

FUTURE DIRECTION - PANEL DISCUSSION

Jack L. Smith, Moderator;  
Arnold E. Schaefer, Robert L. Rizek and Robert S. Murphy, Panel Members

Dr. Smith: Well, I think what I'd like to do now is take what I guess I consider as an unusual opportunity to have these three gentlemen up here and have the chance to ask them questions and compare some answers to clear some things up from before. There are several areas and I guess being on the periphery of some of this for a fair number of years now there are several just general questions that I'd like to ask of them. Probably one of the primary ones that I think related to basic sampling difference in a fundamental sense has to do with the difference in using household as a sampling base contrasted to individuals as a sampling base. We have enough statisticians in the room, plus on the podium today to address that. Would either of you gentlemen care to answer that?"

Dr. Schaefer: "Well, the ten-state survey was based on a household frame and for one precise reason. It was quickly appreciated that any of the food programs or the health programs were family oriented. Secondly, I think our data and other data clearly indicates that food patterns within the family are very consistent. Not only are food patterns consistent - so are the biochemistry findings consistent. So is obesity consistent. If mom and dad are fat, well you better bet your last dollar that 80% of the children are going to be fat! If one is fat and one is lean you got about a 40% chance. If both are lean then less than 10% of the children will be fat. And that sort of gives you a health parameter that you can really tie on to. But, I think more important is that I don't know of any food program that's supported by Agriculture or by HEW, that isn't family oriented. Therefore, in our study I didn't even remotely go through all the data that was collected. But the effort was to evaluate the food programs and the health delivery system, and I can give you a very curt answer. At the time we did those studies food delivery system was abominable, and HEW had a long way to go in delivering health services. Now basically HEW is only responsible for delivery health services for the Indians and Eskimos. HEW has a miserable job. Now this is one way of assessing programs and their effectiveness. I think Agriculture is faced with a very big challenge in Congress today. Can we get data which can prove the validity of supporting the kinds of programs that are now in effect? School feeding, feeding the elderly, or the WICK program. I, for one, believe in these programs and I hope today to attract some of you."

Dr. Murphy: "There really isn't any right answer. In fact in the next HANES program we will study the Hispanics according to

household sampling. The reason why we went to a sampling of individuals is exactly as Dr. Schaefer mentioned that there is a consistency in household patterns and we are trying to estimate things at a national level not per households. And you sample household and you end up with effective reduction of sample size by gaining not as much information for each individual as you could by spreading it out into more household units. So there really isn't any right answer to the question you are asking."

Dr. Smith: "In general, I guess I recognize there is no right answer to some of these statements. It's a matter of difference in perspective which I guess is what I really want to try to bring out."

Dr. Rizek: "Well, we do a household survey and within the household an individual intake study. In the first quarter we took all individuals within the household and in the latter three phases of the basic sample, we took everybody from 18 and under and one half of those 19 or older. Now we did not analyze the sample for the whole year. In our sampling of households, we took those and treated those households differently in which less than 10 meals per week were consumed. I feel that we will approximate a sample of individuals. We can't be sure on certain sex age groups of the possibility but I really can't tell yet, but it's basically as Bob said. We're doing a number of things, and part of the problems one runs into is trying to answer too many questions with one survey. And one of these prime aspects we have is what is the effect of food stamps, the effect of school lunch. We're not going to be able to answer questions on the effect of WICK. I ran a special count on low income II and out of 70 households I picked up only 12 WICK households. To study WICK you have to draw a sample of WICK participants and have a sample of eligible but not participating WICK. We just can't do everything in one survey."

Dr. Smith: "Unlike the last question which had no right answer I think this one has no answer but I'll ask it anyway. One of the things that I've always wondered about is if you took a group of 100 families/people, whatever you want to call them, had them eat exactly the same things and you put the data through the HANES data bank and the USDA data bank, what kind of differences might you see?"

Dr. Murphy: "I don't have any idea to tell you the truth."

Dr. Rizek: "Well, I think we will have a report on data banks. Loretta, when are you on, this afternoon or tomorrow?"

Dr. Smith: "I hope that she will be able to address herself to some of that."

- Dr. Rizek: "But this will not give the complete answer. Depending on what data base you use, coding answer, disaggregation or aggregation, etc., you will get different answers. One of the contracts that I want to have undertaken in this project here is to evaluate what would happen. Presently we have between 4500 and 5000 food items in the bank. One of the things that people want is to go faster, quicker, better and cheaper. To me, that is completely inconsistent. What I do need to know is what is the trade-off. I can do it but if I collapse the codes down for 400 - 500, what does that do to the nutrient data? I think it's going to increase fat, increasing fat consumption, among other things. This is one of the things what happens when we collapse. I know there are some dietary intakes that people do with 200 foods, everything collapsed into 200. What does that do to the nutrient data base? So this is what we want to do with the food consumption survey is by collapsing not may be to 200 but may be - Well, let's look, how far could you go down? But then you're trading off not only the nutrient data there are others such as Food and Drug and other people that are interested in this very highly detailed data. How is this food cooked? Is it grilled, is it broiled, is it fried? Does one lose this, if it's collapsed?"
- Dr. Murphy: "I'd like to say that I think as one looks at this, there are many trade-offs. I don't know if individual differences really are that important in terms of specific foods as is the measuring instrument itself. There's so much error in the Dietary Data bank. You need to be as accurate as possible for various reasons but at some level you get into measurement error of the data collection itself."
- Dr. Schaefer: "My only comment is that you can overdue this bit as to how close all these values agree. You need to come back to a little jarring resolution that all of the food data is based on what I still call proximate analysis and that's where you start. Look up the definition of proximate and in addition the definition of crude fiber. Believe me, this hasn't changed since 1918. We're still doing crude fiber by a very, very crude method. And yet, and we got to relate nutrient intake based on some values such as fat, of course there isn't any fat, just ether extract and we make some pretty, or we can get more sophisticated now in protein. But just don't lose sight of the fact that we are facing some real methodology problems. Nobody's really been able to get enough money to support research to do it. Not only in agriculture, but nobody in the government has been really supportive. I hope we're at that stage now where money will be available to improve methodology."

Dr. Smith: "I guess I also am just looking at my perspective on various surveys. I looked at people who have a tendency to get hung up on decimal points. We lose sight because we are dealing with computers and therefore feel we can be exact. I've got one last question and then I'll quit and throw it open to the floor. In a meeting that I was in last week with Bob, you made a comment that it costs about \$40.00 per person to identify subjects to be used in a survey. That doesn't mean doing anything to them that's just the identification procedure. With that in mind, I'd like to ask the question what kind of money are we really spending analyzing data after we get it cleaned? I consider data cleaning not part of the analysis. That's just the preparation."

Dr. Murphy: "I'm just giving a ballpark estimate of cost of the survey. It runs about \$500 a sample person to collect the data and it's probably under \$300 a sample person to process and to publish the results. So it's quite an expensive undertaking and the reason, I think, is what the people referred to this morning. There is really a system that is necessary. There are various strengths and weaknesses to any program and to have detailed programs such as HANES, it's a very expensive machine to be used at a minimal level. You have the programs such as the Nutrition Surveillance Program and some other specific research settings and nutrition research is being carried on. They all play a role in trying to provide nutritional status data as needed by various groups."

Dr. Smith "Bob, would you care to comment?"

Dr. Rizek: "Well, I can only give gross numbers. I would say that just in the tabulations, and this also includes variables that will be used in further analysis of the data, we felt it would be a lot cheaper for us to do it than have an x-number of researchers do it independently. I would say that just in the tabulations of the survey, we would probably spend five to five and a half million dollars. Now this is, and a lot of people would not call these analyses, this is just the tabulations, the statistical handbooks. In terms of analysis, we have a number of contracts out already and will have more as we go along at the end of this fiscal year and next fiscal year. Already we have out one and a half million dollars in analysis of the data such as food patterns, dietary guidelines, economies of scale, food stamp program, and school lunch program."

Dr. Murphy: "I think it's important to mention the fact that data tapes will be available for researchers to use. That this is not a graduate student type of project. I'm not knocking graduate students, they are extremely capable people. The problem is that you have to have a large computer system available and have to use it wisely or you will burn up \$25,000 or more in

computer time just spinning these tapes. Now, you don't want graduate students spending money at that rate. The type of interdisciplinary teams of people who have to get together to analyze this data is very expensive, they have to be very high caliber researchers.

Dr. Schaefer: "Well, only to vindicate that just what you mentioned that boy you need a computer capability. A quick count of the Ten-State survey we had 56 million entries. And you talk about cost we did that survey without Congress appropriating one bloody dime. We robbed Peter to pay Paul - and we interviewed 40,000 people at a unbelievably low cost of less than two million dollars. Now that was done because we had an army of mathematicians lined up and as I recall the total we paid was a bill of \$11,000 that turned out to be about nine and a half cents per analysis, which you couldn't do today."

Dr. Rizek: (Comment not audible) "It might be interesting to know one of our employees at Levingworth Federal Prison just completed Phi Beta Kappa here. We have our tabulation contracts with prisons like Levingworth and several here in Michigan. And one thing about that is you have a low turnover rate in the programs."

Dr. Smith: "Always knew there was a good way to keep programmers in the job but I never thought of that one. Well, certainly I think there is some degree of loss of interest in funding agencies and I don't mean in your individual program but program directors budget in terms of analyzing data. Why don't we throw this open to the floor and see what kind of discussion we can get?"

Man from floor: "I think I know the answer but I think it's important that it be understood. What is the definition of household? What percent of the U.S. population----- (not audible)?"

Dr. Schaefer: "Well, I have to go back and look. And I tell you, that question is not an easy one to answer. By the way we had the USDA, Census Bureau, Office of Economic Opportunities and others define the household as people living in a prescribed area. They could be married or unmarried, that does not make any difference. When you talk in terms of multiple housing there's a whole series of definition. I doubt whether HANES did it any different than we did. The USDA is based on the same people, follows the same guidelines."

Dr. Rizek: "Before we did not collect data where no one in the household consumed more than 10 meals but this time we did collect that data because we were interested especially in the single person household. There is getting to be alot more of these people. They may only eat breakfast or they may not eat breakfast they may just eat 6 or 7 meals. This is becoming an increasing number in the U.S. and so we have to let you know we are reporting today these households. We are excluding institutions, military bases, and so on.

Dr. Smith: "I think many of the questions I tried to ask involve the same thing. In a way there's a little different slant on the definition and a slightly different purpose. Any other questions?"

Man from floor:

"Couple points I would like to make. First, Bob on your point about peer review. I think it is important in the particular area you pointed to though didn't discuss in detail, would have been averted had there been someone involved who knew something about food composition. This is probably one area where collaboration with the USDA probably would have been very helpful. Also I would like to touch on the matter of energy recommendations. There really is not an RDA for energy, a standard. Failure to meet it doesn't necessarily imply anything bad. The point that was made about variability in composition data is also important to recognize. Kent talked about analytical variabilities this morning. There's far more noise in the system particularly in fruits and vegetables because of the seasonal variations and growing locations. But it's very difficult to be very precise about it. The question I would really like to throw out for the panel to deal with is the dilemma we have using much of the survey information available collected through 24 hour recall--the USDA survey being the most recent one is trying to get away from that. But we recognized the limitation of 24 hour recall, recognized that it gives data a value for group averages. But whenever we look at group averages for all surveys, the U.S. population is pretty well-fed. What we really are interested in looking at is distribution of those data, trying to find those groups that are at risk. That means that we have to deal with data on an individual basis and know that a 24-hour record, no matter how good it is for anyone, does not necessarily imply or represent that individual's particular intake. So with the HANES data we find a lot of individuals, particularly in the elderly who appear terribly deficient in protein. The protein intake from 24 hour recall are sometimes 25% or less of the RDA. Yet looking at their biochemistry, those individuals apparently do not have a protein problem. I guess I'd like the panel's reaction to what do you feel about this type of data?"

Dr. Schaefer: "I personally think that if one gets any indication from the dietary data it behooves one to now look at the biochemistry data or other physical or anthropometric studies. I certainly would delay the conclusion of a low protein intake unless I had some evidence that biochemical measure also indicated this. I would also like to know some of the medical history in the elderly. You know honestly, there is some pretty good--I'm glad you made the point of looking at the distribution because I think looking at means just leaves me flat. But looking at the distribution and picking out those population groups we see some real shifts. Certain populations, look at your migrant workers or blacks or whites or poor categories, will have a high prevalence of population that consume less food. But then to me it's been pretty revealing that there is a pretty good correlation between biochemistry. And then when you look at it on a group basis I think we need to warrant against using the dietary data to interpret malnutrition. In that I would rather look at dietary data as giving us a measure of good health, and not trying to specify individuals that are malnourished."

Dr. Murphy: (comments not audible)

Dr. Rizek: "We will be reporting the data by means as well as by distribution. We have not had a chance yet to analyze data very extensively. We have looked at data on basis of one day versus three day and there's not a great deal of difference but it has to be looked at by the individuals to look at the variability by individuals. We are also planning to do some sort of work in terms of our individual intake and see how we can improve our methodology. How many days do we need--24 hours, some say 3 days. I'm not that sure. I have people who want 7 or 14 days or 21 days. But I'm not going to find any respondents who will sit and do it for that long."

Dr. Smith: "Not only that but too, you're going to have to worry about how many seasons out of the year and what fresh fruits and vegetables were available and lead yourself down a lot of roads that are hard to follow. The other one point that I haven't heard mentioned is we've talked a great deal about the dietary data and how to define malnutrition in groups. Seems to me there's another use for this that we haven't discussed and that's in planning for our food supply both from an agricultural standpoint as well as a food manufacturing standpoint. And would you want to respond to that?"

Dr. Schaefer: "I think personally our food supply is pretty good but I'm on the other side of the fence. I'm getting sick and tired of people always talking it down. I think we need to consider the healthy U. S. population. And although I can see some of these graphs and I look at them with a little bit of reassurance that cholesterol levels are going down, I would like to monitor some way that is going to look at hypertension, just relate hypertension to sodium. Or just relate cardiovascular disease to cholesterol. I think this could really lead you down the wrong path. We need to look at all the data including smoking."

Dr. Murphy: (comments not audible)

Woman from floor: "You mentioned, for instance, that Vitamin C had a 35% increase in consumption over 1965. In relation to RDAs how would you gauge their increase at, above or below normal?"

Dr. Rizek: "The mean intake for Vitamin C was of the RDA for all sex age groups, I believe. But iron and B6 fell below; but in general, the fact is that results are not yet complete. Unfortunate that I don't have it here, we will be coming out with this paper of the American Health Foundation of the symposium at Iowa State. A lot of this Vitamin C is coming from soft drinks.

Dr. Smith: "But none of it is coming from tablets, correct?"

Dr. Rizek: No, although we collect information on vitamins; we take vitamins and what type we do not get the quantity and thus do not include it."

Dr. Smith: So you really have one of these individuals who hit 5 to 10 grams a day it will not affect the overall results?"

Dr. Rizek: (not audible)  
"It did bring them, in terms of Vitamin C it brought them above the RDA level, although in 1965 one of the reasons the Vitamin C was down, if you remember, we had a freeze and the citrus fell in 1964 and there were not as many oranges and grapefruits available at that time. One has to consider this type of information."

Woman from floor: "I wonder if I understood your presentation correctly on household food consumption survey. You were saying you reported on the difference of dollar value of away from home food consumption. Then were your references to the nutrient status strictly on the at-home situation or would that include away from home food consumption, also?"

Dr. Rizek: "On the household, it is strictly at home. We adjust to a 21 meal equivalent person. On the individual intake, that is on meals both at home and away."

Woman from floor: "Do you anticipate your reports will reflect commentary on the impact on the increase in a way from home food consumption on nutritional intake patterns?"

Dr. Rizek: "We identify the source of food on individual intake. We do not give the quantities of food in the household phase, that is, quantities of food eaten away from home because that is on a retail weight basis. We get only money value for food eaten away from home. But then on the individual phase, based on the 24 hour recall and on the 3 days, we will identify both foods at home and foods away from home and also by the occasion,



snacks, breakfast, lunch and dinner, however people classify their meals. You will be able to break these out. I just looked at the data Friday. One of the most significant increases in terms of calories was 3 to 5 year old children and 22 to 35 year-old women almost doubled from 12 to 24 percent of their calories from away from home foods between 1955 and 1965. Now this is undoubtedly due to increased number of women in the work force and the children in child-care centers who are eating their lunch away from home. But this was the most dramatic increase of any sex-age groups. They went up almost exactly the same."

Dr. Smith: "One of the dangers we can see in dealing with means, as I look at the back of the room, I see two clocks that are an hour apart. Based on the mean time, we're right on schedule. However, we're really running late so I think with this, we'll thank the panel.