

DISCUSSION PAPER SERIES

No. 6608

**EXPLORATIONS OF THE EFFECT OF
EXPERIENCE ON PREFERENCES
FOR A HEALTH-CARE SERVICE**

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Discussion Paper No. 6608
December 2007

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ABSTRACT

Explorations of the Effect of Experience on Preferences for a Health-Care Service

The standard assumption in economic theory is that preferences do not change as a result of experience with the commodity/service/event. Behavioural scientists have challenged this assumption, claiming that preferences constantly do change as experience is accumulated. This paper tests the effect of experience with a health-care service on preferences for maternity-ward attributes. In order to explore the effect of experience on preferences, the research sample was decomposed into three sub-samples: women pregnant with their first child (no experience); women after one delivery (single experience); and women after more than one delivery (multiple experiences). The preference patterns of the three sub-groups were estimated and compared. A Discrete Choice Experiment (DCE) was employed for establishing the relative importance of the following attributes: number of beds in room; attitude of staff; professionalism of staff; information delivered by personnel; and travel time from residence to hospital. Socio-economic background variables (education, age, and income) were also considered. The basic findings are that preferences change significantly as a result of experience with the health event; that the effect of experience is attribute-specific; that the extent of past experience (number of deliveries) is irrelevant; and that the effect of experience differs by socio-economic status.

JEL Classification: D01, D12 and I19

Keywords: delivery, discrete choice experiment, experience, health-care and preferences

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Submitted 10 December 2007

EXPLORATIONS OF THE EFFECT OF EXPERIENCE ON PREFERENCES FOR A HEALTH-CARE SERVICE

1 Introduction

The standard assumption in economic theory is that preferences are given and stable. In fact, any attempt to explain differences in economic outcomes using preference differences or changes in preferences, is considered unscientific. Stigler and Becker, right at the beginning of their influential 1977 article, “De Gustibus Non Est Disputandum”, state:

One does not argue over tastes for the same reason that one does not argue over the Rocky Mountains – both are there, will be there next year, too, and are the same to all men (page 76).

In the concluding section they summarize:

We also claim, however, that no scientific behavior has been illuminated by assumptions of differences in tastes. Instead, they along with assumptions of unstable tastes have been a convenient crutch to lean on when the analysis has bogged down. They give the appearance of considered judgment, yet really have only been ad hoc arguments that disguise analytical failures (page 89).

The view that preferences are stable, implicitly assumes that economic agents have full information about all of the consumption bundles and their associated utilities; such that once a rational ordering of the preferences across these bundles is made, they thereafter remain unchanged. In reality, however, information about goods and services is incomplete. Consumers typically possess prior conceptions, often based on peers' experiences, regarding

the value or utility associated with a wide range of goods and services. Over time, as the consumers themselves consume these goods and services, their preferences are updated – based on their own experience, and as greater experience is gathered about these commodities or commodity bundles, a reordering of preferences, may, in principle, occur.

The same process may be said to apply to the preference pattern of any given good or service. Under Lancaster's (1966) theory of value, a commodity or service can be decomposed into separable attributes (that is, characteristics or features), where each attribute has its partial utility. The standard assumption is that this set of partial utilities is constant. In a similar vein, based on experience, consumers might update the partial utilities and change the preference structure of the attributes.

This paper is presented as a contribution to the empirical-experimental literature that tests the validity of theoretical assumptions; it sets out to answer question as to: (i) whether the preference pattern is indeed constant, or whether an individual *updates and changes her preferences* as she accumulates greater information, based on her personal experience, about the commodity or service. This issue was examined using data regarding the consumption of a health-care service, composed of a set of attributes; (ii) in addition, the paper examines the details of the preferences updating: whether there are *differential effects of experience on the various attributes* of the health care service; (iii) it also investigates whether *additional experience* leads to increasingly greater changes in preferences, or whether the impact of experience on preference change soon reaches a plateau after the initial consumption of the service; (iv) finally, the paper examines the probable *differential effects of experience within diverse socio-economic groups*.

The paper examines these issues using data generated by a Discrete Choice Experiment (DCE). This is a stated-preferences technique for establishing the relative importance of different attributes in the provision of a good or a service. A DCE differs from other methodologies used to study preference patterns in its ability to disaggregate total utility, so that the contribution of each attribute to the total utility can be estimated. It thereby enables the examination of the differential effects of experience on the various attributes. It should be noted that while the DCE methodology has been used quite extensively to estimate preference patterns of health-care services, only two of the studies (San Miguel et al., 2002; Ryan and Ubach, 2003) looked at the effect of experience on preferences. Moreover, distinctions between the different attributes and between single versus multiple experiences have not been considered, and neither were differences between socio-economic sub-groups been detected.

Specifically, the paper examines the composite health service rendered during the delivery of babies at Israeli public hospitals. Israeli women were interviewed shortly before or after giving birth. The sample includes women with different levels of experience with child-birth, and was accordingly decomposed into three sub-groups: women pregnant with their first child (no experience); women who had recently given birth to their first child (single experience); and women who had gone through two or more deliveries. A large representative sample of 469 women was examined, leading to almost 4000 observations. The preference patterns of these sub-samples were estimated and compared.

As the DCE health-care literature is dominated by case studies that analyze UK and US data¹, the present study, using Israeli data, extends the experimentation scope, thereby enriching the DCE literature in general, and the literature on the effect of experience on preferences in particular.

Our results indicate that (i) experience matters: the experience of a delivery leads to a significant updating of the preference pattern for attributes of a birth-giving health-care service; (ii) the effect of experience is attribute specific: some attributes are further affected than others; (iii) it is the initial experience that matters, while additional experiences do not lead to further changes in preferences; and (iv) experience has different effects within various socio-economic sub-groups: the observed outcome of experience is a product of the interaction between experience and other intermediating factors, such as education and income.

The rest of the paper is structured as follows: The next section presents a background literature overview of the effect of experience on preferences; the Discrete Choice Experiment and the research sample are then described in Section 3; Section 4 presents the Econometric model; section 5 presents the findings; and Section 6 offers conclusions and a discussion.

2 Background – Literature Overview

The literature on the effect of experience on preferences (utilities) for attributes of a health-care service is relatively small.

¹ In a recent paper Ryan and Gerard (2003) identified 34 applications of DCE in health economics that have been published during 1990-2000. The main focus of those papers was the valuation of utilities of health-care programs. Other applied areas included health insurance planning, labor supply characteristics, time preference values, and valuation of generic health status domains. It appears that the UK was the predominant producer of DCEs (20 studies). Seven papers examined US data, followed by six with Australian data and a single paper that used Canadian figures. More recently a Spanish data set has been used to assess preferences for attributes of an innovative program for cervical cancer screening (Arana et al., 2006).

2.1 *Economic modeling*

One of the most basic assumptions in economic theory is that preferences are stable, complete and transitive. The individual decision maker is assumed to maximize his expected utility from the commodity/service/event subject to a stable, well-defined utility function.

Several studies have challenged the stability assumption. Two main approaches have been used to empirically test its validity: parametric tests of structural stability of demand functions; and non-parametric tests of the axiom of stability (see San Miguel et al., 2002, for a literature survey of these two approaches).

In particular, accumulated experience with the commodity/service/event under discussion has *not* been considered a factor responsible for a change in preferences, which may lead, in turn, to a change in decision making and demand. A potential effect of past experience on consumption has been mentioned by von Weizsacker (1971) and by Day (1986). They claim that human behavior is governed by adaptive procedures and therefore, depends on past experience. However, they did not offer any systematic theory or empirical tests of this hypothesis.

Neo-classical economists have been reluctant to accept the idea that preferences are not stable and instead, they offer various explanations for the observation that preferences tend to change with experience or due to changes in conditions. For instance, Cox and Oaxaca (1982) claim that *conditional* preferences are stable (e.g. preferences for minimum wages *conditional* on the extent of unionization and on the importance of property income). Therefore, a change in conditions will result in a change in preferences, and this, without violating the assumption of stable *conditional* preferences.

2.2 *Behavioral perspective: Constructed preferences*

In contrast to the classical economic theory of choice that assumes preferences to be stable, there is a growing body of evidence supporting an alternative conception, that preferences are often *constructed* (Slovic, 1991; Payne et al., 1993). Experience might be an important factor in the process of the construction and shaping of preferences². Rabin (1998) provides an extensive review of many of these articles.

² Economists might refer to it as habit formation (e.g. Pollak, 1976; Constantinides, 1990). However this ‘habit formation’ is essentially equivalent to convergent stable long run demands.

2.3 *Effect of the respondent's experience with illness on the valuation of health states*³

Studies addressing the question of stability of the patients' valuation of health, i.e., *whether experience with illness influences the valuation of health*, were conducted along two lines: (i) by comparing health valuations of different groups of respondents: patients currently experiencing a certain health state, people with past experience of that health state, close relatives of patients, health-care professionals, and samples of the general public; and (ii) by observing the same patients during different stages of their illness.

The definition of the state of health was one-dimensional. Values of health states have been estimated on the basis of stated preferences survey data, using different techniques and instruments. They include: Time-Trade-Off (TTO, e.g. Buxton and Ashby, 1988, Tsevat et al., 1993)⁴; Willingness to Pay methodologies (WTP, e.g. Ryan et al., 1997; Donaldson et al., 1998); Standard Gamble (SG, e.g. Base et al., 1994); The EuroQol rating instrument (e.g. EuroQol, 1990; Brooks, 1996); Magnitude estimation (e.g. Rosser and Kind, 1978); Quality Adjusted Life Years (QALY, e.g. Nord, 1992); and Paired Comparisons (e.g. Kind, 2005).

It is beyond the scope of this paper to review the extensive existing literature⁵. A few examples will be mentioned for each line of research: (i) De Wit et al. (2000) reviewed 35 different publications that reported 38 studies, which used nine different research designs and compared various rater groups, in an attempt to answer the question of whether experience with illness influences the valuation of health. The results were inconclusive: twenty seven of the 38 studies concluded that patients' values are different from other groups' values. Eleven studies found no differences in values between rater groups. The studies reporting differences in valuation found that in general, patients gave higher values than other groups. Past experience of illness, on the other hand, appears to have a negligible effect on valuations (Dolan, 1996); (ii) Many of the studies which used longitudinal patient data, aiming to detect changes in valuations in response to changes in health conditions, used time-trade-off instruments. The results were indecisive in this set of papers as well. It seems that more studies concluded that utilities from different health conditions did not change when there was a change in the patient's actual status of health. For example, Llewellyn-Thomas et al., (1984, 1993) examined patients undergoing radiation therapy for laryngeal cancer. In one study they

³ Giving birth is not considered as an illness. However it involves medical procedures and health-care services that are similar to those provided during an illness.

⁴ The TTO instrument is intensively used in health evaluation studies. It estimates the trade-off between years of survival (quantity) and quality of life, asking sick patients questions such as: "Which would you prefer: living 10 years in your current state of health or 1 year in excellent health?" If the patient preferred 10 years of current health, the period of excellent health was progressively lengthened until an indifference point was found.

⁵ Many of studies were conducted by medical doctors.

found that patients assigned similar time-trade-off values to voice quality over the course of treatment, despite deterioration in their actual voice quality. In another study of 66 patients, it was found that evaluations of future short-term health states did not change when they actually entered these stages. O'Connor et al. (1987) found that utility patterns of cancer patients undergoing chemotherapy remained stable, despite significant side effects of treatment. Similarly, a study of dialysis patients receiving erythropoietin found no change in time-trade-off scores, despite improvements in measures of fatigue, depression and physical functional status (Canadian Erythropoietin Study Group, 1990). Consistent with the results of the above reported studies are also the results of a longitudinal study by Tsevat et al. (1993), which examined time-trade-off values in a cohort of survivors of myocardial infarction. Over a time interval of 8.4 months utilities remained stable despite changes in cardiac functional status and symptoms.

2.4 Effect of experience on preferences for various attributes of a health-care service

All the studies reported above referred to a change in the valuation of a one-dimensional clinical health state, and examined potential changes in valuation that resulted from experience with illness. More recently it has been acknowledged that patients have defined preferences, not only for the health outcome but also for the *attributes of the process of a health-care service*. Accordingly, the statistical technique of DCE was employed for the estimation of the relative importance attached to different characteristics of the *process* of health-care (for the theoretical foundations and statistical techniques of designing DCEs and analyzing DCE data, see for instance: Ben Akiva and Lerman, 1985; Louviere et al., 2000; and Ryan and Amaya-Amaya, 2005). Two recent studies used DCEs to examine the effect of experience on preferences for attributes of health-care events. The first study, by San Miguel et al. (2002), examined preferences for out-of-hours care by general practitioners; and the second study, by Ryan and Ubach (2003), studied preferences for a new service of repeat prescription. In the two studies, the preferences of in-experienced versus experienced patients were compared⁶. The results, however, were not conclusive.

⁶ It should be noted that the health economics literature includes several more papers that seem to refer to the effect of experience on preferences. However, they relate to different definitions of experience. In Porter and Macintyre (1984), Salkeld et al. (2000), and Hundley and Ryan (2004) 'experience' is defined as the 'status quo' – 'what patients already know' – and refers to the *level* of attribute/s that they are familiar with. It is claimed that they prefer what they know best. For instance, Hundley and Ryan (2004) who compared preferences of women for intra-partum care at different areas in the UK, found that women in areas where continuity of care was a realistic option appeared to value this aspect of care more highly.

In the first study (San Miguel et al., 2002) two identical questionnaires were given, two months apart, to parents who took their sick children to a health-care facility. In order to test the effect of experience on preferences, the sample was split into two sub-samples: parents who experienced a visit to a facility between the two experiments and parents who had not had this additional experience. Two preference patterns were estimated for each sub-sample, based on each of the two experiments. The results were mixed (depending on the type of test, whether it was a non-parametric or parametric test) and contrary to what had been expected. The unexpected results may have stemmed from the problematic definition of the ‘experience’ core variable. Most importantly, experience before the first experiment was totally ignored, and only experience between the two experiments was recorded. A better identification of the experience variable and a finer definition may have lead to different results.

In the second study by Ryan and Ubach (2003), a DCE was used to test the effect of previous experience on preferences for a new system of issuing repeat prescriptions. Preferences for the new system had been estimated separately for two groups of patients: 33 patients who had no previous experience with the new system and 33 individuals with prior experience. It was found that the preference patterns of the two groups were significantly different, indicating that experience affects preferences.

The study presented in this paper aims at contributing to this line of research and unpacking, with greater detail, the impact of experience on preferences for attributes of a health-care event. Preferences for attributes of medical care at maternity-wards (where women stay during labor, intra-partum care and post-natal care) are compared across three groups of respondents: women in pre-natal classes (shortly before their first delivery), women after the first delivery, and those after more than one delivery.

3 Methods

The statistical tool used to elicit preferences and detect the effect experience had on them, was a Discrete Choice Experiment⁷, which was conducted in maternity-wards in three large public

Arana et al. (2006) compared valuations of medical (professionally experienced) doctors with valuations of patients, regarding attributes of an innovative program for cervical cancer screening. They refer to ‘experience’ as the medical professional training and experience of the evaluator.

⁷ DCEs were first introduced in Mathematical Psychology (Luce and Tukey, 1964; Green et al., 1972) and then adopted by economists for use in the fields of transportation (e.g., Wardman, 1988), environment (e.g. Swallow et al., 1992; Opaluch et al., 1993), marketing (e.g. Cattin and Wittink, 1982 who survey the marketing literature), and recently in health (e.g. Bryan et al., 1998; Ryan et al, 1998a, 1998b; Vick and Scott, 1998; Salkeld et al.,

hospitals⁸ located in the Greater Tel-Aviv area, in Israel. Women who had given birth⁹ were approached by interviewers and requested to fill out a questionnaire¹⁰. In the questionnaire, a DCE was used to present individuals with a series of hypothetical scenario pairs of maternity-ward care. Each of the pair's scenarios depicted different levels for a number of maternity-ward care attributes (for example, 3 beds in a room as opposed to 2 beds in a room). One scenario (A) was kept constant while the other (B) was changed in each pair. For each pair, the subjects were asked to choose which they preferred. It was assumed that subjects would choose the alternative that provides the higher level of utility.

The attributes, their levels and the wording of the questionnaire, were determined during three preliminary stages: (i) an in-depth face-to-face interviews with ten women who had recently given birth; (ii) a pilot study involving 48 women.; and (iii) an extensive literature survey, which examined the topics of hospital choice for delivery and maternity care, and preferences for attributes of maternity care and natal care. The various studies referred to different attributes of medical care. Some of them are: Christensen-Szalanski (1984); McGuirk and Porell (1984); Rahtz and Moore (1988); Bronstein and Morrisey (1991); Phibbs et al. (1993); Brown and Lumley (1994); Wilcock et al. (1997); Janssen et al. (2000); and Sadler et al. (2001). Since the late 1990s, DCEs have been used to elicit preferences for maternity care, e.g. Ryan and Hughes (1997); Hundley et al. (2001); and Hundley and Ryan (2004). Three recent studies (that also used DCEs) compared preference patterns of different groups: Longworth et al. (2001) contrasted the relative values attached to characteristics, associated with the process of maternity care during the intra-partum stage, for women who had chosen to give birth at home, as compared to women who gave birth at the hospital. The five characteristics that were considered are: continuity of contact with the same medical staff; location of delivery; availability of pain relievers; who is the decision maker; and probability of transfer during labor if a problem develops. Arana et al. (2006) examined preferences for an innovative program for cervical cancer screening among respondents of two groups: one

2000; San Miguel et al., 2002; Scott, 2002). The term Conjoint analysis (CA) is sometimes used for the DCE statistical tool.

⁸ Israel has a public health-care system. A negligible number of women give birth in private hospitals or at home.

⁹ The advantage of a stated-preference technique, such as a DCE, is that the experiment can legitimately elicit the preferences of any group of individuals, not only patients, provided that the experiment is well designed and gives the respondent sufficient information about the commodity being valued and all the relevant information necessary for making well-informed rational choices. However, in our case that examines the effect of experience with the health event, it is more natural to include women who are either close to the event or shortly after. This also guarantees that the interviewed women have all the relevant information.

¹⁰ It is recognized in the literature that interviews are the most effective and appropriate means for conducting DCEs, even though they are rarely used, due to their high costs. Postal questionnaires are regularly used instead (Ryan and Gerard, 2003).

was composed of expert medical practitioners, and the second included young undergraduate students of social science. The following attributes were considered: time interval between tests; probability of a false-positive result; probability of dying from cervical cancer; waiting time for test results; and cost of the test. The preference patterns of the two groups were not significantly different. Neuman and Neuman (2007) compared preferences for maternity-ward care between a group of women who gave birth, and a group of medical care-givers who treated them. The same attributes used in the present study were also used there. Significant differences between the two preference patterns were found, leading to the conclusion that care-givers are not perfect agents of the patients.

We also followed the suggestions mentioned in the DCE literature, that attributes and levels should be realistic, sensible to respondents, and capable of being traded off.

The following attributes (and levels) were identified: (a) number of beds in hospital room (three beds; two beds; or a private room), (b) attitude of staff toward the patient (reasonable; very good), (c) medical staff's professionalism (good; very good), (d) information transfer from staff to patient (basic; extensive), and (e) travel time from residence to hospital (45; 30; or 15 minutes).

Table 1 presents the attributes, their levels and coding, the attributes of the constant hospital A, the attributes of the various alternatives of hospital B, and the levels of the difference (B-A) for each of the alternatives.

Table 1 -- about here

The levels of the first attribute - number of beds in hospital room - relate to the current facilities in most Israeli maternity-wards, where a standard room has two or three hospitalization beds. There are only a few private rooms, and some hospitals have also rooms with more than three beds.

The three qualitative attributes – attitude of staff, professionalism of staff, and transfer of information – have two similar levels each. The levels are similar but not identical – the gap between 'reasonable' and 'very good' is larger than between 'good' and 'very good'. This is because hospitals are believed to be more diverse in terms of attitude of staff, than in terms of professionalism. Hospitals are also believed to be diverse in terms of information transfer, and therefore, the two assigned levels are 'basic' and 'extensive'. The pilot survey and interviews indicated that uniformity simplifies the task of choosing between scenarios, and that

respondents are fully aware of the gap between the two levels assigned to each of the attributes.

Travel time received the levels of 15, 30 and 45 minutes to reflect the fact that the actual travel time is relatively short, due to the central location of a number of hospitals (the average *actual* travel time of the respondents from their residence to the maternity-ward was 19 minutes, with minor differences between the three hospitals: 23, 20 and 16 minutes to each of the hospitals, respectively). A gap of 15 minutes between two successive levels seems, therefore, reasonable.

A full factorial design, using all of the possible attribute combinations, gives rise to 72 scenarios ($2^3 * 3^2 = 72$; 2 attributes have 3 possible levels each, and each of the other 3 attributes has 2 alternative levels). In order to reduce the number of scenarios to a manageable size, the SPSS Orthoplan procedure was used to provide a fractional factorial orthogonal design¹¹. The procedure's application gave rise to 16 different scenarios, each representing a hypothetical maternity-ward. If all 16 options were to be compared to each-other, a large number of possible discrete choices would have emerged. To overcome this difficulty, one scenario was randomly chosen to be constant throughout the questionnaire (scenario A), and each of the remaining 15 scenarios was compared to it – resulting in 15 pair-wise combinations. Four ‘dominant options’ (one alternative had superior or identical levels for all attributes) were detected among the 15 paired combinations. Three were excluded and one pair was used to test for ‘internal consistency’¹². Realizing that it is difficult for women who had recently undergone a delivery to cope with 12 complex pair-wise choices, the 12 paired combinations were further split into two subsets, each with six or seven choices (the ‘dominant option’ was included in each subset). The resulting questionnaire was distributed randomly among the women interviewed in maternity-wards. The group of pre-natal class respondents filled out the full-size questionnaire, with 12 paired scenarios.

Exhibit 1 presents two examples of the pair-wise combinations presented to the respondents. Some of the attributes of maternity-ward A have higher levels, while the others are inferior (or equal) to those in maternity-ward B. The respondent, therefore, has to consider ‘gains’ versus ‘losses’ and estimate trade-offs between the attributes when making her complex ‘multi-dimensional’ choices. The respondent is also requested to assume that all other, not mentioned, attributes are identical in both of the paired scenarios; in particular, that the

¹¹ There are two other alternative designs: the cyclical and the D-optimal designs. For a review see Carlsson and Martinsson (2003). They also show that the three designs produce unbiased estimations.

¹² A few women, who failed the test by preferring the inferior alternative, were excluded from the sample.

clinical conditions of the mother and the baby and the availability of pain-relief means are the same¹³. This type of choice simulates the real-life choice of a hospital.

Exhibit 1 -- about here

Information was also collected regarding the socio-economic background characteristics of the respondents: age, education, personal income, household income, ethnic origin, religious affiliation and duration of residence in Israel¹⁴.

4 The Econometric Model

Assuming a linear utility function, the marginal change in utility when moving from A to B is given by:

$$(1) \quad \Delta U_{A \rightarrow B} = \sum_{i=1}^n \beta_i X_i + u_i + \varepsilon ;$$

The observed value of the dependent variable of the estimated preference equation (ΔU) is dichotomous and takes the value of 1, if maternity-ward B is chosen; and the value of 0, if maternity-ward A is preferred.

The independent variables are the X_i s, where X_i is the *difference* in the level of attribute i between B and A. They express changes from the reference level of the constant scenario and are outlined in Table 1. Each of the two three-level quantitative attributes was defined using two dummy variables (see note to table 1).

β_i are the parameters of the model, that represent *marginal utility scores* (relative importance) of the attributes. The ratio of any two coefficients is an estimate of the marginal rate of substitution (MRS) between the respective attributes; u_i is the error term that represents differences between the various choices of the same respondent (each respondent provides 6-8 discrete choice observations); and ε is the error term representing differences between

¹³ This is a realistic assumption – all maternity wards in Israel have excellent clinical standards and all methods of pain relief, including epidural anesthesia, are available. It follows that the two important attributes of health outcome of the mother and baby, and availability of methods of pain relief have not been included in the questionnaire attributes.

¹⁴ The questionnaire also included questions on the actual levels of the quantitative variables: actual ‘travel time’ to the hospital, and the ‘number of beds’ in the room in which the respondent was currently hospitalized.

respondents. To account for the fact that each respondent makes several choices, a Random-Effects Probit was used for estimation.

The data, compiled from the completed questionnaires of the three groups of women, were used to estimate three sets of regressions for the three groups of respondents. Two regression models were estimated for each group: main-effects regressions that include only the five main-effects (attributes)¹⁵ ; and interactive regressions, which also include interactions of main-effects with socio-economic background variables (education, age and household income). The latter were added, to test for differences in preferences that stem from the different backgrounds of the respondents, and to arrive at net valuations of the examined attributes. Moreover, the socio-economic variables also represent alternative costs (e.g. education and age are proxies of human capital, and hence of the cost of time) and incomes. Their inclusion controls for cost and income differences, which could have biased the estimates of main-effects.

5 Results

5.1 The sample

146 women, who were expecting their first child, were interviewed during pre-natal classes conducted in the three public hospitals included in the experiment: Sheba (in Ramat-Gan – 90 women), Rabin (in Petach-Tikva – 21 women) and Meir (in Kfar-Saba – 44 women). 323 women who recently gave birth were interviewed in maternity-wards in the same three hospitals: 97, 90 and 136 women in each of the hospitals, respectively. The sample of 323 women has been split into two sub-samples: 97 women after their first delivery and 226 women after at least two deliveries. The overall response rate was around 80% in pre-natal classes and 50% in maternity-wards. Respondents in pre-natal classes, who filled out the full-size questionnaire with 12 comparisons, provided a total of 1743 observations. Women after delivery, who filled out the half-size questionnaires, provided 633 observations of women who had their first child and 1466 observations of women who experienced more than one delivery.

Women in pre-natal classes were, on average, younger than women in maternity-wards. The averages were 29 years (range of 19-40) and 31 years (range of 18-47), respectively. Four percent of the women who gave birth were older than 40. Over one quarter (28%) of the women who had delivered had undergone high-risk pregnancies. The socio-economic

¹⁵ Interaction effects between any two main-effects are assumed to be zero, due the orthogonality of the design.

characteristics of the samples are representative of the general Israeli population in the relevant age group.

5.2 Main-effects preference structures

Main-effects preference structures for the three groups are presented in Table 2 (columns (1), (2) and (3), respectively). All five attributes (main-effects) are defined as dummy variables: Each of the two-level attributes – ‘attitude of staff towards patients’, ‘professionalism of staff’ and ‘information transferred from staff to patients’ - is represented by one dummy variable that equals one, for the higher level of the attribute. Each of the three-level attributes- ‘number of beds’ and ‘travel time’ - is represented by two dummy variables. Dummy variables are used also for these quantitative variables to allow non-monotonic impacts as we move from one level to the next. To test for the significance of the differences between coefficients of patients with different levels of experience, a joint regression of the two groups under consideration was employed, with interaction terms of each of the main-effects with a dummy variable that equals 1 if the respondent belongs to one group, and 0 if she belongs to the other. The coefficient of the interaction term relates to the difference between respective coefficients, and the Z-statistics of the interaction term was used to test the difference's significance. They are presented in the fourth and fifth columns of Table 2.

Table 2 -- about here

An examination of preference patterns of women with no experience (regression 1); women with the experience of one delivery (regression 2); and women with accumulated experience of more than one delivery (regression 3); shows that women with no experience have different preferences compared to women who experienced at least one delivery. However, the *number* of deliveries (intensity of experience) does not have a significant effect on preferences.

A comparison of regressions (2) and (3) indicates that in the valuation of all attributes, women with more than one delivery are not significantly different from women who experienced only one delivery. This is evident from the last column in Table 2, which looks at differences between the respective coefficients of the various attributes, and they are all insignificant (at the 0.05 significance level).

Within each of the two groups, ‘professionalism of staff’ ranks first, followed by ‘attitude of staff’, ‘information transferred from staff to patients’, ‘travel time’ and ‘number of beds’. The last ranking attribute is not a significant one – two beds in a room and even a private room are

not significantly preferred over a three-bed room. As well, one may notice that the women in each of the two sub-samples are indifferent when choosing between travel time of 30 minutes and of 15 minutes (i.e., 15 minute or 30 minutes less than the reference group, of 45 minutes, are equally valued).

It is not surprising that ‘professionalism of staff’ is the most important trait of a surgical procedure, which affects both the mother and the baby. The most unexpected finding is that the physical facilities of hospitalization, such as ‘number of beds in hospital room’, do not matter at all – a private room is not more valued than sharing a room with two other women. It is also somewhat surprising to find that the relative importance of ‘attitude of staff’ is close to that of ‘professionalism’ (coefficients of 1.5659 and 1.7277, respectively, in the sample of women after one delivery; respective coefficients of 1.4156 and 1.8595 in the sample of women after more than one delivery). Moreover, ‘attitude of staff’ is valued much more than ‘information transferred from staff to patients’, which includes all possible types of information: about the delivery, the baby, breastfeeding, etc. Another somewhat unexpected finding is the one that women are indifferent between travel times reduced by 30 or by 15 minutes¹⁶.

While women with any level of experience have similar preference patterns, they differ significantly from women with no experience at all – those expecting their first child. A comparison of regressions (1) and (2) shows that the ranking of the two most important attributes is similar: ‘professionalism of staff’ ranks highest (coefficients of 1.8355 and 1.7277, in regressions 1 and 2, respectively) and second comes ‘attitude of staff’ (coefficients of 1.2977 and 1.5659, respectively). The relative importance of ‘professionalism’ is similar for women with no experience and for those who recently gave birth. However ‘attitude’ is less valued by the former (the difference is significant at 9.2%). The most outstanding result relates to the importance of a private room: while women who have recently experienced a delivery do not value it at all, it is highly and significantly valued by women in pre-natal classes (a coefficient of 0.8142, $Z = 9.34$). ‘Information’ is significantly less important for in-experienced women (a difference of 0.2852, significant at 5.6%). ‘Travel time’ has similar valuations in the two groups, with the similar indifference between 30 and 15 minutes. Travel time from residence to hospital is significantly valued, but less than all of the other attributes

¹⁶ A possible explanation for this finding could be that time might be perceived as a crucial factor for women who are in an advanced stage of labor. A 45 minutes travel time (the reference group) could endanger her if she will not arrive to the hospital on time. A decrease in travel time to 15 minutes and even to 30 minutes is, therefore, significantly valued. However, the 15 minutes difference between 30 and 15 minutes was not considered, by women in our samples, to be significantly important.

(in the sample of pre-natal women) and less than most attributes (except ‘number of beds in room of hospital’, in the sample of women who gave birth). As well, indifference is evidenced in the valuation of travel times shorter by 30 minutes or by 15 minutes (compared to the 45 minutes reference group). While time is an important factor in decision making, it is not surprising that in the present health-care event it plays quite a minor role – there is only one round-trip drive between residence and hospital. Women would not want to travel 45 minutes (that might also be dangerous if they are in advanced stages of labor), but are indifferent as to traveling 30 or 15 minutes.

To conclude: women who are expecting their first delivery have preference patterns that are significantly different from preferences of women who have already experienced a delivery: only ‘professionalism of staff’ and ‘travel time’ are similarly valued by the two groups. A private room is more highly valued by in-experienced women, while ‘attitude’ and ‘information’ have lower utilities for this group. Regarding women after one and after more than one deliveries, as both groups of women were found to exhibit similar preference patterns, it follows that the amount (intensity) of experience does not affect preferences. It is probably only the fresh experience that affects utilities (preferences).

5.3 Interactions with socio-economic background variables

The regressions presented in Table 2 are simple main-effects regressions. The coefficients are weighted averages over all respondents in the respective group, and give an overall picture of preferences. To control for differences in the socio-economic make-up of the various groups¹⁷ and to test for differences between preference patterns of socio-economic sub-groups, a set of interaction variables was added to the list of main-effects independent variables. These interaction variables relate socio-economic background variables with each of the main-effects. The two sub-samples of women in maternity wards that have similar preference patterns as well as similar socio-economic characteristics, have been merged into one sample¹⁸. Table 3 presents results of regressions that include interactions that were significant in at least one group of women. In order to facilitate comparison with the main-effects regressions, they are also presented in Table 3.

The inclusion of the interaction terms also results in a finer analysis and a more sophisticated comparison between preference patterns of in-experienced versus experienced women. It adds

¹⁷ Women in pre-natal classes were a bit younger and more educated.

¹⁸ Hospitalization facilities (in labor rooms and in maternity-wards) and duration of hospitalization after a delivery are also identical for all deliveries (first or above first).

to the information about how experience influences main-effects, additional information on the probable differential effects within various socio-economic sub-groups.

It appears that religious affiliation, ethnic origin and immigration status (less than five years in the country) do not affect preferences (interaction terms with those variables were therefore omitted from the regressions). The three socio-economic variables that evidenced significant interactions with hospital attributes were: education (defined using a dummy variable: academic=1 versus non-academic=0); age (defined by a dummy variable high-age=1 if age \geq 35); and household income (a dummy variable high-income=1 if income is above average)¹⁹. Age and education are also proxies of the alternative cost of time (older and more-educated individuals have higher alternative time-costs due to augmented human capital) and might, therefore, affect preferences for travel time via a substitution effect. Household income could affect preferences via an income effect.

Table 3 -- about here

Regressions (1) and (3) repeat the main-effects preference structures of in-experienced and experienced women, respectively. In regressions (2) and (4) interactive terms of individual socio-economic characteristics and main-effects were added. Interactions that were insignificant in both equations have been omitted.

An examination and comparison of the results indicate the following:

(i) A *private room* is significantly valued by all the women in the pre-natal classes. There are no differences between either the academic versus non-academic (interaction term of ‘academic*private room’ is insignificant within this group: $Z=0.29$) nor between high-income versus low-income groups (Z of interaction term is 1.50). On the other hand, within the sample of women who had recently given birth (regression 4), those who are less-educated and also have a low household income changed their preferences quite dramatically. The importance of a ‘private room’, previously ranked third, now becomes insignificant; meaning that low-educated, low-income women in maternity-wards do not value a private room at all (coefficient is even negative, has the size of -0.1843, but insignificant with $Z=1.50$). Academic women have a significant coefficient of 0.3015 ($Z=2.01$) and women who enjoy a high household income have a significant coefficient of 0.4080 ($Z=2.58$). It follows that

¹⁹ Each of these variables has a set of values. We experimented with various specifications. The use of the dummy variables defined above seemed most reasonable. Personal income was not included due to the large number of missing values. It was also highly correlated with education.

women who are either highly educated or have a high household income are less affected by experience, and academic women who also enjoy a high household income undergo only marginal changes in their preferences for a 'private room' (the sum of the relevant interaction coefficients is $0.4080+0.3015=0.7095$, compared to a coefficient of 0.8141 before experiencing a delivery). To conclude: experience with a delivery changes significantly, and quite dramatically, the valuation of a private room among women from a lower socio-economic status. Women who belong to a higher socio-economic strata (are more educated and enjoy a higher income), are less affected by experience. The effect of experience becomes insignificant for academic women with above average household income.

(ii) Regressions (1) and (3) demonstrate that *attitude of staff* is valued less by in-experienced patients. A finer examination, based on regression (2) and (4), reveals that this is true only for low-income women. High-income pre-natal women have an extra valuation by a coefficient of 0.3806 ($Z=2.55$). It appears that the valuation of the pre-natal women with high-income is similar to that of the experienced women ($1.1708+0.3806=1.5514$, and 1.4567, respectively). In this case too it was found that it is the 'weaker' women (less educated and with lower income) who are those to exhibit a significant change in preferences due to experience.

(iii) Preferences for *Professionalism of staff* do not change with accumulated experience. The interactive models demonstrate that it is more valued (both before and after giving birth) by more educated women and by older women ($\text{age} \geq 35$). The much higher and very significant interaction coefficients of ' $\text{age} \geq 35$ '*'*professionalism*' are most probably related to the high-risk pregnancies of older women, who therefore value more a highly professional staff.

(iv) Regressions (1) and (3) indicate that women who had recently given birth value the *information transferred from staff to patients* more than pre-natal women. A closer inspection of regressions (2) and (4) reveals that it is the low-income women who have changed their preferences considerably (coefficients of 0.5760 and 0.7550, before and after giving birth, respectively). While the high-income respondents also exhibit a change in preferences, it is relatively smaller (coefficients of $0.5760+0.3774=0.9534$ and $0.7550+0.3309=1.0859$, before and after giving birth, respectively). Both before and after giving birth, high-income women seem to value information more highly compared to their low-income counterparts. The excess-valuation does not change with experience (similar coefficients of the interaction terms of about 0.3).

(v) The preference for *travel time* does not change with experience and is identical in all socio-economic sub-groups (in both groups of women, interaction terms of travel time, with all socio-economic variables, were insignificant). This finding seems to be at odds with the

economic theory that suggests that the cost of time is higher for women with more human capital (more-educated and older women). We would have expected those women to have a higher valuation of time. The regression results can be explained by the fact that traveling to the maternity-ward is a one-time episode. The levels assigned to the attribute of travel time are 30 and 15 minutes (compared to the reference value of 45). These are quite short time distances that reflect the fact that hospitals in Israel are located all over the country within short travel distances (the average real travel time of the interviewed women was about 20 minutes). In a parallel study on preferences of women diagnosed with breast cancer, who travel extensively for numerous chemotherapy/radiation treatments, it was found that indeed, women who are more educated value travel time significantly more than less-educated women (Neuman, 2007).

To conclude: experiencing a delivery led to a change in most preferences, mainly of the less-educated and low-income women.

6 Conclusions and Discussion

In this study, DCEs were used to estimate preference structures for attributes of maternity-ward services among three groups of women, in order to detect the effect of experience on preference patterns. A comparison of preferences of women with no experience (women expecting their first child), one experience episode (women who had experienced their first delivery), and more than one experience event (women who had more than one delivery) leads to the following main conclusions: (a) it appears that *experience changes the preference pattern*. This result is in line with the findings reported by Ryan and Ubach (2003); (b) the *amount (intensity) of experience seems to be irrelevant*. The fresh, real-life experience affects preferences, but it appears that repetitive realistic incidents do not have an additional accumulated effect; and (c) *socio-economic background variables seem to matter*. Less-educated women with a lower household income seem to be more affected by experience, when compared to their highly-educated and high-income counterparts²⁰.

Why does an experience with the health-care event lead to a change in the preferences for its attributes? In fact, we do not know, and more investigation and testing are needed, in order to reveal what are the factors that drive the change in preferences (and in turn lead to a change in

²⁰ This finding seems to be at odds with results of studies that compared valuations of health status among different rater groups: They suggested that the different valuations did not stem from different demographic characteristics of respondents, such as age, sex or socio-economic status (Rosser and kind, 1978; Dolan, 1996). However, these studies referred to the overall one-dimensional valuation of the state of health and not to the more detailed structure of preferences that is examined in this study.

decision making). Hypotheses regarding this issue might differ for economists and behavioral scientists. Economists might argue that it is the quantity of information gathered by the individual that leads to the change. However, it should be noted that the experience/information is related to the health event, and not necessarily to the attributes under consideration. For instance, the significant drop in the valuation of a private room for women who had given birth, is not a response to the experience with a private room during hospitalization (most hospitals in Israel do not have private rooms at all). It is the experience of having a delivery in a maternity-ward (and not information about how it feels to be in a private room) that led to the change in the preference for this attribute, as well as for others. On the other hand, behavioral scientists might claim that new preferences had been constructed as a result of the maternity-ward experience of having a delivery.

To resolve the differences between economists and behavioral scientists, the distinction between *predicted utilities* and *experienced utilities* needs to be mentioned. If there is no past experience and it is a first time event, *predicted utilities* are affecting preferences (and used for decision making). These refer to *beliefs* about the utilities of the attributes (outcomes). After experiencing the event, the expected utilities are updated, and a new set of utilities replaces the old set. These are the experienced utilities. Using the terminology of Kahneman et al. (1997)²¹, *experienced utility* of an event (attribute) is the measure of the hedonic utility of that event (attribute), i.e., the total pleasure (or displeasure) associated with it²². In contrast to pregnant women, whose preferences are based on expected utilities; women who have experienced a delivery, exhibit a preference pattern that is based on the new set of updated and newly constructed experienced utilities, which seem to differ from the expected ones.

So, it seems that the difference between neoclassical economists and behavioral scientists, with regard to the reason for why preferences change with experience, is a rather semantic one – while the former argue that preferences are stable but are not revealed unless the individual gets better information via experience; the latter claim that preferences are constructed, and experience helps in the construction and exposition of the true preferences. In any case, the matter of the fact is that stated preferences do change with experience.

²¹ In the paper they survey, integrate and extend the literature that explores the notion of utility, its history and its various variants. Formal analysis and proofs are also presented.

²² The basic building block of experienced utility is *instant utility*: “A measure of hedonic and affective experience which can be derived from immediate reports of subjective experience or from physiological indices” (Kahneman et al., 1997, Page 376). This notion of utility dates back to Bentham (1789) (who referred to utility as ‘pleasure’ and ‘pain’) and to the economic writings of the 19th Century.

Will the modified preferences, shaped by recent experience, last for long or will a *reversal and convergence to the original pattern of the inexperienced patient take place*? In other words: does experience create a short term transitory change or a permanent one? Our restricted samples cannot be used to answer this important question and it should be explored in future studies.

Socio-economic background variables matter. Adding interaction terms of socio-economic variables with the main-effects, allows controlling for socio-economic differences (between women in pre-natal classes and in maternity wards, mainly in terms of age), and allows distinguishing between preference patterns of various sub-groups.

Empirical results have *policy implications*, in terms of marketing and attracting potential patients, and also in suggesting adjustments and new treatment policies. However, if different patients (e.g. women who are pregnant with their first child and women who already have children) have different preferences – whose preferences should be accommodated? Obviously, there is no clear answer to this question. However, this information should be considered by hospital policy makers. While the policy implications are beyond its scope.

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Exhibit 1: Discrete Choice Questions

Attributes of service (during labor, intra-partum care and natal care) of two maternity-wards, A and B, are described below. The two wards differ with respect to a number of attributes.

- Assume that all other attributes (on top of the 5 listed ones) are identical in the two wards.
- In each question, maternity-ward A is the same and ward B is different.
- Which maternity-ward would you prefer? (Please tick box below).
- Please answer all questions.

Question 1

Attributes	Maternity-ward A (constant)	Maternity-ward B
Number of beds in room	3 beds	private room (1 bed)
Attitude of staff towards patients	reasonable	reasonable
Professionalism of staff	very good	good
Information transfer	extensive	extensive
Travel time to hospital	45 minutes	30 minutes

Prefer Ward A

Prefer Ward B

Question 2

Attributes	Maternity-ward A (constant)	Maternity-ward B
Number of beds in room	3 beds	2 beds
Attitude of staff towards patients	reasonable	reasonable
Professionalism of staff	very good	very good
Information transfer	extensive	basic
Travel time to hospital	45 minutes	15 minutes

Prefer Ward A

Prefer Ward B

Table 1: Attributes, Levels and Coding

Ward Attributes (independent variables)	Ward A (constant)	Coding	Ward B (all alternatives)	Coding	Difference (B-A) (value of independent variable)
Number of beds in room	3 beds	2	3 beds	3	0
			2 beds	2	-1
			private room	1	-2
Attitude of staff towards patients	reasonable	0	reasonable	0	0
			very good	1	+1
Professionalism of staff	very good	0	good	0	-1
			very good	1	0
Information transferred from staff to patients	extensive	1	basic	0	- 1
			extensive	1	0
Travel time to hospital	45 minutes	1	45 minutes	2	0
			30 minutes	1	-1
			15 minutes	0	-2

Note: For regression analysis, each of the independent variables that relate to the attributes of ‘attitude’, ‘professionalism’ and ‘information’ has been defined by one dummy variable that takes the value of 1 for the better level of the difference, and 0 for the lower one. The 'number of beds' was defined by two dummy variables: '2 beds versus 3 beds' and 'private room versus 3 beds'. 'Travel time to hospital' included the two dummy variables of: '30 minutes versus 45 minutes' and '15 minutes versus 45 minutes'.

**Table 2: Main-Effects Regressions – Probit Random-Effects
by Different Levels of Experience: Pre-natal Women, Women who Gave Birth for the
First Time, and Women who Gave Birth for the Second Time and Over,
Israel, 2003**

Independent variables	(1) Pre-natal classes	(2) First birth	(3) Second birth or over	Differences between	
				Pre-natal classes and first birth	first- and second birth or over
Number of beds (reference: 3 beds)					
Two beds	0.0869 (1.04)	-0.1102 (0.76)	0.1200 (1.28)	0.1988 (1.18)	-0.2351 (1.34)
Private room	0.8142 (9.34)	0.0419 (0.30)	0.1346 (1.40)	0.7724 (4.62)	-0.0958 (0.55)
Attitude	1.2977 (15.48)	1.5659 (9.94)	1.4156 (13.91)	-0.2799 (1.69)	0.2000 (1.15)
Professionalism of staff	1.8355 (19.56)	1.7277 (10.97)	1.8595 (17.07)	0.0926 (0.57)	-0.0688 (0.41)
Information	0.7080 (9.11)	0.9846 (7.25)	0.7801 (9.07)	-0.2852 (1.91)	0.2389 (1.55)
Time of travel (reference: 45 minutes)					
30 minutes	0.4927 (5.67)	0.3723 (2.42)	0.5256 (5.19)	0.1182 (0.67)	-0.1430 (0.77)
15 minutes	0.6058 (5.64)	0.4666 (2.65)	0.5346 (4.57)	0.1353 (0.66)	-0.0528 (0.25)
Number of observations	1743	633	1466	2736	2099
Number of women	146	97	226	243	323
Log Likelihood	-781.35	-269.89	-645.78	-1051.25	-915.88
ρ	0.4216	0.4063	0.4639	0.4177	0.4478
χ^2 for Likelihood ratio test of $\rho=0$ (significance level)	195.76 (0.00)	40.14 (0.00)	132.12 (0.00)	235.87 (0.00)	71.83 (0.00)
Notes: The coefficients of the following pairs of main-effects are not significantly different (at a significance level of 0.05)	Private room and Information; Travel time of 15 and of 30 minutes; Information and Travel time of 15 minutes	Attitude and Professionalism; Travel time of 15 and of 30 minutes	Travel time of 15 and of 30 minutes	-	-

- Notes:**
- Stata 8 was used for estimation (Random-Effects Probit, with no constant).
 - Numbers in parentheses are absolute Z -statistics.
 - Hospital A (the constant set) has the following attributes: Number of beds – 3; Attitude – reasonable; Professionalism of staff - very good; Information – extensive; Travel time – 45 minutes
 - Women in prenatal classes filled out a questionnaire with all 12 pair-wise choices. Women in maternity wards had questionnaires with either 6 or 7 choices (the dominant option pair was included in both types).
 - The regressions of each of the three groups were estimated separately. The significance of the differences between the main-effects of any two groups, is derived from a pooled regression of the two groups, with interactions to check for differences and their significance. The reported difference is the coefficient of interaction term. It is not identical (but similar) to the difference between the two separate coefficients, due to the non-linearity of Random-Effects Probit regression.
 - The coefficients in the column that refers to pre-natal classes and first birth are (approximately) the difference between coefficients of the first column (Pre-natal classes) and the second (1st birth).

Similarly, the coefficients in the column that refers to 1st and 2nd birth or over are (approximately) the difference between the coefficients of the second column and the third.

Table 3: Interactive Regressions

**Random-Effects Probit Main-Effects Regressions with Socio-Economic Interactions,
Women in Pre-natal Classes and Women who Gave Birth,
Israel, 2003**

Independent variables	(1) Pre-natal classes: Main effects	(2) Pre-natal classes: Interacted model	(3) Maternity wards: Main-effects	(4) Maternity wards: Interacted model
Number of beds (reference: three beds)				
Two beds	0.0869 (1.04)	0.0885 (1.05)	0.0523 (0.67)	0.0581 (0.73)
Private room	0.8142 (9.34)	0.6867 (4.17)	0.1097 (1.38)	-0.1843 (1.50)
Attitude of staff	1.2977 (15.48)	1.1708 (11.75)	1.4567 (17.11)	1.4556 (14.86)
Professionalism of staff	1.8355 (19.56)	1.5989 (10.18)	1.8154 (20.34)	1.5736 (13.79)
Information	0.7080 (9.11)	0.5760 (6.06)	0.8402 (11.61)	0.7550 (8.83)
Time of travel (reference: 45 minutes)				
30 minutes	0.4927 (5.67)	0.4998 (5.71)	0.4794 (5.69)	0.4699 (5.49)
15 minutes	0.6058 (5.64)	0.6050 (5.59)	0.5094 (5.25)	0.5083 (5.16)
Interaction terms:				
High income of household*Private room	-	0.2515 (1.50)	-	0.4080 (2.58)
Academic*Private room	-	0.0558 (0.29)	-	0.3015 (2.01)
High income of household*Attitude	-	0.3806 (2.55)	-	0.1464 (1.04)
Academic*Professionalism	-	0.2795 (1.67)	-	0.3364 (2.59)
High age (>=35)* Professionalism	-	0.4717 (2.01)	-	0.3857 (2.62)
High income of household*Information	-	0.3774 (2.58)	-	0.3309 (2.37)
Number of Observations	1743	1743	2099	2099
Number of Women	146	146	323	323
Log Likelihood	-781.35	-771.99	-919.81	-905.06
ρ	0.4216	0.5192	0.4461	0.4591
χ^2 for Likelihood ratio test of $\rho=0$ (significance level)	195.76 (0.00)	198.81 (0.00)	172.02 (0.00)	175.91 (0.00)

Notes: - Stata 8 was used for estimation (Random-Effects Probit, with no constant).
- Numbers in parentheses are absolute Z -statistics
- Hospital A (the constant set) has the following attributes: Number of beds – 3; Attitude – reasonable;
Professionalism of staff - very good; Information – extensive; Travel time – 45 minutes