

Mulling it is Really Getting Interesting!

"Get organized! With all these Files, I can't even find my Pencil!" (Preparation of Data for Analysis).

Dear Reader,

WE just learned that you have completed your data collection, and are ready to begin the next step. Shabash!

"Thank you. A 70% return on my questionnaire was not too bad, was it?"

No. As a matter of fact, that is considered excellent for a return on a mailed questionnaire.

"Now that I have all this data, where do I begin, and how do I get organized?"

Very good questions. Firstly, we suggest that you take your data and "mull it."

"And do what?"

You need to begin mulling data. This means you are about to find out what your study has accomplished. You now must group and reorder your records, files or cards, in order to arrive at conclusions. So, you begin by making piles where like data are put together.

"How do I sort the data? According to what rule?"

Well, look at your study. Suppose you are studying the differences between men and women.

"Oh, so I separate according to the variable I defined earlier."

That's right. And you keep subdividing until all cards, etc., have been used. Then, let us say, you take all the male cards, and divide them into youth, adulthood, old age. The female cards are handled in the same way. You spread out these categories and place each card in its appropriate category. You do this until all the data have been separated.

Then, you will want to run a check to be sure that your work is accurate. To follow with this example of two variables, you should have a total of six piles, a male group of three, and a female group of three.

After checking on the piles, you add up the number in each pile and record that number on a large sheet of paper along with the description of the piles.

Once you have separated the data, then further separations and divisions can be made.

"But supposing I wish to sort all the data according to height and weight. And I wanted to divide it into those below five feet six inches and those over five feet six inches?"

Then you would have to go to the original records and re-sort the whole pile. But remember, you sort according to the variables being studied.

Sometime you can devise schemes for simple recording and sorting. In one study we conducted on growth and development of Indian children we placed all southern records on one table, all northern records on another, etc. In another study we used green for our experimental group instrument and yellow for the control group.

What to do with Sorted Data

"Now that I have sorted the data, what do I do? I do feel somewhat more organized."

Well, take a look at the piles of data. You could not write up each record individually. It would take up too much time and it would not be very useful. Also, you will probably have more data, and tables than you can use, but as we said earlier, it is better to "overkill." You can always discard information, but you may not be able to

collect it, once your respondent is gone.

"But the idea here is to lay out the data to see the patterns or trends in it."

Right. You want to see an overall picture, the range of numbers, how many high, low and/or average scores, clusters of scores, large gaps in the data, missing elements, etc.

"Now it's really getting interesting."

This aspect of research is really the most exciting, and many people can hardly wait to "see what they've got."

Laying out the Data

Let's take a look at an actual study conducted by Krishna Gulani *et al* concerning the results of a teaching programme for fathers concerning immunization of their infants. Gulani and her colleagues wanted to see if the experimental group of fathers who experienced a training programme would be more inclined to bring their infants for immunization than fathers who had no such training. They decided that important variables were: 1) the age of the father, 2) the educational achievement level of the father, and 3) their occupation.

So, they separated the fathers into two overall groups: the experimental and control group; 20 in the experimental, 20 in the control. Next, they separated the father cards into age categories consisting of two piles, those below 30, and those over 30.

"Now there would be four piles: experimental under 30, experimental over 30, control under 30, control over 30."

That's right. Now what would be done next?

"Well, then the groups would be divided according to educational level."

Yes, and in this study there were four levels: NL (non-literate), M (middle and below), HS (higher secondary), U (university). Now, there would be eight piles with an experimental below 30 group consisting of: NLO, M4, HS8, and U1. The experimental group above 30 would have: NL3, M3, HS1, UO. The control group below 30 piles would have four piles of: NL2, M7, HS6, UO; and an above 30 years of NLO; M1, HS O, U4. Then totals

can be tallied across and down, as illustrated in Table 1.

Table 1
Age, Educational Level of Experimental & Control Groups

	Age	Education	Total
	NL	M	HS U
Experimental	Below 30	— 4	8 1 13
	Above 30	3 3	1 — 7
	Total	3 7	9 1 20
	Below 30	2 7	6 — 15
Control	Above 30	— 1	— 4 5
	Total	2 8	6 4 20

"Ah, now the picture is clearer! It can easily be seen that in both the groups there were more below age 30 fathers than above age 30. Also, it can be seen that most (75%) of the fathers had achieved middle or high school levels of education."

Yes. The picture becomes easier to visualize once you have presented the data in a table. We could then do the same thing for occupational level. In the above example you notice that we had only two age categories, above and below 30. This was done because we had such a small number in our sample. In a larger sample you may want to report the data in the following way.

Table 2
Age of Fathers Participating in Training Programme (Hypothetical Data)

Age	Experimental	Control
23	13	12
24	18	17
25	20	21
26	16	17
27	14	15

Suppose, however, that you had comparisons for 15 villages. To compare by inspection the differences between the groups within each village and then present all the data for the remaining 14 villages would be an enormous task.

What we really want to find out is, are there differences between the experimental and control groups? Secondly, did these differences occur by chance, and/or are the variables related?

"You mean, for this example, you would ask, did the training programme make any difference?"

Right—And what else?

"Also, is education related to changes in level of learning. And, is age related to level of learning."

That's right. And to find these things, one must do some analysis. And you decide on this by looking over the data and thinking about the patterns, etc. which seem to form. The way you analyze the data will be a result of the way you think about or mull the data. Thus,

your analysis may differ from another researcher's. The point of this whole process is to ensure that you have recorded correctly, that the data is accurate, and that the data is prepared for—you guessed it.

"Analysis!"

Right. But first, let us stop and get that data mulled.

Marie Farrell
Aparna Bhaduri

Reference:

Lombard, Q. *Biostatistics for the Health Professions*. N.Y.: Prentice-Hall, Inc., 1975.

WONDERS OF ACUPUNCTURE

Towards Painless Child Birth ?

A WOMAN in labour can deliver within an hour and with less pains through acupuncture, according to Dr. A.L. Agarwal, a member of the International Acupuncture Society.

He said at Raipur recently that Dr. W.S. E. Perera, a Sri Lanka gynaecologist, had successfully performed many such operations.

Dr. Agarwal said an acupuncture-delivered baby was found to be more mentally developed. The bleeding associated with childbirth was also less.

Dr. Agarwal claimed that although acupuncture was said to have originated in China nearly 5,000 years ago, the original book on the subject was written in Sanskrit about 2,000 years ago and was now in the national museum of Sri Lanka at Colombo.

A French doctor who studied the science in China had also said that the original book on acupuncture was in Sanskrit. In the Vedas and some Shruti texts it is mentioned that certain painful conditions on the back and in other parts are cured by putting pressure on certain points of the human body.

Dr. Agarwal said he would visit Sri Lanka to bring the book to India. According to him Bud-

dhist monks had "smuggled" the subject to China.

He regretted that the subject had not yet been recognised in India while the USA, Britain, France, Canada, Austria, Korea, Japan and the Soviet Union were conducting research on it.

He said that acu-anaesthesia was the most significant outcome of this research. An open heart surgery patient could speak to doctors at the operation table following the injection of acu-anaesthesia. This had been demonstrated in Peking during the visit of the former U.S. President, Mr. Richard Nixon.

Dr. Agarwal, who has extensively studied the subject in Japan, Thailand and Hong Kong, said he had cured about 80 per cent of post-polio residual paralysis cases through acupuncture. He claimed that epilepsy, bronchial asthma, cerebro-arthritides and hemiplegia could also be cured through acupuncture. However, cancer, tuberculosis and other similar diseases could not be cured by acupuncture.

He said the Chinese had successfully treated deaf and dumb-children and cured blindness through this treatment. He said the International Acupuncture Society headquarters in Paris was considering opening a research institute in India and in some other developing countries.