

THE FAMILY IN ECONOMIC DEVELOPMENT

Policy Brief

INFANT MORTALITY AND ECONOMIC DEVELOPMENT

Infant mortality rates (IMRs) tend to fall as countries and regions experience increases in their levels of socioeconomic development. Although IMRs have declined considerably during this century, great disparities remain between more and less developed countries. In one sense, these differences hold out hope. Given the experience of more developed nations, less developed countries can evidently expect their IMRs to decline as they achieve greater socioeconomic development. On the other hand, if conditions associated with development are the principal or only influences on IMRs, must less developed nations simply resign themselves to high infant mortality until their development accelerates? Some statistics for developing nations suggest that such may not be the case. IMRs sometimes differ considerably among nations about equally developed on the basis of per capita gross national product (GNP). For example, Sri Lanka and Sierra Leone had about the same per capita GNP in 1987, and yet Sierra Leone had an IMR almost five times greater than Sri Lanka's. Apparently, influences other than income per se are at work. Knowing what these other influences are is vitally important for policymakers in developing countries and the donor community.

Several recent RAND studies have focused on this issue. Analysts have used data from the First Malaysian Family Life Survey to establish the degree to which certain household-level changes associated with development have influenced temporal and regional differences in Malaysian infant mortality.

Infant Survival in Malaysia

Malaysia provides a particularly instructive case for studying the relationship between economic development and infant mortality. The country's IMR declined significantly from 100 in the 1940s to 30 in the 1970s. The country has experienced considerable economic growth. It contains both more and less developed areas. And the government has instituted a number of programs (such as rural health clinics and rural sanitation programs) that could affect the IMR and its relationship to economic development.

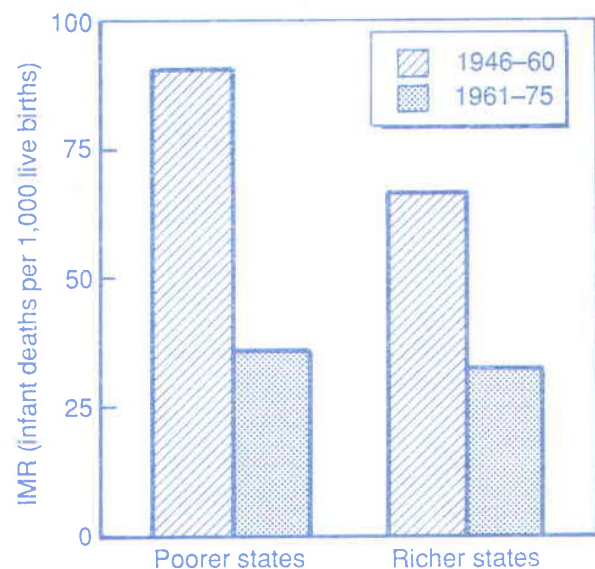
The government's Fourth Malaysian Plan categorizes the four most rural states—Kedah, Kelantan, Perlis, and Trengganu (collectively referred to here as KKPT)—as low

income states in relation to the other states in Peninsular Malaysia. As received wisdom would predict, IMRs are higher in the low income states. However, as the figure shows, the average IMR in the poorer states declined sharply between 1961 and 1975. Taking the IMR as a proxy measure of socioeconomic development, one would not expect to find that KKPT's 1970 GNP was only half that of the richer states (M\$654 compared with M\$1364).

To shed light on this issue, analysts examined regional differences in infant mortality over a 30-year period in Malaysia. Their work focused on five sets of variables generally associated with economic development: mothers' education, fertility, breastfeeding, water, and sanitation. They also examined the influence of mothers' ethnicity.

Research Conclusions

1. Among the variables considered, increases in mothers' education contributed most strongly to the general decline in the IMR over time. Differences in water and sanitation contributed most strongly to regional differences in the IMRs during both time periods.



SOURCE: First Malaysian Family Life Survey

Infant Mortality Rates in Malaysia

2. Several concomitants of development that have been thought to contribute to the inverse relationship between IMR and development do not do so—at least in the data considered in this research. These include decreases in overall fertility and childbearing by women under age 18, changes in birth spacing, and increases in household income.
3. Along both regional and temporal dimensions, one concomitant of development—reduced breastfeeding—kept the inverse relationship between infant mortality and economic development from being even stronger. However, the analyses also suggest that diminished breastfeeding should become less detrimental as an area develops, because breastfeeding becomes less crucial to infant survival as water and sanitation improve.
4. For several reasons, the poorer states experienced a greater decline in infant mortality. For one, over the time considered, mothers' education and toilet sanitation improved more in the poorer states than in the richer ones. Also, there was no decline in the duration of unsupplemented breastfeeding in the poorer states and less of a decline in the duration of supplemental breastfeeding. In the richer states, breastfeeding declined sharply, putting upward pressure on the IMR and offsetting the benefits of improved water and sanitation.
5. The regional differences in infant mortality were most strongly influenced by a characteristic unrelated to economic development—ethnic mix. Of Malaysia's three major ethnic groups, Chinese infants have much lower mortality rates than do Malays or Indians. There are more Chinese families in the richer states, and this contributed to their lower IMRs.
6. Although regional differences in the IMR can be explained by mothers' education, improvements in water and sanitation, differences in breastfeeding, and ethnic mix, the sets of variables considered in these analyses did not explain much of the change that occurred in the IMR over time. Taken together, the changes in these variables explain less than half of the decline in the IMR.

Policy Implications

The inability of this research to explain much of the IMR decline over time suggests that factors that changed over time, other than those examined in these studies, had an important

influence on infant mortality; these factors may include, for example, improvements in health services and general medical care. Since its independence in 1957, the Malaysian government has spent increasing amounts of money on programs to combat major endemic communicable diseases, to provide preventive medical services, and to treat water and sewage, particularly in rural areas. These public programs may well have contributed to the large reduction in the IMR between the two time periods examined in this work, and to the more rapid decline in infant mortality among the poorer states.

From a policy perspective, it is important to understand the degree to which such programs contribute to reductions in infant mortality, because policymakers can influence the purpose, nature, and extent of these programs and, in doing so, may affect IMRs. Although such programs are related to development—because governments must have the resources to mount them—countries can set priorities for allocating available resources. Statistics suggest that countries in the same development categories (as measured by per capita GNP) vary in the percentage of national resources they commit to health programs and also in their IMRs. Thus, it appears that IMRs are not shackled to economic development per se, but rather depend on the priorities that developing countries set.

To guide policy efforts aimed at reducing infant mortality, the next important step will be to collect and analyze community-level data that parallel household data and that indicate the kinds of public programs and services available over time that might have influenced and interacted with family behavior to reduce IMRs. There is a particular need for retrospective community data that can be matched to retrospective household data. This information will enable analysts to establish more completely the full range of factors affecting infant mortality and to provide policymakers with the information they need to formulate interventions for improving child survival rates.

In the meantime, the analyses undertaken in these studies indicate several policies and programs that will help reduce infant mortality. Efforts should be made to increase women's education and to improve general public health conditions, especially water and sanitation. Where water and sanitation are substandard, governments should undertake strong initiatives to encourage breastfeeding, especially unsupplemented breastfeeding.

This Policy Brief highlights the major policy-relevant findings of several research projects conducted by RAND's Family in Economic Development Center. It does not cover the technical, methodological, or analytical bases for these findings. For a detailed report of those and other aspects of the research discussed here, see Julie DaVanzo, "Infant Mortality and Socioeconomic Development: Evidence from Malaysian Household Data," *Demography*, Vol. 25, No. 4, November 1988; Julie DaVanzo and Jean-Pierre Habicht, "Infant Mortality Decline in Malaysia, 1946–1975: The Roles of Changes in Variables and Changes in the Structure of Relationships," *Demography*, Vol. 23, No. 2, May 1986, also published by The RAND Corporation as N-2491-WB/RF/FF, May 1986; Christine Peterson, Khairuddin Yusof, Julie DaVanzo, and Jean-Pierre Habicht, *Why Were Infant and Child Mortality Rates Highest in the Poorest States of Peninsular Malaysia, 1941–1975?* The RAND Corporation, N-2329-FF/RF/WF/IF; and the sources cited in these publications. This research was sponsored by the National Institute of Child Health and Human Development; the World Bank; the Ford, Rockefeller, and Hewlett Foundations; and The RAND Corporation. The preparation of this Policy Brief was supported by the William and Flora Hewlett Foundation. For more information about the Family in Economic Development Center, contact Julie DaVanzo, The RAND Corporation, 1700 Main Street, Santa Monica, CA 90406.