

MEASURING COMMUNITY VARIABLES FOR HOUSEHOLD HEALTH AND DEMOGRAPHIC
SURVEYS IN DEVELOPING COUNTRIES

Julie DaVanzo

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The Rand Corporation, 1700 Main Street, P.O. Box 2138, Santa Monica, CA 90406-2138

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WHY COLLECT COMMUNITY DATA?

Proximate determinants, or risk factors, that affect morbidity and mortality (such as maternal age and parity, infant feeding and household diet, and utilization of medical care [Mosley and Chen, 1984]) are usually the result of household decisions--for example, decisions regarding the timing and pace of childbearing; the preparation, storage, and allocation of food; when and where (if at all) to seek medical care; and so forth. These decisions are made in response to (1) the availability and price of family planning methods, food, and medical care (supply), and (2) how the decisionmaker values what they produce, i.e., fewer, better nourished, healthier children (demand). Community data can provide information on the supply factors, which interact with a household's demand in determining the quantity actually used. If a particular item or service is not available or is only available at great cost, it is clearly difficult for people to use it.

Community data are particularly valuable for policy purposes because they provide information on factors affecting health and survival that are often directly manipulable by policies and programs. For example, it is difficult for policymakers to affect health care utilization directly; however, they *can* affect features of health programs and facilities, and in so doing may influence health care utilization.

Furthermore, from an analytic point of view, community data are more likely than most other factors affecting or measuring mortality and morbidity risk factors to be *exogenous* to household decisionmaking--that is, outside the direct control of the household. If a variable is truly exogenous to household decisionmaking, it is much easier to obtain an unbiased estimate of its effect (see discussion in Schultz, 1984).²

¹This paper was prepared for presentation at the session "Demography and the Biomedical Sciences" at the IUSSP XX General Conference, Florence, 1985.

²The Mosley-Chen framework (1984, p. 29) posits the general category of "socioeconomic determinants" as causally prior to five

Finally, community data are often not as difficult or time-consuming to collect as household data. There are typically many fewer communities on which to collect information than there are individuals or households. Furthermore, some of the information may be available from central records, obviating the need to collect it separately from each community and ensuring some degree of standardization among the communities.

WHAT COMMUNITY DATA WOULD BE USEFUL FOR HEALTH AND DEMOGRAPHIC SURVEYS?

Ideally, one would collect information on all community attributes that could affect any of the behaviors or characteristics that may affect child health and survival. The "wish list" would include the following:

proximate determinants, which in turn affect morbidity, growth faltering, and mortality. This general socioeconomic category includes some items that are likely to be the result of household choice--such as type and extent of the mother's work, which may be chosen in light of her fertility and child care decisions--and others such as community variables where this is less likely to be the case.

It is possible, however, that even community characteristics may not be truly independent of household decisionmaking and household characteristics. For example, if people with a high demand for the services offered by a particular public program migrate to communities that offer those services, estimates of program effectiveness may be biased. (For example, if mothers who move to an area with a health program are more likely than residents of that community to be careful about the health of their children anyway, the effect of the program on children's health may be overstated. In this case, one would want to separately measure the program's effect on immigrants and on people who resided in the community both before and after its introduction, ideally using before-after comparisons to assess the effects.)

Another reason why community characteristics may not be independent is that programs may not be randomly placed with respect to the outcomes they seek to affect. For example, family planning clinics may be located initially in areas where women are the most motivated to practice contraception and may already be doing so with traditional methods. In this case, looking at their contraceptive practice and fertility only after the program has been instituted and comparing them with levels in areas without a clinic would lead to an overestimate of program effectiveness. Again, before-after comparisons can help reduce the likelihood of bias, as can controls for other factors that affect both program placement and fertility and contraceptive practice.

- *Health and family planning programs: Availability, prices, and type and quality of services offered in the public and private sectors.*

- Regarding *availability*, we would like information on how far a community member must go to get services,³ how frequently those services are available (number of days per month, number of hours per day), and whether there have been problems with service availability (e.g., treks canceled because of shortages of fuel, supplies, or personnel).
- For *prices*, information should be collected not only on *money* costs, but also on *time* costs (both travel time and waiting time). Efforts should also be made to collect information on *psychic* costs; e.g., other things the same, people may be less likely to use a service if the language, ethnic group, or caste of service providers differs from their own (see, for example, Potter, 1985).
- Dimensions of *services offered* include
 - * The training of service providers (e.g., Have birth attendants been trained about appropriate methods for cutting and treating the umbilical cord?)
 - * The types of procedures that can be performed (e.g., Can cesarean sections or sterilizations be performed at the nearest delivery point? If not, what are the mechanisms for referrals of these or other problem cases to other tiers of the health system? Is transportation readily available for emergency referrals?)
 - * The methods and services available and restrictions on their use (e.g., What drugs are available? What contraceptive methods are available? Are certain methods only available to particular types of women, for example, of a minimum age and/or parity?)
 - * Delivery institution policies that encourage or discourage breastfeeding (e.g., rooming in, free distribution of infant formula).
 - * Health and family planning education programs.

³In geographically large communities, the distances to service points may vary among areas of the community and may necessitate collecting this information at a sub-community or even individual level.

- The types of information in the above list should be collected for the following types of services:
 - * Prenatal care
 - * Delivery services
 - * Well-baby care
 - * Other preventative care
 - * Curative care
 - * Family planning
- *Prices and availability of food, including weaning foods for infants.*
- *Labor markets: Availability of jobs, wages paid, compatibility with child care.* These affect the wages and income of adults and children.
- *Schools: Accessibility, prices, perceived quality.*
- *Prices and availability of electricity, soap, pesticides.*
- *Transportation*
 - Availabilities and prices of public transportation and of fuel
 - Quantity and quality of roads.
- *Environmental conditions*
 - Prevalence of disease vectors
 - Campaigns to control or eradicate particular diseases
 - Climate
 - Water supply; sewerage.
- *Communications--Radio, TV, newspapers, telephone.*

ISSUES IN SURVEY DESIGN AND DATA COLLECTION

Number of Communities

Many health surveys have focused on only one or a few communities, often choosing them to be as similar as possible to enhance comparability in case-control studies. If community data are to have explanatory power in analyses, there must be a sufficient number and variety of communities to provide meaningful variation.

Retrospective or Longitudinal Community Data

If the household data cover a retrospective or longitudinal period of reference, so should the corresponding community data. This is particularly important in settings where conditions have changed or are changing over time. Many previous demographic surveys, such as our Malaysian Family Life Survey [MFLS] (Butz and DaVanzo, 1978), have collected quite detailed community data that pertained to the time of the survey and have tried to use these together with household-level data covering the previous 10 or 20 years. Often, however, some of the most interesting variation in the household data is not the cross-sectional variation at the time of the survey but rather the variation over time. For example, the infant mortality rate in Malaysia fell substantially over the time period covered by our data and was sufficiently low by the time of the survey that there were too few infant deaths in the years immediately before the survey to show strong correlations with variations in pertinent community variables. As another example, at the time of the MFLS survey, nearly all sample communities had a family planning clinic within 10 miles (and *all* had one within 20 miles); by contrast, no community had had a clinic nearby at the beginning of the reference period covered by the data. Hence, if one's goal is to explain the strong upward trend in contraceptive use, the most meaningful variation is likely to be in *when* clinics began operations,⁴ not in their accessibility at the time of the survey. In addition, the length of time during which services have been available may also be related to current patterns of contraceptive practice.

⁴We have since collected this information from National Family Planning Board records.

Collecting community data retrospectively or longitudinally adds more variation to the data and, as in a household survey, this can reduce the number of observations on which it is necessary to collect information.

If the analysis covers more than a snapshot of time, however, migration of respondents can be a problem. In a retrospective survey, some current residents of sample communities may have lived in nonsample communities in the past. At the least, migration-history data or information on duration of residence in the current area should be collected from individuals so that we know for which respondents and for what years the information on the community of current residence is not relevant. Ideally, community information should be sought for the nonsample communities for the particular years when the respondents lived there.

Longitudinal surveys typically have a policy on whether they will try to follow respondents who move outside the sample areas. If migrants are followed, efforts should be made to collect information on their new communities as well. Clearly, in both the retrospective and longitudinal cases, it will be much easier and less expensive to collect information on nonsample communities if the community data desired are available from central records.

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