

Health, Education, and the Economic Crisis in Indonesia

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Introduction

Indonesia has experienced vast changes in the both the economic and the political environment during 1998. Projections put output at 15% below its 1997 level and inflation at 75-80% for the year. Riots and demonstrations have taken place in a number of Indonesian cities, leading to but not ending after the resignation of President Suharto in May of 1998.

Few Indonesians have remained untouched by these and other events of the last couple of years. The drought of 1997, the price shocks associated with the collapse of the rupiah and removal of subsidies, and the income shocks arising from changes in demand combine to yield an extremely complex picture of substantial change throughout the society. The effects of the crisis on welfare of the population are nuanced and heterogeneous. They vary by region, across socio-economic groups, and across demographic groups.

This paper provides information on how the crisis has affected children in terms of schooling behaviors, use of health care, and health status. Because changes in individual well-being are shaped to some extent by changes in the community, we also provide information on changes in schools and health services at public and private facilities.

The data that we use to address these questions are uniquely well-suited to the task at hand. The Indonesia Family Life Survey (IFLS) is an on-going longitudinal survey of individuals, households, families, and communities in Indonesia, the second wave of which was collected in August-December, 1997. In an effort to respond to the needs of the policy and scientific communities, RAND, in collaboration with *Lembaga Demografi*, undertook a special wave of the IFLS, IFLS2+, in late 1998. IFLS2+ reinterviewed individuals from almost 2,000 Indonesian households that had been interviewed one year earlier as part of IFLS2. Because our focus in this report is on the immediate impact of the crisis, we contrast responses in the 1997 interview with the same person's (or facility's) responses in the 1998 interview.

1. Study Design and the IFLS Sample

The data on which this paper is based have several features that make them particularly appropriate for understanding how the lives of Indonesian have changed as a result of the economic and political events of 1998. We highlight these features briefly, then provide more detail about the study methodology below.

First, the data are longitudinal. We compare data from individuals interviewed in late 1997 (IFLS2) with data from those *same* individuals one year later, in 1998 (IFLS2+). The longitudinal design is scientifically advantageous because if the study is well-implemented, sample composition will be held constant across waves and differences in respondents over time will reflect real changes, rather than differences in study design.

The IFLS has been extremely successful with respect to maintaining the sample composition. For the IFLS2+, we identified 1,934 households that we had interviewed in 1997 and from whom we wanted to obtain data in 1998. We succeeded at interviewing over 98% of these households. Because our reinterview rates are so high, attrition bias in our study is not an issue.

Second, the IFLS is extremely rich in content. The depth of the IFLS is important because Indonesia's economic crisis has the potential to affect many different aspects of well-being and to provoke a variety of responses. We collect data on a number of topics. At the household level, we collect indicators of economic well-being, such as incomes, assets, savings, expenditures, and consumption. At the individual level we collect information on responses to changes in the economy, including school enrollment and use of health services. The surveys also contain data on health outcomes such as self-assessed health status and physical assessments conducted by a health worker.

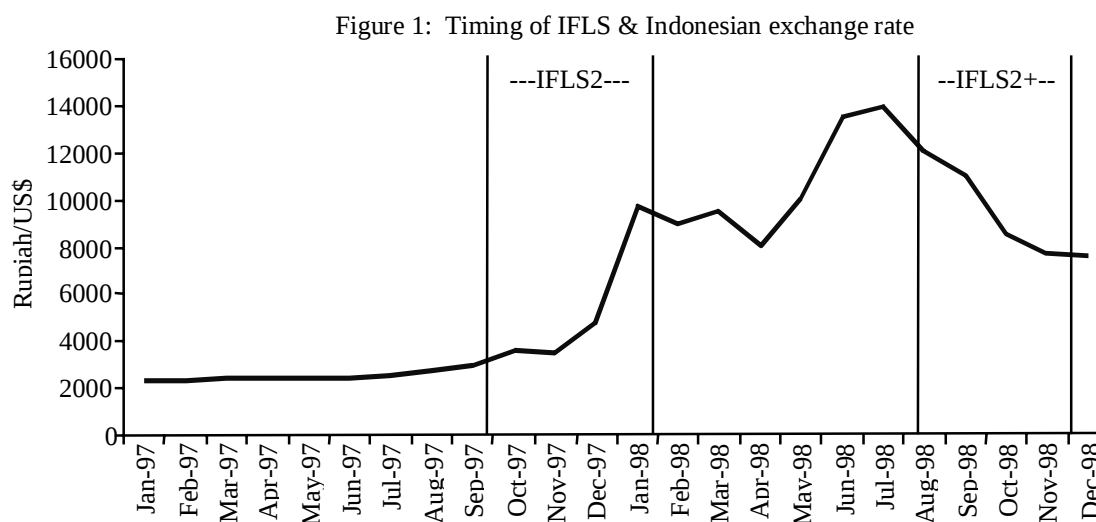
The IFLS data are not limited to households. Through interviews with community leaders and visits to markets we obtain information on community-level changes in prices of food, fuel, and other goods. Additionally we visit public and private schools and health facilities to collect data on the price and quality of services available at these institutions.

Third, the timing of the surveys is appropriate for pinpointing the short-term impacts of and anticipating the medium- and longer-term impacts of the crisis (Figure 1). IFLS2 was fielded in the second half of 1997, just before the rupiah collapsed precipitously. By design, IFLS2+ was fielded one year later, during the second half of 1998.

Fourth, the IFLS has good geographic coverage. The comparisons in this report are based on data from seven Indonesian provinces: Jakarta, West Java, Central Java, West Nusa Tenggara, South Kalimantan, South Sumatra, and North Sumatra. The survey respondents live in communities that in combination represent a great deal of Indonesia's economic, environmental, and cultural heterogeneity. The geographic breadth of the survey is important because the effects

of the crisis and people's responses may vary considerably by region.

The data used in this report are part of a much larger project, the Indonesian Family Life Surveys. The results presented here are comparisons of the 1998 data with a subset of the data collected in 1997. In fact, the 1998 survey was designed specifically for assessing the impacts of the crisis through such comparisons. Consequently, the study design for the 1998 survey draws heavily on the earlier rounds of data collection with respect to the sample, questionnaire content, and field procedures.



Study Background

The IFLS is a large-scale integrated socio-economic and health survey that collects extensive information on the lives of respondents, their households, their families, and the communities in which they live. The IFLS is an on-going longitudinal survey. The sample is representative of about 83% of the Indonesian population and contains over 30,000 individuals living in 13 of the 27 provinces in the country. The first wave was conducted in 1993/94 (IFLS1), with a follow-up in 1997/98 (IFLS2) and a special follow-up (of a 25% sub-sample) in late 1998 (IFLS2+).¹

The original IFLS sampling scheme balanced the costs of surveying the more remote and

¹ The IFLS-1 was supported by funding from the National Institute for Child Health and Human Development, USAID, the Ford Foundation, and the World Health Organization. The IFLS surveys are designed and implemented by RAND, with a sub-contract to the Demographic Institute of the University of Indonesia.

sparsely-populated regions of Indonesia against the benefits of capturing the ethnic and socioeconomic diversity of the country. Within 13 provinces, the scheme randomly sampled households from 321 enumeration areas (EAs). The EAs were selected from a nationally representative sample frame used in the 1993 SUSENAS.² A total of 7,730 households were included in the original listing for the first wave, IFLS1, and over 93% of these households were interviewed.

For each IFLS1 household, representative members (typically the female and male household heads) provided household-level demographic and economic information. In addition, several household members were randomly selected and asked to provide detailed individual information on a variety of topics, including use of health care and health status, contraception, education, migration and labor market behavior.

The second wave of the IFLS (IFLS2) was fielded between August 1997 and January 1998, with the goal of recontacting all original IFLS households and reinterviewing all IFLS1 main respondents. If a household had moved, we obtained information about their new location and followed them if they resided in any of the 13 IFLS provinces. Excluding the households in which everyone had died (usually single-person households), we succeeded at reinterviewing 94% of the IFLS1 households.

When we relocated a household in IFLS2 we obtained some information on all of the 1993 household members, regardless of whether they were still resident. In 1997 we interviewed all individuals in the original household. Because we sought to re-interview all the IFLS1 main respondents, we attempted to track those who had split off from the original household.³ We re-interviewed 91% of all the IFLS1 individuals that we targeted, including about 1,500 who had split-off from the original household and were successfully tracked and interviewed in a new household.

Each round of the IFLS has included an extensive survey of the communities in which the IFLS households are located. The Community-Facility Survey includes interviews with the head

²The provinces are four on Sumatra (North Sumatra, West Sumatra, South Sumatra, and Lampung), all five of the Javanese provinces (DKI Jakarta, West Java, Central Java, DI Yogyakarta, and East Java), and four provinces covering the remaining major island groups (Bali, West Nusa Tenggara, South Kalimantan, and South Sulawesi).

³We did not track 1993 household members who had not been administered an individual interview unless they were at least 26 years old in 1993. This was because of the costs and because of the necessity of keeping the tracking activity manageable. The IFLS2 sample of individuals is representative of the underlying population for those who were at least 26 in 1993. The other age groups are representative after applying weights to account for the within-

of the community (the *Kepala Desa* or *Lurah*), the head of the Women's Group (*Ibu PKK*), and the collection of data on prices of food and non-food items from knowledgeable informants and from sales outlets. In addition, in each community, data are collected about facilities through visits to as many as 12 health care providers and 8 schools per community.

IFLS2+

The purpose of the IFLS2+ survey was to provide insights into the likely medium-term and long-term effects of Indonesia's economic crisis by collecting timely data on who has been affected and on the strategies adopted to mitigate the impact. The IFLS2 was uniquely well-positioned to serve as a baseline for another interview. Because we had neither the time nor the resources to mount a survey of the same magnitude as IFLS2, we fielded a scaled down survey that retained as much as possible from IFLS2. By design, IFLS2+ re-administers many of the IFLS1 and IFLS2 questions, so that comparisons across rounds can be made for characteristics of households and individuals and for characteristics of communities and facilities.

In IFLS2+ we decided to re-interview a 25% subsample of the IFLS households. We drew the IFLS2+ sample in two stages. First, to reduce costs we decided to revisit 7 of the 13 IFLS provinces: West Nusa Tenggara, Central Java, Jakarta, West Java, South Kalimantan, South Sumatra, and North Sumatra. These provinces span the full spectrum of socio-economic status and economic activity in the fuller IFLS sample. Second, within those provinces, we purposively drew 80 EAs with weighted probabilities in order to match the IFLS sample as closely as possible. The IFLS2+ sample is representative of the entire IFLS sample. Counting all original households in IFLS1 and the split-offs in IFLS2, there are 2,066 households in the IFLS2+ target sample. We relocated and reinterviewed over 95% of the target households.

For the purposes of this paper, the households of central interest are those that were interviewed in both 1997 and 1998, since it is only for these households that we can contrast life a year ago with life now. Of these 1,934 households we interviewed over 98% of the original households. In no province were our completion rates less than 97%. At the individual level our completion rate is 96% of the IFLS2 respondents.

In addition to interviews with households and individuals, we repeated the community-facility survey in IFLS2+. Fieldworkers were instructed to reinterview both the community

household sampling scheme used in IFLS1.

leaders, and all the facilities interviewed in IFLS2. For each community, interviewers were given a specific list of the names and addresses of the government health centers, private providers, community health posts, and schools from which data were collected in 1997. Of the providers interviewed in 1997, a total of 219 public providers (about 2.8 per community) and 387 private providers (about 4.8 per community) were reinterviewed in 1998. The results presented in subsequent sections compare the responses of these providers in 1997 to their responses in 1998.

Comparisons Between 1997 and 1998

In this paper we present a number of summary statistics on behaviors and outcomes in 1997 and 1998, as well as results from a multivariate regressions of the correlates of transition in behaviors and outcomes. With respect to the summary statistics, we typically compare levels of behaviors in 1997 and 1998 and test for statistically significant changes between years. We make the comparisons for two groups of respondents: for all respondents interviewed in *either* 1997 or 1998 (referred to as respondents from the same 80 IFLS2+ communities), and the subset of respondents who were interviewed in *both* 1997 and 1998 (referred to as the same respondents, or panel respondents). In addition, we provide summary statistics for *all* IFLS2 respondents (including those from the 241 non-IFLS2+ communities)

For children, age is strongly correlated with the behaviors and outcomes we consider. Panel respondents are inevitably one year older in 1998 than they were in 1997. Thus, the summary statistics for panel respondents confound changes associated with economic factors and changes associated with aging. The results for respondents from the same communities do not incorporate the effects of aging. Accordingly, with respect to the summary statistics for children, we tend to emphasize the results for respondents from the same communities rather than the results for the panel respondents.

The regression results examine the impact of household and individual characteristics on levels (1997 and 1998) and transitions (between 1997 and 1998) in behaviors and outcomes. The regressions include controls for age in 1997.

2. Education

One of the potential responses to the economic crisis is for children and young adults to

withdraw from school. Schooling is an investment that does not come for free, either in terms of fees or in terms of the opportunity costs of children's time. Evidence from the IFLS2/2+ shows that there has been a significant decline in expenditures between 1997 and 1998.⁴

In this section we explore changes in enrollment status and drop out rates for two age groups: 13-19 year olds and 7-12 year olds. The age range for the older children roughly corresponds to junior and senior secondary school (SMP or SMU). The younger age range corresponds to elementary school (SD). Changes in schooling behavior may affect the long-term well-being of both age groups. Among older children, those who stop attending school during the crisis may never return. For younger children, interruptions in schooling may be temporary. However, if these children are leaving permanently, before they have even learned to read and write, they will suffer the consequences for years to come.

Current enrollment refers to the person's enrollment status at the time of the interview. The IFLS2 interview took place during the early part of the 1997/98 school year, while the IFLS2+ interview took place early in the 1998/99 school year.⁵ Dropout is defined as having been enrolled in the previous year, but not in the current year. Thus the group from which dropout rates are computed (all children enrolled in the previous year) is smaller than that for current enrollment (all children).

Table 1 presents the results for 13-19 year olds, for each survey year. Columns 1-3 provide information from 1997 and 1998 on all children interviewed in the 80 IFLS2+ communities. Columns 4-6 provide information on the panel respondents — the subset of children who were interviewed in 1997 and again in 1998, and did not age out of the specified age category by 1998. By construction, the panel sample is one year older in 1998 and so comparison of the 1997 and 1998 estimates for the panel sample confounds the effect of aging with the effect of the crisis. But age is strongly related to schooling behavior, particularly for the older age group. Consequently, for this group we place more emphasis on the estimates based on the cross-sections (columns 1-3).

The results are presented by gender, by level of household expenditure in 1997, and by residence. Between 1997 and 1998, the percentage of 13-19 year olds who are not currently

⁴ See Frankenberg E., D. Thomas, and K. Beegle. 1999. "The Real costs of Indonesia's economic crisis: Preliminary findings from the Indonesia Family Life Surveys." mimeo. Santa Monica, CA: RAND.

⁵ The school year typically begins in August. For a very small number of households in IFLS2+, the school year had not yet begun when the interviews took place.

enrolled in school has risen. In both years, more 13-19 year olds are out of school in rural than in urban areas. However, the percentage not enrolled increased more in urban areas-- from 33 percent in 1997 to 38 percent in 1998, a change that is statistically significant. Children from poorer households are more likely to be out of school than children from better off households—a phenomenon that intensified between 1997 and 1998. Gender is not associated with enrollment status in either year. The increases over time in the proportion of 13-19 year olds who are not enrolled are much larger for the panel sample.

Drop out rates are presented in Columns 7-9. They have risen significantly since 1997. The changes are more pronounced for males than for females, for urban residents than for rural residents, and for children from the poorest households.

Table 2 presents the results for 7-12 year olds. In this age group, as well, we find that fewer children are in school in 1998 than in 1997. The percentage of 7-12 year olds that are not currently in school has also risen between 1997 and 1998, to just over 6%. For several subgroups, the increase is statistically significant. In contrast to the results for older children, in this age group the increase in children who are out of school has been larger in rural than in urban areas. Failure to enroll has also risen sharply among children from the poorest households. Overall, the size of the gap in enrollment between the top and bottom PCE quartiles has widened, so that by 1998, children from the poorest households are about ten times more likely to be out of school than their counterparts from households at the top of the expenditure distribution. Drop out rates have also risen for 7-12 year olds, particularly for children in rural areas and for children from poorer households.

We now explore the correlates of enrollment and drop out, for each age group, in a multivariate framework (Tables 3 and 4). Estimates are from linear probability models, with t-statistics provided in parentheses. We include variables measuring age, gender, sector and province of residence, and characteristics of the household and household head in 1997.

For 13-19 year olds, there are strong declines in enrollment with each year of age, in both 1997 and 1998. The age pattern of enrollment does not appear to have changed significantly between years. Among older children, the advantage for enrollment rates of living in urban areas deteriorated between 1997 and 1998. Likewise, urban children had lower drop out rates than rural children in 1997, but by 1998 the rates are about equal. In 1997, there is no relationship between expenditure and enrollment, indicating that education was reaching even the poorest.

Household expenditures show a strong significant relationship with enrollment in 1998. By 1998, resource constraints deter schooling, which is a disturbing result.

The multivariate results for younger children are presented in Table 4. The patterns of enrollment and drop-out probabilities by residence are different from those for older children. In 1998 young children in rural areas are significantly less likely to be in school than children in urban areas. No differential existed in 1997. Likewise, the dropout rate is higher for rural than for urban children in 1998, but not in 1997. Generally, province of residence has little to do with enrollment and dropout for younger children. The exception is South Sumatra, where the probability of enrollment has decreased and the probability of dropout has increased significantly relative to West Java. Rising levels of household expenditure are associated with a greater chance of enrollment, and a lower chance of dropping out, and the protective effect is stronger in 1998 than in 1997.

In addition to questions within the household survey that focused on education for individuals, we also visited primary and junior secondary schools and conducted interviews with the school principal or (if he or she was unavailable) with an assistant principal or teacher. A total of 243 elementary schools and 233 junior secondary schools were interviewed. About 85% of the elementary schools are administered by the Ministry of Education (MOE), while about 55% of junior secondary schools are MOE schools. Most of the non-MOE schools are operated by private foundations.

One set of questions in the IFLS2+ questionnaire focused on identifying what dimensions of the crisis have affected the operation of schools (Table 5). The rising cost of paper was mentioned as a problem more than any other factor. More than half of all schools also experienced problems associated with the rising costs of books, supplies, and photocopying. For the most part, elementary and junior secondary schools face the same problems. Payment of monthly BP3 fees (an important source of revenue for schools) is more problematic at elementary schools than at junior secondary schools, while the cost of transportation and shortage of maintenance funds is more problematic for junior secondary schools than for elementary schools. Respondents mentioned a number of ways that they addressed these problems. Common responses to rising costs of paper and photocopying are writing on the board, reading test questions, and increasing test fees or asking parents for donations. Common responses to book shortages were asking students to share, placing more copies in the library, and no longer

requiring use of the book.

3. Use of Health Care by Children

The exchange rate fluctuations and other dimensions of the crisis have altered both the absolute and the relative prices of goods and services. Health services are no exception. Moreover, in addition to changes in the explicit price of health services, travel costs to providers and waiting times at providers may have changed in ways that make use of services relatively more or less attractive in 1998. Results on expenditure changes show that households are spending a significantly smaller portion of their budget on health care in 1998 than 1997 (see footnote 4). Changes in use may also have occurred if the crisis has altered underlying health status and thus the need for health care. In this section we explore whether use of health services has changed between 1997 and 1998.

The IFLS2 and IFLS2+ asked respondents about use of outpatient services in the four weeks prior to the interview. Respondents provided information about the source of care for any outpatient visit they had made during the reference period. In these analyses we consider overall rates of use and use of public, private, and traditional services, for children age 14 and below.⁶

The results for use of health care tell a dramatic story: between 1997 and 1998 use of health services has fallen substantially (Table 6). We discuss the results for all respondents rather than for panel respondents.⁷

Overall, the proportion of children using health services in the month prior to the interview declined significantly, from just over one-quarter of all children in 1997, to just over one-fifth of children in 1998. Rows 2-5 of the table show that almost all of the decline is due to a reduction in use of community health posts (*posyandus*).⁸ Overall use of government clinics

⁶ Respondents were asked about visits to each of the following types of providers: public hospitals, government health centers and subcenters, community health posts, private hospitals, private clinics, doctors' practices, nurses and paramedics and midwives, traditional practitioners, and others. The first two categories are considered public providers, while the next four categories are considered private providers.

⁷ Children use less care as they get older. Consequently, the decreases in use observed for panel respondents are a combination of two effects: the effect of the crisis and age-related decline in use that occurs because all panel respondents are a year older in 1998 than they were in 1997.

⁸ Community health posts are monthly activities sponsored by volunteers from the community and attended by staff from nearby government clinics. The posts offer a variety of preventive services. Sometimes curative care is available as well.

has declined significantly, while use of private and traditional services has changed little.

Subsequent rows of the table explore changes in the types of providers children see, given that a visit is made. The most striking findings are the dramatic decline in visits to *posyandus* and a substantial increase in the proportion of children visiting private doctors. In 1997, 56.8% of children who received some health care visited a *posyandu* in the month before the survey. By 1998 the proportion of visitors to the *posyandu* had dropped by 15.3 percentage points, to 41.6%. With respect to private doctors, in 1997 only about 12% of children who sought care did so from private practitioners. By 1998 the fraction had risen to almost 18%.

Among visitors, no significant change in use of the *puskesmas* occurred for children. Nor did the fraction of child users who visited traditional practitioners change significantly between 1997 and 1998.

The decline in children's use of the *posyandu* is of concern because the *posyandu* is an important source of preventive care, such as growth monitoring, immunization, and Vitamin A. Table 7 examines the extent to which immunization and Vitamin A uptake have changed between 1997 and 1998, for children less than three years old. With respect to Vitamin A, the child's mother provided information about whether the child had received any in the previous six months. Information on the child's immunization status was obtained from the child's KMS (growth monitoring) card or from the child's mother or caretaker when a KMS card could not be seen.

Receipt of Vitamin A in the six months before the survey has declined substantially. In 1997, 55% of children under three had been given Vitamin A in the previous six months. By 1998 the proportion was less than 43%.

There are relatively few significant changes in receipt of other services typically provided through the *posyandu*. The proportion of children for which a KMS card was available did not change between 1997 and 1998. Nor, for the most part, do rates of immunization uptake appear to have changed significantly. There are two immunizations for which uptake appears to have changed: Polio 1, for which the rate is significantly lower in 1998 than in 1997, and Hepatitis B, for which the rate is significantly higher in 1998 than in 1997.⁹

⁹ Both of these changes may reflect aspects of Indonesia's health program. Recently Indonesia switched from providing polio immunizations through health centers and community health posts to providing polio twice per year on specially designated days. Hepatitis B immunizations are a service that has been added relatively recently to the immunizations available through public health centers.

The results in Table 7 suggest that, thus far, decreasing rates of participation in the *posyandu* program have not produced significant declines in immunization coverage—a finding that may reflect a variety of dynamics. For one thing, the *posyandu* is not the only source of immunizations. It may well be the case that children are receiving immunizations at *puskesmas* or private providers, for which rates of utilization have not diminished. Moreover, it is not necessary for children to attend the *posyandu* every month in order to be adequately immunized. It may be that children are attending the *posyandu* with reduced, but still sufficient frequency to receive the necessary immunizations. It does appear that children are receiving less Vitamin A than they were a year ago.

It is of interest to go beyond the aggregate rates and consider whether particular sub-groups of children have experienced more changes in use than other groups. The next set of tables explores the factors associated with these changing patterns of health care use.

The correlates of use of health care are presented in Table 8. We analyze the correlates of use of care in 1997 and 1998 (columns 1-4), as well as the correlates of changes in use of both public and private providers (columns 5-8). Estimates from multinomial logit models of use of health care are reported in columns (1) and (2), for 1997, and (3) and (4), for 1998.¹⁰ The estimates represent risk ratios of using public or private health services relative to not using any health care. Columns 5-8 provide a summary of the transition to and from use of public and private providers, relative to experiencing no change in use of care, in a multinomial logit framework.

Per capita expenditure has a strong impact on children's use of care. First, it appears that in 1997, among children from households below the median level of *per capita* income, those in the relatively better off households are somewhat more likely to use public care. By 1998 household resources are irrelevant with respect to use of public care (Column 3).

With respect to private care, resources do matter among children from lower income households in 1997: the poorest are the least likely to use private care (Column 2). By 1998, however, the differential use of private services for those with less than median expenditures has been severely attenuated and is not significant (Column 4). Among lower PCE children, as PCE rises, there is an increasing chance the child will switch out of private care between 1997 and 1998 so that by 1998, fewer children from middle income households are using private care (Column 8).

¹⁰ The handful of respondents that used both public and private health services are included in the category for private.

This effect is offset by an increase in the probability a child from a higher income household switched into using private care in 1998 (Column 5). Thus, the net effect is a relatively small change in the use of private care (as seen in Table 6) but a very large change in which children who are using private care. By 1998, it is the children of the relatively better off.

No significant differences emerge in health care use patterns by gender of the child, or by the size of the household in the which the child lives. Age, however, has a strong effect. Older children generally have fewer service needs than their younger counterparts, and so increases in age reduce use of services and transitions into patterns of more service use in 1998 relative to 1997.

Urban residence does affect children's health care use: children in urban areas are more likely to switch into use of private services by 1998.

Children in North Sumatra are generally less likely to use care or transition into care than are their counterparts in West Java. The effects of residence in South Sumatra are similar in direction to those for North Sumatran children. In Jakarta, in 1997, children were less likely to use public services than were children in West Java. By 1998 this is no longer true. Children in Central Java are less likely to use public services in 1997 and less likely to transition into use of public services by 1998. Children in NTB and in South Kalimantan substantially less likely to transition into use of private services than are children in West Java.

It appears from these results that much of the increased use of private doctors is among children from better off households, children in urban areas, and, to some extent, children on Java. Reductions in use of public services are occurring for children in the poorest and middle-income households, older children, and children in North Sumatra.

4. The Availability, Quality, and Price of Health Services

The results in the preceding section focus on the findings of the household survey with respect to use of health care by children. In this section we summarize results from the facility survey with respect to the provision of health services. These results provide information about whether the availability, quality, and prices of health care have changed between 1997 and 1998.

In this section, we use the term public providers to refer to government health clinics, while private providers refers to doctors, clinics, midwives, nurses, and paramedics.

The top half of Table 9 presents results with respect to whether the availability of services related to maternal and child health has changed between 1997 and 1998. In parallel to the results for individuals, results are provided for all facilities interviewed in 1997 and for the matched sample of facilities interviewed in both 1997 and 1998 (panel facilities in the 80 IFLS2+ communities), and for the change between 1997 and 1998. The first four columns of the table report the statistics for public facilities: *puskesmas* and *puskesmas pembantu*. Columns 5 through 8 report the statistics for private facilities: clinics, doctors, midwives, nurses, and paramedics.

With the exception of Vitamin A, there have been no significant declines in the availability of services related to child (and maternal) health services at either public facilities or private facilities. There has been a significant decline in the proportion of both public and private facilities offering Vitamin A. This result ties back to the household data, where we saw a significant decline in the proportion of children under three who had received Vitamin A in the past 6 months. Among public facilities, the proportion giving out Vitamin A has dropped from 87.7% to 71.7%. In private facilities, provision of Vitamin A declined from 56% to 39.6%. Both changes are statistically significant.

The lower half of Table 9 shows the median price changes for two MCH-related services: BCG immunization for children and tetanus toxoid immunization for pregnant women.¹¹ Interestingly, for these services the median price has risen significantly in public facilities, but has not changed (at the median) in private facilities.

The preceding table provides a sense of which services are supposed to be available at public and private providers and how much those services cost, but it does not tell us whether essential medications and supplies are usually in stock and which may not actually be available to patients who show up on a given day. Information on stock outages of drugs and supplies is tabulated in Table 10.

At public facilities in 1997, for no drug was the proportion of facilities experiencing a stock outage in the past six months more than 20%, and for all drugs but ampicillin the proportion was substantially less than 15%. By 1998 the situation has changed dramatically, particularly with respect to antibiotics. For all antibiotics other than tetracycline and benzathine penicillin G, the proportion of facilities experiencing a stock outage increased

significantly. For penicillin, the change represents a six-fold increase. By 1998 about one quarter of public facilities had experienced stock outages of penicillin, while 40% had experienced outages of ampicillin.

For drugs other than antibiotics changes in stock outages between 1997 and 1998 are not statistically significant. For Vitamin A this may be because facilities have stopped providing it altogether (see Table 9). In public facilities there has actually been a significant decrease in the proportion of providers running out of stock of iron tablets.

The picture at private facilities stands in stark contrast. The proportions of facilities experiencing changes in experience with stock outages are not significant for any drug. The result reflects both the fact that stock outages in 1998 are generally lower in private than in public facilities, and also that because fewer private facilities offer drugs, the standard errors for private facilities are larger.

Provision of appropriate drugs is one component of providing quality services. The availability of basic supplies is another. Table 9 also considers the availability of bandages at public facilities. There have been increases in the proportion of facilities that do not have sufficient stocks of bandages (data on bandages was not collected at private facilities in both years).

5. Child Health Status

The previous sections have documented a decline in use of health services and changes in the prices and potential quality of health services. In this section of the paper we explore the extent to which health status has changed between 1997 and 1998. The Indonesia Family Life Surveys contain a number of measures of health status. We first consider the results of self-reported measures of health status: measures obtained by asking the respondent or his or her mother or care-taker specific questions about health during the four weeks prior to the interview.¹² The questions focus on experience with any of a list of symptoms, whether normal daily activities have been disrupted by ill health, whether health status has required the

¹¹ We use the median because it is more robust to price changes and outliers.

¹² For children 10 and below questions are directed to the mother or care-taker. Children older than 10 typically report for themselves.

respondent to stay in bed, and the respondent's ranking of his or her general health status. Here we consider the presence of any symptom, the presence of particular symptoms, and whether ill health resulted in time in bed. We look first at levels and at changes in children's health and then turn to an exploration of the determinants of changes in health status. As with use of health care for children, our discussion focuses on the results for all respondents rather than panel respondents, so that we do not confuse age-related changes in health status with changes over time.

Overall there appears to have been an improvement in health status as indicated by the self-reported measures (Table 11). Most of the symptoms have declined significantly between 1997 and 1998, and the average number of symptoms reported is significantly smaller in 1998 than in 1997. The overall proportion of children experiencing at least one symptom has not declined significantly between 1997 and 1998 (it is about 70% in both years).

In addition to the self-reported measures of health status described above, the IFLS2 and IFLS2+ data contain an array of physically-assessed measures of health status, measured by a trained nurse who traveled with the interviewing team. For children these measures consist of height and weight, hemoglobin levels of respondents at least one year of age, and lung capacity of respondents nine years old and above. Finally, the nurse evaluates each respondent's health on a 9 point scale.

Examination of the levels and changes in these measures between 1997 and 1998 provides another perspective on health status—one that is less likely to incorporate the respondent's knowledge and perceptions of his or her health status. Table 12 presents evidence on nutritional status. For children less than nine in 1997 we present the results on height-for-age (a long-run measure of health status). For children less than nine in 1997 we present weight-for-height (a shorter-run measure more indicative of recent changes in health status). The results are expressed as z-scores. The z-scores provide a measure of each child's height and weight-for-height relative to that of the median child (of the same age) from a well-nourished reference population.¹³

The first and fourth rows of Table 12 present the average z-scores on height-for-age and weight-for-height for the IFLS children (all and panel respondents) in 1997 and in 1998. For

¹³ The z-score is the number of standard deviations above or below the median of the reference population. We use the National Center for Health Statistics reference population as the standard, which is based on children in the U.S.

neither height-for-age nor weight-for-height has there has been a significant change in the past year in the average z-scores of the IFLS children.

We also present statistics on the proportions of children whose nutritional status indicators are more than one standard deviation and more than two standard deviations below the median for the reference group. These statistics tell us something about how nutritional status has changed for the children at the low end of the scale. With respect to weight-for-height, a measure of recent health status, the results are encouraging. For both same-community and panel respondents there has been a significant decrease in the proportion of children whose weight-for-height is more than two standard deviations below the median. This result is broadly consistent with the evidence from Table 11 (to the extent that illness takes a toll on short-run nutritional status), which suggests that children are experiencing fewer symptoms in 1998 than they did in 1997. For same-community respondents, the data also suggest that the proportion of children whose height-for-age is more than two standard deviations below the median has decreased.

The last indicator of nutritional status that we consider is hemoglobin level, which is measured for all respondents at least one year of age in 1997. On average there has been a significant increase in hemoglobin level since 1997. The improvement extends to those with the lowest levels of hemoglobin. The proportions of respondents with hemoglobin levels below 10 (a standard cut-off for moderate anemia) have decreased significantly since 1997.

Table 12 presents evidence on the correlates of changes in nutritional status for children as a function of characteristics in 1997. Coefficients with a positive sign can be interpreted as being associated with an improvement in health. Expenditure levels do not appear to be associated change in height-for-age (for female children) or with weight-for-height or hemoglobin levels for children of either gender. For boys, however, higher levels of expenditure in 1997 significantly increase the change of an improvement in nutritional status as measured by height-for-age. Province of residence is less closely associated with changes in nutritional status than it was with changes in the self-reported indicators. For boys, improvements in weight-for-height are less likely for residents of South Sumatra. For girls (less than 10), improvements in hemoglobin levels are larger in urban areas.

Taking all the evidence on changes in health status together, we conclude that in many ways, the current health status of children in 1998 is better than it was in 1997.

6. Summary

Indonesia has experienced vast changes in the both the economic and the political environment during 1998. Few Indonesians have remained untouched by the events of the year, but the effects of the economic crisis on welfare vary by region and across socio-economic and demographic groups. This paper has presented information on changes in a number of dimensions of children's well-being between 1997 and 1998: education, use of health services, and health status. Because changes in individual well-being are shaped to some extent by changes in the community, we have also provided information on changes at schools and at public and private health services.

Both schooling enrollment and use of health care have declined significantly between 1997 and 1998. Drop out rates for children age 7 to 12 have increased significantly in rural areas, from about 1% to about 5%. For young adults age 13 to 19, drop out rates have increased significantly in urban areas. For both age groups it is the children from the poorest households that have been affected the most.

For children, overall use of health services has decreased substantially. A dramatic decline in visits to the *posyandu* accounts for the change. Visits to private providers have increased somewhat. Underlying these general changes is a strong shift between 1997 and 1998 in how expenditure levels affect use. It is children from the poorer and middle-income households who are switching out of use of public providers, and it is the relatively less educated women who are reducing their participation in *posyandu* activities (this result is not presented here, see footnote 4). Children from middle-income households are also switching out of use of private providers, but children from the higher-income households are increasingly relying on private care.

Reduction in use of the *posyandu* is a particular concern given that it is a key source for preventive care. For the youngest children (those under three), declines in use of the *posyandu* have not yet translated into declines in immunization uptake. However, there has been a significant reduction in the proportion of children under three receiving Vitamin A in the six months prior to the survey. The result for Vitamin A in the household data also emerges in the facility data. There have been significant decreases in the proportions of both public and private facilities offering Vitamin A.

Changes in use of health services likely reflect both demand and supply factors. For

example, as more women work, the time that mothers have available to obtain preventive care for their children has likely diminished. Additionally, the quality of those services (for example, whether Vitamin A is available) has gone down. The problem at public providers is not limited to Vitamin A or to preventive care: stock outages of antibiotics have increased significantly as well, as has the proportion of providers with insufficient supplies of bandages. At the same time, prices of services have risen substantially. The combination of declines in quality and increases in prices of services at public providers may account for some of the shift out of use of public care.

To what extent have decreases in use of health care and changes within health facilities themselves translated into changes in health status? The surveys contain an array of self-reported and physically-assessed measures of health status. Considering all of the evidence on changes in health status together, we conclude that on many dimensions, the current health status of children is better in 1998 than it was in 1997. Self-reports clearly indicate a decrease in the proportion of children experiencing particular symptoms in the month before the survey. The physical assessments are also consistent with an improvement in health. With respect to nutritional status, the proportion of children at the lowest end of the spectrum (as measured by weight-for-height) has decreased. Overall it appears that hemoglobin status has actually improved.

A question of key interest in a paper such as this one is whether particular sub-groups emerge as having been especially hard-hit by the crisis. Our results do suggest that relative to a year ago, investments in children have declined, particularly for those from the poorest households. The youngest children have reduced use of standard sources of preventive care and they are receiving Vitamin A less often. Their older counterparts in rural areas are dropping out of primary school, while in urban areas drop outs have increased at the junior secondary level. Children in households with relatively high levels of *per capita* expenditure have largely been protected from these negative trends. To the extent that children from the poorest households are missing out on investments that would have positive impacts far into the future, they may bear the costs of the crisis for years to come.

It should be mentioned that similarities across sub-groups in certain behaviors may reflect quite different underlying motivations or causes. For example, reductions in use of public health care among poor children may occur because of insufficient time and money for services. For the middle class, on the other hand, declines in use may arise as a response to declines in the quality of public services. In some areas drop out rates for young adults may be increasing

because the earnings they forego by attending school are desperately needed by their parents. In other areas, rises in drop out rates may occur because opportunities to earn income have actually increased (for example, in areas producing export crops), making work temporarily more attractive than school.

In sum, we find that the impact of the crisis is not small, but it is heterogeneous in terms of who has been affected, in terms of the dimensions of well-being that have changed, and in the ways that people have responded. Our results suggest that if policies are to succeed at alleviating the impact of the crisis, they will need to be multi-faceted, carefully designed, and implemented so that they both reach particular sub-groups and relieve the particular constraint. Moreover, policies may need to address problems at both the household and the facility level, in response to changes in both the demand for and the supply of certain goods and services.

Table 1: Enrollment and Drop Out Rates, Children 13-19

	Percentage of Children not Currently Enrolled						Drop Out Rate		
	Same Communities			Same Respondents			Same Communities		
	1997 (1)	1998 (2)	Change (3)	1997 (4)	1998 (5)	Change (6)	1997 (7)	1998 (8)	Change (9)
Gender									
Male	38.5 (1.8)	43.1 (1.8)	4.6 (2.5)	31.5 (2.0)	43.4 (2.1)	11.9 (2.9)	12.1 (1.5)	17.7 (1.6)	5.6 (2.2)
Female	40.6 (1.8)	44.1 (1.7)	3.5 (2.5)	32.8 (2.0)	43.5 (2.1)	10.7 (2.8)	12.3 (1.5)	16.2 (1.5)	3.9 (2.2)
Expenditure Level in 1997									
1 st Quartile	48.5 (2.5)	54.1 (2.4)	5.6 (3.4)	40.7 (2.7)	57.1 (2.8)	16.4 (3.9)	14.2 (2.2)	25.5 (2.7)	11.3 (3.5)
2 nd Quartile	36.0 (2.5)	43.3 (2.4)	7.3 (3.4)	30.7 (2.7)	42.6 (2.9)	11.9 (3.9)	13.1 (2.0)	17.6 (2.2)	4.5 (3.0)
3 rd Quartile	37.9 (2.6)	40.4 (2.5)	2.5 (3.6)	29.0 (2.7)	37.3 (2.9)	8.3 (4.0)	13.2 (2.1)	15.5 (2.2)	2.3 (3.1)
4 th Quartile	33.1 (2.8)	35.5 (2.6)	2.4 (3.8)	25.6 (2.9)	32.6 (3.1)	7.0 (4.2)	7.3 (1.8)	9.5 (1.9)	2.2 (2.6)
Residence:									
Urban	33.2 (1.8)	38.4 (1.8)	5.2 (2.5)	25.0 (1.8)	38.1 (2.1)	13.1 (2.8)	11.1 (1.4)	17.5 (1.7)	6.4 (2.1)
Rural	46.0 (1.9)	48.5 (1.7)	2.5 (2.5)	39.1 (2.0)	48.5 (2.1)	9.4 (2.9)	13.5 (1.6)	16.8 (1.6)	3.3 (2.3)
Number of observations	1431	1691		1138	1138		972	1141	

Table 2: Enrollment and Drop Out Rates, Children 7-12

	Percentage of Children not Currently Enrolled						Drop Out Rate		
	Same Communities			Same Respondents			Same Communities		
	1997 (1)	1998 (2)	Change (3)	1997 (4)	1998 (5)	Change (6)	1997 (7)	1998 (8)	Change (9)
Gender									
Male	5.1 (0.9)	6.1 (0.9)	1.0 (1.3)	3.7 (0.9)	6.1 (1.1)	2.4 (1.4)	1.0 (0.4)	3.4 (0.7)	2.4 (0.6)
Female	3.4 (0.8)	6.2 (1.0)	2.8 (1.2)	2.4 (0.7)	5.8 (1.1)	3.4 (1.3)	1.2 (0.5)	3.8 (0.8)	2.6 (0.9)
Expenditure Level in 1997									
1 st Quartile	6.9 (1.3)	11.7 (1.6)	4.8 (2.0)	4.9 (1.2)	10.7 (1.7)	5.8 (2.1)	1.3 (0.6)	7.5 (1.4)	6.2 (1.5)
2 nd Quartile	3.7 (1.0)	3.6 (1.0)	-0.1 (1.5)	2.7 (1.0)	3.5 (1.1)	0.8 (1.5)	1.5 (0.7)	1.2 (0.6)	-0.3 (0.9)
3 rd Quartile	3.0 (1.0)	4.8 (1.3)	1.8 (1.6)	2.3 (1.0)	4.7 (1.4)	2.4 (1.8)	0.7 (0.5)	3.1 (1.0)	2.4 (1.2)
4 th Quartile	1.6 (0.9)	2.5 (1.1)	0.9 (1.5)	0.7 (0.7)	1.4 (1.0)	0.7 (1.2)	0.6 (0.6)	1.6 (0.8)	1.0 (1.1)
Residence:									
Urban	2.4 (0.7)	2.5 (0.7)	0.1 (1.0)	1.9 (0.7)	2.2 (0.8)	0.3 (1.1)	0.9 (0.4)	1.3 (0.5)	0.4 (0.7)
Rural	5.5 (0.8)	8.8 (1.0)	3.3 (1.3)	3.8 (0.8)	8.2 (1.1)	4.4 (1.4)	1.3 (0.4)	5.4 (0.8)	4.1 (1.0)
Number of Observations	1189	1286		942	942		1151	1252	

Table 3: Correlates of Enrollment and Drop-Out for Children 13-19

		Enrollment			Drop-out		
		1997	1998	Change	1997	1998	Change
Age is at least:	14	-4.766 [1.190]	-3.236 [0.834]	1.530 [0.274]	-1.115 [0.357]	-2.574 [0.751]	-1.459 [0.313]
	15	-15.103 [3.632]	-7.278 [1.908]	7.825 [1.386]	5.294 [1.528]	2.750 [0.793]	-2.545 [0.514]
	16	-9.623 [2.300]	-17.806 [4.507]	-8.183 [1.422]	5.414 [1.467]	9.558 [2.483]	4.144 [0.771]
	17	-9.636 [2.299]	-6.708 [1.686]	2.928 [0.507]	-0.312 [0.080]	-2.978 [0.711]	-2.667 [0.463]
	18	-12.946 [3.123]	-19.563 [4.832]	-6.617 [1.142]	11.539 [2.755]	21.522 [4.595]	9.983 [1.583]
	19	-15.354 [3.344]	-14.160 [3.424]	1.194 [0.193]	12.992 [2.314]	17.948 [3.380]	5.286 [0.685]
Female		-4.204 [1.862]	-2.209 [1.043]	1.995 [0.644]	1.458 [0.716]	-0.816 [0.383]	-0.274 [0.766]
Urban residence		9.853 [3.934]	5.147 [2.142]	-4.706 [1.356]	-3.980 [1.761]	1.733 [0.722]	5.713 [1.722]
Prov: North Sumatra		13.526 [3.120]	13.158 [3.239]	-0.368 [0.062]	-5.707 [1.512]	-5.952 [1.450]	-0.245 [0.044]
South Sumatra		4.045 [0.960]	8.995 [2.302]	4.950 [0.861]	-7.45 [1.921]	-2.347 [0.583]	5.105 [0.906]
Jakarta		-1.532 [0.308]	8.257 [1.784]	9.789 [1.440]	3.582 [0.833]	-7.043 [1.535]	-10.625 [1.680]
Central Java		4.657 [1.224]	3.705 [1.032]	-0.952 [0.182]	-1.562 [0.453]	-0.765 [0.200]	0.796 [0.154]
West Nusa Tenggara		6.692 [1.623]	13.189 [3.483]	6.497 [1.160]	-2.728 [0.720]	-5.441 [1.384]	-2.173 [0.493]
South Kalimantan		-0.205 [0.043]	0.483 [0.107]	0.688 [0.105]	-5.337 [1.167]	3.993 [0.819]	9.330 [1.387]
Age of household head		0.030 [0.302]	-0.088 [0.890]	-0.118 [0.839]	0.023 [0.243]	0.114 [1.124]	0.091 [0.645]
Household head is male		-0.071 [0.020]	-7.344 [2.252]	-7.273 [1.514]	5.378 [1.578]	6.932 [2.032]	1.553 [0.319]
Years of education of hh head		2.456 [8.375]	2.249 [7.983]	-0.208 [0.512]	-0.870 [3.309]	-1.092 [3.873]	-0.223 [0.574]
lnPCE		0.609 [0.472]	4.219 [3.484]	3.610 [2.041]	-1.748 [1.523]	-4.189 [3.463]	-2.441 [1.454]
Number of children 0-14 in hh		-1.104 [1.008]	-2.469 [2.349]	-1.365 [0.899]	0.728 [0.738]	1.377 [1.310]	0.650 [0.448]
ln (household size)		-0.712 [0.196]	4.387 [1.280]	5.099 [1.020]	-3.183 [0.935]	-2.599 [0.738]	0.584 [0.118]
Intercept		54.372 [3.388]	41.528 [2.684]	-12.844 [0.576]	57.995 [3.998]	37.150 [2.190]	-20.845 [0.933]
Adjusted R ²		0.258	0.274		0.083	0.139	
F[all covariates]		24.52	30.09	1.08	5.22	9.46	1.72
Number of observations		1422	1620	3042	979	1099	2078

Notes: Estimates are from a linear probability model. T-statistics are in brackets.

Table 4 : Correlates of enrollment and Drop Out for Children 7-12

		Enrollment			Drop-out		
		1997	1998	Change	1997	1998	Change
		(1)	(2)	(3)	(4)	(5)	(6)
Age is at least:	8	7.890	0.153	-7.736	0.788	0.827	0.039
		[3.925]	[0.064]	[2.472]	[0.712]	[0.435]	[0.018]
	9	2.052	1.249	-0.803	-0.988	-0.344	0.644
		[1.012]	[0.554]	[0.263]	[0.909]	[0.193]	[0.303]
	10	-1.196	0.180	1.377	1.250	1.934	0.683
		[0.586]	[0.079]	[0.446]	[1.148]	[1.072]	[0.319]
	11	0.123	-2.177	-2.300	-1.060	1.620	2.679
		[0.061]	[0.931]	[0.745]	[0.987]	[0.886]	[1.253]
	12	-6.057	1.153	7.210	4.294	-1.417	-5.711
		[3.093]	[0.504]	[2.390]	[4.071]	[0.792]	[2.724]
Female		1.770	-0.321	-2.091	0.002	0.616	0.614
		[1.532]	[0.239]	[1.177]	[0.004]	[0.583]	[0.495]
Urban residence		0.710	4.223	3.513	-0.138	-2.944	-2.805
		[0.520]	[2.688]	[1.681]	[0.188]	[2.391]	[1.932]
Prov: North Sumatra		0.272	-1.253	-1.525	1.001	-0.149	-1.150
		[0.115]	[0.456]	[0.419]	[0.783]	[0.069]	[0.454]
South Sumatra		-0.870	-14.871	-14.001	0.803	13.010	12.207
		[0.429]	[6.309]	[4.490]	[0.732]	[7.007]	[5.607]
Jakarta		-0.946	-4.372	-3.426	2.079	2.295	0.215
		[0.338]	[1.421]	[0.818]	[1.386]	[0.952]	[0.074]
Central Java		1.843	0.985	-0.858	0.724	-1.174	-1.898
		[0.941]	[0.434]	[0.285]	[0.686]	[0.661]	[0.908]
West Nusa Tenggara		0.802	1.782	0.980	-0.087	-2.287	-2.200
		[0.403]	[0.774]	[0.321]	[0.081]	[1.264]	[1.032]
South Kalimantan		-7.097	-8.200	-1.103	1.500	3.929	2.431
		[2.581]	[2.703]	[0.267]	[0.987]	[1.632]	[0.831]
Age of household head		-0.080	0.028	0.108	0.054	-0.048	-0.103
		[1.341]	[0.436]	[1.223]	[1.685]	[0.962]	[1.667]
Household head is male		1.158	-1.420	-2.578	-0.953	0.450	1.403
		[0.620]	[0.643]	[0.890]	[0.943]	[0.260]	[0.695]
Years of education of hh head		0.533	0.436	-0.097	-0.068	-0.147	-0.079
		[3.353]	[2.360]	[0.396]	[0.791]	[1.015]	[0.467]
ℓnPCE		1.035	3.037	2.002	-0.099	-2.278	-2.179
		[1.364]	[3.586]	[1.750]	[0.241]	[3.419]	[2.730]
Number of children 0-14 in hh		-2.042	-1.195	0.847	1.451	0.254	-1.197
		[2.821]	[1.544]	[0.792]	[3.711]	[0.416]	[1.601]
ℓn (household size)		2.855	-0.307	-3.161	-4.730	0.504	5.234
		[1.017]	[0.116]	[0.802]	[3.121]	[0.242]	[1.906]
Intercept		87.916	86.466	-1.450	3.582	9.436	5.854
		[9.416]	[8.916]	[0.106]	[0.717]	[1.248]	[0.622]
Adjusted R ²		0.060	0.093		0.024	0.102	
F[all covariates]		4.74	7.28	3.75	2.39	7.78	6.54
Number of observations		1183	1224	2407	1145	1191	2336

Notes: Estimates are from a linear probability model. T-statistics are in brackets.

Table 5: Characteristics of Schools

percent reporting

	Elementary (SD)	Junior Secondary (SMP)
Over the past 12 months, the operations of this school have been affected by changes in:		
Paper costs	70.4	76.0
cost of non-compulsory books	64.6	65.3
cost of other supplies (non-books)	55.1	50.2
Photocopy costs	54.7	55.3
Availability of compulsory books	42.4	42.0
Budget available for maintenance	37.9	43.5
Payment of BP3 fees	32.5	24.9
cost of transportation	11.9	19.0
Number of observations	243	233

Table 6: Use of Health Care by Children

means and standard errors

	All resp. in 1997 (1)	Same communities			Same respondents		
		1997 (2)	1998 (3)	Change (4)	1997 (5)	1998 (6)	Change (7)
% use any health services	27.39 (0.4)	25.82 (0.8)	19.88 (0.7)	-5.94 (1.09)	26.91 (0.9)	16.71 (0.8)	-10.19 (1.2)
% use <i>puskesmas</i>	6.9 (0.2)	7.4 (0.4)	5.7 (0.4)	-1.6 (0.6)	7.8 (0.5)	5.4 (0.4)	-2.4 (0.7)
% use <i>posyandu</i>	16.1 (0.3)	14.7 (0.7)	8.3 (0.5)	-6.4 (0.8)	15.8 (0.7)	6.0 (0.5)	-9.8 (0.9)
% use private health services	8.49 (0.3)	7.79 (0.5)	7.59 (0.5)	-0.21 (0.70)	7.87 (0.5)	6.69 (0.5)	-1.18 (0.7)
% use traditional health services	0.50 (0.1)	0.80 (0.2)	0.74 (0.2)	-0.06 (0.23)	0.86 (0.2)	0.69 (0.2)	-0.16 (0.3)
% use <i>posyandu</i> , children < 5	50.6 (0.9)	46.7 (1.8)	27.7 (1.5)	-19.0 (2.3)			
Among users							
% <i>posyandu</i>	58.62 (0.9)	56.84 (1.9)	41.56 (2.0)	-15.28 (2.72)	58.64 (1.9)	35.85 (2.4)	-22.78 (3.1)
% <i>puskesmas</i>	25.08 (0.8)	28.63 (1.7)	28.90 (1.8)	0.26 (2.49)	28.94 (1.8)	32.44 (2.3)	3.50 (2.9)
% private doctor	13.79 (0.6)	12.41 (1.2)	17.86 (1.5)	5.45 (1.96)	11.52 (1.2)	18.78 (1.9)	7.27 (2.2)
% nurse	13.86 (0.6)	12.69 (1.3)	12.99 (1.4)	0.29 (1.84)	13.03 (1.3)	13.17 (1.7)	0.14 (2.1)
% traditional	1.83 (0.3)	3.10 (0.7)	3.73 (0.8)	0.63 (1.00)	3.18 (0.7)	4.15 (1.0)	0.96 (1.2)
Number of observations	10351	2746	3098	5844	2453	2453	2453

Notes: Sample is all children age under 15, except for the row for use of the *posyandu* by children less than five.

Table 7: Immunization Uptake for Children Less than Three Years Old
means and standard errors

	All Resp.	Same communities		
	1997	1997	1998	Change
	(1)	(2)	(3)	(4)
% of children who received Vitamin A in 6 months before survey	60.6 (0.8)	55.12 (2.4)	42.75 (2.1)	-12.37 (3.2)
% of children who could present a KMS card	22.8 (0.7)	30.00 (2.2)	29.73 (2.0)	-0.26 (3.0)
% of children who have received BCG	77.05 (1.0)	74.88 (2.1)	73.61 (1.9)	-1.28 (2.8)
% of children who have received Polio at birth	21.62 (0.9)	18.60 (1.9)	22.49 (1.8)	3.89 (2.6)
% of children who have received Polio 1	87.06 (0.8)	86.97 (1.6)	80.11 (1.7)	-6.87 (2.4)
% of children who have received Polio 2	73.05 (0.1)	69.53 (2.2)	67.47 (2.0)	-2.06 (3.0)
% of children who have received Polio 3	49.27 (0.1)	47.44 (2.4)	45.17 (2.1)	-2.27 (3.2)
% of children who have received DPT 1	72.98 (1.0)	70.40 (2.2)	72.11 (1.9)	1.72 (2.9)
% of children who have received DPT 2	57.28 (0.1)	54.46 (2.4)	59.67 (2.1)	5.21 (3.2)
% of children who have received DPT 3	42.55 (0.1)	38.73 (2.4)	42.19 (2.1)	3.46 (3.2)
% of children who have received Measles	57.08 (0.1)	55.11 (2.4)	51.67 (2.2)	-3.44 (3.2)
% of children who have received Hepatitis B	49.74 (0.1)	39.77 (2.3)	48.51 (2.2)	8.75 (3.2)
Number of observations	1697	430	538	

Table 8: Correlates of Use of Health Care by Children

		Use of care in 1997		Use of care in 1998		Change in use of care Between 1997 and 1998			
		Public	Private	Public	Private	Gain Public	Gain Private	Lose Public	Lose Private
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\ln$ PCE (spline):	below median	1.319	3.288	0.973	1.516	0.985	1.165	1.251	2.706
		[1.83]	[4.41]	[0.15]	[1.73]	[0.07]	[0.57]	[1.34]	[3.51]
	above median	0.892	1.116	1.198	1.259	1.100	1.303	0.843	1.150
		[0.92]	[0.89]	[1.42]	[1.83]	[0.55]	[1.89]	[1.17]	[1.04]
Male		0.968	1.143	0.934	1.012	0.889	1.000	0.963	1.090
		[0.28]	[0.83]	[0.46]	[0.07]	[0.62]	[0.00]	[0.30]	[0.50]
Age		0.710	0.784	0.776	0.839	0.835	0.867	0.781	0.820
		[18.69]	[10.72]	[11.93]	[7.84]	[7.05]	[5.46]	[13.61]	[8.52]
$\ln$ (household size)		1.050	0.959	0.912	0.958	0.655	0.883	0.973	0.755
		[0.29]	[0.19]	[0.46]	[0.19]	[1.64]	[0.45]	[0.15]	[1.21]
Urban residence		1.167	1.379	1.077	1.430	0.889	1.593	1.106	1.234
		[1.18]	[1.82]	[0.46]	[1.97]	[0.55]	[2.13]	[0.71]	[1.11]
Province:									
North Sumatra		0.194	0.205	0.282	0.848	0.292	1.234	0.397	0.267
		[6.17]	[3.53]	[3.53]	[0.58]	[2.95]	[0.64]	[3.25]	[2.76]
South Sumatra		0.514	1.116	0.543	0.480	0.411	0.508	0.707	1.069
		[3.20]	[0.38]	[2.36]	[2.46]	[2.72]	[1.83]	[1.52]	[0.22]
Jakarta		0.458	1.529	0.976	0.952	0.418	1.042	0.678	1.408
		[2.90]	[1.35]	[0.08]	[0.16]	[1.88]	[0.11]	[1.32]	[1.00]
Central Java		0.564	1.617	0.692	0.688	0.545	0.728	0.660	1.564
		[2.94]	[1.83]	[1.58]	[1.45]	[2.10]	[0.98]	[1.88]	[1.62]
NTB		0.698	0.490	0.685	0.279	0.587	0.310	0.929	0.502
		[1.90]	[2.16]	[1.62]	[3.84]	[1.87]	[2.83]	[0.36]	[1.99]
South Kalimantan		0.685	0.519	0.577	0.277	0.455	0.210	0.913	0.458
		[1.58]	[1.63]	[1.80]	[2.96]	[2.02]	[2.47]	[0.35]	[1.79]
Intercept		0.014	0.388	0.69	0.233				
		[0.11]	[4.33]	[3.01]	[3.49]				
χ^2/F (joint significance		685.73		298.03		460.82			
all covariates)		[0.00]		[0.00]		[0.00]			
$\ln$ (Likelihood)		-1468.66		-1198.33		-2156.44			

Notes: Estimates are from a multinomial logit model; estimates are risk ratios relative to excluded category of no use of health care. Asymptotic t statistics in are brackets.

Table 9: Provision of Maternal and Child Health Services in Public and Private Health Facilities
means and standard errors

	Public Facilities				Private Facilities			
	All 1997 (1)	Same Facilities 1997 (2)	1998 (3)	Change (4)	All 1997 (5)	Same Facilities 1997 (6)	1998 (7)	Change (8)
Service Availability								
Vitamin A	90.9 (1.0)	87.7 (2.3)	71.7 (3.1)	-16.0 (3.8)	55.3 (1.2)	56.0 (2.6)	39.6 (2.6)	-16.4 (3.7)
Oralit	98.4 (0.4)	99.1 (0.7)	99.1 (0.6)	0.02 (0.9)	72.9 (1.1)	75.9 (2.2)	80.7 (2.1)	4.8 (3.1)
Child immunization	82.7 (1.3)	78.1 (2.8)	78.5 (2.8)	0.5 (4.0)	35.2 (1.1)	32.0 (2.4)	31.2 (2.4)	-0.8 (3.4)
BCG	82.3 (1.3)	78.1 (2.8)	78.5 (2.8)	0.5 (4.0)	33.6 (1.1)	31.0 (2.4)	29.3 (2.3)	-1.7 (3.3)
DPT	82.5 (1.3)	78.0 (2.8)	78.5 (2.8)	0.6 (4.0)	35.0 (1.1)	31.7 (2.4)	30.4 (2.4)	-1.3 (3.3)
Polio	82.4 (1.3)	78.0 (2.8)	78.5 (2.8)	0.6 (4.0)	34.8 (1.1)	31.4 (2.4)	30.7 (2.4)	-0.8 (3.3)
Measles	82.6 (1.3)	78.0 (2.8)	78.5 (2.8)	0.6 (4.0)	34.4 (1.1)	31.2 (2.4)	30.3 (2.3)	-0.9 (3.3)
Tetanus toxoid	88.3 (1.1)	84.0 (2.5)	83.1 (2.5)	-0.9 (3.6)	43.9 (1.2)	41.7 (2.5)	40.2 (2.5)	-1.5 (3.6)
Iron Tablets	96.0 (0.7)	93.4 (1.7)	95.9 (1.3)	2.5 (2.2)	64.0 (1.2)	64.0 (2.5)	69.8 (2.5)	5.8 (3.5)
Median price of services								
Child Immunization:	500 (44.2)	500 (106.9)	750 (104.0)	250 (121.2)	3500 (252.4)	5000 (927.5)	5000 (685.4)	0 (706.1)
Tetanus toxoid	500 (44.1)	500 (64.1)	900 (124.2)	400 (94.5)	4000 (245.3)	5000 (345.4)	5000 (459.2)	0 (469.2)
Number of observations	900	219	219	219	1815	387	387	387

Table 10: Proportion of Facilities Reporting Stock Outages of Drugs, Vaccines, and Supplies in the Past Six Months
means and standard errors

		All				Same Facilities			
		1997	1997	1998	Change	1997	1997	1998	Change
		(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Vitamin A		7.1	6.0	3.6	-2.4	7.9	8.3	9.5	1.2
		(1.1)	(2.2)	(1.8)	(2.9)	(0.9)	(2.1)	(2.5)	(3.2)
Antibiotics									
Penicillin		10.9	3.5	27.6	24.1	19.5	19.5	20.0	0.5
		(2.1)	(2.5)	(5.9)	(6.5)	(2.1)	(4.4)	(4.1)	(6.0)
Ampicilin		16.2	15.6	40.8	25.2	12.1	14.8	17.4	2.6
		(1.5)	(3.1)	(4.0)	(5.2)	(0.9)	(2.2)	(2.2)	(3.1)
Tetracycline		12.0	12.0	16.2	4.2	9.0	9.1	13.1	4.1
		(1.4)	(2.8)	(3.0)	(4.2)	(0.8)	(1.9)	(2.0)	(2.8)
Chloroamphenicol		11.8	10.8	21.0	10.2	9.4	9.3	15.0	5.7
		(1.4)	(2.7)	(3.4)	(4.4)	(0.9)	(2.0)	(2.2)	(3.0)
Clotrimazole		11.5	10.8	24.7	13.8	8.6	12.1	13.8	1.7
		(1.5)	(3.0)	(3.6)	(4.9)	(1.0)	(2.5)	(2.2)	(3.4)
Benazaythine Penicillin G		2.3	0.0	7.7	7.7	9.0	5.6	19.1	13.5
		(2.3)	(0.0)	(7.7)	(7.1)	(3.5)	(5.6)	(8.8)	(10.8)
Oralit		4.5	4.7	6.7	2.0	8.2	8.0	7.5	-0.5
		(0.9)	(1.9)	(2.0)	(2.8)	(0.8)	(1.8)	(1.6)	(2.4)
Iron tablets		6.2	4.1	0.7	-3.5	7.0	7.1	6.7	-0.4
		(1.0)	(1.8)	(0.7)	(1.8)	(0.8)	(1.8)	(1.6)	(2.4)
Immunizations: BCG				8.8				14.7	
				(2.2)				(3.5)	
DPT				7.0				7.8	
				(2.0)				(2.7)	
Measles				7.6				11.4	
				(2.0)				(3.1)	
Polio				8.8				7.5	
				(2.2)				(2.6)	
Tetanus Toxoid				10.4				23.4	
				(2.3)				(3.4)	
Bandages: Has in stock and has enough		95.8	97.7	93.6	-4.1				
		(0.7)	(1.0)	(1.7)	(1.9)				
Has in stock but not enough		1.3	0.9	4.6	3.7				
		(0.4)	(0.6)	(1.4)	(1.6)				
Number of observations		900	219	219	219		387	387	387

Table 11: Morbidity, Days Ill and General Health Status of Children

means and standard errors

	All resp. in 1997	Same communities			Same respondents		
	(1)	1997	1998	Change	1997	1998	Change
		(2)	(3)	(4)	(5)	(6)	(7)
% have any morbidity	70.30 (0.4)	70.72 (0.9)	70.37 (0.8)	-0.35 (1.2)	70.36 (0.9)	68.61 (0.9)	-1.75 (1.3)
% have diarrhea	10.17 (0.3)	11.87 (0.6)	9.88 (0.5)	-1.99 (0.8)	12.11 (0.7)	8.68 (0.6)	-3.42 (0.9)
% have cough/breathing problems	33.95 (0.5)	34.56 (0.9)	32.15 (0.8)	-2.41 (1.2)	35.14 (1.0)	30.53 (0.9)	-4.61 (1.3)
% have fever	32.81 (0.5)	32.16 (0.9)	28.60 (0.8)	-3.56 (1.2)	32.98 (0.9)	26.91 (0.9)	-6.07 (1.3)
% have runny nose	47.16 (0.5)	47.31 (1.0)	43.48 (0.9)	-3.83 (1.3)	47.78 (1.0)	42.11 (1.0)	-5.67 (1.4)
# morbidities reported	2.63 (0.0)	2.76 (0.1)	2.53 (0.0)	-0.23 (0.1)	2.77 (0.1)	2.43 (0.1)	-0.34 (0.1)
% been in bed	11.02 (0.3)	11.43 (0.6)	9.38 (0.5)	-2.06 (0.8)	11.53 (0.6)	8.86 (0.6)	-2.68 (0.9)
Number of observations	10,351	2,746	3,098	5,844	2,453	2,453	2,453

Table 12: Nutritional Status of Children
means and standard errors

	All resp. in 1997 (1)	Same communities			Same respondents		
		1997 (2)	1998 (3)	Change (4)	1997 (5)	1998 (6)	Change (7)
Height for age (z score)	-1.77 (0.02)	-1.96 (0.04)	-1.89 (0.03)	0.07 (0.05)	-1.91 (0.04)	-1.91 (0.04)	0.00 (0.05)
% z score<-2	42.94 (0.82)	50.68 (1.62)	45.66 (1.33)	-5.02 (2.10)	50.00 (1.63)	47.25 (1.62)	-2.75 (2.30)
Number of observations	3,652	951	1,395	2,346	946	946	946
Weight for height (z score)	-0.57 (0.01)	-0.61 (0.03)	-0.62 (0.02)	-0.00 (0.04)	-0.64 (0.03)	-0.66 (0.03)	-0.02 (0.04)
% z score<-1	33.91 (0.62)	35.56 (1.22)	35.20 (1.08)	-0.36 (1.63)	36.79 (1.36)	35.92 (1.35)	-0.87 (1.91)
% z score<-2	7.31 (0.34)	8.57 (0.71)	5.59 (0.52)	-2.97 (0.86)	8.39 (0.78)	4.98 (0.61)	-3.40 (0.99)
Number of observations	5,839	1,541	1,949	3,490	1,264	1,264	1,264
Hemoglobin (mg/dl)	11.43 (0.02)	11.42 (0.04)	11.55 (0.03)	0.13 (0.05)	11.32 (0.04)	11.54 (0.04)	0.22 (0.06)
% hemoglobin<10mg/dl	12.36 (0.47)	11.83 (0.91)	9.33 (0.73)	-2.5 (1.15)	13.0 (1.0)	9.4 (0.80)	-3.6 (1.3)
Number of observations							

Notes: Height-for-age estimates include only children age 9 or under in 1997; weight for height includes children age 9 or under in 1997. Hemoglobin is measured for everyone age 1 or older in 1997.

Table 13: Correlates of Changes in Nutritional Status of Children

	Change in Height for age (0-9 yr olds)		Change in Weight for height (0-9 yr olds)		Change in Hemoglobin (0-9 yr olds)	
	Male (1)	Female (2)	Male (3)	Female (4)	Male (1)	Female (2)
<i>ln</i> PCE	0.132 [2.63]	-0.015 [0.25]	0.081 [0.66]	0.086 [0.67]	0.045 [0.59]	-0.087 [1.1]
Age	-0.029 [1.58]	0.022 [0.91]	0.090 [2.97]	0.088 [2.12]	0.003 [0.16]	-0.024 [1.08]
<i>ln</i> (househld size)	-0.044 [0.42]	0.046 [0.29]	0.157 [0.57]	-0.485 [1.41]	0.087 [0.49]	-0.126 [0.64]
Urban residence	0.102 [1.22]	-0.117 [1.1]	-0.051 [0.24]	0.255 [1.08]	-0.015 [0.11]	0.323 [2.33]
Province						
North Sumatra	0.129 [0.97]	0.324 [1.52]	-0.071 [0.21]	0.03 [0.07]	1.05 [4.49]	0.502 [1.8]
South Sumatra	0.127 [0.97]	-0.112 [0.58]	-0.811 [2.49]	-0.003 [0.01]	0.312 [1.57]	0.331 [1.47]
Jakarta	-0.106 [0.64]	-0.225 [0.88]	-0.087 [0.21]	-0.139 [0.27]	-0.211 [0.79]	-0.473 [1.65]
Central Java	0.139 [1.19]	-0.042 [0.24]	0.005 [0.02]	-0.383 [1.06]	0.643 [3.37]	0.305 [1.47]
NTB	0.169 [1.44]	0.046 [0.26]	-0.308 [1.02]	-0.215 [0.59]	0.093 [0.48]	-0.077 [0.37]
South Kalimantan	0.044 [0.30]	0.350 [1.70]	0.035 [0.09]	-0.377 [0.84]	0.204 [0.82]	-0.07 [0.25]
Intercept	-0.924 [2.44]	-0.107 [0.21]	-0.409 [0.42]	-2.117 [1.95]	-0.354 [0.58]	0.689 [1.08]
F(all covs)	1.36 [0.16]	1.04 [0.42]	1.29 [0.2]	1.83 [0.02]	2.78 [0.00]	2.05 [0.01]
R ²	0.05	0.04	0.027	0.052	0.06	0.05

Notes: Height for age and weight for height are measured as change in z-score. Estimates are from OLS

regressions. T statistics are in brackets.