TI 2003-016/2
Tinbergen Institute Discussion Paper

# Did the Healthcard Program ensure Access to Medical Care for the Poor during Indonesia's Economic Crisis?

(Revised version September 2004)

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# Did the health card program ensure access to medical care for the poor during Indonesia's economic crisis? [1]

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September 2004

[1] The authors would like to thank Jan Willem Gunning, Maarten Lindeboom, Aparnaa Somanathan and Dominique van de Walle, and seminar participants at the World Bank, Tinbergen Institute, 2001 IHEA and GDN conferences for useful comments.

[2] World Bank. The views expressed in this paper reflect those of the authors and not necessarily those of the World Bank.

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# Abstract

The Indonesian Social Safety Net (SSN) health card program was implemented in response to the economic crisis that hit Indonesia in 1997 to preserve access to health care services for the poor. Under the program health cards were allocated to poor households, entitling them with subsidised care at public health care providers, while the providers themselves received budgetary support to compensate for the extra demand. This papers looks at the impact of the program on outpatient care utilisation, and, in particular, endeavours to disentangle the direct effect of the allocation of health cards from the indirect effect of the transfer of funds to health care facilities. It finds that the program resulted in a net increase in utilisation for the poor health card owners while for non-poor health card owners the program resulted mainly in a substitution from private to public providers. However, the largest effect of the program seems to have come from a general increase in the supply of public services resulting from the budgetary support received through the SSN program. These benefits seem to have been captured mainly by the non-poor. As a result, most of the benefits of the health card program went to the non-poor, even though the healthcards itself were distributed pro-poor. The results suggest that in addition to the need for targeting the poor, a closer linkage between provision of services to the target groups and funding would have resulted in a better-targeted program. It also points to potential impact that such programs can have on the public/private mix if the design does not take those factors into account.

# 1. Introduction

In the current debate on the provision of health care services in developing countries, demand side subsidies for medical care are often argued to be more effective in reaching the poor than supply side interventions. Health spending is generally found not to be pro-poor, as public policy typically lacks the incentives for health care providers to serve the poor (World Bank, 2004). Empirical evidence shows high income elasticities for health care, and thus large inequalities between poor and rich, but rather low price elasticities that tend to be larger for the poor (Jimenez, 1995; Gertler and Hammer, 1997). Targeted prices subsidies for medical care are therefore often advocated as means to increase access to medical care for the poor. The success of such targeted demand side interventions critically depends on the ability to identify and reach the poor.

This case study looks at a very particular kind of health care intervention that was applied in Indonesia, which included both a targeted price subsidy and a public spending component. This combined program was part of a larger Social Safety Net (SSN) program that was initiated to protect the poor from the effects of the Southeast Asian economic crisis, which hit the country in 1997. [1] Households that were thought to be most vulnerable to economic shocks were allocated *health cards*, which entitled all household members to the price subsidy. Health care facilities that provided the subsidised care received extra budgetary support to compensate for the increased demand.

There are some distinct features to the SSN health program. First, the price subsidy only applied to public service providers. Private sector health care providers were not included in the scheme. Second, targeting and allocation of the budgetary support to health care providers was decentralised to district committees. However, the transfers were made directly from Jakarta to the public health care facilities, through specially created accounts at the post office. Third, there was a loose relationship between the utilisation of the health card and the compensation that the health care providers received in return. Compensation was allocated to districts based on the estimated number of households eligible for the health card program and not based on actual utilisation of the health cards.

[1] The SSN included an education program, a labour creation program and food assistance. See Ananta and Siregar (1999) and Daly and Fane (2002) for an overview of the SSN programs.

This paper focuses on the effect of the Indonesian health card program on demand for primary outpatient health care. The particular design allows us to investigate a number of interesting questions.

First, it provides the opportunity of an *ex post* analysis of a health care policy change. Most studies that discuss the effectiveness of health policy draw on simulation based health care demand models, which make *ex ante* predictions of possible policy scenario's given some estimated parameters. The drawback of these simulations is that the underlying estimates reflect the effects of marginal changes in price, while the sensitivity of health care demand to price changes may well be different when it concerns large discrete jumps. In effect, these simulations often concern out of sample prediction where the forecasted interventions lie outside the range of the observed price data (Gertler and Hammer, 1997). Although ex post studies do not suffer from this problem, there is relatively little empirical work that evaluates actual pricing policies in health care. Moreover, only few of these studies take account of the endogenous nature of public interventions in their estimation strategy.[2] This paper aims to contribute to that literature.

Second, since the health card only entitled the user to free services at public providers we can directly investigate substitution effects between private and public providers. This is difficult in health care demand studies, as information on the price menu offered by alternative health care providers is often not available. As an alternative to exogenous price data many models estimate the demand for medical care based on proxy variables derived from (endogenous) household expenditure data[3] or variation in indirect cost measures, such as opportunity costs due to loss of work or travel time to the nearest provider.[4] However, opportunity costs do not vary by public or private provider and the same will often hold for travel time. For instance, doctors working at public providers in Indonesia also often maintain private practices making it impossible to use travel time variation to estimate substitution effects. Studies that

[2] Using data from a randomised health insurance and cost sharing experiment in the United States, Manning *et al.* (1987) estimate the demand for outpatient care. Gertler and Molyneaux (1997) use panel data to evaluate an experiment of a user fee increase for outpatient services in Indonesia. Regarding targeted health care subsidies, the Medicaid program in the US is probably the most studied. Currie and Gruber (1996) and Currie and Thomas (1995) exploit variation in legislature across states to control for endogeneity of the program. In an analysis of a school based health insurance scheme in Egypt, Yip and Berman (2001) treat participation as selection on observables.

[3] E.g. Gertler, Locay and Sanderson (1987), Lavy and Quigley (1993), Ching (1995), Mocan, Tekin and Zax (2000).

[4] E.g., Gertler and Gaag (1990), Dow (1999).

do manage to identify price variation across provider types generally find substantial substitution effects between public and private providers as a result of public price policy.[5]

The third contribution of this paper is that we compare the effect of a targeted price subsidy with that of increased public health care spending. We will argue that the transfers made to the public sector providers benefited all potential users while the price subsidy was only available to those who received a health card. We make an attempt to disentangle the two effects. In the health care demand literature policy scenarios such as reinvesting funds (from raising user fees, for example) into the public health sector is often discussed and simulated. While appealing for policy, this requires strong assumptions about the supply response of health care providers (such as the cost structure and the performance of the government or local authorities). In case of the SSN intervention we directly observe effect of increased public spending without making these assumptions. There are empirical studies that use actual provider or community data to show that an increase in supply and quality of care, and especially drug availability at health facilities, has a significant effect on utilisation.[6] The problem with these quality and supply variables is that they are often endogenous due to government policy, and that the measured effects are likely to capture both supply and demand effects. While some studies manage to control for the former problem, it is much harder to control for the latter. In this paper we identify both the health card effect and the effect of the budgetary support on utilisation, and show that the largest share of the program's effect is due to increased public spending.

Finally, we evaluate the distribution of the effects of both the demand and supply side interventions. The literature suggests that the poor are more sensitive to price effects than the rich.[7] But even if households receive their health cards, there may still be barriers to using these benefits, such as lack of information, regional shortage of providers, or opportunity costs unabridged by the health card. Such barriers are likely to vary by population sub-group, households or even individual

[5] E.g., Mwabu, Ainsworth and Nyamete (1993); Sahn, Younger and Genicot (2003).
[6] Lavy and Quigley (1993) define quality as the type of provider for a study in Ghana; Lavy and Germain (1994) find strong effects of supply of drugs, staff and services; Mwabu *et al.* (1993), Akin, Guilkey and Denton (1995), and Akin *et al.* (1998) use facility level data and find large effects of drug availability; Sahn *et al.* (2003) use community level data to find similarly strong effects of availability of drug and medical staff.
[7] E.g., Gertler *et al.* (1987), Manning *et al.* (1987), Sauerborn, Nougtara and Latimer (1994), Ching (1995), Yip and Berman (2001), Sahn *et al.* (2003).

characteristics (Blank and Card, 1991; Currie and Thomas, 1995) and are likely to be higher for the poor. Alternatively, health card recipients may be reluctant to utilise their benefits simply because of a preconception that subsidised care is of inferior quality to non-subsidised health care (Arhin, 1994). Given the loose relationship between SSN budgetary support and the actual use of health cards, it may well be that health care facilities are reluctant to provide free services, or at least service of similar quality as provided to non-subsidised patients. In this case the non-poor are likely to capture a large part of the benefits from extra public health care spending. We find the effects of price subsidy and the supply impulse to differ by income group. For low-income groups (with relatively high price elasticity) we find both a substitution from public to private care and an increase in total utilisation due to the health card, but little effect from increased spending. However, for the more wealthy groups (less sensitive to price changes) we find the substitution effect to be more dominant and the supply-induced effect of the budget increase to be larger, since the rich typically face less barriers to access to medical care than the poor. Overall, the non-poor captured most of the benefit, despite pro-poor targeting of the scholarships.

The organisation of the paper is as follows. The next section gives an overview of the data. In section 3 we describe the health card program in more detail. Section 4 focuses on the evaluation problem and our strategy for estimating the impact of the health card on utilisation of medical services. The results are discussed in section 5, while section 6 highlights some caveats and examines the sensitivity of the results to the main assumptions of the study. Section 7 concludes.

## 2. The data

The study is based on data from Indonesia's nation-wide socio-economic household survey (*Susenas*). The 1999 round of this annual survey contained a special module to measure the use of the SSN interventions, including the health card program. The survey was fielded in February 1999, while the health card program started in September 1998. The results of this analysis therefore reflect the experience of the first months of operation of the program. For this reason, and data limitations, we limit the analysis to the impact of the program on the access to medical care (in terms of utilisation), and do not endeavour to estimate the effect on health. Health effects are likely to take longer to materialise. The survey sampled 205,747 households and

collected a wide range of socio-economic indicators along with a measure of consumption. In the area of health, the survey collected information on self-reported illness, utilisation of medical services, user fees and ownership and utilisation of the health card. We also use the 1998 Susenas as this provides the pre-intervention data needed for the analysis. This round is also fielded in February, includes 207,645 households and covers the same questionnaire and variables as the 1999 survey, except for the SSN programs.

A 1996 village level census (*Podes*) provides pre-intervention information on accessibility and supply of health services, and various other community characteristics. The 1996 Podes includes 66,486 villages (*desa*) and townships (*kelurahan*) and can be merged with the Susenas.

Besides the micro data we also use administrative data concerning the 1998/1999 budget for the Social Safety Net program. This data includes the budget allocated to 293 districts (*kabupaten*) to implement the health card program and to compensate the public health clinics (*Puskesmas*) and village midwifes (*Bidan di desa*) for the expected extra demand for health services resulting from the health card program. The largest share of this budget was directly transferred to public health care providers. The transfers were made in two to four phases, depending on the province, starting in the last quarter of 1998. By the time of the survey SSN budgets had arrived at the health centres. It provided a substantial additional source of financing for the public health clinics. A survey conducted in June 1999 among 3,802 public health clinics and 3,989 village midwifes provides information on the way in which the health care providers have spent the SSN funds.

## 3. Utilisation of medical services and the health card program

The economic crisis hit Indonesia in the fall of 1997, exacerbated by social and political unrest in 1998. Real GDP decreased by roughly 15 percent in 1998 causing poverty to increase sharply. Suryahadi, Sumarto and Pritchett (2003) estimate an increase in the poverty head count ratio from 15 percent in May 1997 to 33 percent at the end of 1998. As more households moved into poverty, inequality in terms of household expenditure also increased, especially at the lower end of the income distribution (Skoufias, Suryahadi and Sumarto, 2000). 1998 saw an annual increase in the consumer price index of 78 percent. The price of food doubled, with rice and

staple foods experiencing the most severe price increase. There is little evidence of rising overall unemployment during the crisis. Instead, real wages dropped by about 40 percent in the formal wage sector during the first year of the crisis, while agriculture seems to have absorbed part of the displaced labour from other sectors. (Cameron, 1999; Smith *et al.*, 2002; Frankenberg, Smith and Thomas, 2003).

The severity of the crisis has undoubtedly affected households' health care expenditures and utilisation. Frankenberg *et al.* (2003) find that household consumption declined by 20 percent in 1998, with investment in human capital (i.e. health and education) decreasing by 37 percent. Table 1 depicts observed trends in the utilisation of medical services before and during the crisis. The data are based on a series of Susenas household surveys and present utilisation of *modern* health care in the month of February of each year.[8] The table indicates a sharp decrease in the utilisation of modern health care from 1997 to 1998, which was largely due to declining utilisation of public sector providers. A breakdown by type of provider is presented in Table 2 and shows that the decline in public care occurs for the most part at public health clinics. Waters, Saadah and Pradhan (2003) attribute this trend to a decline in the quality of public sector providers. The main cause for this quality deterioration was the growing shortage of drugs and supplies among public facilities during the crisis, especially in rural areas (Frankenberg, Thomas and Beegle, 1999; Knowles, Pernia and Racelis, 1999). From 1998 to 1999 total utilisation of modern health care providers remained the same, but the share of the public sector increased. One possible explanation is the SSN health program, which started during this period. We will investigate the empirical foundation of this hypothesis.[9]

The SSN health program follows a decentralised design, where the allocation of health cards and funds is delegated to lower administrative levels. The amount of subsidy for public health care providers to be distributed across districts, along with the number of health cards to be issued, was determined by a *pre-intervention* poverty estimate. This poverty measure is constructed by the national family planning board (*Badan Koordinasi Keluarga Berencana Nasional* – BKKBN) and counts the number of poor households per district based on the so-called *prosperity status*. Under this

[8] Modern health care is here defined as public health care providers – hospitals, health clinics (*Puskesmas*), village maternity posts (*Polindes*) and integrated health posts (*Posyandu*) – and private providers – hospitals, doctors, clinics and paramedical services. Traditional health care is not included.

definition a household is deemed poor when they have insufficient funds for any one of the following: (i) to worship according to faith, (ii) eat basic food twice a day, (iii) have different clothing for school/work and home, (iv) have a floor not made out of earth, or (v) have access to modern medical care for children or access to modern contraceptive methods. The BKKBN regularly collect this information on a census basis. This BKKBN prosperity measure is rather an unsuitable allocation criterion for the SSN, since its components are fairly inflexible and inappropriate for measuring economic shocks or the impact of a crisis. However, at the time of implementation it was the only up to date welfare measure at hand.

At the district level committees were formed to deal with the allocation of funds to the health clinics and village midwifes. This allocation was based on the BKKBN estimate of poor households eligible for a health card in the village or sub-district (*kecamatan*) that is served by each public provider. The transfer was not influenced by the actual services provided to health card owners. The district committee allocated health cards to villages, again based on the BKKBN measure, where the village leaders headed village committees. Along with the health cards they received guidelines on which criteria to use when distributing the health card to households. Besides households that were classified as poor by the BKKBN, the village committees were to consider households that were severely affected by the crisis. The local leaders however maintained a lot of leverage to distribute health cards according to their own insights. Health cards were usually distributed through local health centres and village midwifes.

The health card entitled the owner and family members to free services at public health care providers consisting of (1) outpatient and inpatient care, (2) contraceptives for women in child bearing age, (3) pre-natal care and (4) assistance at birth. In this paper we limit ourselves to the impact of the health card program on outpatient healthcare utilisation.

By February 1999 the health card program was already of a substantial magnitude with 10.6 percent of Indonesians reporting that their household was allocated a health card. For the poor this percentage is even higher. Table 3 shows that 18.5 percent of individuals from the poorest quintile had a health card. For people in

[9] Another explanation for the dip in 1998 would be that households postponed preventive care, in anticipation of the health card. But this is unlikely because the SSN interventions had not been announced when the 1998 Susenas survey was conducted.

the second poorest quintile (about half of which are estimated to live below the poverty line at that time) this is 13.7 percent. So even though we are analysing the program in its very early stages, it was already in full swing at the time of the 1999 Susenas survey. Table 4 provides descriptive statistics for health card owners and others. Column 1 shows the statistics for households without a health card, while column 2 shows the characteristics for households that did receive a health card. It appears that households that own a health card are generally poorer, slightly larger and work more often in agriculture compared to non-health card owners. Heads of households with a health card have on average a lower education and are more likely to be females.

Utilisation of outpatient care is higher amongst households that own a health card, especially in case of public services. The utilisation rates provided in Table 5 indicate that 15.1 percent of the health card owners visit an outpatient provider during a period of 3 months, compared to 12.9 percent for the non-health card owners. Although health card owners tend to choose public providers more often, they do not always use their health card. 3.7 out of 10.4 percent of the health card owners report not to use the health card when seeking care at a public provided. Also we find a few instances that a health card is used while the household head reports not to own a health card. Technically, these type of occurrences are possible because ownership is collected from the household head while utilisation is collected by individual. Qualitative research by Soelaksono *et al.* (1999) suggests several reasons why health card owners did not always use their health card for treatment. They find that in some public facilities, the time allocated to patients with a health card was limited, and that in remote areas the lack of access to the nearest public facility was a possible deterrent to use the health card. They also found strong indications that patients perceived the care received using a health card to be of lower quality than services and medicines obtained when not using the health card. Ownership of health cards is distributed pro-poor[10]. The concentration curves for ownership and utilisation are presented in figure 2. The poorest 20 percent of the population own 35 percent of the health cards. Still there is considerably leakage to the more wealthy households. Considering that about 10 percent of the households received a health card, perfect targeting would imply

that all health cards were obtained by the poorest 10 percent of the population. However, we find that households from the wealthiest 60 percent of the population own about 40 percent of the health cards. Utilisation of health cards is also pro-poor but slightly less so. Those who received benefits were on average wealthier than those who received the card.

The 1999 health facility survey can provide some more insight on how the SSN health funds have been used. Disbursements to public providers started at the end of 1998, and they were left fairly free in how to utilise the funds. Table 6 shows the type of expenses for which the health clinics chose to use the SSN health grants. The largest fraction (41 percent) of SSN health spending concerned medicines and 12 percent was spent on additional materials. In rural areas the share used for medicine is far larger than in urban areas (43 and 38 percent respectively). The village midwifes used 38 percent of the funds for medicine and 16 percent for supplies, both urban and rural. This reflects the shortage of medicine during the crisis, suggesting that this problem was especially relevant in rural areas.

## 4. Impact of Healthcard Program on utilisation

What would have been the utilisation of outpatient health services if the SSN health card program had not existed? Note that this question comprises two effects: the effect of the health card program on the health card owners and the effect of the program on the household that did not receive a health card. The second effect cannot be assumed to be zero as is usually assumed in an impact evaluation. The additional budgetary resources, net of what is allocated to serve health card owners at a subsidised rate, can potentially benefit the entire population living in the area of service of the provider. We will analyse both effects. Our approach is to treat the two effects as two separate interventions. One is the distribution of health cards to those in need (the *pure* health card program), the second is a general increase in budgetary support to public sector services.

The maintained assumption is that the first intervention – the distribution of health cards – did not have any effect on the quality of the public services. It accrues

[10] Following Lanjouw *et al.* (2002) we use the poverty line as spatial price deflator to control for relative price differences across regions. The argument behind this approach is that regional poverty lines capture spatial differences in the cost of living, in that they reflect the level of expenses required for obtaining some reference level of utility. We use the poverty lines from Pradhan *et al.* (2001).

benefits only to those who actually own a health card. The second intervention affects the whole population. This is a strong assumption, ruling out crowding out effects due to the health card program. We will investigate the sensitivity to this assumption later in the paper.

The impact of the first intervention – the distribution of health cards – can be analysed by forming a control group from the population that did not receive a health card. Since both health card and non-health card owners benefited from the transfer of funds to health care providers, this measures the differential effect of owning a health card conditional on the transfer program. For the second intervention – the general increase in the budget of public health care providers – it is not possible to create a control group from the same sample as this intervention affected everyone. The impact of the total program is estimated using a dynamic approach exploiting the variation in compensation for the health card program to public health clinics and village midwifes across districts and the fact that the allocation to districts was based on pre-intervention poverty estimates. We analyse the utilisation rates before the introduction of the health card program – based on the 1998 Susenas – and compare these with the situation right after the introduction of the health card program. The resulting impact estimate is a result of the two interventions acting simultaneously. The impact of the general increase in funding to public services is then obtained by subtracting the former estimate from the latter.

More formally, the combined average impact of the two interventions can be written as the sum of the two impacts separately. Let $Y_i(h_i, q_j)$ denote the outcome for individual *i*, living in district *j*, as a function of the two interventions. If a person lives in a household that has received a health card then $h_i = 1$, while $h_i = 0$ for non-recipients. $q_j$ reflects the SSN budgetary support to public health care providers in the area where the person lives (indicated by $SSN_j$).

We want to know to what extent the observed development in utilisation from 1998 to 1999 is due to these two interventions. The overall impact of the program that we want to retrieve can be expressed as a weighted mean of the impact on the population with a health card ($h_i = 1$, $q_j = SSN_j$) and people who did not receive a health card, but only benefited from the budget increase ($h_i = 0$, $q_j = SSN_j$). Assuming that utilisation of health card owners and that of non-health card owners is independent, we can write the overall impact as

$$
\begin{aligned}
&p\left\{E\left[Y_i\left(1, SSN_j\right) \mid h_i = 1, q_j = SSN_j\right] - E\left[Y_i(0,0) \mid h_i = 1, q_j = SSN_j\right]\right\} \\
&+ (1-p)\left\{E\left[Y_i\left(0, SSN_j\right) \mid h_i = 0, q_j = SSN_j\right] - E\left[Y_i(0,0) \mid h_i = 0, q_j = SSN_j\right]\right\}
\end{aligned} \tag{1}
$$

where $p = \Pr(h_i = 1)$, the probability of receiving a health card. $E\left[Y_i\left(1, SSN_j\right) \mid h_i = 1, q_j = SSN_j\right]$ reflects the observed average outcome for the population with a health card, while $E\left[Y_i\left(0, SSN_j\right) \mid h_i = 0, q_j = SSN_j\right]$ is the observed average outcome for individuals who did not receive a health card. The other two terms reflect the expected counterfactual outcomes for the two groups, if the programs had not been implemented. We can rewrite equation (1), by adding and subtracting $pE\left[Y_i\left(0, SSN_j\right) \mid h_i = 1, q_j = SSN_j\right]$, as

$$
\begin{aligned}
&p\left\{E\left[Y_i\left(1, SSN_j\right) \mid h_i = 1, q_j = SSN_j\right] - E\left[Y_i\left(0, SSN_j\right) \mid h_i = 1, q_j = SSN_j\right]\right\} \\
&+ E\left[Y_i\left(0, SSN_j\right) \mid q_j = SSN_j\right] - E\left[Y_i(0,0) \mid q_j = SSN_j\right]
\end{aligned} \tag{2}
$$

Here the first two terms (weighted by $p$) give the impact of the pure health card program conditional on the budget increase, for those who own a health card. We will refer to this as the *direct* effect of the program. The last two terms reflect the effect of budget increase for the whole population, which we will refer to as the *indirect* effect of the SSN program.

First, we concentrate on the estimation of the direct effect of the health card intervention. For obvious reasons, a direct comparison between health card owners and non-health card owners after the introduction of the program does not yield a valid impact estimate. The expressions above are conditional upon selection and since selection was not random, we *cannot* presume that $E\left[Y_i\left(0, SSN_j\right) \mid h_i = 1, q_i = SSN_j\right] = E\left[Y_i\left(0, SSN_j\right) \mid h_i = 0, q_i = SSN_j\right]$. The health card was distributed to poor households, and even without a health card their utilisation would have been different from the relatively wealthier non-health card households.

There are various approaches one can take to correct for this non-random placement of the program. A frequently used method is propensity score matching,

which relies on matching on observables, and the assumption of conditional independence.[11] That is, conditional on a set of observed characteristics selection into the program can be treated as random (Heckman and Robb, 1985; Holland, 1986). Recent advances have greatly increased the popularity of this method.[12] The success in reducing the systematic differences between the control and treatment group increases when more variables are used to match households. However, the more variables are used, the more difficult it will become to match households. Rosenbaum and Rubin (1983) proved that if it is valid to match on all of the selected variables separately, it is equally valid to match on the propensity score only. The propensity score is the probability of obtaining treatment as a function of the observed matching variables. This result greatly reduces the dimensionality of the problem. Instead of having to match on several variables, it now suffices to condition on just one variable, the propensity score. The propensity score function can be estimated with a logit model. The unit of our analysis is the household, as health cards were distributed at this level. Households in the treatment group are matched to households in the potential control group. Note that as a result, the sample size of the treatment and matched control group – in terms of individuals – are different as the household sizes vary.

The main weakness of this method is that one cannot be sure that all systematic differences between the control and treatment group that influence utilisation have been removed during the match. The extent in which the propensity score matching will reduce the bias depends on the specification of the propensity score model and the quality of the control variables (Heckman *et al.*, 1997). It is therefore crucial to understand the program design and to include sufficient information about the selection procedure (at all allocation levels) in the model. There are three sources of bias that we want to deal with. The first, and most obvious, is the endogenous placement of health cards with households. Second, since we want to estimate the *pure* health card effect, we want to purge it from any effects of the block

[11] We experimented with instrumental variables but abandoned this approach because we are not convinced that we are able to construct adequate instruments. We used variables that measure the perception of fairness of the distribution of health cards in the district. But the results were very sensitive to specification and choice of instrument. We also experimented with 1997 district BKKBN estimates. However, using 1998 data we found that these variables appear to be correlated with the level of utilisation (but not with changes).

[12] See Imbens (2003) for a survey.

grants. Finally, we need to take account of increased demand for public services, which may result from the allocation of health cards.

To control for the first stage allocation process we include district fixed effects. These capture any between district variation in allocation of health cards and SSN funding. BKKBN poverty estimates for sub-districts control for allocation of subsidy within districts and the number of health cards issued in the areas covered by the facilities. Thus, we are matching households who live in areas that enjoy/suffer similar program intensity and similar supply shocks in health care.

At the village level we include variables from the Podes that reflect pre-program access to health care. These include the number of public health clinics, auxiliary health clinics and maternity facilities in the village, dummy variables indicating whether the majority of village traffic is by land, and a dummy variable reflecting the village leaders' opinion about the accessibility of health clinics. As local facility staff distributes the health cards, we include the number of doctors and village midwifes living in the village (per 1000 inhabitants) as a proxy for informal contacts within the village. Finally, the level of education of the village leader is included, as well as dummy variables indicating IDT eligibility and whether the village is located in a rural area.[13]

For households we include the five BKKBN allocation criteria as dummy variables. Other household welfare variables refer to housing characteristics (status of house occupied, type of roof, walls and floor, sewage, sanitation and drinking water facilities, and source of light), sector of main source of household income, and employment status of the head of household. We further control for household composition (gender and age), household size and head of household characteristics (gender and education level). Per capita consumption is endogenous since a health card reduces health care expenses, and is therefore omitted. A household with a health card would, on average, report a lower consumption level than it would if it had not received a health card.[14] If we add household expenditure to the propensity score function we would be constructing a control group that is less wealthy than the intervention group. Consequently, we would overestimate the health card effect.

[13] IDT refers to the *Inpres Desa Tertinggal* program, an anti-poverty program for economic less developed villages.
[14] See van de Walle (2003) for a discussion on assumptions about behavioural responses regarding the effect of public policy on household consumption.

We estimated the propensity score function separately for five main regions in Indonesia.[15] In this way we restricted the match to households living in the same region. A household with a health card living in Java could for instance, never be matched with a household without a health card living in Sumatra. The reason for doing so is that we believe that there are unobserved characteristics which vary by region that influence the effect that other variables have on the probability of receiving a health card. The Pseudo R-squared for the regional models ranged from 0.12 to 0.26.[16]

Households that own a health card are matched to households without a health card, based on the estimated propensity score. There is a variety of matching methods that can be applied (Dehejia and Wahba, 1999; Dehejia and Wahba, 2002; Imbens, 2003). We implemented *nearest neighbour* matching, the simplest matching procedure. For each household in the treatment group we selected a control-household with the nearest value of the propensity score. This way of constructing a control group basically boils down to re-weighing the potential control group. Those households that are not matched receive a weight of zero, those who are matched once receive a weight of one, and those matched more than once receive a weight higher than one. The choice between allowing matching with replacement or without involves the trade-off between increasing precision and reducing the bias. Matching with replacement will give the least biased estimate, but reduces precision of the estimate, as the weights for multiple matched observations increase the variance. The drawback of matching without replacement is that it yields a shortage of possible matches for those households with a high propensity score. We used the rule that when the match obtained without replacement had a propensity score that differed more than 0.001 from the propensity score of the household in the treatment group, we resorted to matching with replacement. If no match was found within a radius of 0.001 we did not match the household to a control.

The quality of match is best illustrated using a graph. Figure 2 graphs the distribution of the propensity score for the matched households in a histogram, while Table 7 depicts the distribution of the propensity score for the intervention group, potential controls and households matched more than once. The number of matched

[15] The 5 regions we define are (i) Java and Bali, (ii) Sumatra, (iii) Sulawesi, (iv) Kalimantan and (v) Other Islands.
[16] The estimation results for the propensity score function are available upon request from the authors.

household's decreases as the probability of selection increases. The region of overlapping support ranges from 0.0008 to 0.8473. Households outside this range are not considered in the matching procedure.

The matched households are very similar on the basis of the individual observed characteristics, which entered into the matching function. This is evident from Table 4, where column 2 and 3 present the descriptive statistics for the matched samples, and columns 4 and 5 show the difference in means of the covariates. The top panel presents variables that were included in the matching function, and shows that the two samples are well balanced across the observed characteristics. The second panel shows that the district dummy variables managed to control for the supply shock in the matching process. Both program intensity variables are balanced for the matched households, while they differ strongly for the non-matched households.

The differential impact of ownership of a health card is estimated by comparing utilisation patterns of the treatment and matched control group. Comparing means yields the average impact of the pure health card intervention on health card owners. It can easily be obtained by estimating the regression

$$(3) \qquad Y_i = \delta + \beta\, HC_i + \varepsilon_i$$

on the matched sample applying sample weights. $\hat{\beta}$ is an unbiased estimate of the pure treatment effect for those who are selected into the program, $E\left[Y_i\left(1, SSN_j\right) \mid h_i = 1, q_j = SSN_j\right] - E\left[Y_i\left(0, SSN_j\right) \mid h_i = 1, q_j = SSN_j\right]$ in equation (2). The pure health card effect is then $\hat{p}\hat{\beta}$, where $\hat{p}$ is the estimated probability of selection into the program ( $\hat{p} = \Pr(h_i = 1)$ ).

The overall impact of the program, as defined in equation (1), is obtained by exploiting regional variation in the financial compensation for the health card program to public health care providers. We assume that the increase in funding will capture the combined direct and indirect effects. Later in the paper we evaluate the robustness of this approach. To measure the variation in SSN compensation we use administrative data concerning the 1998/1999 budget that was allocated for transfers to public health facilities. The variation was substantial. For example, we found that the amount of compensation, weighted by the district population size, in Sulawesi is

29 percent higher than in Sumatra and 34 percent higher that in Java/Bali, but about half of what is allocated to the smaller islands (Table 8).

We model the effect of the general increase in funding as a linear function of the budget allocation. For district *j*, in time period *t*, the utilisation of health services is written as

$$(4) \qquad Y_{jt} = \alpha_j + \theta_0 d_t + \sum_{r=2}^{5} \theta_r d_r d_t + \gamma \frac{SSN_{jt}}{N_{jt}} + \phi' W_{jt} + \varepsilon_{jt}$$

where $SSN_j$ is the amount of compensation for public health clinics allocated to district *j*, $N_j$ denotes the district population size. Subscript *t* indicates time and refers to either the time period before the intervention (1998) or the time period after the intervention (1999). We include a time dummy variable, taking value $d_t = 0$ if $t =$ 1998 or $d_t = 1$ if $t = 1999$. The time variable has been interacted with 5 region specific fixed effects, $d_r$, in order to allow for some flexibility in capturing the time effect.[17] In the pre-intervention year $SSN_j$ equals zero for all districts. We also add a set of regional welfare and demographic characteristics, $W_{jt}$, to the model. These include the poverty profile of the districts[18], the average age and household size, the district population size, and the fraction of the population living in a rural area. Frankenberg *et al.* (2003) show evidence of changes in household size, migration between urban and rural areas due to households restructuring their composition in response to the crisis. While the average household size increased in (lower cost) rural areas, the number of working age family members increased in urban households.

The non-random allocation of the SSN budget is accounted for by a district fixed effect, $\alpha_j$. This removes any bias due to unobserved time invariant factors that affect geographic allocation and are also correlated with health care utilisation. The fact that the SSN budget allocation was determined by static pre-program poverty estimates, the BBKBN classification, and not on the basis of dynamic changes in poverty legitimises the fixed effects approach.

Taking differences across districts over time gives

[17] Java and Bali (region 1) are used as reference group.

[18] The poverty profile is portrayed by the poverty rate ($P_0$) and poverty gap ($P_1$), with $P_\alpha = n^{-1} \sum_{i=1}^{q} (1 - c_i / pl)^\alpha$ , where *pl* is the poverty line and *q* the number of individuals for which $c_i \leq pl$ (Foster, Greer and Thorbecke, 1984).

$$(5) \qquad \Delta Y_{jt} = \theta_0 + \sum_{r=2}^{5} \theta_r d_r + \gamma \frac{SSN_{j99}}{N_{j99}} + \phi' \Delta W_{jt} + \Delta \varepsilon_{jt}$$

Estimating (5) by OLS yields unbiased estimates under the assumption that the allocation of SSN funds is not correlated with time variant unobservables. If the geographic allocation is correlated with important district-level trends that are not captured by the time dummies or $\Delta W_{jt}$, then OLS estimates may still be biased. This is not very likely, given that the BKKBN indices are badly suited for capturing the changes in welfare. Further reassurance is given by the fact that we find no correlation between SSN allocation (per capita) and changes in utilisation from 1998 to 1997.

The overall impact of the program is then obtained by taking a population weighted average of the effects for the districts

$$(6) \qquad \sum_{j=1}^{J} \hat{\gamma} \frac{SSN_j}{N_j} \frac{N_j}{N} = \hat{\gamma} \overline{SSN}$$

where $\overline{SSN}$ is the average financial compensation for the health card program per person across the country, and $J$ the number of districts.

The estimated impact of the supply impulse on the utilisation of outpatient services (i.e., the indirect effect) is given by the difference between the estimate of the average total effect and the average pure health card. Inserting (6) and the estimate of $\beta$ in (3) into (2) yields an expression for the impact of the general budget increase for public service providers

$$(7) \qquad E\left[Y_i\left(0, \overline{SSN}_j\right) \mid q_j = \overline{SSN}_j\right] - E\left[Y_i(0,0) \mid q_j = \overline{SSN}_j\right] = \hat{\gamma}\overline{SSN} - \hat{p}\hat{\beta}$$

## 5. Results

The estimation results of the pure health card effect on outpatient utilisation for health card owners $(\hat{\beta})$ and the average pure effect $(\hat{p}\hat{\beta})$, are given in Table 9. The estimate of $\hat{p}$ is simply the fraction of individuals living in a household that owns a health card. The table also shows contact rates for outpatient services for the matched

intervention and control groups, and the percentage change relative to the counterfactual. The effects are estimated for reported utilisation over a one-month reference period.[19]

Health card ownership resulted in a relative increase in the use of outpatient services of 9.1 percent, and an absolute increase of 1 percentage point. This increase was due to an increase in utilisation from the poorest four quintiles, while for the richer quintile we only observe a substitution effect from private to public health care providers. The highest increase, relative to the base, is seen for the third quintile (16.8 percent), followed by the poorest group (14.2). For all income groups health card ownership resulted in an increase in the use of public sector services and a decrease in the use of private sector services. For the richest quintile the two effects cancelled out, as we see a small, statistically not significant, increase in overall utilisation. The shift from private to public care seems to have occurred in both urban and rural areas. The health card program affected utilisation amongst women more than it did amongst men, possibly because of the maternity services covered under the health card program. Both the overall increase in outpatient visits and the substitution effect from private to public were larger for women.

Table 11 presents the estimates of $\gamma$ from equation (5), and the estimates of the overall effect of the program $(\hat{\gamma}\,\overline{SSN})$, defined in equation (6). These estimates are also based on a one-month reference period. The results indicate an absolute increase in the use of public sector services of 0.5 percentage point, while the program does not affect the use of private sector services. We find that the effect is larger for the wealthier quintiles. For the first and third quintiles the estimates are small and not significant. As with the pure health card effect, the overall effect of the program on public services is larger for females than for males. The program had the largest impact on the use of public care in rural areas, while for urban areas the estimates are not precise. Since private care seems unaffected, we find similar results for the overall effect on utilisation.

The indirect effect, which could be attributed to an overall supply or quality impulse as a result of the extra budget support in the public sector, seems to have been

[19] Each year the Core of the Susenas collects utilisation using a one-month reference period. We also estimated the effects based on a three months reference period, which was used in the 1999 SSN module. However, these data may partly reflect pre-intervention outcomes, so we need to be careful

a main contributor to the increase in the use of public health care services. Combining the estimates in Table 11 with those referring to the one month reference period in Table 9 allows us to investigate what share of the increase in the use of public sector services is due to the indirect effect (as defined in equation (7)), and to the pure health card effect. The share of the indirect effect to the total effect is given by $1-\left((\hat{p}\hat{\beta})/(\hat{\gamma}\overline{SSN})\right)$. About 80 percent of the overall increase in utilisation is a result of the indirect effect. In the public sector about half of the total increase can be attributed to the indirect effect of the budget increase. The results also suggest that the indirect benefits of the program increase with income. For the richest quintile only 7 percent of the increased utilisation of public care can be attributed to the health card itself, while for the poor there is no evidence of any indirect effect. Finally, the supply impulse had an above average effect in rural areas, emphasising the shortage of resources with rural public health care providers.

So can the revival of the public sector utilisation be attributed to the Social Safety Net Program? It appears to be. The estimates reported in Table 11 can be used to estimate the utilisation if the health card program had not existed. From (6) it shows that the impact on overall utilisation is the estimate of $\gamma$ times the average compensation to health care providers ($\overline{SSN}$). The results indicate that health card program increased outpatient contact rate by 0.55 percentage point and the contact rate at public facilities by 0.47 percentage point. In Table 1, where we reported the trends in health care utilisation, we added the counterfactual of what would have been public and private sector utilisation in absence of the health card program. From 1998 to 1999 the contact rate for public sector services increased from 5.0 to 5.3 percent, while the contact rate for modern health care providers remained stable at 10.5 percent. The estimates suggest that without the health card program public sector utilisation would have dropped further to 4.9 percent, and the overall contact rate would have dropped to 10.0 percent.

interpreting these results. Nevertheless, the estimates show a similar impact as the one-month recall period. These results are available upon request from the authors.

## 6. Caveats and sensitivity analysis

*Crowding out*

The main assumption underlying our study is that utilisation of health card owners is independent from that of non-health card households. This implies that the number of health card recipients (i.e., the program intensity) in the region does not affect utilisation of care for non-recipients. However, if health care supply would be inelastic, then distributing health cards could lead to a crowding out effect. Resources would be redistributed from non-recipients to health card recipients. In this case the estimated direct effect of the health card will be biased upward. The difference in utilisation would consist of the "true" health card effect and the crowding out effect.

One might argue that the crowding out effect is likely to be small. Since health card coverage is 11 percent and concentrated among the poor whose health care demand is typically low, it is unlikely that the program would seriously strain the capacity of health care facilities. We can test this argument by controlling for health card intensity when we estimate the direct effect, by including the average number of health cards distributed in the district. We also include the sub-district allocation criteria and village level characteristics to capture program intensity at lower administrative levels. If the estimated direct effect is indeed biased upward by crowding out effects then we would expect the results to be sensitive to these control variables.

The results in Table 10 suggest that the estimated direct effect is not biased due to crowding out effects. Specification (1) controls for a set of individual and households characteristics, IDT village and rural area dummies, and the availability of health facilities in the village. Specification (2) adds the sub-district BKKBN index, program intensity at district level, and the poverty profile ($P_0$, $P_1$). The fraction of the population with a health card and the SSN budget per capita allocated to the districts reflect program intensity. The estimated effects do not change much, and remain within one standard deviation from the estimates in Table 9.

*Interaction effects*

It is possible that the benefits of the health cards depend on the size of the SSN grants allocated to an area. The quality of care provided to health card owners may well increase with the financial compensation. So far we have ignored interaction effects

between the health card program and the SSN budgetary support. The district dummy variables included in the matching functions do capture program intensity and the supply shock induced by the SSN budget. Moreover, our estimation method allows for unobserved effect heterogeneity due to regional variation in SSN intensity, since we simply average the estimated impact for all the households with a health card. Nevertheless, we can investigate whether our estimates are sensitive to these interaction effects.

Another interaction effect, related to crowding out, occurs when the benefits of a health card decrease if the pressure of the health card program increases in a region. If this is the case, we expect a negative interaction effect.

Specification (3) in Table 10 includes interaction terms of the health card with the two program intensity indicators. Our estimates seem not to be affected by the interaction effects. The point estimate for the direct health card effect on overall utilisation is slightly larger, but still within one standard deviation. The substitution effect between public and private is also slightly larger than in Table 9. The interaction effects are not statistically significant.

*Selection on health status*

A third problem, and potentially more serious, is that we have not taken account of the possibility that households may have been selected based on health status. Those with poor health may have received a health card because of their higher anticipated need while other – otherwise similar – persons did not receive one. Officially health cards should have been distributed based on BKKBN criteria but health status could well have played a role in the actual distribution. If this is true, not including a measure of health status in the matching function will result in an intervention group with a worse health status than the control group. Poor health will, ceteris paribus, increase the demand for health care. The resulting impact estimate will be larger or equal to the true effect.

The only measure of health status the Susenas collects is self-reported illness. However, including self-reported illness in the matching function would likely have resulted in an underestimate of the true health card effect. The evidence indicates that self-reported illness depends on the affordability of care. We find that the rich report more often ill compared to the poor, which is surely not a result of the rich having a worse health status than the poor. If self-reported illness indeed depends on the

affordability of health care, and health care is more affordable for those who own a healthcard, then matching on self reported illness will result in a control group with worse health status than the intervention group. Better health will, ceteris paribus, decrease the demand for primary health care. Hence our impact estimate would have been an underestimate.

The two impact estimates, obtained without and with including self-reported illness in the matching function, can give us some notion on the extent of the bias. The health card effect should lie between the estimate that does control for self-reported illness (lower bound) and that which does not (upper bound). The results suggest that our estimates and conclusions are not sensitive to systematic differences in health status, since the estimated bounds lie close to each other. We included a dummy variable that indicated whether a health complaint has disrupted work, school or daily activities for any member of the household during the last month in the matching function. Specification (4) in Table 10 gives the results for a one-month reference period. Comparing it with Table 9, we see that the estimate for all outpatient care decreases slightly, from 0.0101 to 0.0081. The point estimates are within one standard deviation. This leads to an upper- and lower bound for the direct effect of 0.11 to 0.09 percentage point, respectively. The difference comes from the change in demand for public care. The estimated effect for private care remains unchanged.

*Total effect*

Does the SSN budget allocation identify the combined effect of the increased funding and the allocation of health cards, as we defined it in equation (1)? It could be, for example, that there are districts with a high SSN allocation but with a delay in health card distribution at the time of the survey. Does the variation in SSN budget then adequately capture the total effect? To investigate this we added health card coverage to the model, as well as an interaction term with the SSN variable. If the budget allocation does not identify the total effect, we expect the results to be sensitive to the new variables.

Note that health card allocation data is likely to be endogenous. Unlike the SSN budget, it is not administrative data driven by pre-program welfare indicators. It reflects the actual allocation of health cards, which depends on district specific infrastructure, organisation and welfare characteristics, and is likely to be correlated

with the heterogeneous effects of the crisis. Therefore, we use the BKKBN indices from December 1997 as instruments for health card allocation.[20]

The results are given in Table 12 and suggest that our original estimates are fairly robust and capture the combined effect of the program. When we add health card penetration, the coefficients for the SSN grants are a slightly larger and a little less precise. Neither the coefficient of the health card variable or that of the interaction term is significant.

## 7. Conclusion

This paper presented an impact evaluation of the health card program as it operated under the Social Safety Net in its very first months. It shows that in many ways the program was a success. In other ways the program has achieved things which may not have been the objective at the outset. The health card program has a weak link between the delivery of services to health card owners and the financial compensation. Service providers were reimbursed using a lump sum transfer based on the number of health cards distributed to their area of influence. As a result, serving a health card owner did not result in a direct financial reward to the service provider. This makes the health card program a rather particular case of a targeted price subsidy scheme.

The particular design resulted in a weak link between health card ownership and utilisation. We find that often health card owners did not use their health card when obtaining care from public service providers. Also we find instances in which a patient reports the use of the health card while the head of the household reports not to own a health card. It seems like several factors are at play. High rejection rates could follow from the delays in the lump sum transfers made to the providers. The second case could arise if service providers distribute health cards when the patients show up to ask for services.

There is clear evidence that the health card program was pro-poor in the sense that the poor had a higher probability of receiving a health card and if they received a health card, they increased the use of health services presumably making them

[20] We use the indices for the two poorest BKKBN classifications (pre-prosperous and KS1). Households ranked in one of these groups are eligible for a health card. The instruments are not correlated with the pre-crisis trend. An over-identifying restrictions test further validates the instruments. Detailed results are available upon request from the authors.

healthier. However, there is considerable leakage to the richer quintiles, and utilisation of services is less pro-poor than ownership. Conditional on ownership, the rich have a higher propensity to use their health card.

Returning to the questions we started out with, we found that for all households health card ownership resulted in a large substitution effect away from the private sector to the public sector, with a net increase in the overall use of outpatient medical services. A dynamic analysis further indicates that the combined SSN program resulted in an increase of the outpatient contact rate at modern health care providers of 0.55 percentage point. In the event the program would not have existed outpatient utilisation would have further fallen in 1999. However, the increased utilisation due to the direct health card effect only contributes about 20 percent to that. A considerable proportion of the impact of the program seems to have been through the budgetary support for public services. If this is true, the comeback of the public sector in the provision of outpatient care can be attributed for a large part to the supply impulse induced by the increased spending under the SSN health program.

However, the effects of both the direct health card and the supply impulse show a strong heterogeneous pattern across sub groups of the population. While the targeting and impact of the pure health card program is pro-poor, the total effect is not. The poor are responsive to a price subsidy but not to a supply impulse. The health card increased utilisation and led to a substitution effect from private to subsidised public care. For the non-poor, however, utilisation seems to be mainly supply driven, as the health card only affected their choice of health care provider without increasing utilisation.

The impact of the program has suffered from the weak link between reimbursements for public service providers and utilisation of the health card. Those in the poorest quintile did only benefit from the program if they received a health card, as the results indicate that they did not benefit from the supply impulse. In the end, the non-poor captured most of the benefits of the overall program. This emphasises that in absence of clear incentive mechanisms for health care providers, general increases in public spending are relatively ineffective in reaching the poor. A stronger link between provision of services and budget would likely have improved the targeting to the poor.

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# Tables and Figures

Table 1 Changes in outpatient contact rates for public and private care, 1995 to 1999 (percentage of population that visited provider at least once in previous month)

| Provider | 1995 | 1997 | 1998 | 1999 | 1999 without SSN |
|---|---|---|---|---|---|
| Public | 7.00 | 6.65 | 5.03 | 5.34 | 4.87 |
| | [0.083] | [0.085] | [0.062] | [0.071] | |
| Private | 6.48 | 6.71 | 6.11 | 5.80 | 5.67 |
| | [0.073] | [0.079] | [0.070] | [0.078] | |
| Modern (public or private) [a] | 12.83 | 12.83 | 10.48 | 10.53 | 9.98 |
| | [0.111] | [0.118] | [0.098] | [0.110] | |
| Nr. of observations | 873,647 | 887,266 | 880,040 | 864,580 | |

Note: Standard errors in square brackets.

[a)] The contact rate for all modern care is smaller than the sum of the contact rates for public and private care since individuals who sought both public and private care are counted only once in the aggregate.

Table 2 Changes in outpatient contact rates, 1995 to 1999, by type of provider

| Provider | 1995 | 1997 | 1998 | 1999 |
|---|---|---|---|---|
| Public hospital | 0.64 | 0.60 | 0.64 | 0.59 |
| | [0.015] | [0.017] | [0.017] | [0.019] |
| Private hospital | 0.40 | 0.41 | 0.40 | 0.39 |
| | [0.016] | [0.015] | [0.013] | [0.018] |
| Private doctor | 3.01 | 3.14 | 2.84 | 2.63 |
| | [0.050] | [0.053] | [0.044] | [0.052] |
| Primary health centre (*Puskesmas*) | 4.66 | 4.31 | 3.25 | 3.46 |
| | [0.065] | [0.069] | [0.049] | [0.057] |
| Subsidiary health centre (*Puskesmas Pembantu*) | 1.69 | 1.66 | 1.01 | 1.01 |
| | [0.046] | [0.044] | [0.031] | [0.032] |
| Private clinic | 0.42 | 0.39 | 0.34 | 0.31 |
| | [0.020] | [0.020] | [0.015] | [0.016] |
| Integrated health centre (*Posyandu*) | 0.19 | 0.20 | 0.12 | 0.10 |
| | [0.009] | [0.011] | [0.008] | [0.007] |
| Village maternity room (*Polindes*) | 0.38 | 0.24 | 0.26 | 0.40 |
| | [0.017] | [0.013] | [0.015] | [0.015] |
| Paramedical practitioner (*Petugas*) | 2.82 | 2.93 | 2.80 | 2.70 |
| | [0.048] | [0.052] | [0.048] | [0.049] |
| Traditional care | 0.73 | 0.63 | 0.43 | 0.40 |
| | [0.020] | [0.018] | [0.014] | [0.015] |
| Nr. of observations | 873,647 | 887,266 | 880,040 | 864,580 |

Note: Standard errors in square brackets.

Table 3 Percentage of Indonesians living in households owning a health card, by per capita consumption quintile

| | Percentage |
|---|---|
| Quintile 1 (poor) | 18.45 |
| Quintile 2 | 13.71 |
| Quintile 3 | 10.61 |
| Quintile 4 | 7.09 |
| Quintile 5 (rich) | 3.71 |
| Indonesia | 10.62 |
| Number of observations | 822,607 |

Table 4 Descriptive statistics for households with and without a health card, and for matched pairs

| Variable | All households | | Matched pairs | | | |
|---|---|---|---|---|---|---|
| | No health card | Health card | No health card [a] | Health card | Diff. | [s.e] |
| Propensity score | 0.0823 | 0.2488 | 0.2433 | 0.2433 | -0.0000 | 0.0018 |
| Female head of household | 0.1268 | 0.1608 | 0.1618 | 0.1601 | -0.0017 | 0.0038 |
| Education head of household | | | | | | |
| No education completed | 0.3641 | 0.5087 | 0.5090 | 0.5073 | -0.0017 | 0.0052 |
| Primary | 0.2985 | 0.3324 | 0.3289 | 0.3327 | 0.0038 | 0.0049 |
| Junior secondary | 0.1220 | 0.0814 | 0.0818 | 0.0818 | 0.0000 | 0.0028 |
| Senior secondary | 0.1689 | 0.0667 | 0.0693 | 0.0674 | -0.0019 | 0.0026 |
| Higher | 0.0465 | 0.0107 | 0.0111 | 0.0108 | -0.0003 | 0.0011 |
| Head of household unemployed | 0.0079 | 0.0074 | 0.0075 | 0.0074 | -0.0001 | 0.0009 |
| Household size | 4.2043 | 4.2576 | 4.2211 | 4.2449 | 0.0238 | 0.0189 |
| BKKBN criteria | | | | | | |
| Worship | 0.9343 | 0.8894 | 0.8911 | 0.8902 | -0.0010 | 0.0032 |
| Food | 0.9835 | 0.9778 | 0.9785 | 0.9790 | 0.0004 | 0.0015 |
| Clothing | 0.9645 | 0.9473 | 0.9487 | 0.9487 | 0.0000 | 0.0023 |
| Floor | 0.8193 | 0.5935 | 0.5962 | 0.5954 | -0.0008 | 0.0051 |
| Health | 0.8899 | 0.9061 | 0.9056 | 0.9057 | 0.0001 | 0.0030 |
| Main source of household income | | | | | | |
| Agriculture, farming | 0.4551 | 0.5568 | 0.5526 | 0.5546 | 0.0020 | 0.0051 |
| Mining, quarrying | 0.0097 | 0.0089 | 0.0089 | 0.0089 | -0.0001 | 0.0010 |
| Processing industry | 0.0687 | 0.0685 | 0.0655 | 0.0682 | 0.0027 | 0.0026 |
| Electricity, gas, water | 0.0022 | 0.0007 | 0.0009 | 0.0007 | -0.0002 | 0.0003 |
| Construction | 0.0400 | 0.0494 | 0.0507 | 0.0496 | -0.0011 | 0.0023 |
| Trade | 0.1482 | 0.1180 | 0.1206 | 0.1193 | -0.0013 | 0.0034 |
| Transport., storage, comm. | 0.0510 | 0.0519 | 0.0522 | 0.0521 | -0.0002 | 0.0023 |
| Finance, insurance, real estate | 0.0091 | 0.0031 | 0.0026 | 0.0031 | 0.0005 | 0.0006 |
| Services | 0.1462 | 0.0931 | 0.0957 | 0.0936 | -0.0021 | 0.0030 |
| Other | 0.0028 | 0.0037 | 0.0033 | 0.0036 | 0.0004 | 0.0006 |
| Income recipient | 0.0672 | 0.0459 | 0.0470 | 0.0464 | -0.0006 | 0.0022 |
| Rural area | 0.6792 | 0.7880 | 0.7856 | 0.7862 | 0.0006 | 0.0042 |
| IDT village | 0.2822 | 0.3495 | 0.3476 | 0.3444 | -0.0032 | 0.0049 |
| BKKBN rate per sub-district | 0.3088 | 0.4407 | 0.4417 | 0.4390 | -0.0028 | 0.0026 |
| Program intensity at district level | | | | | | |
| SSN budget per capita | 1.6164 | 1.8178 | 1.8154 | 1.8147 | -0.0007 | 0.0099 |
| Health card coverage | 0.0886 | 0.1885 | 0.1865 | 0.1870 | 0.0004 | 0.0012 |
| Endogenous variables | | | | | | |
| Member of household ill | 0.3110 | 0.3620 | 0.3293 | 0.3605 | 0.0312 | 0.0049 |
| Quintile 1 (poor) | 0.1523 | 0.2838 | 0.2415 | 0.2798 | 0.0383 | 0.0045 |
| Quintile 2 | 0.1686 | 0.2385 | 0.2279 | 0.2392 | 0.0112 | 0.0044 |
| Quintile 3 | 0.1930 | 0.2101 | 0.2089 | 0.2114 | 0.0025 | 0.0042 |
| Quintile 4 | 0.2206 | 0.1659 | 0.1811 | 0.1671 | -0.0141 | 0.0039 |
| Quintile 5 (rich) | 0.2655 | 0.1018 | 0.1405 | 0.1026 | -0.0379 | 0.0034 |
| Number of observations | 173,366 | 18,993 | 18,727 | 18,727 | | |

[a)] Includes 406 households that are matched more than once.

Table 5 Utilisation of health card (percent that sought care in past three months)

| | Head of household reports to have received a health card | Head of household reports not to have received a health card |
|---|---|---|
| Received outpatient care | 15.10 | 12.91 |
| Went to public provider | 10.36 | 6.55 |
| - Used health card | 6.63 | 0.14 |
| - Did not use health card | 3.73 | 6.41 |
| Went to private provider | 4.74 | 6.36 |
| Number of observations | 81,126 | 741,481 |

Table 6 Type of expenses for which SSN transfers to health clinics have been used (as percentage of total SSN health program transfers)

| | Public health clinic | | | Village midwife | | |
|---|---|---|---|---|---|---|
| | Urban | Rural | Indonesia | Urban | Rural | Indonesia |
| Medicine procurement | 37.64 | 43.21 | 41.40 | 39.09 | 38.36 | 38.44 |
| Medical disposables | 14.29 | 11.56 | 12.45 | 16.31 | 16.49 | 16.47 |
| Food for in-patients | 2.57 | 1.87 | 2.10 | | | |
| Transport costs for referral | 5.75 | 6.75 | 6.43 | 3.73 | 4.09 | 4.05 |
| other transport expenses | | | | 22.38 | 20.51 | 20.72 |
| Birth aids by village midwife | 17.05 | 17.95 | 17.65 | | | |
| Contraceptive tools | | | | 2.01 | 3.13 | 3.01 |
| Tax to Pemda | 1.42 | 1.49 | 1.47 | | | |
| Honorarium | 2.23 | 2.04 | 2.10 | | | |
| Other | 19.05 | 15.13 | 16.40 | 16.48 | 17.40 | 17.30 |
| Number of clinics | 1,319 | 2,411 | 3,730 | 404 | 3,242 | 3,646 |

Source: 1999 Social Safety Net survey – public health centres (*Puskesmas*) and village midwives (*Bidan di desa*)

Table 7 Distribution of propensity score for all households and for the matched pairs

| | All households | | Matched pairs | | Nr. of households in |
|---|---|---|---|---|---|
| Propensity score | No health card | Health card | No health card | Health card | control group matched more than once |
| 0.0 – 0.1 | 128,128 | 4,658 | 4,658 | 4,658 | 0 |
| 0.1 – 0.2 | 26,544 | 4,405 | 4,406 | 4,405 | 0 |
| 0.2 – 0.3 | 10,003 | 3,388 | 3,386 | 3,387 | 3 |
| 0.3 – 0.4 | 4,828 | 2,605 | 2,589 | 2,588 | 21 |
| 0.4 – 0.5 | 2,318 | 1,839 | 1,788 | 1,794 | 68 |
| 0.5 – 0.6 | 1,105 | 1,238 | 1,208 | 1,203 | 161 |
| 0.6 – 0.7 | 378 | 664 | 620 | 620 | 137 |
| 0.7 – 0.8 | 57 | 177 | 72 | 72 | 16 |
| 0.8 – 0.9 | 5 | 19 | 0 | 0 | 0 |
| Total | 173,366 | 18,993 | 18,727 | 18,727 | 406 |

Note: Range of common support: [0.0008, 0.8473]

Table 8 SSN budget allocation to public health care providers, 1998/1999 (1000' Rupiah)

| Region | Total budget *Puskesmas* and village midwife | Population size [a] | Budget per capita | Health card coverage | Number of districts |
|---|---|---|---|---|---|
| Java Bali | 158,524,734 | 123,646,893 | 1.282 | 0.139 | 117 |
| Sumatra | 57,686,076 | 43,396,301 | 1.329 | 0.072 | 73 |
| Sulawesi | 25,009,892 | 14,553,660 | 1.718 | 0.049 | 40 |
| Kalimantan | 15,747,384 | 11,210,671 | 1.405 | 0.052 | 29 |
| Other islands | 36,024,406 | 11,860,142 | 3.037 | 0.085 | 34 |
| Indonesia | 292,992,492 | 204,667,667 | 1.432 | 0.106 | 293 |

Source: Ministry of Health and Social Welfare, Indonesia
[a)] Based on Susenas weights.

Table 9 Impact of health card ownership on utilisation of outpatient services (pure health card effect, 1month reference period)

| Outpatient care | Intervention group | Control group | Difference ($\hat{\beta}$) | [s.e.][a] | % Change | Direct effect ($\hat{p}\hat{\beta}$) | $\hat{p}$ | N treated | N control |
|---|---|---|---|---|---|---|---|---|---|
| Quintile 1 (poor) | 0.0993 | 0.0869 | 0.0123 | [0.0032] | 14.2 | 0.0023 | 0.184 | 25,029 | 20,411 |
| Quintile 2 | 0.1206 | 0.1080 | 0.0126 | [0.0040] | 11.7 | 0.0017 | 0.137 | 19,561 | 17,905 |
| Quintile 3 | 0.1333 | 0.1142 | 0.0191 | [0.0045] | 16.8 | 0.0020 | 0.106 | 15,658 | 15,426 |
| Quintile 4 | 0.1453 | 0.1292 | 0.0161 | [0.0055] | 12.4 | 0.0011 | 0.071 | 10,922 | 12,048 |
| Quintile 5 (rich) | 0.1510 | 0.1451 | 0.0059 | [0.0079] | 4.0 | 0.0002 | 0.037 | 5,642 | 8,090 |
| Male | 0.1158 | 0.1069 | 0.0089 | [0.0030] | 8.3 | 0.0009 | 0.105 | 38,062 | 36,641 |
| Female | 0.1270 | 0.1157 | 0.0113 | [0.0029] | 9.8 | 0.0012 | 0.107 | 38,841 | 37,345 |
| Urban | 0.1392 | 0.1281 | 0.0110 | [0.0051] | 8.6 | 0.0008 | 0.073 | 17,888 | 16,853 |
| Rural | 0.1149 | 0.1061 | 0.0088 | [0.0021] | 8.3 | 0.0011 | 0.128 | 59,015 | 57,133 |
| All | 0.1215 | 0.1113 | 0.0101 | [0.0020] | 9.1 | 0.0011 | 0.106 | 76,903 | 73,986 |
| Public | | | | | | | | | |
| Quintile 1 (poor) | 0.0729 | 0.0542 | 0.0187 | [0.0026] | 34.6 | 0.0035 | 0.184 | 25,029 | 20,411 |
| Quintile 2 | 0.0784 | 0.0585 | 0.0200 | [0.0032] | 34.1 | 0.0027 | 0.137 | 19,561 | 17,905 |
| Quintile 3 | 0.0859 | 0.0575 | 0.0284 | [0.0033] | 49.3 | 0.0030 | 0.106 | 15,658 | 15,426 |
| Quintile 4 | 0.0916 | 0.0627 | 0.0289 | [0.0043] | 46.1 | 0.0020 | 0.071 | 10,922 | 12,048 |
| Quintile 5 (rich) | 0.0841 | 0.0590 | 0.0251 | [0.0057] | 42.5 | 0.0009 | 0.037 | 5,642 | 8,090 |
| Male | 0.0734 | 0.0537 | 0.0197 | [0.0021] | 36.8 | 0.0021 | 0.105 | 38,062 | 36,641 |
| Female | 0.0871 | 0.0622 | 0.0249 | [0.0022] | 40.1 | 0.0027 | 0.107 | 38,841 | 37,345 |
| Urban | 0.0869 | 0.0628 | 0.0241 | [0.0034] | 38.3 | 0.0017 | 0.073 | 17,888 | 16,853 |
| Rural | 0.0779 | 0.0565 | 0.0214 | [0.0017] | 38.0 | 0.0027 | 0.128 | 59,015 | 57,133 |
| All | 0.0804 | 0.0580 | 0.0224 | [0.0015] | 38.6 | 0.0024 | 0.106 | 76,903 | 73,986 |
| Private | | | | | | | | | |
| Quintile 1 (poor) | 0.0305 | 0.0371 | -0.0066 | [0.0022] | -17.7 | -0.0012 | 0.184 | 25,029 | 20,411 |
| Quintile 2 | 0.0497 | 0.0547 | -0.0051 | [0.0030] | -9.3 | -0.0007 | 0.137 | 19,561 | 17,905 |
| Quintile 3 | 0.0571 | 0.0641 | -0.0070 | [0.0036] | -11.0 | -0.0007 | 0.106 | 15,658 | 15,426 |
| Quintile 4 | 0.0655 | 0.0765 | -0.0110 | [0.0041] | -14.4 | -0.0008 | 0.071 | 10,922 | 12,048 |
| Quintile 5 (rich) | 0.0803 | 0.0983 | -0.0179 | [0.0068] | -18.2 | -0.0007 | 0.037 | 5,642 | 8,090 |
| Male | 0.0501 | 0.0601 | -0.0100 | [0.0023] | -16.6 | -0.0010 | 0.105 | 38,062 | 36,641 |
| Female | 0.0477 | 0.0606 | -0.0129 | [0.0021] | -21.3 | -0.0014 | 0.107 | 38,841 | 37,345 |
| Urban | 0.0613 | 0.0726 | -0.0113 | [0.0041] | -15.5 | -0.0008 | 0.073 | 17,888 | 16,853 |
| Rural | 0.0442 | 0.0565 | -0.0123 | [0.0015] | -21.7 | -0.0016 | 0.128 | 59,015 | 57,133 |
| All | 0.0489 | 0.0604 | -0.0115 | [0.0015] | -19.0 | -0.0012 | 0.106 | 76,903 | 73,986 |

[a] Bootstrapped standard errors with 500 replications.

Table 10 Sensitivity direct effect estimate (1 month reference period)

| Outpatient care | (1) [a] | (2) [a] | (3) [a] | (4) [b] |
|---|---|---|---|---|
| Health card | 0.0103 | 0.0109 | 0.0106 | 0.0081 |
| | [0.0020] | [0.0020] | [0.0052] | [0.0020] |
| SSN per capita in district | | 0.0126 | 0.0112 | |
| | | [0.0016] | [0.0020] | |
| Health card coverage in district | | 0.1059 | 0.1195 | |
| | | [0.0109] | [0.0146] | |
| Health card * SSN per capita | | | 0.0034 | |
| | | | [0.0025] | |
| Health card * Health card coverage | | | -0.0289 | |
| | | | [0.0188] | |
| Public | | | | |
| Health card | 0.0224 | 0.0235 | 0.0272 | 0.0201 |
| | [0.0015] | [0.0015] | [0.0038] | [0.0016] |
| SSN per capita in district | | 0.0119 | 0.0125 | |
| | | [0.0012] | [0.0015] | |
| Health card coverage in district | | 0.0470 | 0.0507 | |
| | | [0.0077] | [0.0114] | |
| Health card * SSN per capita | | | -0.0015 | |
| | | | [0.0019] | |
| Health card * Health card coverage | | | -0.0059 | |
| | | | [0.0137] | |
| Private | | | | |
| Health card | -0.0111 | -0.0113 | -0.0140 | -0.0117 |
| | [0.0014] | [0.0015] | [0.0038] | [0.0015] |
| SSN per capita in district | | 0.0014 | -0.0000 | |
| | | [0.0012] | [0.0014] | |
| Health card coverage in district | | 0.0693 | 0.0760 | |
| | | [0.0082] | [0.0101] | |
| Health card * SSN per capita | | | 0.0035 | |
| | | | [0.0019] | |
| Health card * Health card coverage | | | -0.0161 | |
| | | | [0.0140] | |
| Number of observations | 150,889 | 150,889 | 150,889 | 151,219 |

Note: Detailed estimation results are available upon request from the authors.

a) Probit marginal effects. The sample concerns the same set of individuals from matched households as in Table 9. The coefficients of other covariates are omitted for convenience. All specifications include age, gender, characteristics head of household (gender, education), household size, BKKBN prosperity status, main source of income (agriculture/no agriculture), village status (rural, IDT), and availability of health providers in the village/township. Specification (2) and (3) also include sub-district BKKBN index, and district poverty profile ($P_0$, $P_1$).

b) Sensitivity to selection on needs bias. The propensity score function includes a dummy variable that indicates whether a health complaint has disrupted work, school or daily activities of a household member. N – treated = 76,956, N – control = 74,263. Bootstrapped standard errors with 500 replications.

Table 11 Overall effect of SSN interventions (1 month reference period)

| All outpatient visits | coefficient $(\hat{\gamma})$ | [s.e.] | Overall effect [a] $(\hat{\gamma}\,\overline{SSN})$ | Number of districts |
|---|---|---|---|---|
| Quintile 1 (poor) | 0.0039 | [0.0041] | 0.0056 | 290 |
| Quintile 2 | 0.0073 | [0.0038] | 0.0105 | 293 |
| Quintile 3 | 0.0012 | [0.0029] | 0.0017 | 293 |
| Quintile 4 | 0.0065 | [0.0032] | 0.0093 | 293 |
| Quintile 5 (rich) | 0.0075 | [0.0036] | 0.0108 | 293 |
| Male | 0.0037 | [0.0022] | 0.0053 | 293 |
| Female | 0.0040 | [0.0024] | 0.0058 | 293 |
| Urban | 0.0045 | [0.0048] | 0.0064 | 286 |
| Rural | 0.0060 | [0.0028] | 0.0086 | 276 |
| All | 0.0039 | [0.0022] | 0.0055 | 293 |
| Outpatient public | | | | |
| Quintile 1 (poor) | 0.0035 | [0.0033] | 0.0049 | 290 |
| Quintile 2 | 0.0080 | [0.0033] | 0.0115 | 293 |
| Quintile 3 | -0.0001 | [0.0022] | -0.0001 | 293 |
| Quintile 4 | 0.0059 | [0.0023] | 0.0085 | 293 |
| Quintile 5 (rich) | 0.0094 | [0.0023] | 0.0134 | 293 |
| Male | 0.0026 | [0.0014] | 0.0037 | 293 |
| Female | 0.0040 | [0.0017] | 0.0057 | 293 |
| Urban | 0.0016 | [0.0032] | 0.0023 | 286 |
| Rural | 0.0053 | [0.0020] | 0.0076 | 276 |
| All | 0.0033 | [0.0015] | 0.0047 | 293 |
| Outpatient private | | | | |
| Quintile 1 (poor) | 0.0020 | [0.0025] | 0.0028 | 290 |
| Quintile 2 | -0.0002 | [0.0018] | -0.0003 | 293 |
| Quintile 3 | 0.0016 | [0.0017] | 0.0023 | 293 |
| Quintile 4 | 0.0004 | [0.0020] | 0.0006 | 293 |
| Quintile 5 (rich) | -0.0016 | [0.0028] | -0.0023 | 293 |
| Male | 0.0012 | [0.0014] | 0.0017 | 293 |
| Female | 0.0005 | [0.0014] | 0.0008 | 293 |
| Urban | 0.0031 | [0.0031] | 0.0045 | 286 |
| Rural | 0.0013 | [0.0017] | 0.0019 | 276 |
| All | 0.0009 | [0.0013] | 0.0013 | 293 |

Note: Detailed estimation results are available upon request from the authors.

a) $\overline{SSN} = 1.432$ (see Table 8)

Table 12 Sensitivity total effect estimate (IV)

| All outpatient visits | (1) coefficient | [s.e.] | (2) coefficient | [s.e.] |
|---|---|---|---|---|
| SSN per capita in district | 0.0042 | [0.0028] | 0.0044 | [0.0032] |
| Health card coverage in district | -0.0118 | [0.0628] | | |
| SSN*HC | | | -0.0054 | [0.0244] |
| Outpatient public | | | | |
| SSN per capita in district | 0.0037 | [0.0019] | 0.0039 | [0.0022] |
| Health card coverage in district | -0.0159 | [0.0421] | | |
| SSN*HC | | | -0.0060 | [0.0163] |
| Outpatient private | | | | |
| SSN per capita in district | 0.0007 | [0.0017] | 0.0007 | [0.0020] |
| Health card coverage in district | 0.0081 | [0.0381] | | |
| SSN*HC | | | 0.0020 | [0.0148] |
| Instrumented | Health card coverage | | SSN*HC | |

Note: BKKBN pre-prosperous and KS1 indices for December 1997 are used as instruments. Detailed estimation results are available upon request from the authors.

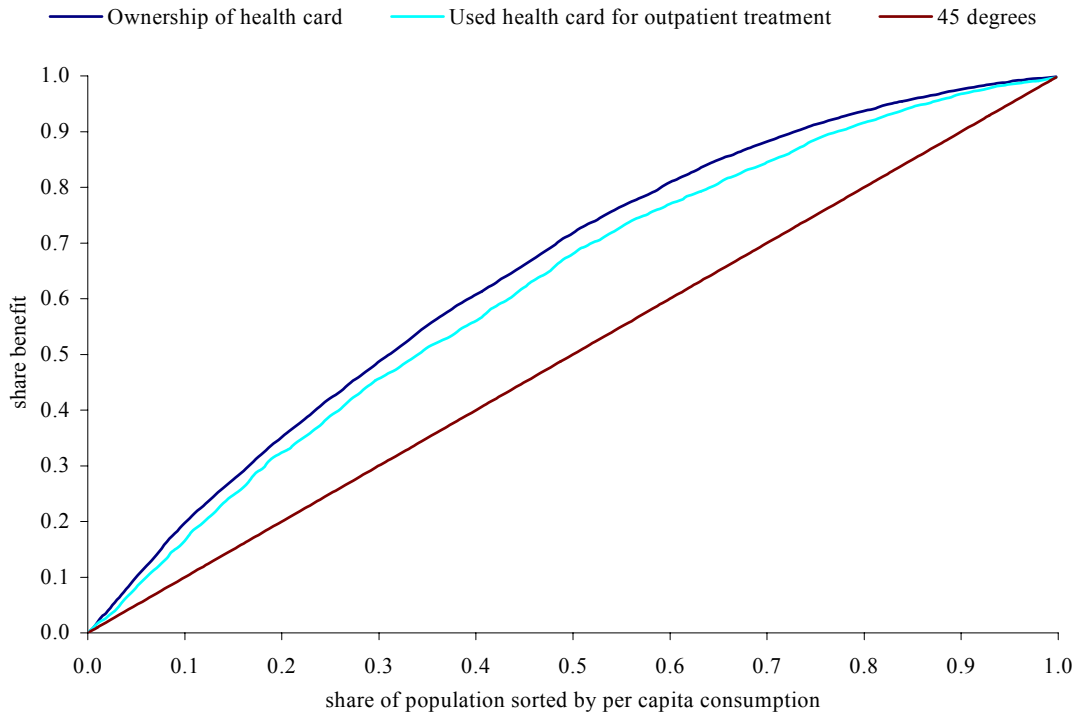


Figure 1 Concentration curve for ownership and use of Healthcard to obtain benefits associated with outpatient treatment

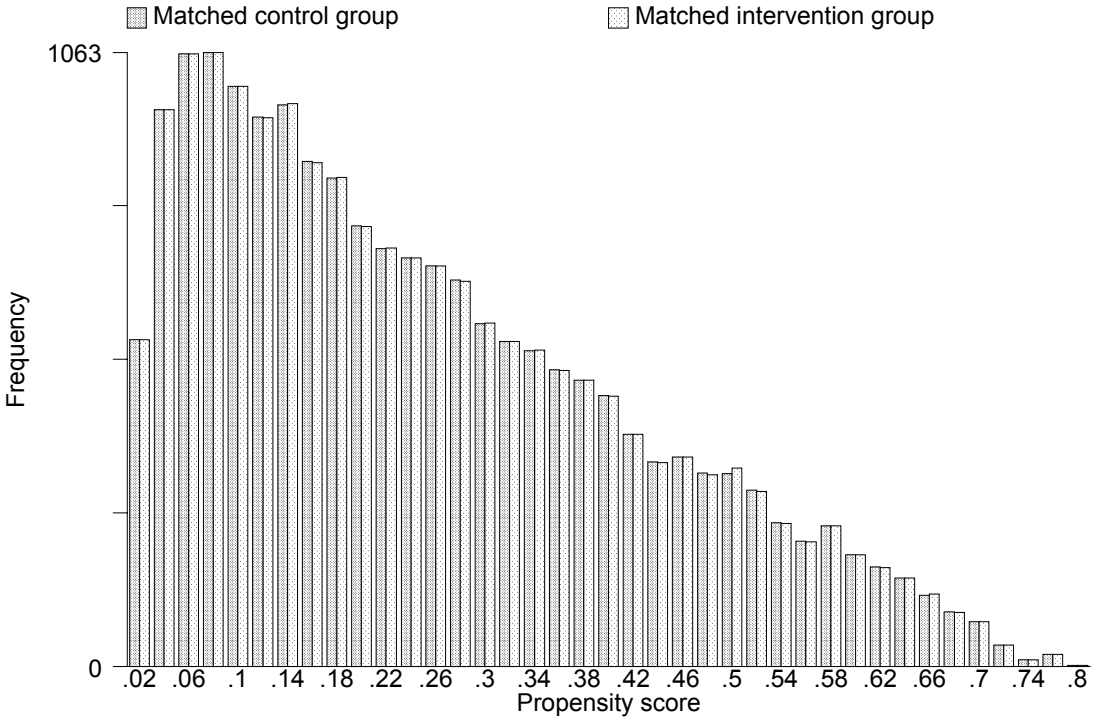


Figure 2 Histogram of the propensity score for matched households (bin size = 0.02)

# Appendix – Supplementary tables

Table A - 1 Propensity score estimations (logit), by region

| | (1) Java/Bali | (2) Sumatra | (3) Sulawesi | (4) Kalimantan | (5) Other islands |
|---|---|---|---|---|---|
| Female head of household | 0.351** | 0.351** | 0.268* | 0.694** | -0.101 |
| | [0.042] | [0.076] | [0.116] | [0.146] | [0.112] |
| Education head of household (ref. : not completed primary school) | | | | | |
| Primary | -0.133** | -0.091+ | 0.008 | 0.010 | 0.091 |
| | [0.027] | [0.050] | [0.077] | [0.091] | [0.067] |
| Junior secondary | -0.326** | -0.240** | -0.179 | -0.208 | 0.026 |
| | [0.046] | [0.069] | [0.113] | [0.148] | [0.104] |
| Senior secondary | -0.706** | -0.474** | -0.312** | -0.110 | -0.089 |
| | [0.054] | [0.079] | [0.120] | [0.160] | [0.108] |
| Higher | -1.107** | -0.735** | -0.438+ | -0.768+ | -0.160 |
| | [0.115] | [0.171] | [0.258] | [0.417] | [0.207] |
| Head of household unemployed | 0.275* | 0.277 | 0.111 | -0.274 | -0.370 |
| | [0.115] | [0.264] | [0.423] | [0.741] | [0.399] |
| Log household size | 0.313** | 0.360** | 0.284** | 0.314** | 0.287** |
| | [0.033] | [0.059] | [0.091] | [0.110] | [0.080] |
| Household composition (ref. : share of males age 18-60) | | | | | |
| Share of males age < 18 | 0.533** | 0.296+ | 0.178 | 0.443 | 0.779** |
| | [0.088] | [0.158] | [0.248] | [0.293] | [0.221] |
| Share of females age < 18 | 0.567** | 0.205 | -0.100 | 0.357 | 0.705** |
| | [0.089] | [0.160] | [0.257] | [0.298] | [0.225] |
| Share of females age 18-60 | 0.299** | 0.185 | 0.337 | -0.231 | 0.560* |
| | [0.097] | [0.184] | [0.278] | [0.330] | [0.256] |
| Share of males age > 60 | 0.419** | 0.328 | 0.159 | 1.302** | 0.537* |
| | [0.094] | [0.213] | [0.320] | [0.347] | [0.272] |
| Share of females age > 60 | 0.362** | 0.321 | 0.677* | 0.668+ | 0.810** |
| | [0.097] | [0.205] | [0.308] | [0.351] | [0.303] |
| BKKBN criteria | | | | | |
| Worship | -0.000 | -0.176* | -0.053 | 0.051 | 0.603** |
| | [0.037] | [0.085] | [0.105] | [0.143] | [0.177] |
| Food | -0.278** | -0.264+ | 0.174 | -0.528* | -0.183 |
| | [0.096] | [0.151] | [0.246] | [0.211] | [0.119] |
| Clothing | -0.178** | -0.372** | -0.620** | -0.753** | 0.241* |
| | [0.057] | [0.107] | [0.159] | [0.164] | [0.100] |
| Floor | -0.201** | -0.064 | -0.091 | -0.676** | 0.066 |
| | [0.041] | [0.075] | [0.125] | [0.163] | [0.089] |
| Health | 0.237** | 0.367** | 0.677** | 0.274* | 0.321** |
| | [0.040] | [0.075] | [0.114] | [0.131] | [0.087] |
| Main source of subsistence (ref. : agriculture) | | | | | |
| Mining/quarrying | 0.218 | 0.246 | -0.056 | -0.264 | -0.064 |
| | [0.135] | [0.184] | [0.411] | [0.222] | [0.548] |
| Processing industry | 0.080+ | -0.054 | 0.226 | -0.051 | 0.064 |
| | [0.043] | [0.107] | [0.138] | [0.169] | [0.165] |
| Electricity/gas/water | -0.397 | -0.907 | -0.246 | | 0.086 |
| | [0.354] | [0.726] | [1.031] | | [0.847] |
| Construction | 0.277** | 0.206+ | 0.299+ | 0.250 | 0.321+ |
| | [0.050] | [0.109] | [0.165] | [0.199] | [0.165] |
| Trade | -0.061+ | -0.167* | -0.093 | -0.661** | -0.067 |
| | [0.035] | [0.076] | [0.109] | [0.170] | [0.122] |
| Transport/storage/communication | 0.182** | 0.069 | 0.213 | -0.212 | -0.181 |
| | [0.050] | [0.100] | [0.148] | [0.217] | [0.180] |

| | | | | | |
|---|---|---|---|---|---|
| Finance/real estate | -0.196 | -0.805+ | -0.687 | -1.021 | -0.839 |
| | [0.161] | [0.463] | [0.740] | [1.023] | [0.755] |
| Services | 0.081+ | 0.075 | -0.163 | -0.031 | -0.027 |
| | [0.043] | [0.082] | [0.131] | [0.161] | [0.108] |
| Other | -0.017 | 0.381 | 0.601 | -1.428 | 0.816 |
| | [0.175] | [0.318] | [0.567] | [1.026] | [0.852] |
| Income recipient | -0.197** | -0.315** | -0.394* | -0.604* | -0.033 |
| | [0.054] | [0.121] | [0.160] | [0.264] | [0.165] |
| Household owns holy book | -0.083** | 0.213** | 0.071 | 0.178 | 0.344** |
| | [0.028] | [0.074] | [0.100] | [0.115] | [0.070] |
| Status of house (ref. : own property) | | | | | |
| Lease | -0.495** | -0.139 | -0.301 | -0.623 | -1.093* |
| | [0.090] | [0.127] | [0.262] | [0.524] | [0.440] |
| Rent | -0.561** | 0.097 | -1.263** | -0.884** | -1.110** |
| | [0.123] | [0.095] | [0.466] | [0.301] | [0.310] |
| Official | 0.507** | 0.050 | -0.205 | -0.569+ | -0.271 |
| | [0.131] | [0.139] | [0.340] | [0.334] | [0.182] |
| Free | 0.055 | 0.141 | 0.064 | -0.221 | 0.193 |
| | [0.065] | [0.095] | [0.152] | [0.234] | [0.170] |
| Other | 0.030 | 0.233 | 0.607** | -0.327 | 0.072 |
| | [0.103] | [0.158] | [0.202] | [0.342] | [0.233] |
| Type of roof (ref. : concrete) | | | | | |
| Corrugated tile | 0.066 | -0.368* | -0.256 | -1.098* | -0.985** |
| | [0.113] | [0.169] | [0.320] | [0.504] | [0.276] |
| Shingle roof | -0.344 | -0.072 | 0.348 | -0.964* | -1.111+ |
| | [0.323] | [0.267] | [0.423] | [0.477] | [0.589] |
| Iron sheeting | -0.080 | -0.376* | -0.223 | -0.819+ | -0.552* |
| | [0.133] | [0.160] | [0.267] | [0.476] | [0.269] |
| Asbestos | 0.006 | -0.078 | -0.385 | -2.108* | -0.725 |
| | [0.178] | [0.259] | [0.502] | [0.855] | [0.455] |
| Sugar palm fibre | 0.085 | -0.481 | -0.136 | -0.004 | -0.434 |
| | [0.322] | [0.354] | [0.363] | [0.609] | [0.493] |
| Leaves/other | -0.097 | 0.043 | 0.194 | -0.569 | -0.795** |
| | [0.158] | [0.172] | [0.279] | [0.479] | [0.273] |
| Type of wall (ref. : brick) | | | | | |
| Wood | 0.162** | 0.438** | 0.264* | 0.492* | 0.568** |
| | [0.036] | [0.059] | [0.107] | [0.227] | [0.102] |
| Bamboo | 0.522** | 0.600** | 0.461** | 0.805* | 0.270** |
| | [0.034] | [0.097] | [0.126] | [0.320] | [0.091] |
| Other | 0.242+ | 0.191 | 0.243 | 0.453+ | 0.338** |
| | [0.145] | [0.196] | [0.162] | [0.250] | [0.100] |
| Type of floor (ref. : marble/ceramic) | | | | | |
| Floor tile | 0.460** | 0.152 | 0.125 | -0.257 | 0.624+ |
| | [0.059] | [0.200] | [0.372] | [0.531] | [0.349] |
| Cement plaster | 0.901** | 0.405** | 0.869** | 0.391 | 0.604* |
| | [0.057] | [0.151] | [0.308] | [0.436] | [0.270] |
| Wood | 0.810** | 0.240 | 0.602+ | -0.007 | 0.506+ |
| | [0.101] | [0.162] | [0.321] | [0.420] | [0.293] |
| Bamboo | 1.070** | 0.430+ | 0.977** | 0.158 | 0.514 |
| | [0.100] | [0.247] | [0.349] | [0.566] | [0.319] |
| Earth | 1.137** | 0.575** | 1.073** | 0.443 | 0.817** |
| | [0.070] | [0.176] | [0.337] | [0.477] | [0.286] |
| Other | 0.138 | 0.515 | 0.167 | 1.401* | 1.398** |
| | [0.234] | [0.561] | [0.578] | [0.611] | [0.325] |
| Source drinking of water (ref. : bottled water) | | | | | |
| Tap | -0.402* | 0.064 | 0.540 | 1.343 | 0.288 |
| | [0.167] | [0.305] | [0.487] | [1.056] | [0.515] |
| Pump | -0.476** | 0.223 | -0.347 | 0.777 | 0.538 |
| | [0.181] | [0.338] | [0.534] | [1.144] | [0.560] |
| Protected well | -0.462* | 0.282 | 0.318 | 0.855 | 0.150 |

| | | | | | |
|---|---|---|---|---|---|
| | [0.180] | [0.323] | [0.518] | [1.143] | [0.558] |
| Unprotected well | -0.346+ | 0.097 | 0.463 | 0.829 | 0.617 |
| | [0.182] | [0.325] | [0.522] | [1.139] | [0.558] |
| Protected spring | -0.393* | 0.396 | 0.631 | -0.705 | 0.190 |
| | [0.181] | [0.327] | [0.518] | [1.227] | [0.556] |
| Unprotected spring | -0.457* | 0.013 | 0.063 | 0.680 | 0.415 |
| | [0.184] | [0.333] | [0.538] | [1.202] | [0.557] |
| River | -0.182 | 0.104 | -0.132 | 0.563 | 0.120 |
| | [0.205] | [0.326] | [0.560] | [1.135] | [0.561] |
| Rain water/other | -0.202 | 0.532 | -0.046 | 0.461 | -0.339 |
| | [0.194] | [0.332] | [0.547] | [1.139] | [0.570] |
| Do not purchase drinking water | 0.106 | -0.069 | 0.236 | 0.502 | -0.041 |
| | [0.071] | [0.116] | [0.188] | [0.433] | [0.214] |
| Drinking water facility | | | | | |
| Shared | 0.251** | 0.256** | 0.161+ | 0.216 | 0.316** |
| | [0.029] | [0.059] | [0.085] | [0.136] | [0.090] |
| Public | 0.061 | 0.259** | -0.186+ | -0.172 | 0.457** |
| | [0.037] | [0.072] | [0.106] | [0.154] | [0.091] |
| None | 0.081 | 0.192* | 0.241+ | 0.476** | 0.459** |
| | [0.059] | [0.087] | [0.141] | [0.134] | [0.127] |
| Source of light (ref. : PLN electricity) | | | | | |
| Non-PLN electricity | -0.199 | -0.173 | 0.667** | -1.143** | 0.265 |
| | [0.124] | [0.114] | [0.200] | [0.378] | [0.166] |
| Pump lantern | -0.073 | 0.160* | 0.431** | 0.286 | 0.559** |
| | [0.097] | [0.078] | [0.120] | [0.176] | [0.137] |
| Oil lamp | 0.019 | 0.308** | 0.131 | 0.183+ | 0.145+ |
| | [0.043] | [0.061] | [0.095] | [0.100] | [0.080] |
| Other | -0.221 | 0.008 | -0.098 | -0.068 | -0.048 |
| | [0.247] | [0.248] | [0.459] | [0.421] | [0.189] |
| Toilet facilities (ref. private) | | | | | |
| Shared | 0.061 | -0.000 | 0.078 | 0.596** | -0.007 |
| | [0.039] | [0.083] | [0.115] | [0.138] | [0.115] |
| Public | 0.320** | 0.419** | 0.639** | 0.755** | 0.213 |
| | [0.051] | [0.085] | [0.167] | [0.151] | [0.152] |
| Other | 0.228** | 0.151+ | 0.028 | -0.115 | 0.237* |
| | [0.048] | [0.077] | [0.130] | [0.137] | [0.103] |
| Toilet disposal (ref. : septic tank) | | | | | |
| Pond/rice field | -0.045 | 0.417** | -0.015 | -0.005 | 0.793** |
| | [0.063] | [0.123] | [0.260] | [0.494] | [0.277] |
| River/lake/sea | 0.200** | 0.218** | 0.303* | 0.496** | 0.180 |
| | [0.049] | [0.085] | [0.147] | [0.168] | [0.133] |
| Hole | 0.220** | 0.306** | 0.139 | 0.233 | 0.441** |
| | [0.036] | [0.071] | [0.099] | [0.156] | [0.098] |
| Shore/open field | 0.363** | 0.209+ | 0.291* | 0.519* | 0.168 |
| | [0.072] | [0.112] | [0.142] | [0.217] | [0.133] |
| Other | 0.016 | 0.195+ | 0.029 | 0.460+ | 0.297* |
| | [0.089] | [0.111] | [0.185] | [0.239] | [0.140] |
| Nr. of *Puskesmas* in village | 0.004 | -0.011 | 0.051 | -0.046 | -0.113 |
| | [0.031] | [0.061] | [0.091] | [0.102] | [0.070] |
| Nr. of supporting *Puskesmas* in village | -0.186** | -0.058 | -0.051 | -0.127+ | -0.311** |
| | [0.025] | [0.041] | [0.067] | [0.073] | [0.057] |
| Nr. of *Polindes* in village | -0.016 | -0.137** | -0.094 | 0.072 | -0.258** |
| | [0.028] | [0.051] | [0.094] | [0.088] | [0.081] |
| Nr. doctors living in village per 1,000 inhabitants | 0.236** | 0.131** | -0.174 | -0.037 | 0.080+ |
| | [0.037] | [0.046] | [0.108] | [0.152] | [0.048] |
| Nr. village midwifes living in village per 1,000 inhabitants | 0.326** | 0.193** | -0.002 | 0.366** | 0.116* |
| | [0.067] | [0.032] | [0.110] | [0.081] | [0.048] |
| Majority of inter village traffic by land | -0.942* | 0.651** | 0.182 | 0.417** | 0.075 |

| | | | | | |
|---|---|---|---|---|---|
| | [0.378] | [0.119] | [0.190] | [0.112] | [0.134] |
| Health facilities easy or very easy to reach | 0.064 | -0.117+ | -0.293* | 0.036 | 0.236** |
| | [0.061] | [0.070] | [0.115] | [0.125] | [0.087] |
| Education head of village | | | | | |
| (ref. : not completed primary school) | | | | | |
| Primary | -0.217 | -0.375** | 0.015 | 1.189** | 0.499** |
| | [0.140] | [0.141] | [0.311] | [0.274] | [0.154] |
| Junior secondary | -0.159 | -0.516** | 0.228 | 1.025** | 0.226 |
| | [0.140] | [0.141] | [0.295] | [0.277] | [0.158] |
| Senior secondary | -0.117 | -0.471** | 0.208 | 0.818** | 0.259 |
| | [0.139] | [0.140] | [0.293] | [0.280] | [0.160] |
| Higher | -0.176 | -0.420** | 0.365 | 0.774* | 0.472** |
| | [0.141] | [0.156] | [0.301] | [0.327] | [0.179] |
| Rural area | -0.159** | 0.243** | -0.095 | -0.194 | 0.235* |
| | [0.039] | [0.084] | [0.123] | [0.186] | [0.111] |
| IDT village | 0.066* | 0.205** | 0.103 | -0.071 | 0.034 |
| | [0.030] | [0.056] | [0.082] | [0.093] | [0.096] |
| BKKBN poverty rate in sub-district, Jan. 1999 | 0.892** | 0.835** | 0.358 | 0.893** | 0.114 |
| | [0.085] | [0.162] | [0.292] | [0.294] | [0.185] |
| Constant | -2.201** | -3.783** | -4.565** | -4.503** | -6.587** |
| | [0.493] | [0.491] | [0.798] | [1.300] | [0.777] |
| District dummy variables | yes | yes | yes | yes | yes |
| Observations | 87,061 | 43,381 | 23,779 | 15,697 | 22,441 |
| Pseudo R-squared | 0.20 | 0.12 | 0.17 | 0.15 | 0.26 |

Standard errors in brackets
+ significant at 10%; * significant at 5%; ** significant at 1%
Coefficients for district dummy variables not shown.

Table A - 2 Exogeneity SSN budget data and trend in utilisation 1997 – 1998

| | (1) Outpatient 1998-1997 | (2) Public 1998-1997 | (3) Private 1998-1997 |
|---|---|---|---|
| SSN per capita in district | -0.0013 | -0.0014 | 0.0000 |
| | [0.0020] | [0.0013] | [0.0012] |
| Constant | -0.0252** | -0.0162** | -0.0077** |
| | [0.0038] | [0.0026] | [0.0023] |
| Observations | 292 | 292 | 292 |
| R-squared | 0.00 | 0.00 | 0.00 |

Standard errors in brackets
+ significant at 10%; * significant at 5%; ** significant at 1%

Table A - 3 Impact of health card ownership on utilisation of outpatient services (pure health card effect, 3 month reference period)

| Outpatient care | Intervention group | Control group | Difference ($\hat{\beta}$) | [s.e.][a] | % Change | Direct effect ($\hat{p}\hat{\beta}$) | $\hat{p}$ | N treated | N control |
|---|---|---|---|---|---|---|---|---|---|
| Quintile 1 (poor) | 0.1264 | 0.1110 | 0.0153 | [0.0036] | 13.8 | 0.0028 | 0.185 | 24,901 | 20,283 |
| Quintile 2 | 0.1475 | 0.1362 | 0.0113 | [0.0045] | 8.3 | 0.0015 | 0.137 | 19,447 | 17,825 |
| Quintile 3 | 0.1592 | 0.1420 | 0.0172 | [0.0049] | 12.1 | 0.0018 | 0.106 | 15,582 | 15,347 |
| Quintile 4 | 0.1767 | 0.1598 | 0.0170 | [0.0061] | 10.6 | 0.0012 | 0.071 | 10,866 | 11,997 |
| Quintile 5 (rich) | 0.1773 | 0.1754 | 0.0019 | [0.0084] | 1.1 | 0.0001 | 0.037 | 5,586 | 8,040 |
| Male | 0.1409 | 0.1325 | 0.0083 | [0.0032] | 6.3 | 0.0009 | 0.105 | 37,854 | 36,437 |
| Female | 0.1566 | 0.1454 | 0.0111 | [0.0033] | 7.6 | 0.0012 | 0.108 | 38,619 | 37,161 |
| Urban | 0.1615 | 0.1514 | 0.0101 | [0.0049] | 6.7 | 0.0007 | 0.072 | 17,780 | 16,761 |
| Rural | 0.1440 | 0.1352 | 0.0089 | [0.0025] | 6.6 | 0.0011 | 0.128 | 58,693 | 56,837 |
| All | 0.1488 | 0.1391 | 0.0098 | [0.0022] | 7.0 | 0.0010 | 0.106 | 76,473 | 73,598 |
| Public | | | | | | | | | |
| Quintile 1 (poor) | 0.0950 | 0.0710 | 0.0240 | [0.0031] | 33.9 | 0.0044 | 0.185 | 24,901 | 20,283 |
| Quintile 2 | 0.1000 | 0.0755 | 0.0245 | [0.0035] | 32.4 | 0.0034 | 0.137 | 19,447 | 17,825 |
| Quintile 3 | 0.1056 | 0.0762 | 0.0293 | [0.0039] | 38.5 | 0.0031 | 0.106 | 15,582 | 15,347 |
| Quintile 4 | 0.1115 | 0.0820 | 0.0296 | [0.0047] | 36.1 | 0.0021 | 0.071 | 10,866 | 11,997 |
| Quintile 5 (rich) | 0.1146 | 0.0731 | 0.0414 | [0.0063] | 56.7 | 0.0015 | 0.037 | 5,586 | 8,040 |
| Male | 0.0922 | 0.0697 | 0.0225 | [0.0024] | 32.3 | 0.0024 | 0.105 | 37,854 | 36,437 |
| Female | 0.1118 | 0.0810 | 0.0308 | [0.0027] | 38.1 | 0.0033 | 0.108 | 38,619 | 37,161 |
| Urban | 0.1030 | 0.0734 | 0.0296 | [0.0038] | 40.4 | 0.0021 | 0.072 | 17,780 | 16,761 |
| Rural | 0.1018 | 0.0760 | 0.0258 | [0.0020] | 34.0 | 0.0033 | 0.128 | 58,693 | 56,837 |
| All | 0.1021 | 0.0754 | 0.0268 | [0.0018] | 35.5 | 0.0028 | 0.106 | 76,473 | 73,598 |
| Private | | | | | | | | | |
| Quintile 1 (poor) | 0.0313 | 0.0400 | -0.0087 | [0.0021] | -21.8 | -0.0016 | 0.185 | 24,901 | 20,283 |
| Quintile 2 | 0.0475 | 0.0608 | -0.0132 | [0.0031] | -21.7 | -0.0018 | 0.137 | 19,447 | 17,825 |
| Quintile 3 | 0.0537 | 0.0658 | -0.0121 | [0.0034] | -18.4 | -0.0013 | 0.106 | 15,582 | 15,347 |
| Quintile 4 | 0.0652 | 0.0778 | -0.0126 | [0.0042] | -16.2 | -0.0009 | 0.071 | 10,866 | 11,997 |
| Quintile 5 (rich) | 0.0627 | 0.1023 | -0.0396 | [0.0068] | -38.7 | -0.0015 | 0.037 | 5,586 | 8,040 |
| Male | 0.0486 | 0.0629 | -0.0142 | [0.0023] | -22.6 | -0.0015 | 0.105 | 37,854 | 36,437 |
| Female | 0.0447 | 0.0645 | -0.0197 | [0.0022] | -30.6 | -0.0021 | 0.108 | 38,619 | 37,161 |
| Urban | 0.0585 | 0.0780 | -0.0195 | [0.0039] | -25.0 | -0.0014 | 0.072 | 17,780 | 16,761 |
| Rural | 0.0422 | 0.0592 | -0.0169 | [0.0016] | -28.6 | -0.0022 | 0.128 | 58,693 | 56,837 |
| All | 0.0467 | 0.0637 | -0.0170 | [0.0014] | -26.7 | -0.0018 | 0.106 | 76,473 | 73,598 |

[a)] Bootstrapped standard errors with 500 replications.

Table A - 4 Total effect of SSN budget allocation on change in use of modern outpatient care, public and private

| | (1) All | (2) Q1 | (3) Q2 | (4) Q3 | (5) Q4 | (6) Q5 | (7) Male | (8) Female | (9) Urban | (10) Rural |
|---|---|---|---|---|---|---|---|---|---|---|
| SSN budget allocation, per capita | 0.0039+ | 0.0039 | 0.0073+ | 0.0012 | 0.0065* | 0.0075* | 0.0037+ | 0.0040+ | 0.0045 | 0.0060* |
| | [0.0022] | [0.0041] | [0.0038] | [0.0029] | [0.0032] | [0.0036] | [0.0022] | [0.0024] | [0.0048] | [0.0028] |
| Diff. age | -0.0028 | -0.0023 | -0.0109* | 0.0004 | -0.0030 | 0.0002 | -0.0047 | -0.0007 | 0.0044 | -0.0011 |
| | [0.0031] | [0.0059] | [0.0053] | [0.0041] | [0.0045] | [0.0051] | [0.0032] | [0.0034] | [0.0061] | [0.0040] |
| Diff. household size | 0.0073 | -0.0056 | -0.0394+ | -0.0025 | 0.0185 | 0.0144 | 0.0059 | 0.0089 | -0.0140 | 0.0153 |
| | [0.0121] | [0.0230] | [0.0207] | [0.0158] | [0.0175] | [0.0200] | [0.0123] | [0.0130] | [0.0233] | [0.0155] |
| Diff. % population in rural area | 0.0032 | 0.0600 | 0.0107 | -0.0409 | 0.0112 | 0.0792 | -0.0042 | 0.0103 | -0.0069 | 0.0078 |
| | [0.0306] | [0.0601] | [0.0522] | [0.0399] | [0.0441] | [0.0504] | [0.0310] | [0.0329] | [0.0636] | [0.0381] |
| Diff. population | -0.0000 | -0.0000 | -0.0000 | -0.0000 | 0.0000 | 0.0000 | -0.0000 | -0.0000 | -0.0000 | -0.0000 |
| | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] |
| Diff. poverty rate ($P_0$) | -0.0065 | -0.0200 | 0.0375 | 0.0436+ | 0.0172 | 0.0281 | -0.0074 | -0.0060 | -0.0193 | -0.0187 |
| | [0.0182] | [0.0339] | [0.0310] | [0.0237] | [0.0262] | [0.0299] | [0.0184] | [0.0195] | [0.0350] | [0.0228] |
| Diff. poverty gap ($P_1$) | 0.0387* | -0.0121 | 0.0330 | 0.0579** | 0.0554* | 0.0445+ | 0.0272+ | 0.0495** | 0.0245 | 0.0302 |
| | [0.0159] | [0.0300] | [0.0272] | [0.0208] | [0.0230] | [0.0263] | [0.0161] | [0.0172] | [0.0306] | [0.0205] |
| Sumatra | 0.0001 | -0.0062 | -0.0038 | 0.0035 | -0.0016 | -0.0070 | 0.0004 | -0.0002 | -0.0129 | 0.0032 |
| | [0.0049] | [0.0092] | [0.0083] | [0.0064] | [0.0071] | [0.0081] | [0.0050] | [0.0053] | [0.0093] | [0.0063] |
| Sulawesi | -0.0203** | -0.0156 | -0.0182+ | -0.0178* | -0.0274** | -0.0202+ | -0.0168** | -0.0236** | -0.0307* | -0.0192* |
| | [0.0063] | [0.0118] | [0.0108] | [0.0082] | [0.0091] | [0.0104] | [0.0064] | [0.0068] | [0.0122] | [0.0081] |
| Kalimantan | -0.0044 | 0.0013 | -0.0036 | -0.0047 | 0.0044 | -0.0111 | -0.0039 | -0.0050 | -0.0060 | 0.0021 |
| | [0.0067] | [0.0125] | [0.0114] | [0.0087] | [0.0096] | [0.0110] | [0.0068] | [0.0072] | [0.0129] | [0.0084] |
| Other islands | 0.0041 | -0.0134 | -0.0139 | 0.0105 | -0.0068 | -0.0135 | 0.0041 | 0.0044 | -0.0259 | 0.0017 |
| | [0.0080] | [0.0151] | [0.0137] | [0.0105] | [0.0116] | [0.0133] | [0.0081] | [0.0087] | [0.0157] | [0.0101] |
| Constant | -0.0151+ | 0.0087 | -0.0173 | -0.0281* | -0.0301* | -0.0279+ | -0.0103 | -0.0197* | -0.0103 | -0.0155 |
| | [0.0087] | [0.0164] | [0.0148] | [0.0113] | [0.0125] | [0.0143] | [0.0088] | [0.0094] | [0.0170] | [0.0112] |
| Observations | 293 | 290 | 293 | 293 | 293 | 293 | 293 | 293 | 286 | 276 |
| R-squared | 0.08 | 0.02 | 0.07 | 0.07 | 0.07 | 0.05 | 0.07 | 0.10 | 0.03 | 0.06 |

Standard errors in brackets
+ significant at 10%; * significant at 5%; ** significant at 1%

Table A - 5 Total effect of SSN budget allocation on change in use of public outpatient care

| | (1) All | (2) Q1 | (3) Q2 | (4) Q3 | (5) Q4 | (6) Q5 | (7) Male | (8) Female | (9) Urban | (10) Rural |
|---|---|---|---|---|---|---|---|---|---|---|
| SSN budget allocation, per capita | 0.0033* | 0.0035 | 0.0080* | -0.0001 | 0.0059* | 0.0094** | 0.0026+ | 0.0040* | 0.0016 | 0.0053** |
| | [0.0015] | [0.0033] | [0.0033] | [0.0022] | [0.0023] | [0.0023] | [0.0014] | [0.0017] | [0.0032] | [0.0020] |
| Diff. age | -0.0028 | -0.0022 | -0.0122* | -0.0019 | -0.0035 | -0.0012 | -0.0038+ | -0.0017 | -0.0019 | -0.0005 |
| | [0.0021] | [0.0047] | [0.0047] | [0.0031] | [0.0033] | [0.0032] | [0.0020] | [0.0024] | [0.0041] | [0.0028] |
| Diff. household size | 0.0029 | -0.0088 | -0.0353+ | -0.0079 | 0.0075 | -0.0032 | 0.0033 | 0.0029 | -0.0127 | 0.0119 |
| | [0.0081] | [0.0184] | [0.0184] | [0.0119] | [0.0127] | [0.0125] | [0.0077] | [0.0092] | [0.0156] | [0.0110] |
| Diff. % population in rural area | 0.0252 | 0.0787 | 0.0246 | -0.0555+ | 0.0476 | 0.1037** | 0.0075 | 0.0426+ | -0.0136 | -0.0015 |
| | [0.0203] | [0.0481] | [0.0464] | [0.0300] | [0.0321] | [0.0314] | [0.0194] | [0.0233] | [0.0427] | [0.0271] |
| Diff. population | 0.0000 | -0.0000 | -0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | -0.0000 | 0.0000 | -0.0000 |
| | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] |
| Diff. poverty rate ($P_0$) | 0.0082 | -0.0058 | 0.0077 | 0.0407* | 0.0082 | 0.0034 | 0.0047 | 0.0114 | -0.0070 | 0.0100 |
| | [0.0121] | [0.0272] | [0.0275] | [0.0178] | [0.0191] | [0.0186] | [0.0115] | [0.0138] | [0.0235] | [0.0163] |
| Diff. poverty gap ($P_1$) | 0.0356** | -0.0027 | 0.0174 | 0.0476** | 0.0366* | 0.0133 | 0.0240* | 0.0464** | 0.0179 | 0.0343* |
| | [0.0106] | [0.0240] | [0.0242] | [0.0156] | [0.0167] | [0.0164] | [0.0101] | [0.0122] | [0.0205] | [0.0146] |
| Sumatra | -0.0015 | -0.0005 | -0.0099 | 0.0024 | 0.0006 | -0.0055 | -0.0030 | 0.0000 | -0.0157* | 0.0039 |
| | [0.0032] | [0.0074] | [0.0074] | [0.0048] | [0.0051] | [0.0050] | [0.0031] | [0.0037] | [0.0062] | [0.0045] |
| Sulawesi | -0.0153** | -0.0121 | -0.0186+ | -0.0151* | -0.0203** | -0.0171** | -0.0136** | -0.0170** | -0.0236** | -0.0153** |
| | [0.0042] | [0.0094] | [0.0096] | [0.0062] | [0.0066] | [0.0065] | [0.0040] | [0.0048] | [0.0082] | [0.0057] |
| Kalimantan | 0.0013 | 0.0066 | -0.0003 | -0.0007 | 0.0053 | -0.0033 | 0.0008 | 0.0017 | -0.0037 | 0.0052 |
| | [0.0044] | [0.0100] | [0.0101] | [0.0066] | [0.0070] | [0.0069] | [0.0042] | [0.0051] | [0.0087] | [0.0060] |
| Other islands | -0.0011 | -0.0122 | -0.0214+ | 0.0019 | -0.0137 | -0.0277** | 0.0003 | -0.0023 | -0.0269* | -0.0005 |
| | [0.0053] | [0.0121] | [0.0122] | [0.0079] | [0.0084] | [0.0083] | [0.0051] | [0.0061] | [0.0105] | [0.0072] |
| Constant | -0.0128* | 0.0054 | -0.0055 | -0.0180* | -0.0170+ | -0.0125 | -0.0071 | -0.0182** | -0.0007 | -0.0192* |
| | [0.0058] | [0.0131] | [0.0132] | [0.0085] | [0.0091] | [0.0089] | [0.0055] | [0.0066] | [0.0114] | [0.0079] |
| Observations | 293 | 290 | 293 | 293 | 293 | 293 | 293 | 293 | 286 | 276 |
| R-squared | 0.11 | 0.02 | 0.07 | 0.09 | 0.08 | 0.10 | 0.09 | 0.12 | 0.06 | 0.09 |

Standard errors in brackets
+ significant at 10%; * significant at 5%; ** significant at 1%

Table A - 6 Total effect of SSN budget allocation on change in use of private outpatient care

| | (1) All | (2) Q1 | (3) Q2 | (4) Q3 | (5) Q4 | (6) Q5 | (7) Male | (8) Female | (9) Urban | (10) Rural |
|---|---|---|---|---|---|---|---|---|---|---|
| SSN budget allocation, per capita | 0.0009 | 0.0020 | -0.0002 | 0.0016 | 0.0004 | -0.0016 | 0.0012 | 0.0005 | 0.0031 | 0.0013 |
| | [0.0013] | [0.0025] | [0.0018] | [0.0017] | [0.0020] | [0.0028] | [0.0014] | [0.0014] | [0.0031] | [0.0017] |
| Diff. age | -0.0000 | -0.0019 | -0.0004 | 0.0039 | 0.0012 | 0.0004 | -0.0012 | 0.0012 | 0.0065+ | -0.0004 |
| | [0.0019] | [0.0035] | [0.0026] | [0.0024] | [0.0029] | [0.0040] | [0.0020] | [0.0020] | [0.0039] | [0.0025] |
| Diff. household size | 0.0085 | 0.0017 | -0.0026 | 0.0106 | 0.0158 | 0.0257 | 0.0085 | 0.0085 | 0.0045 | 0.0064 |
| | [0.0074] | [0.0137] | [0.0101] | [0.0095] | [0.0111] | [0.0156] | [0.0078] | [0.0077] | [0.0148] | [0.0096] |
| Diff. % population in rural area | -0.0269 | -0.0061 | -0.0141 | 0.0119 | -0.0370 | -0.0289 | -0.0285 | -0.0253 | -0.0002 | 0.0103 |
| | [0.0187] | [0.0358] | [0.0255] | [0.0240] | [0.0280] | [0.0394] | [0.0197] | [0.0195] | [0.0404] | [0.0236] |
| Diff. population | -0.0000 | -0.0000 | -0.0000** | -0.0000 | -0.0000 | -0.0000 | -0.0000 | -0.0000 | -0.0000 | -0.0000 |
| | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] |
| Diff. poverty rate ($P_0$) | -0.0195+ | -0.0219 | 0.0267+ | 0.0054 | 0.0086 | 0.0158 | -0.0178 | -0.0213+ | -0.0153 | -0.0352* |
| | [0.0111] | [0.0202] | [0.0151] | [0.0142] | [0.0166] | [0.0234] | [0.0117] | [0.0116] | [0.0222] | [0.0142] |
| Diff. poverty gap ($P_1$) | 0.0039 | -0.0256 | 0.0194 | 0.0191 | 0.0262+ | 0.0265 | 0.0027 | 0.0052 | 0.0012 | -0.0033 |
| | [0.0097] | [0.0179] | [0.0133] | [0.0125] | [0.0146] | [0.0206] | [0.0103] | [0.0102] | [0.0194] | [0.0127] |
| Sumatra | 0.0017 | -0.0038 | 0.0054 | 0.0014 | -0.0017 | -0.0014 | 0.0034 | -0.0000 | 0.0025 | -0.0004 |
| | [0.0030] | [0.0055] | [0.0041] | [0.0038] | [0.0045] | [0.0063] | [0.0032] | [0.0031] | [0.0059] | [0.0039] |
| Sulawesi | -0.0061 | -0.0028 | -0.0015 | -0.0044 | -0.0090 | -0.0045 | -0.0044 | -0.0079+ | -0.0108 | -0.0053 |
| | [0.0039] | [0.0070] | [0.0053] | [0.0049] | [0.0058] | [0.0082] | [0.0041] | [0.0040] | [0.0078] | [0.0050] |
| Kalimantan | -0.0063 | -0.0042 | -0.0030 | -0.0056 | -0.0001 | -0.0065 | -0.0054 | -0.0073+ | -0.0034 | -0.0037 |
| | [0.0041] | [0.0074] | [0.0056] | [0.0052] | [0.0061] | [0.0086] | [0.0043] | [0.0043] | [0.0082] | [0.0052] |
| Other islands | 0.0069 | -0.0023 | 0.0072 | 0.0101 | 0.0101 | 0.0187+ | 0.0068 | 0.0070 | 0.0024 | 0.0030 |
| | [0.0049] | [0.0090] | [0.0067] | [0.0063] | [0.0074] | [0.0104] | [0.0052] | [0.0051] | [0.0100] | [0.0063] |
| Constant | -0.0029 | 0.0086 | -0.0134+ | -0.0159* | -0.0175* | -0.0141 | -0.0028 | -0.0031 | -0.0078 | 0.0027 |
| | [0.0053] | [0.0098] | [0.0072] | [0.0068] | [0.0080] | [0.0112] | [0.0056] | [0.0056] | [0.0108] | [0.0069] |
| Observations | 293 | 290 | 293 | 293 | 293 | 293 | 293 | 293 | 286 | 276 |
| R-squared | 0.06 | 0.02 | 0.07 | 0.06 | 0.05 | 0.03 | 0.06 | 0.06 | 0.03 | 0.04 |

Standard errors in brackets
+ significant at 10%; * significant at 5%; ** significant at 1%

Table A - 7 Sensitivity direct effect estimate, outpatient care (1 month recall; probit marginal effects)

| | (1) | (2) | (3) |
|---|---|---|---|
| Health card | 0.0103** | 0.0109** | 0.0106* |
| | [0.0020] | [0.0020] | [0.0052] |
| Health card * SSN per capita | | | 0.0034 |
| | | | [0.0025] |
| Health card * HC allocation per capita | | | -0.0289 |
| | | | [0.0188] |
| Age | 0.0007** | 0.0007** | 0.0007** |
| | [0.0001] | [0.0001] | [0.0001] |
| Female | 0.0076** | 0.0075** | 0.0075** |
| | [0.0020] | [0.0020] | [0.0020] |
| Female head of household | -0.0117** | -0.0115** | -0.0115** |
| | [0.0031] | [0.0031] | [0.0031] |
| Education head of household | | | |
| Primary | -0.0028 | -0.0025 | -0.0025 |
| | [0.0022] | [0.0022] | [0.0022] |
| Junior secondary | 0.0054 | 0.0069+ | 0.0069+ |
| | [0.0041] | [0.0042] | [0.0042] |
| Senior secondary | 0.0091* | 0.0103* | 0.0102* |
| | [0.0044] | [0.0044] | [0.0044] |
| Higher | 0.0464* | 0.0489* | 0.0486* |
| | [0.0205] | [0.0211] | [0.0211] |
| Log household size | -0.0380** | -0.0381** | -0.0380** |
| | [0.0026] | [0.0026] | [0.0026] |
| BKKBN criteria | | | |
| Worship | 0.0129** | 0.0126** | 0.0125** |
| | [0.0030] | [0.0030] | [0.0030] |
| Food | -0.0084 | -0.0086 | -0.0088 |
| | [0.0076] | [0.0076] | [0.0076] |
| Clothing | 0.0087+ | 0.0061 | 0.0061 |
| | [0.0047] | [0.0047] | [0.0047] |
| Floor | -0.0021 | 0.0024 | 0.0024 |
| | [0.0021] | [0.0022] | [0.0022] |
| Health | 0.0505** | 0.0494** | 0.0493** |
| | [0.0028] | [0.0028] | [0.0028] |
| Agriculture main source of income | -0.0221** | -0.0220** | -0.0220** |
| | [0.0023] | [0.0023] | [0.0023] |
| Rural area | -0.0072* | -0.0102** | -0.0103** |
| | [0.0029] | [0.0031] | [0.0030] |
| IDT village | -0.0008 | -0.0037 | -0.0036 |
| | [0.0022] | [0.0023] | [0.0023] |
| Nr. of Puskesmas in village | 0.0103** | 0.0119** | 0.0119** |
| | [0.0025] | [0.0025] | [0.0025] |
| Nr. of supporting Puskesmas in village | 0.0067** | 0.0081** | 0.0081** |
| | [0.0020] | [0.0020] | [0.0020] |
| BKKBN rate per sub-district | | -0.0269** | -0.0270** |
| | | [0.0060] | [0.0060] |
| SSN per capita in district | | 0.0126** | 0.0112** |
| | | [0.0016] | [0.0020] |
| HC allocation per capita in district | | 0.1059** | 0.1195** |
| | | [0.0109] | [0.0146] |
| Poverty rate ($P_0$) | | -0.0179** | -0.0181** |
| | | [0.0067] | [0.0067] |
| Poverty gap ($P_1$) | | -0.0041 | -0.0029 |
| | | [0.0106] | [0.0106] |
| Observations | 150,889 | 150,889 | 150,889 |
| Pseudo R-squared | 0.01 | 0.02 | 0.02 |

Robust standard errors in brackets

Table A - 8 Sensitivity direct effect estimate, public care (1 month recall; probit marginal effects)

| | (1) | (2) | (3) |
|---|---|---|---|
| Health card | 0.0224** | 0.0235** | 0.0272** |
| | [0.0015] | [0.0015] | [0.0038] |
| Health card * SSN per capita | | | -0.0015 |
| | | | [0.0019] |
| Health card * HC allocation per capita | | | -0.0059 |
| | | | [0.0137] |
| Age | 0.0002** | 0.0002** | 0.0002** |
| | [0.0000] | [0.0000] | [0.0000] |
| Female | 0.0098** | 0.0097** | 0.0097** |
| | [0.0015] | [0.0015] | [0.0015] |
| Female head of household | -0.0064** | -0.0065** | -0.0065** |
| | [0.0024] | [0.0024] | [0.0024] |
| Education head of household | | | |
| Primary | -0.0041* | -0.0040* | -0.0040* |
| | [0.0017] | [0.0017] | [0.0017] |
| Junior secondary | -0.0004 | 0.0003 | 0.0002 |
| | [0.0030] | [0.0030] | [0.0030] |
| Senior secondary | -0.0010 | -0.0012 | -0.0012 |
| | [0.0032] | [0.0032] | [0.0032] |
| Higher | -0.0228** | -0.0229** | -0.0229** |
| | [0.0060] | [0.0059] | [0.0059] |
| Log household size | -0.0228** | -0.0234** | -0.0234** |
| | [0.0020] | [0.0020] | [0.0020] |
| BKKBN criteria | | | |
| Worship | 0.0163** | 0.0154** | 0.0153** |
| | [0.0021] | [0.0022] | [0.0022] |
| Food | -0.0155* | -0.0133* | -0.0132* |
| | [0.0063] | [0.0062] | [0.0062] |
| Clothing | -0.0027 | -0.0039 | -0.0039 |
| | [0.0039] | [0.0040] | [0.0039] |
| Floor | 0.0015 | 0.0044** | 0.0044* |
| | [0.0016] | [0.0017] | [0.0017] |
| Health | 0.0310** | 0.0307** | 0.0307** |
| | [0.0021] | [0.0021] | [0.0021] |
| Agriculture main source of income | -0.0119** | -0.0125** | -0.0125** |
| | [0.0017] | [0.0017] | [0.0017] |
| Rural area | -0.0004 | -0.0027 | -0.0027 |
| | [0.0022] | [0.0023] | [0.0023] |
| IDT village | 0.0058** | 0.0021 | 0.0020 |
| | [0.0017] | [0.0017] | [0.0017] |
| Nr. of Puskesmas in village | 0.0086** | 0.0098** | 0.0098** |
| | [0.0019] | [0.0019] | [0.0019] |
| Nr. of supporting Puskesmas in village | 0.0108** | 0.0118** | 0.0119** |
| | [0.0015] | [0.0015] | [0.0015] |
| BKKBN rate per sub-district | | -0.0199** | -0.0198** |
| | | [0.0041] | [0.0041] |
| SSN per capita in district | | 0.0119** | 0.0125** |
| | | [0.0012] | [0.0015] |
| HC allocation per capita in district | | 0.0470** | 0.0507** |
| | | [0.0077] | [0.0114] |
| Poverty rate ($P_0$) | | -0.0087+ | -0.0090+ |
| | | [0.0051] | [0.0051] |
| Poverty gap ($P_1$) | | 0.0261** | 0.0258** |
| | | [0.0077] | [0.0077] |
| Observations | 150,889 | 150,889 | 150,889 |
| Pseudo R-squared | 0.01 | 0.02 | 0.02 |

Robust standard errors in brackets
+ significant at 10%; * significant at 5%; ** significant at 1%

Table A - 9 Sensitivity direct effect estimate, private care (1 month recall; probit marginal effects)

| | (1) | (2) | (3) |
|---|---|---|---|
| Health card | -0.0111** | -0.0113** | -0.0140** |
| | [0.0014] | [0.0015] | [0.0038] |
| Health card * SSN per capita | | | 0.0035+ |
| | | | [0.0019] |
| Health card * HC allocation per capita | | | -0.0161 |
| | | | [0.0140] |
| Age | 0.0006** | 0.0006** | 0.0006** |
| | [0.0000] | [0.0000] | [0.0000] |
| Female | -0.0023 | -0.0022 | -0.0022 |
| | [0.0014] | [0.0014] | [0.0014] |
| Female head of household | -0.0075** | -0.0072** | -0.0073** |
| | [0.0021] | [0.0021] | [0.0021] |
| Education head of household | | | |
| Primary | 0.0008 | 0.0009 | 0.0009 |
| | [0.0016] | [0.0016] | [0.0016] |
| Junior secondary | 0.0051 | 0.0057+ | 0.0057+ |
| | [0.0032] | [0.0032] | [0.0032] |
| Senior secondary | 0.0106** | 0.0117** | 0.0117** |
| | [0.0033] | [0.0033] | [0.0033] |
| Higher | 0.0656** | 0.0685** | 0.0682** |
| | [0.0205] | [0.0210] | [0.0210] |
| Log household size | -0.0189** | -0.0184** | -0.0183** |
| | [0.0018] | [0.0018] | [0.0018] |
| BKKBN criteria | | | |
| Worship | -0.0022 | -0.0017 | -0.0017 |
| | [0.0022] | [0.0022] | [0.0022] |
| Food | 0.0050 | 0.0034 | 0.0032 |
| | [0.0048] | [0.0049] | [0.0049] |
| Clothing | 0.0121** | 0.0106** | 0.0106** |
| | [0.0030] | [0.0031] | [0.0031] |
| Floor | -0.0033* | -0.0013 | -0.0013 |
| | [0.0015] | [0.0016] | [0.0016] |
| Health | 0.0220** | 0.0210** | 0.0210** |
| | [0.0019] | [0.0020] | [0.0020] |
| Agriculture main source of income | -0.0125** | -0.0118** | -0.0118** |
| | [0.0016] | [0.0016] | [0.0016] |
| Rural area | -0.0067** | -0.0076** | -0.0077** |
| | [0.0021] | [0.0022] | [0.0022] |
| IDT village | -0.0065** | -0.0061** | -0.0060** |
| | [0.0015] | [0.0016] | [0.0016] |
| Nr. of Puskesmas in village | 0.0019 | 0.0022 | 0.0022 |
| | [0.0018] | [0.0018] | [0.0018] |
| Nr. of supporting Puskesmas in village | -0.0042** | -0.0039** | -0.0039** |
| | [0.0014] | [0.0014] | [0.0014] |
| BKKBN rate per sub-district | | -0.0066 | -0.0066 |
| | | [0.0046] | [0.0046] |
| SSN per capita in district | | 0.0014 | -0.0000 |
| | | [0.0012] | [0.0014] |
| HC allocation per capita in district | | 0.0693** | 0.0760** |
| | | [0.0082] | [0.0101] |
| Poverty rate ($P_0$) | | -0.0155** | -0.0155** |
| | | [0.0047] | [0.0047] |
| Poverty gap ($P_1$) | | -0.0336** | -0.0328** |
| | | [0.0078] | [0.0078] |
| Observations | 150,889 | 150,889 | 150,889 |
| Pseudo R-squared | 0.02 | 0.03 | 0.03 |

Robust standard errors in brackets
+ significant at 10%; * significant at 5%; ** significant at 1%

Table A - 10 Sensitivity direct effect estimate to selection on needs bias (pure health card effect, 1month reference period)

| Outpatient care | Intervention group | Control group | Difference ($\hat{\beta}$) | [s.e.][a] | % Change | Direct effect ($\hat{p}\hat{\beta}$) | $\hat{p}$ | N treated | N control |
|---|---|---|---|---|---|---|---|---|---|
| Quintile 1 (poor) | 0.0993 | 0.0866 | 0.0127 | [0.0031] | 14.7 | 0.0023 | 0.184 | 25,046 | 20,796 |
| Quintile 2 | 0.1205 | 0.1056 | 0.0149 | [0.0041] | 14.1 | 0.0020 | 0.137 | 19,611 | 17,658 |
| Quintile 3 | 0.1330 | 0.1197 | 0.0132 | [0.0047] | 11.0 | 0.0014 | 0.106 | 15,655 | 15,393 |
| Quintile 4 | 0.1450 | 0.1378 | 0.0072 | [0.0058] | 5.2 | 0.0005 | 0.071 | 10,912 | 12,374 |
| Quintile 5 (rich) | 0.1509 | 0.1468 | 0.0041 | [0.0076] | 2.8 | 0.0002 | 0.037 | 5,641 | 7,942 |
| Male | 0.1155 | 0.1097 | 0.0059 | [0.0028] | 5.4 | 0.0006 | 0.105 | 38,085 | 36,843 |
| Female | 0.1269 | 0.1167 | 0.0102 | [0.0029] | 8.8 | 0.0011 | 0.107 | 38,871 | 37,420 |
| Urban | 0.1390 | 0.1316 | 0.0074 | [0.0049] | 5.6 | 0.0005 | 0.073 | 17,879 | 17,048 |
| Rural | 0.1147 | 0.1073 | 0.0074 | [0.0022] | 6.9 | 0.0009 | 0.128 | 59,077 | 57,215 |
| All | 0.1213 | 0.1132 | 0.0081 | [0.0020] | 7.1 | 0.0009 | 0.106 | 76,956 | 74,263 |
| Public | | | | | | | | | |
| Quintile 1 (poor) | 0.0729 | 0.0534 | 0.0195 | [0.0025] | 36.5 | 0.0036 | 0.184 | 25,046 | 20,796 |
| Quintile 2 | 0.0784 | 0.0577 | 0.0207 | [0.0032] | 35.9 | 0.0028 | 0.137 | 19,611 | 17,658 |
| Quintile 3 | 0.0855 | 0.0614 | 0.0240 | [0.0036] | 39.2 | 0.0025 | 0.106 | 15,655 | 15,393 |
| Quintile 4 | 0.0914 | 0.0685 | 0.0230 | [0.0044] | 33.5 | 0.0016 | 0.071 | 10,912 | 12,374 |
| Quintile 5 (rich) | 0.0840 | 0.0665 | 0.0175 | [0.0056] | 26.3 | 0.0006 | 0.037 | 5,641 | 7,942 |
| Male | 0.0732 | 0.0561 | 0.0171 | [0.0022] | 30.5 | 0.0018 | 0.105 | 38,085 | 36,843 |
| Female | 0.0871 | 0.0639 | 0.0231 | [0.0023] | 36.1 | 0.0025 | 0.107 | 38,871 | 37,420 |
| Urban | 0.0867 | 0.0681 | 0.0187 | [0.0036] | 27.4 | 0.0014 | 0.073 | 17,879 | 17,048 |
| Rural | 0.0778 | 0.0575 | 0.0203 | [0.0017] | 35.3 | 0.0026 | 0.128 | 59,077 | 57,215 |
| All | 0.0802 | 0.0601 | 0.0201 | [0.0016] | 33.5 | 0.0021 | 0.106 | 76,956 | 74,263 |
| Private | | | | | | | | | |
| Quintile 1 (poor) | 0.0305 | 0.0374 | -0.0069 | [0.0020] | -18.3 | -0.0013 | 0.184 | 25,046 | 20,796 |
| Quintile 2 | 0.0495 | 0.0544 | -0.0048 | [0.0029] | -8.9 | -0.0007 | 0.137 | 19,611 | 17,658 |
| Quintile 3 | 0.0572 | 0.0655 | -0.0083 | [0.0035] | -12.7 | -0.0009 | 0.106 | 15,655 | 15,393 |
| Quintile 4 | 0.0654 | 0.0796 | -0.0142 | [0.0043] | -17.8 | -0.0010 | 0.071 | 10,912 | 12,374 |
| Quintile 5 (rich) | 0.0803 | 0.0941 | -0.0138 | [0.0062] | -14.6 | -0.0005 | 0.037 | 5,641 | 7,942 |
| Male | 0.0500 | 0.0606 | -0.0106 | [0.0022] | -17.5 | -0.0011 | 0.105 | 38,085 | 36,843 |
| Female | 0.0478 | 0.0605 | -0.0127 | [0.0021] | -21.1 | -0.0014 | 0.107 | 38,871 | 37,420 |
| Urban | 0.0613 | 0.0706 | -0.0092 | [0.0037] | -13.1 | -0.0007 | 0.073 | 17,879 | 17,048 |
| Rural | 0.0442 | 0.0574 | -0.0132 | [0.0016] | -22.9 | -0.0017 | 0.128 | 59,077 | 57,215 |
| All | 0.0489 | 0.0606 | -0.0117 | [0.0015] | -19.3 | -0.0012 | 0.106 | 76,956 | 74,263 |

[a] Bootstrapped standard errors with 500 replications.

Table A - 11 Sensitivity total effect estimate (IV)

| | (1) Outpatient | (2) Outpatient | (3) Public | (4) Public | (5) Private | (6) Private |
|---|---|---|---|---|---|---|
| SSN per capita in district | 0.0042 | 0.0044 | 0.0037* | 0.0039+ | 0.0007 | 0.0007 |
| | [0.0028] | [0.0032] | [0.0019] | [0.0022] | [0.0017] | [0.0020] |
| Health card coverage in district | -0.0118 | | -0.0159 | | 0.0081 | |
| | [0.0628] | | [0.0421] | | [0.0381] | |
| SSN*HC | | -0.0054 | | -0.0060 | | 0.0020 |
| | | [0.0244] | | [0.0163] | | [0.0148] |
| Diff. age | -0.0028 | -0.0028 | -0.0029 | -0.0028 | 0.0000 | -0.0000 |
| | [0.0032] | [0.0032] | [0.0021] | [0.0021] | [0.0019] | [0.0019] |
| Diff. household size | 0.0081 | 0.0083 | 0.0039 | 0.0040 | 0.0080 | 0.0082 |
| | [0.0128] | [0.0129] | [0.0086] | [0.0086] | [0.0078] | [0.0078] |
| Diff. % population in rural area | 0.0033 | 0.0034 | 0.0254 | 0.0255 | -0.0270 | -0.0269 |
| | [0.0308] | [0.0308] | [0.0207] | [0.0206] | [0.0187] | [0.0187] |
| Diff. population | -0.0000 | -0.0000 | 0.0000 | 0.0000 | -0.0000 | -0.0000 |
| | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] |
| Diff. poverty rate ($P_0$) | -0.0060 | -0.0063 | 0.0088 | 0.0084 | -0.0198+ | -0.0196+ |
| | [0.0184] | [0.0183] | [0.0124] | [0.0122] | [0.0112] | [0.0111] |
| Diff. poverty gap ($P_1$) | 0.0385* | 0.0381* | 0.0353** | 0.0349** | 0.0040 | 0.0041 |
| | [0.0161] | [0.0163] | [0.0108] | [0.0109] | [0.0098] | [0.0099] |
| Sumatra | -0.0007 | -0.0005 | -0.0025 | -0.0022 | 0.0022 | 0.0019 |
| | [0.0064] | [0.0057] | [0.0043] | [0.0038] | [0.0039] | [0.0035] |
| Sulawesi | -0.0214* | -0.0213** | -0.0169** | -0.0164** | -0.0053 | -0.0058 |
| | [0.0090] | [0.0078] | [0.0060] | [0.0052] | [0.0054] | [0.0047] |
| Kalimantan | -0.0055 | -0.0053 | -0.0003 | 0.0003 | -0.0056 | -0.0060 |
| | [0.0090] | [0.0079] | [0.0060] | [0.0053] | [0.0055] | [0.0048] |
| Other islands | 0.0029 | 0.0036 | -0.0027 | -0.0017 | 0.0077 | 0.0071 |
| | [0.0102] | [0.0085] | [0.0068] | [0.0057] | [0.0062] | [0.0051] |
| Constant | -0.0138 | -0.0143 | -0.0110 | -0.0119+ | -0.0038 | -0.0032 |
| | [0.0113] | [0.0095] | [0.0076] | [0.0063] | [0.0068] | [0.0058] |
| Observations | 293 | 293 | 293 | 293 | 293 | 293 |
| R-squared | 0.08 | 0.08 | 0.09 | 0.09 | 0.06 | 0.06 |
| Instrumented | HC | SSN*HC | HC | SSN*HC | HC | SSN*HC |
| Over-identifying restrictions test | | | | | | |
| $\chi^2$ (1) | 0.110 | 0.096 | 0.009 | 0.018 | 0.662 | 0.690 |
| Probability | 0.741 | 0.756 | 0.923 | 0.893 | 0.416 | 0.406 |
| Durbin-Wu-Hausman test | | | | | | |
| F (1, 279) | 1.667 | 1.592 | 3.784 | 3.888 | 0.027 | 0.008 |
| Probability | 0.198 | 0.208 | 0.053 | 0.050 | 0.870 | 0.928 |
| First stage regression | HC | SSN*HC | | | | |
| Instruments | | | | | | |
| BKKBN pre-prosperous | 0.2315** | 0.5833** | | | | |
| | [0.0347] | [0.0823] | | | | |
| BKKBN KS1 | 0.0285 | -0.0187 | | | | |
| | [0.0535] | [0.1270] | | | | |
| | (other results omitted) | | | | | |
| Joint significance instruments | | | | | | |
| F (1, 279) | 22.807 | 26.786 | | | | |
| Probability | 0.000 | 0.000 | | | | |

Standard errors in brackets
+ significant at 10%; * significant at 5%; ** significant at 1%

Table A - 12 Exogeneity BKKBN data and trend in utilisation 1997 – 1998

| | (1)<br>Outpatient 1998-1997 | (2)<br>Public 1998-1997 | (3)<br>Private 1998-1997 |
|---|---|---|---|
| BKKBN pre-prosperous | -0.0045 | -0.0027 | -0.0030 |
| | [0.0111] | [0.0076] | [0.0066] |
| BKKBN prosperous I | -0.0143 | -0.0182 | -0.0006 |
| | [0.0190] | [0.0130] | [0.0113] |
| Constant | -0.0230** | -0.0135** | -0.0070* |
| | [0.0056] | [0.0038] | [0.0033] |
| Observations | 292 | 292 | 292 |
| R-squared | 0.00 | 0.01 | 0.00 |

Standard errors in brackets
+ significant at 10%; * significant at 5%; ** significant at 1%