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Abstract

This paper explores the use of anchoring vignettes as a means to adjust survey reports of health system performance for differential reporting behaviour using data contained within the World Health Survey (WHS). Survey respondents are asked to rate their experiences of health systems across a number of domains on a five-point categorical scale. Using data provided through a set of vignettes we investigate variations in reporting of interactions with health services across both socio-demographic groups and countries. We show how the method of anchoring vignettes can be used to enhance cross-country comparability of performance. Our results show large differences in the rankings of country performance once adjustment for systematic country-level reporting behaviour has been undertaken compared to a ranking based on raw unadjusted data.

Keywords: Anchoring vignettes, Cross-country comparison, Health care responsiveness, Health system performance

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1. Introduction

Increasingly patients' views and opinions are being recognized as an essential means for assessing the provision of health services, to stimulate quality improvements and more recently, in measuring health systems performance (Coulter and Magee, 2003). While traditionally, patients' views have been sought on the quality of care provided and satisfaction with health services, in the context of performance assessment, the WHO has proposed the concept of responsiveness as a more desirable measure by which health systems can be judged (Valentine et al, 2003a). Responsiveness relates to a system's ability to respond to the legitimate expectations of potential users about non-health enhancing aspects of care and together with health and fairness of financial contribution has been suggested as an intrinsic goal of health system performance (Murray and Frenk, 2000). In broad terms, health system responsiveness has been defined as the way in which individuals are treated and the environment in which they are treated and importantly, encompasses the notion of an individual's experience of contact with the health system (Valentine et al, 2003a).

A central purpose for measuring outcomes, such as health system responsiveness, is to enable institutions to compare and contrast their performance to that of others, including at a macro level, to performance obtained in other countries. By establishing relevant benchmarks, cross-national comparison offers opportunities for countries to assess their place in relation to others; to learn from experience elsewhere; and to identify and explore trends in performance (O'Mahony and Stevens, 2004; Gonzalez Block, 1997). To this end, international comparison has become one of the most influential levers for change in the provision of public services. This is perhaps best evidenced by the extensive resources invested by national and international organizations in the collection, publication and analyses of cross-national data. The Commonwealth Fund is a useful example of an organisation that has a track record in conducting cross-country comparative surveys of the public and health professionals. Recent surveys include patients' experiences of interactions with primary care services across five countries (Schoen et al., 2004); patients' use and views of health care (Schoen et al., 2007); a comparison of health care spending in OECD countries (Anderson et al., 2007); and the comparison of international rates of amenable mortality across industrialized countries (Nolte and McKee, 2008). Such analyses aim to measure key attributes of health systems to assess comparative performance, to identify underperformance and to inform potential policy developments.

Perhaps the most ambitious attempt to date to compare health system performance was The world health report 2000 (World Health Organization, 2000). The report aimed to assess the performance and relative ranking of the world's health systems across five dimensions of performance including health and responsiveness (in both levels and distribution) and fairness in financial contributions. The report generated an enormous interest but also attracted criticism on the basis of its scientific merits and associated country-level league tables (Williams, 2001; Gravelle, et al., 2002; Richardson, et al., 2003). Nevertheless, the report helped to promote comparative analyses and represents a landmark in the evaluation of health systems. A recent European Ministerial Conference on Health Systems, Tallin 2009, attested to the continued interest in comparative analysis of health system performance.

The challenge of how appropriately to compare across countries with different institutional settings and populations is a central feature of comparative work across all public services. Traditionally, many of the data that international comparisons have relied upon have been reported at broad aggregate country level. A reliance on aggregate data, however, often makes it difficult to successfully disentangle the many possible reasons for observed variation between countries and accordingly the results of such analyses are often highly contested and inconclusive. More recently, the measurement and comparison of performance has shifted towards the use of data measured at an individual level, often derived from administrative records or cross-country surveys of respondents' experiences. A fundamental problem with a reliance on survey data, recognized by Blendon et al. (2003), is that studies aimed at comparative inference have rarely taken into consideration possible variations in cultural expectations that might influence the reporting behaviour of surveyed respondents. Attempts to enhance cross-country comparison has tended to focus on defining objective measures of desired outcomes and developing survey instruments that are relevant and understandable across cultural settings (e.g. Lynn et al., 2005; Okazaki and Sue, 1995; Brislin, 1986; Murray et al, 2003). In itself this is, however, unlikely to ensure response comparability if individuals, when faced with survey questions about the functioning of health systems, systematically interpret the meaning of the available response categories, such as `poor' or `good' performance, differently across population or population sub-groups (Sadana et al., 2002). For example, it is natural to believe that poor system performance means different things to different people, and as a result, individuals

may attach very different interpretations to survey response categories. Where this is the case then a fixed level of underlying performance is unlikely to be rated equally across populations of interest (see Tandon et al., 2003) and correspondingly cross-population comparison may produce misleading assessments of relative performance. This differential mapping from the underlying latent construct of interest (objective performance) to the available survey response categories is a source of reporting heterogeneity and has been variously described as state-dependent bias (Kerkhofs and Lindeboom, 1995), scale of reference bias (de Groot, 2000), response category cut-point shift (Sadana, 2002) and differential item functioning (Kapteyn et al., 2007).

The degree to which self-reported survey data are comparable across individuals, socio-economic groups or populations has been debated extensively, usually with regard to measures of health status (for example, Jürges, 2007, Bago d'Uva et al., 2008; Lindeboom and van Doorslaer, 2004; Iburg et al., 2002; Manderbacka, 1998; Kempen et al., 1996; Kerkhofs and Lindeboom, 1995; Idler and Kasl, 1995) and health-related disability (Kapteyn et al., 2007). Similar concerns extend to self-reported survey data on health system performance, for example the responsiveness of the system, where the characteristics of survey respondents and cultural norms regarding the use and experiences of public services are likely to be influential in shaping an individual's responses.

Recently, the method of anchoring vignettes has been promoted as a means for controlling for systematic differences in preferences and norms when responding to survey questions (for example, see Salomon et al., 2004). Vignettes represent hypothetical descriptions of fixed levels of a latent construct, such as responsiveness. If we consider a categorical reporting scale varying from `very bad' to `very good', then reporting behaviour results from individuals applying different response thresholds, that map underlying performance on a latent scale to the ordinal response categories. Since the vignettes are fixed and pre-determined, any systematic variation across individuals in the rating of the vignettes can be attributed to differences in reporting behaviour. Accordingly, the responses to the vignette questions allow the response thresholds, or cut-points, to be modelled as a function of the socio-demographic characteristics of respondents. Since individuals are asked to evaluate the vignettes in the same way as they evaluate their own experiences, this information can then be used subsequently to adjust the self-reported data of a respondent's own contact with health services. For within-country analyses applying the thresholds observed for a

typical respondent (the average) as a benchmark, responses of other individuals can be re-scaled, or anchored to the benchmark to provide adjusted comparable data. Similarly for cross-country comparative analysis, responses can be re-scaled to a chosen benchmark country. This allows comparison of responsiveness to be made with respect to the predicted proportion of respondents rating the system as say `poor' or alternatively as `very good' where these predictions are purged of reporting behaviour.

A number of studies have applied the vignette approach and made use of what has been termed the hierarchical ordered probit (HOPIT) model to adjust self-reported data for systematic differences in respondents' use of threshold values. The method has predominantly been applied to self-reported data on health status (for example see, Iburg et al., 2002; Tandon et al., 2003; Murray et al., 2003; King et al., 2004; Bago d'Uva et al., 2008). More recently, there have been attempts to extend the methodology to health systems performance, for example Valentine et al. (2003b) have considered the role of sex, age, years of education and reported health status on reporting behaviour applied to the World Health Organisation Multi-Country Survey (WHO-MCSS) responsiveness module while Puentes Rosas et al. (2006) consider age, sex, education and type of health care provider using a survey of user satisfaction in Mexico.

This paper explores the utility of using information from vignettes to adjust self-reported data on health system responsiveness to enhance both within and across country comparability of health system performance. We illustrate the use of the method by exploring information from the World Health Survey (WHS) across several countries. First, we describe the existence of reporting behaviour across socio-demographic groups within each of nine illustrative countries. Secondly, we apply the HOPIT model within countries to model and adjust for systematic reporting and thirdly, we extend the method to consider cross-country comparison of health system responsiveness. To aid analysis, we stratify the countries into three groups according the United Nations Human Development Index (HDI)(United Nations Development Programme, 2006). Finally, by benchmarking reporting behaviour to that of a selected country within each of the three HDI groups, we evaluate whether differential reporting behaviour affects cross-country rankings of health system responsiveness.

2. Health system responsiveness

The concept of responsiveness as a measure of health systems performance was developed and promoted by the World Health Organisation (WHO). The concept covers a set of non-clinical and non-financial dimensions of quality of care that reflect respect for human dignity and interpersonal aspects of the care process (Valentine et al., 2009). Human rights include concepts such as respecting patient autonomy and dignity, while interpersonal aspects of care, or client orientation, focus on aspects that are commonly expressed as hotel facilities, for example, the quality of basic amenities. These are measured across eight domains chosen to reflect the goals for health care processes and systems valued highly by individuals in their contact with health systems. The domains are: *autonomy*, *choice*, *clarity of communication*, *confidentiality of personal information*, *dignity*, *prompt attention*, *quality of basic amenities* and *access to family and community support*. Definitions of these domains together with examples of the questions asked to survey respondents are provided in Figure 1.

Increasingly patients' views and opinions are being recognised as the appropriate source of information on non-technical aspects of the health care process and accordingly the measurement of health system responsiveness is based on surveys of user views. In principle, the concept covers both interactions with health services together with broader experiences and interactions with health systems, including, for example, health promotion campaigns, and public health interventions (Valentine et al., 2009). Respondents are asked to rate their most recent (in the previous year) experience of contact with the health system within each of the eight domains. The response categories available are `very good', `good', `moderate', `bad' and `very bad'. As such responsiveness is viewed as a multidimensional concept, with each domain measured as a categorical variable for which there is an assumed underlying latent scale.

3. Empirical approach

The reporting of responsiveness is via an ordered categorical variable that is assumed to be a discrete representation of some underlying latent scale. If it is assumed that individuals map the latent scale to the response categories in a consistent way, irrespective of their characteristics or circumstances, then we observe homogeneous reporting behaviour. In these circumstances the standard ordered probit estimator that assumes a set of constant

thresholds in the mapping of the latent scale to the response categories, would provide an appropriate method to model the data. In contrast, reporting heterogeneity, or differential reporting behaviour, arises when individuals differ in the positioning of thresholds when mapping the latent construct to the available response categories. Systematic variation in reporting behaviour can be examined in relation to measured attributes of individuals such as their socio-economic status. For example, income has been shown to be a determinant of differential reporting behaviour in self-reported general health status such that more wealthy individuals have higher expectations of health and hence report lower levels of objectively identical health status compared to less wealthy counterparts (Bago d'Uva et al., 2008).

Differential reporting behaviour can be shown diagrammatically with the example in Figure 2. Assume individuals in country A and country B are asked to rate the responsiveness of their health systems according to the scale ranging from `very bad' to `very good' and assume for ease of exposition that individuals within a country have the same reporting behaviour. The thresholds (μ) represent the points that divide the available response categories. Reporting heterogeneity results in respondents in country A applying a different set of thresholds to the underlying latent construct compared to respondents in country B. A casual inspection of the ratings in the two countries would suggest that individuals in country A face poorer health system responsiveness compared to individuals in country B (for example, the proportion of individuals reporting `very good' responsiveness is less in country A than in country B). However, both groups face the same underlying level of responsiveness as depicted by the solid vertical line. Anchoring the location of the thresholds to a common scale is fundamental to comparative analysis across the two countries. The challenge is to model the positioning of the thresholds as functions of observed characteristics of the relevant populations and to use this information to benchmark a comparison to a chosen threshold scale.

3.1. The Hierarchical Ordered Probit Model (HOPIT)

The ordered probit model makes use of a set of constant thresholds applicable to all individuals to map responses on a latent scale to observed outcomes. Where this assumption does not hold, estimates of the impact of explanatory variables on outcomes (responsiveness) of interest will be biased. The hierarchical ordered probit model (HOPIT)

developed by Tandon et al. (2003) (also see Terza, 1985) is an extension of the ordered probit model that allows the thresholds to vary across individuals. The method draws on the use of the anchoring vignettes to provide a source of external information that facilitates the identification of the thresholds as functions of covariates. The model can be specified in two parts. The first part draws on the use of vignettes to identify the thresholds as a function of relevant characteristics (*reporting behaviour equation*). The second part maps individual socio-economic and other characteristics to underlying health system responsiveness while controlling for differences in reporting behaviour obtained through the first step (*responsiveness equation*). The two parts are outlined more formally below.

Reporting behaviour equation

To identify the thresholds as a function of respondent covariates, let R_{ik}^{v*} represent underlying health system responsiveness for vignette k, rated by individual i. Given that each vignette is fixed and unrelated to a respondent's characteristics, it is assumed that the expected value of the underlying latent scale depends solely on the corresponding vignette, such that:

$$R_{ik}^{v*} = K_{ik}\eta_k + \varepsilon_{ik}^{v}, \qquad \varepsilon_{ik}^{v} \mid K_i \sim N(0,1) \tag{1}$$

where K_{ik} is the vector of vignettes, η_k is a conformably dimensioned vector of parameters and ε_{ik}^{v} is an idiosyncratic error term. R_{ik}^{v*} is unobservable to the researcher and instead we observe the vignette rating, r_{ik}^{v} on a five point scale ranging from `very bad' to `very good'. We assume the observed category of r_{ik}^{v} is related to R_{ik}^{v*} through the following mechanism:

$$r_{ik}^{v} = j \quad if \quad \mu_i^{j-1} \le R_{ik}^{v*} < \mu_i^{j} \tag{2}$$

$$\text{for } \mu_i^0 = -\infty, \mu_i^5 = \infty, \forall i,k; \quad j = 1,\ldots,5$$

Should the thresholds represent fixed constants, common to all individuals, then the above mapping defines the ordered probit model. For the HOPIT model the thresholds are assumed to be functions of covariates, X such that:

$$\mu_i^j = X_i \gamma^j \tag{3}$$

where γ^j, $j = 1, \ldots 5$ are parameters to be estimated along with η_k. Further, we assume an ordering of the thresholds such that $\mu_i^1 < \mu_i^2 < \ldots < \mu_i^5$.[1] If we impose the restriction that the covariates affect all thresholds by the same magnitude then we have parallel cut-point shift. However, if the degree of reporting heterogeneity varies across thresholds such that it is greater at some levels of responsiveness than others, we refer to this as non-parallel shift (Jones et al. 2007).

Responsiveness equation

Underlying health system responsiveness faced by individual *i* can be expressed as:

$$R_i^{s*} = Z_i \beta + \varepsilon_i^s, \qquad \varepsilon_i^s \mid Z_i \sim N\left(0, \sigma^2\right) \tag{4}$$

where Z_i represents a set of regressors predictive of responsiveness. As with the vignettes, R_i^{s*} represents an unobserved latent variable and we assume that the observed categorical response, r_i^s, relates to R_i^{s*} in the following way:

$$r_i^s = j \quad if \quad \mu_i^{j-1} \le R_i^{s*} < \mu_i^j \tag{5}$$

$$\text{for } \mu_i^0 = -\infty, \mu_i^5 = \infty, \forall i; \quad j = 1, \ldots, 5$$

where μ_i^j are defined by (3) with γ^j fixed and it is assumed that R_{ik}^{v*} and R_i^{s*} are independent for all $i = 1, \ldots, N$ and $k = 1, \ldots, V$. Note that $\hat{\sigma}^2$ in (4) is identified due to the thresholds being fixed through the reporting behaviour equation.

[1] The linearity of the regression specification in the threshold equation may specify a model that is internally inconsistent for some data vectors and "cannot ensure that the probabilities are always positive" (Green and Hensher 2009, p. 81). Terza (1985) and Pudney and Shields (2000) overcome this potential problem by modelling the thresholds as an exponential rather than a linear function of the covariates. We have run a robustness check using an exponential function for a model using data for Mexico. The coefficients of the model estimated specifying the thresholds as an exponential function of the covariates are extremely similar to those of the model using thresholds as a linear function of the covariates (results are available on request). For ease of computation and interpretation we retain a linear specification in all that follows.

It follows that the probabilities associated with each of the five response categories are given by:

$$\Pr(r_i = j) = \Phi(\mu_i^j - Z_i\beta) - \Phi(\mu_i^{j-1} - Z_i\beta), \qquad j = 1,\ldots,5 \tag{6}$$

where $\Phi(.)$ is the cumulative standard normal distribution.

The use of vignettes to identify reporting heterogeneity relies on the following two assumptions:

Response consistency: it is assumed that individuals classify the vignettes in a way that is consistent with the rating of their own experiences of health system responsiveness. This implies that the mapping used from the latent level of responsiveness shown by the vignettes to the response categories is the same as the mapping used to translate latent responsiveness of own experiences to the response categories.

Vignette equivalence: it is assumed that "the level of the variable represented by any one vignette is perceived by all respondents in the same way and on the same unidimensional scale" (King et al., 2004; p.194). This assumption implies that, conditional on the socio-economic characteristics that determine reporting behaviour, for each vignette there is an actual (unobserved) level of reponsiveness that all individuals agree to, irrespectively of their country of residence, their sociodemographic characteristics or the level of responsiveness they face. This assumption might not be tenable in cross-country analyses where, for example, differences in institutional settings might lead to different perceived levels of underlying responsiveness. Comparing across reasonably homogeneous groups of countries and conditioning on country-level characteristics will alleviate some of these concerns (Kristensen and Johanson, 2008).

4. Data – The World Health Survey (WHS)

The most ambitious attempt to date to measure and compare health systems responsiveness is the World Health Survey (WHS). The WHS is an initiative launched by the WHO in 2001 aimed at strengthening national capacity to monitor critical health outputs and outcomes through the fielding of a valid, reliable and comparable household survey instrument (see Üstün et al., 2003). Seventy countries participated in the WHS 2002-2003, consisting of a combination of 90-minute in-household interviews (53 countries), 30-minute face-to-face interviews (13 countries) and computer assisted telephone interviews (4 countries). All surveys were drawn from nationally representative frames with known probability resulting in sample sizes of between 600 and 10,000 respondents across the countries surveyed. Samples have undergone extensive quality assurance procedures, including the testing of the psychometric properties of the responsiveness instrument (for example, see Valentine et al., 2009).

Of particular interest to our study is the information contained in the WHS on health system responsiveness. The WHS responsiveness module has been developed from an extensive consultation process aimed at gathering information on the aspects of the delivery of health care that individuals value most. The resulting instrument was fielded in the WHO Multi-Country Survey Study on Health and Responsiveness (2000-2001) (MCSS - see Üstün et al., 2003) and a refined version of the MCSS module was incorporated in the WHS. The WHS responsiveness module gathers basic information on health care utilisation for both inpatient and outpatient services. Here we focus exclusively on inpatient services.

The data contains information on the importance respondents place on each of the eight domains present in the responsiveness section of the WHS. In the interests of brevity and to conserve space we present analyses for the following four domains: *Dignity, Confidentiality*, *Quality of Facilities* and *Clarity of Communication.* These domains are considered most important by the respondents across the countries used to illustrate reporting behaviour. In general, for the set of illustrative countries, those categorised within the high HDI group place greater importance on the domains *Confidentiality* and *Clarity of Communication*, while for the medium and low HDI countries *Dignity* and *Quality of facilities* have greater relevance. Two question items are rated by respondents for each of the domains.

The first part of our analysis illustrates the level and determinants of reporting behaviour and the application of the HOPIT model using the following nine countries: Mexico, Spain, Malaysia, India, Philippines, Sri Lanka, Burkina, Malawi and Ethiopia. These countries have been selected on the basis of the following criteria. First, the long version (90-minute in-household) questionnaire was used in these countries. The long version questionnaire is more informative than the short version in containing two items questions for each domain (the short version questionnaire contains only one item per domain). Secondly, the countries satisfy well the set of psychometric properties of feasibility, reliability and validity for the responsiveness module in the WHS and hence have desirable survey properties (see Valentine et al., 2009). Accordingly, these countries have acceptable response rates, strong test-retest properties and the responsiveness items satisfy properties of homogeneity and the uni-dimensionality (see Ustun et al., 2003). Thirdly, the countries represent geographical areas characterized by different levels of development, defined by the Human Development Index (HDI). We use this index to stratify countries into high, medium and low HDI groups. The HDI is a composite index of human development which combines indicators of life expectancy, educational attainment and income (United Nations Development Programme, 2006). Mexico, Spain and Malaysia belong to the high HDI group; India, Philippines and Sri Lanka to the medium HDI group; and Burkina, Malawi and Ethiopia to the low HDI group. Finally, the countries selected have a high sample size in comparison to other countries belonging to the same HDI group.[2]

4.1. Explanatory variables

Variables available in the WHS on individual characteristics include age, gender, level of education and income. Level of education is measured as both a categorical variable containing seven categories representing, for example, 'primary school completed', 'secondary school completed' to 'post graduate degree completed' and a continuous variable measuring the number of years in education. Gender is a dummy variable coded 1 for women and 0 for men. Income is derived from a measure of permanent income based on information on the physical assets owned by households. The approach to its measurement (which relies on a variant of the HOPIT model to improve cross-country

[2] We note that the sample size for Mexico (38,455) is far greater than that for other countries, increasing the scope and precision of analysis for this country.

comparability) is described by Ferguson et al. (2003).[3] In our analysis we construct dummy variables to indicate the tertiles of the within-country distribution of household permanent income to which individuals belong.[4] To assess comparability of the country-specific income distributions we compute the coefficient of variation as a summary measure of dispersion. The distribution of income is broadly similar across the nine countries and with the exception of Spain and Malaysia all have a coefficient of variation less than unity.[5] For the analysis presented here, the first income tertile is considered as the base category. Descriptive statistics for the set of explanatory variables for each of the nine countries are presented in Table 1.[6] These variables have been extensively used in the studies investigating reporting bias in self-reported measure of health (Bago d`Uva et al., 2008; Iburg et al., 2002; Murray et al., 2003; Valentine et al., 2003b) and health-related disability (Kapteyn et al., 2007).

4.2. Vignettes

The WHS contains a number of vignettes describing the experiences of hypothetical individuals within each of the eight domains of responsiveness. The vignettes have been divided into four sets (Set A-D) with each set containing five vignettes for each item present across two domains. For example, Set A contains five vignettes for each of the two items in the domain of *Dignity* (items representing respect and privacy) and five vignettes for each of the two items in the domain *Prompt Attention* (items representing travelling time and waiting time). Due to constraints of interview length, each respondent in the survey rated the vignettes present in only one of the sets. Therefore, each vignette has been rated by approximately 25% of survey respondents. The response scale available to respondents answering the vignettes is the same as the scale available when responding to their own experiences of health system responsiveness. Examples of the vignettes are provided in Figure 3.

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[3] As a check of the robustness of the approach we computed an alternative measure of permanent income based on the ownership of assets computed through the use of principal components analysis (see O`Donnell et al., 2007; p. 45). For all the nine countries considered in the first part of the analysis there is an acceptable level of correlation between the two measures of income (the correlation index varies between 0.62 (Malawi) and 0.92 (Malaysia)).

[4] Models are specified using tertiles of the distribution of income. For the descriptive analysis we use income quintiles

[5] The coefficient of variation, in absolute value, varies between 0.25 and 0.82, with the exception of Spain and Malaysia where the coefficient is greater than 1.0.

[6] We exclude from our analysis a few outlying observations reporting more than 25 years of education

5. Empirical strategy

Our empirical approach is as follows. First, for each of the nine illustrative countries we establish prima-facie evidence of differential reporting behaviour and investigate whether this systematically varies by demographic and/or socio-economic characteristics of respondents. We then make use of the HOPIT model to estimate the relationship between the model thresholds that determine the mapping from the latent level of responsiveness to the observed reporting categories and the set of individual characteristics (3). Conditional on this relationship, we then estimate the responsiveness equation, again, as a function of respondent characteristics (4). The coefficients estimated by the HOPIT model are compared to the corresponding estimates derived from a more standard ordered probit model assuming fixed thresholds across all individuals.

The model is then extended to assess differential reporting behaviour across countries. In so doing, we consider a larger set of countries available in the WHS and restrict comparison to countries within each of three HDI groups.[7] Analysis within HDI groups imposes a degree of homogeneity across countries in terms of their stage of development which aids in maintaining the assumption of vignette equivalence. In addition to the demographic and socio-economic characteristics outlined above, the models contain dummy variables to represent attributes of the included countries. These might reflect, for example, economic and cultural differences across countries within a given HDI group. The specification of the HOPIT model further includes interaction terms between the country dummies and the socio-economic characteristics in the responsiveness equation (4), and interaction terms between the country dummies and income tertiles in the reporting behaviour equation (3).

Finally, we evaluate whether the ranking of countries in each HDI group according to the responsiveness of their health system is affected by the presence of differential reporting behaviour. This is achieved by comparing observed unadjusted raw frequencies of responsiveness to predictions obtained from the HOPIT model. For ease of presentation

[7] We do not consider data collected through computer assisted telephone interviews as these are likely to be of lower quality. This excludes Australia, Luxemburg and Norway from our analysis.

we compare rankings of the proportion of respondents reporting `very good' responsiveness.[8]

6. Results

6.1. Differential reporting behaviour

Figure 4 presents histograms of the proportion of respondents reporting each of the five categories of responsiveness for the set of vignettes (vig1 to vig5) available for the first item of each of the four domains considered. Respondents' valuations of their own experience of contact with health services are also shown (own). To conserve space we present descriptive results for Mexico only.[9] Heterogeneity in respondent reports is also observed across other item and domain combinations and within other countries.

Figure 4 clearly shows heterogeneity across response categories in reporting of the vignettes. For example, the third vignette (vig3) for *Clarity of communication* attracts similar ratings (approximately between 25-35%) across three of the five response categories. Given the fixed and exogenous nature of the vignettes, such variation in respondents' ratings provides prime-facie evidence of differential reporting behaviour. A comparison of ratings of own experiences of contact with health services versus vignette ratings clearly indicates that individuals exhibit less dispersion in the reporting of own experiences compared to the hypothetical cases provided through the vignettes. For example, the distribution of responses across the available categories for own responsiveness is similar across the four domains with approximately 70% of respondents rating their experience as `good'. In contrast, the vignette ratings are far more dispersed and are infrequently observed to be above 50% for any particular response category. Own ratings of responsiveness, however, conflate actual experiences of health services with differential reporting behaviour while, in contrast differences in the ratings of the vignettes are assumed to be due solely to reporting behaviour.

Figure 5 investigates reporting behaviour by socio-demographic position of respondents. These are illustrated using the second vignette in the domain *Clarity of communication* for

[8] This is illustrative and different rankings are likely to result by considering other categories in the response scale.
[9] The larger sample size afforded to Mexico ensures that the frequencies are estimated with greater precision than for the other countries.

Mexico.[10] Results are provided stratified by educational attainment, income quintiles, gender and age respectively. A gradient across the levels of a variable for any of the specific response categories (for example, `very good') provides evidence of systematic reporting behaviour. For example, we observe a clear gradient across educational achievement: in general, better educated respondents are more likely to rate this particular vignette as `very good' compared to less educated respondents.[11] A gradient is also apparent across income quintiles where individuals further along the income distribution are more likely to report `very good' and less likely to report `moderate' responsiveness compared to individuals at the lower end of the distribution. While there is some evidence of variation across age groups, in general reporting behaviour does not appear to be influenced greatly by gender or age.

6.2. Within country analyses

Homogeneity in reporting behaviour

Table 2 presents results of separate tests for homogeneity in reporting behaviour and parallel cut-point shift (a shift that is a function of covariates but, importantly, is an equal shift across all thresholds). For the test for homogeneity, p-values from a Wald test of the joint significance of the estimated coefficients across the four thresholds of the model are reported in the first six columns of the table. These are reported for each of the socio-demographic characteristics considered. Rejection of the null indicates the thresholds are functions of the respective socio-demographic characteristic. Results are shown by age, gender, educational attainment (in years) and two dummy variables representing the second and third income tertiles. In addition to separate tests for each variable, the first column reports a joint test across all socio-demographic characteristics. For the majority of country and domain combinations, the null hypothesis of homogenous reporting can be rejected for at least one of the socio-demographic variables. There is however, variation in the extent of systematic reporting behaviour across countries and domains. In general, and consistent with the descriptive analysis, the results indicate greater reporting heterogeneity by income and education, compared to age and gender.

[10] *Clarity of communication* is rated as being most relevant by Mexican respondents.

[11] Some caution is required when interpreting these results as the education category 'Post Graduate' is sparsely populated and hence the response ratings are not estimated with same level of precision as for other education groups.

The final six columns of Table 2 report results investigating the existence of parallel cut-point shift. Again, tests are presented separately by income, education, age and gender and jointly across all characteristics. The table shows p-values from a Wald test of equality of respective coefficients across the four thresholds. If we consider the joint tests across all characteristics, then parallel cut-point shift is rejected for the vast majority of country and domain combinations. For individual socio-demographic variables, a similar pattern emerges for the tests for parallel cut-point shift as for tests for homogeneity. Accordingly, where thresholds appear to be related to the socio-demographic characteristics of respondents, in general, this results in non-parallel cut-point shift.

Determinants of reporting behaviour

We investigate further the determinants of reporting behaviour as a function of respondent characteristics by focusing on education. Table 3 (a) presents estimated coefficients of years of education across the four thresholds together with their associated standard errors. These are derived from modelling the vignette data (equations (1) to (3)). For a particular domain and item combination, positive coefficients across the thresholds indicate higher expectations of health services and an associated lower probability of reporting high levels of responsiveness as years in education increase. This scenario is observed for both items of the domain *Dignity* for India. Accordingly, more educated individuals appear to rate a fixed level of responsiveness in this domain less favourably than their less educated counterparts.

In general, the results for Malaysia, Mexico, Philippines, and Sri Lanka provide evidence that the better educated rate responsiveness more extremely than their less educated counterparts. This can be seen by the positive coefficient estimated on the first threshold and the negative estimated coefficient on the fourth threshold. Results for Malawi reflect those for India. For the remaining countries, it is difficult to draw generalisations. Across all results many of the coefficients fail to attain statistical significance implying that within a specific country and domain, education influences a limited number of thresholds.

Similar conclusions can be drawn from a comparison of the effect of income (results shown in Table 3 (b)). While for certain countries a pattern emerges, suggesting reporting

behaviour is systematically related to income, for other countries it is difficult to draw generalisations.

Adjusting for reporting heterogeneity

The impact of adjusting for differential reporting behaviour can be investigated using data on the self-reports of respondents' own experiences of health service contact. This can be assessed by comparing the estimated coefficients, $\hat{\beta}$, in the responsiveness equation (4) with and without adjustment for reporting behaviour using the ordered probit (unadjusted) and the HOPIT model (adjusted). Note that for an ordered probit model it is customary to fix the constant and variance to 0 and 1 respectively (for example, see Greene, 2003). However, to obtain comparability of the coefficients we fixed the constant and variance parameters of the ordered probit model to those of the HOPIT model.

To conserve space we report the impact of adjusting for differential reporting behaviour within countries by comparing the estimated coefficient for the dummy variable representing the third tertile of income. Results are reported in Table 4. If we focus on countries within the medium HDI group, then for the majority of the domains and items, coefficients from the ordered probit model indicate a positive and significant income effect, implying higher responsiveness is enjoyed by wealthier individuals compared to their less wealthy counterparts. The coefficients from the HOPIT model, however, differ from those obtained using the ordered probit model. For India, adjusting for reporting behaviour depresses the income effect, whilst for the Philippines the income effect generally increases for the HOPIT model compared to the ordered probit results. The results for Sri Lanka are more ambiguous with some domain and item combinations increasing and others decreasing. Within countries, a comparison of the estimated coefficients and associated standard errors obtained from the ordered probit model to those from the HOPIT model suggests that for a number of domain and item combinations the differences are large enough to attain statistical significance.

As a further indication of the effects of adjusting for within-country reporting heterogeneity, Table 5 presents the ex-ante and ex-post frequencies of reporting each of the five response categories for both items of the four domains considered. To conserve space, results are shown for the three example countries belonging to the high HDI

groups. Ex-ante results report the frequencies observed in the raw data for each domain and item. The ex-post results are based on predictions obtained from either the ordered probit model or the HOPIT model adjusting for within-country differential reporting behaviour. For all countries, predictions from the ordered probit model are remarkably similar to the ex-ante frequencies observed in the raw data. Although not large, the difference between the ex-ante frequencies and the ex-post frequencies are more notable when considering predictions from the HOPIT model, particularly for Mexico.[12] Overall, the results suggest that within-country predictions of responsiveness with or without adjustment for differential reporting behaviour vary little from the raw frequencies observed in the data.

6.3. Cross-country analyses

We now consider the impact of adjusting for reporting behaviour across countries. This is achieved by extending the model presented in the previous section by specifying the thresholds (3) as a function of the set of individual socio-demographic characteristics, country-specific dummy variables and interactions between the country-specific dummy variables and income tertiles.[13] The responsiveness equation (4) is specified as a function of the set of individual socio-demographic characteristics, country-specific dummy variables and interactions between the country-specific variables and the socio-demographic characteristics. To enhance comparability of results models are estimated across countries within each of the three HDI groups.

Table 6 reports the coefficients and standard errors for the set of country dummies by HDI group for the item *Respect* (in the domain *Dignity)*. To conserve space results for High and Low HDI country groups only are shown.[14] The set of coefficients are contrasted against the baseline countries of Mexico and Malawi respectively. The variation in country coefficients illustrates the existence of differential reporting behaviour across countries. With the exception of France and Ethiopia, the estimated coefficients attain statistical

[12] Applying a RESET test (a test of no neglected non-linearities in the functional form of the model, Ramsey, 1969) suggests that both the ordered probit and the HOPIT model are well specified for the majority of item and domain combinations and across the various countries.
[13] Models where the specification of the thresholds included interaction terms between country dummies and other socio-demographic characteristics failed to achieve convergence.
[14] Results for the set of medium HDI countries are available on request.

significance for at least one of the four thresholds for each country.[15] For countries within the High HDI group, the coefficients for the first threshold are generally positive while those for the fourth threshold are generally negative. These results imply that compared to Mexico, countries are likely to make greater use of the extremes of the available reporting categories when rating performance. A similar result is observed across the countries within the low HDI group although, in general, there appears to be less variation in estimated coefficients and fewer coefficients attain statistical significance.

The results of Table 6 establish the existence of differential reporting behaviour across countries. We next investigate the impact of adjusting for country-specific reporting behaviour by comparing predictions of reporting `very good' responsiveness from both the ordered probit and the HOPIT model. Results are presented in Table 7 for the item *Respect*. Results are presented separately for the three HDI groups. The first column of the table reports the raw frequencies from respondent ratings observed in the data. These vary substantially and have been ranked in order of reporting `very good' responsiveness. For example, in the High HDI group 61.9% of respondents in Austria compared to 16.3% of respondents in Mexico report `very good' responsiveness. This variation in ratings will reflect differences in true underlying health system responsiveness faced by individuals, but will also, in part, reflect systematic reporting behaviour that differs across countries. The challenge for comparative analysis is to isolate the impact of the former, abstracting from the impact of the latter.

The second column reports predicted frequencies from an ordered probit model. This model includes the socio-demographic variables together with a set of country dummy variables and interaction terms between country dummies and the socio-demographic variables as predictors in the responsiveness model but assumes a set of fixed thresholds common to all countries. Estimation is undertaken on data pooled across all countries within each HDI group. If we consider the ranking of the countries, overall there is little change between the observed frequencies derived from the raw data and the predictions from the ordered probit model. For high HDI countries Austria, Demark, Sweden and the United Kindom are ranked highly; countries such as The Netherlands, Estonia and Bosnia tend to be placed in the middle of the rankings; and Mauritius, Malaysia and Mexico tend to be towards the bottom of the rankings. A test of the independence of the rankings

[15] It should be noted that statistical significance is, in part, due to the chosen baseline country.

rejects the null in favour of dependence ($p<0.01$), indicating an association between the rankings from the predictions of the ordered probit model and the observed raw frequencies.[16]

Columns (3) and (4) present predicted frequencies obtained from the HOPIT model. The model contains the same set of explanatory variables in the responsiveness equation (4) as specified in the ordered probit model. In addition, the thresholds are modelled as functions of the socio-demographic variables and the set of country dummy variables (and interactions with income tertiles). The modelling of the thresholds allows us to control for differential reporting behaviour across individuals within countries (via socio-demographic characteristics) and across countries (via country dummy variables). We use the results in two ways. First, the results presented in column (3) represent the predictions obtained from the model calculated separately for each country, and adjusting for within country reporting behaviour. Crucially the model does not adjust for differences in reporting across countries. Predictions are obtained by anchoring the relevant parameters in the thresholds to the characteristics of the `average' respondent in each of the countries considered. We refer to this model as the `country-specific' HOPIT model. Due to the use of within country thresholds, the predicted frequencies should resemble more closely the frequencies observed in the raw data than the corresponding predictions from the ordered probit model (which assumes a set of thresholds common to all countries). This is supported by our results and is most evident in the medium and low HDI countries. For each HDI group, Kendal's correlation coefficient is larger when comparing the ranking of column (3) with column (1) than the corresponding correlations derived from the rankings of the ordered probit model. The increases are, however, marginal.[17] Again, a test of the independence of the rankings is firmly rejected.

Secondly, to provide rankings comparable across countries we benchmark reporting behaviour to that observed in the baseline countries. We then predict the reporting of `very

[16] Kendall's tau rank correlation (Kendall, 1938) is used as a measure of the degree of correspondence between the rankings. Perfect agreement leads to a coefficient of 1, perfect disagreement -1, and independence 0. The test is performed under the null hypothesis of independence.

[17] Note that in general the greater the number of countries used in the comparison, the larger the difference between the correlation coefficients from comparing the ranking from the ordered probit predictions and the raw frequencies and the rankings from the `country-specific' HOPIT model and the raw frequencies. This is shown in Table 8. For the eight items, the table compares the correlation coefficients of the rankings obtained from the ordered probit model (1) with the corresponding coefficient from the `country-specific' HOPIT model (2). The comparison is given across models increasing in the number of countries considered. In general, the greater the number of countries, the closer the rankings from the `country-specific' HOPIT predictions are to the raw frequencies compared to the ordered probit predictions.

good' responsiveness, irrespective of country of residence, as if all respondents had the reporting behaviour of the baseline country. That is, for each country within an HDI group the predicted probability of reporting `very good' responsiveness is computed using the thresholds estimated for the baseline country. By adopting the reporting characteristics for a specific country we define a comparable basis on which to rank countries. The resulting rankings are provided in column (4). Inspection of these results reveals a different ranking to that observed for the raw frequencies. This is most evident for countries within the medium and low HDI groups.[18] For example, for the high HDI group of countries, Austria falls 11 places and Bosnia falls eight places in the rankings once benchmarked for reporting behaviour. In contrast The Netherlands moves up 10 places and Finland seven places in the rankings post benchmarking. For the countries in the medium HDI group, Bangladesh and Tunisia fall 10 places in the rankings whilst Philippines rises 20 places and Dominican Republic rises seven places. Among the countries in the low HDI group, Mali drops from the top of the rankings to the middle, and Chad from near the bottom of the distribution to near the top.[19]

A test of independence of the rankings between the HOPIT model benchmarked to the chosen baseline country and the frequencies observed in the raw data fails to reject the null hypothesis for the low HDI group of countries ($p = 0.580$) and fails to reject at the 1% level for the medium HDI countries. This implies a different orderings of the countries before and after adjusting for reporting behaviour. While the same test rejects the null of independence for the high HDI countries, a visual inspection of the rankings reveals large differences as outlined above. Further we observe a large decrease in the correlation coefficient, decreasing from 0.992 when comparing the `country-specific' HOPIT model rankings to those obtained in the raw frequencies to 0.671 for the benchmarked HOPIT model rankings.

Predictions from the benchmarked HOPIT model allow us to consider the importance of adjusting for differential reporting in explaining cross-country differences in reported rates of responsiveness. For example, if we consider the group of high HDI countries, the difference in reporting `very good' responsiveness between the country ranked first

[18] The correlation coefficient assumes the value 0.671, 0.517 and 0.247 in the High, Medium and Low HDI group, respectively.
[19] Note that while the relative ranking of countries is independent of the choice of country to anchor against, the absolute level of country predictions is partly determined by the choice of benchmark country.

(Austria) and the baseline country (Mexico) is 45.6 percent (61.9 – 16.3). If we anchor reporting behaviour in Austria to the response scales used by Mexican respondents, the difference is reduced to 10.7 percent (28.4 – 17.7). Accordingly, between the highest and lowest ranked countries approximately three-quarters of the observed difference in the frequencies of reporting `very good' responsiveness appears to be due to reporting behaviour. For medium and low HDI countries similar comparisons suggest that approximately 39 percent and 83 percent respectively of the observed difference between the highest ranked and benchmarked country is due to differences in cross-country reporting behaviour. While these results will vary by the choice of countries compared, the results provide an indication of the potential impact of reporting behaviour on comparisons of performance.

7. Conclusions and discussion

A clear purpose for outcome measurement is to enable institutions to compare and contrast their performance to that of others, including at the macro level the performance secured in other countries. To this end international comparison has become one of the most influential levers for change in public services. Increasingly patients' views and opinions obtained through surveys are being recognised as a legitimate and important means for assessing the performance of health systems. A reliance on individual-level survey data based on respondent self-reports of system performance presents challenges for international comparison. In particular, self-reported data is likely to suffer from the existence of systematic variations in reporting behaviour. This might be evident both across individuals, stratified by socio-demographic characteristics, within countries and across countries. Systematic reporting behaviour, or reporting heterogeneity, results from survey respondents applying different thresholds when reporting (using a categorical scale) an underlying latent construct such as health system responsiveness. Accordingly, a given fixed level of performance might be rated differently across survey respondents. In order to identify true underlying differences in performance, measures of performance need to be purged of systematic variations in reporting behaviour. Using the method of anchoring vignettes this paper has illustrated how reporting of health system responsiveness might vary both within and across countries. Our results indicate the presence of systematic reporting behaviour variation that is linked to the socio-demographic characteristics of

survey respondents within countries. Whilst the degree to which these characteristics influence reporting varies across country our results indicate that adjusting for differential reporting behaviour within countries has little effect on the overall reporting of health system responsiveness at country level. Within countries the predicted frequencies of reporting `very poor' to `very good' responsiveness obtained from an application of the HOPIT model do not vary greatly from the corresponding frequencies observed in the raw data. [20]

Differential reporting behaviour, however, appears more prevalent across countries where differences in norms and cultural expectations are likely to be more marked than within countries. This is evident in the WHS data where country-level rankings of responsiveness obtained from the observed raw data vary from the rankings obtained through the HOPIT model where reporting behaviour is anchored to a common scale. While some caution is merited when interpreting the rankings as definitive indications of comparative system performance, the results suggest that cross-country analyses that rely on survey respondents' reports of interactions with public services need to consider the extent of systematic differences in reporting behaviour. To this end, the method of anchoring vignettes offers a potentially powerful tool to adjust survey results and to place cross-country comparative analysis on a more consistent footing than that obtained from a simple comparison of observed raw data frequencies.

The use of anchoring vignettes in conjunction with the HOPIT model promises to be an important tool to aid cross country comparison of health system performance. The use of the approach, however, has limitations. First, the set of socio-demographic variables extracted from the WHS used in this work are arguably better predictors of variation in reporting behaviour (used to model the thresholds, (3)) than predictors of underlying health system responsiveness (used in the responsiveness equation, (4)). Future research might focus on the appropriate determinants of health system responsiveness to further aid cross-country comparison. Secondly, the method relies on the assumption of response consistency and vignette equivalence and the validity of these assumptions remains the

[20] Where interest lies in comparing responsiveness across socio-demographic groups within a country and not across countries, then benchmarking reporting behaviour is likely to affect ratings of performance. For example, if we are interested in the responsiveness of a system across education groups, then we might want to benchmark to a single educational category (e.g. degree of higher degree). We might then observe changes in ratings of responsiveness before and after adjusting for reporting behaviour. However, for broad country-level comparison adjusting for socio-demographic reporting behaviour has little impact on ratings when compared to the raw frequencies observed in the data. .

object of current research (Kapteyn et al., 2007; Kirstensen and Johanson, 2008). Finally, the inclusion within surveys of vignettes necessarily entails a cost on survey implementation and it is important to consider the design of included vignettes to ensure they elicit relevant information efficiently, and the principles underlying the efficient design of vignettes is a further area of ongoing research activity (King and Wand, 2007).

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Figure 1: Domains of responsiveness

The eight domains of responsiveness defined by the WHO are as follows (see Valentine et al., 2003a for a full exposition of these domains):

- *Autonomy:* respect of patients' views of what is appropriate and allowing the patient to make informed choices;
- *Choice:* An individual's right or opportunity to choose a health care institution and health provider and to secure a second opinion and access specialist services when required;
- *Clarity of communication:* Clear explaination to patients and family the nature of the illness, details of treatment and available options;
- *Confidentiality of Personal Information:* privacy in the environment in which consultations are conducted and the concept of privileged communication and confidentiality of medical records;
- *Dignity:* the ability of patients to receiving care in a respectful, caring, and non-discriminatory setting;
- *Prompt attention:* the ability to access care rapidly in the case of emergencies, or readily with short waiting times for non-emergencies;
- *Quality of basic amenities:* the physical environment and services often referred to as "hotel facilities", including clean surroundings, regular maintenance, adequate furniture, sufficient ventilation, enough space in waiting rooms etc;
- *Access to family and community support:* the extent to which patients have access to their family and friends when receiving care and the maintenance of regular activities (e.g. opportunity to carry out religious and cultural practices).

Example questions used in the WHS to measure responsiveness include:

- *Autonomy*: How would you rate your experience of being involved in making decisions about your health care of treatment?
- *Choice:* How would you rate the freedom you had to choose the health care providers that attended to you?
- *Communication:* How would you rate your experience of how clearly health care providers explained things to you?
- *Confidentiality:* How would you rate the way your personal information was kept confidential?
- *Dignity:* How would you rate the way your privacy was respected during physical examinations and treatments?
- *Quality of basic amenities:* How would you rate the cleanliness of the rooms inside the facility, including toilets?
- *Prompt attention:* How would you rate the amount of time you waited before being attended to?
- *Access to family and friends:* How would you rate the ease of having family and friends visit you?

The above provide examples only and not an exhaustive list of questions for each domain. The response categories available to respondents were "very good", "good", "moderate", "bad" and "very bad".

Figure 3: Examples of vignette questions used in the WHS

Respectful Treatment

[Anya] took her baby for a vaccination. The nurse said hello but did not ask for [Anya's] or the baby's name. The nurse also examined [Anya] and made her remove her shirt in the waiting room.

Q1: How would you rate her experience of being greeted and talked to respectfully?

Q2; How would you rate the way her privacy was respected during physical examinations and treatments?

Communication

[Rose] cannot write or read. She went to the doctor because she was feeling dizzy. The doctor didn't have time to answer her questions or to explain anything. He sent her away with a piece of paper without telling her what it said.

Q1: How would you rate her experience of how clearly health care providers explained things to her?

Q2: How would you rate her experience of getting enough time to ask questions about her health problem of treatment?

Confidentiality

[Simon] was speaking to his doctor about an embarrassing problem. There was a friend and a neighbour of his in the crowded waiting room and because of the noise the doctor had to shout when telling [Simon] the treatment he needed.

Q1: How would you rate the way the health services ensured [Simon] could talk privately to health care providers?

Q2: How would you rate the way [Simon's] personal information was kept confidential?

Quality of Basic Amenities

[Wing] had his own room in the hospital and shared a bathroom with two others. The room and bathroom were cleaned frequently and had fresh air.

Q1: How would you rate the cleanliness of the rooms inside the facility, including toilets?

Q2: How would you rate the amount of space [Wing] had?

Note that the above provide examples only and not an exhaustive list of possible vignettes for each domain. The response categories available to respondents were "very good", "good", "moderate", "bad" and "very bad".

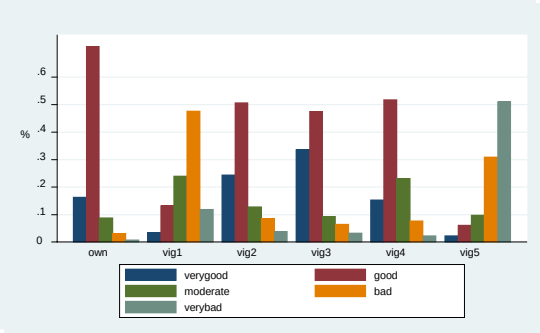
Table 1: Descriptive statistics for variables at individual level

Country		Women		Age				Education level				Education - years				Income tertile	
	n	*mean*	*sd*	*mea*	*sd*	*range*		*mean*	*sd*	*range*		*mean*	*sd*	*range*		*mean*	*sd*
Malaysia	5,889	0.56	0.50	41	15	*18*	*98*	3.86	1.58	*1*	*7*	8.36	4.53	*0*	*25*	2.00	0.82
Mexico	38,738	0.58	0.49	41	17	*18*	*106*	4.10	0.63	*3*	*7*	7.20	4.96	*0*	*25*	2.00	0.82
Spain	6,229	0.59	0.49	53	18	*18*	*101*	3.94	1.39	*1*	*7*	8.92	5.21	*0*	*25*	2.01	0.82
Philippines	10,056	0.54	0.50	39	15	*18*	*99*	3.57	1.23	*1*	*7*	8.52	3.70	*0*	*24*	2.00	0.82
India	8,373	0.50	0.50	39	15	*15*	*101*	2.91	1.80	*1*	*7*	5.17	5.09	*0*	*25*	2.03	0.82
Sri Lanka	5,971	0.53	0.50	41	15	*18*	*100*	3.70	1.08	*1*	*7*	8.39	3.99	*0*	*25*	2.00	0.81
Malawi	4,850	0.57	0.50	35	16	*18*	*91*	2.24	0.87	*1*	*7*	6.17	4.33	*0*	*21*	2.04	0.82
Ethiopia	2,172	0.40	0.49	31	11	*16*	*95*	3.31	0.98	*1*	*7*	6.90	3.69	*0*	*20*	2.40	0.73
Burkina	3,832	0.52	0.50	36	15	*18*	*110*	1.61	1.18	*1*	*7*	2.25	4.46	*0*	*25*	2.03	0.82

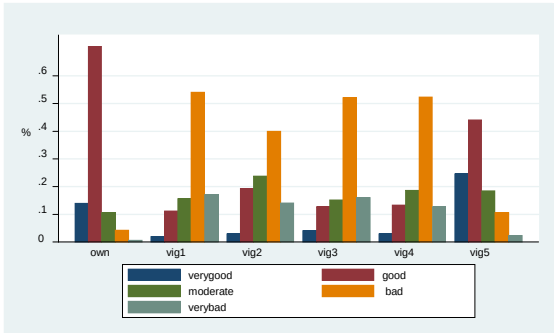
Note: For “educational level” Mexico only has levels 3 to 7

Figure 4: Summary frequencies for the reporting of own contacts with health services and vignettes: Mexico.

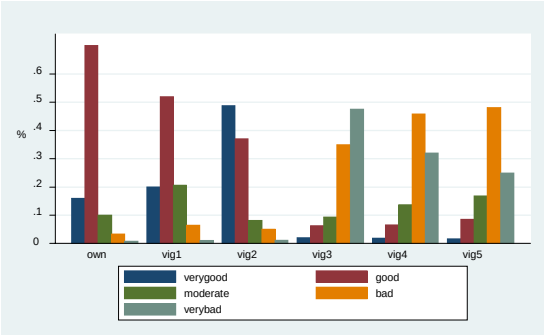
a) Dignity (item respect)



b) Confidentiality (item talk privately)



c) Quality of Facilities (item cleanliness)



d) Clarity of communication (item clarity)

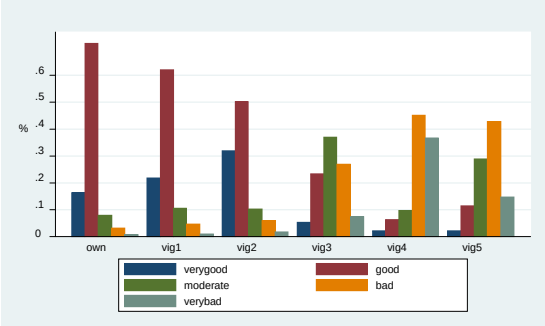
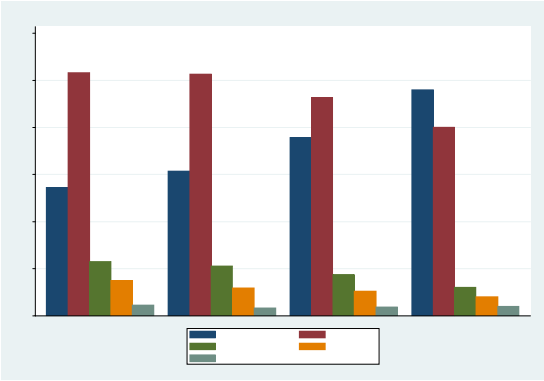
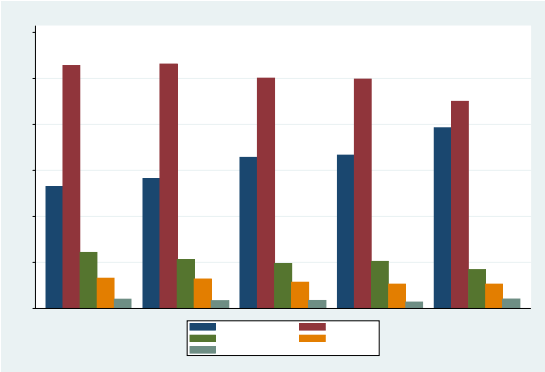


Figure 5: Vignette ratings for *Clarity of Communication* (Vignette 2, 1st item: How clear health care providers explained things): Mexico

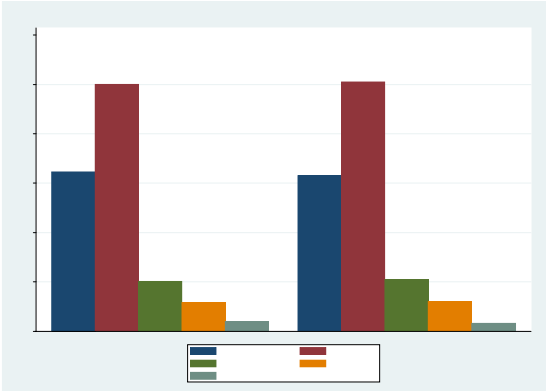
(a) Education



(b) Income quintiles



(c) Gender



(d) Age

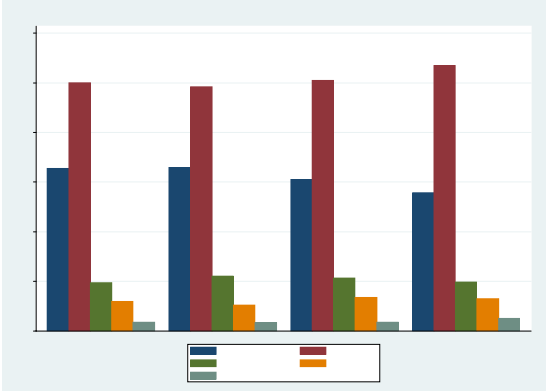
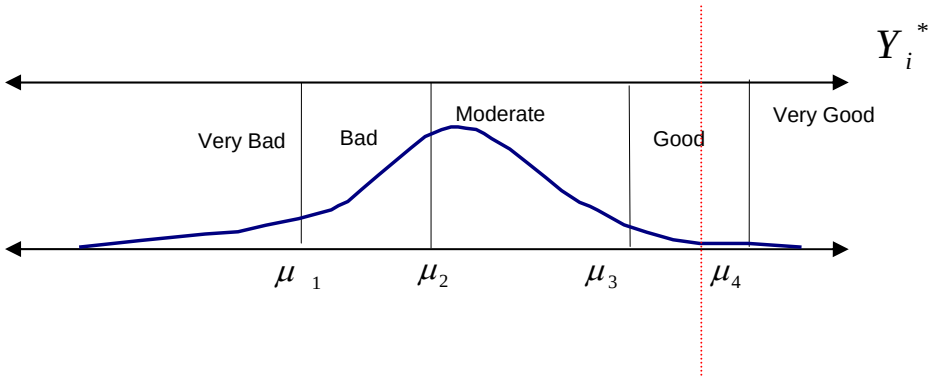
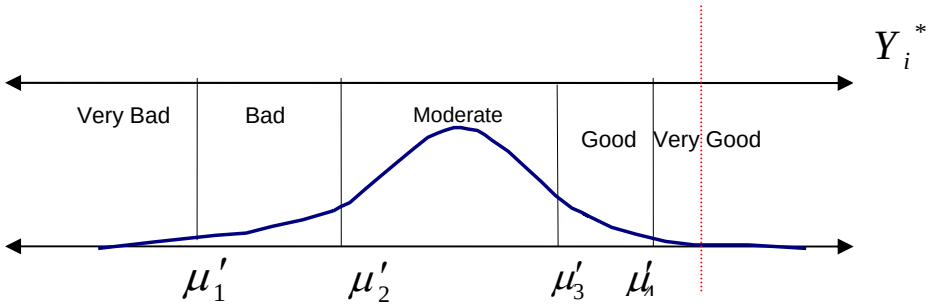


Figure 2: Illustration of reporting heterogeneity

Country A



Country B



NOTE:

Y_i^* = latent (and unobservable) possible levels of responsiveness
μ = cut points that divide two different response categories
Red vertical line = (unobservable) level of responsiveness experienced by individual in every country

Table 2: Tests of homogenous reporting and parallel cut-point shift, by individual countries

		Malaysia											
		Homogeneity						Parallel cut-point shift					
		All	D.Inc2	D.Inc3	Women	Age	Educ.	All	D.Inc2	D.Inc3	Women	Age	Educ.
Dignity	respect	**0.00**	0.35	**0.00**	0.79	0.43	**0.00**	**0.00**	0.23	**0.00**	0.66	0.35	**0.00**
	privacy	**0.00**	0.66	**0.00**	0.87	0.30	**0.00**	**0.00**	0.56	**0.00**	0.87	0.20	**0.00**
Clarity of Communication	clear comm.	**0.00**	**0.01**	**0.01**	0.87	0.14	**0.00**	**0.00**	**0.01**	0.08	0.78	0.41	**0.00**
	time quest.	**0.00**	**0.02**	0.07	0.88	**0.00**	**0.00**	**0.00**	**0.01**	0.44	0.78	**0.04**	**0.00**
Confidentiality	talk privately	**0.00**	0.55	**0.02**	**0.03**	0.19	**0.00**	**0.00**	0.90	0.90	**0.01**	0.12	**0.00**
	conf. info	**0.00**	0.35	**0.00**	0.31	0.29	**0.00**	**0.00**	0.59	0.10	0.19	0.21	**0.00**
Quality of Facilities	clean	**0.00**	0.17	0.06	0.36	0.12	**0.00**	**0.00**	0.20	**0.04**	0.45	0.35	**0.00**
	space	**0.00**	0.21	**0.00**	**0.04**	0.22	**0.00**	**0.00**	0.18	**0.00**	0.17	0.59	**0.00**
		Mexico											
		Homogeneity						Parallel cut-point shift					
		All	D.Inc2	D.Inc3	Women	Age	Educ.	All	D.Inc2	D.Inc3	Women	Age	Educ.
Dignity	respect	**0.00**	**0.00**	**0.00**	**0.00**	1.00	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	0.99	**0.00**
	privacy	**0.00**	**0.00**	**0.00**	**0.00**	0.78	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	0.63	**0.00**
Clarity of Communication	clear comm.	**0.00**	**0.03**	**0.00**	0.23	**0.01**	**0.00**	**0.00**	**0.02**	**0.00**	0.13	**0.00**	**0.00**
	time quest.	**0.00**	**0.00**	**0.00**	**0.01**	0.10	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	0.06	**0.00**
Confidentiality	talk privately	**0.00**	0.17	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	0.51	**0.00**	**0.01**	0.19	**0.00**
	conf. info	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	0.64	**0.00**	**0.00**	**0.05**	**0.00**
Quality of Facilities	clean	**0.00**	**0.00**	**0.00**	0.53	0.12	**0.00**	**0.00**	**0.00**	**0.00**	0.37	0.06	**0.00**
	space	**0.00**	**0.00**	**0.00**	**0.01**	0.55	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	0.39	**0.00**
		Spain											
		Homogeneity						Parallel cut-point shift					
		All	D.Inc2	D.Inc3	Women	Age	Educ.	All	D.Inc2	D.Inc3	Women	Age	Educ.
Dignity	respect	**0.00**	0.21	**0.04**	0.12	0.12	0.30	**0.00**	0.13	**0.02**	0.07	0.17	0.54
	privacy	**0.00**	0.24	0.14	0.32	**0.02**	0.15	**0.00**	0.14	0.07	0.28	**0.02**	0.12
Clarity of Communication	clear comm.	**0.00**	**0.02**	**0.01**	0.24	0.41	**0.01**	0.06	**0.02**	**0.02**	0.64	0.43	0.10
	time quest.	**0.00**	0.29	**0.04**	0.07	0.94	**0.04**	**0.05**	0.30	0.11	0.07	0.85	0.13
Confidentiality	talk privately	**0.00**	0.97	0.23	**0.05**	0.17	**0.05**	**0.00**	0.92	0.16	0.10	0.22	**0.03**
	conf. info	**0.00**	0.84	0.72	0.12	0.08	0.19	**0.00**	0.70	0.73	0.10	**0.05**	0.20
Quality of Facilities	clean	**0.00**	**0.00**	**0.01**	0.74	**0.05**	0.47	**0.03**	**0.00**	**0.01**	0.69	0.11	0.70
	space	**0.00**	**0.00**	**0.00**	0.07	**0.03**	0.15	**0.00**	**0.01**	**0.01**	**0.03**	0.11	0.09
		India											
		Homogeneity						Parallel cut-point shift					
		All	D.Inc2	D.Inc3	Women	Age	Educ.	All	D.Inc2	D.Inc3	Women	Age	Educ.
Dignity	respect	**0.02**	0.99	**0.01**	0.19	**0.03**	**0.02**	0.41	0.97	0.28	0.38	0.53	0.92
	privacy	**0.00**	0.22	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	0.13	**0.00**	**0.05**	0.08	0.68
Clarity of Communication	clear comm.	**0.00**	0.23	**0.00**	0.43	**0.03**	**0.01**	**0.00**	0.41	**0.03**	0.28	0.06	**0.01**
	time quest.	**0.05**	0.27	**0.04**	0.64	0.15	0.16	**0.02**	0.18	**0.02**	0.48	0.14	0.10
Confidentiality	talk privately	**0.00**	0.23	0.20	0.10	**0.01**	0.34	**0.00**	0.16	0.11	0.23	0.93	0.23
	conf. info	**0.01**	0.28	0.06	**0.05**	0.07	0.77	**0.05**	0.17	**0.04**	**0.05**	0.98	0.79
Quality of Facilities	clean	**0.00**	0.07	**0.02**	**0.01**	0.26	0.31	**0.00**	**0.04**	**0.01**	**0.00**	0.21	0.19
	space	0.18	0.11	0.17	0.81	0.45	0.47	0.08	0.09	0.11	0.85	0.32	0.50
		Philippines											
		Homogeneity						Parallel cut-point shift					
		All	D.Inc2	D.Inc3	Women	Age	Educ.	All	D.Inc2	D.Inc3	Women	Age	Educ.
Dignity	respect	**0.01**	0.08	0.25	0.70	**0.01**	0.58	**0.01**	0.21	0.65	0.55	**0.01**	0.45
	privacy	**0.00**	**0.03**	0.18	0.50	**0.01**	0.17	**0.00**	**0.05**	0.19	0.35	**0.04**	0.09
Clarity of Communication	clear comm.	**0.00**	**0.04**	**0.01**	0.49	**0.02**	**0.00**	**0.00**	0.70	**0.01**	0.58	**0.01**	**0.00**
	time quest.	**0.00**	0.12	0.10	0.23	**0.02**	**0.00**	**0.00**	0.70	0.11	0.14	**0.01**	**0.00**
Confidentiality	talk privately	**0.00**	0.14	0.16	0.26	**0.05**	**0.00**	**0.00**	0.08	0.11	0.26	**0.04**	**0.00**
	conf. info	**0.00**	**0.02**	**0.03**	**0.01**	**0.01**	**0.00**	**0.00**	0.06	**0.02**	**0.03**	0.09	**0.00**
Quality of Facilities	clean	**0.00**	0.47	0.18	0.16	0.34	**0.00**	**0.00**	0.44	0.38	0.09	0.59	**0.00**
	space	**0.01**	0.60	0.10	0.16	0.61	**0.03**	**0.01**	0.87	0.23	0.10	0.62	**0.01**

Note: Figures represent p-values derived for either tests of homogeneity in reporting or parallel cut-point shift. Figures in bold indicate significance at 5% level

D.Inc2 represents a dummy variable for the 2nd income tertile. Similarly, D.Inc3 represents a dummy variable for the 3rd tertile.

Table 2: Continued

		SriLanka											
		Homogeneity						Parallel cut-point shift					
		All	D.Inc2	D.Inc3	Women	Age	Educ.	All	D.Inc2	D.Inc3	Women	Age	Educ.
Dignity	respect	0.63	0.73	0.08	0.78	0.47	0.14	0.49	0.57	**0.04**	0.66	0.83	0.11
	privacy	**0.00**	0.08	**0.01**	0.33	0.21	**0.00**	**0.00**	0.07	**0.01**	0.21	0.22	**0.00**
Clarity of Communication	clear comm.	**0.00**	**0.02**	**0.03**	0.60	0.50	**0.00**	**0.00**	0.17	0.97	0.44	0.45	**0.00**
	time quest.	**0.00**	0.32	0.39	0.74	0.06	**0.00**	**0.00**	0.41	0.89	0.64	**0.03**	**0.00**
Confidentiality	talk privately	**0.00**	**0.02**	0.06	0.48	0.35	**0.04**	**0.00**	0.16	0.50	0.32	0.51	**0.03**
	conf. info	**0.00**	**0.01**	0.18	0.87	0.71	**0.01**	**0.00**	**0.02**	0.10	0.92	0.71	**0.03**
Quality of Facilities	clean	**0.00**	**0.00**	**0.00**	0.34	0.45	**0.00**	**0.00**	**0.01**	**0.01**	0.31	0.35	**0.00**
	space	**0.00**	**0.00**	**0.03**	0.44	0.68	**0.04**	**0.00**	**0.00**	0.27	0.29	0.69	**0.02**
		Burkina											
		Homogeneity						Parallel cut-point shift					
		All	D.Inc2	D.Inc3	Women	Age	Educ.	All	D.Inc2	D.Inc3	Women	Age	Educ.
Dignity	respect	**0.00**	**0.03**	**0.02**	0.33	**0.00**	0.12	**0.00**	**0.04**	0.12	0.22	**0.02**	0.11
	privacy	**0.00**	0.48	0.15	0.22	**0.05**	0.29	**0.00**	0.38	0.09	0.17	**0.04**	0.41
Clarity of Communication	clear comm.	**0.05**	0.73	0.17	0.18	0.60	0.42	**0.05**	0.96	0.31	0.25	0.44	0.31
	time quest.	**0.00**	0.18	**0.02**	0.24	0.25	**0.02**	**0.00**	0.30	**0.03**	0.18	0.15	**0.01**
Confidentiality	talk privately	0.36	0.30	0.14	0.55	0.71	0.24	0.27	0.23	0.10	0.47	0.62	0.31
	conf. info	0.08	0.10	**0.04**	**0.04**	0.61	0.68	0.21	0.22	**0.02**	0.13	0.84	0.60
Quality of Facilities	clean	**0.01**	**0.04**	**0.00**	0.76	**0.02**	0.47	**0.05**	0.97	0.19	0.67	**0.01**	0.45
	space	0.14	0.27	0.06	0.47	0.25	0.26	0.21	0.95	0.42	0.45	0.15	0.15
		Ethiopia											
		Homogeneity						Parallel cut-point shift					
		All	D.Inc2	D.Inc3	Women	Age	Educ.	All	D.Inc2	D.Inc3	Women	Age	Educ.
Dignity	respect	0.63	0.13	**0.04**	0.90	0.83	0.45	0.41	0.08	**0.02**	0.80	0.73	0.40
	privacy	0.26	0.18	**0.02**	0.93	0.23	0.98	0.21	0.10	**0.02**	0.92	0.32	0.94
Clarity of Communication	clear comm.	**0.01**	**0.05**	**0.05**	0.06	0.26	0.06	**0.01**	**0.03**	**0.03**	0.06	0.19	0.34
	time quest.	0.09	**0.00**	**0.00**	0.98	0.26	0.87	**0.02**	**0.00**	**0.00**	0.95	0.16	0.83
Confidentiality	talk privately	**0.00**	0.53	**0.00**	0.20	0.34	0.10	**0.00**	0.47	**0.00**	0.16	0.41	0.38
	conf. info	**0.00**	**0.05**	**0.00**	0.08	0.65	0.11	**0.00**	0.06	**0.01**	**0.04**	0.81	0.28
Quality of Facilities	clean	0.08	**0.00**	0.10	0.51	0.86	0.35	**0.02**	**0.00**	**0.05**	0.37	0.73	0.25
	space	0.13	**0.01**	0.11	0.68	0.60	0.36	0.07	**0.00**	0.08	0.80	0.43	0.24
		Malawi											
		Homogeneity						Parallel cut-point shift					
		All	D.Inc2	D.Inc3	Women	Age	Educ.	All	D.Inc2	D.Inc3	Women	Age	Educ.
Dignity	respect	**0.00**	0.66	0.65	0.07	**0.02**	**0.00**	**0.00**	0.62	0.49	**0.05**	**0.01**	**0.00**
	privacy	**0.00**	0.32	0.11	0.21	0.63	**0.00**	**0.00**	0.20	0.08	0.17	0.47	**0.00**
Clarity of Communication	clear comm.	**0.04**	0.94	**0.04**	0.96	0.29	**0.01**	**0.05**	0.89	**0.05**	0.92	0.24	**0.04**
	time quest.	**0.00**	0.56	**0.04**	0.69	**0.03**	**0.00**	**0.00**	0.44	**0.05**	0.52	**0.02**	**0.01**
Confidentiality	talk privately	**0.00**	0.93	**0.05**	0.45	**0.00**	**0.00**	**0.00**	0.83	**0.04**	0.33	**0.00**	**0.00**
	conf. info	**0.00**	0.91	0.28	0.55	0.22	**0.00**	**0.00**	0.85	0.18	0.52	0.13	**0.00**
Quality of Facilities	clean	**0.00**	0.20	**0.00**	0.27	0.06	**0.00**	**0.00**	0.11	**0.00**	0.16	**0.03**	**0.00**
	space	0.06	0.49	0.06	0.44	0.11	0.50	**0.01**	0.44	**0.03**	0.29	0.06	0.37

Note: Figures represent p-values derived for either tests of homogeneity in reporting or parallel cut-point shift. Figures in bold indicate significance at 5% level
D.Inc2 represents a dummy variable for the 2nd income tertile. Similarly, D.Inc3 represents a dummy variable for the 3rd tertile.

Table 3 (a): Estimated coefficients and standard errors of education of the thresholds by individual countries

High HDI Countries		**Malaysia**				**Mexico**				**Spain**			
		μ_1	μ_2	μ_3	μ_4	μ_1	μ_2	μ_3	μ_4	μ_1	μ_2	μ_3	μ_4
Dignity													
respect	coeff	**0.030**	**-0.016**	-0.002	**-0.036**	**0.007**	0.001	-0.002	**-0.008**	-0.007	-0.005	-0.001	-0.008
	st. err	0.009	0.007	0.007	0.007	0.002	0.002	0.002	0.002	0.006	0.005	0.005	0.005
privacy	coeff	**0.025**	0.001	-0.004	**-0.032**	**0.007**	0.002	0.000	**-0.010**	0.000	0.002	0.000	**-0.010**
	st. err	0.008	0.007	0.007	0.007	0.002	0.002	0.002	0.002	0.006	0.005	0.005	0.005
Clarity of Communication													
clear comm.	coeff	**0.024**	-0.006	0.003	-0.013	**0.010**	0.003	0.001	**-0.013**	**0.012**	**0.015**	**0.013**	0.001
	st. err	0.008	0.007	0.007	0.007	0.002	0.002	0.002	0.002	0.006	0.005	0.005	0.006
time quest.	coeff	**0.034**	-0.001	-0.002	-0.012	**0.012**	0.003	-0.001	**-0.011**	0.010	**0.013**	**0.011**	0.000
	st. err	0.008	0.007	0.007	0.007	0.002	0.002	0.002	0.002	0.006	0.005	0.005	0.006
Confidentiality													
talk privately	coeff	**0.016**	-0.001	**-0.012**	**-0.024**	**0.016**	**0.007**	0.003	**-0.008**	0.000	**0.009**	0.005	-0.004
	st. err	0.007	0.006	0.006	0.007	0.002	0.002	0.002	0.002	0.004	0.004	0.005	0.005
conf. info	coeff	**0.020**	-0.011	**-0.017**	**-0.031**	**0.014**	**0.006**	0.003	**-0.008**	0.006	0.007	0.002	-0.005
	st. err	0.007	0.006	0.006	0.007	0.002	0.002	0.002	0.002	0.004	0.005	0.005	0.006
Quality of Facilities													
clean	coeff	**0.041**	0.013	0.009	**-0.025**	**0.014**	**0.006**	0.000	**-0.008**	**0.010**	0.006	0.005	0.001
	st. err	0.007	0.008	0.008	0.008	0.002	0.002	0.002	0.002	0.005	0.006	0.006	0.006
space	coeff	**0.038**	0.012	0.015	**-0.020**	**0.012**	**0.007**	0.002	**-0.008**	**0.010**	0.000	-0.003	-0.008
	st. err	0.008	0.007	0.008	0.008	0.002	0.002	0.002	0.002	0.005	0.006	0.006	0.006
Medium HDI Countries		**India**				**Philippines**				**SriLanka**			
		μ_1	μ_2	μ_3	μ_4	μ_1	μ_2	μ_3	μ_4	μ_1	μ_2	μ_3	μ_4
Dignity													
respect	coeff	**0.011**	**0.011**	**0.009**	**0.010**	0.008	0.003	-0.002	-0.003	0.004	0.006	0.009	-0.002
	st. err	0.005	0.004	0.004	0.004	0.006	0.004	0.004	0.006	0.007	0.005	0.005	0.005
privacy	coeff	**0.016**	**0.013**	**0.013**	**0.009**	0.008	0.004	-0.007	-0.003	**0.016**	0.007	0.006	**-0.012**
	st. err	0.005	0.004	0.004	0.004	0.006	0.004	0.004	0.006	0.006	0.005	0.005	0.005
Clarity of Communication													
clear comm.	coeff	**0.019**	0.006	-0.003	0.003	0.012	**0.012**	**-0.008**	-0.009	0.010	0.008	-0.004	**-0.022**
	st. err	0.006	0.004	0.004	0.004	0.007	0.005	0.004	0.005	0.007	0.005	0.005	0.006
time quest.	coeff	0.008	-0.004	-0.006	-0.001	0.006	**0.014**	**-0.008**	-0.007	0.013	0.005	-0.003	**-0.026**
	st. err	0.006	0.004	0.004	0.004	0.007	0.005	0.004	0.005	0.007	0.005	0.005	0.006
Confidentiality													
talk privately	coeff	0.007	0.000	-0.003	0.002	-0.001	0.007	**-0.013**	**-0.014**	-0.004	0.003	-0.004	**-0.012**
	st. err	0.005	0.004	0.004	0.004	0.006	0.004	0.004	0.006	0.006	0.005	0.005	0.005
conf. info	coeff	-0.004	-0.004	-0.001	0.001	0.010	0.006	**-0.014**	**-0.021**	0.011	**0.013**	0.007	-0.002
	st. err	0.004	0.004	0.004	0.005	0.006	0.004	0.004	0.006	0.006	0.005	0.005	0.005
Quality of Facilities													
clean	coeff	-0.002	-0.005	-0.003	0.006	**0.016**	**0.012**	-0.001	**-0.012**	**0.015**	0.009	0.004	**-0.013**
	st. err	0.005	0.004	0.004	0.005	0.005	0.005	0.005	0.005	0.006	0.005	0.005	0.006
space	coeff	0.002	-0.004	-0.007	-0.007	0.009	0.006	-0.004	**-0.013**	**0.012**	0.003	0.002	-0.011
	st. err	0.005	0.004	0.004	0.005	0.005	0.005	0.005	0.006	0.006	0.005	0.005	0.006
Low HDI Countries		**Burkina**				**Ethiopia**				**Malawi**			
		μ_1	μ_2	μ_3	μ_4	μ_1	μ_2	μ_3	μ_4	μ_1	μ_2	μ_3	μ_4
Dignity													
respect	coeff	0.014	0.010	0.009	-0.006	0.009	0.002	0.013	0.001	**0.020**	-0.011	0.002	0.004
	st. err	0.008	0.007	0.007	0.008	0.011	0.009	0.009	0.009	0.007	0.006	0.006	0.006
privacy	coeff	**0.017**	0.003	0.006	0.004	0.000	0.004	0.003	-0.002	**0.023**	-0.003	0.004	-0.001
	st. err	0.008	0.007	0.007	0.007	0.012	0.010	0.009	0.009	0.007	0.006	0.006	0.006
Clarity of Communication													
clear comm.	coeff	-0.001	0.009	0.009	-0.003	-0.002	-0.009	**-0.023**	**-0.025**	**0.014**	0.002	0.002	**0.017**
	st. err	0.010	0.008	0.008	0.008	0.012	0.009	0.009	0.009	0.007	0.006	0.006	0.006
time quest.	coeff	-0.006	0.003	0.011	-0.014	-0.001	0.000	-0.003	-0.011	0.011	0.001	0.000	**0.020**
	st. err	0.009	0.008	0.008	0.008	0.012	0.009	0.009	0.010	0.007	0.006	0.006	0.006
Confidentiality													
talk privately	coeff	0.007	0.009	**0.014**	0.001	-0.015	-0.007	-0.013	**-0.026**	**0.028**	-0.011	-0.005	**0.017**
	st. err	0.008	0.007	0.007	0.009	0.010	0.009	0.009	0.011	0.006	0.006	0.006	0.008
conf. info	coeff	0.007	0.002	0.006	-0.002	**-0.022**	-0.004	-0.015	-0.012	**0.014**	-0.010	-0.004	0.014
	st. err	0.008	0.007	0.008	0.009	0.010	0.009	0.010	0.011	0.006	0.006	0.007	0.008
Quality of Facilities													
clean	coeff	-0.004	-0.002	-0.002	-0.015	0.019	-0.003	-0.002	-0.002	0.006	-0.003	0.003	**0.021**
	st. err	0.009	0.008	0.009	0.009	0.011	0.010	0.011	0.011	0.007	0.006	0.007	0.007
space	coeff	-0.015	0.006	0.004	0.002	0.009	-0.011	0.001	-0.008	0.002	-0.004	0.004	0.007
	st. err	0.009	0.008	0.008	0.009	0.011	0.010	0.011	0.011	0.006	0.006	0.006	0.007

Note: Figures in bold indicate significance at 5% level

μ_1 to μ_4 refer to thresholds 1 to 4.

Table 3 (b): Estimated coefficients and standard errors of permanent income (third tertile) of the thresholds by individual countries

High HDI Countries		**Malaysia**				**Mexico**				**Spain**			
		μ_1	μ_2	μ_3	μ_4	μ_1	μ_2	μ_3	μ_4	μ_1	μ_2	μ_3	μ_4
Dignity													
respect	coeff	-0.113	0.116	0.081	**0.256**	**0.066**	**0.044**	-0.006	**-0.101**	0.144	0.115	0.055	-0.092
	st. err	0.084	0.069	0.066	0.076	0.024	0.019	0.018	0.025	0.076	0.067	0.061	0.070
privacy	coeff	0.034	0.034	0.113	**0.321**	**0.063**	**0.043**	-0.005	**-0.055**	0.139	0.024	-0.066	-0.076
	st. err	0.081	0.067	0.065	0.073	0.023	0.019	0.018	0.024	0.073	0.067	0.061	0.065
Clarity of Communication													
clear comm.	coeff	0.142	**0.146**	0.001	0.138	**0.115**	**0.044**	0.021	**-0.068**	**0.195**	-0.044	0.045	0.073
	st. err	0.080	0.066	0.066	0.074	0.023	0.018	0.018	0.027	0.069	0.063	0.063	0.073
time quest.	coeff	0.155	0.099	0.046	**0.145**	**0.099**	**0.054**	0.027	-0.024	**0.198**	0.048	0.002	0.054
	st. err	0.081	0.064	0.064	0.074	0.023	0.018	0.018	0.027	0.066	0.063	0.064	0.073
Confidentiality													
talk privately	coeff	**0.147**	**0.146**	**0.143**	**0.186**	**0.078**	**0.066**	**0.054**	-0.020	0.096	0.017	-0.051	-0.055
	st. err	0.072	0.056	0.060	0.066	0.021	0.017	0.018	0.024	0.056	0.055	0.059	0.065
conf. info	coeff	0.093	**0.179**	**0.242**	**0.315**	**0.121**	**0.079**	**0.047**	0.005	0.073	0.032	-0.002	-0.017
	st. err	0.074	0.056	0.059	0.064	0.020	0.017	0.018	0.025	0.056	0.059	0.065	0.068
Quality of Facilities													
clean	coeff	**0.148**	-0.024	-0.135	-0.001	**0.229**	**0.105**	**0.079**	**-0.061**	**0.183**	-0.072	0.023	-0.043
	st. err	0.070	0.079	0.082	0.080	0.021	0.019	0.019	0.025	0.065	0.077	0.075	0.077
space	coeff	**0.168**	0.083	**-0.185**	-0.029	**0.243**	**0.083**	**0.054**	**-0.096**	**0.233**	0.008	0.051	-0.014
	st. err	0.072	0.070	0.075	0.077	0.021	0.019	0.019	0.026	0.063	0.070	0.071	0.079
Medium HDI Countries		**India**				**Philippines**				**SriLanka**			
		μ_1	μ_2	μ_3	μ_4	μ_1	μ_2	μ_3	μ_4	μ_1	μ_2	μ_3	μ_4
Dignity													
respect	coeff	-0.036	-0.074	**-0.099**	**-0.165**	-0.084	-0.026	-0.061	-0.052	0.036	0.020	-0.081	-0.002
	st. err	0.060	0.045	0.042	0.058	0.049	0.036	0.037	0.053	0.064	0.049	0.044	0.049
privacy	coeff	0.068	-0.023	**-0.117**	**-0.158**	-0.027	0.008	-0.037	**-0.111**	**-0.141**	-0.012	-0.085	-0.007
	st. err	0.058	0.046	0.042	0.057	0.047	0.036	0.037	0.051	0.058	0.048	0.046	0.048
Clarity of Communication													
clear comm.	coeff	**-0.154**	-0.013	-0.059	**-0.158**	-0.092	-0.004	0.068	**0.137**	0.105	**0.125**	**0.131**	**0.142**
	st. err	0.073	0.047	0.044	0.061	0.059	0.040	0.038	0.057	0.063	0.049	0.048	0.049
time quest.	coeff	0.008	0.052	0.035	**-0.114**	-0.043	-0.007	**0.076**	0.096	0.053	0.092	0.072	0.073
	st. err	0.067	0.047	0.044	0.062	0.056	0.039	0.038	0.056	0.060	0.048	0.047	0.050
Confidentiality													
talk privately	coeff	0.080	0.012	-0.063	-0.050	**-0.104**	-0.036	0.033	0.021	-0.046	**-0.086**	**-0.119**	**-0.138**
	st. err	0.061	0.042	0.043	0.058	0.055	0.034	0.036	0.048	0.056	0.043	0.044	0.047
conf. info	coeff	0.053	**0.086**	0.012	-0.077	-0.093	**0.069**	0.059	0.044	-0.021	0.011	0.051	-0.030
	st. err	0.054	0.042	0.045	0.059	0.051	0.034	0.036	0.047	0.052	0.044	0.045	0.044
Quality of Facilities													
clean	coeff	0.097	**0.090**	-0.043	-0.012	0.019	0.054	0.029	**0.103**	-0.074	**-0.169**	**-0.102**	0.011
	st. err	0.052	0.046	0.048	0.067	0.043	0.041	0.043	0.055	0.055	0.048	0.048	0.055
space	coeff	0.067	0.061	-0.043	-0.009	0.058	0.046	-0.002	0.098	**-0.168**	**-0.112**	-0.067	-0.044
	st. err	0.053	0.046	0.048	0.065	0.043	0.039	0.042	0.056	0.054	0.047	0.048	0.054
Low HDI Countries		**Burkina**				**Ethiopia**				**Malawi**			
		μ_1	μ_2	μ_3	μ_4	μ_1	μ_2	μ_3	μ_4	μ_1	μ_2	μ_3	μ_4
Dignity													
respect	coeff	0.067	**0.253**	0.136	**0.242**	0.154	0.158	-0.131	-0.133	-0.025	-0.044	0.025	0.044
	st. err	0.109	0.090	0.089	0.126	0.121	0.099	0.091	0.447	0.074	0.062	0.060	0.086
privacy	coeff	-0.051	0.123	-0.024	-0.120	**0.284**	**0.253**	0.018	-0.123	0.013	-0.043	0.073	0.110
	st. err	0.110	0.091	0.091	0.114	0.124	0.102	0.093	0.424	0.074	0.063	0.061	0.076
Clarity of Communication													
clear comm.	coeff	0.149	0.175	**0.193**	0.005	**0.299**	0.193	0.024	-0.169	0.047	-0.096	-0.051	-0.141
	st. err	0.115	0.093	0.091	0.127	0.145	0.106	0.099	0.496	0.070	0.061	0.060	0.090
time quest.	coeff	**0.215**	**0.271**	0.160	-0.086	**0.288**	**0.288**	-0.120	-0.193	0.037	-0.114	-0.065	-0.128
	st. err	0.111	0.093	0.092	0.126	0.142	0.105	0.101	0.498	0.067	0.062	0.060	0.096
Confidentiality													
talk privately	coeff	-0.075	-0.037	-0.146	0.039	**0.506**	**0.252**	0.090	-0.030	-0.064	**-0.111**	0.029	0.040
	st. err	0.099	0.079	0.084	0.115	0.109	0.087	0.092	0.405	0.057	0.056	0.061	0.087
conf. info	coeff	-0.076	-0.084	-0.106	0.170	**0.499**	**0.284**	0.140	-0.030	-0.025	-0.071	0.040	0.056
	st. err	0.095	0.081	0.087	0.112	0.107	0.087	0.094	0.384	0.056	0.058	0.064	0.089
Quality of Facilities													
clean	coeff	**0.434**	**0.258**	0.176	0.125	0.179	0.083	0.046	-0.266	0.087	-0.033	-0.067	**-0.227**
	st. err	0.110	0.098	0.103	0.133	0.121	0.112	0.125	0.625	0.062	0.062	0.065	0.085
space	coeff	**0.284**	0.183	0.186	0.057	0.200	**0.209**	0.047	-0.176	**0.123**	0.001	-0.006	-0.098
	st. err	0.106	0.096	0.101	0.138	0.120	0.109	0.118	0.566	0.061	0.061	0.064	0.085

Note: Figures in bold indicate significance at 5% level

μ_1 to μ_4 refer to thresholds 1 to 4.

Table 4: Coefficients of permanent income (third tertile) in the OPROBIT and HOPIT model, by individual countries

High HDI Countries		**Malaysia**		**Mexico**		**Spain**	
		OPROBIT	**HOPIT**	**OPROBIT**	**HOPIT**	**OPROBIT**	**HOPIT**
Dignity							
respect	coeff	0.017	**0.195**	**0.077**	0.020	0.087	0.040
	st. err	0.081	0.085	0.037	0.029	0.080	0.079
privacy	coeff	0.007	**0.246**	**0.093**	**0.057**	0.032	-0.040
	st. err	0.083	0.083	0.038	0.027	0.081	0.074
Clarity of Communication							
clear comm.	coeff	-0.066	0.025	**0.082**	0.048	**0.148**	**0.201**
	st. err	0.083	0.084	0.037	0.031	0.077	0.084
time quest.	coeff	0.048	0.145	**0.066**	**0.060**	0.089	0.123
	st. err	0.082	0.084	0.037	0.031	0.076	0.084
Confidentiality							
talk privately	coeff	0.037	**0.204**	0.010	0.021	**0.092**	0.040
	st. err	0.082	0.073	0.036	0.028	0.078	0.073
conf. info	coeff	-0.032	**0.258**	**0.049**	**0.064**	0.063	0.046
	st. err	0.084	0.072	0.037	0.029	0.080	0.076
Quality of Facilities							
clean	coeff	-0.017	-0.069	-0.022	-0.019	-0.101	-0.127
	st. err	0.082	0.090	0.036	0.029	0.078	0.088
space	coeff	0.093	-0.002	-0.029	-0.048	-0.039	-0.021
	st. err	0.081	0.086	0.036	0.029	0.075	0.090
Medium HDI Countries		**India**		**Philippines**		**SriLanka**	
		OPROBIT	**HOPIT**	**OPROBIT**	**HOPIT**	**OPROBIT**	**HOPIT**
Dignity							
respect	coeff	**0.370**	**0.243**	**0.098**	0.037	**0.236**	**0.188**
	st. err	0.072	0.064	0.070	0.059	0.076	0.055
privacy	coeff	**0.381**	**0.256**	0.087	0.032	**0.202**	**0.151**
	st. err	0.072	0.062	0.070	0.057	0.076	0.054
Clarity of Communication							
clear comm.	coeff	**0.374**	**0.271**	**0.162**	**0.233**	**0.194**	**0.324**
	st. err	0.071	0.068	0.070	0.063	0.074	0.057
time quest.	coeff	**0.432**	**0.407**	**0.128**	**0.194**	**0.161**	**0.234**
	st. err	0.071	0.069	0.070	0.062	0.072	0.059
Confidentiality							
talk privately	coeff	**0.429**	**0.372**	**0.096**	**0.116**	**0.123**	-0.005
	st. err	0.071	0.065	0.070	0.053	0.073	0.054
conf. info	coeff	**0.439**	**0.423**	**0.081**	**0.139**	**0.100**	**0.124**
	st. err	0.071	0.066	0.071	0.053	0.075	0.051
Quality of Facilities							
clean	coeff	**0.506**	**0.495**	**0.206**	**0.250**	**0.160**	0.070
	st. err	0.070	0.075	0.069	0.061	0.071	0.065
space	coeff	**0.462**	**0.447**	**0.220**	**0.240**	**0.124**	0.037
	st. err	0.070	0.072	0.069	0.062	0.071	0.063
Low HDI Countries		**Burkina**		**Ethiopia**		**Malawi**	
		OPROBIT	**HOPIT**	**OPROBIT**	**HOPIT**	**OPROBIT**	**HOPIT**
Dignity							
respect	coeff	-0.073	0.123	-0.040	-0.099	0.007	0.031
	st. err	0.133	0.127	0.496	0.443	0.085	0.093
privacy	coeff	-0.068	-0.128	0.331	0.357	**0.144**	**0.224**
	st. err	0.138	0.113	0.501	0.420	0.086	0.083
Clarity of Communication							
clear comm.	coeff	0.131	**0.260**	0.019	-0.006	0.121	0.024
	st. err	0.131	0.128	0.501	0.492	0.084	0.096
time quest.	coeff	0.158	**0.297**	-0.310	-0.376	0.128	0.060
	st. err	0.130	0.128	0.502	0.493	0.082	0.103
Confidentiality							
talk privately	coeff	0.106	0.031	0.400	0.557	**0.147**	0.158
	st. err	0.131	0.115	0.501	0.401	0.083	0.092
conf. info	coeff	0.120	0.097	-0.066	0.037	0.129	0.157
	st. err	0.138	0.114	0.514	0.380	0.086	0.096
Quality of Facilities							
clean	coeff	**-0.223**	-0.055	-0.424	-0.504	-0.029	-0.155
	st. err	0.132	0.135	0.497	0.618	0.083	0.090
space	coeff	**-0.366**	-0.204	-0.045	-0.010	0.013	-0.027
	st. err	0.133	0.139	0.491	0.561	0.083	0.091

Note: Figures in bold indicate significance at 5% level

Table 5: ex-ante frequencies, ex-post frequencies computed through the OPROBIT and through the HOPIT model, for Malaysia, Mexico and Spain.

Domain	Item		MALAYSIA			MEXICO			SPAIN		
			ex ante prob	ex post prob PROBIT	ex post prob HOPIT	ex ante prob	ex post prob PROBIT	ex post prob HOPIT	ex ante prob	ex post prob PROBIT	ex post prob HOPIT
Dignity	RESPECT	very bad	0.3%	0.3%	0.0%	0.7%	0.7%	0.0%	0.7%	0.7%	0.0%
		bad	2.4%	2.5%	2.6%	3.0%	3.0%	2.9%	0.8%	0.9%	1.7%
		moderate	10.6%	10.7%	12.1%	8.7%	8.7%	12.3%	6.1%	6.2%	7.6%
		good	68.5%	67.7%	65.5%	71.2%	71.2%	67.0%	61.4%	61.4%	59.0%
		very good	18.2%	18.8%	19.8%	16.3%	16.3%	17.6%	30.9%	30.7%	31.6%
	PRIVACY	very bad	0.4%	0.4%	0.0%	0.4%	0.4%	0.0%	0.2%	0.2%	0.0%
		bad	2.1%	2.2%	2.4%	2.2%	2.3%	1.9%	1.9%	1.9%	1.4%
		moderate	8.2%	8.3%	10.1%	7.4%	7.4%	10.4%	5.2%	5.3%	7.4%
		good	69.5%	69.1%	66.5%	73.5%	73.5%	70.2%	65.9%	65.8%	63.5%
		very good	19.7%	20.0%	21.0%	16.5%	16.4%	17.5%	26.8%	26.7%	27.6%
Clarity of Communication	CLEAR COMM.	very bad	0.2%	0.2%	0.0%	0.7%	0.7%	0.0%	0.7%	0.8%	0.1%
		bad	2.5%	2.5%	1.5%	3.2%	3.2%	2.5%	2.6%	2.7%	3.4%
		moderate	8.2%	8.3%	11.6%	7.9%	7.9%	13.3%	11.0%	11.2%	13.0%
		good	70.0%	70.0%	67.0%	71.8%	71.8%	66.2%	60.3%	60.1%	57.2%
		very good	19.1%	19.0%	19.9%	16.3%	16.3%	18.1%	25.4%	25.3%	26.3%
	TIME QUEST.	very bad	0.2%	0.2%	0.0%	0.7%	0.7%	0.0%	0.9%	0.9%	0.2%
		bad	3.6%	3.5%	2.7%	3.6%	3.7%	2.8%	4.5%	4.7%	5.6%
		moderate	11.9%	11.5%	14.6%	8.5%	8.5%	14.0%	13.6%	13.7%	15.1%
		good	68.3%	68.6%	65.6%	71.0%	71.0%	65.3%	59.9%	59.7%	57.3%
		very good	15.9%	16.2%	17.1%	16.1%	16.1%	17.9%	21.2%	21.0%	21.8%
Confidentiality	TALK PRIVATELY	very bad	0.3%	0.3%	0.0%	0.6%	0.6%	0.0%	1.0%	1.1%	0.0%
		bad	2.6%	2.4%	2.4%	4.2%	4.2%	3.9%	3.7%	3.8%	5.3%
		moderate	11.9%	11.6%	13.9%	10.6%	10.6%	15.8%	10.4%	10.7%	13.6%
		good	69.3%	69.3%	65.9%	70.6%	70.6%	64.1%	62.4%	62.2%	56.9%
		very good	15.9%	16.4%	17.8%	14.0%	14.0%	16.2%	22.5%	22.2%	24.2%
	CONF. INFO	very bad	0.1%	0.1%	0.0%	1.2%	1.2%	0.0%	0.8%	0.8%	0.0%
		bad	1.0%	1.1%	0.7%	2.7%	2.7%	4.0%	1.8%	1.8%	2.6%
		moderate	8.4%	8.7%	10.4%	10.0%	10.0%	15.1%	7.6%	7.7%	11.2%
		good	69.9%	70.2%	68.1%	71.9%	71.9%	63.8%	67.7%	67.7%	61.9%
		very good	20.6%	19.9%	20.7%	14.3%	14.2%	17.1%	22.1%	22.0%	24.3%
Quality of Facilities	CLEAN	very bad	0.2%	0.2%	0.0%	0.7%	0.7%	0.0%	0.5%	0.5%	0.1%
		bad	1.3%	1.4%	1.3%	3.3%	3.2%	3.1%	1.3%	1.3%	2.9%
		moderate	7.6%	7.8%	8.8%	10.0%	9.9%	13.9%	10.4%	10.6%	9.0%
		good	67.1%	67.1%	66.0%	70.1%	70.1%	65.4%	60.3%	60.2%	60.7%
		very good	23.7%	23.5%	23.9%	15.9%	16.1%	17.7%	27.5%	27.4%	27.3%
	SPACE	very bad	0.1%	0.1%	0.0%	0.8%	0.8%	0.0%	1.9%	2.0%	0.7%
		bad	1.6%	1.5%	1.4%	4.7%	4.7%	4.4%	6.6%	6.7%	8.7%
		moderate	14.1%	14.4%	14.9%	11.8%	11.7%	16.8%	16.0%	16.2%	17.2%
		good	67.5%	67.4%	67.0%	68.1%	68.0%	62.1%	54.5%	54.3%	51.8%
		very good	16.6%	16.5%	16.7%	14.6%	14.7%	16.6%	21.0%	20.8%	21.6%

Table 6: Respect: coefficients and standard errors (for the agents in the first income tertile) of cut-points as a function of country dummy variables in the model

HIGH HDI	μ_1		μ_2		μ_3		μ_4	
COUNTRIES	coeff.	st.er.	coeff.	st.er.	coeff.	st.er.	coeff.	st.er.
U. Arab Emirates	0.079	0.083	-0.002	0.068	0.032	0.064	**-0.496**	0.068
Austria	-0.012	0.143	**-0.221**	0.113	**-0.246**	0.101	**-0.594**	0.101
Belgium	**0.547**	0.127	**0.402**	0.113	**0.385**	0.111	-0.069	0.117
Bosnia	**0.275**	0.085	-0.006	0.074	-0.025	0.070	**-0.390**	0.073
Czech Rep.	0.054	0.111	-0.054	0.095	0.100	0.086	**-0.429**	0.088
Germany	**0.260**	0.099	-0.010	0.085	0.007	0.079	**-0.343**	0.081
Denmark	**0.697**	0.112	**0.497**	0.100	**0.553**	0.099	-0.134	0.107
Spain	**0.193**	0.045	0.053	0.038	-0.055	0.036	**-0.169**	0.038
Estonia	-0.063	0.104	0.022	0.086	0.104	0.081	**-0.277**	0.083
Finland	**0.390**	0.092	**0.249**	0.078	**0.568**	0.075	0.080	0.084
France	0.262	0.152	0.125	0.125	0.209	0.118	-0.164	0.125
UK	**0.551**	0.093	**0.252**	0.084	**0.276**	0.080	**-0.288**	0.083
Greece	**0.410**	0.091	0.076	0.081	0.123	0.077	**-0.488**	0.080
Croatia	**0.217**	0.103	**0.312**	0.087	**0.594**	0.083	**-0.263**	0.086
Hungary	0.127	0.079	-0.072	0.066	0.018	0.061	**-0.593**	0.063
Ireland	**0.820**	0.106	**0.328**	0.098	**0.241**	0.096	**-0.438**	0.101
Italy	0.242	0.207	-0.314	0.179	-0.206	0.157	**-0.586**	0.157
Latvia	**0.587**	0.104	0.156	0.094	**0.171**	0.089	**-0.294**	0.093
Mauritius	**0.326**	0.049	**0.432**	0.042	**0.303**	0.041	-0.065	0.044
Malaysia	**-0.138**	0.053	0.002	0.042	-0.032	0.039	**-0.200**	0.042
Netherlands	0.087	0.125	**0.250**	0.101	**0.314**	0.096	0.137	0.109
Portugal	-0.050	0.113	0.051	0.092	**0.229**	0.084	**0.206**	0.099
Slovakia	0.049	0.075	-0.076	0.063	-0.059	0.060	**-0.521**	0.061
Slovenia	**0.485**	0.117	**0.226**	0.104	0.059	0.102	**-0.272**	0.109
Sweden	**0.601**	0.097	**0.532**	0.085	**0.557**	0.083	0.136	0.092
Uruguay	**0.237**	0.063	**0.121**	0.053	0.084	0.050	0.027	0.055
LOW HDI COUNTRIES								
Burkina	**0.583**	0.273	**0.428**	0.197	0.176	0.176	-0.103	0.199
Coted`Ivoire	0.409	0.271	**0.491**	0.195	**0.414**	0.174	0.196	0.198
Ethiopia	0.339	0.267	0.345	0.191	0.235	0.169	-0.348	0.191
Kenya	**0.588**	0.264	**0.476**	0.189	0.210	0.167	-0.313	0.189
Mauritania	0.117	0.292	**0.427**	0.204	**0.572**	0.182	0.170	0.210
Mali	**0.572**	0.264	**0.491**	0.189	0.083	0.167	**-0.505**	0.188
Senegal	0.394	0.272	**0.382**	0.195	0.199	0.173	**-0.464**	0.195
Chad	0.227	0.277	**0.514**	0.196	**0.582**	0.175	**0.437**	0.204
Zambia	0.481	0.263	**0.407**	0.188	0.305	0.166	-0.181	0.188
Zimbabwe	0.450	0.265	**0.457**	0.189	0.217	0.167	0.049	0.189

Note: Mexico and Malawi are the baseline for the High and Low HDI countries, respectively. Figures in bold indicate significance at 5% level. μ_1 to μ_4 refer to thresholds 1 to 4.

Table 7: Observed and predicted probabilities of reporting "very good" responsiveness for "Respect"

a) High HDI group

rank	ex ante prob (1)		ex post prob PROBIT (2)		ex post prob HOPIT (country specific cut points) (3)		ex post prob HOPIT (Mexico specific cut points) (4)		postion in the ex-ante prob ranking for countries in the HOPIT with Mexico specific cut points (5)
1	Austria	61.9%	Austria	56.9%	Austria	60.4%	Finland	55.1%	7
2	Denmark	61.0%	Denmark	55.7%	Denmark	60.1%	Denmark	54.6%	2
3	Sweden	55.8%	Sweden	49.4%	Sweden	55.1%	Sweden	54.5%	3
4	Czech Rep.	52.9%	UK	47.2%	UK	52.4%	Belgium	42.9%	11
5	UK	51.4%	Czech Rep.	47.0%	Czech Rep.	52.1%	France	40.3%	9
6	Greece	51.0%	Finland	44.4%	Greece	50.9%	UK	39.9%	5
7	Finland	49.3%	Greece	43.6%	Finland	46.5%	Netherlands	38.8%	17
8	Hungary	47.8%	Hungary	39.6%	Hungary	45.5%	Uruguay	35.6%	13
9	France	47.6%	France	39.2%	Belgium	44.2%	Czech Rep.	32.2%	4
10	Ireland	45.7%	Belgium	38.7%	France	44.1%	Estonia	28.5%	16
11	Belgium	44.9%	Uruguay	38.1%	U. Arab Emirates	43.9%	Austria	28.4%	1
12	U. Arab Emirates	44.4%	U. Arab Emirates	37.1%	Ireland	43.7%	Greece	26.0%	6
13	Uruguay	37.9%	Ireland	34.4%	Bosnia	37.9%	Ireland	25.0%	10
14	Latvia	36.2%	Netherlands	34.3%	Uruguay	37.7%	Spain	24.7%	20
15	Bosnia	36.1%	Estonia	32.7%	Croatia	35.2%	Croatia	24.2%	18
16	Estonia	35.5%	Bosnia	32.7%	Estonia	35.1%	Germany	23.1%	19
17	Netherlands	35.3%	Spain	32.4%	Latvia	34.5%	Mauritius	23.0%	24
18	Croatia	35.1%	Germany	30.0%	Netherlands	34.5%	U. Arab Emirates	22.6%	12
19	Germany	34.2%	Latvia	27.0%	Germany	34.0%	Portugal	21.6%	25
20	Spain	30.9%	Slovenia	26.5%	Spain	32.4%	Slovenia	21.4%	21
21	Slovenia	30.4%	Slovakia	23.7%	Slovenia	32.3%	Hungary	20.8%	8
22	Slovakia	27.6%	Croatia	23.2%	Slovakia	31.0%	Latvia	20.8%	14
23	Italy	26.2%	Malaysia	21.8%	Mauritius	27.1%	Bosnia	18.6%	15
24	Mauritius	24.2%	Mauritius	21.6%	Italy	24.0%	Mexico	17.7%	27
25	Portugal	18.5%	Mexico	20.7%	Malaysia	21.5%	Malaysia	16.8%	26
26	Malaysia	18.2%	Portugal	20.1%	Portugal	19.4%	Slovakia	10.2%	22
27	Mexico	16.3%	Italy	18.6%	Mexico	17.7%	Italy	9.4%	23
Pearson`s correlation coefficient			(2) & (1)		(3) & (1)		(4) & (1)		
rho			0.950		0.992		0.671		
Kendall`s tau			(2) & (1)		(3) & (1)		(4) & (1)		
H0: Independence									
Test statistic			0.855		0.926		0.539		
P-value			<0.01		<0.01		<0.01		

b) Medium HDI group

rank	ex ante prob (1)		ex post prob PROBIT (2)		ex post prob HOPIT (country specific cut points) (3)		ex post prob HOPIT (India specific cut points) (4)		postion in the ex-ante prob ranking for countries in the HOPIT with India specific cut points (5)
1	Paraguay	53.6%	Paraguay	47.4%	Paraguay	50.4%	Paraguay	39.4%	1
2	Brazil	38.7%	Brazil	36.2%	Brazil	38.9%	Georgia	36.4%	3
3	Georgia	31.4%	Georgia	32.7%	Georgia	34.3%	Brazil	33.4%	2
4	Ecuador	31.0%	Ecuador	28.2%	Ecuador	30.1%	Myanmar	32.8%	21
5	South-Africa	27.7%	Domin. Rep.	22.4%	South-Africa	27.6%	Domin. Rep.	30.6%	12
6	Ghana	27.1%	Ghana	21.8%	Ghana	27.0%	Philippines	30.3%	26
7	Namibia	25.2%	India	20.3%	Namibia	25.2%	China	28.7%	17
8	Morocco	25.1%	Myanmar	19.4%	Morocco	23.8%	Guatemala	27.3%	16
9	Bangladesh	24.6%	Guatemala	18.9%	Swaziland	21.1%	Ecuador	25.3%	4
10	India	20.5%	South-Africa	18.8%	Congo	19.8%	South-Africa	23.3%	5
11	Swaziland	17.6%	Namibia	18.5%	India	19.1%	Namibia	22.8%	7
12	Domin. Rep.	17.1%	Lao	18.1%	Bangladesh	18.4%	Congo	21.9%	13
13	Congo	16.6%	Bangladesh	16.7%	Domin. Rep.	17.4%	Comoros	21.9%	19
14	Tunisia	16.2%	Kazakhstan	16.5%	Kazakhstan	17.0%	India	19.1%	10
15	Lao	15.8%	China	16.1%	Lao	17.0%	Ghana	18.8%	6
16	Guatemala	15.0%	Sri-Lanka	14.3%	Russia	16.3%	Kazakhstan	18.0%	20
17	China	14.6%	Swaziland	13.8%	China	16.3%	Lao	17.6%	15
18	Russia	13.1%	Tunisia	13.3%	Tunisia	15.7%	Russia	15.8%	18
19	Comoros	12.8%	Russia	13.0%	Sri-Lanka	15.2%	Bangladesh	15.8%	9
20	Kazakhstan	12.7%	Vietnam	12.4%	Comoros	13.6%	Pakistan	15.4%	23
21	Myanmar	11.6%	Nepal	11.5%	Myanmar	12.8%	Ukraine	15.4%	22
22	Ukraine	9.9%	Morocco	11.0%	Ukraine	11.6%	Swaziland	14.7%	11
23	Pakistan	9.8%	Philippines	10.9%	Vietnam	11.4%	Vietnam	12.9%	27
24	Sri-Lanka	9.4%	Congo	10.1%	Pakistan	9.4%	Tunisia	12.4%	14
25	Nepal	9.2%	Comoros	10.0%	Philippines	8.9%	Nepal	12.1%	25
26	Philippines	7.6%	Ukraine	9.3%	Guatemala	8.0%	Sri-Lanka	9.8%	24
27	Vietnam	7.4%	Pakistan	8.8%	Nepal	6.4%	Morocco	7.6%	8
Pearson`s correlation coefficient			(2) & (1)		(3) & (1)		(4) & (1)		
rho			0.876		0.961		0.517		
Kendall`s tau			(2) & (1)		(3) & (1)		(4) & (1)		
H0: Independence									
Test statistic			0.547		0.809		0.342		
P-value			< 0.01		< 0.01		0.013		

c) Low HDI group

rank	ex ante prob (1)		ex post prob PROBIT (2)		ex post prob HOPIT (country specific cut points) (3)		ex post prob HOPIT (India specific cut points) (4)		postion in the ex-ante prob ranking for countries in the HOPIT with Malawi specific cut points (5)
1	Mali	42.4%	Mali	34.5%	Mali	39.9%	Kenya	21.3%	5
2	Zambia	28.6%	Kenya	28.1%	Zambia	28.3%	Chad	18.0%	9
3	Zimbabwe	24.5%	Zimbabwe	28.0%	Ethiopia	27.5%	Zimbabwe	17.9%	3
4	Ethiopia	24.3%	Zambia	25.7%	Zimbabwe	25.4%	Burkina	16.5%	7
5	Kenya	24.3%	Ethiopia	22.8%	Mauritania	24.8%	Zambia	16.1%	2
6	Cote d`Ivoire	21.9%	Burkina	22.6%	Kenya	21.4%	Mali	15.2%	1
7	Burkina	15.1%	Mauritania	18.9%	Cote d`Ivoire	20.8%	Senegal	12.8%	11
8	Mauritania	14.5%	Chad	18.6%	Burkina	19.8%	Ethiopia	11.9%	4
9	Chad	13.2%	Cote d`Ivoire	17.9%	Chad	16.8%	Malawi	10.1%	10
10	Malawi	12.2%	Senegal	13.3%	Malawi	10.7%	Mauritania	9.7%	8
11	Senegal	5.4%	Malawi	12.5%	Senegal	8.5%	Cote d`Ivoire	7.5%	6
Pearson`s correlation coefficient			(2) & (1)		(3) & (1)		(4) & (1)		
rho			0.890		0.923		0.247		
Kendall`s tau			(2) & (1)		(3) & (1)		(4) & (1)		
H0: Independence									
Test statistic			0.709		0.818		0.146		
P-value			< 0.01		< 0.01		0.580		

Table 8: Pearson correlation coefficients between the raw data frequencies and the ordered probit predictions (1), and between the raw data frequencies and HOPIT country-specific predictions (2)

Number of countries	Respect		Privacy		Clear comm.		Time quest.		Talk privately		Conf. info		Clean		Space	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
2	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
3	.979	.869	.942	.805	1.000	.794	.993	.885	.998	.873	.970	.751	.931	.999	.982	.993
4	.909	.866	.934	.856	.974	.843	.968	.896	.983	.888	.937	.787	.887	.917	.949	.962
5	.987	.984	.990	.979	.989	.967	.936	.959	.983	.962	.974	.950	.980	.982	.984	.986
20	.889	.964	.926	.964	.862	.958	.785	.943	.916	.920	.886	.917	.864	.946	.882	.937
27	.887	.966	.923	.964	.865	.957	.803	.947	.910	.922	.893	.903	.871	.942	.871	.929

Note:

(1) Pearson correlation coefficient between the raw frequencies and predictions obtained from the ordered probit model

(2) Pearson correlation coefficient between the raw frequencies and predictions obtained from the "country-specific" HOPIT model

Number of countries:

2: India and Philippines; 3: 2 + Sri Lanka; 4: 3 + Pakistan; 5: 4 + Brazil; 20: 5 + Bangladesh, Congo, Dominican Republic, Ecuador, Ghana, Guatemala, Kazakhstan, Leo, Morocco, Myanmar, Namibia, Nepal, Paraguay, Swaziland, Tunisia; 27: 20 + Vietnam, China, Comoros, Georgia, Russia, South Africa, Ukraine