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ABSTRACT

Do You Have to Win It to Fix It? A Longitudinal Study of Lottery Winners and Their Health Care Demand

We exploit lottery wins to investigate the effects of exogenous changes to individuals' income on health care demand in the United Kingdom. This strategy allows us to estimate lottery income elasticities for a range of health care services that are publicly and privately provided. The results indicate that lottery winners with larger wins are more likely to choose private health services than public health services from the National Health Service. For high-income individuals without private medical insurance, the larger their winnings, the more likely they are to obtain private overnight hospital care. For privately insured individuals, the larger their winnings, the more likely they are to obtain private care for dental services and for eye, blood pressure, and cervical examinations. We find that medium to large winners (≥ £500) are more likely to have private health insurance. Larger winners are also more likely to drop coverage earlier, possibly after their winnings have been exhausted. The elasticities with respect to lottery wins are comparable in magnitude to the elasticities of household income from fixed-effect models.

JEL Classification: H42, I11, D1

Keywords: lottery wins, health care, income elasticity, public-private

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1 Introduction

A substantial empirical literature is emerging on the relationship between income and health care demand following the seminar work by Grossman (1972). The interest stems from an attempt to understand the determinants of health expenditure and its share of household or national incomes. A fundamental question is the nature of health care as an economic good: the expectation that health spending would increase disproportionately more as income increases if health care is a luxury good and disproportionately less if it is a normal good. Numerous studies have examined this question by quantifying the income elasticity of health care (e.g., Gerdtham and Jönsson 2000; Getzen 2000; Costa-Font et al. 2011).

However, the empirical evidence remains subject to criticism. A main critique of the existing econometric work is that the estimates of the income–health spending relationship are not causal, because most studies are based on simple correlations between income and health expenditure. The assumption that income is exogenous is likely to be violated as the income–health expenditure nexus is filtered by a variety of confounding effects. For example, the demand for health care is associated with health behaviors (e.g., smoking, exercise), which are affected by education, cognitive ability, and health knowledge (Cutler and Lleras-Muney 2010). These attributes are also correlated with income. Further endogeneity issues potentially arise when current income is used as a measure of household resources, because individuals in poor health may be less likely to participate actively in the labor market, but at the same time consume more health care. Omitted factors such as non-cognitive skills can further compound the endogeneity problem, for example, if individuals with higher perceived sense of control are more likely both to seek health care services and to earn higher incomes (Cobb-Clark et al. 2014).

A second critique is that the literature has largely been silent on the role of health care heterogeneity. Existing studies do not distinguish between preventive and curative health services, or between health care from the public and private sectors. It might be expected that the relationship between income and the demand for preventive care would be different from that of curative care. Preventive care is conceptualized as a human capital investment and is strongly influenced by education and income (Kenkel 2000; Wu 2003). Curative care behavior, in contrast, is driven by immediate need, and hence, income is less likely to be important. This is particularly true for public health systems where monetary barriers on access to health care, in principle, should not exist. However, access to health care in the private sector should be significantly determined by income, as with any other private good.

This study addresses both issues simultaneously. First, to create a setting as close as possible to the idealized laboratory experiment, we use data of lottery winners to estimate the effect of income on the utilization of health care services in the United Kingdom. We follow the same testing strategy as Gardner and Oswald (2007) and Apouey and Clark (2014), who use the British Household Panel Survey (BHPS) to study the effect of lottery wins on mental and physical health, and Lindahl (2005), who analyze the impacts on health status and mortality using Swedish data.

Our study is the first to investigate the effect of exogenous income on health care use in an institutional context where public and private sectors of health care coexist. We contribute to the small body of work on the importance of income on the demand for private health care (Propper 2000), and the interrelation between income, private health insurance, and health care use in a National Health Service (e.g., Fabbri and Monfardini 2009; Cheng 2014). It is important to understand how individuals' decisions about public and private health care are determined by income, because these decisions influence support for public sector health care (Epple and Romano 1996; Blomquist and Christiansen 1999), and the potential redistributive role of public provision of health care (Besley and Coate 1991).

Our study complements a handful of related studies that use data from the United States, which has a different health system from that of the United Kingdom. These studies employ various strategies to estimate causal effects of income on health care expenditures. For example, Acemoglu et al. (2013) use oil price shocks and variations in the dependency of economic subregions on oil to estimate the income elasticity of hospital spending. Three other studies exploit the Social Security benefit notch as a source of exogenous variation in incomes of senior citizens on prescription drug use (Moran and Simon 2006), long-term care services (Goda et al. 2011), and out-of-pocket medical expenditure (Tsai 2014).

The remainder of the paper is organized as follows. In Section 2, we describe the data and discuss the estimation strategy. In Section 3, we discuss the results from the empirical analysis. In Section 4, we present the implied income elasticities of health care. Finally, Section 5 concludes with a discussion of the key findings in the paper.

2 Data and Methods

2.1 Data

The main data source used in the analysis is the BHPS, which is a nationally representative random sample of households, containing over 25000 unique adult individuals. The survey is conducted between September and Christmas of each year from 1991 (see Taylor et al. 2001). Respondents are interviewed in successive waves; households who move to a new residence are interviewed at their new location; if an individual splits off from the original household, the adult members of their new household are also interviewed. Children are interviewed once they reach 11 years old. The sample has remained representative of the British population since the early 1990s.

We study the use of health care services of a panel of lottery winners in the BHPS. Data on lottery wins were collected for the first time in 1997 and are available for 12 waves (Waves 7–18). In the survey, respondents were asked to state whether they received windfall income from lottery wins and the amount of winnings. We focus on all lottery winners at the year of winning the lottery. The complete case sample for analysis consists of 14205 observations (6520 individuals). Of those, 94.8% are small wins (£1–£499), and 5.2% are medium to large wins (£500+) (see Table A.1 in the Appendix). The average real lottery win is £157. Many individuals won the lottery more than once in our panel. For example, from 1997, the average number of "years of winning the lottery" for the same person is 2.17, with a standard deviation of approximately 1.8 years. This implies that there are likely to be some individuals who play repeatedly.

Data on health service utilization have been collected in the BHPS since 1991 (Wave 1). In each year of the survey, individuals were asked whether they had been admitted into hospital as an inpatient and whether they had health checkups. The recall period is the 1st of September of the preceding year. The list of health checkups includes checks for blood pressure, chest X-ray, cholesterol, dental care, eye test, and for females, cervical and breast examinations. Individuals who reported having been hospitalized, or having had checkups, were asked if these were obtained through the National Health Service (NHS), the private sector, or both. For the purpose of analyzing the public or private type of the health service use, we combine the responses that indicate "use of private sector" and "use of both private and public sectors" into one category.

Table 1 presents the proportion of individuals who have used health care and, conditional on having used health care, the proportion that chose private (non-NHS) services. For example, 65% of lottery winners reported having used dental care, 9.3% had an overnight hospitalization, and 26% of all females received a cervical examination. Of those who had dental treatment, 29% obtained care from private providers; 8.3% of individuals who were hospitalized chose private hospital care.

The remaining explanatory variables that were used in the study can be classified into the following categories: demographic and socioeconomic characteristics (e.g., age, gender, equivalized real household income, education), health insurance, measures of health status (self-assessed health, presence of health problems), and metropolitan region identifiers. Of particular interest is whether individuals have private medical insurance (PMI). Respondents who are covered by the insurance in their own name (as opposed to through a family member) were asked whether the coverage had been paid for directly, deducted from wages, or paid by employer. The summary statistics for these explanatory variables in our sample of lottery winners are shown in Table A.1, with the sample characteristics of non-winners shown in the same table for comparison. Compared with non-winners, winners have higher equivalized household income, are more likely to be males, have private health insurance, and are employed fulltime.

In the analysis of the effect of lottery wins on health care use, it would be desirable to control for any unobserved heterogeneity in participating in the National Lottery. A key reason why we focus on lottery winners at the year of winning is because the BHPS does not contain information about the number of times (if any) the individual has played the lottery. Hence, we cannot distinguish non-players from unsuccessful players. Nevertheless, in Britain, as opposed to a number of other countries, many people play lotteries; a recent survey-based estimate by Wardle (2007) places the proportion of lottery players at two-thirds of the British adult population, with 57% playing the National Lottery (and almost 60% of these playing at least once a week). This explains why there is a considerable number of repeated lottery winners in the BHPS data compared with any other nationally representative data set.

2.2 Econometric strategy

We model the utilization of health care by using a two-part model that has been extensively used in the empirical analysis on the demand for health care. The first part is a binary outcome model that distinguishes between users and non-users of a given health care service. The second part is a separate binary outcome model that describes the distinction between users of private (non-NHS) health care versus NHS health care, conditional on being a user. For both parts, we estimate separate linear random effects (RE) models.

We employ a linear generalized RE model because the length of the panel is relatively short, which is a result of the infrequent nature both of lottery wins and of health care use.[1] The model is specified as follows:

$$y_{it} = \beta w_{it} + \mathbf{x}'_{it}\delta + e_{it} \tag{1}$$

where y_{it} represents the health care utilization measure; w_{it} denotes the amount of lottery winnings; $\mathbf{x}'_{it}$ represents a vector of covariates; and β and δ are coefficients to be estimated. The RE model allows the error term ϵ_{it} to be decomposed into the individual-specific component, α_i, and the time-varying component, ϵ_{it}, as follows:

$$e_{it} = \alpha_i + \epsilon_{it} \tag{2}$$

We assume that α_i is not correlated with covariates w_{it} and $\mathbf{x}'$, which is the standard assumption for the RE model.

We focus on lottery winners instead of a sample of winners and non-winners to minimize the presence of unobserved heterogeneity that influences both the decision to participate in lotteries and health care behaviors. However, this strategy does not account for potential unobserved heterogeneity among lottery winners, which may arise if large winners play more lotteries (e.g., Ekhardt and Powdthavee 2014), and if the difference in playing behavior is systematically related to the intensity of health care use. To address this, we decompose winnings into their mean across the observation period, and the deviation from that mean as follows:

[1] All of the paper's results can be replicated with limited dependent estimators. However, as a pedagogical device and for ease of reading, we use standardized linear methods.

$$w_{it} = \bar{w}_i + (w_{it} - \bar{w}_i) \tag{3}$$

Introducing the mean lottery win variable helps to correct for the unobserved correlation between the individual-specific effect and the amount of personal lottery windfall at any given time t (see Mundlak 1978). We can also interpret the addition of the mean as a way to decompose lottery wins into a level (i.e., individual i's usual wins) and a shock effect. Equation (1) thus becomes:

$$y_{it} = \beta w_{it} + \gamma \bar{w}_i + \mathbf{x}'_{it}\delta + e_{it} \tag{4}$$

Additionally, we can treat β as the shock effect and $(\beta+\gamma)$ as the level effect (or the combined effect of current and permanent lottery windfalls). To aid the interpretation of our results and to allow comparability across different types of health services, we standardize all our binary outcome variables across the entire sample to have a mean of 0 and a standard deviation of 1. This enables us to directly interpret the estimated coefficients as standard deviation changes in health service use and/or private versus NHS type.

We assess the sensitivity of the results from the RE model by considering the case where the individual-specific effect, α_i, is correlated with covariates w_{it} and $\mathbf{x}'$. To eliminate this effect, we apply "within" transformation to Equation (1), which yields:

$$\tilde{y}_{it} = \beta \tilde{w}_{it} + \tilde{\mathbf{x}}'_{it}\delta + \tilde{e}_{it} \tag{5}$$

where the tilde denotes deviation from the sample averages. Equation (5) is commonly referred to as the FE "within" estimator. We discuss the findings of our econometric analysis in Section 3.

3 Results

We describe in this section the main findings of our study. First, we discuss the estimates of the effect of lottery wins on the utilization of health services and the choice of private versus NHS care. Second, we investigate whether lottery winners are more likely to have PMI and more likely to take up private insurance coverage after winning the lottery. Third, we examine whether lottery winners who take up PMI also drop their insurance coverage more quickly.

3.1 Effect of lottery wins on utilization and private versus NHS care

Table 2 presents the coefficient estimates on lottery wins and household income on whether lottery winners used health services in a given year, and whether users of health services chose to obtain private (non-NHS) or NHS services. As mentioned at the end of Section 2.2, the binary dependent variables are standardized to facilitate comparability across different types of health services. The coefficient estimates are interpreted as standard deviation changes in health service use and/or private versus NHS type for a 10% increase in lottery wins. The table shows the estimates from the RE model with Mundlak correction and the FE within-estimation model.

Table 2 indicates that lottery wins have little to no effect on the utilization of health care services, whereas health care use is higher for individuals with higher incomes. The former result is observed from columns (1) and (2), whereby most of the coefficient estimates are not statistically significant from zero. These results indicate that winners with larger lottery wins are not more likely to use health services. On the role of household income (columns 3 and 4), the estimates from the RE model are positive and statistically significant at conventional levels for health checks associated with blood pressure, cholesterol, dental, eye test, and breast examinations.

These results are consistent with health care being a normal good whereby the use of these health care services increases with income. The magnitudes of the estimates vary and are indicative of significant heterogeneity across different types of services. When time-fixed unobserved characteristics of individuals are accounted for by using FE estimation, the effect sizes of household income become smaller and are statistically insignificant from zero for most types of health checks except for dental care. This indicates the importance of time-invariant individual heterogeneity in influencing the decision to use health care services.

Moving onto the effect of lottery wins and the choice between private versus NHS care (columns 5 and 6), the results indicate that the probability of choosing private care is higher for individuals with larger wins. For health services such as dental care, blood pressure check, and cervical examination, the estimates from both the RE and FE models show that lottery winners with larger wins are more likely to choose private health care. The effect of lottery wins varies by the type of health service. For example, a 10% increase in winnings increases the probability of obtaining a private dental service by 0.20–0.21 of a standard deviation, whereas the effect is larger for cervical examination (0.74–0.78 of a standard deviation).

For overnight hospitalization, the RE estimate (column 5) is large and statistically significant. This result indicates that, of lottery winners who had experienced an overnight hospitalization episode in the past year, those with larger wins were more likely to choose private care. When time-fixed unobserved characteristics of individuals are accounted for in the FE specification, the effect of lottery wins becomes small and insignificant from zero. This indicates the importance of time-invariant individual heterogeneity in influencing the choice of private hospital care, which appears to play a smaller role for outpatient health services such as dental care or cervical examination. One plausible explanation may be individuals' risk aversion toward private hospital expenditure, which is larger and more uncertain than the cost of private health care in an outpatient setting.

Finally, the effect of household income on the choice of private or public health care is shown in columns (7) and (8). The estimates from the RE model are positive and statistically significant for most of the health services analyzed, indicating that the probability of choosing private health care increases with household income. The size of the household income effect is also considerably larger than that of lottery wins. Time-invariant unobserved heterogeneity is also likely to be important in the choice between private and public care, as evidenced by the smaller and statistically insignificant income effect sizes when FE estimation is used.

We consider a different specification to that presented in Table 2 in which lottery wins enter the regression as separate dummy variables representing four win categories, with the reference category being a win of less than £100. The estimates are presented in Table A.2. The coefficients on the variable for the largest win category ($> £500$) in the regression on private and public choice are large and statistically significant for a number of health care services. These results show that the positive effect of wins on the choice of private care is influenced to a great extent by winners with medium to large winnings.

3.2 Lottery wins, private medical insurance, and the choice of private versus NHS care

The effect of windfall income on health care behaviors is expected to differ depending on whether individuals have PMI. We investigate the effect of lottery wins on the choice between private and public health care by re-estimating the RE and FE regressions in Table 2, separating the sample into individuals with and without PMI. For individuals without PMI, we expect their health care behaviors to differ by income if those with higher incomes are more likely to self-fund private health services than those with lower incomes. To consider this, we further separate the non-privately insured sample into two groups where the low-income group are individuals in the first and second income quartiles and the high-income group are in the third and fourth income quartiles. We focus on the choice between private and NHS care because lottery wins have little effect on the utilization of health services, consistent with the findings in Table 2.

Table 3 shows the estimates of lottery wins on the choice of public and private care by PMI status. Columns (1) and (2) show the estimates for privately insured individuals. These indicate that the larger the lottery wins, the higher the probability of individuals choosing private care for dental, eye, and blood pressure checks, and cervical examination. One mechanism underlying these results may be that lottery winners are using their winnings to pay the associated copayments or the private expenses directly if their PMI contracts do not cover these services. On hospital care, the estimate of lottery wins on private overnight hospitalization is not statistically significant. This result is not unexpected for privately insured individuals given that expenditure on private hospital care is covered under PMI contracts, although the generosity of individual contracts may vary.

Columns (3)–(6) present the estimates for individuals without PMI by income levels. For high-income individuals, the estimate on overnight hospitalization from the RE model (column 3) is positive and statistically significant, indicating that those with higher lottery winnings are more likely to choose private overnight hospital care. The estimate becomes negative and not statistically significant from zero when FE estimation is used (column 4), which is consistent with the earlier result that time-invariant characteristics are likely to be important in influencing the decision to choose private care. Indeed, it would be expected that the uncertainty surrounding the expenditure on private hospital care would be higher for individuals without

PMI, because they bear the full cost of private care. An alternative explanation is that the effect of lottery wins is largest for individuals with strong preferences for private hospital care and that lottery wins no longer have an impact on the choice of private versus NHS care when these time-invariant preferences have been eliminated in the FE estimation.

In contrast with the findings for high-income individuals, lottery wins have no effect on the choice of private versus NHS hospital care for low-income individuals without PMI (column 5). The coefficient estimate becomes negative and significant for the FE model, indicating that lottery winners with larger wins are more likely to choose NHS care when time-invariant individual heterogeneity has been taken into account. For the other types of health services, there is evidence that larger winners are more likely to choose private care for cervical examinations.

3.3 Lottery wins and private medical insurance

A potential mechanism by which lotteries may influence health care demand is if lottery wins are systematically related to individuals' propensity to have PMI or to switch into PMI. To investigate this more formally, we refer to Table 4 where we regress PMI status on various configurations of lottery wins among winners at the year of winning: "Any wins," large wins or "Wins $>$ £500," and lottery win categories ("$<$ £100," "£100 $-$ £250," "£250 $-$ £500," "$>$ £500"). The reference category consists of individuals who have won the lottery at least once in the panel and are non-winners in a given year.

We estimate the effects of lotteries on the probability that individuals have PMI ($Prob(PMI_t = 1|X)$) in the same year, and the probability that individuals take up PMI conditional on not having PMI ($Prob(PMI_t = 1|PMI_{t-1} = 0, X)$) in the preceding year. These regressions are estimated with pooled ordinary least-squares regression by using the same set of covariates as in Table 2 and with clustered standard errors. These results are discussed in columns (1)–(3) and (4)–(6) of Table 4, respectively. Columns (1)–(3) show that lottery winners are more likely to be privately insured, and this relationship is similar whether the insurance coverage is paid for by individuals (i.e., direct payment) or through their employment (e.g., deducted from wages). The results from the lottery win categories (row C) indicate that the probability of having PMI broadly increases with the size of lottery wins, with winners of $>$ £500 being the most likely to have PMI.

Columns (4)–(6) show whether individuals are more likely to switch into PMI after winning the lottery. Overall, lottery winners are more likely to take up medical insurance in the year of winning the lottery than non-winners. For the subsample of individuals who paid for their insurance coverage directly, the regression coefficients are larger for larger wins, indicating that the uptake of PMI is higher for larger winners. However, these coefficient estimates are not statistically significant from zero. Nevertheless, this is not perhaps entirely unexpected given that PMI ownership among lottery winners is higher than the general population to begin with, and hence the effect of winning the lottery on the uptake of PMI is likely to be small.

3.4 Do lottery winners drop private medical insurance more quickly?

We consider the question of whether lottery winners who take up insurance coverage subsequently drop cover more quickly, and we investigate this by examining the relationship between lottery wins and the duration of insurance coverage. The principal outcome of interest is length of time (in years) that individuals maintain PMI from the year of insurance coverage commencement. We accommodate the right censoring of the outcome variable by including a variable that measures the number of years that individuals remain in the sample, in addition to an extensive set of covariates as in Table 2.

The results of the regression analysis are presented in Table 5. Those shown in columns (1)–(4) indicate that, of the individuals who pay for their private insurance coverage either directly or as a deduction from their wages, lottery winners winning more than £500 maintain coverage for a significantly shorter duration of time than non-winners and smaller winners. More specifically, large lottery winners drop private insurance coverage between approximately 10 and 11 months earlier, possibly after their winnings have been exhausted. A similar result is observed for individuals who pay for their insurance directly, because the size of the coefficients are relatively close to those of the former. However, these estimates are not statistically significant from zero, which is probably attributable to low statistical power because of the small sample size.

4 Implied elasticities of health care

A secondary question of this study is whether lottery wins offer plausibly exogenous variation in individuals' income from which we may be able to derive estimates of income elasticity of health care. To this end, we first estimate separate generalized linear RE regressions where the dependent variables are binary and assume the value of 1 if an individual obtained public and private care and 0 if the individual did not obtain care for a given service. The estimates are then used to calculate the implied elasticities of public and private health care versus no care with respect to lottery wins.

The elasticity estimates of lottery wins are shown in columns (1) and (4) of Table 6 for public and private health care, respectively. For public care versus not using health care, the estimated elasticities are small and statistically insignificant for all the health services considered. Conversely, for private care, the elasticities are large and statistically significant. For example, a 1% increase in lottery wins raises the probability that an individual will choose private care rather than not obtain health care by 0.26% for an overnight hospitalization episode and by 0.96% for a private cervical examination.

For comparison, we also present in Table 6 the elasticity estimates with respect to household income for the whole sample consisting of winners and non-winners using both FE (columns 2 and 5) and RE (columns 3 and 6) models. For public versus not obtaining care, as shown in columns (2) and (3), the elasticity estimates are broadly positive for outpatient services and negative for overnight hospitalization. The estimated elasticities from the RE model are also generally larger in magnitude than those from the FE model. For private care versus no care, the elasticities are positive and large in magnitude, particularly those from the RE model.

On the whole, the income elasticities from the FE model appear to be similar in magnitude and direction to the elasticity of lottery wins. Conversely, the income elasticities from the RE model are larger than both the income elasticities from the FE model and the elasticity of lottery wins.

4.1 Inheritance income

As an additional analysis, we estimate the implied income elasticities on health care with respect to inheritance or bequest income by using a sample of over 3100 individuals who have reported receiving these types of windfall incomes. These estimates are reported in Table A.3. The income elasticities for public health care versus no care are small in magnitude and are statistically insignificant except for cervical examinations. These results are consistent with the elasticity estimates obtained from lottery winnings, as shown in Table 6.

For private health care, the estimated elasticities are larger in magnitude than those from public health care and are statistically significant for dental and eye examination services. Although there are some differences (e.g., chest X-ray, cervical) in the sizes of the elasticities compared with lottery wins, the estimates are generally consistent in both direction and magnitude.

5 Conclusion

This study exploits lottery wins as a source of exogenous changes in individuals' income to obtain causal estimates of lottery income elasticities for health care. We examined a longitudinal sample of over 14000 lottery winners in the United Kingdom to investigate the impact of lottery wins on health care demand for a range of health care services in an institutional context in which health care is provided in both public and private sectors. The results show that, although lottery wins have little to no effects on the probability that individuals use health care services, lottery winners with relatively large wins are significantly more likely to choose health care from the private sector than from the public sector. We find strong evidence supporting this behavior for health services such as dental care, blood pressure checks, and cervical examination.

The results also show that the effects of lottery wins differ depending on whether individuals have PMI. For high-income individuals without PMI, the larger the lottery win, the higher the probability that individuals obtain private overnight hospital care. This indicates that those individuals are self-financing private hospital care using their lottery winnings. For individuals with PMI, larger winners are more likely to obtain private care for a range of outpatient services (e.g., dental, eye, cervical examination), indicating that winners are using their winnings to afford the associated copayments that are not covered under their PMI contracts.

The estimates of the implied lottery income elasticities for public health care services are close to zero, indicating that positive income shocks do not influence the utilization of health care from the public sector. This is perhaps unsurprising given that financial barriers are not expected to be important in limiting access to health care provided by the NHS. Conversely, the implied lottery income elasticities for private health care are positive and in the range of 0.01–0.32 for most of the health services considered, and 0.96 for cervical examination. The FE estimates of household income elasticities are comparable to those from lottery income; they are in the range of 0.03–0.15, and 0.51 for cervical examinations. Both sets of estimates are similar to those obtained by Kenkel (1994), who, using United States data, finds an income elasticity of preventive care of 0.06. Our estimates are smaller than those obtained in a recent meta-regression analysis, which finds that the income elasticity of demand for health care is between 0.4 and 0.8 (Costa-Font, Gemmill, and Rubert 2011). Finally, our results are consistent with evidence from microeconomic studies that support the notion that health care is a necessity and not a luxury good.

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Table 1: Proportion using health care services and the choice of private (non-NHS) versus NHS service conditional on use.

	Overnight Hospital	Blood pressure	Chest X-ray	Cholesterol test	Dental	Eye test	Cervical exam	Breast exam
Whether used health services	0.093 (0.291)	0.492 (0.500)	0.140 (0.347)	0.181 (0.385)	0.650 (0.477)	0.408 (0.492)	0.260 (0.439)	0.124 (0.330)
N	14,205	14,205	14,205	14,205	14,205	14,205	6,146	6,146
Choice of private service conditional on use	0.083 (0.276)	0.067 (0.250)	0.069 (0.253)	0.076 (0.265)	0.294 (0.456)	0.373 (0.484)	0.015 (0.122)	0.037 (0.189)
N	1,309	6,960	1,987	2,558	9,205	5,758	1,599	755

Note: Standard deviation in parenthesis

Table 2: Estimates of lottery winnings and household income on whether used health service, and the choice of private versus NHS service.

Dependent variable	Whether used health service				Choice of private (non-NHS) service			
	Effect of lottery winnings		Effect of household income		Effect of lottery winnings		Effect of household income	
	Random Effects - Mundlak	Fixed Effects - Within	Random Effects - Mundlak	Fixed Effects - Within	Random Effects - Mundlak	Fixed Effects - Within	Random Effects - Mundlak	Fixed Effects - Within
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Overnight hospital	-0.004	-0.01	-0.08	0.19	0.72**	0.02	2.56***	1.59
	(0.09)	(0.09)	(0.15)	(0.26)	(0.33)	(0.52)	(0.54)	(1.68)
Blood pressure	-0.07	-0.07	0.88***	0.29	0.31**	0.31**	1.18***	0.02
	(0.08)	(0.09)	(0.14)	(0.25)	(0.13)	(0.14)	(0.26)	(0.46)
Chest X-ray	0.03	0.03	0.20	0.15	0.34	0.09	2.07***	0.22
	(0.09)	(0.10)	(0.15)	(0.28)	(0.25)	(0.32)	(0.42)	(0.83)
Cholesterol test	0.01	0.02	0.77***	0.03	0.19	0.13	2.00***	0.90
	(0.09)	(0.09)	(0.15)	(0.26)	(0.18)	(0.21)	(0.38)	(0.68)
Dental	-0.04	-0.04	0.41***	0.40***	0.21**	0.20*	1.76***	0.70**
	(0.07)	(0.07)	(0.15)	(0.21)	(0.10)	(0.11)	(0.19)	(0.31)
Eye test	0.03	0.06	0.53***	0.09	0.08	0.14	1.49***	0.14
	(0.09)	(0.09)	(0.16)	(0.27)	(0.14)	(0.16)	(0.23)	(0.45)
Cervical exam	-0.08	-0.05	-0.13	0.08	0.78***	0.74**	1.12**	-0.40
	(0.16)	(0.16)	(0.24)	(0.48)	(0.27)	(0.32)	(0.45)	(0.98)
Breast exam	0.13	0.09	0.71***	0.20	0.32	0.12	0.27	-2.67**
	(0.16)	(0.17)	(0.25)	(0.49)	(0.29)	(0.35)	(0.64)	(1.27)

Note: Significance: *** 1%; ** 5%; * 10%. Robust standard errors in parenthesis. Dependent variables are standardized for comparability across different types of health care services. Coefficient estimates are interpreted as standard deviation changes in health service use for a ten percent increase in lottery winnings and household income. Other covariates include age and squared-age, gender, education attainment, employment status, equivalized household income, home ownership, marital status, self-assessed health, health problems, and region identifiers.

Table 3: Estimates of lottery winnings on the choice of private versus NHS care by insurance status.

	Insurance = Yes		Insurance = No, High income		Insurance = No, Low income	
	Random Effects - Mundlak	Fixed Effects - Within	Random Effects - Mundlak	Fixed Effects - Within	Random Effects - Mundlak	Fixed Effects - Within
Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)
Overnight hospital	1.13	0.96	0.88*	-0.89	-0.02	-1.21**
	(1.46)	(0.96)	(0.48)	(2.08)	(0.27)	(0.46)
Blood pressure	0.96**	0.56*	0.17	-0.25	0.01	-0.01
	(0.45)	(0.32)	(0.24)	(0.29)	(0.10)	(0.11)
Chest X-ray	0.98	0.24	0.01	0.04	-0.25	-0.16
	(0.98)	(0.71)	(0.41)	(0.65)	(0.15)	(0.18)
Cholesterol test	1.24*	0.66	-0.43	-0.75*	-0.11	-0.12
	(0.75)	(0.52)	(0.33)	(0.39)	(0.11)	(0.12)
Dental	0.39*	0.46***	0.03	0.08	0.06	-0.05
	(0.22)	(0.17)	(0.17)	(0.18)	(0.16)	(0.19)
Eye test	0.48	0.56***	0.18	0.45	-0.20	-0.29
	(0.33)	(0.20)	(0.24)	(0.31)	(0.20)	(0.25)
Cervical exam	3.33***	1.44**	0.02	0.16	0.75**	1.55***
	(1.05)	(0.69)	(0.29)	(0.39)	(0.32)	(0.54)
Breast exam	1.22	0.81	$-^a$	$-^a$	0.53	0.83
	(1.78)	(1.29)			(0.35)	(0.50)

Note: $-^a$ Insufficient observations. Significance: *** 1%; ** 5%; * 10%. Robust standard errors in parenthesis. Income levels are defined by quartiles of equivalized household income; Low: 1^{st} & 2^{nd}, High: 3^{rd} & 4^{th}. The privately insured sample is not separated by income levels due to small sample sizes. Dependent variables are standardized and coefficient estimates are interpreted as standard deviation changes in health service use for a ten percent increase in lottery winnings. Other covariates include age and squared-age, gender, education attainment, employment status, home ownership, marital status, self-assessed health, health problems, and region identifiers.

Table 4: Lottery wins and private medical insurance (PMI) status by insurance types

	$Prob(PMI_t = 1 \mid X)$			$Prob(PMI_t = 1 \mid PMI_{t-1} = 0, X)$		
	(1) All types	(2) Direct payment & deduct from wages	(3) Direct payment	(4) All types	(5) Direct payment & deduct from wages	(6) Direct payment
(A) Any wins	0.013**	0.009**	0.009**	0.006**	0.002	0.001
	(0.005)	(0.004)	(0.003)	(0.003)	(0.002)	(0.002)
(B) Wins > £500	0.070***	0.067***	0.065***	0.011	0.002	0.004
	(0.021)	(0.022)	(0.022)	(0.010)	(0.008)	(0.007)
(C) Lottery wins categories:						
No wins (Ref)						
< £100	0.007	0.003	0.003	0.004	0.002	0.001
	(0.005)	(0.004)	(0.003)	(0.003)	(0.002)	(0.002)
£100 – £250	0.037***	0.018	0.016	0.023***	0.006	0.004
	(0.014)	(0.011)	(0.010)	(0.009)	(0.006)	(0.005)
£250 – £500	0.007	0.019	0.020	0.007	0.010	0.003
	(0.017)	(0.014)	(0.013)	(0.011)	(0.009)	(0.007)
> £500	0.074***	0.068***	0.066***	0.012	0.003	0.005
	(0.022)	(0.022)	(0.022)	(0.010)	(0.008)	(0.007)
Observations (N)	52,132	46,489	45,542	40,510	39,571	39,331

Note: Significance: *** 1%; ** 5%; * 10%. Standard errors are clustered at the level of the individual hence parenthesis reflect robust standard errors. Private medical insurance types refer to how medical insurance is paid for. The sample comprises of individuals that won the lottery at least once in the panel, lottery players, and consist of both winners and non-winners in a given year. Covariates include age and squared-age, gender, education attainment, employment status, home ownership, marital status, self-assessed health, health problems, and region identifiers.

Table 5: Lottery wins and length of time individuals maintain private medical insurance coverage

	Direct payment & deduct from wages (N=958)				Direct payment only (N=718)			
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(A) Wins > £500	-0.869*	-0.809*	-0.678	-0.631	-0.757	-0.683	-0.502	-0.385
	(0.458)	(0.462)	(0.486)	(0.502)	(0.516)	(0.514)	(0.549)	(0.552)
(B) Lottery wins categories:								
No wins (Ref)								
< £100	0.020	0.0325	0.0655	0.111	-0.165	-0.183	-0.126	-0.100
	(0.146)	(0.150)	(0.149)	(0.152)	(0.160)	(0.164)	(0.164)	(0.162)
£100 – £250	0.114	0.159	0.143	0.248	0.418	0.467	0.457	0.505
	(0.376)	(0.387)	(0.389)	(0.381)	(0.477)	(0.484)	(0.480)	(0.478)
£250 – £500	0.350	0.400	0.282	0.150	0.382	0.348	0.212	-0.001
	(0.411)	(0.410)	(0.408)	(0.438)	(0.562)	(0.572)	(0.582)	(0.635)
> £500	-0.854*	-0.788*	-0.653	-0.591	-0.778	-0.705	-0.522	-0.397
	(0.459)	(0.464)	(0.488)	(0.504)	(0.519)	(0.517)	(0.551)	(0.556)
Time left in sample	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demographic	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Income, wealth	No	No	Yes	Yes	No	No	Yes	Yes
Health, geography	No	No	No	Yes	No	No	No	Yes

Note: Significance: *** 1%; ** 5%; * 10%. Standard errors are clustered at the level of the individual hence parenthesis reflect robust standard errors. The sample comprises of individuals that won the lottery at least once in the panel, lottery players, and consist of both winners and non-winners in a given year. The outcome variable is the number of years individuals maintain private medical insurance coverage after taking up medical insurance. *Time left in sample*: the total number of waves that individuals remain in the survey in the year they take up medical insurance; *Demographic*: age and squared-age, gender, marital status, education attainment, employment status; *Income, wealth*: household income, home ownership; *Health, geography*: self-assessed health, health problems, and region identifiers.

Table 6: Implied income elasticities of health care with respect to lottery winnings and household income

	Public vs. No Care			Private vs. No Care		
	Elasticity of winnings (RE)	Elasticity of income (FE-All)	Elasticity of income (RE-All)	Elasticity of winnings (RE)	Elasticity of income (FE-All)	Elasticity of income (RE-All)
	(1)	(2)	(3)	(4)	(5)	(6)
Overnight hospital	-0.013	-0.036*	-0.037***	0.262*	0.106	0.475***
Blood pressure	-0.010	0.017*	0.045***	0.088	0.104***	0.343***
Chest X-ray	-0.005	0.018	0.023**	0.258**	-0.001	0.403***
Cholesterol test	-0.005	0.012	0.094***	0.153	0.150***	0.408***
Dental	-0.007	-0.011**	0.003	0.008	0.027***	0.094***
Eye-test	0.003	-0.009	-0.002	0.012	0.056***	0.184***
Cervical exam	-0.024	0.013	-0.023**	0.963***	0.511***	0.691***
Breast exam	0.028	0.043*	0.137***	0.315	0.146	0.454***

Note: Significance: *** 1%; ** 5%; * 10%. Statistical significant refers to the regression coefficient estimates. Estimates of income elasticities are calculated as percentage change in the proportion of individuals obtaining public or private care versus no-care given a one-percent increase in lottery winnings or household income.

A Appendix

Table A.1: Descriptive statistics of winners and non-winners samples

	Winners		Non-winners	
Dependent variable	Mean	Std. Dev	Mean	Std. Dev.
Log(real lottery win)	3.576	1.423		
Win category: $<$ £100	0.809	0.393		
Win category: £100 $-$ £250	0.091	0.288		
Win category: £250 $-$ £500	0.048	0.213		
Win category: $>$ £500	0.052	0.223		
Log(real household income)	9.126	0.655	9.022	0.711
Private health insurance	0.197	0.398	0.148	0.355
Age	45.342	17.112	45.718	18.424
Female	0.432	0.495	0.558	0.497
Primary	0.213	0.410	0.255	0.436
Secondary	0.018	0.132	0.012	0.110
Low-secondary, vocation	0.324	0.468	0.296	0.457
High-secondary, mid-vocation	0.128	0.334	0.124	0.329
High vocation	0.206	0.405	0.170	0.375
First degree	0.079	0.270	0.103	0.304
High degree	0.024	0.152	0.027	0.161
Education: Undefined	0.008	0.088	0.014	0.118
Employed full-time	0.590	0.492	0.502	0.500
Self-employed	0.075	0.264	0.070	0.256
Unemployed	0.022	0.146	0.035	0.184
Retired	0.180	0.3839	0.203	0.402
Maternity leave	0.004	0.060	0.005	0.070
Family care	0.052	0.221	0.076	0.265
Full-time student	0.034	0.180	0.053	0.224
Disabled	0.039	0.194	0.048	0.213
Government training	0.001	0.029	0.002	0.041
Other type of employment	0.004	0.065	0.007	0.082
Owns home	0.759	0.428	0.736	0.441
Married	0.699	0.459	0.644	0.479
Health: Excellent	0.226	0.418	0.234	0.423
Health: Good	0.481	0.500	0.456	0.498
Health: Fair	0.205	0.404	0.211	0.408
Health: Poor	0.067	0.249	0.078	0.268
Health: Very poor	0.021	0.142	0.022	0.146
Health problems: Arms, Legs etc	0.294	0.456	0.278	0.448
Health problems: Sight	0.050	0.218	0.052	0.222
Health problems: Hearing	0.092	0.289	0.083	0.276
Health problems: Skin conditions	0.141	0.348	0.117	0.321
Health problems: Chest	0.142	0.349	0.135	0.342
Health problems: Heart/Blood pressure	0.182	0.386	0.171	0.377
Health problems: Stomach	0.086	0.280	0.081	0.273
Health problems: Diabetes	0.038	0.191	0.038	0.192
Health problems: Anxiety, depression	0.069	0.253	0.087	0.282
Health problems: Alcohol, drugs	0.005	0.072	0.006	0.074
Health problems: Epilepsy	0.006	0.080	0.009	0.092
Health problems: Migraine	0.084	0.277	0.081	0.272
Health problems: Other	0.050	0.218	0.044	0.206
N	14,205		134,176	

Table A.2: Estimates of lottery winnings categories on health care use and the choice of private (non-NHS) versus NHS care

	Overnight Hospital	Blood pressure	Chest X-ray	Cholesterol test	Dental	Eye test	Cervical exam	Breast exam
	(1)	(5)	(4)	(6)	(2)	(3)	(7)	(8)
(A) Whether used health care								
Lottery wins categories (Reference £1-£100):								
£100 – £250	0.09	0.03	0.27	-0.02	0.04	0.51	0.51	0.43
	(0.28)	(0.28)	(0.30)	(0.29)	(0.26)	(0.30)	(0.52)	(0.53)
£250 – £500	-0.17	-0.57	0.27	0.47	0.17	-0.08	-0.38	0.02
	(0.39)	(0.38)	(0.42)	(0.40)	(0.35)	(0.42)	(0.71)	(0.73)
> £500	-0.27	-0.48	-0.17	0.33	-0.33	-0.00	0.08	0.52
	(0.42)	(0.41)	(0.45)	(0.42)	(0.37)	(0.44)	(0.75)	(0.77)
(B) Choice of private versus NHS care								
Lottery wins categories (Reference £1-£100):								
£100 – £250	-0.74	0.59	-0.20	0.37	0.66**	-0.32	0.27	1.72
	(1.05)	(0.45)	(0.79)	(0.63)	(0.35)	(0.45)	(0.89)	(1.11)
£250 – £500	0.85	0.38	-1.76	0.84	0.69**	-0.98	1.14	-0.32
	(1.42)	(0.62)	(1.04)	(0.83)	(0.48)	(0.64)	(1.29)	(1.32)
> £500	3.35**	1.65**	1.14	2.33***	0.42	0.22	6.69***	2.74
	(1.55)	(0.67)	(1.15)	(0.90)	(0.52)	(0.68)	(1.33)	(1.72)

Note: Significance: *** 1%; ** 5%; * 10%. Robust standard errors in parenthesis. Outcome variables are standardized for comparability across different types of health care services. The estimates are based on the generalized linear random effects model. Coefficient estimates are interpreted as standard deviation changes in health service use for a ten percent increase in lottery winnings. Other covariates include age and squared-age, gender, education attainment, employment status, home ownership, marital status, self-assessed health, health problems, and region identifiers.

Table A.3: Implied income elasticities of health care with respect to inheritance income

Dependent variable	Public vs. No Care	Private vs. No Care
Overnight hospital	0.039	0.138
Blood pressure	0.013	0.082
Chest X-ray	-0.006	0.769
Cholesterol test	0.010	0.033
Dental	0.012	0.058**
Eye test	0.008	0.143***
Cervical exam	0.044*	0.224
Breast exam	0.033	0.171

Note: $^{-a}$ Significance: *** 1%; ** 5%; * 10%. Statistical significance refers to the regression coefficient estimates, which are estimated using OLS. Estimates of income elasticities are calculated as percentage change in the proportion of individuals obtaining public or private care versus no-care given a one-percent increase in bequest income.

Table A.4: Full regression estimates on whether used health service; random effects model with Mundlak correction

Variable	Overnight hospital	Dental	Eye-test	Chest X-ray	Blood pressure	Cholestrol	Cervical exam	Breast exam
Age	-0.016	0.024	0.005	-0.008	-0.001	0.031	0.011	0.072
	(0.003)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)
Age-squared	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	-0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Female	0.060	0.142	0.143	-0.108	0.202	-0.132		
	(0.019)	(0.022)	(0.021)	(0.020)	(0.019)	(0.020)		
Education (Ref: Primary)								
Not defined	0.053	0.141	0.087	-0.061	-0.024	0.194	-0.076	0.474
	(0.097)	(0.103)	(0.105)	(0.102)	(0.096)	(0.099)	(0.155)	(0.162)
Secondary	0.041	0.389	0.041	0.090	0.061	0.043	-0.076	-0.029
	(0.074)	(0.088)	(0.082)	(0.078)	(0.075)	(0.076)	(0.109)	(0.115)
Low secondary	0.072	0.238	0.116	0.062	0.088	0.077	0.024	0.001
– vocation	(0.026)	(0.030)	(0.029)	(0.028)	(0.027)	(0.027)	(0.040)	(0.042)
High secondary	0.053	0.252	0.207	0.014	0.157	0.143	0.088	0.017
– mid vocation	(0.034)	(0.039)	(0.037)	(0.036)	(0.034)	(0.035)	(0.057)	(0.059)
High vocation	0.095	0.326	0.163	0.077	0.140	0.078	0.144	-0.115
	(0.030)	(0.034)	(0.032)	(0.031)	(0.030)	(0.030)	(0.046)	(0.049)
First degree	0.063	0.353	0.283	0.038	0.159	0.082	0.030	0.007
	(0.039)	(0.045)	(0.043)	(0.042)	(0.040)	(0.041)	(0.066)	(0.069)
Higher degree	0.080	0.387	0.221	0.050	0.197	0.101	0.114	0.045
	(0.064)	(0.073)	(0.070)	(0.067)	(0.065)	(0.066)	(0.113)	(0.119)
Employment status (Ref: In paid employment)								
Self-employed	0.039	0.008	-0.073	-0.019	-0.037	-0.008	0.049	0.010
	(0.033)	(0.034)	(0.036)	(0.035)	(0.033)	(0.034)	(0.069)	(0.072)
Unemployed	-0.011	0.057	-0.016	-0.019	0.013	0.042	0.103	-0.103
	(0.054)	(0.052)	(0.058)	(0.058)	(0.053)	(0.055)	(0.110)	(0.114)
Retired	0.099	0.050	0.007	0.014	0.114	0.175	-0.065	0.008
	(0.037)	(0.037)	(0.040)	(0.039)	(0.036)	(0.038)	(0.055)	(0.058)
Family care	1.653	0.094	-0.250	0.152	0.895	0.208	-0.163	-0.079
	(0.124)	(0.112)	(0.132)	(0.132)	(0.120)	(0.126)	(0.141)	(0.146)
Full-time	0.192	0.150	0.008	0.012	0.113	0.078	-0.048	-0.020
student	(0.039)	(0.039)	(0.042)	(0.042)	(0.039)	(0.040)	(0.046)	(0.048)
Long-term sick/	-0.060	0.315	0.180	0.063	-0.003	0.067	-0.450	0.300
disabled	(0.049)	(0.048)	(0.052)	(0.052)	(0.048)	(0.050)	(0.086)	(0.089)
On maternity	0.108	0.041	0.124	0.115	0.105	0.084	-0.125	0.121
leave	(0.049)	(0.050)	(0.053)	(0.052)	(0.049)	(0.050)	(0.078)	(0.082)
Government	0.069	0.304	0.066	0.789	-0.289	0.125		
training	(0.259)	(0.242)	(0.277)	(0.277)	(0.254)	(0.264)		
Other	-0.036	0.244	0.048	0.086	0.186	0.236	-0.150	0.402
	(0.117)	(0.109)	(0.125)	(0.124)	(0.114)	(0.119)	(0.223)	(0.230)
Log(household	-0.008	0.041	0.053	0.020	0.088	0.077	-0.013	0.071
income)	(0.015)	(0.015)	(0.016)	(0.015)	(0.014)	(0.015)	(0.024)	(0.025)
Log(lottery	-0.000	-0.004	0.003	0.003	-0.007	0.002	-0.008	0.013
winnings)	(0.009)	(0.007)	(0.009)	(0.009)	(0.008)	(0.009)	(0.016)	(0.016)
Avg. lottery	0.015	0.005	0.006	0.016	0.021	0.018	-0.005	-0.001
winnings	(0.011)	(0.011)	(0.012)	(0.012)	(0.011)	(0.012)	(0.020)	(0.020)
Owns home	-0.030	0.222	-0.003	-0.027	-0.000	0.058	-0.064	0.060

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Table A.4 – continued from previous page

Variable	Overnight hospital	Dental	Eye-test	Chest X-ray	Blood pressure	Cholestrol	Cervical exam	Breast exam
	(0.021)	(0.023)	(0.023)	(0.023)	(0.021)	(0.022)	(0.034)	(0.035)
Married	-0.001	0.055	-0.020	-0.033	0.092	0.007	0.110	0.030
	(0.021)	(0.022)	(0.023)	(0.022)	(0.021)	(0.022)	(0.033)	(0.035)
Self-assessed health (Ref: Excellent)								
Good	0.057	-0.043	0.001	0.081	0.105	0.056	0.041	0.078
	(0.020)	(0.019)	(0.022)	(0.022)	(0.020)	(0.021)	(0.035)	(0.037)
Fair	0.207	-0.118	-0.027	0.329	0.244	0.085	0.094	0.027
	(0.026)	(0.025)	(0.028)	(0.028)	(0.026)	(0.027)	(0.045)	(0.046)
Poor	0.695	-0.120	-0.005	0.764	0.412	0.130	0.081	0.061
	(0.038)	(0.036)	(0.041)	(0.041)	(0.038)	(0.039)	(0.063)	(0.065)
Very poor	1.231	-0.112	-0.012	1.327	0.416	0.193	0.021	-0.091
	(0.062)	(0.058)	(0.066)	(0.066)	(0.060)	(0.063)	(0.093)	(0.097)
Constant	-0.120	-1.328	-1.153	-0.249	-1.466	-1.826	0.393	-2.657
	(0.164)	(0.170)	(0.177)	(0.173)	(0.163)	(0.168)	(0.271)	(0.282)
N	14,205	14,205	14,205	14,205	14,205	14,205	6,146	6,146

Note: Robust standard errors in parenthesis. Other covariates include indicators for health problems and geography.

Table A.5: Full regression estimates on choice of private versus NHS care; random effects model with Mundlak correction

Variable	Overnight hospital	Dental	Eye-test	Chest X-ray	Blood pressure	Cholestrol	Cervical exam	Breast exam
Age	0.028	0.011	0.005	0.006	-0.001	-0.047	-0.006	-0.023
	(0.011)	(0.005)	(0.005)	(0.009)	(0.006)	(0.010)	(0.014)	0.024)
Age-squared	-0.000	-0.000	-0.000	-0.000	-0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	0.000)
Education (Ref: Primary)								
Female	-0.022	-0.084	-0.124	-0.037	-0.381	-0.106		
	(0.069)	(0.028)	(0.030)	(0.056)	(0.035)	(0.051)		
Not defined	0.812	-0.067	0.064	-0.165	0.067	0.086	-0.054	-0.184
	(0.343)	(0.139)	(0.160)	(0.310)	(0.187)	(0.249)	(0.349)	0.330)
Secondary	0.729	0.037	-0.022	0.197	0.080	-0.167	0.203	0.011
	(0.273)	(0.105)	(0.142)	(0.214)	(0.158)	(0.256)	(0.195)	0.375)
Low secondary – vocation	0.137	0.018	-0.028	0.008	-0.012	0.040	0.004	0.082
	(0.088)	(0.041)	(0.042)	(0.072)	(0.047)	(0.065)	(0.083)	0.109)
High secondary – mid vocation	0.419	0.091	0.067	0.157	0.001	-0.102	0.005	0.491
	(0.119)	(0.051)	(0.055)	(0.097)	(0.062)	(0.091)	(0.106)	0.183)
High vocation	0.156	0.127	0.087	0.054	0.006	0.003	-0.088	0.041
	(0.100)	(0.045)	(0.047)	(0.081)	(0.053)	(0.073)	(0.091)	0.136)
First degree	0.307	0.176	0.227	0.234	0.160	-0.021	0.156	0.020
	(0.153)	(0.057)	(0.063)	(0.120)	(0.072)	(0.108)	(0.125)	0.181)
Higher degree	0.248	0.188	0.223	0.006	0.020	0.136	-0.103	0.337
	(0.257)	(0.090)	(0.098)	(0.193)	(0.116)	(0.162)	(0.191)	0.266)
Employment status (Ref: In paid employment)								
Self-employed	0.353	0.186	-0.003	0.114	-0.102	-0.017	0.349	0.462
	(0.134)	(0.045)	(0.057)	(0.104)	(0.061)	(0.081)	(0.115)	0.184)
Unemployed	0.122	-0.203	-0.259	-0.056	-0.199	-0.140	-0.043	-0.024
	(0.197)	(0.074)	(0.101)	(0.151)	(0.099)	(0.156)	(0.175)	0.299)
Retired	0.013	-0.028	-0.261	0.010	-0.088	-0.060	-0.160	-0.055
	(0.127)	(0.051)	(0.054)	(0.102)	(0.054)	(0.067)	(0.137)	0.108)
Family care	-0.100	-0.215	-0.182	-0.293	-0.151	-0.297	0.838	-0.679
	(0.189)	(0.136)	(0.248)	(0.402)	(0.142)	(0.376)	(0.239)	1.015)
Full-time student	0.030	-0.008	-0.204	-0.048	-0.026	0.003	0.091	0.008
	(0.122)	(0.050)	(0.062)	(0.121)	(0.062)	(0.100)	(0.081)	0.119)
Long-term sick/ disabled	0.610	-0.152	-0.560	-0.025	-0.214	-0.700	-0.040	-0.401
	(0.193)	(0.063)	(0.082)	(0.141)	(0.099)	(0.334)	(0.184)	0.508)
On maternity leave	-0.103	-0.314	-0.456	-0.121	-0.187	-0.162	-0.131	-0.032
	(0.126)	(0.071)	(0.073)	(0.100)	(0.071)	(0.091)	(0.142)	0.172)
Government training	0.061	-0.235	-0.657	-0.280	-0.109	0.005		
	(0.675)	(0.313)	(0.452)	(0.372)	(0.524)	(0.533)		
Other	-0.036	0.165	0.064	-0.028	-0.001	-0.240	-0.217	0.080
	(0.468)	(0.151)	(0.198)	(0.292)	(0.183)	(0.262)	(0.420)	0.347)
Log(household income)	0.256	0.176	0.149	0.207	0.118	0.200	0.112	0.027
	(0.054)	(0.019)	(0.023)	(0.042)	(0.026)	(0.038)	(0.045)	0.064)
Log(lottery winnings)	0.072	0.021	0.008	0.034	0.031	0.019	0.078	0.032
	(0.033)	(0.010)	(0.014)	(0.025)	(0.013)	(0.018)	(0.027)	(0.029)
Avg. lottery winnings	-0.006	0.004	0.017	-0.024	-0.009	-0.029	-0.075	-0.055
	(0.042)	(0.015)	(0.018)	(0.033)	(0.019)	(0.028)	(0.035)	(0.046)
Owns home	0.081	0.034	0.092	0.050	0.070	0.086	0.038	0.109

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Table A.4 – continued from previous page

Variable	Overnight hospital	Dental	Eye-test	Chest X-ray	Blood pressure	Cholestrol	Cervical exam	Breast exam
	(0.075)	(0.032)	(0.036)	(0.060)	(0.039)	(0.060)	(0.064)	0.113)
Married	0.074	-0.004	0.006	0.056	-0.061	0.031	-0.014	0.009
	(0.073)	(0.031)	(0.034)	(0.059)	(0.037)	(0.054)	(0.064)	0.104)
Self-assessed health (Ref: Excellent)								
Good	-0.039	-0.026	-0.100	-0.187	-0.184	-0.240	-0.111	-0.177
	(0.107)	(0.025)	(0.033)	(0.085)	(0.038)	(0.057)	(0.064)	0.096)
Fair	-0.170	-0.063	-0.166	-0.189	-0.246	-0.272	-0.076	-0.211
	(0.113)	(0.034)	(0.042)	(0.089)	(0.045)	(0.065)	(0.081)	0.117)
Poor	-0.023	-0.102	-0.168	-0.172	-0.176	-0.245	0.132	-0.052
	(0.123)	(0.051)	(0.061)	(0.099)	(0.057)	(0.081)	(0.114)	0.157)
Very poor	-0.137	-0.205	-0.183	-0.153	-0.115	-0.130	0.113	-0.294
	(0.147)	(0.084)	(0.088)	(0.118)	(0.083)	(0.110)	(0.179)	0.235)
Constant	-3.477	-1.934	-1.002	-1.855	-0.394	0.213	0.957	0.817
	(0.639)	(0.232)	(0.263)	(0.458)	(0.295)	(0.450)	(0.547)	(0.888)
N	1,319	9,205	5,758	1,987	6,960	2,558	1,599	755

Note: Robust standard errors in parenthesis. Other covariates include indicators for health problems and geography.

Table A.6: Lottery wins and private medical insurance (PMI) status by insurance types - winners only

	$Prob(PMI_t = 1\|X)$			$Prob(PMI_t = 1\|PMI_{t-1} = 0, X)$		
	(1) All types	(2) Direct payment & deduct from wages	(3) Direct payment	(4) All types	(5) Direct payment & deduct from wages	(6) Direct payment
(A) Lottery wins	0.011***	0.010***	0.010***	0.002	0.001	0.001
	(0.003)	(0.003)	(0.003)	(0.002)	(0.001)	(0.001)
(B) Lottery wins categories:						
< £100 (Ref)						
£100 – £250	0.031**	0.016	0.013	0.020**	0.005	0.004
	(0.014)	(0.011)	(0.010)	(0.009)	(0.006)	(0.005)
£250 – £500	0.002	0.015	0.016	0.004	0.009	0.002
	(0.018)	(0.014)	(0.013)	(0.011)	(0.009)	(0.007)
> £500	0.064***	0.063***	0.061***	0.009	0.001	0.004
	(0.021)	(0.022)	(0.021)	(0.011)	(0.008)	(0.007)
Observations (N)	14,205	12,591	12,320	10,710	10,419	10,345

Note: Significance: *** 1%; ** 5%; * 10%. Robust standard errors in parenthesis. Private medical insurance types refer to how medical insurance is paid for. The sample comprises of winners at the year of winning. Covariates include age and squared-age, gender, education attainment, employment status, home ownership, marital status, self-assessed health, health problems, and region identifiers.