

DEPARTMENT.

Branch.

File No. 12-Comp

Jammie G. Backmist, 1941.  
Samples

SAMPLE

The 2% \_\_\_\_\_ use and test.

F.12. Comp.

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1941

Sam

I had a discussion with Dr. Raja today. He had not quite understood how we did our sorting but on my explanation agreed that the taking of every fiftieth slip would achieve desirable randomness and also coverage.

Consequently, in our sorting instruction a paragraph to the following effect should appear.

"In order to provide a province or State sample, Superintendents will arrange when the first full sorting is being done, for each sorter to mark every fiftieth slip on the back with a bold cross. This should be done for each sex, i.e., every fiftieth male card and every fiftieth female card will bear this mark. Otherwise after he will proceed with the ordinary sorting operations for the Imperial tables. When these operations are over the sample will be brought together by taking out the marked slips. This sample will then be used for fertility and other studies and retained after the census is over for consultation or use by approved bodies in accordance with instructions which I shall send separately."

2. The other point discussed was the ancient topic of European and Anglo-Indian age figures. Here too, a certain unfamiliarity with census procedure had prevented Dr. Raja from grasping the real position. A good many elements enter. It is no use excising the military male population, for this would leave their wives and children in, and no census arrangement could guarantee to get them out also. Thus Dr. Raja's position would be worse than ever so far as vital statistics are concerned. He agreed with this and finally it was decided that the provincial A.S+C.C. figures for the two communities should be shown as already proposed and that he will endeavour to secure separate vital statistics for British military population.



24152

my-

19-10-1940.

Office of the Census Commissioner,  
His Majesty's Government, Jaipur & Kashmir.

02-1-60  
3-6-60

No. 1379 / S.G. Dated Jaipur on 29-5-1960.

Jaipur (96) - Sampling

*My dear Yeats*

Reference has been made to 'Sampling' in para 14, of the 'General Scheme of the census' in para (v) of my letter No. 219 dated 15-2-60 to your Highness and in para (V) of your letter No. 1/5-60 dated 1-5-60.

'Sampling' was referred to briefly at the Conference, vide para 13 of the minutes, but the reference was very short and we had little time to discuss procedure in any detail.

2. I do not think I shall be able to do much in the way of sampling. I have, however, discussed the possibility of carrying out a sample in connection with fertility with the Director of Medical Services for this State, Col. J. Harper Nelson.

3. In this connection I should be grateful if you would give me, out of your experience, a comprehensive note on how such an enquiry should be conducted and the size of the unit to be taken up. Should we take a given number of houses and record facts concerning them or should we take all the women in a given area? In the latter case perhaps we could not respond fully but even this fact (refusal to respond) probably has a definite value. The greater detail you can give me in outlining the best procedure to be followed the better I shall like it. I should like to give Col. Harper Nelson a complete outline of your

you would like and then, after discussion, leave him to carry out the survey through specially qualified persons.

4. If you could give me a similar note for a 'Sample' enquiry as connecting with employment, say educated unemployment, I might be able to attempt this with the assistance of the Director of Industries or Director of Education.

5. I am sorry to hear of your work but if I cannot look to you for guidance I don't know to whom I should turn.

*Yours sincerely  
M. W. Ford*

M. Youda Esquire, C.I.E. I.C.S.  
General Commissioner for India,  
India.

Office of the Secretary,  
Ministry of Education,  
New Delhi.

No. 1-c

Simla, dated the 4th June 1940.

My dear Raja,

The Kashmere superintendent, following up my advocacy of sampling as one way of covering the wide Indian field under the handicap of limited funds, has asked me for advice as to how sampling enquiries on fertility or educated unemployment could be carried out in that State. I enclose a copy of my draft reply and should be glad for any comments or suggestions for improvements. I should like to do what I can to get this idea started

Yours sincerely,

*Sd/- M. Yeatts*

K.C.K.E. Raja, Esquire.  
Assistant Public Health Commissioner,  
Office of the D.G.I.M.S.,  
New Delhi.

recd  
6-40

D.O. No.16-21/40-P.H.

OFFICE OF THE PUBLIC HEALTH  
COMMISSIONER WITH THE GOVERNMENT OF INDIA

New Delhi, the 19<sup>th</sup> June 1940

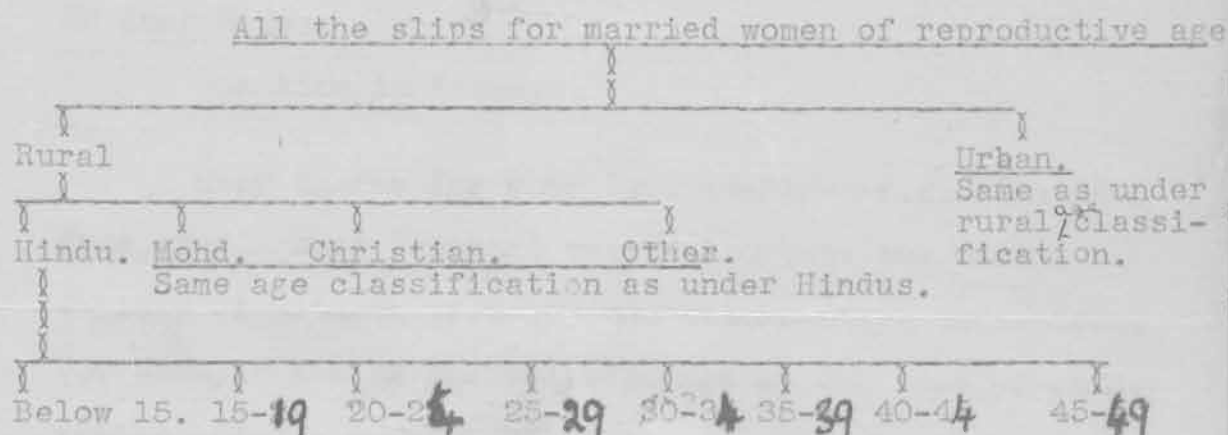
Dear Mr. Yeats,

I am sorry for the delay in replying to your letter No.1-C, dated the 4th June 1940, with which you enclosed a copy of your draft reply on sampling to the Kashmere Census Superintendent.

In paragraph 7, where you suggest the utilisation of census slips for securing a sample, it is not clear whether you contemplate enquiries by special agencies for such items of information as age of the mother at the beginning of married life and the husband's age. It is certainly better to collect such information through an agency which is more qualified than the average enumerator is likely to be. This will, of course, necessitate the collection of this information at a date later than that of the census. If I interpret your intention correctly, I suggest the following method in order to ensure that the sampling is carried out satisfactorily and <sup>that</sup> the question of fertility, on statistical examination, may be examined from the point of view of various factors likely to be associated with it, such as community, economic status, educational attainments of the parents, age of mother or father, occupation etc.

The information available for the whole population from the census slips will, even for the purpose of the census report, be classified in respect of certain of these factors, e.g., urban and rural, community, occupation, age, etc. I am not sure whether your census provides for classification in respect of economic status. Incidentally, I may mention that I have no copy with me of the questions you propose to ask at the coming census and I shall be obliged if you can kindly send me a copy of these questions.

If all the slips for women during the reproductive age period can be divided into the sub-groups as shown below-



then the slips in each of the smallest sub-groups represent the population <sup>from</sup> ~~for~~ which we can draw samples by any method which ensures randomness, such as by shuffling the slips and drawing the required number at random. It is desirable that the number in each sample should be more or less the same and that they should not be less than at least 50.

Information relating to age of mother at cohabitation, age of the husband, educational attainments of the parents etc will now have to be collected in respect of each woman included in the sample. I may point out that in this method, where absolute randomness has been attempted, the number of areas to be covered by the enquiry may be much more than if <sup>you</sup> selected your sample by first making a selection of the villages and subsequently of the women to be included in the sample from these selected villages. However, I believe that the method elaborated above will secure a definitely better sample representative of the total population than the method of selecting a certain number of villages and confining sampling to them.

I wonder whether I have made myself quite clear; if not, I hope to hear from you.

Yours sincerely,

*Uchiraji*  
19/6/40



No. 3-C.

Simla, dated the 21st June 1940.

My dear Raja,

Sampling in Kashmir.

Many thanks for your D.O. 16-21/40-P.H. of 19th June 1940. What I wanted was to indicate the utmost variety of methods of using the actual slips themselves. For example taking the recorded age at the time of enumeration and the number of children and approximate duration of the married life could be reached. Then the husband's age could be got from his slip. If possible the individual cases on every fiftieth slip could be visited and checked.

2. The census will not provide for classification in respect of "economic status", a term rather difficult to define. It will however provide material for classification by region, community, occupation.

3. The material in the small table in paragraph 2 of your letter should broadly be forthcoming from the age and civil condition sorting, though I am not sure whether the actual groups you mention will appear. Is it your idea



*that*  
fifty slips should be taken under each age group? All the slips are not sorted at once. They are too many for this; what is done is that each local area is taken in turn. Hence my idea of taking every fifty <sup>with</sup> slip out throughout the process of sorting.

Generally speaking I would prefer to take the sample from the total population rather than by preliminary selection of areas, but of course an intensive local study is by no means ruled out. Cf. paragraph 5 of the draft.

4. I enclose a copy of the questions which will be asked and should be glad of any further comments and suggestions. *They were published in the press some time ago*

Yours sincerely,

*W. S. S. S.*

K.C.K.E. Raja, Esquire,  
Assistant Public Health Commissioner,  
Office of the D.G.I.M.S.,  
New Delhi.

HIS HIGHNESS' GOVERNMENT, JAMMU & KASHMIR.

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No: 1677 / D.O. Dated Srinagar the 6-7-1940.

This is in reply to your L.O. No. 1379 dated 29-5-1940.

SUBJECT:- Census 1941- Sampling.

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My dear Yeatts

May I invite your attention to my letter No. 1379 dated 29-5-1940 on the subject of sampling. I should be grateful if you could give me the guidance sought.

Yours Sincerely

*R. W. Ford*

Mr. R. W. Ford,  
Census Commissioner,  
Jammu State,  
JAMMUNA.

M. Yeatts Esquire,  
Census Commissioner,  
Government of India,

Simla.

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67.

D.O. No. 4-C.10/7.

Office of the Census Commissioner for India.

Simla, dated the 10th July 1940.

1747  
18-7-1940  
My dear Wreford,

This is in reply to your D.O. 1677 of 6th July 1940.

Sampling.

10-7-1940  
My dear Wreford,  
Actually I drafted a note for you on receipt of your earlier letter and sent it to Dr. Raja for any remarks. I still await his reply. I enclose now however a copy of the draft I made which will show you the type of thing I had in mind and if you have any doubts or difficulties do not hesitate to put them to me.

Yours sincerely,

Capt. R.G. Wreford,  
Census Commissioner,  
Kashmir State,  
Srinagar.

Wreford  
11740  
Sent  
Reminder to Raja  
6-c-20/7 20740

L.S.

HIS HIGHNESS' GOVERNMENT, JAMMU & KASHMIR.

Telex No. 1375 of 19th May.

No: 1747-A D.O. Dated Srinagar the 18-7-1940.

Census 1941- Sampling.

My dear Yeatts,

Many thanks for your B/O No. 4-2.10/7 dated

10-7-1940. I am much obliged to you for the trouble you have taken. I grasp the scope open to me in 'Sampling' both as regards method and range. I will now see what I can take up. I note you will send me copies of certain discussions you had with Dr. Raja, vide para B of your note under reference, on the subject of vital statistics.

Yours sincerely,

M. W. Yeatts Esquire, C.I.E., I.C.S.,  
Census Commissioner For India,

S.M.H  
18.7

Draft.

B.O.

Sampling

Your D.O. 1379 of 29th May.

1. It is rather difficult offhand to give a comprehensive note on sampling but here are some comments and suggestions that occur to me.
- 2.8 A sample, as its name implies, is designed to give an accurate picture of the whole. Think of the commercial traveller and the articles he carries round and his object in doing so. A sample in other words should be such that from its limited dimensions a full and accurate picture of the whole can be achieved.
3. Taken into the statistical field this implies in the first instance a definition of the purpose you think you can achieve. A sample of fertility should, in the strict sense of the word, give a picture of all the women in Kashmir but women are not uniform; nor can one predict their variations, or how and where and when they will occur. If they were uniform then a sample taken anywhere would be more or less representative, just as a clipping from a length of cloth would be. Since they are not, it follows that the sample should be taken in such a way as to provide opportunity for the entrance of the natural variations. Hence the importance of what is known as the random sample when the general body of facts it is desired to represent is itself not uniform and the locus of its variations cannot be declared.
4. For a random sample we should try to have as large a "universe" as possible i.e.

we should try to make our selection over the whole extent whose circumstances we hope to represent by the sample. In order to give natural variation the fullest chance to express itself in the sample we should try to introduce as much chance as possible into the choice of the actual units to be included within it. It is of the first importance in sampling to do whatever we can to exclude our own preconceptions, and conscious or unconscious bias. Hence in your fertility enquiry if you could take say every fiftieth woman in the State, and take them moreover as the result of some quite arbitrary procedure for covering the State e.g. the villages in order of number, or north to south, and so on you would be well on the way to getting a good sample. I do not know however if the circumstances of Kashmir would permit of this. I rather doubt it.

5. You will see therefore that to secure a good statistical sample strictly speaking is a matter of some difficulty. Do not let yourself be put off by the mere term. If it is possible for you to conduct an absolutely inclusive study in a single area, do so by all means; but describe it merely as what it is i.e. a comprehensive presentation for a particular area. Unless you are able to take a real sample throughout the country I would recommend this regional study as better.

6. I would suggest also however that the State has a hospital, dispensary, maternity clinic etc. to which women come it should be a



regular practice for women patients to be asked the simple questions bearing on fertility i.e. age at the beginning of married life (i.e. cohabitation) and age at the birth of children. If birth statistics in the State could be developed so as to show the age of parents the number of the birth and one or two other details this would produce in the course of a few years, provided the registration was complete, excellent material on the fertility question and this, supplemented by professional material coming from hospitals etc., would provide Kashmir with all that it needed

7. The two census questions if answered would provide a complete picture of the women of the State from at least two aspects; (1) age at the birth of the first child and (2) the number of children born. The same census slip would probably give you the occupation of her husband (i.e. the person on whom dependent). You might possibly be able to base a further sample on this e.g. by taking every fiftieth case at random and endeavouring to establish the age at the beginning of married life; and a study of other slips would probably produce the husband's age. But if the agency were available the information provided by the census slip could be followed up by further questioning say every fiftieth woman on such matters as age at the beginning of married life, age of husband etc.

8. Webb wrote to me recently saying that Rajputana States would be interested in the vital



*Done  
to S.E. 14/7  
1940*

statistics matter and I shall send you a copy of certain discussions I had with Dr. Raja on this point.

9. An educated unemployment sample should I think be forthcoming from our list of census questions, for by taking the answers to 12 and 13 along with that to 21 we should be able to secure a record of all the persons in the State who have reached a certain level of instruction and are also in search of work. The enumeration slip would give also the age, caste or community, and means of livelihood of the person on whom dependent. The study of a particular area in which competent investigators were available and further questions could possibly asked to elicit such matters as unsuitable unemployment etc., all of which material could be presented in illustration of the general topic.

10. I hope this has enabled you to see what is implied by sampling and the best way to set about it. Remember that in regard to any census question to which the entire population have given an answer, you can take your sample from the slips themselves in any random method that occurs. For in this case you have actually a complete universe, since the entire population has been questioned. Sampling in this case represents a possible means of economy. Instead of sorting or collating the entire answers one can present perhaps one fiftieth or one twenty-fifth and so on. Generally speaking, census answers are comparatively limited in scope and they can often be usefully illustrated by intensive local enquiries.

11. Broadly speaking therefore the first essential is to decide what is actually feasible in practice and thereafter to show very clearly in any published report what exactly has been done. If you do this you will have given material of great value to other people. Provided the outsider knows the precise nature of the operation performed to produce your figures, he will know where he is in proceeding to his own deductions.

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C.C.

11. In the slips after enumeration we shall have a great variety of information for every individual in your population. In other words, so far as that information or combination of it is concerned, you start with a statistical universe equal to the whole of your population. Keep a look out therefore for possibilities of testing out theories, suggestions for investigation etc., concerning Kashmir features, raw material for it, or some of it exists in your slips; and then see whether a sample could be taken on the lines indicated above. We want to achieve the utmost variety of methods of using the actual slips themselves. Thus for example, from the recorded age at the time of enumeration of the number of children, an approximate duration of married life could be reached. The husband's age could be got from his slip and, of course his means of livelihood; while details of community, education, etc. are also available.

One particularly useful point about sampling is that it lends itself to these trial enquiries and is an economical way of pursuing them. Funds alone, to say nothing of time, would generally prevent studies of this kind running over the whole population, and finally if statistical methods of their progress mean anything at all, they should enable us ultimately to describe in many cases or even most cases, the whole from a part.

12. Broadly speaking the first essential is to decide what is actually feasible in practice and thereafter to show very clearly in any published report what exactly has been done. If you do this you will have given material of great value to other people. Provided the outsider knows the precise nature of the operation performed to produce your figures, he will know where he is in proceeding to his own deductions.



15/10

D.15/10-40.

New Delhi, D/16th Oct., 1940.

No. 16-21/40/16-P.H.



OFFICE OF PUBLIC HEALTH COMMISSIONER  
WITH THE GOVERNMENT OF INDIA.

New Delhi, dated the 29<sup>th</sup> July 1940.

Dear Mr. Yeatts,

Kindly refer to para 3 of your letter D.O No.3-C, dated the 21st June, 1940. What I suggested was that at least fifty slips should be taken under each group. The size of the sample will be determined to some extent, by the size of the population from which it is drawn.

I recognise the difficulty you mention regarding the sorting of the slips of individual areas being done separately. At the same time it is desirable to take the sample from the whole population rather than by a preliminary selection of areas. Will it be possible to arrange for the slips of the whole area under investigation in respect of any special enquiry, such as fertility, to be serially numbered? If this can be done, whatever the size of the sample, it is possible to ensure that the selection is random by taking the specific units constituting the sample from the total set of serial numbers in any manner that makes for randomness in selection.

I am sorry for the delay in sending this reply. I was busy with the Central Advisory Board of Health and accompanied Colonel Cotter to Poona. I came back only yesterday night.

Yours sincerely,

Kewbhaja

W.W.M. Yeatts, Esq., I.C.S.,  
Census Commissioner for India,  
United Services Club, Simla.

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12.10.40

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15/10-40

D.15/10-40.

New Delhi, D/16th Oct., 1940.

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My dear Raja,

This is in reply to your D.O. 16-21/40/16-P.H. of 29th July, 1940. I think it would be useful if we could have a further discussion, as I am not very clear about the point you raise. So far as I could see we should certainly take the sample from the whole population by the method I suggested and it is not a question of a preliminary selection of areas.

I am no longer in the Secretariat but possibly we may be able to arrange a meeting.

Yours sincerely,

*W. J. 17/10*

Dr. K.C.K.E. Raja,  
Assistant Public Health Commissioner,  
Office of the D.G.I.M.S.,  
New Delhi.

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