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***Health, Family Planning and Well-being in Indonesia during an Economic Crisis:  
Early Results from the Indonesian Family Life Survey***

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# **Health, Family Planning and Well-being in Indonesia during an Economic Crisis: Early results from the Indonesian Family Life Survey**

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The results reported in this paper are *preliminary*. This study is based on data from two rounds of the Indonesian Family Life Survey (IFLS2/2+), a project of RAND, in collaboration with UCLA and the Demographic Institute of the University of Indonesia. We are grateful to William Emmett, the POLICY Project, who supported the broader project in its early stages. We are also indebted to Bill Winfrey and Harry Cross (also of POLICY). Scott Guggenheim provided the impetus that led to the World Bank's support for this project. Gillie Brown and Lant Pritchett provided valuable input. Our colleagues at the Demographic Institute have worked untiringly under extremely stressful conditions to make this project a success. We cannot overstate their contribution. We are especially grateful to Bondan Sikoki, Ni Wayan Suriastini, Muda Saputra, Endang Pudjani, Sutji Rochani, Akhir Matua Harahap, Cecep Sukria Sumantri, Hendratno, Iip, Wilson Victor and Widodo who helped to develop and pretest the instruments, train the interviewers, and supervise the fieldwork. We also owe a debt to Victoria Beard, Trevor Croft, Jim Smith, John Strauss, Graciela Teruel, and to all the supervisors, interviewers, and respondents who have participated in the Indonesia Family Life Survey.

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## 0. Introduction

After almost three decades of sustained economic growth, Indonesia is currently in the midst of a major economic and financial crisis. Output in 1998 is expected to be about 15% below its level in 1997 and there have been dramatic shifts in both the economic and political landscape in the country.

The rupiah came under pressure in the latter part of 1997 with the exchange rate showing signs of weakness in August 1997. It fell from around Rp2,400 per US\$ to about Rp4,800 by December 1997. In January 1998, the rupiah collapsed. Over the course of a few days, it fell by a factor of three to Rp15,000. Although it soon recovered, by the middle of the year the rupiah had slumped back to the lows of January, 1998. Since June 1998, the rupiah has strengthened and by the end of 1998 stood at around Rp8,000 to the US\$. This strengthening of the rupiah reflects, at least in part, the tightening of monetary policy in the middle of the year. However, throughout the period, the exchange rate been characterized by extremely high volatility which has contributed to greater uncertainty in the financial markets.

Interest rates have behaved much like the exchange rate: they spiked in August 1997 -- when they quadrupled -- and they have remained extremely volatile since then. Chaos has reigned in the banking sector. Several major banks have been taken over by the Indonesian Bank Restructuring Agency. All of this turmoil has wreaked havoc with both the confidence of investors and the availability of credit.

Prices of many commodities spiraled upwards during the first three quarters of 1998 but appear to have stabilized towards the end of the year. Annual inflation is estimated by the Central Statistical Bureau to be about 75-80% for 1998 (although monthly inflation is close to zero for October and November, 1998). Food prices, especially staples, have risen most steeply suggesting that (net) food consumers are likely to be severely impacted by the crisis whereas food producers may have had some protection. However, the prolonged drought of 1997 tempers that inference and so it is unclear what the net effect of the combined shocks has been.

Simultaneously, Indonesia is undergoing dramatic transformation in the political sector. President Suharto resigned in May 1998. Within days, the incoming president, Habibie, declared multi-party elections for the middle of 1999 and pledged reforms that would revive political activity in the country. How effective these reforms will be remains to be seen: protests, in some cases violent, continue to rock the country.

Few Indonesians have not been touched by the upheavals of the last year. For some, the turmoil has been devastating. For others, it has brought new opportunities. Exporters, export producers and food producers are likely to have fared far better than those engaged in the production of services and non-tradeables or those on fixed incomes. There are many dimensions to the crisis in Indonesia and, accordingly, the combined impact of each facet is likely to vary across regions, across socio-economic groups and across demographic groups in complex and nuanced ways.

This paper seeks to contribute new evidence on three questions, the answers to which are all key for the design of effective and well-targeted public policy. The questions on which we focus are: who has been affected most by the crisis, how they have been affected and how they have responded to the crisis. Precisely because of the complexity of the Indonesian situation, a good understanding of the strategies that people have adopted to mitigate the effects of the crisis will be critical for predicting the medium- and longer-term effects of the crisis. On one hand, some people have more to draw on when times are bad than do others. Distinguishing these groups is key if programs are to be well-targeted. On the other hand, the strategies adopted by individuals and families to mitigate the effects of the crisis may have implications for the longer run: the effects of pulling children out of school, delaying necessary health care expenditures, selling off productive assets that earn an income are likely to be felt for many years to come. Because the IFLS is designed to be comprehensive, it is uniquely well-positioned to answer these important questions about behavioral responses to the crisis.

The IFLS is an on-going longitudinal survey of individuals, households, families and communities in Indonesia. In an effort to respond to the needs of the policy and scientific communities, RAND, Lembaga Demografi and UCLA undertook a special wave of the IFLS, IFLS2+, in late 1998. Because our focus is on the immediate impact of the crisis, in this report, we contrast each response in the 1997 interview with the same person's response in the 1998 interview.

The crisis has affected the poorest, the middle income and households in the upper part of the income distribution in Indonesia. While the precise magnitude of the crisis is subject to controversy (and depends critically on assumptions about changes in prices), there is unambiguous evidence in our data that the crisis has had a far-reaching effect on the purchasing power of all our respondents. The share of the household budget spent on food, and especially staples, has increased significantly and these increases are largest for the poorest. To make room for these expenditures, purchases of semi-durables appear to have been delayed. There have been significant declines in expenditures on education, especially among the poorest and significant declines in enrollments by young children from poor households. This is very troubling.

There have been significant reductions in the share of the budget households spend on health over the last year. At the same time, prices of health services have increased at least as fast as inflation. Thus, there has been a substantial reduction in use of health services -- by both adults and children. This reduction is almost entirely concentrated in the public health sector -- the puskesmas for adults and the posyandu for children. Not only have prices increased, but so have waiting times and the frequency of stock outages of basic drugs. There has been some switching into private health services by those who are relatively better off and substantial switching away from private health services by those in the middle of the income distribution. Thus, on net, use of private services has changed little although the characteristics of their clientele have.

Most measures of health status collected in the IFLS have improved over the over the last year although there are indications that the nutritional status of adults has worsened, particularly among the poorest. There is a suggestion that the health of the poor may be particularly vulnerable to an extended reduction in their purchasing power.

We conclude that while few have been left unscathed by the crisis, the short-term effects and the medium-term effects are likely to be very different for different sub-groups of the population. It is imperative that policy makers identify those people for whom this crisis is likely to have the most deleterious impact on the medium and longer-term for they are the people who need to be targeted for assistance today. This will require a good understanding of the behavioral responses to the crisis by individuals, families and communities in Indonesia and careful monitoring of those responses as the people adapt to their changing socio-economic and political landscape.

The rest of this paper is divided into nine sections. We begin with a description of the study design and the IFLS sample. It is followed by a description of the magnitude of the crisis as revealed in the IFLS data. The following two sections focus on contraceptive use, starting with changes in use reported by ever married women and then discussing results from our survey of family planning service providers. Use of health services are discussed in sections 5 and 6 with sections 7 and 8 devoted to indicators of health status. The final section summarizes our results.

## 1. Study design and the IFLS sample

The IFLS is a large-scale integrated socio-economic and health survey that collects extensive information on the lives of our respondents, their households, their families and the communities in which they live. It is an ambitious project.

First, in the context of multi-purpose comprehensive surveys, the sample is relatively large. 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.

Second, the IFLS is an on-going longitudinal survey. The first wave was conducted in 1993/94 (IFLS1), with a follow-up in 1997/98 (IFLS2) and a special follow-up, designed for this project, in late 1998 (IFLS2+). Large scale longitudinal surveys remain rare in developing countries and there is considerable skepticism that they can be successfully fielded given the lack of communication infrastructure and distances that typically need to be traveled. The IFLS demonstrates that skepticism is misplaced. Third, the IFLS is a very complex instrument that collects an extraordinary level of richness on the social, economic, demographic and health characteristics of our respondents. Moreover, the survey contains several innovations in terms of substantive content and in terms of the fielding of the survey. As an example, the survey has been a pioneer in the collection of community-level information that can be combined with the individual and household level information to speak to issues that confront policy makers. As another example, IFLS2 and IFLS2+ implemented a system of computer-based editing and data quality control in the field so that interviews were typically punched on the same day they were administered. The data were then electronically transmitted to Jakarta and Santa Monica for further checking.

### *IFLS1*

The IFLS sampling scheme was designed to balance the costs of surveying the more remote and sparsely-populated regions of Indonesia against the benefits of capturing the ethnic and socioeconomic diversity of the country. The scheme stratified on provinces, then randomly sampled within enumeration areas (EAs) from within each of the 13 selected provinces.<sup>1</sup> A total of 321 EAs were selected from a nationally representative sample frame used in the 1993 SUSENAS (a survey of about 60,000 households).<sup>2</sup> Within each EA, households were randomly selected by field teams based upon the 1993 SUSENAS listings obtained from regional offices of

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<sup>1</sup>The 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).

<sup>2</sup>A similar approach was taken by the Demographic and Health Surveys (DHS) fielded in Indonesia in 1987 and 1991. The SUSENAS frame, designed by the Indonesian Central Bureau of Statistics (BPS), is based on the 1990 census. The IFLS1 was based on the SUSENAS sample because BPS had recently listed and mapped each of the SUSENAS EAs thus saving time and money.

the Bureau Pusat Statistik (BPS).<sup>3</sup> Urban EAs and EAs in smaller provinces were over-sampled to facilitate urban-rural and Javanese-non-Javanese comparisons.

A total of 7,730 households were included in the original listing for the first wave, IFLS1, with the goal of obtaining a final sample size of 7,000 completed households. The assumed non-participation rate of about 10% was based on BPS experience. In fact, 7,224 households (or 93%) were interviewed. Approximately 2% of households refused and 5% were not found.<sup>4</sup> The completion rate ranged from a low of 89 percent to a high of 98 percent across the thirteen provinces. The final sample of 7,224 completed households consists of 3,436 households in urban areas (91% completion rate), and 3,788 households in rural areas (96% completion).

For each IFLS1 household, representative members (typically the female and male household heads) provided household-level demographic and economic information including consumption, wealth, income and family businesses. In addition, several household members were randomly selected and asked to provide detailed individual information on use of health care and health status, fertility, contraception and marriage; education, migration and labor market behavior; participation in community activities, interactions with non co-resident family members and individual ownership of assets.<sup>5</sup> Community-level information was collected from interviews with the community leader and head of the village women's group, as well as through visits to multiple schools and multiple public and private health care providers.<sup>6</sup>

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<sup>3</sup>The standard definition of a household that is used in most surveys in Indonesia is a group of people whose members reside in the same dwelling and share food from the same cooking pot. This definition was adopted for IFLS1.

<sup>4</sup>In about two-thirds of these cases, no interview was obtained either because the building was vacated (14%), the household refused (25%), or no one was at home (29%). Other households were not interviewed due to a demolished building, illness, or an inability to locate the building.

<sup>5</sup>The decision to interview selected household members rather than all household members was made because of the costs of interviewing all household members. The selection rules were designed to prioritize interviews with ever-married women below 50 and older respondents (50 and above), while maintaining a positive probability of selection for all adult respondents. Interviews were conducted with the following household member; the household head and his or her spouse; two randomly selected children (aged 0-14) of the head and spouse; an individual age 50 and above and his or her spouse, randomly selected from remaining members; for a randomly selected 25 percent of the households, an individual age 15 to 49 and his or her spouse (randomly selected from remaining members). The sampling rules give rise to a potential maximum of six respondents within a household, but for cost reasons the maximum number actually interviewed was restricted to four.

<sup>6</sup>Data collected from schools and health care providers is intended to characterize the services that are available to people in the community. In most surveys, the nearest facility (or facilities) are visited -- even if the facility is seldom used by the people who live nearby. We took a novel approach. We asked each individual respondent to name the facilities they had used in the last year; we also asked them to list all the facilities they knew about. We also asked the community leaders to list the facilities available to people in the area. We compiled a complete list of all the facilities and then randomly sampled from that list with weights that were proportional to the frequency with which the facility had been mentioned. The facility sample will, therefore, provide a much closer approximation to the services that are actually relevant for the decisions made by our respondents than the standard approach of visiting the nearest facilities.

## *IFLS2*

The second wave of the IFLS (IFLS2) was fielded between August 1997 and January 1998. Our goal was to recontact all the original IFLS households and interview all of the IFLS1 main respondents. If a household had moved, we obtained information about their new location and followed them as long as they resided in any of the 13 IFLS provinces. This means that, by design, we lose households that have moved abroad or to a non-IFLS province; they account for a very small proportion of our households (<1%) and are excluded because the costs of finding them are prohibitive. Table 1.2 presents our household-level re-interview rate. Among all IFLS households, it is 93.3%; excluding those households in which everyone has died (usually single-person households), our success rate is 94%.

It is useful to put these numbers into perspective. There are three longitudinal surveys in the United States that might be thought of as the "gold standard". The Panel Study of Income Dynamics began in 1968 and has been fielded every year since then. The attrition between the first and second waves was 11.9%. The Health and Retirement Survey and the AHEAD are two recently implemented longitudinal surveys that are generally recognized as being state-of-the-art. There is a two year hiatus between each wave of those surveys and their first to second wave attrition rates are 8.9% and 9.3% respectively. The fact that IFLS has a four year hiatus, has a budget which is an order of magnitude smaller than any of those surveys and was able to keep attrition to 6% is, simply put, astonishing. It is testimony to the quality of the entire IFLS team and, particularly, the commitment of the project supervisors and interviewers.

Few of our respondents refused to participate (1%) and so the vast majority of those households that were not re-interviewed were not found. About 15% of these are known to have moved to destinations outside Indonesia or in a non-IFLS province; they were, therefore, not followed. The rest are households that have moved but that we were unable to relocate. This was particularly a problem in Jakarta both because of development which has changed the landscape in some of our EAs and because people are relatively mobile, often having only a tenuous connection with their neighbors. One of our EAs, for example, was bulldozed and turned into a shopping complex between IFLS1 and IFLS2. None of our 20 households lived in the vicinity in 1997. Nevertheless, by drawing on all our tracking techniques, we were able to identify one household that had died, one who refused and we successfully re-interviewed all 18 of the rest giving us a 90% success rate in that EA. Many of these respondents had moved out of Jakarta and so were tracked to their new homes in other provinces.

A small number of surveys in developing countries have returned to the original EAs and sought to re-interview the people living in the original housing structure. The 100-village survey in Indonesia is an example. Apart from the fact that it is often extremely difficult to identify the original housing structure (particularly in a place like Indonesia which is very dynamic), it is unclear how to interpret the resulting sample. Those respondents who have moved from their original location are likely to be the ones whose lives have changed the most -- for better, or for worse -- and they will be systematically excluded from the sample. The panel sample of people interviewed in both surveys is representative of *only the non-movers* which is obviously a select group of people. It would be naive to assume new respondents who enter the sample because they are now living in an original housing structure are "like" the respondents who moved out.

Moreover, housing structures come and go -- areas that have grown (or lost population) will not be appropriately represented in the new sample. If there was a complete re-listing of the EA, it would be possible, in principle, to weight the sample to be representative of the current population in that area. However, the value of the longitudinal dimension of the survey is seriously attenuated by the choice-based sample design. It is unclear, therefore, that this approach offers anything over and above two independent cross-sections which would be substantially cheaper to field.

In the IFLS, we follow movers. Had we followed the strategy of simply interviewing people who still live in their original housing structure, we would have re-interviewed approximately 83% of the IFLS1 households. The additional 10% of the households that we did interview are extremely important in terms of their contribution to the information content. About one half of these households were found in relatively close proximity to their original location.<sup>7</sup> The other half were 'long-distance' tracking cases and many of them had moved to a different kabupaten or a different province. Using regression methods, Thomas, Frankenberg and Smith (1999) demonstrate that the 'stayers', local movers, long distance movers and the households we did not relocate are all different from each other. However, in terms of their observed characteristics in 1993, stayers and local movers are relatively similar to one another and long distance movers are very similar to those we did not re-locate. The big gap lies between the stayers/local movers on one hand and the long distance movers (who were or were not relocated) on the other.

The benefits of tracking are clear. There is, however, a cost to tracking. Thomas, Frankenberg and Smith (1999) estimate that a long-distance tracking case cost about twice as much to complete as a case relocated in the original EA. We conclude that the benefits outweigh the costs and maintain that local *and* long-distance tracking is critically important if we are to draw inferences about the transitions our respondents have experienced.

Re-locating a household in IFLS2 implies we obtain some information on every person who was in the household in 1993. Some of those people have split off from the original household. In IFLS2, we conducted an individual interview with everyone in the original household irrespective of whether they were in the household in 1993 (or were interviewed in 1993). Because we sought to re-interview all the IFLS1 main respondents, we also attempted to track those who had split off from the original household.<sup>8</sup> We re-interviewed 91% of all the

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<sup>7</sup>Specifically, they were found within about one-half hour travel time from the original housing structure.

<sup>8</sup>With one exception, we did not track 1993 household members who had not been administered an individual interview. This was because of the costs and also because we wanted to keep the tracking activity manageable. As it was, we had about 3,500 individuals who had moved and we sought to follow; had we tracked everyone, that number would have doubled. Assume that there are 1.5 original respondents in a split-off household (which is the number in IFLS2) we would have added nearly 5,000 households to a sample of 7,200! We were, however, concerned about the implications of the within-household sampling rule that was followed in IFLS1. We therefore included *all* IFLS1 household members age 26 and above in 1993 in the tracking list. Thus, the IFLS2 sample of individuals is representative of the underlying population for this age group; the other age groups are representative after applying weights to account for the sampling scheme.

IFLS1 main respondents (including all people age 26 and above in 1993). About 1,500 of them had split-off from the original household and were successfully tracked. Many of them had moved together and so there are 850 new households bringing the total number of households in IFLS2 to over 7,600. It is worth noting that although we did not interview them, we did collect a good deal of information about the people who had left the household by 1997 and were not tracked.

The fieldwork in IFLS2 was divided into two phases: a main period when the teams revisited all the original EAs and a follow-up tracking period. Local tracking was completed during the main field period with the follow-up tracking period being devoted to cross-province movers, movers to locations that are far away from our EAs and difficult cases. The main fieldwork period lasted between three and four months, depending on the province. As shown in Figure 1, the main fieldwork was completed between August and December, 1997, the period during which the Indonesian economy was beginning to show signs of weakness. During this time, several of our teams completed their long distance tracking assignments. In January, 1998, we reduced our team sizes and began a period that focussed on interviewing difficult cases. Some of that work trickled into January, which is when the Indonesian rupiah collapsed.

#### *IFLS2+*

IFLS2 is uniquely well-positioned to serve as a baseline for another interview with our respondents in order to understand how they have been affected by the economic crisis. Thus, we fielded IFLS2+ in August-December, 1998.

The purpose of IFLS2+ is to provide measures of the changes in the economic and social well-being of our respondents, their households, their families and their communities; to help identify those groups who have been most seriously affected by the crisis; to document the strategies our respondents have adopted to mitigate the effects of the crisis; and to, thereby, provide some insights into the likely medium-term and long-term effects of the crisis.

In a study of this nature, time is of the essence. It took two years to plan and test IFLS2. We did not have two years for IFLS2+. Nor did we have the resources to mount a survey of the same magnitude as IFLS2. We chose, therefore, to field a scaled down survey, while retaining as much as possible from IFLS2 as possible.

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 (such as expenditure levels, school enrollments, use of contraceptives and health care) and for characteristics of communities and facilities (such as food prices and the availability and prices of drugs and contraceptive supplies). Some sections were dropped to reduce costs. Other sections were substantially revised. For example, the IFLS contains extensive retrospective life histories; the recall periods were scaled back in IFLS2+ to reflect the fact that the average length of time since the last interview will be about one year. Thus, in IFLS2+, the work history and contraceptive calendars collect retrospective data back to June, 1997, whereas in IFLS2 these histories extended back 10 years in many cases.

There are several new sections in both the household and community-facility surveys in IFLS2+. These sections were specifically designed to elicit information about the impact of the crisis, how they have responded to it and how it is perceived by our respondents. Some of these questions were included in response to the needs of the Government of Indonesia and the donors who funded the IFLS2+ fieldwork. The new sections were piloted in April/May, 1998 and the entire instrument was pre-tested in May/June, 1998.

We also scaled down the sample and decided to re-interview a 25% subsample of the IFLS households. Using all the IFLS EAs as our sampling frame, we drew the IFLS2+ sample in two stages. First, in order to keep costs down, 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 were picked so that they spanned the full spectrum of socio-economic status and economic activity in the fuller IFLS sample. Second, within those provinces, we randomly drew 80 EAs with weighted probabilities in order to match the IFLS sample as closely as possible. These weights were based on the marginal distributions of sector of residence (urban or rural), household size, education level of the household head and quartiles of per capita expenditure (measured in 1993). In terms of socioeconomic and demographic characteristics, the IFLS2+ sample is representative of the entire IFLS sample and our purposive sampling has, in fact, achieved a very high level of overall efficiency -- 74% relative to a simple random sample. This is very good given that the sample is only 25% of the original sample.

Counting all original households in IFLS1 and the split-offs in IFLS2, there are 2,066 households in the IFLS2+ target sample. The turmoil in Indonesia during 1998 made relocating and interviewing these households particularly tricky. Fortunately, the combination of outstanding fieldworkers, the experience of IFLS2 and the willingness of our respondents to participate meant that we achieved an even higher success rate than in IFLS2. As shown in Panel A of Table 1.2, over 95% of the target households were re-interviewed.

From a scientific point of view, it is important to retain all the original respondents in our target sample, even if they were not interviewed in IFLS2. This means, therefore, that our target sample includes the 6% of households not interviewed in 1997. In 1998, we successfully contacted over 50% of those households. However, 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 their lives now with a year ago. These are the households which form the analytic sample used in the rest of the report. When we restrict ourselves to these 1,934 households, we achieved a remarkable success rate: we interviewed over 98% of the original households and in one province, West Nusa Tenggara, we re-interviewed every single household. Our completion rates at the individual level are 94% (including respondents not found in IFLS2) and 96% (of the IFLS2 respondents).<sup>9</sup>

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<sup>9</sup>It is typically the case in longitudinal surveys in the United States that attrition rates are smaller after the second wave. In the PSID, Wave 2 to Wave 3 attrition was 3.5% (but they did not attempt to locate people who are attrited between Wave 1 and Wave 2); in the HRS, it was 8.1% (including those who had attrited between the first two waves). To a large extent, this reflects the fact that attrition is due primarily to refusal in these surveys. In Indonesia, our respondents are not a phone call away and so attrition is largely driven by geographic mobility. Therefore, there is no reason to expect attrition rates to decline over time; rather, we have to redouble our efforts in

Evidence on the representativeness of the IFLS2+ sample is presented in Table 1.3.<sup>10</sup> Columns 1 through 3 are based on data from IFLS2. Column 1 includes all households interviewed in 1997; column 2 includes the target sample and column 3 includes those households who were interviewed in IFLS2+. The two sub-samples mirror the full sample reasonably closely. (Differences between the first and second columns will disappear when the data are weighted). Column 4 repeats the same summary statistics based on the 1998 interview for the IFLS2+ households. There is a suggestion that household structures have changed although these differences are swamped by the declines in *per capita* expenditure (PCE) and increases in the share of the budget allocated to food. The average household in IFLS2+ has seen a 25% decline in real PCE. The next section explores the evidence on the magnitude of the crisis in more detail.

### *The IFLS Community and Facility Surveys*

The behaviors and outcomes of individuals are shaped not only by the characteristics of individuals and their families, but also by the characteristics of the communities in which they live. In recognition of this fact, 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 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 by visits to as many as 12 health care providers and 8 schools per community. With respect to health care providers, the types of facilities include public providers (government health centers such as *puskesmas* and *puskesmas pembantu*), private providers (private clinics and the single provider practices of doctors, midwives, including Village Midwives, nurses, and paramedics) and community health posts (*poysandu*). With respect to schools, IFLS1 and IFLS2 include interviews with public and private elementary (SD), junior (SMP), and senior secondary schools (SMU), while IFLS2+ includes interviews with elementary and junior secondary schools.

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each wave as we have to seek out our respondents. It is, therefore, worth pondering why our tracking was more successful in IFLS2+ than IFLS2. We can think of two reasons. First, the entire IFLS team -- including the interviewers and supervisors -- had learnt from the experience of IFLS2 and were able to implement more sophisticated tracking procedures. Our success in IFLS2 reflects the fact that we recorded extensive recontact information in IFLS1 and IFLS2 (including names and addresses of employers, schools and family or friends who could help relocate the respondent). We provided this information to the interviewers who then pursued every avenues of inquiry possible in an effort to find the respondents. In IFLS2 and IFLS2+, we carefully monitored recontact rates over the course of the fieldwork and devoted additional resources to tracking movers and revisiting households that we had failed to interview during the main field period. IFLS2, however, was very severely resource constrained and, in particular, project staff at RAND were prevented from using resources they had earmarked for tracking. There is no doubt in our minds that with a small amount of additional resources, we would have achieved an even higher completion rate in IFLS2.

<sup>10</sup>At this time, weights have not been computed and so all numbers in this paper are unweighted. It is important to recognize that the purposive sampling design of IFLS2+ means that the sample is not representative at the province level.

In selecting facilities to be interviewed within each of the IFLS communities, the goal was to collect data about the characteristics of a sample of public and private facilities available to members of the IFLS households. Special sampling procedures were developed for IFLS1 and IFLS2. To generate a list of available facilities from which to draw a sample, the team supervisor aggregated the responses of IFLS household members to questions about facilities they knew about. The facilities were ranked by frequency of mention. These ranked lists provided frames for each facility type, from which a sample of two to four facilities was drawn.

The goal of the IFLS2+ facility survey was slightly different. Specifically, we wanted to understand how facility characteristics have changed since the onset of the crisis. Accordingly, the facility sample for IFLS2+ was not redrawn. Instead, interviewers were instructed to reinterview all the facilities interviewed in IFLS2, in order to provide panel data on facilities. 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 in sections 4 and 6 compare the responses of these providers in 1997 to their responses in 1998.

**Table 1.1**  
**IFLS2: HH Completion Rates**

Province	Target # Hhs (1)	# HHs Interviewed (2)	% HHs Interviewed (3)	----- If alive -----		
				% HHs Interviewed (4)	% HHs Refused (5)	% HHs Not found (6)
Total	7224	6743	93.3	94.0	1.1	4.9
North Sumatra	563	502	89.2	89.6	3.0	7.3
West Sumatra	351	324	92.3	93.4	0.6	6.0
South Sumatra	349	316	90.5	90.8	3.4	5.7
Lampung	274	259	94.5	94.5	0.0	5.5
Jakarta	731	632	86.5	86.9	0.5	12.4
West Java	1111	1050	94.5	95.5	0.9	3.6
Central Java	878	856	97.5	98.1	0.8	1.1
Yogyakarta	478	445	93.1	93.7	0.6	5.6
East Java	1044	995	95.3	95.9	0.9	3.2
Bali	340	321	94.4	94.7	0.9	4.4
NTB	407	393	96.6	97.3	0.7	2.0
South Kalimantan	323	294	91.0	91.6	2.5	5.9
South Sulawesi	375	356	94.9	95.7	0.3	4.0

Source: IFLS1 and IFLS2

**Table 1.2**  
**IFLS2+: HH Completion Rates**

A. All IFLS HHs

<b>Province</b>	<b>Target # HHs (1)</b>	<b># HHs Interviewed (2)</b>	<b>% HHs Interviewed (3)</b>
Total	2066	1972	95.5
North Sumatra	240	228	95.0
South Sumatra	312	297	95.2
Jakarta	206	191	92.7
West Java	334	334	96.4
Central Java	464	449	96.8
NTB	306	298	97.4
South Kalimantan	204	187	91.7

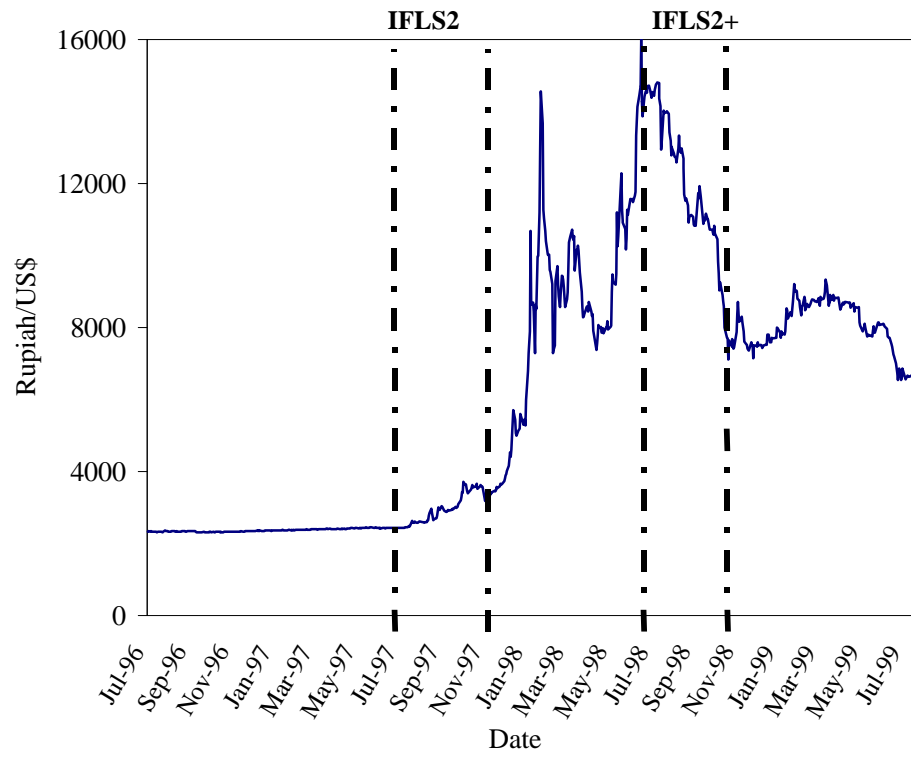
Source: IFLS1, IFLS2, IFLS2+

B. All IFLS HHs interviewed in IFLS2

<b>Province</b>	<b>Target # HHs</b>	<b># HHs Interviewed</b>	<b>% HHs Interviewed</b>
Total	1934	1903	98.4
North Sumatra	213	208	97.7
South Sumatra	289	283	98.0
Jakarta	181	178	98.3
West Java	318	312	98.1
Central Java	452	445	98.5
NTB	295	295	100.0
South Kalimantan	186	182	97.9

Source: IFLS2 and IFLS2+

**Figure 1.1: Timing of the IFLS and the Indonesian Exchange Rate**



**Table 1.3: Sample representativeness**

Comparison of IFLS2 full sample, target sample for IFLS2+ and final IFLS2+ sample

Characteristics measured in:	- - - - 1997 - - - -			1998
	All HHs in IFLS2 (1)	Target HHs in IFLS2+ (2)	Inter- viewed in IFLS2+ (3)	IFLS2+ sample HHs (4)
Number of HHs	7560	1934	1903	1903
% urban	45.4	42.9	41.4	42.1
Household size	4.4	4.4	4.4	4.3
Number of children	1.41	1.47	1.48	1.49
Age of HH head	47.4	47.1	47.1	46.2
Education of HH head (years)	6.0	5.9	5.6	6.1
Means and (standard errors) of				
Per capita expenditure (Rp 000)	241 (7)	252 (17)	246 (18)	186 (5)
Share of budget spent on food	66.5 (0.2)	68.5 (0.5)	69.0 (0.5)	73.8 (0.5)
Source of data:	IFLS2	IFLS2	IFLS2	IFLS2+

Notes: Column 1 is based on all HHs interviewed in IFLS2. Column 2 is based on the random sub-sample of IFLS2 households that were included in the IFLS2+ target sample. Columns 3 and 4 are based on those households re-interviewed in IFLS2+; column 3 is based on their 1997 information (recorded in IFLS2) and column 4 is based on their 1998 information (recorded in 1998).

## 2. The magnitude of the crisis

### *Household expenditure*

We turn now to a description of the changes experienced by our respondents in IFLS2+ between 1997 and 1998. To put the magnitude of the crisis in perspective, we begin with household expenditure patterns.<sup>11</sup> Mean total monthly household expenditure in 1997 is reported in the first column of Table 2.1: it is close to Rp 1 million. Because inflation is running at around 75% it is important to deflate expenditures in 1998 so that they are comparable with 1997; we use a province-specific index based on urban price data from BPS.<sup>12</sup> Real monthly expenditure for the same households is reported in the second column of the table. The mean of the difference in expenditure (1998-1997) is reported in the third column. On average, total household expenditure has declined by 10%. A similar comparison is drawn for changes in monthly *per capita* expenditure (PCE): it has declined, on average, by 25%. When we look at median expenditure, the story is strikingly different: it has remained relatively stable during this period.

<sup>11</sup>Household expenditure in this survey is based on respondents' recall of expenditures for a series of different goods (or categories of goods). The reference period for the recall varies depending on the good. The respondent is asked about food expenditures over the previous week for 37 food items/groups of items (such as rice; cassava, tapioca, dried cassava; tofu, tempe, etc.; oil; and so on. For those people who produce their own food, the respondent is asked to value the amount consumed in the previous week. There are 19 non-food items; for some we use a reference period of the previous month (electricity, water, fuel; recurrent transport expenses; domestic services) and for others, the reference period is a year (clothing, medical costs, education). It is difficult to get good measures of housing expenses in these sorts of surveys. We record rental costs (for those who are renting) and ask the respondent for an estimated rental equivalent (for those who are owner-occupiers/live rent free). All expenditures are cumulated and converted to a monthly equivalent. The sample in this section is restricted to those households who completed the expenditure module in both IFLS2 and IFLS2+.

<sup>12</sup>To this end, we have deflated 1998 expenditures using a province-specific price deflator that is based on the BPS price indices reported for 45 cities in Indonesia. We matched the cities in the BPS database to our provinces and used the (simple) average of the price index for provinces with more than one city. We use price indices for August, September, October and November, deflating all 1998 expenditures to December 1997. The inflation rates we used are:

Province	Inflation rate (relative to December 1997)				
	August	September	October	November	
North Sumatra	68.2	78.2	76.7	77.9	
West Sumatra	74.6	85.1	81.7	85.1	
South Sumatra	76.4	87.7	85.4	85.0	
Lampung	79.6	86.9	86.2	86.2	
Jakarta	68.6	74.1	72.9	71.7	
West Java	61.5	67.4	68.1	67.0	
Central Java	61.4	67.6	67.3	68.1	
East Java	69.2	76.7	76.4	76.0	
Yogyakarta	78.8	83.4	83.6	85.0	
Bali	62.7	70.5	71.3	73.8	
NTB	73.5	82.9	85.1	89.0	
South Kalimantan		63.2	74.0	74.1	72.7
South Sulawesi	70.0	77.1	77.0	78.3	

There has been a significant decline in the level of inequality as measured by the logarithm of PCE (from 0.94 to 0.86). The poverty rate has increased from 11% to about 14%.<sup>13</sup> We can conclude, that there has been a substantial shift in the structure of the distribution of expenditure with the center of the distribution remaining relatively stable, the right tail being substantially truncated between 1997 and 1998 and the left tail becoming fatter indicating that more households are in poverty in 1998 relative to 1997. These facts are illustrated in Figure 2.1 which indicates that the poor, the middle class and the better off have all been affected by this crisis.<sup>14</sup> (Levels of PCE at each decile are reported in the first column of Table 2.3.)

Urban and rural households are distinguished in the second panel of Table 2.1. The data suggest that urban households have been more seriously impacted by the crisis: PCE of the average urban household has declined by 33% and poverty has increased by 30%. However, the price indices available from BPS are based only on urban markets. The IFLS community survey collects information on 10 prices of standardized commodities from local stores and markets; in addition, prices for 39 items are asked of the Ibu PKK and respondents at the posyandu in the community. Using those prices, in combination with the household-level expenditure data, we calculated EA specific (Laspeyres) price indices for the IFLS communities. We estimate that rural inflation is about 5% higher than urban inflation.

In the final panel of Table 2.1, we deflate rural expenditures by an additional 5% over and above the BPS province-specific rates. With this adjustment, poverty is estimated to have increased by 30% -- which is the same as in urban areas.

Based on the IFLS data, we estimate inflation between the rounds of the survey to be about 15% higher than the BPS rate (which goes back to December 1997). While it is important to emphasize that the IFLS is not designed to collect the detailed data necessary to calculate price indices, these estimates give us pause. We have, therefore, explored the implications for our estimates of both the magnitude of the crisis and identification of who has been most seriously impacted by the crisis. We have used the BPS province-specific price indices but inflated them by an additional 14% for urban households and 16% for rural households: the results are presented in Table 2.2 and Figure 2.2.

It is readily apparent from Figure 2.2 that there has been a shift to the left of the entire distribution of PCE. This is reflected in a decline not only of mean PCE but also of the median and a very substantial increase in the fraction of the population below the poverty line.

The subsequent sections discuss changes between 1997 and 1998 in several key dimensions of well-being related to health and family planning. Section 3 focuses on use of contraception, source of contraceptive methods, and women's satisfaction with services. Section 4 continues

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<sup>13</sup>The poverty lines were chosen so that estimated poverty rates in IFLS2 match the BPS province and sector specific poverty rates for 1996, the most recent poverty estimates for Indonesia.

<sup>14</sup>The figure is a non-parametric estimate of the density of PCE. It is based on an Epanechnikov kernel with a 10% bandwidth.

with the topic of family planning but switches perspectives, to that of the provider rather than of individual women. Section 5 explores changes in use of health care for both children and adults. Information on changes in the characteristics of health service facilities is provided in Section 6. Finally, in Sections 7 and 8 we turn to measures of health status. We consider both self-reported measures of health status and physical assessments obtained by trained nurses.

**Table 2.1: IFLS Household expenditure: 1997, 1998 and changes**

All households and households stratified by sector of residence

Prices based on BPS 44 city price index

		Total household expenditure			Per capita expenditure			Poverty rate	
		1997	1998	Change	1997	1998	Change	1997	1998
		(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)
All Indonesia									
	Mean	921	823	-98	246	186	-60	11.0	13.8
	Std.err.	[79]	[22]	[77]	[18]	[5]	[17]	[1.5]	[1.8]
	Median	544	557	18	131	129	-4		
	Std.IQR	[15]	[16]	[13]	[4]	[4]	[3]		
	# obs	1840							
Sector of residence									
Urban									
	Mean	1227	944	-283	319	211	-108	9.2	12.0
	Std.err.	[184]	[41]	[181]	[41]	[10]	[40]	[2.3]	[2.6]
	Median	620	593	-12	141	134	-8		
	Std.IQR	[26]	[28]	[21]	[7]	[6]	[5]		
	# obs	762							
Rural (Urban price index)									
	Mean	705	738	32	194	168	-26	12.4	15.2
	Std.err.	[33]	[25]	[28]	[8]	[5]	[7]	[2.1]	[2.4]
	Median	481	528	33	127	125	-0		
	Std.IQR	[19]	[20]	[17]	[5]	[5]	[4]		
	# obs	1078							
Rural (5% higher inflation than in urban areas)									
	Mean	705	703	-2	194	160	-34	12.4	16.2
	Std.err.	[33]	[24]	[27]	[8]	[5]	[7]	[2.1]	[2.5]
	Median	481	503	14	127	120	-5		
	Std.IQR	[19]	[19]	[16]	[5]	[4]	[4]		
	# obs	1078							

Notes: All expenditure estimates are converted to monthly equivalents in Rp000. 1998 estimates are in real (December 1997) Rp using province-specific price indices based on the 44 city price indices published by BPS. The second panel of rural estimates assume inflation in rural areas is 5% higher than in urban areas as suggested by the IFLS community level data. Poverty rates are for the population.

**Table 2.2: IFLS Household expenditure: 1997, 1998 and changes**  
**IFLS estimates of inflation rate between 1997 and 1998**

		Total household expenditure			Per capita expenditure			Poverty rate	
		1997	1998	Change	1997	1998	Change	1997	1998
		(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)
<b>All Indonesia</b>									
	Mean	921	668	-253	246	151	-95	11.0	19.9
	Std.err.	[79]	[19]	[77]	[18]	[4]	[17]	[1.5]	[2.1]
	Median	544	446	-69	131	104	-23		
	Std.IQR	[15]	[13]	[12]	[4]	[3]	[3]		
	# obs	1840							
<b>Sector of residence</b>									
Urban	Mean	1227	822	-405	319	184	-135	9.2	15.8
	Std.err.	[184]	[35]	[181]	[41]	[9]	[40]	[2.3]	[3.0]
	Median	620	519	-81	141	116	-21		
	Std.IQR	[26]	[25]	[20]	[7]	[5]	[5]		
	# obs	762							
Rural	Mean	705	560	-146	194	128	-66	12.4	23.0
	Std.err.	[33]	[19]	[27]	[8]	[4]	[7]	[2.1]	[2.8]
	Median	481	399	-66	127	95	-24		
	Std.IQR	[19]	[15]	[15]	[5]	[4]	[4]		
	# obs	1078							

Notes: All expenditure estimates are converted to monthly equivalents in Rp000. 1998 estimates are in real (December 1997) Rp using a combination of BPS and IFLS prices. IFLS estimates of inflation for all IFLS2+ provinces are about 15% higher than BPS estimates; IFLS also estimates that rural inflation is about 5% higher than urban inflation. The BPS 44 city price indices have been converted to province-specific price indices which have been inflated by an additional 14% in urban areas and 16% in rural areas to generate the IFLS estimates of inflation. Poverty rates are for the population.

**Figure 2.1: Per capita expenditure distribution: 1997 & 1998  
BPS inflation rate**

**Figure 2.2: Per capita expenditure distribution: 1997 & 1998  
BPS-adjusted inflation rate**

**Table 2.3: Distribution of per capita expenditure (Rp 000s)**  
**Level of PCE at each decile of population (unweighted)**

Population decile	1997	1998		
	(1)	BPS inflation (2)	+5% rural BPS (3)	IFLS inflation (4)
10	42	40	39	32
20	56	56	54	45
30	72	75	73	60
40	94	95	92	76
50	116	118	114	94
60	142	148	144	120
70	181	188	183	151
80	240	231	226	186
90	354	331	323	267

Notes: All expenditure estimates are converted to monthly equivalents in Rp000. 1998 estimates are in real (December 1997) Rp using the BPS prices for 44 cities (column 1), BPS prices inflated by an extra 5% in rural areas (column 2), BPS prices inflated by an extra 14% in urban areas and 16% in rural areas (in column 3).

**Figure 2.3: Distribution of per capita expenditure  
BPS inflation rate**

**Figure 2.4: Distribution of per capita expenditure  
BPS-adjusted inflation rate**

**Table 2.4: Changes in  $\ln(\text{per capita expenditure})$  between 1997 and 1998**Covariates associated with Change in  $\ln(\text{PCE})$ 

	BPS inflation rates		Rural inflation 5% higher		IFLS inflation estimates	
	(1)	(2)	(3)	(4)	(5)	(6)
$\ln\text{PCE}$	.	-0.732	.	-0.732	.	-0.732
		[67.32]		[67.36]		[67.40]
Community mean( $\ln\text{PCE}$ )	.	0.287	.	0.288	.	0.291
		[10.62]		[10.68]		[10.79]
Community std. dev( $\ln\text{PCE}$ ).	-0.039	.	-0.041	.	-0.046	.
		[0.82]		[0.87]		[0.97]
$\ln(\text{HH size})$	0.254	-0.287	0.254	-0.287	0.254	-0.287
	[3.76]	[5.26]	[3.76]	[5.27]	[3.76]	[5.27]
# children (0-14)	-0.019	-0.009	-0.019	-0.009	-0.019	-0.009
	[1.22]	[0.74]	[1.22]	[0.75]	[1.24]	[0.75]
# males (15-24)	-0.042	-0.001	-0.042	-0.001	-0.042	-0.001
	[2.65]	[0.07]	[2.65]	[0.06]	[2.64]	[0.05]
# males (25-64)	0.012	0.019	0.013	0.019	0.013	0.02
	[0.53]	[1.03]	[0.55]	[1.04]	[0.57]	[1.07]
# males ( $\geq 65$ )	0.031	-0.021	0.031	-0.021	0.032	-0.02
	[0.72]	[0.63]	[0.73]	[0.61]	[0.75]	[0.59]
# females (15-24)	0.074	0.103	0.074	0.102	0.074	0.102
	[4.21]	[7.27]	[4.2]	[7.26]	[4.18]	[7.24]
# females (25-64)	0.058	0.082	0.058	0.083	0.059	0.084
	[2.61]	[4.64]	[2.63]	[4.67]	[2.67]	[4.72]
Age of head	0.001	0.005	0.001	0.005	0.001	0.005
	[0.72]	[6.67]	[0.72]	[6.66]	[0.7]	[6.64]
(1) if head is male	-0.085	-0.025	-0.085	-0.025	-0.085	-0.025
	[2.4]	[0.88]	[2.39]	[0.88]	[2.39]	[0.87]
Education of head (yrs)	-0.012	0.026	-0.011	0.026	-0.011	0.027
	[4.45]	[12.03]	[4.41]	[12.08]	[4.32]	[12.17]
(1) if urban	-0.05	-0.063	-0.005	-0.017	0.089	0.076
	[2.23]	[3.44]	[0.21]	[0.95]	[3.93]	[4.16]
Province:						
North Sumatra	-0.082	-0.159	-0.082	-0.161	-0.084	-0.163
	[2.05]	[4.59]	[2.07]	[4.63]	[2.11]	[4.7]
South Sumatra	0.216	0.091	0.214	0.089	0.211	0.087
	[5.95]	[2.97]	[5.91]	[2.93]	[5.84]	[2.86]
Jakarta	-0.005	0.038	-0.002	0.04	0.003	0.043
	[0.11]	[1.03]	[0.05]	[1.08]	[0.06]	[1.18]
Central Java	0.045	-0.056	0.044	-0.056	0.044	-0.057
	[1.31]	[1.97]	[1.31]	[1.98]	[1.3]	[2]
NTB	-0.059	-0.108	-0.058	-0.107	-0.057	-0.106
	[1.62]	[3.52]	[1.61]	[3.51]	[1.59]	[3.49]
South Kalimantan	-0.138	-0.15	-0.139	-0.151	-0.14	-0.153
	[3.24]	[4.3]	[3.26]	[4.33]	[3.29]	[4.39]
Intercept	-0.366	2.121	-0.414	2.067	-0.644	1.828
	[4.86]	[15.61]	[5.51]	[15.22]	[8.57]	[13.47]
F(all covariates)	19.6	258.11	19.22	257.77	20.35	259.52
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
R <sup>2</sup>	0.04	0.389	0.039	0.389	0.041	0.391

Notes: Dependent variable is  $\ln\text{PCE}_{98} - \ln\text{PCE}_{97}$ . [t statistics] under regression estimates; [p values] below test statistics. West Java is reference province.

**Table 2.5: IFLS Expenditure shares: 1997, 1998 and changes**  
**Share of HH budget allocated to foods and non-foods**

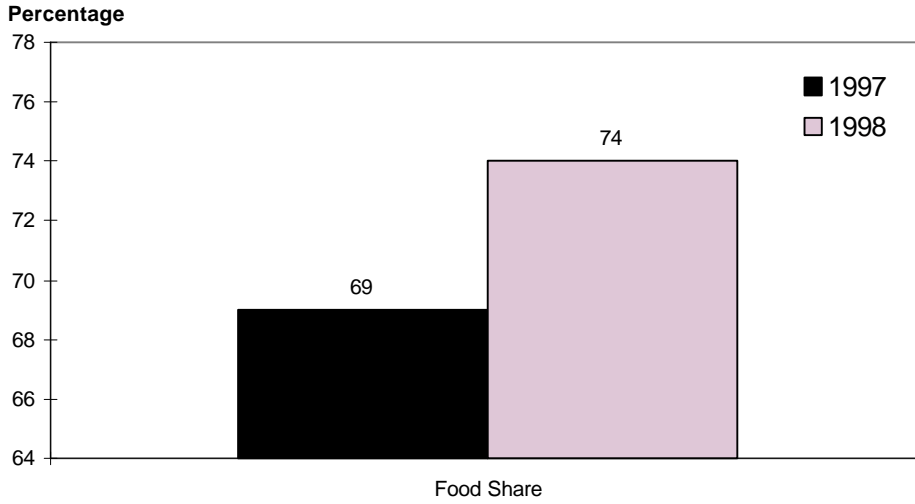
<b>Commodity</b>	<b>1997</b> (1)	<b>1998</b> (2)	<b>Change</b> (3)	<b>% Change</b> (4)
Food	69.04	73.85	4.81 [0.51]	7
Selected foods:				
Staples	23.30	31.61	8.32 [0.62]	36
Meat	12.55	10.01	-2.54 [0.42]	-20
Dairy	3.08	3.10	0.02 [0.19]	1
Oil	2.38	2.65	0.27 [0.13]	11
Vegetables	10.41	11.11	0.71 [0.36]	7
Non-food				
Alcohol/tobacco	4.28	4.74	0.46 [0.37]	11
Health	1.39	1.02	-0.37 [0.11]	-27
Education	3.43	2.93	-0.49 [0.14]	-14
HH goods	5.48	4.67	-0.81 [0.16]	-15
Transport	2.36	2.21	-0.15 [0.16]	-6
Clothing	2.51	1.91	-0.60 [0.07]	-24
Housing	8.06	6.61	-1.45 [0.32]	-18
Recreation	2.14	1.85	-0.29 [0.13]	-14

Number of observations 1840

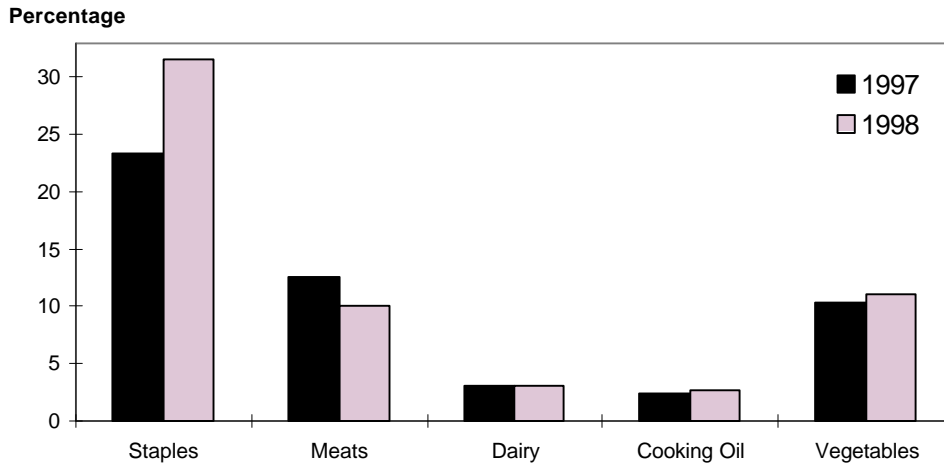
Notes: Standard errors in parentheses. % change is change as percentage of 1997 share.

**Figure 2.5: Changes in the Allocation of the Household Budget, 1997 to 1998**

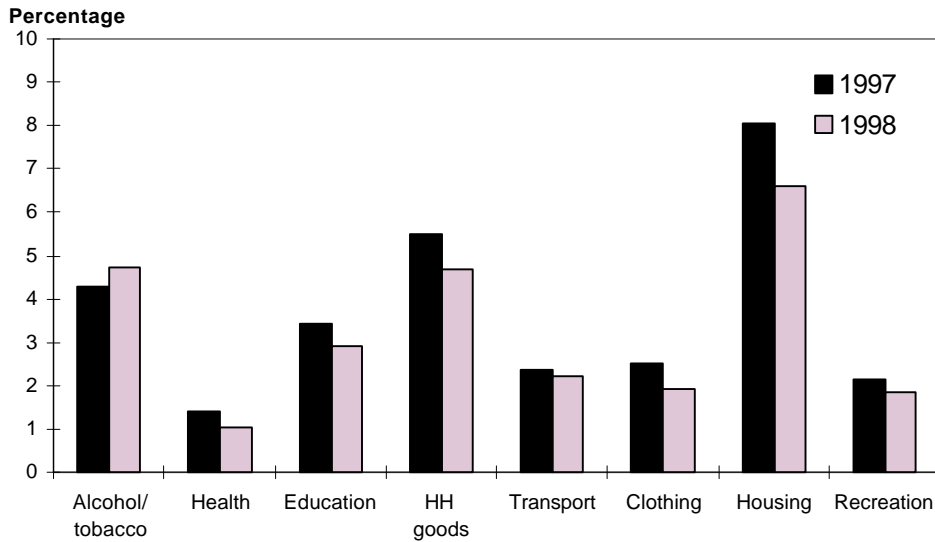
**Change in the Proportion of the Household Budget Allocated to Food**



**Change in the Proportion of the Household Budget Allocated to Various Food Groups**



**Change in the Proportion of the Household Budget Allocated to Non-Food Items**



**Table 2.6: IFLS Expenditure shares: Urban and rural sector**

	Urban HHs				Rural HHs			
	1997 (1)	1998 (2)	Change (3)	% Change (4)	1997 (1)	1998 (2)	Change (3)	% Change (4)
Food	58.96	63.95	4.99	8	76.17	80.84	4.68	6
Selected foods								
Staples	12.99	20.61	7.62	59	30.58	39.39	8.81	29
Meat	12.69	10.40	-2.29	-18	12.46	9.74	-2.72	-22
Dairy	3.66	3.74	0.08	2	2.67	2.64	-0.02	-1
Oil	1.93	2.89	0.96	50	2.70	2.48	-0.22	-8
Vegetables	8.91	8.51	-0.39	-4	11.47	12.94	1.48	13
Non-food								
Alcohol/tobacco	4.08	5.74	1.66	41	4.43	4.04	-0.39	-9
Health	1.73	1.49	-0.24	-14	1.16	0.69	-0.47	-40
Education	4.91	4.51	-0.40	-8	2.38	1.81	-0.56	-24
HH goods	8.17	6.80	-1.37	-17	3.59	3.17	-0.41	-12
Transport	3.15	3.20	0.04	1	1.80	1.51	-0.29	-16
Clothing	2.94	2.48	-0.46	-16	2.20	1.50	-0.69	-32
Housing	10.77	9.14	-1.63	-15	6.14	4.82	-1.32	-21
Recreation	2.58	2.05	-0.53	-21	1.83	1.70	-0.12	-7
Number of observations		762				1078		

Notes: % change is change as percentage of 1997 share.

**Table 2.7: IFLS Change in share of budget spent on food between 1997 and 1998**

	Change in share of budget spent on						
	Food (1)	Staples (2)	Meat (3)	Dairy (4)	Oils (5)	Vege (6)	Alcohol & Tobacco (7)
lnPCE: below median (spline)	-6.142 [5.23]	-5.046 [3.59]	-3.579 [3.72]	-0.394 [0.91]	0.51 [1.66]	-0.944 [1.13]	2.896 [3.34]
lnPCE: above median	-1.052 [1.02]	-3.589 [2.91]	2.36 [2.80]	0.784 [2.06]	0.202 [0.75]	0.927 [1.26]	-0.154 [0.2]
ln(HH size)	-1.515 [0.53]	-12.184 [3.54]	-1.833 [0.78]	-0.322 [0.30]	0.686 [0.91]	0.364 [0.18]	-6.541 [3.08]
# children (0-14)	0.112 [0.14]	2.39 [2.54]	0.302 [0.47]	0.144 [0.49]	-0.137 [0.67]	-0.183 [0.33]	1.557 [2.69]
# males (15-24)	-0.411 [0.45]	2.044 [1.86]	0.098 [0.13]	-0.081 [0.24]	0.104 [0.43]	-0.761 [1.16]	1.809 [2.67]
# males (25-64)	-0.369 [0.28]	2.344 [1.51]	-1.233 [1.16]	0.177 [0.37]	-0.135 [0.40]	1.373 [1.48]	-0.115 [0.12]
# males (>=65)	-0.839 [0.37]	1.483 [0.55]	-1.529 [0.83]	0.494 [0.59]	0.684 [1.16]	-0.794 [0.49]	0.781 [0.47]
# females (15-24)	1.122 [1.14]	1.991 [1.69]	1.194 [1.48]	-0.046 [0.13]	-0.148 [0.57]	0.285 [0.41]	0.966 [1.33]
# females (25-64)	1.628 [1.40]	2.069 [1.48]	1.685 [1.76]	0.262 [0.61]	-0.238 [0.78]	-0.906 [1.09]	0.462 [0.54]
Age of head	0.047 [1.01]	0.038 [0.68]	0.02 [0.52]	-0.009 [0.52]	-0.004 [0.35]	0.028 [0.85]	-0.016 [0.48]
(1) if head is male	1.042 [0.60]	-2.028 [0.97]	2.827 [1.97]	0.329 [0.51]	-0.097 [0.21]	-1.11 [0.89]	0.842 [0.65]
Education of head (yrs)	0.459 [3.36]	0.492 [3.02]	0.003 [0.03]	-0.083 [1.65]	0.02 [0.55]	-0.009 [0.10]	-0.007 [0.07]
(1) if urban	0.463 [0.41]	-1.562 [1.15]	0.421 [0.45]	0.357 [0.85]	1.067 [3.57]	-1.307 [1.61]	1.617 [1.92]
Province							
North Sumatra	-5.533 [2.79]	-10.864 [4.57]	2.463 [1.51]	0.022 [0.03]	0.956 [1.84]	-1.721 [1.21]	2.274 [1.55]
South Sumatra	-3.329 [1.84]	-8.784 [4.05]	1.040 [0.70]	0.507 [0.76]	0.604 [1.27]	0.993 [0.77]	0.145 [0.11]
Jakarta	-7.115 [3.17]	-4.117 [1.53]	1.638 [0.89]	-0.399 [0.48]	0.850 [1.44]	-2.194 [1.37]	3.068 [1.85]
Central Java	-3.598 [2.20]	-2.232 [1.14]	-0.962 [0.72]	-0.491 [0.81]	0.409 [0.95]	-0.156 [0.13]	-0.205 [0.17]
NTB	-3.904 [2.18]	-7.695 [3.60]	2.96 [2.02]	0.147 [0.22]	1.397 [2.98]	-0.251 [0.20]	0.784 [0.59]
South Kalimantan	-3.555 [1.73]	-12.383 [5.03]	3.372 [2.00]	-0.843 [1.11]	1.502 [2.78]	1.039 [0.71]	-0.44 [0.29]
Intercept	31.114 [5.08]	43.369 [5.92]	9.288 [1.85]	1.906 [0.84]	-3.561 [2.22]	4.824 [1.10]	-8.638 [1.91]
F(all covs)	3.24 [0.00]	4.85 [0.00]	1.98 [0.01]	0.71 [0.81]	2.43 [0.00]	1.23 [0.22]	2.88 [0.00]
R <sup>2</sup>	0.03	0.05	0.02	0.01	0.03	0.01	0.03

Notes: 1,840 households. Dependent variable is share<sub>97</sub>-share<sub>98</sub>. [t statistics in parentheses]. [p values] below test statistics. West Java is reference province.

**Table 2.8: IFLS Change in share of budget spent on non-food items between 1997 and 1998**

	Change in share of budget spent on						
	Health (1)	Educn (2)	HH goods (3)	Transport (4)	Clothing (5)	Housing (6)	Recreation (7)
lnPCE: below median (spline)	0.258 [1.03]	0.716 [2.29]	1.153 [3.18]	-0.829 [2.28]	1.2 [7.59]	3.963 [5.32]	0.244 [0.81]
lnPCE: above median	-0.076 [0.35]	1.09 [3.97]	1.669 [5.25]	0.509 [1.59]	0.735 [5.30]	-1.695 [2.60]	-0.111 [0.42]
ln(HH size)	0.108 [0.18]	0.714 [0.93]	1.317 [1.48]	0.083 [0.09]	-0.193 [0.50]	1.575 [0.86]	-1.359 [1.83]
# children (0-14)	0.018 [0.11]	-0.22 [1.05]	-0.09 [0.37]	0.052 [0.22]	0.083 [0.78]	-0.163 [0.33]	0.307 [1.51]
# males (15-24)	-0.101 [0.52]	0.537 [2.20]	-0.418 [1.48]	-0.091 [0.32]	0.119 [0.96]	-0.288 [0.49]	0.155 [0.66]
# males (25-64)	-0.017 [0.06]	-0.192 [0.55]	-0.603 [1.50]	-0.113 [0.28]	0.138 [0.79]	0.963 [1.17]	0.326 [0.97]
# males (>=65)	-0.259 [0.54]	1.326 [2.21]	-1.935 [2.78]	-0.052 [0.07]	0.19 [0.62]	0.966 [0.68]	0.136 [0.23]
# females (15-24)	0.028 [0.13]	-0.657 [2.51]	-0.348 [1.15]	-0.106 [0.35]	0.285 [2.16]	-0.813 [1.30]	0.32 [1.26]
# females (25-64)	0.166 [0.67]	-0.557 [1.79]	-0.481 [1.34]	-0.296 [0.82]	-0.166 [1.06]	-0.997 [1.35]	-0.054 [0.18]
Age of head	-0.012 [1.21]	-0.033 [2.73]	0.001 [0.08]	-0.012 [0.86]	-0.005 [0.78]	-0.045 [1.56]	0.009 [0.78]
(1) if head is male	-0.361 [0.98]	-0.916 [1.97]	1.072 [1.99]	-0.166 [0.31]	0.277 [1.18]	-0.677 [0.61]	-0.531 [1.18]
Education of head (yrs)	-0.027 [0.95]	0.007 [0.18]	-0.07 [1.66]	-0.082 [1.93]	-0.058 [3.16]	-0.246 [2.84]	0.001 [0.03]
(1) if urban	0.361 [1.49]	0.036 [0.12]	-0.831 [2.36]	0.609 [1.72]	0.213 [1.39]	-0.106 [0.15]	-0.341 [1.16]
Province							
North Sumatra	-0.123 [0.29]	-0.212 [0.40]	1.18 [1.93]	1.081 [1.76]	0.317 [1.19]	2.36 [1.87]	0.813 [1.59]
South Sumatra	-0.294 [0.76]	0.27 [0.56]	0.433 [0.77]	0.616 [1.10]	0.424 [1.74]	1.594 [1.39]	-0.259 [0.55]
Jakarta	-0.66 [1.39]	-0.287 [0.48]	-0.381 [0.55]	-0.21 [0.30]	0.26 [0.86]	3.838 [2.69]	0.447 [0.77]
Central Java	0.105 [0.3]	-0.186 [0.43]	-0.082 [0.16]	0.031 [0.06]	0.273 [1.24]	3.87 [3.73]	0.227 [0.54]
NTB	0.109 [0.29]	0.053 [0.11]	0.867 [1.57]	-0.85 [1.53]	0.483 [2.01]	3.234 [2.85]	0.862 [1.87]
South Kalimantan	-0.05 [0.11]	0.318 [0.58]	0.687 [1.08]	0.704 [1.10]	0.153 [0.55]	3.367 [2.58]	1.876 [3.53]
Intercept	-0.822 [0.63]	-1.882 [1.15]	-7.381 [3.91]	4.492 [2.37]	-6.354 [7.72]	-18.617 [4.8]	-0.719 [0.46]
F(all covariates)	0.75 [0.77]	4.22 [0.00]	4.82 [0.00]	1.41 [0.11]	8.52 [0.00]	3.39 [0.00]	1.89 [0.01]
R <sup>2</sup>	0.01	0.04	0.05	0.02	0.08	0.04	0.02

Notes: 1,840 households. Dependent variable is share<sub>97</sub>-share<sub>98</sub>. [t statistics in parentheses]. [p values] below test statistics. West Java is reference province.

**Table 2.9: Employment rates by age and gender**

—	A: MALES					B: FEMALES				
	Earned income in 1997 (1)	Earned income in 1998 (2)	Diff 98-97 (3)	Get Job (4)	Lose Job (5)	Earned income in 1997 (1)	Earned income in 1998 (2)	Diff 98-97 (3)	Get Job (4)	Lose Job (5)
All IFLS2 respondents	67.0 (0.5)	.	.	.	.	34.3 (0.4)	.	.	.	.
IFLS2 respondents living in IFLS2 communities	67.1 (0.9)	.	.	.	.	32.3 (0.9)	.	.	.	.
Panel respondents										
Respondents interviewed in 1997 and 1998	74.4 (1.0)	73.0 (1.0)	-1.4 (0.9)	7.9 (0.6)	9.2 (0.6)	36.0 (1.0)	37.0 (1.0)	1.1 (0.9)	11.8 (0.6)	10.7 (0.6)
Stratified by age in 1997:										
15-24	35.3 (2.0)	41.2 (2.1)	6.0 (2.1)	15.7 (1.5)	9.8 (1.3)	21.9 (1.6)	25.4 (1.7)	3.5 (1.6)	10.0 (1.2)	6.5 (1.0)
25-34	89.5 (1.5)	88.6 (1.5)	-0.9 (1.8)	6.8 (1.2)	7.7 (1.3)	39.1 (2.0)	38.6 (2.0)	-0.5 (2.0)	12.5 (1.3)	13.0 (1.3)
35-44	96.3 (0.9)	91.8 (1.4)	-4.5 (1.5)	2.5 (0.8)	6.9 (1.3)	46.8 (2.3)	48.9 (2.3)	2.1 (2.2)	13.3 (1.5)	11.2 (1.4)
45-54	93.4 (1.4)	89.4 (1.8)	-4.0 (1.9)	3.3 (1.0)	7.3 (1.5)	45.2 (2.7)	45.5 (2.7)	0.3 (2.8)	13.1 (1.8)	12.8 (1.8)
55-64	83.6 (2.5)	73.8 (2.9)	-9.8 (2.9)	5.3 (1.5)	15.1 (2.4)	36.4 (3.0)	35.7 (3.0)	-0.8 (3.1)	12.0 (2.0)	12.8 (2.1)
≥65	61.3 (4.6)	56.8 (4.7)	-4.5 (4.7)	9.9 (2.8)	14.4 (3.3)	28.3 (3.8)	26.9 (3.7)	-1.4 (3.7)	9.0 (2.4)	10.3 (2.5)

Notes: There are 10,696 men and 11,907 women age 15 through 75 in IFLS2 (row 1); 2,648 men and 3,012 women are included in the IFLS2 target sample (row 2); 2,023 men and 2,508 women have been re-interviewed in IFLS2 (row 3). Standard errors are in parentheses.

**Table 2.10: Employment rates by age and gender**

	<b>A: MALES</b>					<b>B: FEMALES</b>				
	<b>Earned income in 1997</b> (1)	<b>Earned income in 1998</b> (2)	<b>Diff 98-97</b> (3)	<b>Get Job</b> (4)	<b>Lose Job</b> (5)	<b>Earned income in 1997</b> (1)	<b>Earned income in 1998</b> (2)	<b>Diff 98-97</b> (3)	<b>Get Job</b> (4)	<b>Lose Job</b> (5)
Panel respondents age 22-65:	89.5 (0.8)	86.0 (0.9)	-3.5 (1.0)	5.3 (0.6)	8.8 (0.7)	41.0 (1.1)	41.8 (1.1)	0.8 (1.1)	12.7 (0.8)	11.9 (0.7)
Education attainment:										
None	89.4 (2.7)	84.1 (3.2)	-5.3 (3.9)	7.6 (2.3)	12.9 (2.9)	48.2 (2.5)	46.0 (2.5)	-2.2 (2.7)	13.9 (1.7)	16.1 (1.8)
Primary	90.3 (1.1)	85.8 (1.3)	-4.5 (1.3)	4.5 (0.7)	9.0 (1.0)	38.3 (1.6)	39.8 (1.6)	1.5 (1.7)	13.8 (1.1)	12.3 (1.1)
>Primary	88.4 (1.3)	86.7 (1.4)	-1.7 (1.5)	5.9 (1.0)	7.6 (1.1)	40.3 (2.1)	42.2 (2.2)	1.9 (1.8)	9.9 (1.3)	8.0 (1.2)
Sector of residence in 1997:										
Rural	90.1 (1.0)	87.0 (1.2)	-3.2 (1.4)	6.0 (0.8)	9.1 (1.0)	38.4 (1.5)	37.6 (1.5)	-0.9 (1.6)	13.6 (1.1)	14.4 (1.1)
Urban	88.7 (1.2)	84.8 (1.4)	-3.9 (1.4)	4.5 (0.8)	8.4 (1.1)	44.3 (1.7)	47.2 (1.7)	2.9 (1.6)	11.6 (1.1)	8.7 (1.0)
Province of residence in 1997:										
North Sumatra	85.4 (3.0)	88.3 (2.8)	2.9 (2.9)	7.3 (2.2)	4.4 (1.8)	27.3 (3.2)	35.9 (3.4)	8.6 (3.1)	14.1 (2.5)	5.6 (1.6)
South Sumatra	87.1 (2.2)	88.4 (2.1)	1.3 (2.6)	8.4 (1.9)	7.1 (1.7)	30.9 (2.8)	34.6 (2.9)	3.7 (3.2)	15.2 (2.2)	11.5 (2.0)
Jakarta	85.0 (2.8)	78.1 (3.3)	-6.9 (3.3)	5.6 (1.8)	12.5 (2.6)	39.8 (3.6)	43.5 (3.6)	3.7 (2.9)	9.9 (2.2)	6.3 (1.8)
West Java	93.3 (1.7)	89.3 (2.1)	-4.0 (2.3)	4.0 (1.3)	8.0 (1.8)	36.2 (2.8)	36.6 (2.8)	0.3 (3.1)	14.5 (2.1)	14.1 (2.0)
Centra Java	91.1 (1.5)	86.1 (1.8)	-5.0 (1.9)	4.2 (1.1)	9.2 (1.5)	53.9 (2.3)	50.7 (2.3)	-3.2 (2.4)	11.7 (1.5)	14.9 (1.6)
NTB	90.2 (2.0)	83.6 (2.5)	-6.7 (2.7)	5.3 (1.5)	12.0 (2.2)	45.1 (2.9)	46.5 (2.9)	1.3 (2.9)	12.8 (1.9)	11.4 (1.9)
South Kalimantan	90.8 (2.4)	86.8 (2.8)	-3.9 (2.6)	3.3 (1.5)	7.2 (2.1)	40.1 (3.8)	34.7 (3.7)	-5.4 (3.8)	9.6 (2.3)	15.0 (2.8)

Notes: 1,483 men and 1,881 women age 22 through 65 in the Panel sample. Standard errors in parentheses.

### 3. Use of Contraceptives

The exchange rate fluctuations and other dimensions of the crisis have altered both the absolute and the relative prices of goods and services. Contraceptives are no exception. Furthermore, in addition to changes in the explicit price of contraceptives, travel costs to providers and waiting times at providers may have changed in ways that make contraceptive use relatively more or less attractive in 1998. In this section we explore whether use of contraception has changed between 1997 and 1998. The analyses are based on questions asked to currently married women in 1997 and again in 1998 about current use of contraception and, if contracepting, about method used. We also examine women's responses to questions about their satisfaction with the family planning services available in their community.

The overwhelming conclusion from the analyses presented in this section is that between 1997 and 1998 there have been no significant changes in contraceptive prevalence or method mix, or with women's satisfaction with family planning services. Moreover, satisfaction with services has decreased for only a few women. More express increased satisfaction with services in the past 12 months relative to previous years.

Table 3.1 presents overall prevalence, and prevalence by method, in 1997 and 1998. The first column of the table presents the overall contraceptive prevalence rate and the distribution of users by method for the entire sample of women interviewed in 1997 (5,629 women). The remaining columns of the table present the overall prevalence rate and method mix in 1997 and in 1998, and the difference between 1997 and 1998, for two groups of women. In columns 2-4, the results are computed based on all women interviewed in the 80 IFLS2+ communities (we refer to this group as all respondents). More than 1,400 women were interviewed in these communities in each year of the survey. However, some of the women interviewed in 1997 were not interviewed in 1998, while some of the women interviewed in 1998 were not interviewed in 1997.

In columns 5-7 we present the results only for the women who were interviewed *both* in 1997 and *again* in 1998. There are 1,267 women who were interviewed in both years. We refer to these women as panel respondents. It is the differences in the behaviors of these women that provide the most rigorous test of whether contraceptive practices have changed since the onset of the economic crisis.

A comparison of the results in column (1) with column (2) provides information about the representativeness of the IFLS2+ EAs. (Recall, however, that none of the numbers is weighted at this time; weighted means will be closer in magnitude.) Comparing columns (2) through (4) with columns (5) through (7) speaks to the issue of the representativeness of the IFLS2+ respondents (i.e. those who were interviewed in both 1997 and 1998). In most cases, they tell the same story which is not surprising given our 95% completion rate (discussed in Section 1). However, when we restrict the analytical sample to a particular age group (such as children age 15 or less), the panel sample is, by construction, one year older in 1998 than in 1997 and so a comparison on the 1997 and 1998 estimates confounds the effect of aging with the effect of the crisis. In those instances, we place more emphasis on the estimates based on the 1997 and 1998 cross-sections (columns 2 through 5).

The results in Table 3.1 indicate that there has been no statistically significant change in either contraceptive prevalence or method mix between 1997 and 1998. Among panel respondents prevalence was 56.6% in 1997 and 57.3% in 1998. In both years, the majority of users rely on pills or injections. Although it is possible that the distribution of users across methods could change in ways that do not alter overall prevalence, further examination of Table 3.1 indicates that for no method has there been a significant change in the proportion of women who use it. Injection is the only method for which there is more than a one percentage point change in prevalence. Although the 2.27 percentage point decrease in injections is not statistically significant, it may portend a longer-term decline in the use of injections, or it may be a reflection of inadequate supplies (see below).

Tables 3.2a and 3.2b explore the IFLS information on source of supplies for contraceptives, for pill users and for injection users. For each respondent who reported current use of one of these methods, we constructed a variable indicating the source (within the seven months prior to the interview) from which she most recently obtained contraceptive services. Not all users reported a visit for services in the seven months prior to the interview.

The first row of Table 3.2a reports the proportion of pill users that did not make a visit. The proportion with no visit is significantly higher in 1997 (14.5%) than in 1998 (6.2%). The change may reflect a shift in women's patterns of procuring contraceptives. Possibly in 1997 women were more likely to "stock up" on pills, obtaining multiple strips in one visit so that visits could be made less frequently. The tendency to stock up on supplies may have diminished in 1998 to the extent that sources of services are more likely to be out of stock, or to the extent that women are less able to afford to purchase multiple strips in one visit. The subsequent rows of the table present the distribution of visitors across sources of family planning supplies. The only statistically significant difference between 1997 and 1998 is a significant rise in the proportion of women whose most recent source of supplies was a friend or family member.

Table 3.2b reports the same statistics for injection users. Here we observe a very large change in source of supplies. Between 1997 and 1998, the proportion of women visiting the puskesmas for supplies dropped significantly. For women in the same communities, the drop is 13 percentage points (from 30.5% to 17.5%). For women interviewed in both 1997 and 1998, the drop is 8 percentage points (from 27.1% to 19.1%). Both changes are statistically significant. Concomitantly, there appears to have been a significant rise in the proportion of injection users obtaining services from Village Midwives.

The results presented thus far explore changes in contraceptive use patterns in the aggregate. It is clear from these analyses that there has been some change in the providers from whom women obtain the most popular methods (pills and injections), but effectively no change in prevalence or method mix during the first year of Indonesia's economic crisis.

These results do not reveal what factors are associated with whether a particular individual changes her contraceptive behavior. To shed light on this question, we now move to a discussion of the characteristics associated with discontinuation and adoption at the individual level. Results

from the multivariate regressions are reported in Table 3.3. The determinants that we consider are per capita expenditure, the woman's age and education, her province of residence, and whether she resides in an urban area.<sup>15</sup>

We use multinomial logit specifications to estimate the effects of women's characteristics on adoption and discontinuation of any method (Columns 1 and 2), of the pill (Columns 3 and 4), and of injections (Columns 5 and 6). In each specification the reference group is women who did not adopt or discontinue the method in question between 1997 and 1998 (that is, they experienced no change in use of that method). The coefficients in the table indicate how a particular characteristic affects the chance that a woman experiences a particular change in behavior. A coefficient of more than one indicates an increase in the likelihood of the behavior (relative to the reference group) and a coefficient of less than one indicates a lower probability. For example, column 4 presents the results for the decision to adopt use of oral contraceptives between 1997 and 1998. The term for urban residence indicates that women who live in urban areas are 1.9 times more likely to adopt the pill than are women who live in rural areas. The t statistic (presented in brackets below the parameter estimate) is greater than two, indicating that the effect of urban residence is statistically significant at a 5% level of confidence.

The first two columns of the table present the correlates associated with the decision to quit (Column 1) or adopt (Column 2) any method of contraception between 1997 and 1998. Age is the only significant predictor of method discontinuation. An additional year of age, for women between 15 and 29, decreases the chance that they will discontinue method use. The decision to discontinue method use is not affected by education, economic status, or residence. The decision to adopt contraception is not significantly affected by any of the factors considered.

Columns 3-6 present the results for discontinuation or adoption of the pill or the injection. Socioeconomic characteristics do have some influence on the decision to stop or start pill use. For women in households where per capita expenditure is above the median, increasing levels of expenditure significantly increase the chance that they will discontinue use of the pill. This result may arise because women in better-off households can better afford alternative methods of contraception. An additional year of education decreases the chance that a woman will adopt the pill. Urban residents are almost twice as likely to adopt the pill as rural residents. Adoption and discontinuation of injections is not related to socioeconomic characteristics.

Overall, of the characteristics we consider, age is most closely related to adoption and discontinuation of contraception. Increasing age is a significant deterrent to discontinuation of any method, of pills, and of injections. Among older women, increasing age is also a significant deterrent to adopting use of pills or injections (but apparently does not discourage women from

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<sup>15</sup> The independent variables are measured as of 1997. We allow the effect of (log) per capita expenditure to be non-linear by specifying a spline function with a knot at the median. This specification captures the fact that the effect of an increase in expenditure on adoption or discontinuation may vary depending on whether the woman is relatively well-off or less well-off economically. Age is also included as a spline, which allows the effect of an additional year of age to differ depending on whether women are between 15 and 29 or between 30 and 49. The province effects are estimated relative to West Java. The coefficient for urban residence reveals the effect of living in an urban area relative to a rural area.

adopting other methods). Together these results suggest that among older women, those who were not already using the pill or injection by 1997 were unlikely to start, while those who were using the pill or injection by 1997 were unlikely to quit.

Residence does not emerge as a strong predictor of adoption or discontinuation of method use. For the most part (see the discussion of pill results for an exception), neither does economic status. The fact that neither expenditure levels nor education affects the decisions to discontinue or to adopt contraception suggests that whatever the effects of the crisis on economic well-being, they have not resulted in changes in contraceptive behaviors. The stability of contraceptive prevalence in the face of the economic crisis suggests that for the majority of couples in Indonesia, contraception is a more appealing option than having an additional child in the current economic environment, despite the fact that contracepting is relatively more expensive now than it used to be (see below).

Thus far our discussion has focused on outcomes related to use of contraception. Our results provide strong evidence that Indonesia's economic crisis has not altered overall prevalence or method mix, nor has it resulted in particular sub-groups of women discontinuing or adopting contraception between 1997 and 1998.

It is also of interest to consider whether women's satisfaction with services has changed, and whether the quality of family planning services available to women has changed. We now turn to a discussion of these topics.

In the IFLS2+ household questionnaire we included questions about women's satisfaction with the family planning services in their community in the past year, relative to the previous year. The question was designed to provide information about women's perceptions of changes in the family planning service environment. Women who responded that their level of satisfaction with services had changed were asked why the change had occurred.

The results from these questions are tabulated in Table 3.4. Almost 50% of respondents said that they had experienced no change in level of satisfaction in the past 12 months relative to previous years. Just under 10% of respondents reported that they were actually more satisfied with services in the past year than in the previous year, while just under 4% were less satisfied.<sup>16</sup> Because relatively few women experienced a change in satisfaction, the number of women who answered the question about why satisfaction had changed is small. We report the results but urge caution in their interpretation.

A number of reasons were given for increased satisfaction, most of which relate to perceived improvements in the quality of services. Increased provision of information and in the number of methods to choose from, and improvements in the quality of follow-up care are the most frequently cited reasons. Somewhat paradoxically, 14% of women cite rising prices as the reason they are more satisfied with services. Some of these women switched from public to

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<sup>16</sup> The remainder of respondents reported an insufficient basis for judgment (either they did not know, or had not used contraception for a sufficient fraction of each year to have an opinion).

private services, and it may be that they are more satisfied with private services, despite a concomitant increase in the price they pay.

Women who are less satisfied with services speak with a far more unanimous voice. Among women less satisfied with services, the rising price of methods was cited as the reason 75% of the time. The rising cost of travel, and of time required to reach the facility, were also mentioned. About 10% of the responses mention a decline in either the quality of follow-up care or the quantity of information provided.

**Table 3.1: Use of contraceptives by currently married women**  
Means and standard errors

Indicator	All resp. in 1997 (1)	Same communities			Same respondents		
		1997 (2)	1998 (3)	Change (4)	1997 (5)	1998 (6)	Change (7)
% current use any method	55.10 (0.7)	53.38 (1.3)	53.08 (1.2)	-0.30 (1.8)	56.59 (1.4)	57.30 (1.4)	0.71 (2.0)
% use modern method	97.09 (0.3)	97.34 (0.6)	97.10 (0.6)	-0.24 (0.8)	97.77 (0.6)	97.52 (0.6)	-0.25 (0.8)
% pill	26.86 (0.8)	33.82 (1.7)	34.26 (1.6)	0.44 (2.3)	34.31 (1.8)	33.75 (1.8)	-0.56 (2.5)
% injection	38.41 (0.9)	38.62 (1.8)	35.83 (1.6)	-2.79 (2.4)	39.05 (1.8)	36.78 (1.8)	-2.27 (2.6)
% condom	0.94 (0.2)	0.93 (0.4)	0.78 (0.3)	-0.15 (0.5)	0.84 (0.3)	0.96 (0.4)	0.13 (0.5)
% IUD	15.70 (0.7)	7.19 (0.9)	8.82 (0.9)	1.63 (1.3)	6.97 (1.0)	7.85 (1.0)	0.88 (1.4)
% Norplant	6.80 (0.5)	10.12 (1.1)	10.38 (1.0)	0.26 (1.5)	10.46 (1.1)	11.43 (1.2)	0.97 (1.6)
% male/female sterilization	8.22 (0.5)	6.39 (0.9)	6.92 (0.8)	0.53 (1.2)	5.86 (0.9)	6.61 (0.9)	0.75 (1.3)
% intra-vaginal	0.16 (0.1)	0.27 (0.2)	0.11 (0.1)	-0.15 (0.2)	0.28 (0.2)	0.14 (0.1)	-0.14 (0.2)
% traditional method	2.88 (0.3)	2.66 (0.6)	2.90 (0.6)	0.24 (0.8)	2.23 (0.6)	2.48 (0.6)	0.25 (0.8)
Number of observations	5629	1407	1688	3095	1267	1267	1267

Notes: Source IFLS2 & IFLS2+ HH surveys. Sample is all ever married women age 15 and older. Column (1) includes all women in IFLS2. Column 2 includes all women in IFLS2 living in the IFLS2+ EAs. Column 3 includes all women in IFLS2+, including new entrants to the survey (because they joined an IFLS2+ household). Column 4 is the difference (3)-(2). Column 5 and 6 includes all women who were interviewed in both IFLS2 and IFLS2+. Responses in IFLS2 are reported in column 5; IFLS2+ responses are in column 6. The change, (6)-(5), is reported in column 7.

**Table 3.2a Source of Contraceptive Supplies among Pill Users**  
**Means and Standard Errors**

	Same Communities			Same Respondents		
	1997 (2)	1998 (3)	Change (4)	1997 (5)	1998 (6)	Change (7)
<b>No Visit</b>	14.5 (1.9)	6.2 (1.7)	-8.3 (2.5)	13.0 (2.1)	6.3 (2.0)	-6.7 (2.9)
<b>Conditional on a visit:</b>						
Hospital, Pvt Practice other than midwife	12.4 (2.1)	9.4 (1.8)	-3.0 (2.8)	12.7 (2.5)	10.8 (2.3)	-1.9 (3.4)
Puskesmas	23.0 (2.9)	22.5 (2.4)	0.5 (3.8)	23.0 (3.2)	20.7 (2.9)	-2.3 (4.3)
Community Source (Posyandu, PPKBD)	26.3 (2.9)	23.9 (2.5)	-2.4 (3.9)	27.3 (3.5)	28.6 (3.2)	1.3 (4.7)
Fieldworker/ Outreach	8.3 (1.8)	6.7 (1.5)	-1.5 (2.3)	8.5 (2.0)	6.4 (1.8)	-2.1 (2.7)
Pharmacy	8.3 (2.0)	11.1 (1.7)	2.8 (2.7)	7.3 (2.3)	10.8 (2.0)	3.6 (3.0)
Private Midwife	14.7 (2.3)	13.1 (2.0)	-1.6 (3.1)	13.3 (2.5)	9.9 (2.2)	-3.5 (3.3)
Village Midwife (Bidan Desa)	3.7 (1.4)	5.1 (1.2)	1.4 (1.8)	4.2 (1.7)	5.4 (-1.5)	1.2 (2.3)
Family and friends or public hospital	3.2 (1.6)	8.1 (1.4)	4.9 (2.1)	3.6 (1.8)	7.4 (1.6)	3.8 (2.4)
Number of observations	256	206		230	246	

**Table 3.2b Source of Contraceptive Supplies among Injection Users  
Means and Standard Errors**

	Same Communities			Same Respondents		
	1997 (2)	1998 (3)	Change (4)	1997 (5)	1998 (6)	Change (7)
<b>No Visit</b>	5.2 (1.0)	1.6 (1.0)	-3.6 (1.4)	4.0 (1.1)	1.9 (1.2)	-2.1 (1.6)
<b>Conditional on a visit</b>						
Private Practice other than midwife	19.3 (2.4)	20.9 (2.2)	1.7 (3.3)	21.0 (2.8)	21.5 (2.8)	-0.5 (4.0)
Government Health Ctr (Puskesmas)	30.5 (2.5)	17.5 (2.3)	-13.0 (3.5)	27.1 (2.9)	19.1 (2.9)	-8.0 (4.1)
Community Source (Posyandu, PPKBD)	3.3 (0.9)	1.9 (0.9)	-1.4 (1.4)	3.7 (1.1)	1.4 (1.1)	-2.3 (1.5)
Fieldworker/ Outreach	1.5 (0.9)	3.1 (0.8)	1.7 (1.2)	1.9 (1.1)	3.8 (1.1)	1.9 (1.6)
Private Midwife	39.3 (3.0)	44.4 (2.8)	5.1 (4.0)	40.7 (3.4)	42.6 (3.4)	1.9 (4.8)
Village Midwife (Bidan Desa)	5.1 (1.7)	11.3 (1.5)	6.2 (2.3)	4.7 (1.8)	10.0 (1.8)	5.4 (2.5)
Family and friends or public hospital	1.1 (0.6)	0.9 (0.6)	-0.2 (0.8)	0.9 (0.7)	1.4 (0.7)	0.5 (1.1)
Number of observations	290	209		239	223	

**Table 3.3: Multivariate correlates of change in contraceptive use between 1997 and 1998**

Characteristics of women that predict quitting or adopting methods

Multinomial logit estimates of relative risk ratios

	Any method		Pill		Injection	
	Quit (1)	Adopt (2)	Quit (3)	Adopt (4)	Quit (5)	Adopt (6)
$\ln$ PCE: below median (spline)	0.713 [1.32]	1.073 [0.24]	0.689 [1.11]	1.025 [0.07]	1.100 [0.26]	1.348 [0.81]
$\ln$ PCE: above median	1.226 [1.28]	0.949 [0.27]	1.517 [2.12]	1.274 [1.08]	0.923 [0.31]	0.976 [0.10]
Age: 20-29 (spline)	0.863 [5.36]	0.981 [0.55]	0.949 [1.41]	0.992 [0.19]	0.875 [4.05]	1.005 [0.13]
30-49	0.997 [0.13]	0.979 [0.96]	0.923 [2.40]	0.938 [2.09]	0.913 [2.36]	0.870 [3.92]
Education (years)	1.037 [1.26]	1.032 [1.08]	1.006 [0.16]	0.912 [2.37]	1.029 [0.73]	1.028 [0.78]
Urban resident	1.009 [0.04]	0.888 [0.51]	1.209 [0.65]	1.948 [2.27]	1.223 [0.69]	0.917 [0.32]
Province						
North Sumatra	0.894 [0.27]	0.622 [1.02]	1.416 [0.72]	1.009 [0.02]	0.229 [1.90]	0.441 [1.53]
South Sumatra	0.531 [1.73]	0.699 [1.00]	0.705 [0.76]	1.630 [1.03]	0.573 [1.29]	0.456 [1.89]
Jakarta	1.008 [0.02]	1.105 [0.25]	0.665 [0.74]	1.525 [0.79]	0.584 [1.05]	0.467 [1.46]
Central Java	0.857 [0.52]	0.648 [1.31]	0.733 [0.78]	0.504 [1.29]	0.573 [1.48]	0.568 [1.61]
NTB	0.517 [1.73]	1.192 [0.53]	0.408 [1.65]	1.541 [0.92]	0.655 [1.01]	0.705 [0.92]
South Kalimantan	1.103 [0.28]	0.680 [0.91]	1.159 [0.32]	1.863 [1.26]	0.481 [1.45]	0.343 [2.05]
$X^2$	67.88		50.09		91.47	
$\ln$ (Likelihood)	-727.21		-473.84		-502.73	
Pseudo $R^2$	0.04		0.05		0.08	

Notes: See Table 3.1. Sample is 1,267 women in IFLS2 and IFLS2+. Estimates are risk ratios relative to excluded category of no change; risk ratio > 1  $\Psi$  higher risk; risk ratio < 1  $\Psi$  lower risk. [Asymptotic t statistics] in parentheses. West Java is reference province.

**Table 3.4: Women’s Satisfaction with Contraceptive Services**

<b>Distribution of women with respect to whether they have experienced a change in level of satisfaction with family planning services this year, relative to last year:</b>	<b>Percentage of Responses</b>
More satisfied this year	9.4%
No change	49.7
Less satisfied this year	3.8
Insufficient basis for judgment	37.2
<i>Number of women</i>	1267
 <b>Reasons for changes in satisfaction with family planning services among women who are:</b>	
<i>Less satisfied with services this year than last year</i>	
Price of method has increased	75%
Decline in quality of follow-up care	6
Price of travel to facility has increased	4
Travel time to facility has increased	4
Decrease in availability of desired method	4
Decline in provision of information	4
Decline in facility cleanliness	2
Other	1
<i>Number of Responses</i>	56
 <i>More satisfied with services this year than last year</i>	
Increase in provision of information	16%
More methods to choose from	13
Increase in quality of follow-up care	12
Improvement in facility cleanliness	8
Increase in availability of desired method	8
Other	8
Don’t Know	8
Improvement in privacy at facility	6
Waiting time at facility has decreased	2
Received a method for free	2
Price of method has decreased	1
Provider expects client to pay less	1
Travel time to facility has decreased	1
Price of method has increased	7
Provider expects client to pay more	7
<i>Number of Responses</i>	147

Note: In IFLS2+ ever-married women of reproductive age were asked whether, relative to the previous year, they were more or less satisfied with the family planning services available in their community.

## 4. Availability and Price of Family Planning Services

The results in Section 3 focus on the findings of the household survey with respect to family planning outcomes including prevalence, method mix, the decision to discontinue or adopt contraception, and changes in women's satisfaction with services. The IFLS2+ also collected data from family planning service providers in the 80 IFLS2+ communities. In this section we summarize results from the facility survey with respect to the provision of family planning services. These results provide information about whether the availability, quality, and prices of family planning have changed between 1997 and 1998.

The tables are organized similarly to the tables in Section 3. For example, Table 4.1 provides information on the proportion of service providers offering different methods of contraception. Results are given 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.

From Table 4.1 we see that in both 1997 and 1998 over 80% of public facilities offer IUDs, injections, and oral contraceptives, while nearly 60% offer implants. Regardless of the type of method, there have been no significant changes in the percentage of facilities providing that method. The proportions of public facilities offering IUDs and Noristerat appear to have decreased somewhat, although in neither case is the change statistically significant.

The results for private providers, which are summarized in columns 5-8 of Table 4.1, are quite different. For one thing, the overall proportion of private providers offering family planning services is much lower than in the public sector facilities. Among private providers, about one-third offer IUDs, about three-quarters offer injections, slightly more than half offer oral contraceptives, and under one-fifth offer implants.

Additionally, changes in the proportion of facilities offering family planning between 1997 and 1998 are more pronounced in the private sector facilities. For example, the proportion of providers offering IUDs has risen from 26.6% to 32.6%. The proportion of providers offering any type of injection has not changed, but significantly higher numbers of private provider are offering Depo-progestin and Cyclofeem in 1998 than was the case in 1997.

These results suggest that family planning method choice has increased at the practices of private providers—a finding that is consistent with the fact that a number of women who are more satisfied with family planning services in 1998 mention more methods to choose from as the reason. Public sector services have changed little, but to the extent that they have, the changes have been in the direction of offering less choice.

Table 4.2 presents results on the median prices of family planning services at public and private facilities.<sup>17</sup> The results confirm what one might expect given that some women mention higher prices as a reason for decreased satisfaction with services. Prices for most services at both public and private providers have indeed risen. The median price of an IUD insertion at a puskesmas basically doubled, from Rp. 1000 to Rp. 2000, between 1997 and 1998. Prices for IUD insertions at private facilities are much higher, but the proportionate change in the price between 1997 and 1998 was smaller. In 1998, the prices associated with IUDs were about 10 times higher at private than at public facilities (prices were also much higher at private facilities in 1997). Prices of injections also rose between 1997 and 1998 at both public and private providers, but the proportionate change was somewhat larger in public than in private facilities, and the price differences in 1998 between public and private facilities are smaller for injections than for other methods. Overall, price changes have been smallest for oral contraceptives, changing very little at public facilities and increasing by about one-third in private facilities. The 1998 prices for oral contraceptives are about two times higher at private facilities than at public facilities. Prices for insertion or removal of implants rose in both public and private facilities. Implant services cost about four times more at private facilities than at public.

Table 4.3 presents statistics on the frequency of stock outages at public and private facilities. For the public providers these data are available in both years of the survey only for injections. The results indicate that between 1997 and 1998 there have been large and statistically significant increases in the proportion of public facilities experiencing stock outages of injections. These shortages may contribute to the decline in use of injections observed in the household survey. The shortages almost certainly contribute to the large decrease in the proportion of injection users who rely on government health centers (puskesmas) for services. The proportions of facilities experiencing stock outages of oral contraceptives are also high in 1998, but since these data were not collected in 1997, it is not clear whether the numbers for 1998 represent an increase over the previous year. Private providers have also experienced stock outages, but the proportions of private providers with outages are much lower (about half) than what is observed for public providers.

In addition to the explicit questions on stock outages, in 1998 we asked both public and private providers whether they had experienced a change in the last 12 months, relative to the previous year, in the availability of family planning supplies. About half of the health centers and about 35% of private providers reported experiencing a change. Among those who had experienced a change, most reported that the change had made service provision more difficult than it used to be. Providers whose practices had been affected by changes in the availability of family planning were asked how they had responded. For public facilities the most frequently given answer was that prices had been raised or that clients were given prescriptions or referrals. These responses were given by private providers as well. In addition, some public and private providers mentioned that they gave women information about other methods that they might

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<sup>17</sup> We use median prices because they are more robust to outliers, which potentially produce large changes at the mean.

consider using. This response is consistent with the reports of women who say that their satisfaction levels have increased because their service provider gave them more information.

**Table 4.1 Provision of Family Planning Services in Public and Private Facilities**  
Means and standard errors

Indicator	Public Facilities				Private Facilities			
	All 1997 (1)	1997 (2)	1998 (3)	Change (4)	All 1997 (5)	1997 (6)	1998 (7)	Change (8)
IUD	88.5 (1.1)	86.3 (2.3)	81.7 (2.6)	-4.6 (3.5)	33.3 (1.1)	26.6 (2.3)	32.6 (2.4)	6.1 (3.3)
LL insertion	76.1 (1.4)	76.7 (2.9)	68.5 (3.2)	-8.2 (4.3)	22.7 (1.0)	18.5 (2.0)	24.9 (2.2)	6.4 (3.0)
LL removal	64.9 (1.6)	61.2 (3.3)	55.3 (3.4)	-5.9 (4.7)	23.7 (1.0)	19.1 (2.0)	25.9 (2.2)	6.9 (3.0)
Copper T insertion	69.9 (1.5)	69.9 (3.1)	65.3 (3.2)	-4.6 (4.5)	29.2 (1.1)	23.6 (2.2)	27.7 (2.3)	4.1 (3.2)
Copper T removal	69.2 (1.5)	68.0 (3.2)	70.8 (3.1)	2.7 (4.4)	30.1 (1.1)	24.2 (2.2)	28.0 (2.3)	3.8 (3.2)
Contraceptive Injection	88.1 (1.1)	84.9 (2.4)	84.5 (2.5)	-0.4 (3.5)	72.7 (1.1)	77.2 (2.2)	78.5 (2.1)	1.4 (3.0)
Depo-Provera	70.6 (1.5)	66.1 (3.2)	62.1 (3.3)	-4.0 (4.6)	61.6 (1.2)	64.4 (2.4)	66.1 (2.4)	1.7 (3.4)
Depo-Progestin	79.4 (1.4)	79.4 (2.8)	78.5 (2.8)	-0.8 (3.9)	45.6 (1.3)	48.2 (2.8)	65.5 (2.4)	17.4 (3.7)
Noristrat	16.7 (1.3)	16.5 (2.5)	10.1 (2.0)	-6.5 (3.2)	15.8 (0.9)	13.9 (1.8)	10.1 (1.5)	-3.8 (2.4)
Cyclofeem	25.8 (1.5)	24.9 (2.9)	22.4 (2.8)	-2.5 (4.1)	30.8 (1.2)	27.8 (2.5)	40.9 (2.5)	13.2 (3.6)
Oral contraceptives	84.6 (1.2)	82.2 (2.6)	82.2 (2.6)	0.0 (3.7)	54.6 (1.2)	57.0 (2.5)	54.7 (2.5)	-2.4 (3.6)
Microgygnon 30	33.6 (1.6)	40.1 (3.3)	43.4 (3.4)	3.3 (4.7)	48.3 (1.2)	49.2 (2.6)	49.7 (2.6)	0.5 (3.6)
Marvelon 28	71.0 (1.5)	70.3 (3.1)	71.7 (3.1)	1.4 (4.4)	32.7 (1.1)	36.3 (2.5)	34.7 (2.4)	-1.6 (3.5)
Excluton 28	70.6 (1.5)	70.8 (3.1)	71.7 (3.1)	0.9 (4.3)	34.7 (1.1)	37.6 (2.5)	37.1 (2.5)	-0.6 (3.5)
Nordette	70.9 (1.5)	69.4 (3.1)	74.0 (3.0)	4.6 (4.3)	25.5 (1.0)	25.9 (2.2)	31.6 (2.4)	5.8 (3.3)
Other	71.3 (1.5)				16.6 (0.9)	19.5 (2.1)	18.9 (2.0)	-0.6 (2.9)
Implants		69.0 (3.1)	74.4 (3.0)	5.5 (4.3)				
Norplant insertion	52.6 (1.7)	60.7 (3.1)	58.0 (3.3)	-2.7 (4.7)	13.3 (0.8)	16.4 (1.9)	17.1 (1.9)	0.7 (2.7)
Norplant removal	51.3 (1.7)	59.6 (3.3)	58.5 (3.3)	-1.2 (4.7)	14.9 (0.8)	17.4 (1.9)	18.1 (2.0)	0.7 (2.8)
Implanon insertion			26.9 (3.0)				11.2 (1.6)	
Implanon removal			27.9 (3.0)				12.2 (1.7)	
Condoms			69.9 (3.1)				0.8 (0.5)	
Number of observations	900	219	219	219	1815	387	387	387

**Table 4.2 Median Prices of Family Planning Services:  
Levels and Changes at Public and Private Facilities  
Means and standard errors**

Indicator	Public Facilities				Private Facilities			
	All	Same Facilities			All	Same Facilities		
	1997 (1)	1997 (2)	1998 (3)	Change (4)	1997 (5)	1997 (6)	1998 (7)	Change (8)
IUD								
LL insertion	900 (48)	1,000 (145)	2,000 (517)	1000 (306)	12,000 (1276)	15,000 (2539)	20,000 (2443)	5,000 (5190)
LL removal	900 (72)	1,000 (145)	1,000 (338)	0.0 (295)	5,000 (724)	5,000 (1234)	10,000 (1666)	5,000 (1325)
Copper T insertion	900 (37)	1,050 (391)	2,000 (651)	950 (557)	20,000 (1017)	20,000 (2532)	25,000 (2428)	5,000 (5102)
Copper T removal	900 (48)	1,000 (144)	1,000 (338)	0.0 (295)	7,500 (1006)	7,500 (1306)	10,000 (1583)	2,500 (737)
Contraceptive Injection								
Depo-Provera	3,000 (183)	3,500 (200)	7,500 (245)	4000 (449)	5,000 (202)	5,000 (201)	10,000 (534)	5,000 (420)
Depo-Progestin	3,350 (127)	3,500 (245)	7,500 (212)	4000 (439)	5,000 (215)	5,000 (214)	8,000 (237)	3,000 (465)
Noristrat	1,000 (277)	2,500 (837)	2,500 (1509)	0.0 (1810)	5,000 (219)	5,000 (339)	10,000 (621)	5,000 (648)
Cyclofeem	4,000 (293)	5,000 (261)	8,000 (498)	3000 (581)	5,000 (149)	6,000 (358)	10,000 (393)	4,000 (709)
Oral contraceptives								
Microgygnon 30	500 (43)	900 (122)	1,000 (90)	100 (96)	2,500 (168)	2,000 (251)	2,000 (240)	0 (350)
Marvelon 28	500 (33)	900 (121)	900 (61)	0.0 (99)	1,500 (243)	1,500 (252)	2,000 (243)	500 (505)
Excluton 28	500 (33)	900 (123)	1,000 (89)	100 (96)	1,500 (207)	1,500 (250)	2,000 (234)	500 (498)
Nordette	500 (32)	900 (123)	900 (62)	0.0 (100)	1,000 (134)	1,500 (383)	2,000 (244)	500 (513)
Other	500 (43)	500 (114)	900 (97)	400 (97)	1,000 (110)	1,000 (172)	2,000 (244)	1,000 (364)
Implants								
Norplant insertion	3,500 (251)	3,500 (636)	7,500 (1282)	4000 (1043)	15,000 (1161)	10,000 (1758)	25,000 (2491)	15,000 (3733)
Norplant removal	3,000 (378)	3,000 (724)	5,500 (1306)	2500 (1315)	10,000 (1347)	10,000 (1495)	20,000 (1706)	10,000 (1705)
Implanon insertion			15,000 (4173)				60,000 (3704)	
Implanon removal			5,000 (1486)				20,000 (3867)	
Condoms			900 (122)				40,000 (30052)	
Number of Observations	900	219	219	219	1815	387	387	387

**Table 4.3 Proportion of Facilities Reporting Stock Outages of Family Planning Supplies in the Past Six Months**  
Means and standard errors

Indicator	Public Facilities				Private Facilities			
	All 1997 (1)	1997 (2)	1998 (3)	Change (4)	All 1997 (5)	1997 (6)	1998 (7)	Change (8)
Injections					6.8 (0.8)	6.3 (1.6)		
Depo-Provera	11.3 (1.5)	11.1 (3.2)	45.6 (4.5)	34.5 (5.8)			20.7 (2.6)	
Depo-Progestin	10.9 (1.4)	10.7 (2.8)	28.3 (3.5)	17.7 (4.8)			15.9 (2.3)	
Noristrat	14.3 (3.7)	15.8 (8.6)	65.4 (9.5)	49.6 (13.4)			34.4 (8.5)	
Cyclofeem	10.9 (2.5)	9.5 (4.6)	30.3 (6.2)	20.8 (8.2)			7.3 (2.1)	
Oral contraceptives								
Microgynon 30			39.7 (4.0)				26.6 (3.2)	
Marvelon 28			39.5 (4.4)				18.7 (3.3)	
Excluton 28			38.5 (4.1)				24.5 (3.6)	
Nordette			30.1 (3.7)				28.7 (4.1)	
IUDs								
Plastic/Lippes			4.6 (1.7)				13.4 (3.5)	
Copper T			12.2 (2.6)				15.5 (3.5)	
Implants								
Norplant			20.2 (3.8)				19.3 (5.3)	
Implanon			22.1 (3.9)				16.4 (4.6)	
Condoms			6.7 (2.0)				5.6 (2.2)	
Number of Observations	900	219	219	219		387	387	387

## 5: Use of Health Care

In this section we examine how use of health services has changed between 1997 and 1998. As with family planning, it is possible that changes in prices and in incomes have resulted in changes in use of health services. Changes may also have occurred if the crisis has altered underlying health status and thus the need for health care. In turn, to the extent that changes in use of services have occurred, they may well influence the health status of Indonesians in the months and years to come.

The IFLS2 and IFLS2+ queried 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 adults (age 15 and above) and children (age 14 and below).<sup>18</sup> Some respondents visited more than one provider type.

The results for use of health care tell a dramatically different story from those for family planning: between 1997 and 1998 use of health services, particularly public services, has fallen substantially both for adults and children.

Table 5.1 summarizes the statistics on use of health care by adults. The proportion of adults visiting a public provider dropped from 7.4% in 1997 to 5.6% in 1998—a statistically significant reduction in use. Changes in the proportions of adults visiting private facilities and traditional practitioners did not change significantly. Overall, the proportion of adults making an outpatient visit to any provider dropped from 14.6% in 1997 to 13.4% in 1998—a decline that is relatively small and is not statistically significant.

We also examine, conditional on any visit, changes in which providers were visited. Among those who used health care, we find that the proportion relying on public services dropped dramatically between 1997 and 1998. In 1997 over 50% of visits were to a public provider (almost entirely puskesmas and puskesmas pembantu). By 1998, the proportion of visits that were to a puskesmas shrunk by ten percentage points, while the proportions of visits that were to private providers (specifically to doctors and clinics) and to traditional practitioners rose. Although overall use of traditional practitioners was relatively low in both years of the survey, the proportion of visits made to traditional practitioners nearly doubled between waves—a change that is statistically significant.

Children are making fewer visits to outpatient providers in 1998 as well (Table 5.2). With respect to children we discuss the results for all respondents rather than for panel respondents.<sup>19</sup>

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<sup>18</sup> Respondents were asked about visits to each of the following types of providers: public hospitals, government health centers and subcenters, 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.

<sup>19</sup> 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.

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 2-4 of the table show that almost all of the decline is due to a reduction in use of public services.

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 the proportion of children visiting posyandu and a significant increase in the proportion of children visiting private doctors. In 1997, 56.8% of children 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 providers, in 1997 only about 30% of children who sought care did so from private practitioners. By 1998 the fraction had risen to 38.2%. As was true for adults, this increase is accounted for by increased use of private doctors rather than midwives, nurses, or paramedics.

Unlike the pattern we observed for adults, 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 5.3 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.

The results in Table 5.3 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.

To summarize the statistics that we have presented above, we see that for adults, not only has overall use of public services declined, but health service users are shifting away from use of the puskesmas in favor of private doctors and traditional practitioners. For children, use of health services has declined significantly. Among children who used care, the fraction visiting a posyandu decreased substantially, while the fraction visiting a private doctor increased.

It is of interest to go beyond the aggregate rates and consider whether particular subgroups of the population 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 among adults are presented in Tables 5.4 and 5.5. The tables contain the results from a variety of specifications. We analyze the correlates of use of care in 1997 and 1998, as well as the correlates of transitions into and out of use of both public and private providers. The factors we consider are:

- 1) household resources measured by the (log of) per capita expenditures (specified as a linear spline with a knot at the median)
- 2) gender
- 3) age (specified as a spline for adults)
- 4) (log of) household size
- 5) sector and province of residence

The various equations that are estimated provide several cuts on how socioeconomic and demographic characteristics are associated with use of care and transitions in use. We summarize the main findings in the subsequent discussion.

Several different empirical specifications are adopted to provide insights into how socioeconomic and demographic characteristics are associated with use of care and transitions in use between 1997 and 1998. 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. The estimates represent risk ratios of using public or private health services relative to not using any health care. Column (5) is an ordinary least squares estimate of change in any health care between 1997 and 1998; the dependent variable takes the value 1 (if the respondent used health care in 1998 but not in 1997, "got care"), -1 (if the respondent used health care in 1997 but not in 1998, "lost care") and 0 (if the respondent used health care in both years *or* did not use health care in either year). While simple, this specification imposes restrictions on how the covariates affect changes in the demand for health care and so in the remaining columns, we treat each transition separately in a series of conditional probability models. In column (6), for example, we estimate a linear probability model of getting care (conditional on not using health care in 1997); column (7) presents estimates of the probability of losing care (conditional on using care in 1998). Columns (8) and (9) refer to public

health care and columns (10) and (11) refer to private health care. Table 5.5 provides a summary of all these transitions in a multinomial logit framework.

For adults the effect of (log) per capita expenditures on use of care changes between 1997 and 1998. In 1997 expenditure level had a significant effect on use of private services, but only for those above the median level of expenditure. By 1998, for those both above and below the median, increasing expenditures are associated with an increase in the chance that a visit to a private provider is made.

Tables 5.4 and 5.5 also indicate that men's visit patterns differ from those of women. In both 1997 and 1998 men are less likely to visit either public or private practitioners than are women (Columns 1-4 of Table 5.4). Men are also less likely to make a transition in health care use between 1997 and 1998. They are less likely than women to start or stop using either public or private providers (Table 5.5).

The effect of age on use of health care is allowed to vary within three categories: 20-29, 30-49, and 50 and above. This flexible specification allows us to see that the effects of age on use vary both across and within categories. For those 50 and older, an extra year of age has no effect on use of care (either public or private) in 1997 or 1998, or on changes in use patterns between 1997 and 1998. For those between 20 and 29, an extra year of age is associated with an increased chance of using private care in 1997 (Column 2 of Table 5.4), and with an increased chance of transitioning out of use of private care by 1998 (Column 4 of Table 5.5). Otherwise, there are relatively few effects of an additional year of age. There are strong effects of an additional year of age on use outcomes for those 30-49 years old. Within this range, being older is associated with a greater chance of using public care in 1997, using public or private care in 1998, and of transitioning in to use of public and in to use of private care between 1997 and 1998.

Urban residence is not related to use of care in 1997 or in 1998, nor is it related to transitions into or out of use of care. The effects of province of residence are more difficult to disentangle. The coefficients in Tables 5.4 and 5.5 represent the difference between residents of a particular province and residents of West Java (the reference population) on a particular dimension of health care use. The biggest differences observed are between North Sumatra and West Java. North Sumatrans are generally less likely to use care in 1997 and less likely to transition into care by 1998 than are residents of West Java. Differences between patterns of use in West Java and patterns of use in other provinces are relatively minor. South Sumatrans are less likely to transition into use of a private provider than are residents of West Java. The only difference between Jakarta and West Java is that in 1997 Jakarta residents were more likely to use private services but by 1998 this difference has disappeared. Residents of Central Java, NTB, and South Kalimantan are all less likely to make a transition in the direction of greater use of public services in 1998 than are those in West Java.

Tables 5.6 and 5.7 parallel Tables 5.4 and 5.5, but present the results for children. The same explanatory factors are considered.

The effects of per capita expenditure on children's use of care are strikingly different from those for adults. First, there is no evidence that resources affect the probability a child uses public health services in 1997 or in 1998. However, with regard to private care, resources do matter among children from lower income households in 1997: the poorest are the least likely to use private care. By 1998, however, the differential use of private services across the income distribution has been severely attenuated and is not significant. (Table 5.6). Thus, 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. This effect is offset by an increase in the probability a child from a higher income household switched into using private care in 1998. Thus, the net effect is a relatively small change in the use of private care (as seen in Table 5.2) but a very large change in the types of children who are using private care. There is also evidence that children from higher income households are less likely to have lost a public health care visit between 1997 and 1998 indicating that middle income children account for a relatively large share of the reduction in public health care services.

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.

Unlike the results for adults, 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. There are many similarities to the results for adults with respect to the effects of province on children's use of health care. As with adults, 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 stronger for children than for adults, and are similar in direction to those for North Sumatran children. In Jakarta, by 1998 children are no longer less likely to use public services than are children in West Java. Children in Central Java are less likely to use public services in 1997 or to transition into use of public services by 1998. In NTB, children's use of private services is very different and much lower than in West Java. Finally, children in South Kalimantan are less likely to make the transition into use of private services.

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.

The results presented above focus on overall changes in use, and on how characteristics of individuals and households affect use of care. We now turn to analyses of how service availability, prices, and quality have changed in public and private facilities between 1997 and 1998.

**Table 5.1: Use of health care by adults**  
Means and standard errors

Indicator	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	15.10 (0.3)	14.40 (0.5)	13.30 (0.4)	-1.10 (0.7)	14.61 (0.5)	13.36 (0.5)	-1.26 (0.7)
% use public health services	6.68 (0.2)	7.20 (0.4)	5.39 (0.3)	-1.81 (0.5)	7.39 (0.4)	5.57 (0.3)	-1.82 (0.5)
% use private health services	8.85 (0.2)	7.71 (0.4)	7.70 (0.3)	-0.02 (0.5)	7.74 (0.4)	7.57 (0.4)	-0.17 (0.6)
% use traditional health services	0.39 (0.0)	0.45 (0.1)	0.75 (0.1)	0.30 (0.1)	0.48 (0.1)	0.80 (0.1)	0.33 (0.2)
Among users							
% public	44.23 (0.9)	50.00 (1.9)	40.54 (1.7)	-9.46 (2.5)	50.59 (1.9)	41.72 (2.0)	-8.87 (2.8)
% puskesmas	38.68 (0.9)	46.43 (1.9)	34.99 (1.6)	-11.43 (2.5)	47.03 (1.9)	37.01 (1.9)	-10.02 (2.7)
% private	58.61 (0.9)	53.57 (1.9)	57.87 (1.7)	4.30 (2.5)	52.97 (1.9)	56.66 (2.0)	3.69 (2.8)
% private doctor	25.37 (0.8)	20.86 (1.5)	25.48 (1.5)	4.62 (2.1)	20.47 (1.6)	23.70 (1.7)	3.23 (2.3)
% nurse	24.20 (0.8)	25.14 (1.6)	24.58 (1.4)	-0.57 (2.2)	24.93 (1.7)	24.84 (1.7)	-0.09 (2.4)
% traditional	2.57 (0.3)	3.14 (0.7)	5.66 (0.8)	2.52 (1.1)	3.26 (0.7)	6.01 (1.0)	2.74 (1.2)
Number of observations	19841	4861	6640	11501	4612	4612	4612

Notes: Sample is all adults age 15 and older. See Table 3.1.

**Table 5.2: Use of health care by children**  
Means and standard errors

Indicator	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 public health services	21.38 (0.4)	20.32 (0.8)	13.17 (0.6)	-7.15 (0.97)	21.52 (0.8)	10.68 (0.6)	-10.84 (1.0)
% 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 serv	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)
Among users							
% public	78.06 (0.8)	78.70 (1.5)	66.23 (1.9)	-12.47 (2.43)	80.00 (1.6)	63.90 (2.4)	-16.10 (2.7)
% posyandu	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)
% puskesmas	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	31.01 (0.9)	30.18 (1.7)	38.15 (2.0)	7.97 (2.60)	29.24 (1.8)	40.00 (2.4)	10.76 (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.

**Table 5.3: Immunization Uptake for Children Less than Three Years Old  
Means and Standard Errors**

Indicator (1)	All Resp. in 1997 (2)	Same communities		Change (5)
		1997 (3)	1998 (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 5.4: Multivariate correlates of use of health care: adults**

	Use of health care in 1997		Use of health care in 1998		Change (5)	Change in use of health care: 1997-1998					
	Public (1)	Private (2)	Public (3)	Private (4)		Get Visit (6)	Lose Visit (7)	Public (8, 9)		Private (10, 11)	
$\ell$ nPCE: below median (spline)	1.252 [1.34]	1.088 [0.53]	1.168 [0.82]	1.912 [3.27]	0.018 [1.03]	0.028 [2.12]	-0.027 [0.53]	0.017 [2.06]	0.107 [1.67]	0.022 [2.15]	-0.118 [1.82]
$\ell$ nPCE: above median	0.792 [1.84]	1.226 [2.56]	0.990 [0.08]	1.261 [2.91]	0.010 [0.90]	0.009 [1.01]	-0.063 [2.17]	-0.004 [0.72]	-0.086 [1.71]	0.014 [2.07]	-0.066 [2.12]
(1) male	0.675 [3.16]	0.626 [4.01]	0.693 [2.63]	0.666 [3.47]	0.011 [0.84]	-0.026 [2.56]	0.078 [2.13]	-0.013 [2.06]	0.032 [0.65]	-0.019 [2.49]	0.044 [0.96]
Age: 20-29 (spline)	1.024 [1.43]	1.043 [2.69]	1.020 [1.04]	1.014 [0.87]	-0.002 [1.25]	0.001 [0.92]	0.001 [0.11]	0.000 [0.21]	-0.011 [1.52]	0.001 [0.49]	0.001 [0.14]
30-49	1.025 [2.64]	1.004 [0.49]	1.029 [2.79]	1.033 [3.60]	0.002 [1.85]	0.003 [3.78]	-0.003 [1.03]	0.001 [2.53]	0.001 [0.28]	0.002 [3.5]	0.000 [0.03]
$\geq$ 50	1.001 [0.22]	1.001 [0.18]	1.001 [0.19]	1.000 [0.07]	0.000 [0.31]	0.000 [0.50]	-0.005 [1.48]	-4.67 [0.02]	-0.003 [0.64]	0.000 [0.53]	-0.008 [1.96]
$\ell$ n(HH size)	1.142 [0.96]	1.100 [0.75]	1.185 [1.10]	1.108 [0.82]	-0.007 [0.44]	0.002 [0.16]	-0.024 [0.62]	0.006 [0.88]	-0.028 [0.52]	0.005 [0.6]	0.006 [0.13]
Urban resident	0.966 [0.27]	0.974 [0.21]	1.012 [0.08]	1.175 [1.33]	0.016 [1.09]	0.020 [1.85]	0.029 [0.75]	0.006 [0.84]	0.052 [1.04]	0.01 [1.19]	-0.01 [0.21]
Province											
North Sumatra	0.272 [3.81]	0.605 [2.00]	0.412 [2.72]	1.138 [0.61]	0.060 [2.24]	-0.010 [0.51]	-0.029 [0.34]	-0.029 [2.31]	0.049 [0.38]	0.009 [0.59]	-0.145 [1.48]
South Sumatra	0.865 [0.65]	0.750 [1.31]	0.648 [1.69]	0.691 [1.62]	-0.007 [0.30]	-0.039 [2.11]	-0.02 [0.3]	-0.021 [1.86]	0.025 [0.29]	-0.025 [1.74]	-0.058 [0.69]
Jakarta	0.584 [1.81]	1.540 [1.99]	0.488 [2.17]	1.037 [0.16]	-0.027 [0.92]	-0.02 [0.89]	-0.008 [0.11]	-0.023 [1.73]	0.009 [0.08]	0.003 [0.2]	-0.045 [0.54]
Central Java	0.718 [1.66]	1.036 [0.20]	0.638 [2.04]	0.917 [0.48]	-0.007 [0.32]	-0.025 [1.52]	0.005 [0.08]	-0.021 [2.04]	-0.015 [0.19]	-0.012 [0.91]	-0.052 [0.76]
NTB	1.813 [3.14]	0.950 [0.25]	1.557 [2.13]	0.794 [1.07]	-0.028 [1.17]	0.004 [0.21]	-0.072 [1.24]	0.021 [1.81]	-0.06 [0.84]	-0.027 [1.93]	-0.097 [1.23]
South Kalimantan	0.929 [0.30]	1.026 [0.11]	0.963 [0.14]	1.251 [1.02]	0.056 [2.04]	0.04 [1.9]	-0.112 [1.56]	-0.012 [0.92]	-0.171 [1.81]	0.004 [0.25]	-0.144 [1.65]
Intercept	-0.061 [0.65]	-0.059 [0.86]	0.922 [3.47]	-0.031 [0.71]	-0.061 [0.65]	-0.059 [0.86]	0.922 [3.47]	-0.031 [0.71]	0.661 [1.93]	-0.059 [1.12]	1.405 [4.10]
X <sup>2</sup> /F(joint significance all covariates)	157.83 [0.03]		157.99 [0.04]		2.26 [0.00]	5.03 [0.00]	1.86 [0.03]	3.06 [0.00]	2.26 [0.00]	5.03 [0.00]	1.86 [0.03]
$\ell$ n(Likelihood)	-2257.61		-2063.35								
Estimation method	MNL		MNL		OLS	LP	LP	LP	LP	LP	LP

Notes: Estimation methods: MNL is multinomial logit; estimates are risk ratios relative to excluded category of no use of health care; OLS is ordinary least squares; LP is linear probability. [Asymptotic t statistics] in parentheses. p values below test statistics. West Java is reference province. Sample is 4,612 adults in IFLS2 & IFLS2+. See Table 5.1.

**Table 5.5: Change in use of health care between 1997 and 1998: Adults**  
**Multinomial logit estimates of risk ratios**  
**Relative to no change in use**

	Gain Public (1)	Gain Private (2)	Lose Public (3)	Lose Private (4)
$\ln$ PCE: below median (spline)	1.692 [2.12]	1.695 [2.41]	1.353 [1.56]	0.981 [0.12]
$\ln$ PCE: above median	0.823 [1.24]	1.173 [1.70]	0.770 [1.83]	1.104 [1.01]
(1) male	0.688 [2.27]	0.758 [2.09]	0.663 [2.93]	0.701 [2.70]
Age: 20-29 (spline)	1.000 [0.02]	1.016 [0.87]	1.013 [0.70]	1.049 [2.72]
30-49	1.038 [2.97]	1.033 [2.79]	1.018 [1.72]	0.999 [0.08]
$\geq$ 50	1.000 [0.04]	0.990 [0.86]	1.000 [0.03]	0.999 [0.21]
$\ln$ (HH size)	1.082 [0.44]	1.083 [0.54]	1.102 [0.62]	1.075 [0.49]
Urban resident	1.185 [1.01]	1.202 [1.32]	1.044 [0.30]	0.986 [0.10]
Province				
North Sumatra	0.550 [1.79]	1.055 [0.23]	0.269 [3.48]	0.538 [2.14]
South Sumatra	0.777 [0.88]	0.522 [2.41]	0.690 [1.46]	0.694 [1.50]
Jakarta	0.597 [1.44]	0.937 [0.25]	0.591 [1.65]	1.470 [1.57]
Central Java	0.567 [2.15]	0.836 [0.87]	0.696 [1.65]	0.935 [0.34]
NTB	1.318 [1.10]	0.619 [1.89]	1.649 [2.39]	0.706 [1.45]
South Kalimantan	0.679 [1.14]	1.037 [0.14]	0.686 [1.29]	0.816 [0.76]
$X^2$		198.93		
Pseudo $R^2$		0.03		
$\ln$ (Likelihood)		-3466.63		

Notes: See Table 5.4. West Java is reference province.

**Table 5.6: Multivariate correlates of use of health care: children**

	Use of health care in 1997		Use of health care in 1998		Change (5)	Change in use of health care: 1997-1998					
	Public (1)	Private (2)	Public (3)	Private (4)		Get Visit (6)	Lose Visit (7)	Public Get Lose (8) (9)		Private Get Lose (10) (11)	
$\ln$ PCE: below median (spline)	1.319 [1.83]	3.288 [4.41]	0.973 [0.15]	1.516 [1.73]	-0.062 [2.44]	-0.019 [1.03]	-0.037 [0.79]	-0.010 [0.72]	0.019 [0.41]	0.009 [0.75]	-0.163 [1.57]
$\ln$ PCE: above median	0.892 [0.92]	1.116 [0.89]	1.198 [1.42]	1.259 [1.83]	0.029 [1.54]	0.031 [2.12]	-0.032 [1.03]	0.014 [1.39]	-0.076 [2.00]	0.022 [2.19]	0.019 [0.48]
(1) male	0.968 [0.28]	1.143 [0.83]	0.934 [0.46]	1.012 [0.07]	-0.010 [0.50]	-0.010 [0.68]	-0.002 [0.04]	-0.006 [0.51]	-0.013 [0.35]	-0.001 [0.05]	-0.031 [0.58]
Age	0.710 [18.69]	0.784 [10.72]	0.776 [11.93]	0.839 [7.84]	0.022 [8.79]	-0.015 [7.09]	0.041 [8.27]	-0.011 [7.24]	0.039 [6.57]	-0.008 [6.39]	0.008 [1.27]
$\ln$ (HH size)	1.050 [0.29]	0.959 [0.19]	0.912 [0.46]	0.958 [0.19]	-0.006 [0.22]	-0.028 [1.36]	-0.044 [0.91]	-0.011 [0.70]	-0.021 [0.41]	-0.007 [0.48]	-0.068 [0.93]
Urban resident	1.167 [1.18]	1.379 [1.82]	1.077 [0.46]	1.430 [1.97]	-0.012 [0.53]	0.02 [1.26]	-0.019 [0.48]	0 [0.03]	-0.061 [1.42]	0.018 [1.64]	-0.04 [0.69]
Province											
North Sumatra	0.194 [6.17]	0.205 [3.53]	0.282 [3.53]	0.848 [0.58]	0.128 [3.16]	-0.022 [0.77]	0.215 [2.41]	-0.057 [2.68]	0.176 [1.9]	-0.001 [0.06]	-0.052 [0.34]
South Sumatra	0.514 [3.20]	1.116 [0.38]	0.543 [2.36]	0.480 [2.46]	-0.019 [0.53]	-0.077 [2.94]	0.084 [1.38]	-0.04 [2.08]	0.063 [0.95]	-0.049 [2.76]	-0.064 [0.68]
Jakarta	0.458 [2.90]	1.529 [1.35]	0.976 [0.08]	0.952 [0.16]	0.047 [1.03]	-0.005 [0.13]	-0.022 [0.31]	-0.023 [0.89]	-0.095 [1.17]	-0.002 [0.06]	-0.074 [0.75]
Central Java	0.564 [2.94]	1.617 [1.83]	0.692 [1.58]	0.688 [1.45]	-0.018 [0.52]	-0.049 [1.88]	0.057 [1.05]	-0.029 [1.53]	-0.004 [0.07]	-0.035 [2.04]	-0.087 [1.04]
NTB	0.698 [1.90]	0.490 [2.16]	0.685 [1.62]	0.279 [3.84]	-0.036 [1.03]	-0.058 [2.21]	0.126 [2.25]	-0.019 [0.97]	0.049 [0.84]	-0.067 [3.92]	-0.033 [0.3]
South Kalimantan	0.685 [1.58]	0.519 [1.63]	0.577 [1.80]	0.277 [2.96]	-0.028 [0.63]	-0.069 [2.09]	0.122 [1.69]	-0.04 [1.64]	0.09 [1.2]	-0.071 [3.32]	-0.018 [0.14]
Intercept	0.014 [0.11]	0.388 [4.33]	0.69 [3.01]	0.233 [3.49]	0.014 [0.11]	0.388 [4.33]	0.69 [3.01]	0.233 [3.49]	0.559 [2.35]	0.113 [1.86]	1.745 [3.51]
X <sup>2</sup> /F(joint significance all covariates)	685.73 [0.00]		298.03 [0.00]		8.80 [0.00]	6.60 [0.00]	7.02 [0.02]	5.49 [0.00]	8.80 [0.00]	6.60 [0.00]	7.02 [0.72]
$\ln$ (Likelihood)	-1468.66		-1198.33								
Estimation method	MNL		MNL		OLS	LP	LP	LP	LP	LP	LP

Notes: Estimation methods: Columns 1-4 - MNL (multinomial logit); estimates are risk ratios relative to excluded category of no use of health care; column 5-OLS (ordinary least squares); columns 6-11-LP (linear probability). Sample for LP estimates are those at risk of change in direction estimated. West Java is reference province. Asymptotic t statistics below estimates, p values below test statistics. Sample is 2,453 children age under 15 in IFLS2 & IFLS2+. See Tables 5.2 & 5.4.

**Table 5.7: Change in use of health care between 1997 and 1998: Children**  
**Multinomial logit estimates of risk ratios**  
**Relative to no change in use**

	<b>Gain Public (1)</b>	<b>Gain Private (2)</b>	<b>Lose Public (3)</b>	<b>Lose Private (4)</b>
<i>ln</i> PCE: below median (spline)	0.985 [0.07]	1.165 [0.57]	1.251 [1.34]	2.706 [3.51]
<i>ln</i> PCE: above median	1.100 [0.55]	1.303 [1.89]	0.843 [1.17]	1.150 [1.04]
(1) male	0.889 [0.62]	1.000 [0.00]	0.963 [0.30]	1.090 [0.50]
Age	0.835 [7.05]	0.867 [5.46]	0.781 [13.61]	0.820 [8.52]
<i>ln</i> (HH size)	0.655 [1.64]	0.883 [0.45]	0.973 [0.15]	0.755 [1.21]
Urban resident	0.889 [0.55]	1.593 [2.13]	1.106 [0.71]	1.234 [1.11]
Province				
North Sumatra	0.292 [2.95]	1.234 [0.64]	0.397 [3.25]	0.267 [2.76]
South Sumatra	0.411 [2.72]	0.508 [1.83]	0.707 [1.52]	1.069 [0.22]
Jakarta	0.418 [1.88]	1.042 [0.11]	0.678 [1.32]	1.408 [1.00]
Central Java	0.545 [2.10]	0.728 [0.98]	0.660 [1.88]	1.564 [1.62]
NTB	0.587 [1.87]	0.310 [2.83]	0.929 [0.36]	0.502 [1.99]
South Kalimantan	0.455 [2.02]	0.210 [2.47]	0.913 [0.35]	0.458 [1.79]
$X^2$		460.821 [0.00]		
Pseudo- $R^2$		0.10		
<i>ln</i> (Likelihood)		-2156.44		

Notes: See Table 5.6. West Java is reference province.



## 6. Availability, Prices, and Quality of Public and Private Health Facilities

In this section we describe results from the survey of health facilities, focusing on the question of how the availability, prices, and quality of outpatient care has changed at health facilities that are accessible to residents of the IFLS2+ communities. The facilities are the same facilities as those described in Section 4, where we highlighted family planning service provision. In this section, we use the term public providers to refer to puskesmas and puskesmas pembantu, while private providers refers to doctors, clinics, midwives, nurses, and paramedics.

We begin (Table 6.1) with a discussion of the problems that providers themselves mention have emerged in the past 12 months. Providers were presented with a list of 11 factors and asked whether the factors had changed within the past 12 months. When a provider responded that there had been a change, he or she was asked whether the change had negatively, positively, or neutrally affected services in the facility.

Overall, public facilities appear to have been more affected by changes in the availability of drugs and supplies, while private providers have been more affected by changes in the prices of these inputs. Generally, more facilities (whether public or private) have been affected by changes related to drugs than by changes related to supplies.

There is general agreement that the availability of drugs has changed-- over 60% of both public and private providers say that drug availability has changed within the past 12 months. For about half of these providers, the change has made provision of services significantly more difficult. Changes in the availability of supplies affect a smaller proportion of providers, but more public than private providers.

With respect to drugs, almost 90% of private providers stated that drug prices have changed, while only 40% of public providers mention rising drug prices. Almost half of both the public and private providers who mention rising drug prices feel that their practices have been negatively affected. Changes in the price of fuel are more of a problem for public than for private providers, which makes sense given the outreach responsibilities of public providers.

Providers whose services had been affected by changes in the availability of drugs and supplies were asked to describe how they had reacted to the changes. For drugs, the most common responses for both public and private providers were that they had reduced the quantity of drugs given to clients, raised prices, and referred clients to other providers. For supplies, responses included recycling supplies and asking clients to provide the supplies themselves.

Panel A of Table 6.2 presents results with respect to whether the availability of services related to maternal and child health has changed between 1997 and 1998. With the exception of Vitamin A, there have been no significant declines in the availability of services related to maternal and child health 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%.

Panel B of Table 6.2 shows the median price changes for two MCH-related services: BCG immunization for children and tetanus toxoid immunization for pregnant women. Interestingly, for these services the median price has risen significantly in public facilities, but has not changed (at the median) in private facilities. This result stands in contrast to what we observed for family planning providers, where service prices increased in both public and private facilities.

In addition to services for women and children, most public and a number of private facilities offer more general services, including provision of basic drugs such as antibiotics, and more specialized medicines such as those related to the treatment of tuberculosis. Table 6.3 presents statistics on the proportion of facilities (public and private) offering these types of medicines.

Essentially all public facilities provide some form of antibiotics. Overall, there has been little change in the specific types of antibiotics offered, although the proportion of facilities providing chloroamphenicol has dropped significantly, while the proportion providing chlotrimazole has risen.

Most public facilities provide some sort of drug for the treatment of tuberculosis. For each of the tuberculosis drugs, the proportion of public facilities providing the drug decreased, although none of these changes is statistically significant, nor do they combine to result in a significant decrease in the proportion of facilities providing any form of TB treatment.

In 1998 about 71% of public facilities provided the anti-helminth pyrantel pamoate. This drug was not included in the IFLS2 facility questionnaires, so we do not know whether its provision was more or less common in 1997.

Columns 5-8 of Table 6.3 focus on private providers. As with public facilities, most private providers do make available some form of antibiotics, particularly in 1998. In fact, between 1997 and 1998 the proportion of private facilities providing antibiotics rose from 83.6% to 94.9%, which is a statistically significant change. Four antibiotics (ampicilin, tetracycline, chloroamphenicol, and chlotrimazole) have all increased significantly in terms of their availability at private facilities.

A far smaller fraction of private facilities provide tuberculosis medications and pyrantel pamoate. Provision of tuberculosis drugs, either in general or by type, by private providers has not changed between 1997 and 1998.

Table 6.3 provides a sense of which medications are supposed to be available at public and private providers, but it does not tell us which medications 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 specific drugs is tabulated in Table 6.4.

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 Benzaythine 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 and 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 6.2). 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 significant changes in experience with stock outages are not significant for any drug. The result reflects the fact that stock outages in 1998 are generally lower in private than in public facilities, and also the fact 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 6.5 considers the availability of gloves, bandages, and needles. For gloves and bandages the results are similar to what we observed for drugs: at public facilities there have been increases in the proportion of facilities that do not have sufficient stocks. For bandages, but not for gloves, the increase is significant. The proportion of private facilities with gloves and bandages in stock has not changed. The data on needles is available only for 1998. About 9.2 % of public providers and 6.3% of private providers experienced a stock outage of needles within the six months prior to the interview.

The number of visitors in the week prior to the interview is presented in Table 6.6. For neither public nor private facilities has there been a significant change in the total number of visitors. For public facilities this fact stands in contrast to the results described in Section V, for the household data, which show a decline in use of puskesmas for adults. The most probable explanation for the difference between the household data and the facility data is that a smaller fraction of adults is visiting the puskesmas in 1998 than in 1997, but those who do visit are making a larger number of visits in 1998.<sup>20</sup>

In addition to collecting data from the registration book, we queried providers as to how they thought their numbers of clients had changed. Public providers were much more likely than private providers to feel that the number of patients had increased. Over half of private providers

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<sup>20</sup> The results for the household data consider whether any visit is made to a provider of a particular type, but not how many are made, given at least one visit. The facility data are taken from the facility's registration book and no effort is made to distinguish first from follow-up visits. This interpretation is consistent with anecdotal evidence that patients are being given smaller dosages of drugs and therefore have to return more to the health facility more frequently in 1998 than in 1997.

thought that the number of patients had decreased—a result that may reflect a decrease in follow-up visits rather than in initial visits.

Tables 6.7 and 6.8 present regression results with respect to how province, urban status, and mean expenditure level in the community are related to changes in service availability and to changes in the numbers of visitors. There are few predictors of changes in service availability for public providers (and in fact there have been relatively few changes in service availability for public providers). With respect to the number of visitors in the week before the interview (last column) it appears that the lower the level of expenditures in the community, the more visits to puskesmas have decreased between 1997 and 1998. Additionally, puskesmas outside of Jakarta are less likely to see an increase in use than are puskesmas in Jakarta.

For private providers (Table 6.8) two findings stand out. First, providers outside of Jakarta are more likely to introduce IUD services between 1997 and 1998 (probably fewer of these providers offered IUD services prior to 1998). Second, providers in communities with higher average levels of expenditures are more likely to introduce tuberculosis medications and anti-biotics.

**Table 6.1 Factors Affecting Provision of Health Services in Public and Private Facilities in 1998**

<b>Factor:</b>	<b>Public Facilities</b>		<b>Private Facilities</b>	
	<b>% Experiencing a change in</b>	<b>% for whom factor has made service provision more difficult</b>	<b>% Experiencing a change in</b>	<b>% for whom factor has made service provision more difficult</b>
Availability of Drugs	60.1	49.2	64.9	48.8
Availability of Supplies	35.8	43.6	25.9	41.4
Price of Drugs	40.4	51.1	87.4	49.7
Price of Supplies	25.2	43.6	32.7	39.2
Price of Fuel	23.4	54.9	12.8	55.1
Availability of Family Planning Supplies	48.6	71.7	35.3	63.7
Number of observations	219		387	

**Table 6.2 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)
<b>A. Service Availability</b>								
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)
<b>B. Median price of services</b>								
Child Immuniz:	500	500	750	250	3500	5000	5000	0
BCG	(44.2)	(106.9)	(104.0)	(121.2)	(252.4)	(927.5)	(685.4)	(706.1)
Tetanus toxoid	500	500	900	400	4000	5000	5000	0
	(44.1)	(64.1)	(124.2)	(94.5)	(245.3)	(345.4)	(459.2)	(469.2)
Number of observations	900	219	219	219	1815	387	387	387

**Table 6.3 Provision of Basic Drugs by Public and Private Health Facilities**

**Means and standard errors**

Indicator	Public Facilities				Private Facilities			
	All	Same Facilities			All	Same Facilities		
	1997 (1)	1997 (2)	1998 (3)	Change (4)	1997 (1)	1997 (2)	1998 (3)	Change (4)
Antibiotics	99.8 (0.2)	99.5 (0.5)	100.0 (0.0)	0.5 (0.5)	83.2 (0.9)	83.6 (1.9)	94.9 (1.2)	11.3 (2.3)
Penicillin	40.1 (1.7)	47.1 (3.5)	45.0 (3.4)	-2.1 (4.9)	24.5 (1.0)	26.9 (2.3)	25.1 (2.2)	-1.9 (3.2)
Ampicilin	96.1 (0.7)	95.8 (1.4)	95.4 (1.4)	-0.4 (2.0)	75.0 (1.0)	76.3 (2.2)	86.1 (1.9)	9.8 (2.9)
Tetracycline	98.7 (0.4)	99.1 (0.7)	99.5 (0.5)	0.5 (0.8)	71.9 (1.1)	72.5 (2.3)	81.5 (2.1)	9.0 (3.1)
Chloroamphenicol	95.3 (0.7)	98.6 (0.8)	94.5 (1.5)	-4.1 (1.8)	62.4 (1.2)	63.3 (2.5)	74.7 (2.3)	11.4 (3.4)
Chlotrimazole	84.7 (1.2)	85.9 (2.4)	93.2 (1.7)	7.3 (2.9)	49.6 (1.2)	52.9 (2.6)	68.2 (2.5)	15.3 (3.6)
Ciprofloxacinl	2.4 (0.5)	3.5 (1.3)	1.4 (0.8)	-2.1 (1.5)	6.9 (0.6)	10.3 (1.6)	10.5 (1.6)	0.2 (2.3)
Cefriaxone	1.7 (0.4)	2.5 (1.1)	0.9 (0.6)	-1.6 (1.3)	1.8 (0.3)	1.7 (0.7)	1.1 (0.6)	-0.5 (0.9)
Cevixisme								
Benazaythine penicillin G	8.4 (1.0)	13.9 (2.4)	10.1 (2.0)	-3.8 (3.2)	4.8 (0.5)	5.6 (1.2)	6.0 (1.3)	0.4 (1.8)
Acyclofir					2.07 (0.4)	1.7 (0.7)	3.7 (1.0)	2.0 (1.2)
Anti-TBC	81.9 (1.3)	83.6 (2.6)	79.5 (2.7)	-4.1 (3.7)	25.4 (1.1)	28.8 (2.4)	27.8 (2.4)	-1.0 (3.4)
INH	78.3 (1.4)	81.1 (2.7)	76.3 (2.9)	-4.9 (4.0)	23.1 (1.0)	25.5 (2.3)	25.9 (2.3)	0.3 (3.3)
Rifampicin	55.8 (1.7)	63.8 (3.4)	55.7 (3.4)	-8.1 (4.8)	16.5 (0.9)	19.2 (2.1)	19.6 (2.1)	0.4 (3.0)
Ethambutol	70.6 (1.5)	76.9 (2.9)	73.1 (3.0)	-3.8 (4.2)	17.2 (0.9)	19.5 (2.1)	21.3 (2.2)	1.8 (3.0)
Streptomycin	32.4 (1.6)	42.2 (3.5)	36.1 (3.3)	-6.2 (4.7)	7.7 (0.7)	8.8 (1.5)	9.1 (1.5)	0.3 (2.1)
Anti-helminths:			70.8				31.3	
pyrantel pamoate			(3.1)				(2.5)	
Number of Observations	900	219	219	219	1815	387	387	387

**Table 6.4: Proportion of Facilities Reporting Stock Outages of Essential Drugs and Vaccines in the Past Six Months**

Indicator	Public Facilities				Private Facilities			
	All 1997 (1)	1997 (2)	1998 (3)	Change (4)	All 1997 (1)	1997 (2)	1998 (3)	Change (4)
Vitamin A	7.1 (1.1)	6.0 (2.2)	3.6 (1.8)	-2.4 (2.9)	7.9 (0.9)	8.3 (2.1)	9.5 (2.5)	1.2 (3.2)
Antibiotics								
Penicillin	10.9 (2.1)	3.5 (2.5)	27.6 (5.9)	24.1 (6.5)	19.5 (2.1)	19.5 (4.4)	20.0 (4.1)	0.5 (6.0)
Ampicilin	16.2 (1.5)	15.6 (3.1)	40.8 (4.0)	25.2 (5.2)	12.1 (0.9)	14.8 (2.2)	17.4 (2.2)	2.6 (3.1)
Tetracycline	12.0 (1.4)	12.0 (2.8)	16.2 (3.0)	4.2 (4.2)	9.0 (0.8)	9.1 (1.9)	13.1 (2.0)	4.1 (2.8)
Chloroamphenicol	11.8 (1.4)	10.8 (2.7)	21.0 (3.4)	10.2 (4.4)	9.4 (0.9)	9.3 (2.0)	15.0 (2.2)	5.7 (3.0)
Chlotrimazore	11.5 (1.5)	10.8 (3.0)	24.7 (3.6)	13.8 (4.9)	8.6 (1.0)	12.1 (2.5)	13.8 (2.2)	1.7 (3.4)
Ciprofloxacinl					7.4 (2.7)	6.7 (4.6)	16.2 (6.1)	9.6 (8.0)
Benazaythine penicillin G	2.3 (2.3)	0.0 (0.0)	7.7 (7.7)	7.7 (7.1)	9.0 (3.5)	5.6 (5.6)	19.1 (8.8)	13.5 (10.8)
Anti-TBC								
INH	6.0 (1.1)	5.9 (2.3)	3.2 (1.6)	-2.7 (2.8)	9.3 (1.6)	8.5 (3.1)	6.7 (2.6)	-1.9 (4.1)
Rifampicin	10.0 (1.7)	8.6 (3.1)	8.1 (3.0)	-0.5 (4.3)	11.0 (2.0)	9.5 (3.7)	5.9 (2.9)	-3.6 (4.7)
Ethambutol	9.6 (1.5)	9.0 (2.9)	8.6 (2.6)	-0.4 (3.9)	9.1 (1.8)	11.1 (4.0)	8.0 (3.2)	-3.1 (5.0)
Streptomycin	9.4 (2.3)	6.9 (3.4)	5.6 (3.2)	-1.3 (4.6)	11.4 (3.0)	14.3 (6.7)	6.3 (4.4)	-8.0 (7.8)
Anti-helminths: pyrantel pamoate			5.0 (2.0)				9.1 (2.8)	
Oralit	4.5 (0.9)	4.7 (1.9)	6.7 (2.0)	2.0 (2.8)	8.2 (0.8)	8.0 (1.8)	7.5 (1.6)	-0.5 (2.4)
Iron tablets	6.2 (1.0)	4.1 (1.8)	0.7 (0.7)	-3.5 (1.8)	7.0 (0.8)	7.1 (1.8)	6.7 (1.6)	-0.4 (2.4)
Immunizations:								
BCG			8.8 (2.2)				14.7 (3.5)	
DPT			7.0 (2.0)				7.8 (2.7)	
Measles			7.6 (2.0)				11.4 (3.1)	
Polio			8.8 (2.2)				7.5 (2.6)	
Tetanus Toxoid			10.4 (2.3)				23.4 (3.4)	
Number of Observations	900	219	219	219		387	387	387

**Table 6.5: Stock outages and Sufficiency of Basic Supplies**

	All Facilities		Same Facilities	
	1997 (1)	1997 (2)	1998 (3)	Change (4)
<b>Puskesmas</b>				
Gloves				
has in stock and has enough	90.7 (1.0)	92.3 (1.8)	87.7 (2.2)	-4.6 (2.9)
has in stock, don't know if enough	3.1 (0.6)	1.4 (0.8)	0.0 (0.0)	-1.4 (0.8)
has in stock but not enough	2.1 (0.5)	3.2 (1.2)	5.9 (1.6)	2.8 (2.0)
doesn't have	4.0 (0.7)	3.2 (1.2)	6.4 (1.7)	3.2 (2.0)
Bandages				
has in stock and has enough	95.8 (0.7)	97.7 (1.0)	93.6 (1.7)	-4.1 (1.9)
has in stock, don't know if enough	2.3 (0.5)	0.9 (0.6)	0.0 (0.0)	-0.9 (0.6)
has in stock but not enough	1.3 (0.4)	0.9 (0.6)	4.6 (1.4)	3.7 (1.6)
doesn't have	0.6 (0.3)	0.5 (0.5)	1.8 (0.9)	1.4 (1.0)
Needles				
proportion with stock outage in previous six months			9.22 (2.0)	
Number of Observations	900	219	219	219
<b>Private Practitioner</b>				
Has gloves	91.5 (0.7)	90.2 (1.5)	90.4 (1.5)	0.2 (2.1)
Has bandages	98.4 (0.3)	98.7 (0.6)	97.7 (0.8)	-1.0 (1.0)
Needles				
proportion with stock outages in previous six months			6.3 (1.3)	
Number of Observations	1815	387	387	387

**Table 6.6: Numbers of Visitors to Public and Private Facilities in the Week Before the Interview**  
Means and standard errors

Indicator	Public Facilities				Private Facilities			
	All 1997 (1)	1997 (2)	Same Facilities 1998 (3)	Change (4)	All 1997 (5)	1997 (6)	Same Facilities 1998 (7)	Change (8)
Monday	46.8 (1.7)	48.7 (3.7)	47.9 (4.3)	-0.8 (5.6)	11.8 (0.4)	11.5 (0.8)	11.4 (0.8)	-0.1 (1.1)
Tuesday	36.1 (1.3)	38.4 (3.0)	43.3 (3.3)	4.8 (4.5)	10.8 (0.4)	10.9 (0.8)	11.3 (0.8)	0.4 (1.1)
Wednesday	35.2 (1.3)	35.5 (2.8)	39.8 (3.0)	4.2 (4.1)	10.6 (0.4)	10.8 (0.8)	11.0 (0.8)	0.2 (1.1)
Thursday	34.4 (1.3)	32.8 (2.7)	40.3 (3.2)	7.6 (4.2)	10.3 (0.3)	10.7 (0.8)	10.8 (0.8)	0.1 (1.1)
Friday	27.8 (1.1)	29.3 (2.6)	33.4 (2.8)	4.1 (3.8)	9.8 (0.3)	10.0 (0.7)	10.3 (0.7)	0.3 (1.0)
Saturday	25.1 (1.0)	26.6 (2.3)	28.9 (2.3)	2.3 (3.3)				
Sunday	4.5 (0.7)	3.7 (1.2)	0.3 (0.2)	-3.4 (1.3)	6.3 (0.3)	6.4 (0.7)	5.6 (0.6)	-0.4 (5.8)
Total all week	208.9 (7.1)	213.6 (15.8)	233.7 (17.7)	20.1 (23.7)	59.5 (1.9)	60.3 (4.2)	59.9 (4.0)	-0.4 (5.8)
Total weekdays	179.8 (6.2)	184.3 (13.8)	203.8 (15.8)	19.5 (20.9)	53.2 (1.7)	53.9 (3.7)	54.9 (3.6)	1.0 (5.2)
<b>Proportion reporting a change in use relative 12 months ago:</b>								
Use has increased			35.8				8.9	
Little Change			39.5				36.7	
Use has decreased			24.7				54.4	
Number of Observations	900	219	219	219	1815	387	387	387

**Table 6.7 : Correlates of changes in Puskesmas health services**

	<b>Any Pill</b>	<b>Any IUD</b>	<b>Any Injectables</b>	<b>Any Anti-TBC</b>	<b>Any Vitamin A</b>	<b>Number of Visits last week</b>
Province						
North Sumatra	-0.158 [-1.875]	-0.006 [-0.050]	0.054 [0.481]	0.163 [1.781]	0.260 [1.886]	-86.047 [-3.468]
South Sumatra	-0.062 [-0.733]	0.166 [1.430]	0.029 [0.255]	0.127 [1.392]	-0.146 [-1.062]	-55.584 [-2.224]
West Java	-0.150 [-1.804]	-0.008 [-0.074]	0.006 [0.057]	0.127 [1.408]	-0.094 [-0.682]	-72.734 [-2.961]
Central Java	-0.051 [-0.666]	-0.052 [-0.491]	0.077 [0.751]	0.140 [1.660]	0.085 [0.667]	-77.431 [-3.406]
NTB	-0.169 [-1.912]	0.039 [0.319]	0.023 [0.197]	0.045 [0.476]	0.231 [1.607]	-58.665 [-2.265]
South Kalimantan	-0.034 [-0.348]	0.072 [0.533]	0.236 [1.803]	0.158 [1.499]	0.111 [0.699]	-40.126 [-1.347]
Urban	-0.024 [-0.542]	0.058 [0.959]	0.038 [0.641]	-0.029 [-0.623]	0.025 [0.356]	12.317 [0.941]
Mean PCE in community	-0.254 [-0.429]	0.152 [0.187]	0.117 [0.148]	0.514 [0.679]	0.615 [0.647]	-405.0 [-1.949]
Intercept	0.105 [1.398]	-0.100 [-0.961]	-0.078 [-0.774]	-0.145 [-1.769]	-0.242 [-1.950]	73.179 [3.276]
R <sup>2</sup>	0.038	0.031	0.024	0.031	0.047	0.09
F(all covariates)	1.03	0.85	0.64	0.82	2.30	2.62
Number of Observations	219	219	218	213	211	211

Notes: T-statistics in parentheses. West Java is reference province.

**Table 6.8: Correlates of changes in Private Practitioner health services**

	<b>Any Pill</b>	<b>Any IUD</b>	<b>Any Injectables</b>	<b>Any Anti-TBC</b>	<b>Any Antibiotics</b>	<b>Any Vitamin A</b>
Province						
North Sumatra	0.045 [0.507]	-0.100 [-1.554]	-0.052 [-0.760]	-0.057 [-0.603]	0.041 [0.675]	0.068 [0.532]
South Sumatra	0.126 [1.346]	-0.150 [-2.206]	-0.108 [-1.470]	-0.067 [-0.675]	-0.0001 [-0.002]	0.035 [0.256]
West Java	0.112 [1.282]	-0.171 [-2.728]	0.044 [0.650]	0.149 [1.504]	0.111 [1.807]	-0.062 [-0.472]
Central Java	-0.026 [-0.311]	-0.156 [-2.618]	-0.067 [-1.058]	0.005 [0.060]	-0.012 [-0.213]	0.081 [0.680]
NTB	0.092 [0.924]	-0.156 [-2.178]	0.003 [0.037]	-0.144 [-1.394]	0.106 [1.609]	0.064 [0.456]
South Kalimantan	-0.031 [-0.301]	-0.233 [-3.095]	-0.077 [-0.952]	0.163 [1.389]	0.079 [1.066]	-0.033 [-0.213]
Urban	0.012 [0.245]	-0.078 [-2.185]	-0.070 [-1.818]	-0.017 [-0.328]	-0.005 [-0.157]	-0.007 [-0.095]
Mean PCE in community	-0.463 [-0.694]	-0.524 [-1.090]	-0.773 [-1.524]	1.412 [2.130]	1.917 [4.481]	1.414 [1.576]
Intercept	-0.070 [-0.875]	0.240 [4.145]	0.113 [1.829]	-0.036 [-0.411]	-0.001 [-0.022]	-0.247 [-2.111]
R <sup>2</sup>	0.021	0.089	0.035	0.058	0.082	0.015
F(all covariates)	1.00	1.73	1.66	2.51	3.76	0.62
Number of Observations	383	383	371	334	346	341

Notes: T-statistics in parentheses. West Java is reference province.

## 7. Health Status as Measured by Self-Reported Indicators

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 and the next section of the report 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. In this section we report on the results of self-reported measures of health status: measures obtained by asking the respondents specific questions about their health during the four weeks prior to the interview. The questions focus on the respondents' experience with any of a list of symptoms, whether normal daily activities have been disrupted by ill health, whether health status has required the respondent to stay in bed, and the respondent's ranking of his or her general health status. We look first at levels and at changes in levels of self-reported health for adults and children, then turn to an exploration of the determinants of changes in health status.

Table 7.1 summarizes the results for adults. The first 11 rows of Column 7, report the difference between the proportion of panel respondents who experienced a symptom in 1998 and that proportion in 1997. The numbers are negative, indicating that the proportion of adults experiencing the symptoms has declined between 1997 and 1998. This results holds for the proportion experiencing any symptom (row 1) and the proportion experiencing specific symptoms. With the exception of skin infections and "other," all the changes are statistically significant. The remaining rows of the table report other self-reported indicators of health. The average number of symptoms declined slightly (but significantly), as did the proportion of adults who spent at least one day in bed because of poor health.

The same indicators are reported for children in Table 7.2. Children over 10 were generally asked to report for themselves, whereas questions were posed to the mother (or other caretaker) for children 10 and below. As with use of health care for children, our discussion focuses on the results for all respondents (Column 4), rather than panel respondents, so that we do not confuse age-related changes in health status with changes over time.

The results for children generally mirror what we observed for adults: overall there appears to have been an improvement in health status as indicated by the self-reported measures. For example, 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). Most of the symptoms have declined significantly between 1997 and 1998, and the average number of symptoms reported is smaller in 1998 than in 1997.

The self-reported indicators present a positive picture changes in health status between 1997 and 1998: overall, health, or at least respondents' perceptions of health, seems to have improved. Tables 7.3 and 7.4 address the question of how these changes in health are related to socioeconomic status, demographic characteristics, and residence. For adults, we consider three health outcomes, and for each of these outcomes analyze the correlates of deteriorations and of improvements in health, relative to no change. The three health outcomes are whether the respondent reports at least one symptom, whether the respondent spent at least one day in bed, and the respondent's assessment of his or her general health status. For adults we estimate the

equations separately for men and women. For children we pool boys and girls and include a term for gender.<sup>21</sup> For children we consider an additional outcome: whether normal activities were disrupted by poor health.

One of the results that emerges for both adults and children is that the links between socioeconomic status and change in self-reported health status appear to be relatively weak. For the most part, household expenditure levels are not significantly associated with transitions either to poorer health or to better health. There are two exceptions. As the expenditure level of the household rises, the chance decreases that either men or children move from experiencing no symptoms in 1997 to experiencing at least one symptom in 1998. We also consider education (for adults) and find that neither does it display a close association with changes in health status.<sup>22</sup> Only for men, and only for one outcome (the change from zero to at least one day in bed), do higher levels of education appear to protect against a deterioration in health status. For women, none of the health outcomes is associated with either education or expenditure levels.

Age is an important predictor of health transitions for children-- less so for adults. For children, increasing age significantly increases the probability of transitions in experiencing symptoms, but significantly decreases the probability of transitions in disrupted activities, days in bed, and general health status. It may be that these last three indicators are more closely associated with permanent components of health status (that tend not to change over time) for older children than for younger children, while symptoms are a more common occurrence for younger children (who have them all the time and thus make few transitions) than for older children (who have "grown out" of recurring problems of coughs, colds, and diarrhea).

As a group, and across the various health outcomes, the variables measuring province of residence (but not urban residence) exhibit a number of associations with changes in health status. For adults, relative to West Java, residence in South Sumatra, Jakarta, Central Java, and NTB seems to be associated with lower probabilities of improved health status and higher probabilities of worsening health status, as measured by changes in symptoms and changes in assessment of general health status. The effects of residence in North Sumatra and South Kalimantan vary by health outcome and to some extent by gender.

For children, the effects of province vary somewhat across the indicators. With respect to changes in assessment of general health status, the picture is less positive for residents of Jakarta, Central Java, North Sumatra, and South Kalimantan than for residents of West Java. Children in NTB, South Kalimantan, and South Sumatra are less likely than children in West Java to experience either an improvement or a deterioration in health status as measured by health-related activity disruptions or days in bed.

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<sup>21</sup> These specifications were chosen after testing for differences by gender. There were no significant differences in the effects of the covariates on use of care and so we do not stratify on gender in those regressions.

<sup>22</sup> Experiments with parental education in the child regression indicate that it had no effect on health transitions.

**Table 7.1: Self-reported morbidity, days ill and general health status -- Adults**  
Means and standard errors

Indicator	All resp. in 1997 (1)	Same communities			Same respondents		
		1997 (2)	1998 (3)	Change (4)	1997 (5)	1998 (6)	Change (7)
% have any morbidity	79.26 (0.3)	82.06 (0.6)	78.21 (0.5)	-3.85 (0.8)	82.26 (0.6)	78.62 (0.6)	-3.64 (0.8)
% have diarrhea	6.43 (0.2)	7.51 (0.4)	6.42 (0.3)	-1.09 (0.5)	7.55 (0.4)	6.46 (0.4)	-1.08 (0.5)
% have cough/breathing pblms	37.38 (0.3)	40.92 (0.7)	34.95 (0.6)	-5.96 (0.9)	41.11 (0.7)	35.21 (0.7)	-5.90 (1.0)
% have nausea/vomit	10.49 (0.2)	12.43 (0.5)	9.40 (0.4)	-3.03 (0.6)	12.49 (0.5)	9.50 (0.4)	-2.99 (0.7)
% have fever	22.87 (0.3)	25.37 (0.6)	20.18 (0.5)	-5.18 (0.8)	25.30 (0.6)	20.14 (0.6)	-5.16 (0.9)
% have skin infection	8.42 (0.2)	10.45 (0.4)	9.50 (0.4)	-0.95 (0.6)	10.43 (0.5)	9.54 (0.4)	-0.89 (0.6)
% have head ache	54.92 (0.4)	57.95 (0.7)	52.56 (0.6)	-5.39 (0.9)	57.91 (0.7)	52.69 (0.7)	-5.23 (1.0)
% have runny nose	47.22 (0.4)	50.65 (0.7)	43.03 (0.6)	-7.62 (0.9)	50.78 (0.7)	43.26 (0.7)	-7.52 (1.0)
% have stomach pain	21.06 (0.3)	25.18 (0.6)	20.96 (0.5)	-4.22 (0.8)	25.02 (0.6)	19.60 (0.6)	-5.42 (0.9)
% have swollen joints	23.26 (0.3)	24.79 (0.6)	19.52 (0.5)	-5.27 (0.8)	25.09 (0.6)	21.49 (0.6)	-3.60 (0.9)
% have other morbidity	28.71 (0.3)	31.54 (0.7)	31.22 (0.6)	-0.32 (0.9)	31.44 (0.7)	32.24 (0.7)	0.80 (1.0)
# morbidities reported	3.20 (0.0)	3.51 (0.0)	3.06 (0.0)	-0.44 (0.1)	3.51 (0.0)	3.10 (0.0)	-0.42 (0.1)
% been ill	20.76 (0.3)	21.02 (0.6)	21.95 (0.5)	0.92 (0.8)	20.94 (0.6)	22.31 (0.6)	1.37 (0.9)
# days ill (if >0)	5.56 (0.1)	5.84 (0.2)	6.16 (0.2)	0.31 (0.3)	5.84 (0.2)	6.24 (0.2)	0.40 (0.3)
% been in bed	7.91 (0.2)	9.03 (0.4)	7.86 (0.3)	-1.17 (0.5)	9.13 (0.4)	7.52 (0.4)	-1.61 (0.6)
# days in bed (if >0)	5.07 (0.1)	5.21 (0.3)	5.54 (0.3)	0.33 (0.4)	5.23 (0.3)	5.74 (0.3)	0.51 (0.4)
% in poor health	11.43 (0.2)	13.64 (0.5)	13.83 (0.4)	0.19 (0.7)	13.66 (0.5)	14.59 (0.5)	0.93 (0.7)
Number of observations	19841	4861	6640	11501	4612	4612	4612

Notes: Sample is all adults age 15 and older.

**Table 7.2: Morbidity, days ill and general health status -- Children**  
Means and standard errors

Indicator	All resp. in 1997 (1)	Same communities			Same respondents		
		1997 (2)	1998 (3)	Change (4)	1997 (5)	1998 (6)	Change (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 nausea/vomit	7.28 (0.3)	8.81 (0.5)	6.49 (0.4)	-2.32 (0.7)	8.81 (0.6)	5.91 (0.5)	-2.89 (0.7)
% 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 skin infection	10.62 (0.3)	11.65 (0.6)	12.59 (0.6)	0.94 (0.9)	11.50 (0.6)	12.92 (0.7)	1.43 (0.9)
% have head ache	30.23 (0.5)	31.39 (0.9)	26.47 (0.8)	-4.92 (1.2)	29.96 (0.9)	26.42 (0.9)	-3.55 (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)
% have stomach pain	16.10 (0.4)	18.79 (0.7)	17.37 (0.7)	-1.42 (1.0)	18.06 (0.8)	16.88 (0.8)	-1.18 (1.1)
% have other morbidity	23.98 (0.4)	25.42 (0.8)	25.08 (0.8)	-0.34 (1.1)	25.56 (0.9)	24.70 (0.9)	-0.86 (1.2)
# 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 ill	25.86 (0.4)	25.56 (0.8)	24.76 (0.8)	-0.80 (1.1)	26.33 (0.9)	23.01 (0.9)	-3.32 (1.2)
# days ill (if >0)	4.14 (0.1)	3.95 (0.1)	4.51 (0.2)	0.57 (0.2)	3.89 (0.1)	4.40 (0.2)	0.51 (0.2)
% 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)
# days in bed (if >0)	3.83 (0.1)	3.57 (0.2)	3.83 (0.2)	0.27 (0.3)	3.54 (0.2)	3.70 (0.2)	0.16 (0.3)
% in poor health	6.70 (0.2)	6.96 (0.5)	8.30 (0.5)	1.34 (0.7)	7.30 (0.5)	8.32 (0.6)	1.02 (0.8)
Number of observations	10351	2746	3098	5844	2453	2453	2453

Notes: Sample is all children under 15.

**Table 7.3: Correlates of changes in self reported health status between 1997 and 1998: Adults**

Multinomial logit estimates of risk relatives, Relative to excluded category of no change

	Change in probability respondent reports at least one morbidity				Change in probability respondent spent at least one day in bed				Change in General health status			
	Male		Female		Male		Female		Male		Female	
	Got sick (1)	Got well (2)	Got sick (3)	Got well (4)	Got sick (5)	Got well (6)	Got sick (7)	Got well (8)	Got better (9)	Got worse (10)	Got better (11)	Got worse (12)
$\ln$ PCE	0.849 [1.98]	0.929 [0.75]	0.975 [0.33]	0.975 [0.29]	0.913 [0.82]	0.898 [0.79]	0.957 [0.47]	1.179 [1.69]	1.118 [1.42]	0.979 [0.27]	0.956 [0.67]	0.943 [0.88]
Age: 20-29 (spline)	1.001 [0.07]	0.993 [0.35]	0.990 [0.66]	0.981 [1.13]	0.990 [0.45]	1.008 [0.27]	0.972 [1.37]	0.978 [0.98]	1.004 [0.25]	0.988 [0.70]	1.002 [0.15]	0.995 [0.36]
30-49	0.985 [1.26]	0.994 [0.43]	0.975 [2.13]	0.980 [1.46]	0.995 [0.31]	1.014 [0.75]	1.028 [1.92]	1.017 [1.07]	1.016 [1.47]	1.016 [1.49]	1.016 [1.54]	0.997 [0.26]
>=50	0.969 [2.02]	0.960 [2.12]	0.951 [2.74]	0.992 [0.47]	1.017 [1.02]	1.024 [1.46]	1.002 [0.13]	1.035 [2.53]	0.999 [0.27]	1.000 [0.07]	1.018 [1.66]	1.026 [2.34]
Education (years)	0.988 [0.70]	1.000 [0.01]	0.983 [0.95]	1.014 [0.65]	0.918 [3.38]	0.956 [1.49]	1.000 [0.01]	0.969 [1.23]	0.982 [1.03]	0.968 [1.79]	1.008 [0.46]	1.001 [0.08]
$\ln$ (HH size)	1.039 [0.24]	1.186 [0.89]	0.800 [1.54]	1.112 [0.64]	0.754 [1.36]	1.051 [0.19]	0.852 [0.97]	1.262 [1.32]	0.901 [0.67]	0.773 [1.67]	0.876 [1.07]	0.848 [1.35]
Urban resident	1.149 [0.99]	0.901 [0.62]	0.868 [1.02]	0.739 [1.94]	1.326 [1.45]	0.830 [0.77]	0.670 [2.29]	1.098 [0.53]	0.929 [0.50]	0.924 [0.53]	1.167 [1.24]	1.177 [1.33]
Province												
North Sumatra	1.919 [2.38]	2.963 [4.16]	2.253 [3.21]	2.035 [2.94]	0.367 [2.14]	3.136 [2.39]	0.624 [1.53]	1.363 [1.10]	0.526 [2.16]	1.137 [0.41]	0.494 [3.01]	1.215 [0.83]
South Sumatra	1.413 [1.39]	1.241 [0.82]	1.622 [1.99]	1.266 [0.99]	0.955 [0.15]	1.884 [1.31]	0.662 [1.51]	0.551 [1.79]	1.381 [1.43]	3.297 [4.74]	0.939 [0.31]	2.771 [4.91]
Jakarta	1.368 [1.10]	0.908 [0.29]	1.050 [0.16]	0.655 [1.28]	0.752 [0.74]	2.183 [1.40]	0.462 [1.92]	0.437 [2.02]	1.344 [1.11]	3.037 [3.81]	1.197 [0.80]	1.671 [2.03]
Central Java	1.671 [2.30]	0.664 [1.53]	1.631 [2.27]	0.680 [1.64]	0.556 [1.95]	2.081 [1.66]	0.666 [1.74]	0.724 [1.24]	1.023 [0.11]	1.956 [2.77]	0.534 [3.45]	1.214 [0.98]
NTB	1.652 [2.05]	0.907 [0.34]	1.378 [1.37]	0.789 [0.96]	1.330 [1.00]	2.489 [1.95]	0.794 [0.93]	0.483 [2.30]	1.051 [0.22]	1.297 [0.92]	1.024 [0.13]	1.126 [0.54]
South Kalimantan	0.942 [0.20]	0.522 [1.83]	0.504 [2.01]	0.395 [2.61]	1.585 [1.52]	3.708 [2.78]	1.062 [0.21]	1.870 [2.20]	0.670 [1.41]	1.721 [1.89]	0.703 [1.48]	1.632 [2.05]
X <sup>2</sup>	93.86		120.61		71.15		83.33		71.01		94.63	
$\ln$ (Likelihood)	-1434.42		-1613.22		-863.11		-1226.37		-1578.49		-2107.28	
R <sup>2</sup>	0.03		0.04		0.04		0.03		0.02		0.02	

Notes: Linear probability estimates. In each pair of regressions, left panel estimates probability a respondent is sick in 1998 conditional on not being sick in 1997; the right panel estimates probability a respondent gets better by 1998 given he/she was ill in 1997. Sample is 4,612 adults in IFLS2 & IFLS2+. West Java is reference province. [t statistics] below regression estimates.

**Table 7.4: Correlates of changes in respondent reported health status between 1997 and 1998: Children**

Multinomial logit estimats of risk relatives

Relative to excluded category of no change

	Change in probability at least one morbidity		Change in probability at least one day ill		Change in probability at least one day in bed		Change in General health status	
	Got sick (1)	Got well (2)	Got sick (3)	Got well (4)	Got sick (5)	Got well (6)	Got better (7)	Got worse (8)
$\ln$ PCE	0.846 [2.44]	1.046 [0.65]	1.076 [1.13]	0.905 [1.35]	1.002 [0.03]	0.951 [0.52]	1.128 [1.77]	0.955 [0.66]
(1) male	0.967 [0.32]	1.064 [0.55]	0.976 [0.22]	0.947 [0.46]	1.117 [0.80]	0.858 [0.96]	0.934 [0.60]	0.900 [0.94]
Age	1.052 [3.68]	1.041 [2.82]	0.953 [3.46]	0.920 [5.51]	0.975 [1.49]	0.912 [4.53]	0.988 [0.84]	0.972 [2.00]
$\ln$ (HH size)	0.982 [0.12]	1.372 [1.94]	0.662 [2.76]	1.015 [0.09]	0.612 [2.67]	0.744 [1.35]	0.802 [1.38]	0.890 [0.74]
Urban resident	0.934 [0.58]	0.981 [0.15]	1.025 [0.20]	1.196 [1.36]	1.012 [0.08]	1.134 [0.72]	0.912 [0.72]	1.229 [1.67]
Province								
North Sumatra	1.182 [0.77]	2.779 [4.64]	0.204 [5.72]	0.627 [1.96]	0.263 [4.15]	0.633 [1.57]	0.567 [2.27]	1.348 [1.12]
South Sumatra	0.945 [0.30]	1.804 [2.85]	0.606 [2.70]	0.930 [0.36]	0.356 [4.20]	0.433 [2.96]	1.388 [1.69]	3.941 [6.16]
Jakarta	0.938 [0.26]	1.047 [0.17]	0.711 [1.42]	1.284 [1.01]	0.595 [1.77]	0.702 [1.08]	1.323 [1.13]	2.447 [3.26]
Central Java	1.082 [0.44]	1.181 [0.78]	0.803 [1.29]	0.859 [0.76]	0.545 [2.86]	0.765 [1.13]	0.820 [1.02]	2.154 [3.42]
NTB	1.058 [0.31]	1.478 [1.88]	0.563 [3.23]	0.511 [3.09]	0.572 [2.65]	0.355 [3.61]	1.307 [1.46]	1.559 [1.87]
South Kalimantan	0.654 [1.69]	0.888 [0.43]	0.474 [3.13]	0.757 [1.07]	0.584 [2.00]	0.393 [2.50]	0.393 [3.04]	1.907 [2.40]
$X^2$	77.55		126.75		85.070		107.64	
$\ln$ (Likelihood)	-2139.54		-2019.37		-1353.885		-2029.45	
$R^2$	0.02		0.03		[0.03]		0.03	

Notes: Sample is 2,453 children in IFLS2 & IFLS2+. West Java is reference province. See Table 5.3

## 8. Health Status as Measured by Physical Assessments

In addition to the self-reported measures of health status described above, the IFLS2 and 2+ data contain an array of physically-assessed measures of health status. The physically-assessed measurements are conducted by a trained nurse who travels with the team. The nurse measures the height and weight of all respondents, hemoglobin levels of respondents at least one year of age, lung capacity of respondents nine years old and above, and the blood pressure and pulse of respondents 15 and above. In addition, respondents 15 and above are asked to rise from a sitting to a standing position five times and are timed in this exercise. 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 8.1 presents evidence on nutritional status. For children less than eight 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.<sup>23</sup>

The first and fourth rows of Table 8.1 present the average z-scores on height-for-age and weight-for-height for the IFLS children (all and panel) in 1997 and in 1998. For neither height-for-age nor weight-for-height has there been a significant change in the past year in the average z-scores of the IFLS children.

We also present 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 all 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 7.2 (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 all 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.

For adults 18 and older we consider Body Mass Index (BMI).<sup>24</sup> We present statistics on the average BMI in both years, and on the proportion of respondents whose BMI is below 18 (the cut-off below which respondents are considered to be unhealthy and mortality rates begin to rise).

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<sup>23</sup> 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.

<sup>24</sup> Body Mass Index is computed as weight (in kilograms) divided by the square of height (measured in meters).

The picture regarding nutritional status for adults is not as positive as that for children. There has been a statistically significant decline in average levels of BMI for adults. For respondents whose BMI has remained in the range considered healthy, a decrease does not necessarily represent a deterioration in health status. Unfortunately, among panel respondents the decline is not limited to adults whose BMI is in the healthy range. There has also been a significant increase in the proportion of adults with a BMI below 18. In 1997, 13.6% of panel respondents were in this category. By 1998, 15.4% of respondents have fallen into this category.

The fact that at the low end of the nutritional spectrum (z-scores of less than -2 for children, BMIs of less than 18 for adults) weight-for-height of children has improved, while the BMI of adults has decreased, suggests that in terms of net energy intake, adults are bearing a greater share of the nutritional burden that the crisis has imposed than are children. This may reflect reduced intake by adults or increased energy output (e.g. working harder).

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 and below 12 (standard cut-offs for moderate and severe anemia) have decreased significantly since 1997.

In Table 8.2 we present the results for the other physical assessments of health status. For the most part these results are consistent with the interpretation that there have been some improvements in health status since 1997. For both panel and all respondents, lung capacity has increased slightly, while blood pressure and sit-to-stand time have decreased. There has been no change in the average score assigned by the nurse as his or her evaluation of health status.

Tables 8.3 and 8.4 present evidence on the correlates of changes in nutritional status between 1998 and 1997. One of the findings that emerges from this table is that increasing levels of expenditures in 1997 are associated with improvements in nutritional status for male children (as measured by height-for-age) and female adults (as measured by BMI). Expenditure levels do not appear to be associated with weight-for-height, with BMI for adult males, or with height-for-age for female children. Expenditure level does not affect change in hemoglobin levels, except for adult women. Among adult women, higher levels of 1997 expenditure are associated with significantly lower levels of hemoglobin.

The effect of expenditure level on adult women's BMI is the opposite of its effect on adult women's hemoglobin level, suggesting that the diets of women in poorer households have changed in ways that cause them to lose weight, but become more iron replete. Although women in better-off households have been protected from weight loss, their hemoglobin levels have not improved.

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. For adolescents of both sexes, residence in Jakarta tends to reduce hemoglobin levels, while for adolescent girls and for adults, residence in North Sumatra improves it. For women, decreases in BMI are particularly likely in Central Java, while decreases in hemoglobin are particularly likely in NTB.

Correlates of changes in the other physical assessments of health are presented in Table 8.5. We highlight a few of the results here.

Estimates of the effects of the socioeconomic and demographic characteristics on changes in lung capacity are reported separately for teenagers and adults, stratifying on gender in the first four columns of Table 8.5. For teenagers, increases in lung capacity are smaller for older respondents which likely reflects the fact that lung capacity is highly correlated with height and younger teenagers grow faster than older teenagers. Among adults, height is fixed (at least until old age) and so the (small but significant) negative coefficient on age can be interpreted as an effect of aging. The effects of household resources are small and (marginally) significant only for teenage females. In contrast, location of residence is a powerful predictor of change in lung capacity. Among teenagers, increases in lung capacity between the waves of the survey are concentrated among rural dwellers. Inter-province differences in the *change* in lung capacity are very large; in part, these may reflect differences between the health workers, some of whom were more aggressive when demonstrating the use of the peak flow meter. (There was one health worker per province and the same health worker was used in the same province in 1997 and 1998 only in South Kalimantan.) However, heterogeneity among health workers is unlikely to explain all the differences since we would expect the effects to be common to males and females, older and younger respondents.

The correlates of change in blood pressure are presented in Columns 5 and 6. The interpretation of a positive coefficient is that it is associated with an increase in blood pressure between 1997 and 1998, and thus a deterioration in health status. Relatively few of the covariates are statistically significant. For women, residence in an urban area is associated with a smaller change in blood pressure, while residence in Jakarta and South Sumatra is associated with an increase in blood pressure. For men, residence in Jakarta also increases blood pressure, as does residence in Central Java.

Correlates associated with the time taken to stand from a sitting position (5 times) are presented in columns 1 and 2 of Table 8.7. The only characteristics that are significant predictors of changes in time are province of residence; we cannot distinguish them from differences in the way the health worker used the stopwatch and so we do not interpret them as purely residence effects.

The same caveat holds for the health worker evaluations in the last four columns of Table 8.7 for we have not cross-validated their evaluations and so do not interpret the province controls (which we treat as health worker fixed effects). We focus, instead, on the individual and household characteristics associated with changes in the evaluations of the respondent's health status. First, relative to rural dwellers, there have been significant improvements in the health of those living in urban areas. Second, in sharp contrast with the respondent's own evaluations of

changes in their health (which were unrelated to household resources), the health workers systematically indicate that the health of the poorest households have deteriorated the most between 1997 and 1998 for all respondents except adult males.

Taking all the evidence on changes in health status together, we conclude that in many ways, the current health status of respondents in 1998 is better than it was in 1997. However, there are some indications that nutritional status of adults (as measured by BMI) has deteriorated over the last year, particularly among poorer women although there have also been improvements in their hemoglobin status (perhaps because of changes in diet). Moreover, our healthworkers consistently indicate that the health of our poorest respondents has deteriorated over the last year and while this has not yet shown up in the physical assessments it does suggest that continued monitoring of the state of health of the population is key. In particular, the medium term effects of the crisis may be quite different from their immediate effects especially when we take into account the large declines in use of health services -- especially among the poorest.

**Table 8.1: Nutritional status**  
Means and standard errors

Indicator	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	3652	951	1395	2346	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	5839	1541	1949	(3490)	1264	1264	1264
Body mass index kg/m2	21.39 (0.03)	21.28 (0.05)	21.07 (0.04)	-0.21 (0.07)	21.33 (0.05)	21.06 (0.05)	-0.27 (0.08)
% < 18	13.06 (0.26)	14.05 (0.54)	14.69 (0.49)	0.63 (0.73)	13.64 (0.57)	15.35 (0.59)	1.71 (0.82)
Number of observations	16927	4156	5168	9324	3688	3688	3688
Hemoglobin (mg/dl)	12.69 (0.01)	12.62 (0.02)	12.82 (0.02)	0.20 (0.03)	12.61 (0.02)	12.79 (0.02)	0.18 (0.03)
% hemoglobin<10mg/dl	6.13 (0.15)	6.68 (0.30)	5.02 (0.24)	-3.91 (0.76)	6.64 (0.32)	4.74 (0.27)	-4.25 (0.85)
% hemoglobin<12mg/dl	33.20 (0.29)	34.75 (0.58)	30.83 (0.50)	-1.66 (0.38)	34.79 (0.61)	30.54 (0.59)	-1.90 (0.42)
Number of observations	27017	6829	8562	15391	6142	6142	6142

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. Body mass index includes adults age 18 or over in 1997. Hemoglobin is measured for everyone age 1 or older in 1997.

**Table 8.2: Physical health assessments**  
Means and standard errors

Indicator	All resp. in 1997 (1)	Same communities			Same respondents		
		1997 (2)	1998 (3)	Change (4)	1997 (5)	1998 (6)	Change (7)
Lung capacity	310.18 [0.71]	309.16 [1.53]	320.48 [1.30]	11.32 [2.00]	310.04 [1.61]	319.99 [1.49]	9.95 [2.20]
Number of observations	22864	5722	7063	12785	5040	5040	5040
Blood pressure --diastolic	126.61 (0.18)	126.78 (0.35)	124.27 (0.29)	-2.52 (0.45)	126.91 (0.36)	124.52 (0.35)	-2.39 (0.50)
Blood pressure --systolic	78.54 (0.09)	78.45 (0.18)	77.52 (0.15)	-0.94 (0.24)	78.53 (0.19)	77.63 (0.19)	-0.90 (0.26)
Number of observations	19158	4701	5927	10628	4193	4193	4193
Sit->stand 5 times secs	7.23 (0.02)	7.60 (0.04)	5.96 (0.02)	-1.64 (0.04)	7.58 (0.04)	6.04 (0.03)	-1.54 (0.05)
Number of observations	17994	4493	5581	10074	3848	3848	3848
Health status Nurse evaln	6.14 (0.01)	5.94 (0.01)	5.98 (0.01)	0.03 (0.02)	5.92 (0.01)	5.89 (0.02)	-0.03 (0.02)
Number of observations	28612	7220	8922	16142	6578	6578	6578

Notes: Lung capacity is measured for all people age 9 and older. Blood pressure and time to stand from a sitting position are measured for all people age 15 and older. After completing the physical assessments and discussing health problems with the respondents, the health worker scored every respondent's health status (using a range from 1 through 9 where 9 is excellent 1 is very poor).

**Table 8.3: Correlates of changes in nutritional status: Anthropometry**

	Change in Height for age (0-9 yr olds)		Change in Weight for height (0-9 yr olds)		Change in Body Mass Index (20-69 yr olds)	
	Male (1)	Female (2)	Male (3)	Female (4)	Male (5)	Female (6)
<i>ln</i> PCE	0.132 [2.63]	-0.015 [0.25]	0.081 [0.66]	0.086 [0.67]	0.001 [0.03]	0.103 [2.37]
Age	-0.029 [1.58]	0.022 [0.91]	0.090 [2.97]	0.088 [2.12]	-0.007 [2.73]	-0.009 [2.99]
<i>ln</i> (HH size)	-0.044 [0.42]	0.046 [0.29]	0.157 [0.57]	-0.485 [1.41]	-0.03 [0.34]	-0.112 [1.30]
Urban resident	0.102 [1.22]	-0.117 [1.1]	-0.051 [0.24]	0.255 [1.08]	0.027 [0.35]	0.015 [0.19]
Province						
North Sumatra	0.129 [0.97]	0.324 [1.52]	-0.071 [0.21]	0.03 [0.07]	-0.295 [1.88]	0.071 [0.46]
South Sumatra	0.127 [0.97]	-0.112 [0.58]	-0.811 [2.49]	-0.003 [0.01]	-0.058 [0.44]	0.255 [1.82]
Jakarta	-0.106 [0.64]	-0.225 [0.88]	-0.087 [0.21]	-0.139 [0.27]	0.077 [0.51]	0.339 [2.07]
Central Java	0.139 [1.19]	-0.042 [0.24]	0.005 [0.02]	-0.383 [1.06]	-0.092 [0.82]	-0.302 [2.51]
NTB	0.169 [1.44]	0.046 [0.26]	-0.308 [1.02]	-0.215 [0.59]	0.085 [0.68]	0.221 [1.67]
South Kalimantan	0.044 [0.30]	0.350 [1.70]	0.035 [0.09]	-0.377 [0.84]	-0.015 [0.11]	-0.057 [0.36]
Intercept	-0.924 [2.44]	-0.107 [0.21]	-0.409 [0.42]	-2.117 [1.95]	0.148 [0.47]	-0.354 [1.07]
F(all covs)	1.36 [0.16]	1.04 [0.42]	1.29 [0.2]	1.83 [0.02]	1.69 [0.08]	5.67 [0.00]
R <sup>2</sup>	0.05	0.04	0.027	0.052	0.012	0.03

Notes: Height for age and weight for height are measured as change in z-score; BMI is measured in kg/m<sup>2</sup>. See Table 8.1. OLS estimates. West Java is reference province. [t statistics] below regression coefficients; [p values] below test statistics.

**Table 8.4: Correlates of changes in nutritional status: Hemoglobin**

	<b>Children (0-9 yr olds)</b>		<b>Teenagers (10-19 yr olds)</b>		<b>Adults (20-69 yr olds)</b>	
	<b>Male (1)</b>	<b>Female (2)</b>	<b>Male (3)</b>	<b>Female (4)</b>	<b>Male (5)</b>	<b>Female (6)</b>
$\ln$ PCE	0.045 [0.59]	-0.087 [1.1]	-0.066 [0.7]	-0.052 [0.65]	-0.035 [0.58]	-0.093 [2.03]
Age	0.003 [0.16]	-0.024 [1.08]	0.008 [0.25]	-0.05 [1.96]	-0.003 [0.85]	0.002 [0.53]
$\ln$ (HH size)	0.087 [0.49]	-0.126 [0.64]	-0.15 [0.71]	0.042 [0.24]	0.052 [0.41]	-0.027 [0.3]
Urban resident	-0.015 [0.11]	0.323 [2.33]	0.168 [1.03]	0.017 [0.13]	0.014 [0.13]	-0.02 [0.24]
Province						
North Sumatra	1.05 [4.49]	0.502 [1.8]	0.501 [1.51]	1.136 [4.3]	0.855 [3.79]	0.457 [2.76]
South Sumatra	0.312 [1.57]	0.331 [1.47]	-0.046 [0.17]	-0.293 [1.23]	-0.324 [1.73]	-0.259 [1.74]
Jakarta	-0.211 [0.79]	-0.473 [1.65]	-0.686 [2.1]	-0.589 [2.01]	-0.166 [0.76]	-0.261 [1.5]
Central Java	0.643 [3.37]	0.305 [1.47]	0.52 [2.05]	0.609 [2.86]	0.23 [1.42]	0.166 [1.3]
NTB	0.093 [0.48]	-0.077 [0.37]	0.01 [0.04]	0.257 [1.19]	-0.134 [0.74]	-0.344 [2.44]
South Kalimantan	0.204 [0.82]	-0.07 [0.25]	0.213 [0.65]	0.193 [0.71]	0.334 [1.64]	0.161 [0.97]
Intercept	-0.354 [0.58]	0.689 [1.08]	-0.145 [0.17]	0.781 [1.05]	0.245 [0.55]	0.574 [1.66]
F(all covs)	2.78 [0.00]	2.05 [0.01]	1.85 [0.02]	3.95 [0.00]	3.77 [0.00]	4.63 [0.00]
R <sup>2</sup>	0.06	0.05	0.05	0.08	0.03	0.02

Notes: OLS estimates. West Java is reference province. See Table 8.3.

**Table 8.5: Correlates of changes in lung capacity and blood pressure**

	<b>Lung capacity Teenagers</b> (10-19 yr olds)		<b>Lung capacity Adults</b> (20-69 yr olds)		<b>Blood pressure Adults</b> (20-69 yr olds)	
	<b>Male</b> (1)	<b>Female</b> (2)	<b>Male</b> (3)	<b>Female</b> (4)	<b>Male</b> (5)	<b>Female</b> (6)
$\ln$ PCE	1.319 [0.62]	2.908 [1.92]	-0.237 [0.54]	0.235 [0.57]	-0.14 [0.41]	0.121 [0.41]
Age	-0.171 [2.55]	-0.389 [5.01]	-0.039 [2.94]	-0.046 [2.04]	-0.006 [0.55]	-0.03 [1.88]
$\ln$ (HH size)	-6.633 [1.47]	-6.523 [2.19]	-0.745 [0.83]	-0.276 [0.35]	0.296 [0.43]	-0.007 [0.01]
Urban resident	-6.125 [1.58]	-9.297 [3.45]	-0.631 [0.78]	-1.504 [1.97]	-0.483 [0.78]	-1.518 [2.82]
Province						
North Sumatra	49.777 [6.19]	53.096 [10.08]	3.318 [2.01]	5.496 [3.78]	0.592 [0.47]	0.977 [0.95]
South Sumatra	16.359 [2.48]	-16.399 [3.48]	1.431 [1.03]	0.478 [0.35]	4.657 [4.39]	1.977 [2.06]
Jakarta	44.84 [5.67]	45.68 [8.06]	1.723 [1.07]	3.928 [2.49]	0.591 [0.48]	2.846 [2.56]
Central Java	-11.082 [1.88]	-6.797 [1.65]	2.026 [1.68]	1.675 [1.44]	0.878 [0.95]	0.154 [0.19]
NTB	83.459 [13.11]	94.033 [21.58]	0.86 [0.64]	0.5 [0.4]	2.702 [2.62]	-0.321 [0.36]
South Kalimantan	7.3 [0.98]	22.921 [4.34]	1.887 [1.23]	3.537 [2.36]	0.476 [0.41]	0.661 [0.63]
Intercept	-1.196 [0.08]	-3.594 [0.33]	0.833 [0.27]	-3.022 [1.01]	-1.102 [0.46]	-0.516 [0.24]
F(all covs)	36.14 [0.00]	106.21 [0.00]	1.46 [0.15]	2.98 [0.00]	3.25 [0.00]	2.38 [0.01]
R <sup>2</sup>	0.14	0.28	0.01	0.01	0.02	0.01

Notes: OLS estimates. West Java is reference province. See Tables 8.2 and 8.3.

**Table 8.6: Correlates of changes in time to stand from sitting position and nurse evaluation of health status**

	Time to stand from sitting position (15-69 year olds)		Nurse evaluation of respondent's health status (Scaled from 1-9)			
	Male	Female	(0-19 yr olds)		(20-69 yr olds)	
	(1)	(2)	Male	Female	Male	Female
	(3)	(4)	(5)	(6)		
$\ln$ PCE	0.115 [1.92]	0.027 [0.38]	-0.184 [4.41]	-0.179 [4.57]	-0.032 [0.82]	-0.086 [2.70]
Age	-0.002 [1.09]	-0.006 [1.48]	0.003 [0.46]	0.000 [0.03]	-0.001 [0.47]	0.002 [0.69]
$\ln$ (HH size)	0.021 [0.17]	-0.171 [1.22]	-0.127 [1.35]	0.040 [0.45]	0.075 [0.94]	0.060 [0.94]
Urban resident	-0.09 [0.83]	0.186 [1.42]	0.409 [5.69]	0.334 [4.86]	0.361 [5.18]	0.311 [5.21]
Province						
North Sumatra	-2.159 [9.56]	-2.470 [9.59]	-0.518 [3.96]	-0.532 [4.06]	-0.328 [2.29]	-0.801 [7.07]
South Sumatra	-4.075 [21.64]	-4.485 [19.05]	-1.094 [9.57]	-1.061 [9.00]	-1.281 [10.73]	-1.146 [10.96]
Jakarta	-2.370 [10.82]	-2.788 [10.39]	-0.044 [0.31]	0.334 [2.33]	-0.015 [0.11]	-0.202 [1.67]
Central Java	-1.065 [6.52]	-1.655 [8.40]	-0.273 [2.56]	-0.324 [3.05]	-0.438 [4.25]	-0.595 [6.64]
NTB	-2.098 [11.51]	-2.248 [10.38]	-1.875 [17.01]	-1.907 [17.77]	-1.682 [14.64]	-2.247 [22.84]
South Kalimantan	-1.066 [5.14]	-1.103 [4.38]	-1.745 [12.55]	-1.747 [12.81]	-1.669 [12.79]	-2.051 [17.67]
Intercept	-0.001 [0.00]	0.576 [1.10]	1.453 [4.34]	1.255 [3.93]	0.683 [2.39]	1.058 [4.37]
F(all covs)	58.63 [0.00]	43.24 [0.00]	40.29 [0.00]	48.33 [0.00]	49.58 [0.00]	88.97 [0.00]
R <sup>2</sup>	0.26	0.17	0.31	0.34	0.26	0.32

Notes: OLS estimates. West Java is reference province. See Tables 8.2 and 8.3.

## 9. Summary

Indonesia has experienced vast changes in the both the economic and the political environment during 1998, and few Indonesians have remained untouched by the events of the year. The effects of the economic crisis on welfare are likely to vary by region and across socio-economic and demographic groups. If policies are to succeed at mitigating the effects of the crisis, they must be based on information about who has been affected, how they have been affected, and how they have responded.

This report has sought to provide information on those topics. The results are based on data from the Indonesia Family Life Survey (IFLS), an on-going longitudinal survey of individuals, households, and communities in Indonesia. For the purpose of understanding how the economic crisis has affected welfare, we compare the responses of individuals interviewed in the second half of 1997 to responses obtained through reinterviews with those same individuals in the second half of 1998. In the 1998 follow-up survey, we succeeded at reinterviewing over 98% of the 1,934 households from which data were collected in 1997.

The report has presented information on changes in a number of dimensions of individual well-being between 1997 and 1998: expenditure levels, use of family planning, use of health care, health status, and (very briefly) education and employment. Because changes in individual well-being are shaped to some extent by changes in the community, we have also provided information on changes in health and family planning services at public and private facilities in the communities in which our individual respondents reside.

With respect to changes in *per capita* levels of household expenditure, it is clear that there has been a decline in real expenditure levels between 1997 and 1998. However, the magnitude of the change, the extent of differences between urban and rural areas, and the implications for poverty rates depend critically on assumptions about prices and on where one draws the poverty line.

Estimates that incorporate province-specific inflation rates (based on BPS price data from 44 urban areas) suggest that overall, the proportion of households below the poverty line has risen by about 25%, with a larger increase in urban than in rural areas. Estimates that allow for higher inflation in rural than in urban areas (as indicated by the price data collected in the IFLS communities), suggest that the rise in poverty is considerably larger, and that rural households have experienced more change than urban households.

Comparisons of household budget allocations between 1997 and 1998 helps move the issue of differential inflation into the background. In both urban and rural areas the proportion of the budget spent on food has increased significantly. The changes have been largest not for the poorest households, but also for households with relatively well-educated heads. Meat has declined as a proportion of the budget, and that change has been largest for those in the middle of the expenditure distribution. Spending on health and education has also declined significantly. In the case of education, the declines are greatest for the poorest households.

With respect to contraceptive use, overall, there has been little change in prevalence of contraceptive use or in method mix. Prevalence is estimated at 56.6% in 1997 and at 57.3% in 1998. The distribution of users across methods has not changed either. Although there has been a slight decline in prevalence of injections, the difference is not statistically significant.

Few women have experienced changes in satisfaction with the family planning services available to them, relative to their options a year ago. Among women who are less satisfied with services (3.8%), rising prices is by far the most common factor mentioned. A higher proportion of women are more satisfied with services, and they mention a variety of improvements related to quality.

Method choice at private facilities appears to have increased between 1997 and 1998, with a higher fraction of private providers offering IUDs, and a significant rise in the proportion of providers offering Cyclofeem and Depo-Progestin. Prices of services at both public and private providers have risen substantially. For both public and private providers, the frequency of stock outages of injections has increased significantly between 1997 and 1998.

The results with respect to health care are quite different. For adults, the proportion using public services in the month before the interview has declined significantly, from 7.4% in 1997 interview to 5.6% in 1998. Users of health services are shifting away from the puskesmas, towards private providers and traditional practitioners. The relationship between economic resources and use of health care is stronger in 1998 than in 1997, suggesting that resources have become a greater barrier to both private health care use among the poorest over the course of the crisis

For children, overall use of health services has decreased substantially. A dramatic decline in visits to the posyandu, from 56.8% to 41.3% (in the month before the survey) 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. 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.

For the youngest children (those under three), declines in use of the posyandu have translated into a significant reduction in the proportion receiving Vitamin A in the six months prior to the survey. Significant declines in immunization uptake have not emerged.

The result for Vitamin A in the household data also emerges in the facility data. There has been a significant decrease in the proportions of both public and private facilities offering Vitamin A. There have been few changes in the availability of immunization services, or in the frequency of stock outages of vaccines. Stock outages of anti-biotics have increased significantly at puskesmas, but not at private practices.

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 respondents in 1998 is better than it was in 1997. Self-reports clearly indicate a decrease in the proportion of respondents experiencing particular symptoms in the month before the survey.

Generally, the physical assessments are 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, and particularly for the poorest women, it appears that hemoglobin status has actually improved.

There are some indications that nutritional status of adults (as measured by BMI) has deteriorated over the last year. This result emerges particularly among poorer women. Moreover, the IFLS health workers consistently indicate that the health of our poorest respondents has deteriorated over the last year—perhaps in ways that have yet to emerge in the physical and self-reported assessments.

## **Appendix 1: Field procedures in IFLS2+**

The development period for IFLS2+ was extremely compressed. This was necessary given the importance of getting into the field quickly and making results available as soon as possible. While the speed placed great stress on the team, compressing activities was feasible without significant costs in terms of reduced quality because the IFLS2 had just come out of the field and so a large part of the infrastructure was in place when design activities for IFLS2+ began.

Initial activities centered on a collaborative team of researchers from Lembaga Demografi, RAND and UCLA preparing a version of the questionnaire for pretesting in and around Jakarta in April and May. New questions and modules in the household instrument were pilot tested in April and subsequently revised. A full pretest of the household questionnaire took place in mid-May. The community-facility instrument was revised and pretested in May and early June. Subsequently, interviewers' manuals and training protocols were developed for both the household and community-facility surveys.

IFLS2 had implemented a system of Computer-Aided Field Editing for household interviews which was extraordinarily successful. We decided, therefore, to expand its implementation and include the community and facility interviews in IFLS2+. Two or three editors accompany each interviewing team. The editors use laptop computers to enter the data from the questionnaires as soon as the interviewers finish the interview. The data entry program assists the editors in identifying problems and inconsistencies that can be resolved with the interviewer on the spot and, if necessary, with the respondent. The electronic data are mailed to Lembaga Demografi and sent to RAND electronically. In addition to providing detailed feedback in real time to the interviewers, the system provides the supervisors at Lembaga Demografi and at RAND with rapid access to the data for the purposes of both monitoring data quality and examining preliminary results.

As the questionnaire was finalized in early June, work on the data entry package began. The household data entry (DE) package was completed, tested, and revised in late June. The community-facility data entry package was completed, tested, and revised in late July. Correction of errors in the DE packages continued into late July. Revised programs were provided to the field teams. Because we were working under such time pressure, it turned out that the community-facility DE package was not ready as we began fieldwork and so the first few weeks of data were entered in Jakarta. Thereafter, all data were entered in the field.

Another essential set of development activities included choosing the sample, refining the recontact protocols, and generating the extensive recontact information that is provided to the interviewers. The characteristics of the IFLS2+ sample are described above. Prior to final selection of the IFLS2+ enumeration areas, sample properties were reviewed by Dr. John Adams, a senior sampling statistician at RAND who has extensive with large scale surveys including several surveys in Indonesia. Once the sample was drawn, work focused on finalizing a system of assigning identifiers to facilitate linking respondents across waves, and on generating recontact information and rosters for each household. Much of the recontact information was printed in the United States and shipped to Indonesia, along with supplies needed for the health assessments.

The field plan for the survey was finalized in June. Recruitment of interviewers, editors, health workers, and supervisors began in May. Field supervisors from LD met and evaluated the IFLS2 field staff. Interviewers, editors, and supervisors who received good evaluations were contacted and asked to participate two activities: data entry for IFLS2 and fieldwork for IFLS2+. Many of the IFLS2+ field staff came to Jakarta a couple of months before IFLS2+ training to work as data entry operators for IFLS2. This was beneficial because it provided interviewers and supervisors with a clearer sense

of the implications for data quality of sloppy interviewing. Health workers were also recruited during this phase.

Training for field staff took place in four waves. In the first session, held in Jakarta over a three day period, the health workers were trained. In the second session, which took place for 10 days in late June in the Puncak, household interviewers, editors, and supervisors from South Sumatra and South Kalimantan were trained. The last three days of training included a field practice, which served as a dress rehearsal for all aspects of the field work: finding respondents, administering the survey instrument, editing the completed instrument, maintaining the Management Information System (MIS), and preparing materials for shipment to Jakarta. Health workers also participated in the field practice. In the third session, community-facility interviewers were trained for a period of six days. The community-facility training also included a field practice where interviews were conducted with village leaders, community women's group leaders, and at health and school facilities. The fourth training session repeated household training for the field staff from the other five provinces. Because the IFLS2+ field staff all participated in IFLS2, training focused particularly on new modules and questions, with a review of elements of the survey that had not changed between rounds.

As in IFLS2, the IFLS2+ fieldwork is divided into two phases. During the first phase, referred to as the main field period, each of the 80 selected IFLS enumeration areas is visited.

Fieldwork began in South Sumatra and South Kalimantan during the second week of July. Fieldwork in the other provinces began during the fourth week of July. Each team consists of a Field Supervisor (LD staff or senior IFLS2 field staff), a Local Supervisor, an Editing Supervisor, four to six household interviewers, one or two Editors, a health worker, and two Community-Facility interviewers. Two interviewing teams are working in West Java and in Central Java. In each of the other provinces only one interviewing team is working.

Early in the fieldwork, most teams were visited by either one of the RAND principal investigators, or the LD Project Director, Bondan Sikoki. The purpose of these visits was to observe interviews and health assessments, work with the editors, check that the MIS was operating smoothly, help the team supervisors provide feedback to other team members, and evaluate team dynamics. In addition to the staff in the field, there are four people in Jakarta assigned to monitor the incoming management information system, electronic data, and questionnaires.