DISCUSSION

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Israel, Templeton and Evans inform us of some real breakthroughs in processing vital statistics that can speed up delivery of data and may also even introduce cost savings. Not alone that, but new data can be at the same time put out. In connection with the multiple cause tabulations, earlier New York City experiments with this mode indicated, for example, that among those aged 65 or more, 8.7 percent of the deaths were ascribed to vascular lesions of the central nervous system as underlying cause but at least 17.1 percent had suffered such an accident. But the plaguing question in my mind is whether the present format of the death certificate is appropriate to elicit the information really needed for determination of multiple causes. Mr. Israel has properly mentioned the need for experimentation along these lines.

To shed some light on the question we did a small follow-back study many years ago on a sample of 73 deaths from cardiovascular diseases. In 53.4 percent of the cases, no additional information turned up, but the percentage of deaths with cardiovascularrenal disease as the sole cause dropped from 65.8 percent to 28.8 percent. The proportions of decedents among whom specified other conditions were found was as follows:

	On certificate	On Follow-back
Hypertension present	26.0%	58.9%
Arteriosclerosis present	79.5	89.0
Diabetes present	9.6	15.1

Obviously, the frequency of arteriosclerosis as a condition among these decedents is understated on the certificates, but such conditions as hypertension and diabetes are even more seriously underestimated and will be, unless special arrangements are made to obtain the information. To investigate possible etiological associations, deficiencies of this kind can introduce telling bias. In view of the rather poor success of educational efforts to improve cause-of-death reporting, it seems that such efforts have to be bolstered by a format that tends to extract the required information. There are, as Mr. Israel points out, many more problems to be resolved for full utilization of multiple causes. Other projects of NCHS, such as CONTEXT and ASSIST give promise of aiding processing at each level of government -- local, state and national -- and hence hastening the demise of the present system of doing everything two or three times, with only a single product, albeit differently limited geographically, as an end result. These efforts of NCHS deserve plaudits. Their early implementation will be welcome.

The report presented by Mrs. Nelson and her colleagues on the experience of the first year and a half with the new abortion law presents a fascinating array of data. They emphasize, among other items, the service to nonresidents provided by the proprietary hospitals and free-standing clinics, showing that between 40 and 50 percent of nonresidents are aborted in such facilities. (Table 2) It may be helpful to look at the data the other way; that is, the proportions of total patients who are nonresidents in each type of institutional setting:

	Percent nonresident
Municipal	4.2
Voluntary - Service	14.2
Private	43.2
Proprietary	84.4
Free Standing Clinics	87.8

Emphasis has been laid on the extra hazards of late abortion and Table 3 indicates that late abortions among nonresidents are relatively fewer than among residents. One must recall that, as reported here, the free standing clinics, where 47.3 percent of the nonresident abortions occur, are restricted to intervention in early pregnancy. Since practically all these cases are, by definition, early, the small differences between residents and nonresidents in the proportions of late abortions suggests that in the hospitalized cases, the situation may be quite different. It is worth noting in this connection that the Abortion Surveillance Report of the National Center for Disease Control for the second quarter of 1971 indicates that of the eight areas included in the report only two areas have lower proportions than New York City of saline instillations. The other five areas have higher proportions for this procedure by rather considerable margins. The ratios of abortions to live births among residents is cited as 415.5 per 1,000 among whites, 737.2 among nonwhites and 331.4 among Puerto Ricans. It is of some interest that the last published ratios on therapeutic abortions before the change in the law were 4.2 for whites, 1.8 for nonwhites and 0.9 for Puerto Ricans. The factor of change is a multiple of a hundred.

The point is made in the paper that "psychiatric" indications became the least common after liberalization whereas it was most common previously as indication for therapeutic intervention. These observations are based on percentages and obviously with "social or sociologic factors" the large component among indications now, the percentage for "psychiatric" reasons must decline. One wonders whether the ratio for "psychiatric" indicators also declined. It is noted that medical reasons are cited for about one percent of the residents; this would mean about 864 instances in the 1½ years of experience, or about 576 a year, a number that is greater than the number of therapeutic abortions before the passage of the new law. The findings here seem compatible with findings reported for other areas where the law has been changed.

For this audience it may be worth calling attention to the paper by Evard (Am. J. Obstet. Gynecol. 113:415, June 1, 1972) who discusses the effects of legal abortions on maternal, fetal, neonatal and perinatal rates. He points out that both numerators and denominators may be

affected and suggests that statisticians should give attention to these effects. Evard figures that each legal abortion, for example, subtracts one from the number of live births that would otherwise have occurred and may also have effects on numerator data, such as infant deaths that did not occur because of lack of the preceding live birth. His argumentation is clearly stated but, if as seems to be generally held, legal abortions are to a large extent replacing illegal abortions, then the live births would not have taken place anyway. Hence, there is not a one-to-one relationship.

Live births in New York City declined by 17,272 in 1971 from the 1970 total. In the last half of 1970, there were 19,349 resident abortions and in the first half of 1971, there were 31,570 additional. Under Evard's assumption, these would have resulted in live births in 1971. This constitutes a difference between the actual number of births and an "expected" number of 33,647. If one assumes 20% of the aborted pregnancies would have been lost spontaneously anyway, then there is still a residual of 23,463.

Is the substantial residual a measure of what would otherwise have been illegal abortions? Or how many illegal abortions continue to occur; for one reason or another, that add to this total? If legal abortions have driven illegal abortions out of the marketplace, then their number has been far less than has sometimes been estimated, if the figures here cited actually represent fulfillment of "need". The decline in births is certainly real. Does this decline represent women who otherwise would not have had abortions, despited disenchantment with childbearing (i.e., a measure of unfilled need, so to speak?) To assume a one-to-one relationship between abortions and live births would provide a roughly estimated total number of anticipated live births in 1971 (again allowing for a 20% depletion because of spontaneous loss) of 172,655, or more than the all-time high of 1947. Such a total would imply a sudden rise in fertility, which seems unlikely in this magnitude in one year.

In any case, it is obvious, despite the crudity of this formulation, that legal abortions and subsequent live births do not have a one-to-one relationship for a variety of reasons. Otherwise, one would have to assume live births would have increased in 1971 to the neighborhood of 172,655 rather than decreasing by more than 17,000. It's an interesting game that I hope someone may be inclined to play.

It is a joy to hear someone say, as do Keyfitz and Lunde, that the field of vital statistics is still open to investigation. I suspect two factors (and perhaps others) are involved in the apparent "routine and sterile" appellation. First, support for the program has inappropriately diminished and, second, many analyses are probably made for internal use of agencies and they never see the light of day outside.

Their exposition of methods of using and evaluating vital statistics and modification of procedures for differing purposes is a useful reminder that we need not, and should not, be satisfied with the same old things in the same old way. I agree with the authors that by accounting for the past we may shed light on methods of predicting the future. But assumptions must be made in which human behavior is involved, and human behavior is not precisely predictable; witness the rise in birth rate in the forties after dire prediction of population declines and the current decline in fertility after prediction of inevitable increases because of the changing age structure of the population. Probably the best we can hope for is to select operational assumptions of various directions and magnitudes. With the aid of the computer and suitable models, we can set forth ranges of prediction that may be even more helpful than single predictions by indicating the uncertainties implicit. A range of prediction may forestall the arguments that often arise over a single prediction because no one reads the fine print!