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How Do GPs Choose their Practice? An Empirical Study of the Strength of GP Preferences for Job Characteristics

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Summary

The recruitment and retention of GPs, especially in under-served areas, is an important policy objective of the Government. If more GPs are to be recruited to inner city deprived areas then we need to understand how GPs take account of various factors when choosing their practice. While many studies have identified which job and practice characteristics are important to GPs little is known about strengths of preference. The purpose of this study was to estimate the strength of preferences of GPs in London for practice and job characteristics. We used a multi-stage research strategy to identify the factors of importance to GPs, their levels and the questionnaire. A list of important practice/job characteristics were derived from three sources: literature review; qualitative telephone interviews with 27 young GPs; and two focus groups of young GPs in London. The focus groups were also used to refine the list of characteristics. The factors identified were: opportunities to develop outside interests; income; list size per GP; size and extent of primary health care team; responsibility for financial management within the practice; out of hours work; daytime working hours; and level of deprivation in the practice population. The questionnaire was posted to a sample of 293 GPs joining a practice as a principal between April 1997 and March 1998 in London, Essex & Hertfordshire.

We present results for a range of methods of analysing the data. We show that a multi-level random-effects estimator with responses clustered by GP takes into account a general tendency for some respondents to choose the left-sided or the right-sided option and conclude that this can only be interpreted as flaws in questionnaire design. We present alternative models which allow for differences in the marginal utility of income or for strengths of preference over the options. Our results indicate that GPs are most averse to working in areas of high deprivation and are most attracted to positions which offer opportunities to develop specialist interests and do not involve their direct involvement in financial management. Our estimates indicate a marginal wage rate of £16 per hour and marginal capitation payments of only £2.50 per patient. Our results may be used to inform the recruitment or re-distribution of GPs *within* London. This information could be used to align incentives within recruitment and retention strategies at practice and health authority level, to the preferences of job-seeking GPs within the labour market.

Introduction

An important policy objective of the Government is to reduce health inequalities in the United Kingdom[1]. A partial solution would be to allocate scarce health care 'resources' such as General Practitioners (GPs) more equitably, according to health need. In England and Wales GPs are not concentrated in areas with the highest levels of morbidity[2]. To address this inequity health care policy must provide the necessary incentives to either attract GPs to or constrain GPs from practising in some areas. For example, GPs may need financial compensation to work in deprived areas. Information is needed on strengths of preferences to determine the efficient level of compensation required.

Principal-agent theory provides a framework within which to analyse GP behaviour where there is asymmetric information. In the health care context the principal (Secretary of State for Health) hires the agent (GP) to maximise their utility. However, the agent may also act to maximise their utility and where this behaviour cannot be observed, market failure occurs. For the principal to design incentives and regulation that successfully influences the agent's behaviour in line with their objectives (societal in the case of health care), it is necessary to have information on the nature of the agent's utility function.

The issue of recruitment and retention of GPs in London has attracted a lot of policy interest in the form of several special initiatives to support GPs[3]. In particular salaried status has been used to employ additional GPs into practices to enable the incumbent GPs to undertake educational courses. Also salaried contracts have been used to attract GPs into under-served areas by offering protected time for research within academic departments of general practice.

The factors that explain national retention rates in England and Wales do not appear to be the same as those that explain occupational choices within London[4]. Taylor and colleagues used logistic regression to identify variables that were predictors of retention amongst young GPs. Female GPs, larger practices and health authorities outside London was associated with greater retention.

In this study we employ a discrete choice experiment to estimate the relative importance of practice and job characteristics to GPs in London in terms of the rate at which they trade-off characteristics in their choice of practice. Most studies which have used conjoint analysis have been within secondary care, although there is an increasing use of it in the primary care field[5,6]. Conjoint analysis has been used already to measure the strength of preferences for job characteristics of GPs across England and Scotland[7].

Theoretical and methodological background

There have been various attempts to model GP behaviour[8,9] to explain medical care decision-making. These models assume the usual arguments in the utility function such as income and workload. In this paper a model is developed to explain the occupational choices made by GPs.

In labour economics, revealed preference techniques have dominated research in this area and have been based on testing the theory of compensating wage differentials to estimate

monetary values for job characteristics[10]. This theory posits that workers, when faced with a choice between two firms A and B which are identical except that the working conditions under B are poorer, will choose B if a higher level of compensation is offered[11]. If this theory explains GP behaviour then GPs would be expected to accept poorer working conditions only if more income was offered.

Underlying these expectations it is assumed that GPs value the characteristics of their job as well as being a GP and providing medical care to improve patient health. It is further assumed that GPs aim to maximise their utility within constraints and that their utility function is a function of a set of job characteristics, such as income, hours of work (which determines the amount of leisure), and level of workload. The utility function specified in this paper is indirect in that the GP is limited in the number and type of alternative characteristics to choose between. Since GPs can only choose one practice and, therefore, one bundle of job characteristics at a time, the alternative characteristics are mutually exclusive. Hence discrete choice theory is used, which is similar to standard consumer theory but the alternatives are discrete and not continuous. The characteristics are also exogenous at the time the choice is made, although once the GP has joined the practice they have the ability to influence them i.e. they become endogenous.

GPs are assumed to have information about the characteristics of the practice and the job and are faced with a range of job offers. GPs only consider two job offers at any one time. This is arguably a more realistic theory of decision-making. The optimisation dilemma for the GP is to choose the practice that maximises their utility subject to the constraints on the alternative job characteristics. Since GP preferences are likely to vary according to socio-economic variables such as age, gender and ethnicity a vector of these factors is included in the indirect utility function. The specification of this utility function has been based on a previous approach developed by one of the authors (AS)[7]:

$$V_{in} = V(z_{in} \cdot S_n)$$

Where V_{in} is the indirect utility function associated with practice i faced by the nth GP, z_{in} is the bundle of job characteristics within the practice, and S_n are socio-economic factors.

Components of the utility function

The job characteristics assumed to be influential in the occupational choices of London GPs were identified from three sources:

a) The economic and non-economic literature;
b) Analysis of short in-depth telephone interviews with 27 GPs in London;
c) Two focus groups of GPs in London.

There were two criteria used to select job characteristics from these sources. Firstly, the weighting the attribute receives in the literature (i.e. the number of times it is mentioned as an important factor in reported surveys of GP opinion), in-depth interviews and the focus groups. Secondly, the amenability of the attribute to policy influence.

The general practice literature generated a list of important practice and job characteristics that fitted into broad areas such as personal, professional, practice and community[12,13,14,15,16,17]. The transcripts of interviews conducted with 27 GPs in London, as part of another study, were then used to expand the list. The focus groups were used to generate a list of characteristics to

see if the same factors arose, and to reduce the list by discussing inter-dependencies between these factors. The criteria for selecting characteristics from this final list were that they must be plausible, actionable, and substitutable. In other words, the scenarios must be realistic to GPs, the characteristics must be capable of being influenced by policy and being traded off against each other. The levels of each of the job characteristics were determined from the literature and the two focus groups of GPs as well. The aim was to make the levels plausible so that they represented realistic choices to GPs. As a result the following model was specified:

$z_i = z(Y_i, W_i, IS_i)$

$W_i = W(OOH_i, Hrs_i, List/GP_i, Fm_i, Deprn_i, PHCT_i)$
$IS_i = IS(Opp_i)$

where Y_i is the level of income offered by the practice. W_i is workload, which is a function of: whether the GP undertakes night and weekend work (OOH_i); the hours of work offered (Hrs_i); the list size per whole time equivalent GP ($List/GP_i$); whether the GP does financial management or not (Fm_i); the level of deprivation in the surrounding patient population ($Deprn_i$); the size and extent of the primary health care team ($PHCT_i$). ISi is intellectual satisfaction, which is a function of opportunities to develop outside interests (Opp_i), such as postgraduate education and clinical assistant work in a local trust.

Full model: $z_i = z(Y_i, OOH_i, Hrs_i, List/GP_i, Fm_i, Opp_i, Deprn_i, PHCT_i)$

It is expected that higher levels of income, opportunities to develop outside interests, no out of hours work and larger primary health care teams would have a positive effect on GP utility. Longer working hours during the day, larger list sizes, and more administration would have a negative impact on GP utility.

Design of the questionnaire
There are a number of questionnaire designs that could be used depending on the number of attributes, number of levels of each, sample size, and correlations between attributes. The questionnaire was designed in collaboration with a similar project carried out in Scotland[7]. Pair-wise choices were presented in such a way so that the characteristics varied independently of each other using a factorial experimental design. This makes it easier to isolate the effects of each characteristic level upon responses and avoids problems of multi-collinearity in estimating strengths of respondent preferences.

The total number of possible scenarios is derived from the number of levels to the power of the number of attributes. A full factorial design with eight attributes, four of which had three levels and four had two, would generate 1296 possible scenarios. As it is not possible to present this number of scenarios to the sample, a fractional factorial design was adopted with 27 scenarios generated using SPEED software. This provides the minimum number of scenarios while ensuring an orthogonal design. Four questionnaires were designed: two with seven pair-wise choices and two with six. Each scenario was compared with a 'control' practice scenario that was common to all four questionnaires. Respondents were asked to indicate whether they "definitely" or "slightly" preferred the control or the alternative practice. Four samples of GPs were randomly assigned to receive one of the four questionnaires. No GP was presented with the whole range of scenarios, thus reducing the possibility of non-response, and obtaining a full data set of preferences for the full range of attributes and levels.

Socio-economic data were collected on the respondent GPs, such as age, sex, income, qualification/education details, marital status (including whether they currently have children).

Sampling
Since the aim of this study was to elicit the strength of preferences for job characteristics of London GPs, the questionnaire was posted to 293 GPs in 20 health authorities in the London area. This sample of GPs was chosen because they were already working in London and the aim of the study was to examine choices between two practices within London and not choices between London and non-London practices. These GPs were chosen on the basis that they had recently joined a practice from outside the health authority area (i.e. not already on the HA list of unrestricted principals) during 1997/8. These GPs were best placed to complete the choice experiment since they had recently undergone a similar decision-making process.

Estimation

We assume that the utility function is independent in all eight attributes and linear in income, patients per GP and hours worked. The change in utility from the base practice (option A) to the alternative practice (option B) is therefore given by:

$$y^*_{ijn} = \beta_{0n} + \sum_{k=1}^{9} \beta_{kn}(X_{ki} - X_{kj}) + \varepsilon_{ijn}$$

And from the strength of preference data we observe:

$$\begin{aligned} y &= 0 \quad if \quad y^*_{ijn} \le y^1 \\ y &= 1 \quad if \quad y^1 < y^*_{ijn} \le y^2 \\ y &= 2 \quad if \quad y^2 < y^*_{ijn} \le y^3 \\ y &= 3 \quad if \quad y^3 < y^*_{ijn} \end{aligned}$$

We used an ordered logit model to estimate the population average values for β_{kn} and the cut-off values y^1 to y^3. Results are shown in Table 4 and discussed in the results section.

An alternative formulation, which was used in a similar study, is to try and take account of the multi-level nature of the data. To investigate this formulation we recode the response variable to make it binary:

$$\begin{aligned} y &= 0 \quad if \quad y^*_{ijn} \le 0 \\ y &= 1 \quad if \quad y^*_{ijn} > 0 \end{aligned}$$

and estimate the population average values for β_{kn} using a variety of binary logit estimators.

We first estimate the model using a simple logit function and compare our results with the ordered logit model. We pay particular attention to the estimated value for β_0 which gives us information on the relative probability that individuals will choose option B. Since individuals have been randomly assigned to choice sets and the only differences between options A and

B which we wish individuals to take into account have been fully described by the independent variables, we would expect this parameter to be not statistically significant from zero. Violation of this assumption might indicate that individuals are systematically more or less likely to chose option B which would raise doubts about the design of the questionnaire.

We next estimate a random-effects specification with responses clustered within respondents. The underlying model of responses is therefore:

$$y^*_{ijn} = \beta_0 + \sum_{k=1}^{9} \beta_{kn}(X_{ki} - X_{kj}) + u_n + v_{ijn}$$

In other words, the intercept term (that is, the propensity to choose option B over option A) varies across respondents ($\beta_0 + u_n$). As with the constant term in the single-level logit model, significant deviations between respondents in the propensity to choose option B over option A (or vice versa) offer little substantive interest but may suggest problems with the design of the questionnaire for some respondents.

An alternative method for dealing with differences between respondents in their relative probabilities of choosing option B over option A *regardless of the relative worth of option B,* is to use a fixed-effects estimator. This method controls for the individual's general propensity to choose B over A, when estimating the impact of the attributes. In other words, given that individual X has chosen option B five times out of seven, what is the relative probability that they will have chosen B in each particular choice set? This estimation method drops all individuals for whom there is no variation in responses, i.e. they have always chosen B or always chosen A. The results for this estimation procedure (which excludes fourteen "non-discerning respondents") are shown in the results section.

There are two broad ways in which variation in responses across respondents might be of substantive interest:

(a) some respondents systematically give responses closer to the population average;
(b) respondents will tend to respond similarly to choices involving the same changes in particular attributes.

Under scenario (a) it is the *absolute magnitude of the deviation from the population average* which tends to vary across respondents. This implies that some respondents are more representative than others. This involves fitting a specific error distribution for each individual. Instead, we concentrate on scenario (b) and estimate a random-effects logit model in which responses are clustered within income levels within respondents.

Ideally we may wish to impose further structure on the error terms so that the individual-specific errors when the individual is faced with an opportunity to increase their income are negatively correlated with the individual-specific errors when the individual is faced with a choice involving a loss of income. This would require fitting a random coefficient model involving changes in income. The random-effects model which we estimate does not impose this structure on the data but does allow the marginal utility of income to vary between respondents. All models are estimated using STATA Version 6.0.

Results

A response rate of 60 per cent was achieved (excluding those GPs who had moved), following one postal reminder. Table 1 shows GP, practice and job characteristics.

Internal consistency and acceptability of technique
To test whether the respondents made consistent choices their responses to questions, that included a dominant option, were analysed. There was one dominant choice in each questionnaire and Table 2 shows that there were very few inconsistent responses. Those GPs may of course have thought their responses were consistent if the hypothesis that (in three out of the four scenarios) respondents prefer more income rather than less, ceteris paribus, does not apply to them.

The respondents were also asked to indicate the degree of difficulty they had in making the choices. Respondents were given four responses: very difficult; difficult; easy; very easy. As Table 3 shows, the majority of respondents found making the choices easy, which gives some indication as to the acceptability of the discrete choice technique.

Regression results
The results from the five different methods of analysis described in the Estimation section are shown in Table 4. The top half of the table shows the regression coefficients, t-ratios and various diagnostic statistics. The results suggest that GPs prefer practices that: offer higher income; involve no out of hours work; present lower daytime hours; involve financial management carried out by someone else; offer opportunities to develop outside interests; are not located in a deprived area; and offer an extended primary health care team.

The logit regression model can also be used to examine the marginal rates of substitution, that is, the extent to which levels of one job characteristic are traded off against another. Since the model also includes an income variable, monetary valuations of the characteristics can be estimated using the marginal rates of their substitution with income in the underlying latent index. The lower portion of Table 4 shows point estimates of the monetary valuation of the job characteristics. This is the ratio of coefficients or parameters $(-\beta_2/\beta_k)$ in the model. A positive monetary valuation implies that the GPs would be willing to forego income (WTP) in order to have more of that particular job characteristic. Similarly, a negative valuation indicates how much the GP would be willing to accept (WTA) as compensation for more of that characteristic. This information gives an indication of the strength of preferences in monetary terms. There is broad agreement between the models in the relative ranking of the attributes although the point estimates of the marginal rates of substitution with income show some variation.

The first column of results presents the results from the ordered logit model which takes account of whether respondents said that they definitely preferred or slightly preferred the chosen option. All attributes have the expected effects on the probability of choosing the alternative option though change in list size and a low level of deprivation are not significant at the 5% level.

The second column of results shows the results for the single-level logit model. The main difference between the results is the significance of having an extended primary health care team. This suggests some loss of information in recoding the response variable into two

categories. In addition, the constant term is significantly different from zero at the 5% level ($p=0.026$) suggesting respondents were more likely to choose the alternative option *regardless of the change in the attributes.*

The third column shows the results for the random-effect logit model with responses clustered by GP. The estimate value for the intra-class correlation of errors is 0.33 which is significantly different from zero ($p=0.002$). This suggests that there are significant differences between individuals in their propensity to choose either the left-sided or right-sided option. The fixed-effects logit model results shown in column four take account of these differences between individuals. Responses from the 14 respondents who always chose option A or always chose option B are dropped from the model. These results are considerably different from those in the previous models. Although the coefficients have the same signs, the estimated effects of avoiding out-of-hours work and responsibility for financial management are not statistically significant. Conversely, changes in list size and the existence of an extended PHCT become significant. Moreover, the changes in the point estimates of the marginal rates of substitution with income are substantial.

The final set of results relate to a random-effects logit specification with clustering by GP and the change in income. The clustering is more significant than that in the model which does not allow for variations in the marginal utility of income. The coefficient on income increases in absolute magnitude compared to the previous random-effects model. This, along with the changes in the coefficients on the other attributes, produces different figures for the marginal rates of substitution.

Discussion

An important policy objective of the UK government is to improve the recruitment and retention of GPs especially in areas with the greatest health needs. Whilst there have been a number of studies that have identified factors that may be important to GPs in choosing their practice, none of these studies have established their relative importance. A discrete choice experiment was used to elicit the strength of London GP preferences for the characteristics of practices.

Conjoint analysis was used to elicit GP preferences as revealed preference methods are unsuitable where remuneration is regulated and wage differentials do not reflect workers marginal valuations of job characteristics, as is most likely the case in general practice. A discrete choice form of conjoint analysis was preferred since this more closely simulates the decision-making process under examination. The coefficients of the independent variables in the estimated regression model were of the expected signs.

However, our results indicate that there a range of possible methods for analysing these kinds of data and that the estimated strengths of preference can vary substantially between models. In particular, a random-effects specification with clustering by respondent offers little substantive interpretation. Moreover, it may be an insufficient adjustment for variations between respondents in their propensity to choose systematically either the left-sided or the right-sided options relative to the fixed-effects specification.

The ratio of coefficients (marginal rate of substitution) indicate the extent to which GPs traded characteristics off against each other and therefore their relative importance. The monetary

values of practice/job characteristics were estimated and it was found that the most important characteristic to GPs was level of deprivation in practice population, with GPs averse to working in highly deprived areas. GPs required between £4,200 and £5,700 to locate in such an area. The next most important characteristic was opportunities to develop outside interests. The results suggest that GPs might be willing to trade-off between £2,500 and £4,100 of income in order to have this practice attribute. However, GPs preferences might depend on whether they thought outside interests would be remunerated and the practice scenarios gave examples of paid and unpaid activities. This finding may support the rationale of recent recruitment and retention policies in London, which have focused on freeing up GP time to enable them to pursue outside activities[3].

Having someone else carry out the financial management of the practice and an extended PHCT were also valued highly. GPs would have to be compensated between £450 and £1,800 to work out of hours. Indeed, the government allocates similar annual amounts to GPs to fund out of hours, although this is used to reduce their night workload through the use of GP co-operatives or deputising services. The valuations of an additional patient taken on to a list or an extra hour worked are somewhat lower and higher, respectively, than capitation payments and the BMA's valuation of GP time. However, these are marginal valuations and are not estimates of the value of GP time already worked. It was not possible to investigate whether the choice of practice was dominated by one characteristic (lexicographic preferences) but if this is present then the monetary valuations could be overestimated.

This study provides further evidence about not only the types of factors that are important to GPs but also the relative strength of their preferences. The results of this study are externally valid to the wider population of London GPs to the extent that they are similar in their characteristics to the respondents in the study. The strength of preferences for practices were elicited using GPs who had already decided to work in London and therefore the results may only be used to inform policies to redistribute GPs *within* London. The results presented in this paper can be used to determine the likelihood of filling GP vacancies in practices and to design incentives to recruit GPs to under-served areas. Recruitment policies can focus on using their scarce resources to improve only those characteristics of practices that are more important to GPs and would increase the probability of recruitment. For example, if a practice is unable to offer a higher income, to offer no out of hours work, or recruit a practice manager, then they might be advised to offer opportunities to develop outside interests instead.

There may be significant variability between population sub-groups in their preferences for different attributes. Our data-set would allow us to explore this variability and preliminary results indicate that: male and older GPs were more averse to working in deprived areas; GPs with dependents were less likely to value opportunities to develop outside interests; and GPs who graduated from non-UK medical schools were less averse to working longer hours. Further work should also consider whether preferences are affected, or alternatively reflected, by the characteristics of individuals' current jobs. Preliminary results indicate that GPs already working in deprived areas are less averse to new positions involving high levels of deprivation and GPs already working long hours are more averse to increases in daytime working hours. This additional information could be used to align incentives within recruitment and retention strategies at practice and health authority level, to the preferences of sub-sets of job-seeking GPs within the labour market.

Table 1: Sample characteristics

Characteristic	Sample	Average/Percentage
Male	170	57%
Age (std dev.)	170	37 years (7)
Percentage with children	169	54%
Medical school location	169	
- London		49%
- Other UK		30%
- Other EU country		5%
- India/Pakistan/Sri Lanka		11%
- Other		5%
GP list size (std dev.)	156	1907 (472)
Typical working hours per week (std dev)	166	37 (11)
Out of hours work	169	78%
Scope to develop outside interests	167	80%
Level of deprivation of practice population	168	
- High		20%
- Medium		40%
- Low		40%
Who does financial management?	169	
- Practice manager		72%
- Respondent		5%
- Other GP in practice		44%
Primary Health Care Team in practice	169	
- Practice nurse		98%
- Nurse practitioner		23%
- Practice manager		94%
- Physiotherapist		37%
- Occupational therapist		4%
- Counsellor		72%
- Alternative practitioners		16%
- Social worker		12%
Income per year (std. dev.)	169	*£39,900 (£12,700)**
- <£20,000		5%
- £20,000 - £30,000		17%
- £30,000 - £40,000		32%
- £40,000 - £50,000		25%
- £50,000 - £60,000		17%
- £60,000 - £70,000		4%
- £70,000 - £80,000		1%
- > £80,000		1%

* Estimated using grouped data regression analysis of the banded income data.

Table 2: Internal consistency

Questionnaire Type (Question)	Dominant variables	No. of inconsistent responses
1 (Q6)	• Higher Income • Opportunities to develop outside interests • Extended PHCT • Fewer daytime hours • Low deprivation	0 (N = 33)
2 (Q5)	• No out of hours • Income • Extended PHCT • Low deprivation	1 (N = 40)
3 (Q5)	• Lower list size • Opportunities to develop outside interests • Fewer daytime hours • Low deprivation	3 (N = 45)
4 (Q6)	• No out of hours work • Lower list size • Someone else does financial management • Extended PHCT • Low deprivation	4 (N = 32)

Table 3: Acceptability of technique

Response	Percentage
Very easy	19
Easy	44
Mid choice	1
Difficult	30
Very difficult	5
Missing	2

Table 4: Regression results

Variable	Ordered logit	Logit	RE logit – clustering by GP	FE logit – clustering by GP	RE logit – clustering by GP and change in income
Observations	1091	1091	1091	1011	1091
Number of groups	-	-	170	156	464
No out-of-hours work	0.38 (2.92)	0.44 (2.51)	0.44 (2.36)	0.12 (0.60)	0.52 (2.52)
Income	0.00 (12.51)	0.00 (12.15)	0.00 (11.86)	0.00 (11.34)	0.00 (9.68)
List size	0.00 (-1.15)	0.00 (-1.22)	0.00 (-1.40)	0.00 (-2.82)	0.00 (-1.37)
No direct responsibility for financial management	0.72 (5.46)	0.71 (3.94)	0.72 (3.80)	0.33 (1.54)	0.82 (3.95)
Opportunities to develop specialist interests	0.78 (5.81)	1.05 (5.97)	1.10 (5.87)	0.68 (3.05)	1.26 (5.88)
Extended Primary Health Care Team	0.55 (4.27)	0.25 (1.40)	0.34 (1.75)	0.72 (3.06)	0.35 (1.67)
Hours worked	-0.16 (-12.25)	-0.20 (-9.33)	-0.21 (-9.38)	-0.21 (-9.38)	-0.23 (-8.78)
High deprivation	-0.92 (-6.04)	-1.20 (-5.85)	-1.32 (-6.04)	-1.51 (-6.52)	-1.43 (-5.62)
Low deprivation	-0.05 (-0.35)	-0.27 (-1.21)	-0.27 (-1.15)	-0.31 (-1.17)	-0.24 (-0.91)
Constant	-	0.56 (2.23)	0.61 (2.25)	-	0.58 (1.93)
Cut-points	-1.78 -0.25 1.17	-	-	-	-
Intra-class correlation, ρ (s.e.)	-	-	0.33 (0.10)	-	0.56 (0.10)
Significance of clustering	-	-	p=0.002	-	p<0.001
Log-Likelihood	-1198.8	-502.1	-497.4	-236.4	-496.2
Marginal rates of substitution with income (£)					
No out-of-hours work	-1760	-1684	-1568	-453	-1697
List size	2.10	2.34	2.84	10.28	2.70
No direct responsibility for financial management	-3283	-2721	-2577	-1231	-2691
Opportunities to develop specialist interests	-3549	-4020	-3949	-2555	-4149
Extended Primary Health Care Team	-2537	-943	-1200	-2695	-1144
Hours worked	15.63	15.78	15.89	16.44	15.59
High deprivation	4222	4601	4740	5663	4674
Low deprivation	235	1021	954	1164	777

Unless otherwise stated, numbers in parentheses are t-ratios.

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