How to Ask About Sex and Get Honest Answers

A statistical technique that has been tested in other applications can allow researchers to ask people about their sexual behavior and completely protect anonymity

One of the great unknowns in the AIDS epidemic is whether the virus will spread in the heterosexual population and, if so, how quickly. And one of the few ways to predict that is to have accurate answers to very private questions about people's sexual behavior. How many sexual partners do individuals have? How frequently do they acquire new partners? Are they using condoms? How many men are bisexual?

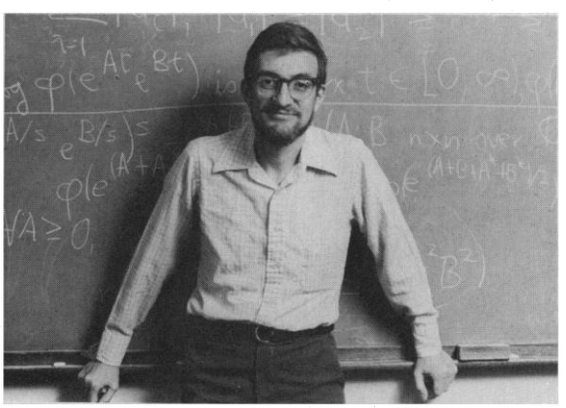
"We know practically nothing about normal sexual behavior," says Joel Cohen, a mathematical biologist at Rockefeller University. Robert May, a mathematical biologist at Princeton University, says, "there has not been a big survey of sexual habits in this country since the Kinsey Report." A number of researchers, including May and his colleague Roy Anderson, are now in the preliminary phases of planning new surveys of sexual behavior.

But surveys of sexual behavior can be difficult because people are not always willing to tell an interviewer private and sensitive details about their lives. However, Cohen suggests, there is a statistical method that should allow investigators to ask questions in a way that will elicit an honest response. The method, which Cohen described recently at a meeting in Washington sponsored by the Board of Mathematical Sciences of the National Research Council, completely protects the privacy of individuals and yet provides good survey information. It "could be used to improve our understanding of AIDS," Cohen said.

The method, called randomized response, was invented in 1965 by Stanley Warner of York University in Ontario, who told *Science* that he had "no particular reason" for inventing the method. It has been used on a number of occasions. For example, social scientists have used it to ask people whether they use drugs, whether they have illegally installed telephones, or whether they have evaded paying taxes. Before abortions were legal, social scientists used the method to ask women whether they had had abortions. But, as far as Warner and Cohen know, no one has used it to ask about sexual behavior.

Cohen described how the randomized response method works by providing an example. Suppose, he said, you want to ask a man whether he had sex with a prostitute this month. You would ask the question and then ask him to flip a coin. Then you would instruct him to answer "no" if the coin comes up tails and he has not had sex with a prostitute this month. Otherwise, he should answer "yes." Only he knows whether his answer reflects the toss of the coin or his true experience.

Next, you would look at all the responses in your population. You know that half the people—or half the questionnaire population—who have not had sex with a prostitute are expected to get tails and the other half are expected to get heads when they flip the coin. For that reason, half of those who have not had sex with a prostitute will answer "yes" even though they have not done it. So whatever proportion of your group said "no," the true number who did not have sex with a prostitute is double that. For example, if 20% of the population you surveyed said "no," then you can conclude that the true fraction that did not have sex with a prostitute is 40%.



Joel Cohen

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In the situations in which the randomized response method has been used, investigators have chosen different randomization techniques. For example, Donald Stem and R. Kirk Steinhorst of Washington State University in Pullman conducted mail surveys and sent respondents special spinners that allowed them to randomize their responses.

In one mail survey, Stem and Steinhorst sent spinners and a questionnaire to 1165 car salesmen in the state of Washington. The salesmen were told that they should spin the spinner and if the arrow landed on a shaded area, they should enter their true answer to the question on the questionnaire. If it landed on a lettered or numbered area of the spinner, they should give a randomly assigned answer. The questions included this one: "How many times within the past year have you knowingly misrepresented a vehicle's warranty in order to close a sale?" They used the same spinner method to question 350 students about whether they had cheated during in the past semester. For example, the students were asked whether they had plagiarized on a term paper or take-home exam.

Stem and Steinhorst suggest that the respondents in the randomized response surveys were more honest than persons surveyed directly. Their sample populations told them that they trusted the method to maintain their privacy—they did not think it was a trick.

There is no way of proving that persons surveyed with the randomized response method are more likely to tell the truth, but most investigators who have used the method reason that if people think their privacy is being protected, they are less likely to lie. In the case of AIDS, Warner says, populations surveyed are likely to realize that it is in their best interests for investigators to have accurate information and so it is reasonable to expect that if people could be assured anonymity, they would give honest answers.

The randomized response method is "moronically simple," Cohen said, yet it "has been overlooked by AIDS researchers." And epidemiologists urgently need reliable information on sexual behavior in order to understand the AIDS epidemic. Cohen, for one, would like to see the method used for this purpose. ■ GINA KOLATA