

TABLE 21

Comparison of consumption in different years for working and middle-class families in Bengal

Item	Unit per head per year	Jagaddal working-class				Calcutta middle-classes			
		Consumption per capita per year		Index-number, 1945: 1941		Consumption per capita per year		Index-number, 1945: 1939	
		1945	1941	Consumption	Prices	1945	1939	Consumption	Prices
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rice and products ...	lbs.	214.0	321.8	66.5	273	221.4	224.7	98.5	308
Wheat and products ...	"	133.3	113.6	117.4	187	85.6	74.1	115.5	258
All cereals ...	"	345.6	435.3	79.4	—	306.9	298.7	102.8	—
Pulses ...	"	68.3	70.0	97.6	366	34.5	32.1	107.6	317
Potatoes ...	"	50.2	64.8	77.5	533	54.9	83.1	66.0	377
Milk and products ...	"	18.3	43.2	42.4	300	77.8	174.5	44.6	333
Butter and ghee ...	"	0.66	3.9	16.8	210	1.6	16.5	10.0	333
Oil ...	"	20.5	15.2	134.7	304	19.1	23.0	83.0	235
Salt ...	"	12.0	15.9	75.6	190	11.8	17.3	68.3	300
Sugar and gur ...	"	26.4	15.0	176.0	185	27.9	48.6	57.5	172
Fish ...	"	12.1	13.1	92.2	290	24.5	50.2	48.8	389
Meat ...	"	3.0	12.0	66.6	343	7.7	11.5	67.0	360
Eggs ...	no.	—	—	—	—	11.8	42.4	28.0	562
Coal ...	lbs.	297.1	279.0	106.5	377	—	—	—	—
Fire wood ...	"	302.0	405.7	74.4	330	—	—	—	—
Cloth (dhuti) ...	yds.	6.9	9.9	69.7	283	—	—	—	—
Cloth (fungi) ...	"	0.6	0.5	120.0	416	—	—	—	—
Number of families ...	—	755	641	—	—	610	1,151	—	—
.. persons ...	—	2,313	1,866	—	—	4,335	10,539	—	—
.. persons per family ...	—	3.06	2.91	—	—	7.11	9.16	—	—

The consumption of all cereals had dropped very appreciably to about 79 per cent. in working-class families, although there was an increase in the consumption of wheat, owing no doubt to more favourable prices. In middle-class families the cereal consumption (which had been originally much lower in comparison with working-class families) had remained more or less steady, but there was a higher consumption of wheat. The consumption of sugar had increased a great deal (to 176 per cent.) among working-class families, but had decreased appreciably in middle-class families, due almost certainly to rationing. The consumption of oil had increased somewhat in working-class families, which was probably due to partial rationing and as an offset against the practical discontinuance of the use of higher-quality fats like butter or ghee (clarified butter). In practically all other items the consumption had decreased very seriously in 1945 in both working-class and middle-class families at Jagaddal and in Calcutta.

Margin of error of index-number of earnings and consumption. As information had been collected about total earnings of different families in 1941 and 1945, it is possible to calculate the average increase in earnings. The geographical blocks had been kept the same in both years. It is possible therefore to calculate average earnings for each block separately in 1941 and 1945, and hence to calculate the ratio of earnings for each individual block. Similar material is also available for a number of other items, like monthly expenditure, consumption of cereals, pulses, vegetables, vegetable oil, meat and fish, dairy products, and clothing. Index-numbers for 1945 with 1941 as base can be therefore calculated for all these items for each of the five geographical blocks at Jagaddal. These index-numbers are shown in Table 22. Similar figures were available for index-numbers for 1942 with 1941 as base, but these have not been printed here.

Table 22 supplies some idea of variations in the index-numbers from block to block. It is possible to form an unweighted average index for the whole area, and also to calculate the unweighted standard error from the figures for the different blocks. These unweighted average index numbers for 1942 on 1941 are shown in col. 3, and for 1945 on 1941 in col. 4 of Table 24.

TABLE 22

Bengal Labour Enquiry--Jagaddal, 1945 and 1941.
Index-numbers for 1945 with 1941 as base (= 100)

Items	n (1941) n (1945) Harmonic mean	(a) Per family basis					(b) Per capita basis				
		Block 1	Block 2	Block 3	Block 4	Block 5	Block 1	Block 2	Block 3	Block 4	Block 5
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		157	168	181	99	37	516	484	434	268	164
		195	212	192	104	51	580	601	467	374	284
		174	188	186	101	43	546	536	450	312	208
Cost of living ...		275	269	272	275	279	275	269	272	275	279
Earnings ...		173	195	207	228	221	191	199	204	172	176
Expenditure ...		165	179	194	212	206	182	183	191	160	164
Cereals ...		78	80	80	107	81	86	82	79	81	65
Pulses ...		89	115	93	126	98	98	118	91	95	78
Vegetables ...		90	98	103	113	92	99	100	101	85	73
Vegetable oil ...		94	149	176	166	136	104	153	173	111	108
Meat and fish ...		71	78	104	95	72	79	80	102	72	57
Spices and salt ...		75	74	71	88	109	83	76	70	67	87
Dairy products ...		30	48	46	47	32	34	50	46	36	26
Clothing ...		73	73	83	87	92	81	75	81	66	73

Information regarding the size of the samples in 1941 and in 1945 in the different blocks is given together with their harmonic means at the top of each column in Table 22. Using such harmonic means as weights, a series of weighted averages with standard errors were calculated, and are shown in col. 5 of Table 24.

TABLE 23

Bengal Labour Enquiry--Jagaddal, 1941, 1942, and 1945. Average earning and expenditure and quantity consumed per month

Serial no.	Item	Unit of measurement per month	1941	1942	1945
(1)	(2)	(3)	(4)	(5)	(6)
	average size of family		2.91	2.79	3.06
			(a) Per family basis		
1	Earning	rupees	26.93 ± 0.92	36.38 ± 1.22	55.40 ± 5.16
2	Expenditure	"	30.11 ± 1.16	35.57 ± 1.15	57.61 ± 5.38
3	Cereals	pounds	103.41 ± 5.70	98.68 ± 5.53	87.49 ± 7.63
4	Pulses	"	15.47 ± 0.70	12.61 ± 0.56	15.93 ± 0.82
5	Vegetables	"	32.32 ± 2.20	31.41 ± 1.52	31.56 ± 2.55
6	Vegetable oil	"	3.56 ± 0.19	3.48 ± 0.19	5.10 ± 0.47
7	Meat and fish	"	6.09 ± 0.35	5.90 ± 0.33	5.60 ± 0.33
8	Spices and salt	"	5.74 ± 0.33	5.74 ± 0.29	4.96 ± 0.97
9	Dairy products	"	13.31 ± 1.69	12.08 ± 1.46	5.10 ± 0.88
10	Clothing	yds. per year	60.48 ± 2.11	55.42 ± 2.52	49.77 ± 5.78
			(b) Per capita basis		
1	Earning	rupees	9.01 ± 0.42	13.32 ± 0.53	16.54 ± 1.09
2	Expenditure	"	9.93 ± 0.35	12.08 ± 0.55	17.20 ± 1.15
3	Cereals	pounds	33.37 ± 0.74	31.76 ± 0.53	26.08 ± 1.48
4	Pulses	"	5.16 ± 0.25	4.20 ± 0.16	4.98 ± 0.64
5	Vegetables	"	10.45 ± 0.45	10.55 ± 0.56	9.46 ± 0.62
6	Vegetable oil	"	1.15 ± 0.04	1.13 ± 0.02	1.52 ± 0.21
7	Meat and fish	"	1.97 ± 0.02	2.04 ± 0.10	1.52 ± 0.14
8	Spices and salt	"	1.85 ± 0.06	1.89 ± 0.06	1.40 ± 0.06
9	Dairy products	"	4.05 ± 0.23	3.79 ± 0.33	1.50 ± 0.06
10	Clothing	yds. per year	19.92 ± 0.64	18.33 ± 0.58	14.70 ± 0.87

Mean values of monthly earnings, expenditure, and consumption of various commodities for working-class families in Jagaddal in 1941, 1942, and 1945 are shown in Table 23. In this table figures have been given both on a "per family" and "per capita" basis, and the standard errors have been calculated from the block figures in 1945 and 1942. From this material, index-numbers can be prepared for 1945 with 1941 as base by dividing the mean values in 1945 by the corresponding mean values in 1941. One measure of the standard error of the index-number can also be obtained by compounding the standard error of the two mean values. These index numbers are shown in col. 6 of Table 24, in which the C.L. index-number has been also given at the top for convenience of reference.

TABLE 24

Bengal Labour Enquiry—Jagaddal, 1941, 1942, and 1945. Index-numbers of earnings, expenditure, and consumption

Serial no.	Item	1942:1941		1945:1941	
		Unweighted average of ratios	Unweighted average of ratios	Weighted average of ratios	Ratios of average
(1)	(2)	(3)	(4)	(5)	(6)
	Cost-of-living index	122 ± 0.33	273 ± 1.64	272.8 ± 1.3	—
	(a) Index-number on "per family" basis				
1	Earnings	137 ± 4.3	205 ± 9.8	199.1 ± 8.3	205.8 ± 20.50
2	Expenditure	121 ± 5.1	191 ± 8.6	186.0 ± 7.5	191.3 ± 19.35
3	Cereals	98 ± 6.1	85 ± 5.5	83.5 ± 4.4	84.6 ± 8.73
4	Pulses	86 ± 5.4	104 ± 7.0	103.1 ± 6.2	103.0 ± 7.09
5	Vegetables	105 ± 6.9	99 ± 4.1	99.2 ± 3.4	97.6 ± 10.33
6	Vegetable oil	101 ± 5.5	144 ± 4.3	144.1 ± 14.0	143.3 ± 15.28
7	Meat and fish	106 ± 7.0	84 ± 6.6	85.3 ± 6.1	82.1 ± 7.20
8	Spices and salt	105 ± 7.0	83 ± 7.0	77.7 ± 4.3	86.4 ± 17.61
9	Dairy products	100 ± 9.3	41 ± 4.0	41.8 ± 3.5	38.3 ± 8.37
10	Clothing	92 ± 5.8	82 ± 3.8	78.9 ± 2.8	82.3 ± 9.98
	(b) Index-number on "per capita" basis				
1	Earnings	141 ± 7.2	188 ± 6.3	191.5 ± 5.1	183.6 ± 14.83
2	Expenditure	122 ± 5.7	176 ± 6.0	179.1 ± 4.8	173.2 ± 13.09
3	Cereals	97 ± 3.0	79 ± 3.6	80.5 ± 3.4	78.2 ± 4.75
4	Pulses	85 ± 4.3	96 ± 6.5	99.2 ± 5.6	96.5 ± 13.22
5	Vegetables	106 ± 7.5	92 ± 5.5	94.9 ± 4.1	90.5 ± 7.15
6	Vegetable oil	98 ± 3.6	130 ± 14.0	133.4 ± 5.8	132.2 ± 18.52
7	Meat and fish	109 ± 8.1	78 ± 7.3	80.5 ± 6.5	77.2 ± 7.31
8	Spices and salt	105 ± 5.0	77 ± 3.8	76.3 ± 3.0	75.7 ± 4.14
9	Dairy products	100 ± 9.0	38 ± 4.5	40.3 ± 4.2	37.0 ± 2.58
10	Clothing	93 ± 3.4	75 ± 2.8	76.4 ± 2.2	73.8 ± 4.95

Index-numbers for 1945, calculated in three different ways, are given in cols. 4, 5, and 6 of Table 24. It will be noticed that it does not matter very much which particular method of calculation is followed, as the three index-numbers are in broad agreement.

It is of course possible to make a deeper analysis by taking into consideration the sampling errors within each block, which, however, would entail a great deal of computational labour. My purpose here is to draw attention to the possibility of making rough but quick comparisons by using the mean values for replicated sub-samples.

I have no desire to discuss the economic implications, but may just note that, with a cost-of-living index of 273 and an index-number of earnings of 205, the index-number of real wages was 75 in 1945. The index-numbers of consumption shown in col. 5 of Table 21 or cols. 5 or 6 of Table 24 are in broad agreement with this value. Consumption of essential articles had naturally remained more steady, while consumption of other commodities had decreased more appreciably. I am not competent to discuss the economic aspects of the subject. My object is to point out that even approximate values of the margin of error are likely to be useful in obtaining a more critical appreciation of the economic situation.

I may mention here that in working-class family enquiries at Jagaddal arrangements had been made to keep a certain number of families common in the enquiries in different years. This enables a direct comparison of the change in the consumption pattern being made on a family or household basis. In fact the form in which the material has been collected makes it possible to undertake a critical study of such enquiries. Owing to lack of resources, we have not been able to take up this work seriously, but Ambika Ghosh and H. K. Chaturvedi are doing what they can.

TABLE 25

Bengal Sample Surveys (1936-42). Estimated consumption of food items in lb. per head per year by expenditure levels

Food items	Levels of family expenditure in rupees per month								All levels
	0-10	10-20	20-30	30-50	50-100	100-200	200-300	300 +	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rice	310.22	371.93	370.28	360.41	342.31	278.95	257.55	262.49	341.48
Rice products	4.11	5.76	10.70	9.87	10.70	10.70	9.87	5.76	8.23
Wheat products	1.64	7.41	13.16	17.28	26.33	44.43	59.24	75.70	19.75
All cereals	315.97	385.10	394.14	387.56	379.34	334.08	326.66	343.95	369.46
Pulses	15.63	27.98	37.03	36.20	32.91	31.27	34.56	36.20	32.91
Salt	9.87	13.27	13.99	14.07	15.63	15.63	17.28	18.10	15.30
Potatoes	12.34	26.33	32.09	37.03	48.55	63.36	79.81	108.61	48.55
Vegetables	22.22	18.45	39.50	44.43	65.00	94.21	109.44	139.88	64.26
Oil	5.76	9.87	11.52	12.34	15.63	19.75	21.39	25.51	14.81
Sugar and gur	3.29	9.05	12.34	14.42	23.86	54.31	36.20	41.96	24.31
Fish	6.58	8.23	11.52	14.81	23.86	41.96	49.37	57.60	25.51
Meat	1.64	4.11	5.76	5.76	8.23	9.05	11.52	17.28	9.05
Eggs	0.13	0.16	0.25	0.70	2.01	3.28	4.84	6.04	2.74
Milk and milk products	5.76	10.70	23.86	49.37	83.93	145.77	167.86	236.98	84.75
Butter and ghee	0.53	0.82	1.64	2.47	5.76	10.70	13.16	23.86	6.58
No. of persons per family ...	3.67	4.52	4.66	5.68	7.19	9.12	11.52	15.36	5.29
Total no. of families ...	3,212	4,142	2,885	2,510	1,519	649	268	224	15,409
Total no. of persons ...	11,788	18,712	13,443	14,247	10,919	5,916	3,088	3,441	81,554

TABLE 26

Estimated index-numbers of per capita consumption of various food items by expenditure level

Food items	Units of measurement	Monthly expenditure in rupees							
		0-10	10-20	20-30	30-50	50-100	100-200	200-300	300 and above
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. Rice	maunds	90.8	108.9	108.4	105.5	100.2	81.7	75.4	76.9
2. Rice products	"	50.0	70.0	130.0	120.0	130.0	130.0	120.0	70.0
3. Atta flour, etc.	"	8.3	37.5	66.7	87.5	133.3	225.0	300.0	383.3
4. All cereals	"	85.5	104.2	106.7	104.9	102.7	90.4	88.4	93.1
5. Pulses	seers	47.5	85.0	112.5	110.0	100.0	95.0	105.0	110.0
6. Salt	"	64.5	86.7	91.4	91.9	102.1	102.1	112.9	118.3
7. Potatoes	"	25.4	54.2	66.1	76.3	100.0	130.5	164.4	223.7
8. Vegetables	"	34.6	28.7	61.5	69.1	101.1	146.0	170.3	217.7
9. Oil	"	38.9	66.7	77.8	83.3	105.6	133.3	144.4	172.2
10. Sugar and gur	"	13.5	37.2	50.8	59.3	98.1	223.3	148.9	172.6
11. Fish	"	25.8	32.3	45.2	58.1	93.6	164.5	193.6	225.8
12. Meat	"	18.2	45.4	63.6	63.6	90.9	100.0	127.3	190.9
13. Eggs	number	4.9	5.7	13.1	25.5	73.2	119.8	177.0	220.6
14. Milk and milk products	seers	6.8	12.6	28.2	58.2	99.0	172.0	198.1	279.6
15. Butter and ghee	"	3.1	12.5	25.0	37.5	87.5	162.5	200.0	362.5
Index no. of persons per family	—	69.4	85.4	88.1	107.4	135.9	172.4	217.8	290.4

Per capita consumption of food items by expenditure levels. I may give another illustration of the use of the sample survey in investigating consumption patterns. A number of enquiries were undertaken in both rural and urban areas in Bengal between 1936 and 1942. Although economic conditions and prices had changed during this period, the actual magnitude of such changes was small in comparison with that which occurred under war conditions. It has therefore been considered permissible to prepare a composite table showing the *per capita* consumption of various food items at different expenditure levels (in rupees per month per family) based on the above enquiries. Relevant data are given in Table 25. The same table has been expressed in the form of index-numbers in Table 26 in which the over-all average consumption has been adopted as 100.

The consumption of all cereals is naturally fairly steady, but shows a slight falling off above the expenditure level of Rs.100 per month. Rice products and wheat are increasingly preferred with rising expenditure level in Bengal. Index-numbers for pulses and salt are also, on the whole, fairly steady. The consumption of all other items increased steadily with rising expenditure level. The disparity in consumption is very high in sugar, fish and meat, and still higher in the consumption of eggs, milk and milk products, and butter and ghee (clarified butter). Another point is worth noting—namely, the steady increase in the size of the household with rising economic status.

Radio Programme Preference Survey

I shall now give an example of what is usually called "listener research" in the United Kingdom. This work was undertaken at the request of the Government of India. The object was to ascertain public reactions to the broadcast of war programmes from the All-India Radio in the earlier part of 1941. It was apprehended, however, that any direct enquiry would meet with considerable psychological resistance. In this situation the Indian Statistical Institute undertook to organize a comprehensive public preference survey with a broad coverage, including reactions to war broadcasts.

As regards the design of the survey, it may be briefly mentioned that the sample was picked out of households possessing radio licences, of which a list was supplied by the Government. The households were selected on the basis of pure space randomization, and arranged in the form of several inter-penetrating replicates. Information for each replicate or sub-sample was collected by an independent set of investigators. The field work was carried out in April–May 1941, and a comprehensive report was submitted to the Government in July 1941, but it was not published owing to wartime restrictions.

Four tables are reproduced below to give a general idea of the approach. Table 27 shows the frequency (in the form of percentages) of listening "often" to different items of the radio programme broken down by age, educational, and occupational groups. The size of the sample in each group is shown at the head of each column.

The nature of the fluctuations in different age-groups is of considerable interest, and is on the whole in keeping with what may be called common-sense expectations. For example, "war news" had practically the highest preference in almost every group, which is just what might have been expected. "News talk" and "foreign news" were also, on the whole, generally popular, as these were also mostly concerned with the war.

In the music and entertainment section it was found that "modern Bengali" and "(Rabindranath) Tagore songs," as well as "plays" and "instrumental music," were, on the whole, highly popular, with "devotional music" holding quite a good place: "classical music" was, however, distinctly less popular. There were also interesting age-variations in this group. Modern Bengali and Tagore songs, plays, and instrumental music were far more popular among the younger people, and showed a definite and considerable decrease in popularity with increasing age. Devotional music, on the other hand, showed a sharp contrast and increasing popularity with age.

There are many other interesting points which, however, need not detain us. It is the sampling errors to which I should like to draw attention. The values for three independent but inter-penetrating samples or replicates are shown in Table 28. The variance (calculated from three replicates—that is, on two degrees of freedom) for the different items is shown in col. 6. The "within binomial variance" for the whole material is given in col. 7; and the ratio of variances in col. 8. The population is not Gauss-Laplacian, and strictly speaking Fisher's *F* cannot be used to test the significance. The use of *F* may, however, give approximate results, and significance has been shown in the usual manner.

TABLE 27
Calcutta radio programme preferences—April–May, 1941. Frequency of listening "often"

Item of radio programme	By age-groups (in years)										By educational groups					By occupational groups				
	All groups n = 803	14-18 n = 24	19-25 n = 170	26-35 n = 278	36-55 n = 298	55- n = 33	Non- maîtres n = 156	Under- graduate n = 354	Gradu- ates n = 293	Student n = 149	Petty trade n = 11	Service n = 300	Busi- ness n = 184	Pro- fession n = 95	Unde- fined n = 64					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)					
WAR																				
1. War news ...	54.7	54.2	52.9	60.1	49.9	60.6	50.3	58.5	52.2	54.0	54.5	54.0	54.9	54.7	57.8					
2. News talk ...	50.8	45.8	52.4	53.2	47.9	57.6	46.5	54.2	48.8	46.0	54.5	49.0	53.2	58.9	54.7					
3. Foreign news ...	43.5	41.7	44.1	46.4	39.3	54.5	35.1	46.6	45.1	46.7	27.3	41.3	41.8	49.5	43.8					
Music																				
4. Modern Bengali ...	46.0	70.8	59.9	47.1	37.9	18.2	45.9	49.4	42.0	58.7	54.5	41.0	44.6	40.0	51.6					
5. Tagore ...	40.2	66.6	49.4	39.6	35.6	21.2	30.6	41.4	40.3	49.3	27.3	38.3	37.0	42.0	35.9					
6. Plays ...	42.5	54.2	51.2	37.4	41.9	36.4	51.6	51.1	33.1	48.7	45.5	42.0	43.7	38.9	53.1					
7. Instrumental ...	43.0	50.0	51.2	43.5	36.2	27.3	41.4	46.6	36.5	46.7	54.5	35.3	40.2	41.1	43.3					
8. Devotional ...	35.1	25.0	30.0	33.4	39.3	51.5	43.3	36.4	29.0	30.0	27.3	35.3	35.3	36.8	43.8					
9. Classical ...	23.3	16.7	29.9	24.8	19.8	12.1	27.4	23.2	21.2	26.6	27.3	22.0	21.4	18.9	26.6					
TALKS																				
10. Humorous ...	29.8	29.2	28.8	32.4	28.2	27.3	29.3	31.6	27.6	26.7	36.4	30.7	28.3	26.3	40.6					
11. Scientific ...	26.2	37.5	27.1	28.1	22.5	30.3	20.4	24.9	30.4	28.0	9.1	27.9	21.7	27.4	26.6					
12. Literary ...	18.7	20.8	21.2	15.8	18.5	30.3	8.9	25.7	21.5	28.7	9.1	22.7	14.7	21.1	23.4					
13. Educational ...	24.9	33.3	26.5	22.5	22.5	30.3	17.8	30.2	24.6	37.3	27.3	26.3	16.8	23.2	25.0					
14. Music lessons ...	20.7	33.3	37.6	15.1	15.8	15.2	21.7	24.9	15.0	34.7	36.4	18.3	17.4	11.6	18.8					
MISCELLANEOUS																				
15. Children's ...	16.1	37.5	21.8	13.3	13.4	18.2	16.6	18.9	12.3	26.0	9.1	11.7	15.8	13.7	18.8					
16. Women's ...	14.7	20.8	17.6	12.2	13.8	24.2	19.1	16.7	9.9	22.7	9.1	10.0	14.1	12.6	23.4					
17. Folk music ...	16.9	25.0	17.0	16.9	16.1	18.2	15.3	18.9	15.4	14.7	0	17.0	20.6	14.7	20.9					
18. Rural ...	12.0	12.5	18.2	11.2	8.1	21.2	10.8	12.4	11.9	16.0	9.1	11.3	12.5	7.4	10.9					

TABLE 23

Calcutta radio programme preferences—April–May, 1941. Percentages of persons "listening often" to different items of programme

Calcutta radio programme item early 1941	Samples (replicates)			Pooled values with s.e. based on replicates $n = 803$	Variance		Ratio of variance
	1	2	3		Between samples d.f. = 2	Within samples d.f. = 800	
	$n = 287$	$n = 268$	$n = 248$				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
WAR							
War news	55.8	50.7	57.7	54.7 \pm 2.52	3,340	2,479	1.35
News talk	54.0	42.9	55.6	50.8 \pm 3.99	12,728	2,477	5.14 †
Foreign news	45.3	40.3	44.8	43.5 \pm 1.59	2,032	2,461	0.83
Music							
Modern Bengali	48.8	39.6	49.6	46.0 \pm 3.38	8,284	2,472	3.35 *
Tagore	39.4	35.1	46.8	40.4 \pm 3.42	8,978	2,391	3.75 *
Plays	43.6	41.4	42.3	42.4 \pm 0.67	319	2,452	0.13
Instrumental	42.2	40.7	43.1	42.0 \pm 0.70	402	2,444	0.16
Devotional	31.0	28.8	46.8	35.5 \pm 5.67	24,734	2,225	11.12 †
Classical	26.1	20.1	23.4	23.2 \pm 1.74	2,506	1,794	1.40
TALKS							
Humorous	28.9	28.0	32.7	29.9 \pm 1.44	1,567	2,094	0.75
Scientific	27.9	21.3	29.4	26.2 \pm 2.49	4,958	1,926	2.57
Literary	24.4	16.0	14.9	18.4 \pm 3.00	7,364	1,506	4.89 *
Educational	23.7	20.9	30.6	25.1 \pm 2.88	6,430	1,861	3.47 *
Music lessons	18.1	19.3	24.6	20.8 \pm 1.95	2,953	1,639	1.80
MISCELLANEOUS							
Children's programme	14.3	14.9	19.4	16.2 \pm 1.61	1,970	1,549	1.46
Women's	12.9	9.3	22.6	14.9 \pm 3.97	12,036	1,228	9.80 †
Folk music	14.3	16.0	21.0	17.1 \pm 2.01	3,130	1,404	2.23
Rural programme	13.2	10.1	12.5	11.9 \pm 0.94	748	1,055	0.71

* Significant at 5 per cent. level.

† Significant at 1 per cent. level.

The important point to note is that, except in three cases, errors calculated from the replicated samples are greater than the theoretical binomial errors. This shows the need for caution.

I am giving below a table to indicate the practical use of such investigations. In this table the index-numbers of frequency of listening are shown separately for men and women in cols. 2.1 and 2.2 respectively. Index-numbers of demand (as expressed by the desire of persons interviewed to have more time given to particular items) are shown in cols. 3.1 and 3.2. Pooled index-numbers of preference were also calculated by taking the average of the two previous index-numbers, and are shown in cols. 4.1 and 4.2. Index-numbers of broadcast time actually allotted to various items at the time of the survey are shown in col. 5. Dividing the pooled index of preference in cols. 4.1 and 4.2 by the index of broadcast time we get index-numbers of disparity given in cols. 6.1 and 6.2 for men and women separately.

These index-numbers of disparity indicate to what items more time should be given. The disparity index cannot, of course, be treated as a quantitative measure of the time likely to be required for satisfaction. For example, the relative demand for talks is very high, but it is possible that a comparatively small increase would enable the satisfaction point to be reached. This merely means that the index of disparity has to be re-estimated as conditions change.

Finally, in Table 30 I give the reactions to war broadcasts. It is quite clear that early in 1941 enemy broadcasts were found more interesting as well as more convincing as compared to All-India Radio propaganda. The margin of error of the results (calculated from replicated samples) was reasonably small. In any case, the possibility of estimating the margin of error (by using independent net-works of samples) is clearly a great gain.

TABLE 29

Radio programme preference—Calcutta, April–May, 1941. Index-numbers of preference, broadcast time and disparity by sexes

Name of programme item	Index-numbers of									
	Listening		Demand		Preference (pooled)		Broad-cast time	Disparity		
	Men	Women	Men	Women	Men	Women		Men	Women	
(1)	(2.1)	(2.2)	(3.1)	(3.2)	(4.1)	(4.2)	(5)	(6.1)	(6.2)	
WAR										
War news	299	186	148	47	224	116	154	145	75	
News talk	155	92	116	27	136	60	24	567	250	
Music										
Modern Bengali	140	148	207	210	174	179	262	66	68	
Tagore	123	128	184	236	154	182	47	323	387	
Plays	130	168	172	236	151	212	125	121	170	
Instrumental	128	114	175	176	151	144	134	113	107	
Devotional	107	114	142	155	124	134	219	57	61	
Classical	71	87	47	54	59	90	208	28	43	
TALKS										
Humorous	91	94	104	108	98	101	8	1,225	1,262	
Scientific	80	27	102	34	91	30	4	2,275	750	
Literary	57	47	74	27	66	37	3	2,200	1,233	
Educational	76	67	90	68	83	68	20	415	340	
Music lesson	63	101	28	94	46	98	65	71	151	
MISCELLANEOUS										
Children's	49	74	45	33	47	54	174	27	31	
Women's	45	136	38	203	42	170	73	58	233	
Folk music	57	40	20	7	38	24	49	78	49	
Rural	37	54	9	13	23	20	131	18	15	

TABLE 30

War broadcast reactions: Calcutta sample, April–May, 1941.

Source of broadcast	Percentage of persons finding the broadcast								
	Interesting			Convincing			Effective propaganda		
	n	mean	s.e.	n	mean	s.e.	n	mean	s.e.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Enemy	139	36.1	2.02	133	34.5	2.18	156	40.5	2.60
Allied (mostly A.I.R.)	56	14.5	1.11	41	10.6	1.10	57	14.8	1.30
Neutral (incl. U.S.S.R.)	34	8.8	0.74	50	13.0	1.15	19	4.9	0.62
No opinion	156	40.5	1.74	161	41.8	2.77	153	39.7	2.72
Total	385	99.9%		385	99.9%		385	99.9%	

N.B.—Standard errors based on eighteen sub-samples.

Calcutta Public Preference Survey, 1941

I shall give another example of a different type, something like what is called public preference or "Galiup" polls in the west. The survey was carried out in certain sections of Calcutta middle-class families along with the broadcast reaction survey. The schedule covered a large number of items including preferences for classical and modern literature in both English and Bengali.

different kinds of games, tobacco, *pan* (betel leaves), etc., and a number of social and political questions. A few tables are given here for purposes of illustration.

TABLE 31
Calcutta public preference survey, 1941. Possession of horoscopes

Groups	Number of persons			Difference between observed and expected	χ^2
	Total	Having horoscopes			
		Observed	Expected		
(1)	(2)	(3)	(4)	(5)	(6)
Total sample	1,470	919	$p = 0.625$		
(a) By age group					
Below 18 years	33	23	23.8	- 0.8	0.07
19-25 "	259	145	161.9	-16.9	4.70
26-35 "	286	297	303.8	+ 6.8	0.41
36-55 "	601	405	375.6	- 29.4	6.14
Above 55 "	86	49	53.8	- 4.3	1.14
$P(\chi^2) = 0.015$, d.f. = 4, $\chi^2 = 12.46$					
(b) By educational groups					
Non-metrics	380	195	237.5	-42.5	20.28
Undergraduates	656	437	410.0	- 27.0	4.74
Graduates	434	287	271.3	- 15.7	2.42
$P(\chi^2) < 0.001$, d.f. = 2, $\chi^2 = 27.44$					
(c) By occupational groups					
Students	189	107	118.1	-11.1	2.78
Petty trade	101	43	63.1	- 20.1	17.07
Service	522	329	326.3	- 2.7	0.06
Business	390	245	243.8	- 1.2	0.16
Learned profession	177	125	110.6	- 14.4	5.00
Landlords	91	70	56.9	- 13.1	8.04
$P(\chi^2) < 0.001$, d.f. = 5, $\chi^2 = 33.11$					
(d) By expenditure levels (per month per family)					
Below Rs. 40	105	45	65.6	-20.6	17.25
Rs. 41-Rs. 100	370	210	231.2	-21.2	5.18
Rs. 101-Rs. 200	386	249	241.2	- 7.8	0.67
Rs. 201-Rs. 400	316	216	197.5	- 18.5	4.62
Above Rs. 400	241	173	150.6	- 22.4	8.88
$P(\chi^2) < 0.001$, d.f. = 4, $\chi^2 = 36.60$					
(e) By communities					
Hindus	1,389	907	868.1	- 38.9	4.64
Muslims	81	12	50.6	- 38.6	78.98
$P(\chi^2) < 0.001$, d.f. = 1, $\chi^2 = 83.62$					

Table 31 gives the percentages of persons having horoscopes, broken down by age, educational and occupational groups, expenditure levels, and communities. The total number of persons covered in the survey is shown in col. 2, and the number possessing horoscopes in col. 3. The over-all proportion of persons having horoscopes is 62.5 per cent. The expected number of persons having horoscopes is shown in col. 4, and the difference between the observed and expected number in col. 5. The corresponding value of χ^2 is given in col. 6.

Variations by age-groups are not important, but non-metrics have comparatively fewer horoscopes (possibly because non-metrics on the whole belong to lower expenditure levels). The occupational distribution shows that the learned profession or landlords proportionately have more horoscopes. The distribution by expenditure levels clearly brings out that richer people

on the whole have a proportionately larger number of horoscopes. Finally, from the distribution by communities it is clear that Hindus are much more interested in horoscopes than Muslims.

TABLE 32
Calcutta Public Preference Survey, 1941. Remarriage of widows and widowers

Groups	Total number of persons giving opinion about remarriage of		Percentage opinion in favour of							
			Unconditional support		Conditional support		Unconditional opposition		Indifferent	
	Widows	Widowers	Widows	Widowers	Widows	Widowers	Widows	Widowers	Widows	Widowers
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(a) By educational groups (males only)										
Non-matriculants ...	367	348	19.07	22.42	52.32	58.05	21.15	13.78	7.36	5.75
Undergraduates ...	658	634	17.02	16.56	62.31	67.67	14.44	9.78	6.23	5.99
Graduates ...	436	410	26.15	24.15	62.16	65.60	6.19	4.88	5.50	5.37
Total ...	1,461	1,392	20.26	20.26	59.75	64.65	13.69	9.34	6.30	5.75
(b) By sex (all cards)										
Men ...	1,461	1,392	20.26	20.26	59.75	64.66	13.69	9.34	6.30	5.74
Women ...	37	37	5.41	10.81	48.65	48.65	40.54	35.14	5.40	5.40
Total ...	1,498	1,429	19.89	20.01	59.48	64.24	14.35	10.01	6.28	5.74
(c) By community (all cards)										
Hindus ...	1,408	1,341	17.47	17.52	60.87	65.92	15.13	10.59	6.53	5.97
Muslims ...	90	88	57.78	57.95	37.78	38.64	2.22	1.14	2.22	2.27
Total ...	1,498	1,429	19.89	20.01	59.48	64.24	14.35	10.01	6.28	5.74

Table 32 shows the distribution of opinion about the re-marriage of widows and widowers by educational groups, communities, and sex. Figures for unconditional opposition to the re-marriage of widows and widowers shown respectively in cols. 8 and 9 are of considerable interest. It is clear that there is much greater opposition to the re-marriage of widows. Opposition definitely decreased with increasing educational status, and women are more opposed to re-marriages than men. Finally, unconditional opposition to re-marriage is practically restricted to Hindus.

Table 33 shows public opinion on inter-group marriages, broken down by educational groups. From col. 6 it is seen that unconditional opposition decreases in every case with increasing educational status. On the whole, there still exists considerable opposition to inter-marriage between sub-castes (28.2 per cent.) which is greater against inter-marriage between different castes (36.41 per cent.). It is interesting to observe that the opposition is greater (49.14 per cent.) against marriages within the same *gotra* (that is, within traditionally the same patrilineal family or clan) than against marriages between provinces (44.61 per cent.). Opposition against marriage between communities—*i.e.*, Hindus and Muslims (60.64 per cent.)—is as strong as opposition to marriages between different nationalities (58.66 per cent.). It is interesting to note, however, that on the whole 12 or 13 per cent. of the persons surveyed and about 20 or 22 per cent. of graduates are unconditionally in favour of inter-communal or international marriages.

Finally, Table 34 shows public opinion about religious instructions in colleges, broken down by educational groups. From col. 6 it is seen that 59.34 per cent. are in favour of such instruction and 18.83 per cent. not in favour, while nearly the same proportion appears to be indifferent. From col. 7 it is clear that opinion in favour of religious instruction in colleges definitely decreases with increasing educational status and that nearly one-third of graduates are not in favour of such instruction.