

The Relative Effects of Health Program Inputs and Household Socioeconomic Status on Use of Services in a Context of Targeted Program Placement: The Case of Nicaragua

Submitted to the 2004 PAA Meetings

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Context. The objectives of this study are to assess the relative effects of health program inputs and household socioeconomic status on the likelihood of individual use of basic reproductive health services in Nicaragua. The analysis uses appropriate estimation methods to control for the potential bias created for the targeted placement of program services across communities. The analysis examines the differential impact of program inputs in different socioeconomic groups in order to assess whether “the poor” benefits the most from health programs relative to the “non-poor” and whether the health program could compensate individuals for being “poor”.

The case of Nicaragua is of interest because of the significant changes in the use of health services and in health outcomes that occurred in that country between 1998 and 2001. This was also a period of significant improvements in the supply of basic health services as a result of the government and international donors reconstruction efforts after Hurricane Mitch (in October 1998). Most of the reconstruction efforts, however, were concentrated in the North and Western parts of the countries and was targeted to rural and smaller communities. Between 1998 and 2001, TFR declined from 3.6 to 3.2 and mortality under age 5 declined from 48.4 to 37.8. The declines were larger in the poorest 20% of the population: TFR in this group went from 6.1 to 5.0, and mortality under 5 declined from 69.6 to 51.9. Smaller relative changes occurred in the richest quintile of the population. In terms of utilization of health services larger relative changes were observed in the poorest quintile of the population living in the post-Hurricane Mitch priority areas. For instance, while at the national level antenatal care (more than 2 visits) went up from 78.5% to 82% of pregnant women, in the post-Hurricane Mitch priority areas, antenatal care among the poorest quintile went from 66.8% to 76.9%. In areas that were not priority for the program, antenatal care actually declined (from 60% to 57.4%). Similar changes were observed for other basic RH services including tetanus toxoide and birth delivery in a health facility.

Methods. We use data from the 1998 and 2001 Nicaragua Demographic and Health Surveys (called ENDESA in Spanish) to assess changes in service utilization at the population level. These household surveys also provide measures of individual and household-level factors hypothesized to influence service utilization. Data about the availability and quality of health facilities is provided by the 2001 Health Facility Survey which included almost all public health facilities and a large number of private providers

in the country. The 2001 facility survey was conducted at the same time than the 2001 ENDESA. Community-level data is provided from a community survey implemented in the same 2001 ENDESA clusters. These three surveys could be linked at the cluster level and provide data on individual, health facility and community factors that could influence individual use of services. Specific services to study are antenatal care, receiving tetanus toxoide injections and place of birth delivery. We use a multilevel logistic regression to specify the model of use of services. We use interaction terms between socioeconomic status and program variables to examine the different effect program inputs might have in the “poor.”

In order to control for the potential bias in the estimates from the targeted or non-random placement of health program inputs we collected special data on province-level characteristics, which could influence program allocations. These data will allow us to specify a model to explain the different levels of program inputs across communities.

We estimate the service use and program placement equations simultaneously using maximum likelihood methods and allowing for correlation among the community unobservables that could be influencing the use and program placement processes. The distribution of the unobservables is estimated using a discrete factor specification. This estimation strategy has been used by Angeles, Guilkey and Mroz (1992) to control the endogeneity of program inputs in a context of targeted placement.

Results. Preliminary results indicate that among the individual-level predictors of service utilization, education and urban residence have predominant influence, not surprisingly. Socioeconomic status is a strong predictor of service use. As expected, program inputs have different effect in the poorest quintile. The effect in this group is larger than in the richest quintile.

Placement equation results indicate that demographic density and electoral affiliation are stronger predictors of the presence of health services in the area.

Further analysis will consists of estimating the model simultaneously, assessing the extent of bias from endogenous placement of services and assessing the different magnitude of program effects in the “poor” and in other socioeconomic groups.