**Determinants of the Choice of GP Practice Registration in England: Evidence from a Discrete Choice Experiment**

**Abstract**

There have been growing concerns that general practitioner (GP) services in England, which are based on registration with a single practice located near the patient’s home, are not sufficiently convenient for patients. To inform the decision as to whether to change registration rules allowing patients to register ‘out-of-area’ and to estimate the demand for this wider choice, we undertook a discrete choice experiment with 1706 respondents. Latent class models were used to analyse preferences for GP practice registration comparing preferences for neighbourhood and non-neighbourhood practices. We find that there is some appetite for registering outside the neighbourhood, but this preference is not uniformly shared across the population. Specifically individuals who are less mobile (e.g. older people and those with caring responsibilities), or satisfied with their local practice are less likely to be interested in registering at a practice outside their neighbourhood. Overall, people feel most strongly about obtaining an appointment with a GP as quickly as possible. Respondents regarded weekend opening as less important than other factors, and particularly less important than extended practice opening hours from Monday to Friday. Assuming a constant demand for GP services, a policy encouraging GP practices to extend their opening hours during the week is likely to decrease the average patient waiting time for an appointment and is likely to be preferred by patients.

**220 words**

1. **Background**

Over the past 15 years, there has been a growing concern that National Health Service (NHS) general practitioner (GP) services in England, which are based on registration with a single general practice located near the patient’s home, are not sufficiently convenient for patients. In response, there has been a series of initiatives in the English NHS to improve access to, and enhance appropriateness and choice of, provider for first contact care and/or urgent care, from the creation of NHS Direct and Walk-in Centres to the development of the NHS Choices website and financial incentives to encourage extended opening hours of GP practices.

The Coalition Government’s 2010 White Paper built upon previous reforms and committed to giving patients a right to choose to register with any GP practice without being restricted by where they lived or by the practice boundaries agreed with the then primary care trusts (PCTs) [[1](#_ENREF_1)]. As a result, between April 2012 and April 2013, the Government launched a pilot in which patients could choose to register with volunteer GP practices in four participating areas (Westminster, Salford, Manchester and Nottingham City) without being restricted by the practices’ boundaries. It was expected that the pilot would benefit patients by giving them more freedom, choice and control over where they accessed care. The pilot evaluation [[2](#_ENREF_2)] suggested that out-of-area registration was likely to appeal to a minority, particularly those who move house but want continuity of care and those who want convenient access near their workplace. Yet, due to its narrow geographic scope (four PCTs in large urban centres), short duration and the relatively low awareness that people living or working in these areas may have had of its existence, it was not possible to determine if, and to what extent, the appetite for Out-of-Area (OoA) registration observed in the pilot was due to the uniqueness of the situations of the population included in the pilot areas, or whether a similar interest was likely to exist more broadly.

To further inform the decision as to whether to extend the GP practice choice scheme and to estimate the potential pattern of demand for a wider choice of general practice care, we sought to explore the determinants of choice of practice registration in the general population in England, with a view to estimating the relative importance of factors (including practice location, opening hours and perceived quality of care received) on practice preferences.

Discrete choice experiments (DCEs) are a quantitative method for eliciting stated preferences [[3](#_ENREF_3)]. Unlike revealed preference studies that observe respondents’ decisions, in a DCE, participants are presented with descriptions of hypothetical services (or goods). DCEs draw on Lancaster’s theory of demand, which posits that goods or services can be described by their essential characteristics and that their value to an individual is derived from the combination of these attributes [[4](#_ENREF_4)]. DCEs have become a popular method in health economics to determine the driving factors behind preferences that cannot be observed in real life, either due to lack of data or because some of the service characteristics of interest are yet to be introduced.

DCEs have been extensively used to understand the determinants of patients’ choice of health care providers [[5](#_ENREF_5)]. For example in the UK, DCEs were used to inform changes to GP working hours and access to out-of-hours care [[6](#_ENREF_6) [7](#_ENREF_7)], or more broadly to understand patients’ preferences for primary care services, with a view to understanding the relative importance of convenience and quality of primary care consultations [[8-10](#_ENREF_8)]. So far, DCEs have not been used to investigate the factors potentially shaping choice of practice registration, either in England (presumably because practice choice was relatively constrained), or in other countries. This study used a DCE to explore the determinants of the choice of practice registration in the general population in England, with a view to understanding the relative importance to patients of greater choice options especially the possibility of registering outside a patient’s local neighbourhood.

1. **Methods**

**DCE development**

We developed a labelled DCE design, using “practice in your neighbourhood” and “practice outside your neighbourhood” as labels. Although we were specifically trying to understand the potential appeal of allowing people who live outside a practice’s boundaries to register with such a practice, defining a geographical area with respect to practice boundaries would not have been meaningful to most people (who often do not know the exact limits of practice boundaries, which might even change over time). Also the size of practice catchments varies by population density across the country.

The choice of attributes and levels (characteristics of each practice) presented in Table 1 was strongly informed by findings from the evaluation of the GP practice choice pilot [[2](#_ENREF_2)] during which users and non-users of the possibility to register with an OoA practice a literature review of English NHS policy interventions to improve access to primary care services [[11](#_ENREF_11)]. This led to a selection of six practice characteristics that were both accounting for the majority of choice and amenable to interventions to improve access to GP services: various possible extended opening hours (weekend, lunchtime, early morning and late evening), the time it takes for patients to obtain an appointment with a GP, whether the practice meets the patient’s needs. This list included: practice location (in your area/neighbourhood or not), opening hours (before/after the normal working day) and around lunchtime, waiting time until an appointment, type of services offered (whether the patient finds clinical expertise relating to their personal needs), and continuity of care (how well the practice knows the health care services in the respondent’s neighbourhood). For each attribute, levels were selected to reflect the current average situation and possible improvements, or issues that had been mentioned by users of the GP practice choice pilot [[2](#_ENREF_2)]. In particular, for the attribute on opening hours at lunchtime, it emerged from the evaluation that whether or not a practice would be open at lunchtime was highly relevant for a practice close to one’s workplace (hence typically outside one’s neighbourhood), but not important for local practices.

Using this list of attributes, we generated a DCE questionnaire with 16 pair-wise choice tasks, and organised a small qualitative pilot with ten members of the public who completed the survey online. Each respondent was then debriefed immediately afterwards through an in-depth telephone interview carried out by a professional qualitative interviewer. Using the framework approach [[12](#_ENREF_12)] which allows themes to emerge inductively and deductively, the analysis of the interview concluded that the most important aspects of the choice context were captured by the attributes, and all attributes were well understood by respondents. The pilot prompted us to add some examples to the attribute on continuity of care, and to broaden the description of the type of services offered by the practice (i.e. not just to encompass clinical services). When prompted about their understanding of the labels, all respondents closely linked “neighbourhood” to the catchment areas of GP practices, and did not require to have this specified in greater detail. The majority of respondents also found that 16 choice sets were manageable especially as they were told in advance how many to expect. Overall, the qualitative pilot led to slight changes in the wording of some attributes, especially providing more details on the continuity of care attribute.

Using the specialised Ngene software programme [[13](#_ENREF_13)], an orthogonal experimental design with zero priors was developed that distributed attributes and levels into a set of 16 choice tasks. This questionnaire was then administered to 68 individuals whose responses were analysed to generate a Bayesian D-efficient experimental design [[14](#_ENREF_14)]. The final online questionnaire randomised the order of the 16 choice tasks and also included additional questions capturing socio-demographic characteristics of respondents, their description of the services offered by, and their satisfaction with, their current GP practice, their use of primary care services in the last 12 months, and their self-reported health.

**Study population**

To obtain a broadly representative sample of the population of England, a market research agency (YouGov) was contracted to administer the survey to members of its online panel. Panel members, who receive a very small financial compensation for taking part in each survey, were contacted by email and invited to take part in the survey. Ethical approval was obtained from the London School of Hygiene and Tropical Medicine Research Ethics Committee.

To be included in the survey, individuals had to be registered with a NHS GP practice and quotas were set on age within gender. The survey was completed by a sample of 2,431 individuals aged 18 or more. Due to the over-sampling of certain categories of individuals (people aged 65 or more and those in paid work) to enable more detailed analysis of these two sub-groups, the socio-demographic composition of the achieved sample was different from that of the general population on these two characteristics. Hence, a sub-sample of 1706 individuals was randomly drawn so that the achieved sample would match Census distributions for age within gender, which we have used for our analysis of the ‘general population sample’. The socio-demographic characteristics of this final sample are presented in Table 2.

**Data analysis**

DCE data analysis is guided by the random utility framework [[15](#_ENREF_15)] which assumes that respondents compare all options presented in the choice task and choose the one that maximises their utility. In a labelled DCE, this means that the analyst estimates alternative-specific coefficients [[16](#_ENREF_16) [17](#_ENREF_17)], in this case, allowing respondents to value differently a practice attribute depending on whether it relates to a practice in the neighbourhood or not.

We analysed the data first with a conditional logit model, and then with a Latent Class Model (LCM) to account for serial correlation of choices as well as preference heterogeneity. The LCM intrinsically sorts respondents into groups (or classes) that have similar preferences (or utility for GP practice characteristics) and identifies individual characteristics associated with group membership [[18-20](#_ENREF_18)]. The number of groups in a LCM is pre-specified by the analyst, and the optimal number is chosen from the ranking of models based on different goodness-of-fit measures, such as the log-likelihood ratio and the Bayesian Information Criteria [[18](#_ENREF_18)].

To characterize each group, respondents were assigned to a group based on the largest of their posterior group membership probabilities. Descriptive statistics for each group are then compared in Table 3.

Finally, to further illustrate the preferences of the different groups, coefficient estimates derived for each group’s utility function are used to predict the proportion of people willing to register with a practice outside the neighbourhood, under various scenarios. In essence, this simulation assumes that respondents choose the practice from which they derive the highest utility. First we estimated a (baseline) situation reflecting typical characteristics of GP practices available both inside and outside the neighbourhood. Here it is assumed that in general individuals should be able to choose between two practices that are able to offer same day appointments, are both open at lunchtime and are both meeting patients’ needs, but neither one offers extended opening hours (either weekends or mornings/evenings), and finally the practice inside the neighbourhood has a good knowledge of local health services while the practice outside the neighbourhood does not. Following this baseline scenario, we estimate the uptake of an outside the neighbourhood practice under three types of scenarios:

- where the practice inside the neighbourhood is worse than in the base scenario, either because it is busy (only able to offer appointments the next day rather than the same day) to very busy (only able to offer appointments a few days later) or does not meet patients’ needs ;

- where the practice inside the neighbourhood offers more convenient services than in the base scenario (extended opening hours and/or weekend openings);

- where the practice outside the neighbourhood offers more convenient services (extended opening hours and/or weekend opening) than in the base scenario.

1. **Results**

Table 3 presents the results of the conditional logit model. First, the negative coefficient associated with the out-of-neighbourhood alternative-specific constant suggests that, in general, practices inside the neighbourhood are favoured over practices outside the neighbourhood. Second, in choosing a practice, people feel most strongly about whether they can normally obtain an appointment with a GP relatively quickly (for both types of practice, the coefficients associated with obtaining a later appointment are the largest). Third, of all the ways in which access to GP practices can be made more convenient, opening practices on Saturday and Sunday seems the least valued by respondents (the size of the coefficients associated with that feature are the smallest). Fourth, it is important for respondents that practices outside their neighbourhood be open at lunchtime, thereby guaranteeing good access during working hours. Finally, and counter-intuitively, respondents value negatively the idea that a practice outside their neighbourhood would know about the local health services available where they live.

Table 4 presents the results of the LCM, which fits the data much better than the conditional logit model (i.e. the logit model predicts 76% of responses versus. 92% in the case of the LCM). The top panel in Table 4 shows the utility coefficients associated with the practice characteristics, first for a practice inside the neighbourhood, and then for a practice outside the neighbourhood, while the bottom section of the Table gives the coefficients for group membership. The best goodness of fit was obtained for a model including three groups of preferences. Figure 1 shows the uptake of practices outside the neighbourhood under different scenarios, which helps illustrate the preferences of the three groups, while Table 4 provides some descriptive characteristics of probable members of the three groups.

The first group represents 24.8% of the population, and is characterised by relatively even and less strong preferences for the different GP practice attributes compared to the other two groups (Table 3). For both types of practices, people in this group regard obtaining an appointment the next day or in a few days in the same way, and, compared to the other two groups, they feel less strongly against waiting times of a week or more. They value positively extended hours (equally in both types of practices), but their preference is not as strong as that of the other two groups. They are indifferent to local practices being open at weekends or knowing about their local services. For the practice outside their neighbourhood, this last is their least valued attribute. Looking at their willingness to register with a practice outside their neighbourhood, about 42% of the people in this group would do so when given the choice between two average practices (Figure 2). An additional 20% would follow them if the local practice was very busy and could only offer an appointment with a GP in a few days, or if the practice outside the neighbourhood offered more convenient opening times. The strongest shift in favour of a non-local practice would happen if the local practice was not responding to their specific health needs (nearly 84% would choose a non-local practice). Due to their relatively moderate valuations of practice attributes compared to the other two groups, we have labelled this group the “moderates”. Amongst the three groups (Table 4), the moderates have the largest proportion of Londoners (21%), the lowest proportion of older people (18%), the lowest proportion staying at home (10%) and the highest proportion of those reporting a long-standing health condition (50%).

The second group represents 47% of the population. We have labelled them “convenience shoppers” because, compared with the other two groups, they feel much more strongly in their choice of practice about having convenient access to GP services: they place the highest value of the three groups on a practice with extended hours and weekend opening, and their shift away from busy local practices that cannot offer appointments on the same day is the most dramatic of the three groups (Table 3). More surprisingly, members of this group also appear to dislike the fact that the practice outside their neighbourhood knows about their local health services. In the base scenario, nearly two-thirds (65%) would prefer to register with a practice outside the neighbourhood (Figure 2). However, if the practice in their neighbourhood had more convenient opening times, a large majority would choose to register there. For example, only 17% would still be interested in registration with a practice outside their neighbourhood if the practice inside their neighbourhood offered extended opening hours. Membership coefficients for this group reveal that those who live in the three largest urban centres and who have a long-standing health condition are less likely to belong to this group, but those aged 65 or more are more likely to be part of this group (Table 3).

The third group, representing 28% of the population, feel more strongly than the moderates about convenient access to local GP services, but not as strongly as the convenience shoppers. They are indifferent to the possibility of having practices open at weekends or to having to wait one more day to obtain an appointment in practices outside their neighbourhood (Table 3). Like the convenience shoppers, they dislike the fact that the practice outside their neighbourhood knows about their local health services. Of all groups, they are systematically the least interested in the option to register outside their neighbourhood (less than 10% of them would choose that option in the base scenario). (Fig 2) Yet, as they still value convenient local GP services and are very dissatisfied if they cannot see a GP the same day. We call this group “demanding local loyalists”. Looking at the membership coefficients, older people (aged 65 years or more), those who look after their family at home, those not suffering from a long-standing health condition, those who are satisfied with their current GP practice and those who have been with their GP for at least five years are all more likely to be demanding local loyalists (Table 3). In fact, looking at Table 4, we see that they have the largest proportion of people aged 65 years or more (24%), those retired (28%) and those who look after their family (15%), and the lowest proportion of those working full-time (37%), and the lowest proportion of people reporting some dissatisfaction with their current GP practice (13%).

1. **Discussion**

Our results confirm that there is some public appetite for registering with a practice that is not local, but they suggest that this preference is not uniformly shared across the population. In particular, we found that about a quarter of the population, because they are less mobile (e.g. older people, retired, looking after family), or because they are satisfied with their local services, would be generally reluctant to register with a practice outside their neighbourhood under any of the scenarios. For half the population (the ‘convenience shoppers’), it seemed that convenience (defined as extended opening hours) and rapidity of access to GP services were the key determinants, above location. The results also showed that most people did not regard GP practices open at the weekend (Saturday and Sunday) as important in determining their choice of practice. Finally, surprisingly, respondents either did not care or valued negatively whether or not the practice outside their area would know about the local health services in their neighbourhood. While this result is difficult to interpret, one explanation is that respondents did not regard the knowledge of local services by a practice outside their neighbourhood as a guarantee that this practice would be able to make appropriate referrals to local services (i.e. this attribute failed to behave as a proxy measure of the potential for continuity/discontinuity of care as we had intended).

To help interpret the results, participants were asked whether and, if so, where, they would register with a practice out of their local area, if they could or wanted to. Fifty-two percent said they would consider registering with a practice close to where they lived but outside their current practice boundaries (at 69%, this proportion was even larger amongst those aged 65 and over). These results reinforce some of the findings from patients in the general practice choice pilot [[2](#_ENREF_2)], which suggest that removal of GP practice boundaries would most likely benefit people wanting to use a practice just a short distance beyond their immediate neighbourhood, not necessarily people commuting long distances for work.

**Limitations**

The results of the DCE study should be cautiously interpreted.

First, the questionnaire was administered to an online survey panel, which is not necessarily representative of the general population, given that access to the internet and volunteering to join an online panel are likely to result in some selection bias [[21](#_ENREF_21)]. As a result, those excluded from the sample might be systematically different from participants, and their preferences might also differ. On the other hand, we were able to recruit a broadly representative sample on simple socioeconomic variables.

Second, as is usual in a DCE, the choice of attribute or its wording is the result of difficult compromises between policy relevance, choice realism and ability to describe in a few words complex concepts or heterogeneous situations. In this study, the wording of labels was quite challenging as they were meant to cover a variety of circumstances (e.g. ‘neighbourhood’). Although we were specifically trying to understand the potential appeal of allowing people to register when they lived outside the usual local practice boundaries, we realised that defining a geographical area with respect to practice boundaries would not be very meaningful to most people, who often either try to ignore the exact limits of their practice boundaries, which might even change over time, or do not know them precisely. Therefore, to convey the idea of local choice versus. The ability to choose a wider range of practices not located locally, we defined the two hypothetical practices as one within the respondent’s neighbourhood and the other outside their neighbourhood. This decision was supported by results from the qualitative pilot where people living in different areas interpreted “neighbourhood” as meaning the likely catchment areas of general practices (i.e. with people living in rural areas associating this term with larger areas than people living in urban areas). However it is still possible to argue that not only do “neighbourhoods” differ from catchment areas, but also that the interpretation of the label provided enable quite varying interpretations by respondents. This issue makes it difficult to draw generic conclusions from the results. Third, the choices made by individuals in a hypothetical choice survey may not necessarily reflect their actual behaviour. Even if there is little reason to believe that respondents misrepresented their true preferences, in real life situations people may remain with their default option (i.e. their local practice), because it is easier and does not require any particular effort compared with making a change.

Finally, the hypothetical uptake of practices inside or outside a neighbourhood based on the DCE results illustrates the relative strength of preferences in the English population for different characteristics of GP practices. The figures obtained should certainly not be interpreted as predictions of the proportions of the English population who would register with one type of practice or the other, since the modelling relies on two strong and inevitably unrealistic assumptions. First, the simulations assume that the entire population faces exactly the same choice (e.g. a busier than average practice inside the neighbourhood versus an averagely busy practice outside the neighbourhood), which is not the case in real life, as the pattern of general practices differs from one neighbourhood to the next. Second, the alternative-specific constant in the regression reflects the choice sets presented to respondents in the DCE survey, meaning that the simulation results partly reflect the ‘market’ of GP practices presented in the choice sets, not the ones that might be offered to respondents in future in real life. In general, it is good practice to re-calibrate the constant terms so that the predicted demand has more external validity. However, it was not possible in this study due to an obvious lack of data.

Nevertheless, this study, with its large sample and ability to study preferences amongst different sub-groups, is a first attempt at understanding and quantifying the determinants of choice of GP practice in the English population. As such, it may be used to inform the design of future policies to improve access to GP services by widening the range of practices open to patients.

**Implications of results**

We showed that some of the people who tend to use primary care services more often (e.g. retired people and people over 65 years) are more likely to choose to stay with a practice inside their neighbourhood than go outside. If it was confirmed that healthier groups (who use fewer services) were more interested in convenient GP practices outside their local neighbourhood and, e.g., closer to their workplace, this could raise complex issues in terms of equity of access to services and imbalances in the case-mix of practice lists, putting increased pressure on the fairness of the weighting for patient need that underlies the per patient practice capitation payment in the NHS General Medical Services contract.

Another important finding of the study relates to the hierarchy in preferences for different ways of making GP practices more convenient and accessible. We found that all respondents viewed the speed at which they could be seen by their GP as the most crucial aspect, followed by having a practice with extended opening hours. By contrast, opening a GP practice at weekends had only a marginal impact on registration choices, which suggests there would be more benefit from extended opening hours during the week than at weekends. Assuming that demand for GP services is constant, a policy encouraging practices to extend their opening hours Monday to Friday is likely to decrease the average patient waiting time for an appointment. In that case, this could be preferable to other ways of improving GP access, especially weekend opening, whose likely additional cost seems likely to exceed any added benefit from the patient’s point of view.

**Conclusions**

The results of this DCE survey raise important issues for the future development of policies designed to improve access to GP services through the removal or relaxation of GP practice boundaries, as well as other policy options suggested by the Government for the English NHS such as a 7-day working week and extended hours (8am-8pm) [[22](#_ENREF_22)]. There is little evidence that the English population will be more satisfied with weekend opening of GP practices, while extended hours during the week and increasing the proportion of patients able to see a GP on the same day are more likely to meet the population’s preferences.

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**Tables**

**Table 1: Design of the Discrete Choice Experiment**

|  |  |  |
| --- | --- | --- |
| **ATTRIBUTES** | **LEVELS** | |
| **Practice in your neighborhood** | **Practice outside**  **your neighborhood** |
| 1. **Whether the practice is open on Saturday and Sunday morning (8am-12pm)** | * Yes * No | * Yes * No |
| 1. **Whether the practice is open at lunchtime (12-2pm)** | * Yes | * Never open at lunchtime * Sometimes open at lunchtime |
| 1. **Whether the practice has extended opening hours - either 7-8am or 6-8pm** | * Yes * No | * Yes * No |
| 1. **How quickly you can normally be seen by a GP in this practice** | * Same day * Next day * A few days later * A week or more | * Same day * Next day * A few days later * A week or more |
| 1. **Whether the practice meets your specific health needs** | * Yes * No | * Yes * No |
| 1. **How well the practice knows the health care services (e.g. hospital, community nurses, etc.) in your neighbourhood** | * The practice has previous experience with most of the health care providers in your neighborhood | * The practice has previous experience with most of the health care providers in your neighborhood * The practice does not have previous experience with most of the health care providers in your neighborhood |

**Table 2: Descriptive statistics of study sample. Figures are numbers (percentage) of the population unless stated otherwise**

|  |  |  |  |
| --- | --- | --- | --- |
| Characteristic | Descriptive Statistic  (N= 1706) | | 2011 Census data |
| Socio-demographic characteristics |  |  |  |
| 18-24y | 187/1706 | (11.0) | (11.9) |
| 25-49y | 773/1706 | (45.3) | (44.3) |
| 50-64y | 392/1706 | (23.0) | (23.0) |
| 65y+ | 354/1706 | (20.8) | (20.8) |
| Age (mean) in years (SD) | 46.7 | (16.7) | 47.7 |
| White | 1543/1706 | (90.8) | (87.3) |
| Female | 907/1706 | (53.2) | (51.4) |
| Has A-levels or more | 823/1706 | (48.2) | n/a a |
| *Economic activity* |  |  |  |
| Working full time | 698/1706 | (40.9) | (42.4) |
| Retired | 398/1706 | (23.3) | (21.9) |
| Looks after family | 209/1706 | (12.3) | (4.1) |
| Residence |  |  |  |
| North East | 89/1706 | (5.2) | (5.0) |
| North West | 231/1706 | (13.5) | (13.3) |
| Yorkshire and the Humber | 183/1706 | (10.7) | (10.0) |
| East Midlands | 143/1706 | (8.4) | (8.6) |
| West Midlands | 145/1706 | (8.5) | (10.5) |
| East | 188/1706 | (11.0) | (11.0) |
| Greater London | 272/1706 | (15.9) | (15.3) |
| South East | 283/1706 | (16.6) | (16.3) |
| South West | 172/1706 | (10.1) | (10.2) |
| Lives in Manchester, Birmingham or London | 385/1706 | (22.6) | (22.2) |
| Health and use of health services |  |  |  |
| Self-reported longstanding health condition | 739/1706 | (43.3) | n/a b |
| Seen GP in the past 12m | 1334/1706 | (78.2) | n/a b |
| Registered with GP for less than 1 year | 123/1706 | (7.2) | n/a b |
| Registered with GP for 5 years or more | 1230/1706 | (72.1) | n/a b |
| Dissatisfied with current GP practice | 423/1706 | (24.8) | n/a b |

Notes: a Census data were not readily available for people aged 18y or more. b Questions not available in the Census.

Table 3**: Conditional logit estimates of preferences for GP practice registration in England from 1706 respondents**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | **Coefficient** | **SE** | **p-value** |
| **GP practice characteristics** |  |  |  |  |
| **Practice in neighbourhood** |  |  |  |  |
| The practice has extended hours |  | 0.635 | 0.048 | 0.000 |
| Practice is open on Sat/Sun morning |  | 0.110 | 0.041 | 0.007 |
| Normally can get appointment next day |  | -0.932 | 0.087 | 0.000 |
| Normally can get appointment in a few days |  | -1.681 | 0.092 | 0.000 |
| Normally can get appointment in > a week |  | -2.208 | 0.102 | 0.000 |
| Practice meets your specific needs |  | 0.752 | 0.056 | 0.000 |
|  |  |  |  |  |
| **Practice outside neighbourhood** |  |  |  |  |
| Alternative-specific constant |  | -2.166 | 0.124 | 0.000 |
| Practice is open at lunchtime |  | 1.192 | 0.049 | 0.000 |
| Practice has extended hours |  | 0.548 | 0.044 | 0.000 |
| Practice is open on Sat/Sun morning |  | 0.346 | 0.041 | 0.000 |
| Normally can get appointment next day |  | -0.493 | 0.048 | 0.000 |
| Normally can get appointment in a few days |  | -0.984 | 0.043 | 0.000 |
| Normally can get appointment in > a week |  | -2.687 | 0.081 | 0.000 |
| Practice meets your specific needs |  | 0.994 | 0.071 | 0.000 |
| Practice knows your local services |  | -0.220 | 0.050 | 0.000 |
|  |  |  |  |  |

Note: estimates based on N=27,296 observations ; 75.95% responses correctly predicted

Table 4**: LCM estimates of preferences for GP practice registration in England from 1706 respondents**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Group 1**  ***Moderates*** | | |  | **Group 2**  ***Convenience shoppers*** | | |  | **Group 3**  ***Demanding local loyalists*** | | |
|  | **Coefficient** | **SE** | **p-value** |  | **Coefficient** | **SE** | **p-value** |  | **Coefficient** | **SE** | **p-value** |
| **Utility function: GP practice preferences** |  |  |  |  |  |  |  |  |  |  |  |
| **Practice in neighbourhood** |  |  |  |  |  |  |  |  |  |  |  |
| The practice has extended hours | 0.554 | 0.088 | 0.000 |  | 2.185 | 0.160 | 0.000 |  | 1.324 | 0.369 | 0.000 |
| Practice is open on Sat/Sun morning | 0.085 | 0.085 | 0.320 |  | 0.671 | 0.096 | 0.000 |  | 0.005 | 0.250 | 0.984 |
| Normally can get appointment next day | -0.421 | 0.117 | 0.000 |  | -4.645 | 0.380 | 0.000 |  | -1.490 | 0.569 | 0.009 |
| Normally can get appointment in a few days | -0.725 | 0.131 | 0.000 |  | -5.938 | 0.407 | 0.000 |  | -2.073 | 0.641 | 0.001 |
| Normally can get appointment in > a week | -0.994 | 0.130 | 0.000 |  | -7.181 | 0.437 | 0.000 |  | -3.254 | 0.682 | 0.000 |
| Practice meets your specific health needs | 1.958 | 0.108 | 0.000 |  | -0.975 | 0.188 | 0.000 |  | -0.041 | 0.306 | 0.894 |
| **Practice outside neighbourhood** |  |  |  |  |  |  |  |  |  |  |  |
| Alternative-specific constant | -0.856 | 0.170 | 0.000 |  | -6.067 | 0.491 | 0.000 |  | -5.322 | 0.727 | 0.000 |
| Practice is open at lunchtime | 0.999 | 0.079 | 0.000 |  | 2.762 | 0.161 | 0.000 |  | 1.463 | 0.278 | 0.000 |
| Practice has extended hours | 0.604 | 0.088 | 0.000 |  | 1.368 | 0.107 | 0.000 |  | 1.072 | 0.254 | 0.000 |
| Practice is open on Sat/Sun morning | 0.497 | 0.081 | 0.000 |  | -0.019 | 0.100 | 0.846 |  | -0.226 | 0.323 | 0.484 |
| Normally can get appointment next day | -0.321 | 0.105 | 0.002 |  | -0.457 | 0.114 | 0.000 |  | -0.388 | 0.307 | 0.206 |
| Normally can get appointment in a few days | -0.347 | 0.108 | 0.001 |  | -2.187 | 0.124 | 0.000 |  | -0.776 | 0.228 | 0.001 |
| Normally can get appointment in > a week | -1.291 | 0.120 | 0.000 |  | -6.380 | 0.283 | 0.000 |  | -3.470 | 0.595 | 0.000 |
| Practice meets your specific health needs | 1.486 | 0.103 | 0.000 |  | 2.926 | 0.239 | 0.000 |  | 1.579 | 0.521 | 0.003 |
| Practice knows your local services | -0.070 | 0.090 | 0.437 |  | -1.153 | 0.103 | 0.000 |  | -0.640 | 0.325 | 0.049 |
|  |  | |  |  |  |  |  |  |  |  |  |
| **Group membership function** |  | |  |  |  |  |  |  |  |  |  |
| Constant |  |  |  |  | 0.697 | 0.201 | 0.001 |  | 0.228 | 0.203 | 0.260 |
| Works full-time |  |  |  |  | 0.111 | 0.167 | 0.505 |  | -0.022 | 0.175 | 0.902 |
| Looks after family |  |  |  |  | 0.251 | 0.231 | 0.276 |  | 0.423 | 0.240 | 0.077 |
| 65y and over |  |  |  |  | 0.373 | 0.199 | 0.061 |  | 0.354 | 0.206 | 0.086 |
| Lives in London, B’ham or Manchester |  |  |  |  | -0.444 | 0.167 | 0.008 |  | -0.257 | 0.177 | 0.146 |
| Self-reported long standing health condition |  |  |  |  | -0.442 | 0.154 | 0.004 |  | -0.485 | 0.162 | 0.003 |
| Has used GP services in past 12m |  |  |  |  | 0.029 | 0.120 | 0.807 |  | 0.082 | 0.124 | 0.510 |
| Has been with GP for 5+ years |  |  |  |  | 0.115 | 0.157 | 0.463 |  | 0.310 | 0.172 | 0.071 |
| Dissatisfied with GP practice |  |  |  |  | 0.049 | 0.166 | 0.768 |  | -0.964 | 0.195 | 0.000 |
|  |  |  | |  |  |  |  |  |  |  |  |
| Class probabilities | *0.24* |  | |  | *0.48* |  | |  | *0.28* |  |  |

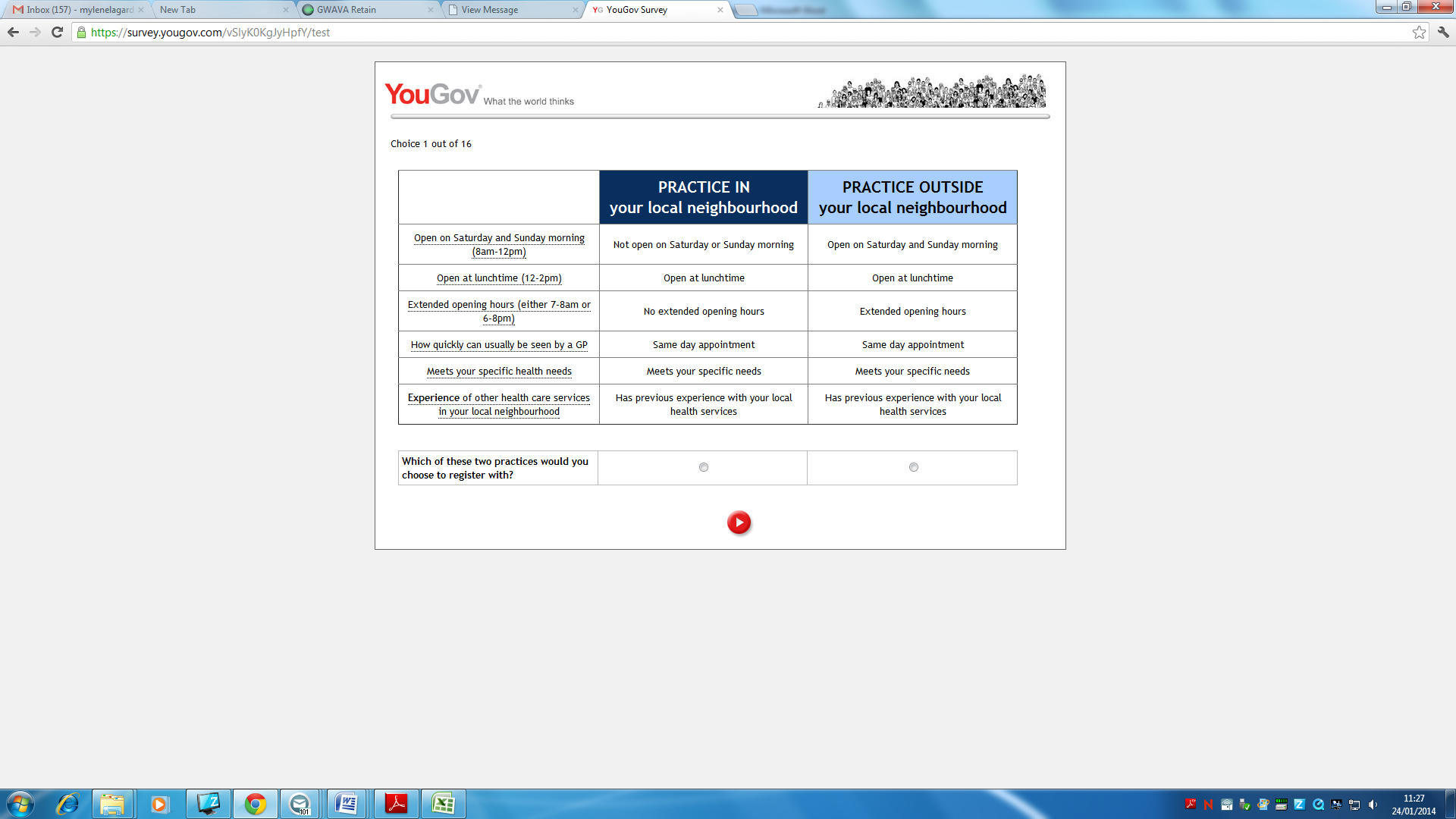
Note: estimates based on N=27,296 observations ; 91.88% responses correctly predicted

Table 5: Descriptive statistics of the three groups. Figures are numbers (percentage) of the population unless stated otherwise

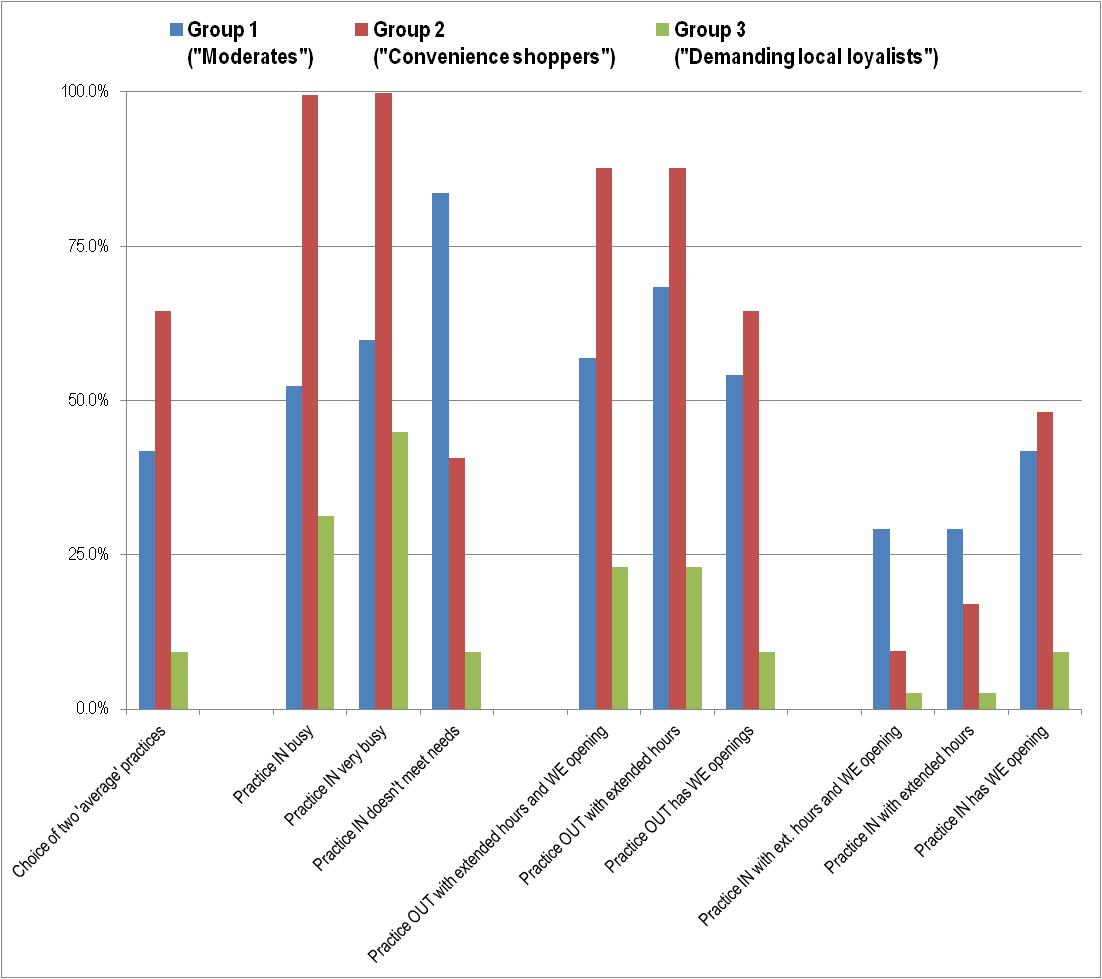
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Characteristics | Group 1  *Moderates* | | Group 2  *Convenience shoppers* | | Group 3  *Demanding local loyalists* | |
|  | N=404 |  | N=826 |  | N=476 |  |
| Socio-demographic characteristics |  |  |  |  |  |  |
| Age (mean) in years (SD) | 47.58 | (16.93) | 47.14 | (16.39) | 44.65 | (16.77) |
| 18-24y\*\* | 59/404 | (0.15) | 78/826 | (0.09) | 50/476 | (0.11) |
| 25-49y | 184/404 | (0.46) | 377/826 | (0.46) | 212/476 | (0.45) |
| 50-64y | 90/404 | (0.22) | 201/826 | (0.24) | 101/476 | (0.21) |
| 65y or more\* | 71/404 | (0.18) | 170/826 | (0.21) | 113/476 | (0.24) |
| White \* | 354/404 | (0.88) | 760/826 | (0.92) | 429/476 | (0.90) |
| Female | 207/404 | (0.51) | 450/826 | (0.54) | 250/476 | (0.53) |
| Has A-levels or more | 205/404 | (0.51) | 389/826 | (0.47) | 229/476 | (0.48) |
| Working full time\* | 170/404 | (0.42) | 353/826 | (0.43) | 175/476 | (0.37) |
| Retired \*\* | 81/404 | (0.20) | 184/826 | (0.22) | 133/476 | (0.28) |
| Looks after family\*\* | 39/404 | (0.10) | 97/826 | (0.12) | 73/476 | (0.15) |
| Residence |  |  |  |  |  |  |
| North East | 16/404 | (0.04) | 51/826 | (0.06) | 22/476 | (0.05) |
| North West\*\*\* | 45/404 | (0.11) | 102/826 | (0.12) | 84/476 | (0.18) |
| Yorkshire and the Humber | 44/404 | (0.11) | 89/826 | (0.11) | 50/476 | (0.11) |
| East Midlands | 40/404 | (0.10) | 66/826 | (0.08) | 37/476 | (0.08) |
| West Midlands | 41/404 | (0.10) | 68/826 | (0.08) | 36/476 | (0.08) |
| East of England\*\* | 34/404 | (0.08) | 106/826 | (0.13) | 48/476 | (0.10) |
| Greater London\*\*\* | 86/404 | (0.21) | 114/826 | (0.14) | 72/476 | (0.15) |
| South East | 60/404 | (0.15) | 145/826 | (0.18) | 78/476 | (0.16) |
| South West | 38/404 | (0.09) | 85/826 | (0.10) | 49/476 | (0.10) |
| Lives in Manchester, Birmingham or London\*\*\* | 116/404 | (0.29) | 168/826 | (0.20) | 101/476 | (0.21) |
| Health and use of health services |  |  |  |  |  |  |
| Self-reported longstanding health condition\*\*\* | 203/404 | (0.50) | 339/826 | (0.41) | 197/476 | (0.41) |
| Seen GP in the past 12m | 313/404 | (0.77) | 643/826 | (0.78) | 378/476 | (0.79) |
| Registered with GP for less than 1 year | 29/404 | (0.07) | 64/826 | (0.08) | 30/476 | (0.06) |
| Registered with GP for 5 years or more\* | 278/404 | (0.69) | 593/826 | (0.72) | 359/476 | (0.75) |
| Dissatisfied with current GP practice\*\*\* | 120/404 | (0.30) | 239/826 | (0.29) | 64/476 | (0.13) |

**Notes:** ANOVA and Pearson’s Chi-square tests show significant differences across the three groups at the 10% (\*), 5% (\*\*) and 1% level (\*\*\*).

**Figure 1: Example of a choice task**

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**Figure 2: Predicted demand for registration with a practice outside the neighbourhood, under different scenarios**

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Note: “Practice IN” means practice in the neighbourhood, “Practice OUT” means practice outside the neighbourhood