Public vs. private health care: An analysis of changing scenario of health sectors in India, Brazil, and South Africa

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Abstract: We have witnessed radical changes in infrastructure of health services as well as pattern of utilisation of care over the years in most of the transitional economies of Asia, Africa, and Latin America. The present paper recognises the existence of two different classes of service providers in the health sector: public and private, measures activities in these two sectors by looking at the utilisation rates of different health care services, and examines how different factors in the demand and supply sides economics of health care contribute to the changing scenario of the health sectors in India, Brazil, and South Africa.

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1 Introduction

We have witnessed radical changes in infrastructure of health services as well as pattern of utilisation of care over the years in most of the developing or transitional economies of Asia, Africa, and Latin America. An enquiry into the fact would unveil some of the important alterations like, among others, introduction of user fees or more specifically hike in fees structure in the public health facilities, emergence of numerous private sources of care over the public ones, and growing preference for those among common mass. Important research questions at this point are that whether characteristics in the demand-side economics of health care are changing or whether those in the supply-side have altered leading to a change in the appeal towards a particular type of care or sources of it. The present paper investigates such research questions empirically by examining the pattern of utilisation of health care in India, and two other leading economies of Latin America and Africa, namely Brazil, and South Africa. It recognises the existence of two different classes of service providers in the health sector: public and private, measures activities in these two sectors by looking at the utilisation

rates of different health care services, and examines how different factors in the demand and supply sides economics of health care contribute to the changing patterns of utilisation of care and hence to the changing scenario of the health sectors in the above-mentioned countries.

The issue of analysing demand for health care in developed and developing countries is gaining importance gradually for better understanding of the underlying forces which give rise to national spending on health care and costs. Scholars from many different fields have been trying systematically to study the determinants of health care demand in developed and developing countries to suggest policies that may help the financing of the health care delivery system without creating burdens on low income groups (Fabbri and Monfardini 2003; Mocan, Tekin and Zax 2004). Many African nations have already adopted the recommendation of the World Bank on increased cost recovery for financing publicly provided health services and gradually introducing user fees (Shaw 1995). However, utilisation dropped in many instances after user fees were introduced. When quality improvements were coupled with the introduction of user fees, utilisation increased after fees were raised (Reerink and Sauerborn 1996). In India too the need for charging user fees is being greatly acknowledged. As a first step towards constructing and using a health accounts framework to analyse resource flows for reproductive and child health project in the Indian State of Rajasthan, the study of The POLICY Project with IIHMR found that private-sector health spending in India and in Rajasthan is amongst the highest in the world, when expressed as a share of GDP. The private sector accounts for 78 per cent of overall health expenditures and 4.7 per cent of GDP (IIHMR 2000). The project asserts that the government should encourage efficient private spending on reproductive health care and should not try to compete with private resources. In other words, the government should not crowd out private spending but should rather complement it and make it as efficient as possible (IIHMR 2000). In recent past in some States in India fees structure in the public health care system has been revised. However, we are unaware of any significant study or survey in Indian context to address issues related to public vs. private health care in the post reform period[1]. As the developed and developing African nations have already gained experience from empirical studies, the question at this stage is that whether the results can readily be implemented in Indian context or whether we should expedite to follow a similar path. Peters, Yazbeck, Sharma, Ramana, Pritchett, and Wagstaff (2002) put a note of caution that experience gained

[1] The survey by NCAER as used in Sundar (1995) was done in 1990; post-reform period in India means period after 1991.

from the latest policy changes in North America and Western Europe cannot be simply adopted in a developing country like India whose demographic and institutional realities are so different from those of high-income countries.

For example, the epidemiologic profile of the industrial societies or those in the post-transitional phase may differ from those in the pre-transitional phase (Omran 1971; Murray and Chen 1992; Salomon and Murray 2002). Prevalence of communicable, maternal, perinatal, and nutritional diseases may be higher over non-communicable diseases and injuries in developing societies than in developed ones. Developing countries, which are in the midst of epidemiologic transition, may also have disease profile of poor as well as affluent countries as we have seen in case of India (Sundar 1995; Peters, Yazbeck, Sharma, Ramana, Pritchett, and Wagstaff 2002; Majumder 2006a). Such a complex epidemiological profile may correspond to high and varied need for health care in developing countries. This high need in no way fuels superficial demand for health care in developing countries even if prices are too low or nominal. For example, in India maternal and child health care services are delivered at free of cost or at nominal prices at public health facilities, and those have been made compulsory for the eligible population with other signatories to the ICPD, Cairo. Still utilisation rates of those services are too low across cultures and societies in India (see ORG 1987; Gobindasamy and Ramesh. 1997; GOI 2002). Government of India had to develop a complete set of machinery to generate demand for those services among common mass. Sharp differences in institutional set ups may also be seen between developed and developing nations. Often the health sector in developing countries suffers from budgetary constraints for adverse macroeconomic conditions (Abel-Smith 1986). Presence of health insurance coverage or third party payer on behalf of patient has also made the situation different in developed countries than in developing ones (Feldstein 1979). The intuitional set ups of different developing transitional economies may differ. Different such countries may remain at different phases of transition. For example, the health sector in India may remain far ahead of similar other major developing nations of Africa, Asia, and Latin America in the process of transition relying heavily on ingenious growth in the private sector. In such a complex situation when private sectors tend to flourish over the public ones in developing countries - it draws our attention. So, there is an urgent need to study the changing scenario in the health sectors in developing countries, particularly the interaction of demand and supply sides characteristics and their impact on the future direction of the health care economies in this phase of transition.

The International Society for Equity in Health (2005) maintains that health care systems should be analysed and compared in their performance with relation to four functions: management, resource creation, service delivery, and financing. The present study focuses on 'service delivery' from the point of view of utilisation of services recognising two distinguishable sources of care: public and private. It utilises individual-level data files on ever-married women from Indian National Family Health Survey-2 (NFHS-2, 1998-1999), Brazilian Demographic and Health Survey (BR3-DHS III, 1996), and South African Demographic and Health Survey (ZA3-DHS-III, 1998).

2 Studies on health services utilisation

Economists began to turn their attention to the matters concerning the efficient allocation of resources devoted to preventing, curing, and alleviating ill health around the end of the 1950s (Culyer 1971). However, literature in the field of health economics is mostly normative in nature consisting of studies on welfare aspects of medical care, what public health policy ought to be or studies being based upon the value judgments in health care. Positive studies based on econometric techniques, empirical evidence, and other quantitative techniques are less extensive and more exotic. Moreover, most of the positive studies have been directed at the evaluation of health care technologies. These include cost benefit analysis, cost effectiveness analysis, and cost utility analysis. All these techniques need adequate knowledge and information about the available alternative health care technologies (Hutton 1994; Drumond, O'Brien, Stoddart, and Torrance 1997). However, analysis of Fuchs (1966), which defined the health service sector as health care industry, opened up new avenues of empirical research in this field tumbling the controversies regarding application of economics to health care. Such an industry provides three types of outputs such as health, and validation services and other consumer services. Among these three groups, the first one of health or medical services is the most important, as one patient immediately needs or demands those. Validation services are those, when a physician provides judgments concerning a person's health status. Other consumer services are so called hospitality or hotel services, which one patient receives with medical services. All these services are output of the health care industry measured in terms utilisation of health facilities, e.g., number of cases treated, hospital admission, etc. (Feldstein 1967a; Feldstein 1967b). The inputs of health care industry as categorised by Fuchs (1966) are: labour input (medical and paramedical stuff, such as doctors, dentists, nurses, etc.), physical capital (plant and equipments, such as hospitals, x-ray

machines, etc.), and intermediate goods and services (drugs, bandages, laundry services, etc.). In such a system, output or utilisation of services is a function of availability or supply of different inputs. Empirical studies within this framework of supply side economics of health care began with the work of Feldstein (1967a). He estimated Cobb-Douglas type production function of hospitals for the British National Health Service. Studies in the demand side of health care economics also follow a similar framework, which considers a set of socio-economic and demographic factors such as age, gender, education, ethnicity, etc. with the economic ones (see Feldstein 1967b and Feldstein 1979). Utilisation of health services depends both on demand and supply of consumers and providers (Lee and Mills 1983). Studies on utilisation of health services fall under a mixed demand-supply framework (Majumder 2005).

Empirical studies in the field of health care economics began from the supply-side economics of health care with the work of Feldstein (1967a). In his formulation, one hospital's production function takes the shape of a Cobb-Douglas production function where output is measured in terms of cases treated or number of hospital admission, and inputs are measured in terms of physical quantities of items used by hospitals such as medical and paramedical stuff, plant and equipments, drugs and bandages, etc. For all the production functions, he found that, elasticity coefficients of medical inputs, beds and drugs and dressings are positive, meaning that hospital output increases with respect to changes in inputs. All the production functions show decreasing returns to scale, meaning that output would increase proportionately less than the increases in inputs. Frost and Francis (1979) challenged Feldstein's (1967a) proposition and proved that utilisation increases proportionately with the availability of bed and elasticity coefficient of bed is not significantly different from one utilising district level data on hospital admission for British National Health Service by availability of beds for 17 districts. However, empirical works within such a theoretical framework in Indian context are not known.

Utilisation of services is also affected by demand-side factors, which may include a set of socio-economic and demographic characteristics, household income, etc. (Feldstein 1979). Empirical works in this tradition by demographers in the context of developing countries are too wide. Since 1950s demographers, whose discipline is most precise in the field of social science even after accommodating scholars from many different fields, have also started focusing on acceptance of different family planning methods and utilisation of maternal and child health care in connection with the so called population explosion in the developing

countries. Though scientific studies in Indian context have very systematically explored the relationship between the demand-side factors and utilisation of various reproductive health care services (see Pathak, Ketkar and Majumdar 1981; Ramachandran and Shastri 1983; Garg 1985; Basu 1990; Chhabra and 1997; Gobindasamy and Ramesh 1997; Rao and Richard 1989; Kavitha and Audinarayana 1997; Trakroo 1993; Sundar 1995; Sodani 1999; Ghosh 2004), from those studies we do not find any clue of analysing preference for care according to type and source (public or private).

Studies within the mixed demand-supply framework also began with the work of Feldstein (1967b). He developed a 'complete-system of econometric models' to observe conveniently how the health care system responds to differences in bed availability, demographic characteristics, income, etc. Scientific studies within this framework in Indian context are too not extensive. Though Majumder (2006b) has analysed utilisation of different types of care considering two distinguishable sources of care (public and private), there remains enough scope to explore further in the context of changing scenario of health sectors in developing countries.

Demand for health care may also be affected significantly by geographical accessibility to those. Increased distance between residents and health care providers is commonly thought to decrease the utilisation of health care. This barrier effect of distance is assumed to be greater for those with reduced access to transportation, and for those living in sparsely populated areas where distances between residences and facilities are large (Nemet and Bailey 2000). Studies on health services utilisation in general have found a negative (distance-decay) relationship between remoteness of a health facilities and utilisation of services (Freeman, Gesler, and Mieras 1983; Airey 1989; Mooney, Zwanziger, Phibbs, and Schmitt 2000). However, in this tradition too, scholars did not pay much attention to different types of care (public vs. private) or sources of it.

The richness of socio-medical literature needs to be mentioned. Since 1970s, social and medical anthropologists applied their minds to patients' perspectives and conceptions about illness and medicine to study how patients comply with the sick role – how they perceive the causes of their condition and make choices regarding the use or non-use of different kinds of health care (Herzlich and Pierret 1985). They have presented a very elaborated and systematic classification of the explanatory variables, which include characteristics of the disorder and their perception - need factors, characteristics of the subject -predisposing factors, and characteristics of the service - enabling factors (Andersen 1968, Kroeger 1983,

Andersen 1995). Though there remains enough scope for applying econometric tools in such a framework, it seems that this tradition is quite biased to qualitative social and anthropological research techniques.

Another tradition came into existence with the Grossman's seminal work (Grossman 1972a, 1972b), which goes beyond traditional demand analysis and has been extremely influential in economics of health care. Grossman (1972b) analysed how individuals allocate their resources to produce health. The model removes the artificial separation between consumption and production, and asserts that individuals are consumers as well as active producers of health who spend enough time and money on production of it. Demand for health care services is derived from a demand for health, which is again derived from the demand for utility in terms of healthy days, leisure and work, etc. As health lasts over time periods, demand for health care, in this model, is essentially seen as the result of patient's intertemporal utility maximisation. It theorises that demand for health care services at any point of time is a function of the latent variable 'health status', wage rate, a price vector for medical services and foodstuff, individual age, level of education, and a vector of environmental effects. In the Grossman tradition, utilisation is primarily patient determined, though conditioned by the health-care delivery system. Empirical implementation of such function requires estimation of two part models: a logit or probit type of model in the first instances to take into account whether any health visit has been made; if the answer is 'yes' then in the second stage – how much has been consumed. This is particularly to take into account the cases with zero expenditure. Though empirical application of Grossman's model is quite wide, we will see results of two recent studies done in the context of Italy (Fabbri and Monfardini 2003) and China (Mocan, Tekin and Zax 2004). It is to be noted that the former considered two broad distinguishable classes of service providers: public, highly regulated, specialists, and private, less regulated, ones in Italy. The latter, highlights the growing trend of private health care in China, however, did not consider such peculiarity while analysing data. But it made us familiar with the demand for health care in China for the first time. The study covered 6407 urban households, mostly who are under the public health insurance coverage. As the present study is utilising data sets, which contain no information on health care expenditure, household income, and price of care, estimation of two part models in the Grossman tradition will not be relevant for our case. Rather, we will confine our study to the extent of estimating logit regression models.

Estimation of logit regression model is possible when utilisation of health services is considered as an event (Béland 1988). Such models give measures of likelihood of utilisation of health services with respect to a set of possible interacting variables. In such a framework, we can measure likelihood of utilising public health facilities in contrast to private ones incorporating factors from both demand and supply sides economics of health care (Majumder 2006b).

3 Data

The study utilises data of three countries: India, Brazil, and South Africa. For India, it utilises data from Indian National Family Health Survey-2 (NFHS-2). NFHS-2 covers a representative sample of about 95000 women in the 15-49 age group from 26 states in India, which comprise more than 99 percent of India's population. The data collection was carried out in two phases, starting in November 1998 and March 1999. The survey provides state-level estimates of demographic and health parameters as well as data on various socioeconomic and programmatic dimensions.

In the survey, each respondent has been asked whether she had visited any health facility in the last 12 months prior to the date of survey. We have found 34220 and 18910 valid cases in the rural and urban areas respectively leading to a total number of 53130 cases where respondents have utilised 14 different types of public or private health facilities as shown in table 1. Though NFHS-2 particularly focuses on reproductive and child health care issues, data on utilisation of health facilities are not confined to any particular aspects of health care. Rather, we see from table 2 that reasons behind seeking health care are many where medical treatment for self (respondent), and that for sick child have lions share to total utilisation.

For Brazil and South Africa source of data has been Demographic Health Survey – III. The Brazilian Demographic Health Survey – III has been conducted in 1996, which covered 12612 women (15-49). For Brazil, we have sorted data according to four reasons for visiting health facilities as shown in table 3: family planning (rural: 1029 and urban: 5145, total: 6174 cases), delivery care (rural: 399 and urban: 1814, total: 2213 cases), gynecological test (rural: 611 and urban: 4198, total: 4809 cases), and prenatal care (rural: 361 and urban: 1751, total: 2112 cases).

The South African Demographic Health Survey – III has been conducted in between February 1998 and August 1998, which covered 11735 women (15-49). For South Africa, we have classified data into three broad categories according to reasons for visiting health

facilities as shown in table 4: family planning (rural: 1800 and urban: 2630, total: 4430 cases), delivery care (rural: 829 and urban: 1113, total: 1942 cases), and places visited most for any reason (rural: 967 and urban: 1130, total: 2097 cases).

As all the three countries have similar data format, results are comparable. However, it is to be noted that coverage of the Indian one is far wider than the Brazilian and South African ones. As a result it is possible to analyse all the 53130 Indian cases in one model controlling for reasons for health visits. Estimation of such models for Brazil and South Africa was also possible, but at the cost of losing many cases or information.

4 Method

4.1 Response and predictor variables

4.1.1 Definition of variables: India

Definitions of predictor and response variables for India are shown in table 8. There are 14 different types of health facilities as shown in table 1. Those have been classified into two broad groups according to sources of care: public and private.

We have selected eleven predictor variables in the demand side: age of the respondent, family size, education, caste / ethnicity, religion, standard of living of the household, and five other control variables (five types of need for visiting different health facilities: family planning, immunisation, maternal care, child health care, and general health care). We would like to see whether preference for public or private types of care varies with age, education, and also with some household level and social characteristics, such as family size, standard of living of the household, caste or ethnicity, and religion. NFHS-2 does not provide any information on cash income of households. Rather, it computes one index of standard of living of households considering type of house, toilet facility, source of lighting, main fuel for cooking, source of drinking water, separate room for cooking, ownership of house, ownership of agricultural land, irrigated land, livestock, and ownership of durable goods (IIPS and ORC Macro 2000). A score value of 1, 2, and 3 mean low, medium, and high standard of living of the households respectively. We are interested to see how utilisation of health different types of care is related to standard of living of the households.

In the supply-side, we have five variables: availability of health facility – measured by type of locality with the assumption that health facilities are easily available in urban areas (see Elo 1992); three measures of quality of care – whether service provider spent enough time with the respondent, whether service provider talked nicely (UNFPA 1995; Schoenbaum

1998) and whether respondent found health premises clean (Haddad, Fournier, and Potvin 1998; Qatari and Haran 1999); exposure to mass media, which is the most powerful instrument through which respondent acquire information on market and gets acquainted with the rest of the world – measured as whether respondent reads newspaper / listens to radio / watches TV every week (Ghosh 2004); and geographical region - captures differences in economy, geography, governance, etc. (Majumder 2006b).

4.1.2 Definition of variables: Brazil & South Africa

Definitions of predictor and response variables for Brazil and South Africa are shown in tables 9 and 10 respectively. Though NFHS and DHS have similar data format, still there are differences in collection / presentation of data. As a result we could not select identical variables for all the three countries. For example, the women's data files of Brazil and South Africa do not contain any ready information on standard of living of the households as we find in case of India. However, the data files contain information on consumer durables, which the households have. On the basis of such information an index on household standard of living has been computed for Brazil and South Africa. We have selected few other variables also, which reflect affordability of households (see Celik and Hotchkiss 2000): proportion of rooms in the household (for Brazil only), floor material, wall material, and roof material (for Brazil only). The South African data file does not contain any information on religion.

In the supply side, we have selected six variables: availability of health services (as in case of India), accessibility to facilities, quality of care, cost, exposure to mass media (as in case of India) and geographical region. On the question of choosing current source of family planning services, respondents in Brazil and South Africa have been asked about the main reasons behind choosing such a source. From this variable (using respondents' opinions) we have computed three separate variables reflecting accessibility to facilities, quality of care, and cost. In strict sense though such information is related to family planning services, we have used those to analyse pattern of utilisation of care for other purposes also. Geographical regions for both the countries have been computed in such a way to capture regional differences in economy, geography, etc.

4.2 The model

If P be the estimated probability of utilising public health facilities, in probability form, the model is (Retherford and Choe 1993):

$$P = \frac{1}{1+e^{-Z}} \qquad \ldots \qquad \text{(i)}$$

where z is the predictor variable, and e is the base of the natural logarithm. From equation (i) it follows that

$$1 - P = 1 - \frac{1}{1+e^{-Z}} = \frac{e^{-Z}}{1+e^{-Z}}. \qquad \ldots \qquad \text{(ii)}$$

Dividing (i) by (ii) we get

$$\frac{P}{1-P} = e^{Z}. \qquad \ldots \qquad \text{(iii)}$$

Or,

$$\Omega = \exp(Z) \qquad \ldots \qquad \text{(iv)}$$

where Ω (uppercase omega) $\equiv \frac{P}{1-P}$ (is called the odds).

Now, if we assume that Z, instead of being a single predictor variable, is linear function of a set of predictor variables:

$$Z \equiv \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_k X_k, \qquad \ldots \qquad \text{(v)}$$

substituting (v) in (iv) we get:

$$\Omega = \exp(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_k X_k). \qquad \ldots \qquad \text{(vi)}$$

$$\Omega = \exp\left(\beta_0 + \sum \beta_{1i} X_{1i} + \sum \beta_{2i} X_{2i}\right). \qquad \ldots \quad \ldots \qquad \text{(vii)}$$

The equations include demand-side (X_{1i}), and supply-side (X_{2i}) factors. One model will be estimated for India, four for Brazil, and three for South Africa.

While interpreting results, we will concentrate on odds ratios [exp *(β)*'s] as measures of effect on the odds (Ω). One odds ratio represent the multiplicative effect of change in the predictor variable from category 0 to 1 on the odds (holding other variables constant). In order to look at goodness of fit, model summaries have also been displayed with results for all the models particularly highlighting *-2 Log likelihood*, *Cox & Snell R Square*, and *Nagelkerke R Square* (see Spicer 2004).

$$-2\text{Log likelihood} \equiv -\log(L_1 / L_2)^2,$$

where the *likelihood* L = the probability of observing our particular sample data under the assumption that the fitted model is true; L_1 = the likelihood of the first model; L_2 = the likelihood of the second model; it is assumed that the second model has all the predictor variables included in the first model, plus at least one more i.e., the first model is nested in the second model (Retherford and Choe 1993). It is understood that the smaller the value of the *-2 Log likelihood* statistic, better the fit.

In OLS though the indicator of goodness of fit is R^2, the logistic analogy to it is *pseudo-*R^2. Though there are several measures of *pseudo-* R^2, *we* have concentrated on two.

$$\text{Cox \& Snell R}^2 = 1 - \exp\left[-\frac{2}{n}(L_2 - L_1)\right].$$

Cox & Snell R Square does not reach 1. A slightly modified version of the measure (so that it varies between 0 and 1) is Nagelkerke R Square.

$$\text{Nagelkerke R}^2 = \frac{\text{Cox \& Snell R}^2}{1 - \exp[2(n^{-1})L_1]}.$$

5 Results and discussions

5.1 Utilisation of public and private health facilities

From table 1 we see that majority of the Indians utilise private health facilities. In the rural areas nearly half of the respondents prefer public health facilities. In the urban areas more than 62 per cent of the respondents utilised private health facilities. Among the wide range of available public health facilities, utilisation rates are higher for government hospitals (usually District and Sub-divisional) and rural hospitals.

From table 2 we see that nearly 80 per cent of the respondents in rural areas of India utilised public health facilities for family planning and immunisation services. In the urban areas, utlisation rates of public facilities for family planning services are not too high. On an average, 51 per cent of the respondents in urban areas utilised public health facilities. For maternal health care, treatment of sick child, and other health care services respondents both in rural and urban areas heavily relied on private health facilities.

Table 3 displays utilisation rates of various public and private health facilities in rural and urban areas of Brazil. In rural areas of Brazil, for family planning services majority of the

respondents relied on public health facilities. On the contrary, in urban areas majority of the respondents relied on private health facilities. For all other services, in rural and urban areas, respondents strongly prefer public health facilities.

Table 4 shows utilisation rates of various public and private health facilities in rural and urban areas of South Africa, where nearly all respondents (90 per cent) utilised public health facilities.

If we comprehend utilisation rate of private health facilities as an index of transition in the health sector, India will come first (score: 59) followed by Brazil (score: 37) and South Africa (score: 11). These figures are simple average of all the cases used in the models in the respective countries.

5.2 Results of multivariate analyses

5.2.1 Results for India

Tables 11, 12, and 13 show results of logit regression analyses of India, Brazil, and South Africa respectively. The first variable (in the demand-side) in table 11 is age of the respondent. We see that the coefficient corresponding to this variable is 1.064. It tells that odds ratio of 30-49 age group is 6.4 per cent higher than that of the 15-29 age group. It conveys that (when other variables are held constant), aged women are more likely to utilise public health facilities relative to younger ones.

Respondents, who are educated up to secondary level, are likely to utilise public health facilities more than the illiterate ones. However, as education increases beyond secondary level, likelihood of utilisation of public health facilities decreases sharply. It tacitly indicates that people, who are educated beyond secondary level, have a tendency to prefer private health facilities.

Ethnic minorities (such as scheduled caste and tribe categories who generally occupy the lower stratum of the local hierarchy) demand public health care more than those from general caste categories. Odds ratios of utilisation of public health facilities decline sharply with the standard of living of the households. It follows from this fact that demand for public health care in India is as sensitive to household income or wealth as an inferior commodity does. These findings support Majumder's earlier findings based on Indian National Family Health Survey-2 (2006b).

If we look at the odds ratios corresponding to various need factors, we see that respondents preferred public health facilities very sharply for immunisation, family planning,

and maternal health care services. However, for treatment of sick child and for various other general health care services, respondents strongly prefer private health facilities.

In the supply-side, we have six variables, by and large, which reflect characteristics of the service. The first variable in this category is availability of health facilities. We may realise that in urban areas both public and private health facilities are easily available. We see that, in such a situation, respondents prefer private health facilities. We have three variables on quality of care. We see that all those strongly go in favour of private health facilities.

We have one more variable in the supply-side, which reflect a good degree of availability of health care, civic amenities, difference in governance, economy, culture, geography, etc. Among the regions, preference for public health care is significantly high in the eastern region. People of the north also demand public health care more than people of the southern region, which is demographically advanced.

5.2.2 Results for Brazil

Results of Brazil are also similar to those of India. The only difference is that relationships are for stronger and clear. For example, with education and all the indices of wealth or standard of living likelihood of utilisation of public facilities decreases very sharply. Odds ratios of utilisation of public health facilities increase sharply when respondents take into account low costs of care.

5.2.3 Results for South Africa

In the South African models, we found three variables important: standard of living, accessibility to health facilities, and cost. Relationship of 'standard of living' with utilisation of public health facilities is similar (negative) to those of India and Brazil. However, low cost aspect of care and accessibility are positive and strongly related to utilisation of public health care.

6 Summary and conclusion

Health care economies in India, Brazil, and South Africa are passing through a phase of transition with other developing or transitional economies. The term 'transition' is used to mean a process with which activities in the private sector increase in contrast to those of public sector. The present paper recognises the existence of two different classes of service providers in the health sector: public and private, measures activities in these two sectors by looking at the utilisation rates of different health care services, and examines how different factors in the demand and supply sides economics of health care contribute to the changing

scenario of the health sectors in the above-mentioned countries.

We have seen that, on an average, in India 59 per cent of the respondents utilised private health facilities. If we comprehend utilisation rate of private health facilities (or activities in the private sector) as an index of transition, among the three countries, India remains far ahead in the process of transition followed by Brazil and South Africa.

We have examined that utilisation rates of public and private health facilities vary sharply with demand and supply sides factors. For example, preference for health care varies sharply with education. From table 5 to 7 we may check that majority of the respondents in all the three countries are educated up to secondary level. In the process of development, we may believe that young cohorts will emerge with more education in near future – and it may reduce the credibility of the public health care system further. The Indian public health care system will get the worst hit as the Country remains far ahead of others in terms of transition. However, future of the public health care system is not too bleak in rural areas of the country and particularly, if we look at the maternal health care and immunisation. Preference for health care also varies with ethnicity and religion. People with low social status (in India), particularly the ethnic minorities have strong preference for public health care. People with higher economic status, as reflected from higher standard of living, prefer private health facilities more. Results of multivariate analysis show that utilisation of public health facilities declines sharply with economic status of a household. It seems that public health care, in this phase of transition, is an inferior commodity. Fabbri and Monfardini (2003) also found that being richer increases the propensity to contact a private specialist and consistently decreases the propensity to contact a public specialist in Italy. In both Brazil and South Africa choice of a care (and hence utilisation of it) is highly sensitive to price (low cost of public health facilities as mentioned by the respondents). Many experts in medical care have generally assumed that prices affect medical service use insignificantly. Yoder (1989) have presented seven different studies in health demand and utilisation in developing countries at sub-national level and come to the conclusion that in general the price of services does not matter, having a minimal (if any) effect on the decision to seek health care. Mocan, Tekin and Zax (2004) have also found that demand for medical care is price inelastic in urban China. However, from the findings of the present study we can realise that preference for public health care is highly elastic in South Africa and Brazil. We get similar results in Yoder's study (1989) in Swaziland (Africa), where people started shifting from public to private mission facilities after hike in fee structure in the former. We are unable to conclude anything

in this regard in Indian context for unavailability of appropriate data. Comparatively, people of the rural areas prefer public health care more than urban dwellers. In the urban areas though both public and private sources are available, urban dwellers are seen to prefer private health facilities. When we concentrate on quality of care, we see that private health facilities remain far ahead of their public counterparts. In Italy too it is common to retain that private health care are of higher quality (Fabbri and Monfardini 2003). However, it is also to be mentioned that quality of private care in India is not always beyond question (see Bhat 1996). Quality of care has been found insensitive in case of South Africa. As nearly 90 per cent of the respondents relied on public health facilities, it may leave no scope for them to judge such characteristics of the service. When we look at preference for care across regions, we see that people of the economically prosperous regions prefer private health care more as compared to people of the other regions.

In a nutshell we can put two important findings together: positive and desirable changes in the factors on the demand-side favour private health care, and similar changes on the supply-side disfavour public health care. So, we may witness further flourishing of the private health sectors in developing transitional economies of Africa, Asia, and Latin America in the days to come. If governments choose the safe position of not crowding out private investments (as we read previously in IIHMR 2000), two appraisals are obvious: protecting the interest of the ethnic minorities and other worse off groups who may not cope up with the flow of transition; and enforcing some regulations to maintain quality of care and pull down superfluous and excessively high prices in the private sector.

The paper thus highlights a transitional phase of the health sectors in India, Brazil, and South Africa, and showed that the process of transition is fueled by the factors from both the demand and supply sides economics of health care. The role of the policy makers is very crucial in such a phase of transition, as there exist huge differences in demographic and epidemiological profiles as well as in institutional set ups between these three countries and the developed world or other developing countries with different institutional set-ups, like China. Such a complex situation warrants the policy makers to share sheer attention in determining the strategy of delivering health care in developing countries like India, Brazil, and South Africa.

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Tab. 1: Utilisation of various health facilities in India

Health Facility		Rural		Urban		Combined	
		n	**%**	**n**	**%**	**n**	**%**
Public	Government /municipal hospital	5497	16.1	4568	24.2	10065	18.9
	Government dispensary	1240	3.6	412	2.2	1652	3.1
	UHC / UHP / UFWC*	124	0.4	244	1.3	368	0.7
	CHC / rural hospital / PHC**	5980	17.5	684	3.6	6664	12.5
	Sub-centre	1287	3.8	162	0.9	1449	2.7
	Government mobile clinic	27	0.1	9	0.0	36	0.1
	Camp	888	2.6	226	1.2	1114	2.1
	Other public sector health facility	309	0.9	169	0.9	478	0.9
	All public	*15352*	*45*	*6474*	*34*	*21826*	*41*
Private	NGO / trust hospital / clinic	234	0.7	192	1.0	426	0.8
	Private hospital / clinic	17473	51.1	11795	62.4	29268	55.1
	Private mobile clinic	191	0.6	126	0.7	317	0.6
	Pharmacy / drugstore	298	0.9	88	0.5	386	0.7
	Other private sector facility	480	1.4	175	0.9	655	1.2
	Other	192	0.6	60	0.3	252	0.5
	All private	*18868*	*55*	*12436*	*66*	*31304*	*59*
Total	**(All facilities)**	**34220**	**100**	**18910**	**100**	**53130**	**100**

** Urban health centres, health points, family welfare centres*

*** CHC: Community Health Centre, PHC: Primary Health Centre*

Tab. 2: Cross-tabulation: Reasons for visiting health facilities by type of facility (India)

Reasons		Rural				Urban				Combined			
		Private		Public		Private		Public		Private		Public	
		n	%	n	%	n	%	n	%	n	%	n	%
Family Planning	Pill supply	44	29.1	107	70.9	35	60.3	23	39.7	79	37.8	130	62.2
	Condom supply	8	22.9	27	77.1	17	58.6	12	41.4	25	39.1	39	60.9
	IUD/loop insertion	22	24.4	68	75.6	48	53.3	42	46.7	70	38.9	110	61.1
	Sterilisation operation	60	17.8	278	82.2	39	39	61	61	99	22.6	339	77.4
	Follow-up for sterilisation	20	25	60	75	11	34.4	21	65.6	31	27.7	81	72.3
	Follow-up for IUD insertion	13	38.2	21	61.8	15	60	10	40	28	47.5	31	52.5
	Family planning advice	36	27.9	93	72.1	22	40	33	60	58	31.5	126	68.5
	Other family planning service	24	34.3	46	65.7	23	63.9	13	36.1	47	44.3	59	55.7
	All family planning services	*227*	*24*	*700*	*76*	*210*	*49*	*215*	*51*	*437*	*32*	*915*	*68*
Immunisation	*Immunisation*	*909*	*20.3*	*3560*	*79.7*	*770*	*35*	*1432*	*65*	*1679*	*25*	*4992*	*74.8*
laternal Care	Antenatal care	1084	42.5	1466	57.5	701	54	596	46	1785	46	2062	53.6
	Delivery care	452	45.5	541	54.5	326	52.4	296	47.6	778	48	837	51.8
	Postpartum care	142	40.6	208	59.4	120	52.4	109	47.6	262	45	317	54.7
	All maternal care	*2587*	*31*	*5775*	*69*	*1917*	*44*	*2433*	*56*	*4504*	*35*	*8208*	*65*
hild Health Care	*Treatment for sick child*	*8278*	*59.6*	*5619*	*40.4*	*5585*	*70.2*	*2369*	*29.8*	*13863*	*63*	*7988*	*36.6*
eneral Health are	Disease prevention	449	47.8	491	52.2	240	56.5	185	43.5	689	50	676	49.5
	Medical treatment for self	11533	60.3	7590	39.7	7429	69.8	3209	30.2	18962	64	10799	36.3
	Treatment for other person	1077	58.5	764	41.5	730	68.2	341	31.8	1807	62	1105	37.9
	Other	46	59.7	31	40.3	36	67.9	17	32.1	82	63	48	36.9
	All general health care services	*21383*	*60*	*14495*	*40*	*14020*	*70*	*6121*	*30*	*35403*	*63*	*20616*	*37*
otal*	**(All reasons)**	**24197**	**54**	**20970**	**46**	**16147**	**65**	**8769**	**35**	**40344**	**58**	**29739**	**42**

** Total number of cases (70083) exceeds number of persons (53130) for multiple visits*

Tab. 3: Utilisation of various health facilities in Brazil

Reasons	Health Facility		Rural		Urban		Combined	
			n	%	n	%	n	%
Family Planning	**Public**	*Govt Clinical /Pharm*	*632*	*61.4*	*2269*	*44.1*	*2901*	*47*
	Private	NGO	2	0.2	14	0.3	16	0.3
		Private Clin /Deliv	115	11.2	957	18.6	1072	17.4
		Private Pharmacy	263	25.6	1786	34.7	2049	33.2
		Shop, church, friend	5	0.5	64	1.2	69	1.1
		Other	6	0.6	35	0.7	41	0.7
		Don't know	6	0.6	20	0.4	26	0.4
		All private	397	38.7	2876	55.9	*3273*	*53.1*
	Total	**(All facilities)**	**1029**	**100**	**5145**	**100**	**6174**	**100**
Delivery Care	**Public**	Govt. hospital	295	73.9	1085	59.8	1380	62.4
		Govt. health center	60	15.0	342	18.9	402	18.2
		Govt. health post	11	2.8	17	0.9	28	1.3
		All public	*366*	*91.7*	*1444*	*79.6*	*1810*	*81.9*
	Private	Private hosp /clinic	33	8.3	363	20.0	396	17.9
		Other	-	-	7	0.4	7	0.3
		All private	*33*	*8.3*	*370*	*20.4*	*403*	*18.2*
	Total	**(All facilities)**	**399**	**100**	**1814**	**100**	**2213**	**100**
Gynecological Test	**Public**	Public hospital	187	30.6	791	18.8	978	20.3
		Associated hospital	86	14.1	551	13.1	637	13.2
		Health post /centre	210	34.4	1112	26.5	1322	27.5
		FP clinic	5	0.8	35	0.8	40	0.8
		All public	*488*	*79.9*	*2489*	*59.2*	*2977*	*61.8*
	Private	Private hospital /clinic	67	11	1125	26.8	1192	24.8
		Private doctor	53	8.7	542	12.9	595	12.4
		Other	2	0.3	29	0.7	31	0.6
		Don't know	1	0.2	13	0.3	14	0.3
		All private	*123*	*20.2*	*1709*	*40.7*	*1832*	*38.1*
	Total	**(All facilities)**	**611**	**100**	**4198**	**100**	**4809**	**100**
Prenatal Care	**Public**	Hospital /maternal public	132	36.6	470	26.8	602	28.5
		Associated hospital	55	15.2	266	15.2	321	15.2
		Deliver center /post	129	35.7	495	28.3	624	29.5
		Maternal hospital /clinic	23	6.4	325	18.6	348	16.5
		All public	*339*	*93.9*	*1556*	*88.9*	*1895*	*89.7*
	Private	Private doctor	20	5.5	191	10.9	211	10.0
		Other	2	0.6	4	0.2	6	0.3
		All private	*22*	*6.1*	*195*	*11.1*	*217*	*10.3*
	Total	**(All facilities)**	**361**	**100**	**1751**	**100**	**2112**	**100**

Tab. 4: Utilisation of various health facilities in South Africa

Reasons	Health Facility		Rural		Urban		Combined	
			n	**%**	**n**	**%**	**n**	**%**
Family Planning	**Public**	Government Clinical/Pharmacy	1677	93.2	2270	86.3	3947	89.1
		Government Home/Community deliv	3	0.2	4	0.2	7	0.2
		All public	*1680*	*93.4*	*2274*	*86.5*	*3954*	*89.3*
	Private	Private Clinical/Deliv	88	4.9	253	9.6	341	7.7
		Private Pharmacy	24	1.3	66	2.5	90	2
		Shop, church, friend	4	0.2	14	0.5	18	0.4
		Other	4	0.2	23	0.9	27	0.6
		All private	*120*	*6.6*	*356*	*13.5*	*476*	*10.7*
	Total	**(All facilities)**	**1800**	**100**	**2630**	**100**	**4430**	**100**
Delivery Care	**Public**	Government hospital	734	88.5	897	80.6	1631	84
		Day hospital/clinic	67	8.1	67	6.0	134	6.9
		Government MOU	-	-	-	-	6	0.3
		Other public	-	-	-	-	2	0.1
		All public	*801*	*96.6*	*964*	*86.6*	*1773*	*91.3*
	Private	Private hospital/clinic	25	3.0	6	0.5	166	8.5
		Other private medical	2	0.2	2	0.2	2	0.1
		Other	1	0.1	141	12.7	1	0.1
		All private	*28*	*3.3*	*149*	*13.4*	*168*	*8.7*
	Total	**(All facilities)**	**829**	**100**	**1113**	**100**	**1942**	**100**
Place visited most often	**Public**	Public Hospital	160	16.5	269	23.8	429	20.5
		Public Clinic	713	73.7	633	56	1346	64.2
		All public	*873*	*90.2*	*902*	*79.8*	*1775*	*84.7*
	Private	Private Hospital	16	1.7	81	7.2	97	4.6
		Private Clinic/Surgery	68	7	137	12.1	205	9.8
		Private Midwife's Office	-	-	4	0.4	4	0.2
		Other	10	1	6	0.5	16	0.8
		All private	*94*	*9.7*	*228*	*20.2*	*322*	*15.4*
	Total	**(All facilities)**	**967**	**100**	**1130**	**100**	**2097**	**100**

Tab. 5: Descriptive statistics - India

Variable	Category	Rural		Urban		Combined	
		n	%	n	%	n	%
Utilisation	Private	18868	55.1	12436	65.8	31304	58.9
	Public	15352	44.9	6474	34.2	21826	41.1
Age of the respondent	Young	17764	51.9	8269	43.7	26033	49.0
	Old	16456	48.1	10641	56.3	27097	51.0
Family size	Small	8355	24.4	5810	30.7	14165	26.7
	Large	25865	75.6	13100	69.3	38965	73.3
Education of the respondent	Illiterate	18011	52.6	4517	23.9	22528	42.4
	Up to Secondary	14525	42.4	10203	54.0	24728	46.5
	Higher	1684	4.9	4190	22.2	5874	11.1
Caste	General	23821	69.6	15001	79.3	38822	73.1
	SC	6387	18.7	2696	14.3	9083	17.1
	ST	4012	11.7	1213	6.4	5225	9.8
Religion	Hindu	26622	77.8	13698	72.4	40320	75.9
	Muslim	3724	10.9	2946	15.6	6670	12.6
	Other	3874	11.3	2266	12.0	6140	11.6
Standard of living	Low	10672	31.2	1865	9.9	12537	23.6
	Medium	17582	51.4	8514	45.0	26096	49.1
	High	5966	17.4	8531	45.1	14497	27.3
Availability of facilities	No	-	-	-	-	34220	64.4
	Yes	-	-	-	-	18910	35.6
Quality of care (time spent)	No	1878	5.5	698	3.7	2576	4.8
	Yes	32342	94.5	18212	96.3	50554	95.2
Quality of care (talked nicely)	No	10369	30.3	3945	20.9	14314	26.9
	Yes	23851	69.7	14965	79.1	38816	73.1
Quality of care (cleanliness)	No	13590	39.7	5276	27.9	18866	35.5
	Yes	20630	60.3	13634	72.1	34264	64.5
Exposure to mass media	No	13629	39.8	1889	10.0	15518	29.2
	Yes	20591	60.2	17021	90.0	37612	70.8
Region	South	8373	24.5	4746	25.1	13119	24.7
	East	6948	20.3	3013	15.9	9961	18.7
	North	18899	55.2	11151	59.0	30050	56.6
Total (for each variable)	**-**	**34220**	**100**	**18910**	**100.0**	**53130**	**100**

Tab. 6: Descriptive statistics - Brazil

Variable	Category	Family Planning		Delivery care		Gynecological test		Prenatal care	
		n	%	n	%	n	%	n	%
Utilisation	Private	3273	53.0	403	18.2	1832	38.1	217	10.3
	Public	2901	47.0	1810	81.8	2977	61.9	1895	89.7
Age of the respondent	Young	2213	35.8	1337	60.4	1499	31.2	1263	59.8
	Old	3961	64.2	876	39.6	3310	68.8	849	40.2
Family size	Small	2896	46.9	1057	47.8	2347	48.8	1012	47.9
	Large	3278	53.1	1156	52.2	2462	51.2	1100	52.1
Education of the respondent	Illiterate	375	6.1	100	4.5	211	4.4	73	3.5
	Up to Secondary	5370	87.0	1992	90.0	4183	87.0	1918	90.8
	Higher	429	6.9	121	5.5	415	8.6	121	5.7
Caste / Ethnicity	White	2584	41.9	877	39.6	2115	44.0	849	40.2
	Mixed	3333	54.0	1237	55.9	2505	52.1	1175	55.6
	Black	257	4.2	99	4.5	189	3.9	88	4.2
Religion	Other	570	9.2	207	9.4	468	9.7	197	9.3
	Evangelist	814	13.2	270	12.2	665	13.8	261	12.4
	Roman Catholic	4790	77.6	1736	78.4	3676	76.4	1654	78.3
Standard of living	Low	1054	17.1	498	22.5	574	11.9	440	20.8
	Medium	3249	52.6	1186	53.6	2519	52.4	1148	54.4
	High	1871	30.3	529	23.9	1716	35.7	524	24.8
Proportion of rooms	≤ 1	2761	44.7	1179	53.3	1936	40.3	1114	52.7
	> 1	3413	55.3	1034	46.7	2873	59.7	998	47.3
Floor material	Natural	287	4.6	118	5.3	137	2.8	97	4.6
	Rudimentary	409	6.6	131	5.9	308	6.4	118	5.6
	Finished	5478	88.7	1964	88.7	4364	90.7	1897	89.8
Wall material	Natural	10	0.2	5	0.2	4	0.1	5	0.2
	Rudimentary	351	5.7	152	6.9	206	4.3	132	6.3
	Finished	5813	94.2	2056	92.9	4599	95.6	1975	93.5
Roof material	Natural	53	0.9	20	0.9	19	0.4	9	0.4
	Rudimentary	28	0.5	14	0.6	17	0.4	13	0.6
	Finished	6093	98.7	2179	98.5	4773	99.3	2090	99.0
Availability of facilities	No	1029	16.7	399	18.0	611	12.7	361	17.1
	Yes	5145	83.3	1814	82.0	4198	87.3	1751	82.9
Accessibility to facilities	No	5481	88.8	1930	87.2	4264	88.7	1836	86.9
	Yes	693	11.2	283	12.8	545	11.3	276	13.1
Quality of care	No	4668	75.6	1748	79.0	3520	73.2	1656	78.4
	Yes	1506	24.4	465	21.0	1289	26.8	456	21.6
Cost	No	5710	92.5	2016	91.1	4444	92.4	1927	91.2
	Yes	464	7.5	197	8.9	365	7.6	185	8.8
Exposure to mass media	No	247	4.0	93	4.2	127	2.6	85	4.0
	Yes	5927	96.0	2120	95.8	4682	97.4	2027	96.0
	Region I	1160	18.8	377	17.0	1036	21.5	369	17.5
	Region II	2603	42.2	972	43.9	1954	40.6	900	42.6
	Region III	2411	39.1	864	39.0	1819	37.8	843	39.9
Total (for each variable)	**-**	**6174**	**100**	**2213**	**100**	**4809**	**100**	**2112**	**100**

Tab. 7: Descriptive statistics – South Africa

Variable	Category	Family Planning		Delivery care		Places visited most often	
		n	%	n	%	n	%
Utilisation	Private	476	10.7	169	8.7	225	10.7
	Public	3954	89.3	1773	91.3	1872	89.3
Age of the respondent	Young	2705	61.1	1264	65.1	1344	64.1
	Old	1725	38.9	678	34.9	753	35.9
Family size	Small	1668	37.7	659	33.9	689	32.9
	Large	2762	62.3	1283	66.1	1408	67.1
Education of the respondent	Illiterate	165	3.7	74	3.8	105	5.0
	Up to Secondary	3871	87.4	1719	88.5	1843	87.9
	Higher	394	8.9	149	7.7	149	7.1
Caste / Ethnicity	White	3575	80.7	1511	77.8	1669	79.6
	Mixed	537	12.1	302	15.6	309	14.7
	Black	318	7.2	129	6.6	119	5.7
Standard of living	Low	2278	51.5	1063	54.7	1208	57.6
	Medium	1654	37.3	679	35.0	698	33.3
	High	497	11.2	200	10.3	191	9.1
Floor material	Natural	620	14.0	289	14.9	356	17.0
	Rudimentary	59	1.3	27	1.4	24	1.1
	Finished	3751	84.7	1626	83.7	1717	81.9
Wall material	Natural	1167	26.3	315*	16.2	369**	17.6
	Rudimentary	1074	24.2	468	24.1	519	24.7
	Finished	2189	49.4	941	48.5	968	46.2
Availability of facilities	No	1800	40.6	829	42.7	967	46.1
	Yes	2630	59.4	1113	57.3	1130	53.9
Accessibility to facilities	No	1052	23.7	457	23.5	475	22.7
	Yes	3378	76.3	1485	76.5	1622	77.3
Quality of care	No	3883	87.7	1722	88.7	1869	89.1
	Yes	547	12.3	220	11.3	228	10.9
Cost	No	4278	96.6	1855	95.5	2007	95.7
	Yes	152	3.4	87	4.5	90	4.3
Exposure to mass media	No	550	12.4	293	15.1	347	16.5
	Yes	3880	87.6	1649	84.9	1750	83.5
Region	Region I	1466	33.1	603	31.1	648	30.9
	Region II	1182	26.7	558	28.7	620	29.6
	Region III	1782	40.2	781	40.2	829	39.5
Total (for each variable)	**-**	**4430**	**100**	**1942**	**100**	**2097**	**100**

** Missing: 218 cases, ** Missing: 241 cases*

Tab. 8: Response and predictor variables in the models and definitions (India)

Dependent and Predictor variables		Definition / description	Code
Dependent variable: Utilisation		Whether the respondent has visited any public health facility for any reason (family planning services, immunisation, maternal care, treatment of sick child, general heath care, etc) in the one-year reference period.	1 if public, 0 private.
DEMAND SIDE FACTORS	Age	Age of the respondent in 2 broad categories in the reproductive span: 15-29, 30-49	1 if age 30-49, 0 otherwise.
	Family size	Number of persons in the household	1 if size ≤ 5 0 otherwise
	Education	Three categories: low (illiterate), medium (up to secondary), high (higher).	1 if medium, 0 otherwise; 1 if high, 0 otherwise.
	Caste	Three categories: General (including other backward class), Scheduled Caste (SC), Scheduled Tribe (ST).	1 if SC, 0 otherwise; 1 if ST, 0 otherwise.
	Religion	Three categories: Hindu, Muslim, Other (Buddhist / Neo-Buddhist, Christian, Doni-Polo, Jain, Jewish, Sikh, Sanamahi, Zoroastian / Parsi, no religion, and other).	1 if Muslim, 0 otherwise; 1 if other, 0 otherwise.
	Standard of living	A composite index of standard of living of the household readily available in NFHS-2. Score: low, medium, high.	1 if medium, 0 otherwise; 1 if high, 0 otherwise.
	Need (1)	Visit for family planning services (Pill supply, Condom supply, IUD/loop insertion, Sterilisation operation, Follow-up for sterilisation, Follow-up for IUD insertion, Family planning advice, Other family planning service).	1 if yes, 0 otherwise.
	Need (2)	Visit for immunisation.	1 if yes, 0 otherwise.
	Need (3)	Visit for maternal care (Antenatal care, Delivery care Postpartum care).	1 if yes, 0 otherwise.
	Need (4)	Visit for treatment of sick child.	1 if yes, 0 otherwise.
	Need (5)	Visit for general health care (Disease prevention, Medical treatment for self, Treatment for other person).	1 if yes, 0 otherwise.
SUPPLY SIDE FACTORS	Availability of health facility	Measured by type of locality with the assumption that facilities are easily available in urban set ups. Two categories: rural (no) and urban (yes).	1 if yes, 0 otherwise.
	Quality of care (1)	One subjective measure on quality of care: Whether service provider spent enough time with the respondent. Answers: yes or no.	1 if yes, 0 otherwise.
	Quality of care (2)	One subjective measure on quality of care: Whether service provider talked nicely. Answers: yes or no.	1 if yes, 0 otherwise.
	Quality of care (3)	One subjective measure on quality of care: Whether respondent found health premises clean. Answers: yes (very clean) or no (somewhat clean, not clean).	1 if yes, 0 otherwise.
	Exposure to mass media	The most powerful instrument through which respondent acquires information on market and gets acquainted with the rest of the world. Measured as whether respondent reads newspaper / listens to radio / watches TV every week.	1 if yes, 0 otherwise.
	Geographical region	Captures differences in economy, geography, governance, etc. Three categories: South (Andhra Pradesh, Goa, Karnataka, Kerala, Maharashtra, and Tamil Nadu), East (Arunachal Pradesh, Asom, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Sikkim, Tripura, West Bengal), and North (Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Madhya Pradesh, New Delhi, Punjab, Rajasthan, Uttar Pradesh).	1 if east, 0 otherwise; 1 if north, 0 otherwise

Tab. 9: Response and predictor variables in the models and definitions (Brazil)

Dependent and Predictor variables		Definition / description	Code
Dependent variable: Utilisation		Whether the respondent has visited any public health facility for family planning services, delivery care, gynecological test, and prenatal care in the one-year reference period. Four models have been estimated according to reasons for visit.	1 if public, 0 private.
DEMAND SIDE FACTORS		Age, Family size, Education: as in table 5.	
	Caste	Three categories: White, Asian, Indian (reference category); Mixed; Black.	1 if Mixed, 0 otherwise; 1 if Black, 0 otherwise.
	Religion	Three categories: Roman Catholic, Evangelist (reference category), Other (No religion, Spiritual kardecista, Umbanda / Candomble, Oriental religions, Traditional protestant, Jewish, and other).	1 if Roman Catholic, 0 otherwise; 1 if 'Other', 0 otherwise.
	Standard of living	A composite index of standard of living of the household has been computed as following: whether the household has (yes / no): electricity connection, radio, television, refrigerator, car, telephone, vacuum cleaner, washing machine, and VCR / Betamax. Three categories: low, medium, high.	1 if medium, 0 otherwise; 1 if high, 0 otherwise.
	Proportion of rooms	Number of rooms has been divided by number of persons in the household. Two categories: ≤ 1 (reference category), > 1.	1 if prop. > 1, 0 otherwise.
	Floor material	Natural (Earth / sand), Rudimentary (Wood planks), Finished (Polished wood, Vinyl, Ceramic tiles, Cemento, Carpet, other).	1 if Rudimentary, 0 otherwise; 1 if Finished, 0 otherwise.
	Wall material	Natural (Palm, straw), Rudimentary (Mud unpolished, Raw wood), Finished (Alvenaria-finished, Polished wood, Other).	1 if Rudimentary, 0 otherwise; 1 if Finished, 0 otherwise.
	Roof material	Natural (Palm / straw), Rudimentary (Raw wood), Finished (Clay tiles, Concrete, Zinc, Polished wood, Eternit, amianto, other).	1 if Rudimentary, 0 otherwise; 1 if Finished, 0 otherwise.
SUPPLY SIDE FACTORS		Availability of health facility: as in table 5.	
	Accessibility to facilities	Respondent chosen the health facility for following reasons: Closer to home / Closer to market, work / or easy Transport. Two categories: yes (when all answers are positive simultaneously, 0 otherwise).	1 if yes, 0 otherwise.
	Quality of care	One subjective measure on quality of care. Respondent found / stated: Staff competent, friendly; Cleaner facility; Offers more privacy; Shorter waiting time; Better service. Two categories: yes (when all answers are positive simultaneously, 0 otherwise).	1 if yes, 0 otherwise.
	Cost	Respondent chosen the health facility for following reasons: Lower cost, cheaper / Free. Two categories: yes (when all answers are positive simultaneously, 0 otherwise).	1 if yes, 0 otherwise.
		Exposure to mass media: as in table 5.	
	Geographical region	Captures differences in economy, geography, governance, etc. Three categories: Region I (Rio de Janeiro & Sao Paulo); Region II (Nordeste & Norte); Region III (Sul, Centro Leste, Centro Oeste).	1 if Region I, 0 otherwise; 1 if Region II, 0 otherwise

Tab. 10: Response and predictor variables in the models and definitions (South Africa)

Dependent and Predictor variables		Definition / description	Code
Dependent variable: Utilisation		Whether the respondent has visited any public health facility for family planning services, delivery care, etc. in the one-year reference period. Three models have been estimated according to reasons for visit.	1 if public, 0 private.
DEMAND SIDE FACTORS		Age, Family size, Education: as in table 5.	
	Ethnicity	Three categories: Black / African; White / Asian / Indian; Colored (reference category).	1 if Black / African, 0 otherwise; 1 if White / Asian / Indian, 0 otherwise.
	Standard of living	A composite index of standard of living of the household has been computed as following: whether the household has (yes / no): electricity connection, radio, television, refrigerator, bicycle, motorcycle, car, telephone, personal computer, washing machine. Three categories: low, medium, high.	1 if medium, 0 otherwise; 1 if high, 0 otherwise.
	Floor material	Natural (Earth, sand, dung), Rudimentary (Bare wood planks), Finished (Cement, Vinyl, Carpet, Ceramic tiles, Parquet/polish wood, Other,).	1 if Rudimentary, 0 otherwise; 1 if Finished, 0 otherwise.
	Wall material	Natural (Mud, Plastic/Cardboard, Mud and Cement), Rudimentary (Corrugated Iron/Zinc, Prefab, Bare Brick/Cement), Finished (Plaster/Finished, Other).	1 if Rudimentary, 0 otherwise; 1 if Finished, 0 otherwise.
SUPPLY SIDE FACTORS		Availability of health facility: as in table 5.	
	Accessibility to facilities	Respondent chosen the health facility for following reasons: Closer to home / Closer to market, work / or easy Transport. Two categories: yes (when all answers are positive simultaneously, 0 otherwise).	1 if yes, 0 otherwise.
	Quality of care	One subjective measure on quality of care. Respondent found / stated: Staff competent, friendly; Cleaner facility; Offers more privacy; Shorter waiting time; Better service. Two categories: yes (when all answers are positive simultaneously, 0 otherwise).	1 if yes, 0 otherwise.
	Cost	Respondent chosen the health facility for following reasons: Lower cost, cheaper / Free. Two categories: yes (when all answers are positive simultaneously, 0 otherwise).	1 if yes, 0 otherwise.
		Exposure to mass media: as in table 5.	
	Geographical region	Captures differences in economy, geography, governance, etc. Three categories: Region I (Western / Eastern / Northern cape); Region II (Gauteng, Mpumalanga, Northern Province); Region III (Free State, KwaZulu Natal, North West).	1 if Region I, 0 otherwise; 1 if Region II, 0 otherwise

Tab. 11: Odds ratios of utilisation of public health facilities in contrast to private ones (India)

Predictor variables	Exp (β)
Demand-side factors	
Age of the respondent (rc: 15-29)	
30-49	1.064[1]
Size of family (rc: small, ≤ 5)	
Large (> 5)	1.021
Education (rc: illiterate)	
Up to secondary	1.103[1]
Higher	0.744[1]
Caste / ethnicity (rc: general)	
Scheduled Caste	1.190[1]
Scheduled Tribe	1.403[1]
Religion (rc: Hindu)	
Muslim	0.987
Other religion	0.840[1]
Standard of living (rc: low)	
Medium	0.922[1]
High	0.639[1]
Need (1) / reasons for visit: Family planning (rc: no, 0)	
Yes (1)	2.704[1]
Need (2) / reasons for visit: Immunisation (rc: no, 0)	
Yes (1)	4.755[1]
Need (3) / reasons for visit: Antenatal care (rc: no, 0)	
Yes (1)	1.428[1]
Need (4) / reasons for visit: Treatment of sick child (rc: no, 0)	
Yes (1)	0.743[1]
Need (5) / reasons for visit: General health care (rc: no, 0)	
Yes (1)	0.880[1]
Supply-side factors	
Availability of facilities (rc: no / rural, 0)	
Yes / urban (1)	0.852[1]
Quality of care (1) / Enough time spent by service provider (rc: no, 0)	
Yes (1)	0.442[1]
Quality of care (2) / Service provider talked nicely (rc: no, 0)	
Yes (1)	0.812[1]
Quality of care (3) / Found premises clean (rc: no, 0)	
Yes (1)	0.435[1]
Exposure to mass media (rc: no, 0)	
Yes (1)	1.021
Geographical region (rc: Southern India)	
Eastern India	2.995[1]
Northern India	1.176[1]
Constant	2.284[1]
Model summary	
n	53130
-2 Log likelihood	60759.444
Cox & Snell R Square	0.190
Nagelkerke R Square	0.256

rc: reference category; ns: not significant; [1]p<0.01, [2]p<0.05, [3]p<0.10

Tab. 12: Odds ratios of utilisation of public health facilities in contrast to private ones (Brazil)

Predictor variables	Family Planning	Delivery Care	Gynecological Test	Prenatal Care
Demand-side factors				
Age of the respondent (rc: 15-29)				
30-49	4.167[1]	0.890	1.213[1]	0.588[1]
Size of family (rc: small, ≤ 5)				
Large (> 5)	1.570[1]	1.089	1.047	1.121
Education (rc: illiterate)				
Up to secondary	0.521[1]	0.507	0.541[1]	0.669
Higher	0.158[1]	0.232[2]	0.138[1]	0.399
Caste / ethnicity (rc: White, Asian, Indian)				
Mixed	1.116[3]	1.035	1.319[1]	2.134[1]
Black	1.131	0.912	1.720[1]	1.264
Religion (rc: Evangelist)				
Roman Catholic	0.751[1]	1.429[2]	1.359[1]	1.162
Other religion	0.642[1]	0.918	1.073	0.873
Standard of living (rc: low)				
Medium	0.746[1]	0.339[1]	0.402[1]	0.269[1]
High	0.408[1]	0.118[1]	0.150[1]	0.094[1]
Proportion of rooms in the house **(rc: ≤ 1)**				
> 1	0.888[3]	0.549[1]	0.533[1]	0.614[2]
Floor material **(rc: natural)**				
Rudimentary	0.520[1]	0.824	0.423[2]	0.307
Finished	0.759	0.743	0.546[3]	0.361
Wall material **(rc: natural)**				
Rudimentary	3.135	7.771	0.034	0.085
Finished	1.844	6.372	0.031	0.086
Roof material **(rc: natural)**				
Rudimentary	0.620	0.760	1.600	14.090
Finished	0.473	1.089	2.869	0.174
Supply-side factors				
Availability of facilities (rc: no / rural, 0)				
Yes / urban (1)	0.774[1]	0.720	0.640[1]	0.986
Accessibility to facilities (rc: no, 0)				
Yes (1)	0.613[2]	0.829	0.830[3]	0.944
Quality of care (rc: no, 0)				
Yes (1)	1.028	0.531[1]	0.795[1]	1.086
Cost (rc: otherwise, 0)				
Low (1)	2.432[1]	0.826	0.988	1.822[3]
Exposure to mass media (rc: no, 0)				
Yes (1)	0.821	0.876	1.006	1.543
Geographical region (rc: Region III)				
Region I (Rio de Janeiro & Sao Paulo)	0.821[2]	0.695[2]	0.885	0.861
Region II (Nordeste & Norte)	1.624[2]	0.718[2]	0.688[1]	0.804
Constant	1.966	15.620[1]	383.082	8973.425
Model summary				
n	6174	2213	4809	2112
-2 Log likelihood	7007.993	1753.919	5363.062	1163.997
Cox & Snell R Square	0.219	0.145	0.193	0.105
Nagelkerke R Square	0.293	0.236	0.262	0.217

rc: reference category; ns: not significant; [1]p<0.01, [2]p<0.05, [3]p<0.10

Tab. 13: Odds ratios of utilisation of public health facilities in contrast to private ones (South Africa)

Predictor variables	Family Planning	Delivery Care	Place visited most often
Demand-side factors			
Age of the respondent (rc: 15-29)			
30-49	0.723[1]	0.590[1]	0.607[1]
Size of family (rc: small, ≤ 5)			
Large (> 5)	1.156	1.607[2]	1.426[2]
Education (rc: illiterate)			
Up to secondary	1.208	1.193	1.013
Higher	0.588	0.339[3]	0.313[2]
Caste / ethnicity (rc: Colored)			
Black / African	1.274	0.617	1.071
White / Asian / Indian	0.519[2]	0.235[1]	0.372[1]
Standard of living (rc: low)			
Medium	0.477[1]	0.502[2]	0.507[1]
High	0.250[1]	0.111[1]	0.153[1]
Floor material **(rc: natural)**			
Rudimentary	1.447	3.228	1.038
Finished	0.550[2]	1.825	1.029
Wall material **(rc: natural)**			
Rudimentary	1.223	1.354	0.707
Finished	1.322	0.854	0.945
Supply-side factors			
Availability of facilities (rc: no / rural, 0)			
Yes / urban (1)	0.886	0.508[3]	1.537[2]
Accessibility to facilities (rc: no / rural, 0)			
Yes (1)	12.723[1]	2.690[1]	1.854[2]
Quality of care (rc: no, 0)			
Yes (1)	0.906	1.511	1.082
Cost (rc: high cost, 0)			
Low (1)	13.067[1]	4.143[1]	0.930
Exposure to mass media (rc: no, 0)			
Yes (1)	0.919	0.302[3]	0.269[1]
Geographical region (rc: Region III)			
Region I (Western / Eastern / Northern cape)	1.692[1]	1.070	1.204
Region II (Gauteng, Mpumalanga, Northern Province)	0.486[1]	1.012	0.908
Constant	5.415[1]	49.661[1]	31.131[1]
Model summary			
n	4430	1942	2097
-2 Log likelihood	1971.552	785.334	1137.966
Cox & Snell R Square	0.211	0.170	0.130
Nagelkerke R Square	0.427	0.382	0.263

rc: reference category; ns: not significant; [1]p<0.01, [2]p<0.05, [3]p<0.10