-3)	N	Mean ± S.E. (2-4)	Mean ± S.E. (2-5)
Bengali Hindu	211-87	22-83	9-28	837	67-98 ± 1-50	837	62-39 ± 1-11	3747	1-92 ± 0-01	637	0-41 ± 0-01	2-09 ± 0-06
Bengali Muslim	219-02	29-01	7-55	96	79-17 ± 4-14	76	74-20 ± 2-38	392	2-32 ± 0-04	76	0-36 ± 0-03	1-87 ± 0-16
Marwari Hindu	255-74	36-02	7-10	108	23-15 ± 4-08	25	88-07 ± 4-04	83	1-07 ± 0-03	25	0-40 ± 0-11	1-09 ± 0-15
Punjabi Hindu	142-83	26-16	5-46	30	63-33 ± 8-80	19	63-40 ± 1-35	64	1-86 ± 0-08	19	0-34 ± 0-07	1-09 ± 0-14
Madras Hindu	124-06	26-45	4-09	16	56-25 ± 12-40	9	64-21 ± 7-98	34	1-65 ± 0-08	9	0-45 ± 0-13	1-78 ± 0-68

negligible in comparison with the standard error. This shows that the per capita consumption for persons taking tea is probably just about the same among both Hindus and Muslims. The consumption per month for each family taking tea is given in column (2.5) and is 1.87 ± 0.16 for Bengali Muslims which agrees within the limits of errors of sampling with a family consumption of 2.09 ± 0.07 among Hindus.

The results for all families are given in Table (5). The proportions of persons taking tea among all families is given in column (3.1) and is 58.74 ± 3.62 per cent among Muslims which is significantly higher than 42.41 ± 1.22 per cent among Hindus. The consumption per month for all persons is shown in column (3.2), and is 0.20 ± 0.02 pound for Muslims which agrees within the limits of errors of sampling with an average consumption of 0.16 ± 0.06 among all Hindus. The average consumption per month per family for all families, shown in col. (3.3) is 1.54 ± 0.15 among Muslims which is in satisfactory agreement with the consumption of 1.42 ± 0.06 for the Hindus.

TABLE (5). CONSUMPTION OF TEA AMONG DIFFERENT COMMUNITIES : ALL FAMILIES

Communitie	Expenditure in Rupees per month		Size of Household	Percentage of Persons		Consumption of tea in lbs. per month		
	Mean	Per person		N	Mean \pm S.E.	Per person		Per family
						N	Mean \pm S.E.	Mean \pm S.E.
(1.1)	(1.2)	(1.3)	(1.4)	(3.1)	(3.2)	(3.3)		
Bengali Hindu	211.87	22.83	9.28	937	42.41 ± 1.22	937	0.16 ± 0.00	1.42 ± 0.06
Bengali Muslim	219.02	29.01	7.55	96	58.74 ± 3.62	96	0.20 ± 0.02	1.54 ± 0.15
Marwari Hindu	255.74	36.02	7.10	108	16.20 ± 3.12	108	0.05 ± 0.01	0.25 ± 0.06
Punjabi Hindu	142.83	26.16	5.46	30	40.67 ± 7.62	30	0.15 ± 0.09	0.69 ± 0.13
Madrasi Hindu	124.06	26.45	4.69	16	49.68 ± 11.75	16	0.24 ± 0.00	1.00 ± 0.56

We find then that among Muslims a larger proportion of families, as well as a larger proportion of persons, drink tea as compared to Hindus. The frequency of taking tea per day is also a little higher; but the per capita consumption or the family consumption per month in both cases appear to be practically of the same order.

Marwari Hindus; If we consider the 108 families of Marwari Hindus the results are quite different. In column (2.1) of Table (4) we find that only 23.15 ± 4.06 per cent of the families drink tea as compared to about 67.98 ± 1.50 per cent or two-thirds of Bengali Hindu families and 79.17 ± 4.14 per cent, or four-fifths of Muslim families. The proportion of persons taking tea among tea-taking families is, however, much higher among Marwari Hindus, and is 88.67 ± 4.04 per cent as compared to 62.39 ± 1.11 per cent among Bengali Hindus and 74.20 ± 2.38 per cent among Muslims. It appears therefore that, although most of the Marwari families do not take tea, yet if a family begins to take it, nearly 90 per cent of its members would do so.

The average daily frequency of taking tea is 1.67 ± 0.03 , which is appreciably lower than the average frequency of 1.92 ± 0.01 among Hindus and 2.22 ± 0.04 among Muslims. The per capita consumption of tea is 0.41 ± 0.11 which is in statistical agreement with the

PREVALENCE OF DRINKING TEA IN CALCUTTA

per capita consumption among both Hindus and Muslims. The average consumption per month for each family taking tea is however only about 1.09 ± 0.14 pound or practically half of the consumption among Hindu families.

In the present sample of Marwari families we found that the average level of expenditure is Rs. 255.74 which is considerably higher than that of either the Bengali Hindus or Muslims. The size of the household is however only 7.10 which is lower than the size of the family in the case of the Hindus and the Muslims. Among the Marwari families the per capita expenditure is Rs. 36 per month, which is considerably higher than that among Bengali families. Owing to the lower proportion of families taking tea among the Marwaris, the consumption per month per persons or per family for all persons and all families are however much lower than among Bengali families.

We find then that although the Marwari families belong on an average to a distinctly higher economic class, drinking tea is much more rare among them than among the Bengali Hindus or Muslims. The per capita consumption of tea for persons who drink tea is however practically the same. The proportion of persons who drink tea among families which take it is on the other hand appreciably higher; this shows that once a Marwari family begins to drink tea most of its members are likely to do so.

Punjabi Hindus: The Punjabi Hindu families in Calcutta in the present sample have a monthly expenditure of of Rs. 142.8 which is distinctly lower than the average expenditure among the Bengali or Marwari families. The size of the household is however comparatively small and only 5.46, so that the per capita expenditure is fairly high and of the order of about Rs. 26 per month.

The proportion of families taking tea is 63.33 ± 8.80 per cent which is slightly lower than but in statistical agreement with the value of 67.98 ± 1.50 per cent for the Bengali Hindus. The proportion of persons taking tea among families which consume tea is 63.40 ± 1.35 per cent which is just about the same as among Bengali Hindu families. The frequency or number of cups per day is 1.86 ± 0.08 and agrees within errors of sampling with the value of 1.92 ± 0.01 for Bengali Hindus. The per capita consumption is 0.3 ± 0.07 which also agrees satisfactorily with the per capita consumption among other communities. As the per capita consumption is about the same as in other communities, but as the size of household is distinctly smaller, the consumption per family is also small and about 1.09 ± 0.14 pound per month which is just about half the consumption among Bengali Hindu families.

We thus find that among the Punjabi Hindus the proportion of families as well as the proportion of persons taking tea are much the same as in the case of Bengali Hindus. The frequency per day is also about the same in both cases. The per capita consumption for persons taking tea is just the same as among other communities; but the size of the family being distinctly smaller the family consumption is much lower than among Bengali families. The size of the sample for Punjabi Hindus is only 30 families which is rather small, and the results given here have naturally a much wider margin of error. In view, however, of the broad agreement of the results with those obtained for the Bengali Hindus, we are justified in accepting them as fairly reliable on the whole.

Madrasi Hindus : The size of the sample for Madrasi Hindus is very small and consists of only sixteen families. The results given here must, therefore, be considered as tentative. The average expenditure is only Rs. 124 which shows that families included in the present sample belong to a distinctly lower economic level than the families in other communities. The size of the household is also smallest and consists, on an average, of 4.7 members so that the per capita expenditure is about Rs. 27 per month which compares quite favourably with all communities other than the Marwaris.

The proportion of families taking tea as well as the proportion of persons taking tea are in general agreement with other Hindu families. The daily frequency of taking tea appears to be slightly lower, but the per capita consumption is about the same as in all other communities. The size of the family being so small, the consumption per family is naturally lower than among other communities.

Summary : The chief conclusions may be now summarized. Drinking tea appears to be more prevalent among Bengali Muslims than among any other community, and we find that roughly four-fifths of the members of such families take tea regularly; the average frequency per day is also high and over 2.2 per day.

There is considerable similarity regarding the habit of drinking tea among the Bengali, Punjabi and Madrasi Hindus. The proportion is roughly about two-thirds against four-fifths among Muslims; and the proportion of persons drinking tea among such families is of the order of 63 per cent or a little less than two-thirds against three-fourths among Muslims; the frequency per day is just below 2.

The per capita consumption of tea for persons taking tea is practically the same among all the communities and is about 0.4 or a little less than half a pound per month per head; the family consumption among different communities naturally depends on the different sizes of the household.

The Marwari Hindus differ appreciably from the other communities. The proportion of families taking tea is very low and less than 25 per cent; while the proportion of members taking tea among such families is very high and nearly 90 per cent. The frequency is rather low and about 1.67 per day, but the per capita consumption for persons who take tea is about 0.4 pound per month and is just the same as in the case of other communities. Drinking tea is thus comparatively rare among Marwaris, but it appears that once a Marwari family begins to drink tea most of its members are likely to do so.

DAILY FREQUENCY AND DISTRIBUTION BY AGE-GROUPS

Daily frequency : I am giving in Table (6) the results of the present enquiry for the different communities. The figures show the number of times tea is taken by each individual and give results separately for males and females of all ages.

For purposes of comparison it is more convenient to use the corresponding percentage figures which are shown in Table (7). It will be seen that among Bengali Hindus who drink tea, less than one-sixth do so only once a day, while nearly 80 per cent or four-fifths take tea twice a day. Only about two per cent drink tea 3 or 4 times a day; and very few more frequently than this.

PREVALENCE OF DRINKING TEA IN CALCUTTA

TABLE 6. FREQUENCY OF DRINKING TEA PER DAY BY COMMUNITIES AND SEXES

No. of times tea is taken (0-1)	Bengali Hindu		Bengali Muslim		Marwari Hindu		Punjabi Hindu		Madraasi Hindu		All Communities		
	Male (1-1)	Female (1-2)	Male (2-1)	Female (2-2)	Male (3-1)	Female (3-2)	Male (4-1)	Female (4-2)	Male (5-1)	Female (5-2)	Male (6-1)	Female (6-2)	Total (6-3)
1	386	233	24	30	16	16	11	6	8	4	445	289	734
2	1806	1156	157	119	27	20	28	11	14	8	2032	1314	3346
3	66	12	22	16	2	1	4	4			94	33	127
4	59	9	4	4	1						64	13	77
5	4		6		6						10		10
6	7		3	1	4						10	1	11
7	2										2		2
8	5										8		9
9													
10	1										1		1
12			2		2						2		2
16			1		1						1		1
Total taking tea	2338	1411	222	170	46	37	43	21	22	12	2669	1651	4320
Not taking tea	2711	2233	196	143	377	279	52	44	22	19	3358	2718	6076
Grand Total	5047	3644	418	313	423	316	95	65	44	31	6027	4369	10396
Mean frequency	1.95	1.86	2.40	1.99	2.22	1.74	1.84	1.90	1.64	1.67	1.98	1.87	1.94
	±0.01	±0.01	±0.08	±0.04	±0.03	±0.08	±0.09	±0.15	±0.08	±0.14	±0.01	±0.01	±0.01

TABLE 7. PERCENTAGE FREQUENCY OF DRINKING TEA PER DAY BY COMMUNITIES AND SEXES

No. of Time taking tea	Bengali Hindu			Bengali Muslim			Marwari Hindu			Punjabi Hindu			Madras Hindu			All Communities		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
(0-1)	(1-1)	(1-2)	(1-3)	(2-1)	(2-2)	(2-3)	(3-1)	(3-2)	(3-3)	(4-1)	(4-2)	(4-3)	(5-1)	(5-2)	(5-3)	(6-1)	(6-2)	(6-3)
1	16-52	10-51	16-52	10-81	17-05	13-78	34-78	43-24	38-56	25-68	28-57	26-56	36-36	33-33	35-29	16-67	17-50	16-99
2	77-31	81-93	79-05	70-73	70-00	70-41	58-70	54-00	50-63	65-12	52-38	60-04	03-04	06-07	04-71	76-13	79-59	77-46
3	2-83	0-85	2-08	9-91	9-41	9-09	4-35	2-70	3-61	9-30	19-05	12-50				3-52	2-00	2-94
4	2-53	0-64	1-81	1-80	2-35	2-04	2-17		1-20							2-40	0-79	1-78
5	0-17		0-11	2-70		1-53										0-37		0-23
6	0-30		0-19	1-35	0-59	1-02										0-37	0-06	0-25
7	0-09		0-05													0-08		0-05
8	0-21	0-07	0-16	1-35		0-77										0-30	0-06	0-21
9																		
10	0-04		0-03													0-04		0-02
12				0-80		0-51										0-08		0-05
16				0-45		0-25										0-04		0-02
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	100-00	100-00	100-00	100-00	100-00	100-00
Total Number	2336	1411	3747	222	170	392	46	37	83	43	21	64	22	12	34	2669	1651	4320

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Among Bengali Muslims the position is only slightly different. The proportion taking tea once a day is slightly lower and about 14 per cent; and the largest number of people, about 70 per cent or more than two-thirds, drink it twice a day. But the interesting point of difference lies in the fact that nearly ten per cent drink tea three times a day among Muslims as against only about two per cent among Hindus. The number of persons taking 4, 5, or 6 times is also comparatively greater among Muslims. This, of course, explains the higher average frequency of 2.2 among Muslims already noticed in the previous Section.

The position among Marwari, Punjabi, and Madrasi Hindus is quite different. A much larger number of persons, varying from 27 to 38 per cent, drink tea only once a day. But here also many more people, roughly varying from 57 to 67 per cent in the different communities take tea twice a day. Among the Punjabi Hindus quite a large proportion, about 12 per cent, drink tea three times a day. But otherwise in these communities practically no one drinks tea more than three times a day.

We find then that most of the people who drink tea do so twice a day, but a considerable fraction takes it only once a day. A small number of people drink tea three times a day, but very few take it more frequently. If we use the combined figures for all communities given in column (6) the position in Calcutta may be stated in the following way. Roughly four-fifths of the people take tea twice a day, and a little over one-sixth once a day; while only about 5 per cent of all persons taking tea do so three times or more frequently per day.

Distribution by Age-groups : Bengali Hindus. The results for the Bengali Hindu families are given in Table (8), and shown graphically in Chart (11). It is interesting to observe that roughly 14 per cent of children below the age of five years apparently take tea. Field workers were specially asked to investigate this point by direct questions; and they reported that in actual fact even young children are sometimes given a little tea mixed with milk.

TABLE (8). AGE-DISTRIBUTION OF PERSONS DRINKING TEA : BENGALI HINDU.

Age Group in Years	Number of Males		Number of Females		Percentage taking tea	
	Taking tea	Total	Taking tea	Total	Males	Females
(1)	(2.1)	(2.2)	(3.1)	(3.2)	(4.1)	(4.2)
0-5	62	585	83	580	10.60	14.31
5-10	175	482	152	526	35.31	28.90
10-15	220	491	192	392	44.81	48.98
15-20	296	579	214	417	51.12	51.32
20-25	328	592	162	312	55.11	51.92
25-30	324	583	145	292	55.57	49.66
30-35	202	374	118	232	54.01	50.86
35-40	199	361	112	225	55.12	49.78
40-50	264	456	130	289	57.89	44.98
50-60	132	233	58	201	56.65	28.86
60-70	48	103	20	86	46.60	23.26
70 & above	15	38	11	44	39.47	25.00
Servants	71	170	14	48	41.76	29.17
Total	2336	5047	1411	3644	46.28	38.72

The proportion rises to about 30 per cent or more in the age group of 5—10 years, and rises above 45 per cent in the age group of 10—15 years. Beyond the age of 15 years, more than half the members of Bengali Hindu families drink tea. In the case of men this percentage is certainly maintained up to the age of 60, and possibly even up to the age of 70. Beyond the age of 70, however, the proportion falls to about 40 per cent. In the case of women, the percentage drinking tea decreases steadily beyond the age of 40, and falls below 25 per cent above the age of 60.

It is interesting to note that the proportion of males and females taking tea remains practically the same up to the age of 20 or 25 years ; but in the older age-groups the proportion of women taking tea progressively decreases as compared to the proportion of men of the same age who take tea. This shows that among the younger section of the population, that is up to the age of about 20 or 25 years there is no prejudice against women taking tea. Among the older people evidently tea used to be considered as a drink more suitable for men than for women.

Bengali Muslims : The size of the sample in the case of Bengali Muslims is too small to allow detailed classification into a large number of age-groups. I am giving in Table (9) the figures separately for the lower age-groups 0—5, 5—10, 10—15 years as they show certain interesting features. I am also giving the pooled results for the groups 0—15 years, 15—30 years, and above 30 years. For purposes of comparison I am also giving the results of Bengali Hindus for the corresponding age-groups.

TABLE (9). AGE-DISTRIBUTION OF PERSONS DRINKING TEA : DIFFERENT COMMUNITIES

Age-Groups In years	Number of males		Number of females		Percentage taking tea	
	Taking tea	Total	Taking tea	Total	Males	Females
(1)	(2.1)	(2.2)	(3.1)	(3.2)	(4.1)	(4.2)
Bengali Hindus No of families = 937						
0-15	457	1558	427	1498	29.33	28.50
15-30	948	1754	521	1021	54.05	51.03
Above 30	860	1565	449	1077	54.95	41.89
Total	2365	5047	1411	3644	46.28	38.72
Servants	71	170	14	48	41.76	29.17
Bengali Muslims : No. of families = 96						
0-5	23	65	16	56	35.38	28.57
5-10	23	39	19	40	58.97	47.50
10-15	24	47	14	31	51.06	45.16
0-15	70	151	49	127	46.36	38.68
15-30	75	125	75	111	60.00	67.57
Above 30	71	105	42	60	67.62	70.00
Total	222	418	170	313	53.11	54.31
Servants	6	37	4	15	16.22	26.67
Marwari Hindus : No. of families = 108						
0-5	7	53	2	51	13.21	3.92
5-10	6	43	4	37	13.95	10.81
10-15	2	35	5	38	5.71	13.16
0-15	15	131	11	126	11.45	8.73
15-30	14	126	12	104	11.11	11.54
Above 30	17	149	14	83	11.41	16.87
Total	46	423	37	316	10.87	11.71

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It is clear that tea is given much more frequently to infants under 5 and also to young children between 5 and 15 years among Muslims than among Hindus. Secondly, there is no diminution of drinking tea with increasing age; and two-thirds or more of the older people take it. The third interesting contrast is given by the fact that there is not the slightest evidence of any difference between the two sexes among Muslims even in the higher age-groups. This shows that among the Muslims even among the older section of the population there is no prejudice against women drinking tea.

Marwari Hindus: I have given the corresponding figures for the Marwari Hindus in the same Table. These present quite a different feature. The proportion of persons drinking tea is nearly the same, of the order of about 11 per cent, practically in all age-groups. There is also no difference between the two sexes. It will be remembered, however, that only a very small proportion of Marwari families drink tea. It appears probable therefore that the habit of drinking tea is confined among a small group of families with a modernized standard of living. In such families there will naturally be no prejudice against women taking tea.

Servants: In Bengali Hindu families nearly 42 per cent male servants and 29 per cent of female servants are given tea. In Muslim families the proportion is lower, 16 and 27 per cent for males and females respectively. In all other communities it is not usual to give any tea to the servants.

PART TWO: RELIABILITY OF THE RESULTS

One of the objects of the present survey was to find out the order of accuracy which can be attained in practice in collecting information relating to different items of consumption. I am, therefore, giving in this Section, as far as possible in non-technical language, a general discussion of the reliability of the present results; as well as a comparison of the results obtained in the parallel surveys in two Wards 4 and 27 carried out by Mr. X of the Tea Market Expansion Board and Laboratory workers.

I am giving in Table (10) the results for the Bengali Hindu families as obtained from the two Sections A and B in which the survey was arranged. We find from column (4) that in every case, with only one single exception, the differences do not exceed the corresponding standard errors. In all these cases the two sets of independent results are in satisfactory agreement. Only in the case of daily frequency, the result for Section A appears to be definitely higher than that for Section B. But in this particular case the standard error is not a valid test for certain special reasons of a technical nature. Also, as this is the only exception, and as the occurrence of such isolated exceptions is inherent in statistical theory, we need not attach any special importance to it. We conclude then that the results in Section A and B obtained independently are in good agreement among themselves. This supplies objective evidence of the reliability of the present results and gives us confidence in accepting them as true within the limits of errors of sampling.

In order to carry forward a more detailed discussion of reliability of results, I had also arranged to collect the material in Section A in accordance with a definite plan. It will be remembered that we conducted the survey in seven Wards. We arranged to collect the information in each Ward in four instalments in the form of four independent sub-samples. For example, in Ward 4 we surveyed 123 families altogether. This was not done, however,

in one instalment. We prepared four different sub-samples of 30, 30, 31 and 32 families respectively each taken at random from all over the Ward. The information for the families included in each sub-sample was collected by different pairs of investigators. The programme was also arranged in such a way that no two pairs of investigators worked at the same time in the same Ward. This, we believe, effectively prevented any bias arising through mutual contact. In the same way, the information for each of the other 6 Wards was collected in four instalments in the form of four independent sub-samples altogether. As seven pairs of investigators were employed for the work in Section A, each pair of investigators collected one sub-sample from each of four different Wards.

The results for these 28 sub-samples were tabulated separately; and from these primary tabulations, the results for the different Wards and for different pairs of investigators were also obtained. It is now clearly possible to compare whether the results for the seven different wards, or for the seven pairs of investigators, or for the 28 sub-samples are in satisfactory agreement among themselves.

Comparison of Wards: I am giving in Table (11) the results for the Bengali Hindu families separately for the different Wards as obtained by the investigators in Section A. By using the standard error (as well as other appropriate statistical tests such as the Chi-square or the analysis of variance by fitting of constants) we found that the estimates for the Wards are in satisfactory agreement among themselves. This can also be seen generally by comparing the figures for the different Wards given in the table. We conclude therefore that there is no significant differentiation among Bengali Hindu families in the different Wards as regards habits relating to drinking tea. This is an indirect confirmation of the reliability of the work, and justifies the pooling together of the results for the different Wards to give consolidated values for the Bengali Hindu community as a whole.

Comparison of Investigators: When we come to the investigators the position is however different. The results for different investigators are given in summary form in Table (12). It will be now seen that the differences among different investigators are much greater than the differences which were observed in the case of different Wards. It is clear then that the different workers differ on an average in their estimates. This means that one pair of investigators may be systematically over-estimating while another pair is under-estimating the same item. This is not surprising as all the investigators in Section A were recruited directly for this enquiry and had no previous training or experience of the present type of work.

Comparison of Sub-samples: I may mention here that we have used proper statistical tests to compare how far the 28 sub-samples on the whole agree among themselves. Owing to the differences between different investigators a certain margin of heterogeneity was present in most cases; but on the whole the agreement was satisfactory. The general conclusion is that by using the method of independent sub-samples it has been possible to investigate in detail the accuracy of the results; and we find that, on the whole, the final results of the present survey may be accepted as quite reliable.

Comparison of Parallel Surveys: I have already mentioned that one of the permanent officers of the Indian Tea Market Expansion Board whom I shall refer to as Mr. X, kindly carried out at my request an actual survey of 50 Bengali Hindu families in Ward No. 4, and

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TABLE (10). COMPARISON OF RESULTS BETWEEN SECTIONS A AND B

Col. Reference	Name of Item	Section A		Section B		Difference between Section A and B
		N	Mean ± S.E.	N	Mean ± S.E.	
(1-1)	(1-2)	(2-1)	(2-2)	(3-1)	(3-2)	(4)
(2-1)	Families taking tea.	634	67.82 ± 1.86	303	68.21 ± 2.68	-0.39 ± 3.26
(2-2)	Percentage of families taking tea	430	60.15 ± 1.97	207	62.34 ± 1.12	-2.19 ± 2.27
(2-3)	Percentage of persons among taking tea	2422	1.82 ± 0.01	1275	2.10 ± 0.02	-0.28 ± 0.02
(2-4)	Daily frequency for persons taking tea	430	0.39 ± 0.01	207	0.43 ± 0.02	-0.04 ± 0.03
(2-5)	Consumption in lbs. per month per person	430	2.05 ± 0.08	207	2.20 ± 0.09	-0.15 ± 0.12
(3-1)	Consumption in lbs. per month per family	634	43.00 ± 1.51	303	41.03 ± 2.10	+1.97 ± 2.59
(3-2)	All Families	634	0.15 ± 0.03	303	0.16 ± 0.01	-0.01 ± 0.03
(3-3)	Consumption in lbs. per month per family	634	1.39 ± 0.07	303	1.50 ± 0.09	-0.11 ± 0.11

TABLE (11). COMPARISON OF RESULTS FOR DIFFERENT WARDS. (SECTION A).

Wards	Percentage of Families		Percentage of Persons		Consumption of tea in lbs. per month		Percentage of Persons		Consumption of tea in lbs. per month		Consumption of tea in lbs. per month			
	N	(2-1)	N	(2-2)	Per person		Per family		N	(3-1)	Per person		Per family	
					(2-3)	(2-4)	(3-2)	(3-3)						
(1)	120	70.00 ± 4.18	84	62.05 ± 2.95	84	0.44 ± 0.03	84	2.18 ± 0.18	120	43.43 ± 3.86	120	0.18 ± 0.02	120	1.53 ± 0.16
4	59	55.93 ± 6.40	33	62.21 ± 5.05	33	0.47 ± 0.05	33	1.98 ± 0.24	59	34.79 ± 4.95	59	0.13 ± 0.02	59	1.11 ± 0.19
5	87	64.37 ± 5.13	56	61.50 ± 3.74	56	0.38 ± 0.04	56	1.04 ± 0.20	87	39.59 ± 3.97	87	0.13 ± 0.02	87	1.25 ± 0.16
9	108	70.37 ± 4.39	76	67.68 ± 3.21	76	0.39 ± 0.03	76	2.05 ± 0.20	108	47.62 ± 3.75	108	0.16 ± 0.02	108	1.44 ± 0.17
14	60	73.33 ± 5.71	44	62.41 ± 4.82	44	0.41 ± 0.04	44	2.05 ± 0.24	60	45.76 ± 5.03	60	0.16 ± 0.02	60	1.50 ± 0.21
22	109	66.05 ± 4.54	72	62.61 ± 3.42	72	0.36 ± 0.03	72	1.97 ± 0.20	109	41.35 ± 3.64	109	0.13 ± 0.01	109	1.30 ± 0.16
27	91	71.43 ± 4.74	65	63.80 ± 3.22	65	0.36 ± 0.02	65	2.00 ± 0.26	91	45.63 ± 3.77	91	0.10 ± 0.02	91	1.49 ± 0.21
Total	634	67.82 ± 1.86	430	63.40 ± 1.35	430	0.39 ± 0.01	430	2.05 ± 0.08	534	43.00 ± 1.51	534	0.15 ± 0.03	634	1.39 ± 0.07

109 families belonging to different communities in Ward No. 23. The two surveys were carried out on different lines, and all the items are not comparable. We have, however, comparable material for both the surveys for the proportion of families taking tea, the proportion of persons taking tea among all families which take tea, and also the proportion of persons taking tea among all families. In the case of the Laboratory survey, actual record of the age of individual members was kept ; but in the case of the survey conducted by Mr. X the members of each family were classified only as adults or children up to the age of 12 years. It is, however, possible to group the material obtained by the Laboratory workers in a form suitable for comparison with the material obtained by Mr. X.

I am giving in Table (13) the two sets of results, one obtained by Mr. X and the other by the Laboratory workers, for comparison. The differences between the two estimates together with the corresponding standard errors of these differences are given in column (4) of Table (13). The first thing to be noticed is that Mr. X's estimates in every case are much higher than the estimates obtained by the Laboratory workers. For example, in Ward No. 4 we find that according to Mr. X, 88 per cent of the Bengali families take tea against 70 per cent according to the Laboratory survey. The difference of over 18 per cent is quite significant in comparison with the standard error of about 7 per cent.

As regards the proportion of persons taking tea, Mr. X gives over 75 per cent against 60 per cent by the other workers, showing a difference of more than 15 per cent. As regards the proportion of persons taking tea among all families the discrepancy is still higher ; Mr. X gives about 66 per cent against 42 per cent by the other workers, with a difference of roughly 24 per cent. If we consider the age distribution, we find the same type of discrepancy. For adult males, Mr. X gives 72 per cent against just over 52 per cent by the Laboratory workers, with a difference of nearly 20 per cent. For adult females, the figures are 61 per cent against 47 with a discrepancy of 14 per cent. The difference in the case of children up to 12 years is much greater. Mr. X gives a figure of nearly 54 per cent against an estimate of about 18 per cent by the Laboratory workers with a discrepancy of over 35 per cent.

In the case of Ward 23, in which the results are given for all the communities taken together, we find differences of the same kind and of the same order. In every case Mr. X gives the higher estimate. The discrepancy is nearly 18 per cent for the proportion of families taking tea, and over 13 per cent for the proportion of persons taking tea in the whole population. As regard adult males, the discrepancy is nearly 21 per cent ; and for adult females over 14 per cent. The difference for children up to 12 years is comparatively small and is only about 9 per cent. In one case only, namely in the proportion of persons taking tea among the families which take tea, the difference between the two estimates is small and is 4 per cent, which is statistically negligible in comparison with the standard error of 2.3 per cent.

These results are striking. We find that Mr. X, who I understand has had considerable experience of surveys of the type which are being conducted at present by the Tea Market Expansion Board, has estimated the prevalence of drinking tea at a much higher level than our Laboratory workers in almost every case. The excess varies roughly from 14 to 36 per cent and is almost always statistically significant. I have already shown, however, that the final results of the Laboratory survey are quite reliable. On this view, we find that Mr. X's estimates are definitely unreliable and invariably much in excess of the other estimates.

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TABLE (12). COMPARISON OF RESULTS FOR DIFFERENT INVESTIGATORS

Investigators	Families taking tea										All Families					
	Percentage of Families			Percentage of Persons			Consumption of tea in lbs. per month				Percentage of Persons			Consumption of tea in lbs. per month		
	(2-1)		(2-2)	(2-3)		Per family		(3-1)		Per person		(3-2)		Per family		
	N		N	N		N		N		N		N		N		
1	83	69.88 ± 5.04	59	71.22 ± 3.64	58	0.35 ± 0.03	58	1.91 ± 0.22	83	49.77 ± 4.39	83	0.16 ± 0.09	83	1.50 ± 0.20		
2	99	56.87 ± 4.98	53	58.30 ± 3.58	56	0.44 ± 0.04	56	2.43 ± 0.25	99	32.68 ± 3.52	99	0.13 ± 0.07	99	1.08 ± 0.16		
3	83	79.52 ± 4.43	66	65.21 ± 3.39	66	0.41 ± 0.03	66	1.87 ± 0.23	83	51.86 ± 3.85	83	0.19 ± 0.10	83	1.83 ± 0.23		
4	96	73.96 ± 4.48	71	51.30 ± 3.07	71	0.45 ± 0.04	71	1.85 ± 0.18	96	37.94 ± 3.27	96	0.15 ± 0.08	96	1.41 ± 0.15		
5	92	75.00 ± 4.51	69	75.58 ± 3.67	69	0.29 ± 0.02	69	1.87 ± 0.23	92	50.08 ± 4.38	92	0.15 ± 0.08	92	1.39 ± 0.16		
6	98	65.21 ± 5.08	53	56.46 ± 3.49	53	0.40 ± 0.03	53	2.22 ± 0.23	98	31.17 ± 3.47	98	0.12 ± 0.08	98	1.03 ± 0.16		
7	85	67.06 ± 5.10	57	65.11 ± 3.31	57	0.42 ± 0.03	57	2.05 ± 0.08	85	43.60 ± 4.01	85	0.17 ± 0.09	85	1.49 ± 0.19		
Total	634	67.82 ± 1.86	430	63.40 ± 1.35	430	0.39 ± 0.01	430	2.05 ± 0.08	634	43.00 ± 1.51	634	0.15 ± 0.03	634	1.39 ± 0.07		

TABLE (13). COMPARISON OF RESULTS OBTAINED BY MR. X AND LABORATORY WORKERS

Percentage of	Estimated by						Difference between estimates
	Mr. X			Laboratory Workers			
	(1)	(2)	(3)	(4)	(5)	(6)	
Ward 4 : Bangali Hindus							
Families taking tea	50	88.00 ± 4.60	182	69.78 ± 3.40		+ 18.22 ± 5.72	
Persons taking tea among families taking tea	591	5.47 ± 0.09	1304	60.12 ± 1.30		+ 15.35 ± 6.24	
Persons taking tea among all families	679	63.63 ± 6.71	1973	41.80 ± 1.14		+ 23.82 ± 6.81	
Adult males taking tea among all males	224	72.32 ± 2.90	840	52.53 ± 1.71		+ 19.79 ± 3.45	
Adult females taking tea among all females	175	60.37 ± 3.69	530	46.60 ± 2.17		+ 15.97 ± 4.28	
Children up to 12 years taking tea among all children	205	53.60 ± 3.44	451	18.42 ± 1.74		+ 35.24 ± 3.90	
Ward 27 : All Communities							
Families taking tea	109	87.10 ± 3.20	131	69.47 ± 4.02		+ 17.69 ± 5.14	
Persons taking tea among families taking tea	904	64.16 ± 1.00	833	60.14 ± 1.70		+ 4.02 ± 2.33	
Persons taking tea among all families	986	58.82 ± 1.57	1102	45.40 ± 1.90		+ 13.36 ± 3.17	
Adult males taking tea among all males	392	74.01 ± 2.23	506	53.95 ± 2.32		+ 20.60 ± 2.14	
Adult females taking tea among all females	288	62.30 ± 2.85	304	48.30 ± 2.87		+ 14.14 ± 4.04	
Children up to 12 years taking tea among all children	316	58.39 ± 2.71	282	27.74 ± 3.62		+ 8.65 ± 3.77	

I should like to emphasize that I am stating these results not in disparagement of Mr. X's work. My own impression is that he did his work according to orthodox methods with ability and conscientiousness. The fault really lies with the method itself. I think the present comparison brings out very clearly the danger of using a system which is not based on modern statistical principles and which has no adequate statistical controls at the point of collection of the primary material.

PRECISION OF THE RESULTS.

I shall conclude this section by adding a few remarks regarding the precision of the final results of the present enquiry. I am giving in Table (14) the mean values for the Bengali Hindus together with the standard errors. If we express the standard errors as percentages

TABLE (14). PRECISION OF THE RESULTS : BENGALI HINDUS

Col. No.	Name of Item	Size of Sample	Mean value \pm S.E.	Percentage Error
(1-1)	(1-2)	(1-3)	(2)	(3)
	Families taking tea.			
(2-1)	Percentage of families taking tea	437	67.9800 \pm 1.5000	2.21
(2-2)	Percentage of persons among taking tea	637	62.3900 \pm 1.1100	1.78
(2-3)	Daily frequency for persons taking tea	3747	1.9170 \pm 0.0101	0.53
(2-4)	Consumption in lbs. per month per person	637	0.4075 \pm 0.0109	2.67
(2-5)	Consumption in lbs. per month per family	637	2.0904 \pm 0.0664	3.18
	All Families			
(3-1)	Percentage of persons among all families	437	42.4100 \pm 1.2200	2.88
(3-2)	Consumption in lbs. per month per person	937	0.1551 \pm 0.0056	3.61
(3-3)	Consumption in lbs. per month per family	937	1.4211 \pm 0.0553	3.19

of the mean values, we get what may be called the percentage error in each case. These values are given in col. (3) of Table (14). It will be seen that the percentage standard errors vary roughly from 0.5 per cent to about 3.6 per cent for the different items. For reasons of a rather technical nature I however consider the standard error in the case of the daily frequency of drinking tea to be an under-estimate. Omitting this one item, we find that in the case of Bengali Hindus with a total sample of 937 families, it should be possible to detect a difference of from 4 to 7 per cent on the basis of a survey on the present scale.

The precision for the other communities is naturally much less as the size of the sample is smaller. For the Bengali Muslims, standard errors vary from roughly 3 or 4 per cent to about 10 per cent. In the case of Marwari Hindus the margin of error is still greater, and the percentage standard error varies from roughly 15 to 30 per cent. For the Punjabi and Madras Hindu the number of families surveyed was very small, only 16 and 13 respectively and the results naturally have a very wide margin of error. With samples of about 1000 families it is, however, gratifying to find that a difference of roughly from four to seven per cent should be capable of being detected by enquiries of the present kind.

The present enquiry has clearly brought out the great advantages of a sample survey. It can be depended upon to give reliable results; it is also carried out in a way which enables valid estimates being made of the accuracy which is actually attained in practice in the final results. Thus we may expect not only to get accurate results, but also to know what is the order of accuracy. Finally it is flexible and can be adapted to attain results of any given standard of accuracy.