

The Urban Happiness Paradox: evidence of Greater Britain

Last decades cities all around the world grew considerably in terms of population and economic significance. Although more and more people opt for an urban life above a rural life, people are in general less happy in large cities compared to smaller cities or villages. This paper aims to unravel this urban happiness paradox. Two underlying mechanisms will be discussed: do large cities make people less happy or do large cities attract more unhappy people? This paper analyses residential mobility in the United Kingdom based on twelve waves of the British Household Panel Survey and explains changes in life satisfaction of people moving from rural areas to urban areas (and vice versa). The results show that, on average, unhappiness in cities can be mainly attributed to the selection of unhappy people into cities.

Key words: Life satisfaction, urban-rural gradient, migration, selection, causality, paradox

1. Introduction: the urban happiness paradox

People move for various reasons varying from better job opportunities to living closer to family or friends. Some prefer to live in a greener, safer or quieter environment while others are attracted to the urban buzz of large cities. Glaeser's book 'The Triumph of the City' (2011) claims that the city makes us richer, smarter, greener, healthier and happier which explains the tremendous growth of cities all around the world. People are attracted to the urban buzz of cities as these are vibrant places with a high allure. The 'triumph' of the city is striking if you take a closer look to the average happiness levels in urban areas: urbanization is generally linked to lower levels of life satisfaction (Berry and Okulicz-Kozaryn, 2009, 2011; Gerdtham and Johannesson, 2001; Graham, 2009; Rodriguez-Pose and Maslauskaitė, 2012). It is questionable why so many people are migrating towards cities while people in developed countries are in general less happy in urban areas. This points towards an urban happiness paradox. This paper aims to unravel this paradox by gaining more insight in the underlying mechanisms between urban-rural differences in life satisfaction. Although research has shown that people living in larger cities are generally less happy compared to people living in smaller cities or villages, there is still a lot unknown about the main drivers behind it. This paper discusses whether this urban happiness paradox can be explained by a causal effect or a selection effect. Although various researchers tried to explain urban-rural differences in life satisfaction (Wirth, 1938; Fisher, 1995; Berry and Okulicz-Kozaryn, 2009, 2011) they did not find empirically prove whether there is a causal effect or a selection effect. If there is a causal effect, urban unhappiness can be explained by city characteristics negatively affecting subjective well-being and typical urban problems – like crime, pollution and inequality – causing lower levels of individual life satisfaction. The conditions of rural living – like safety, green space, affordability – might be more favourable causing a higher level of life satisfaction while, in contrast, the conditions of urban living might cause lower levels of life satisfaction.

Other scholars, however, argued that selective migration might explain urban-rural differences in terms of level of life satisfaction (Glaeser et al., 2016; Easterlin et al., 2011). Glaeser and colleagues (2016) analysed the persistent differences in self-reported subjective wellbeing across metropolitan areas in the United States and find that residents of declining cities appear to be less happy than others. One possible explanation for this relationship is selective migration; especially people who are relatively satisfied with their life leave declining cities or growing cities may attract migrants who are happier than the population as a whole. Based on panel data they test whether some areas attract people who are disproportionately prone to be more or less happy. Easterlin and colleagues (2011) discussed whether the observed urban-rural differences in life satisfaction can be explained by the selectivity of rural-urban migration. They argued that rural out-migrants tend to be better educated than their peers.

In this research we will analyse which mechanism explains urban-rural differences by analysing internal migration in the United Kingdom (UK). We use panel data from the British Household Panel Survey (1996-2008) which enable us to follow internal migrants over time, and analyse changes in their self-reported life satisfaction. We will track the level of life satisfaction of internal migrants up to three years before and after moving from a rural area towards an urban area, and vice versa. We aim to discover why people in larger cities tend to report lower levels of happiness compared to people in smaller cities or villages. This research is one of the first to empirically test the underlying mechanism of urban-rural differences in life satisfaction by following internal migrants over time. A similar research is performed by Stutzer and Frey (2006) who analysed whether marriage makes people happy, or whether happy people are more likely to get married.

The remaining of this paper is structured as followed. Chapter two discusses theories on life satisfaction, geographical mobility, urban-rural conditions and selection effects. Chapter three describes the data and methodology used for this research. Chapter four summaries the main results and chapter five discusses and concludes.

2. Theory

2.1 Life satisfaction, geographical mobility and urban-rural migration

People can play an active role in increasing their own happiness by making considered choices within their life strategies (Easterlin, 2006). Migration research is predicated on the assumption that people move because they believe they will be better off elsewhere and they want to improve their lot in one way or another. Individuals actively seek out locations, identify with their place of residence, and derive considerable satisfaction as well as emotional attachment from it (Florida et al., 2013).

Although a majority of studies discuss the consequences of internal migration on labour-market outcomes and material well-being, only a few studies analysed whether a migration event is followed by a greater life satisfaction (Barcus, 2004; Nowok et al., 2013). Nowok and colleagues (2013) investigated whether individuals who migrate within the United Kingdom became happier after their move and whether the

effect is permanent or transient. They found that migration is preceded by a period when individuals experience a significant decline in happiness, but that the boost that is received through migration appears to bring people back to their initial level of happiness. This is in line with the adaptation theory which refers to the process by which individuals will return to baseline levels of happiness following a change in life circumstances (Lucas, 2007). According to this theory, people adapt to most of these changes after a while. Only major events, such as a divorce, death of a spouse, unemployment, and disability are associated with lasting changes in subjective well-being (Lucas, 2007). While most migrants expect a positive effect on their level of life satisfaction, moving may not always result in increased satisfaction as decisions are often based on imperfect or incomplete information, which may lead to unanticipated situation at the destination (Barcus, 2004). Internal migration can be divided into shorter- and longer distance moves whereby long-distance moves are often motivated by economic and employment needs while short-distance moves are associated with improving residential circumstances. Migration to urban or rural areas has components of both long- and short-distance moves.

Migrants who opt for urban areas like larger cities are often students or young professionals as one of the main reasons to move towards a city is education and employment. Large cities offer plenty of opportunities in terms of employment and career options or as Glaeser (2011) puts it '*urban density provides the clearest path from poverty to prosperity*'. In general, opportunities will be greater in places where there are other people with complementary skills. This is one of the reasons why people gravitate to urban centres, and why high-skilled professionals often move to cities and places where their profession is already well established (Florida, 2009). Although most studies support the idea that urban migration is mainly motivated by employment reasons, a steadily growing body of literature include other factors as well such as urban amenities, aesthetics, good public services (Glaeser et al., 2001). Hence, cities feature an attractive diversity of consumption amenities which make life outside work more enjoyable. The success of cities increasingly depends on their role as centres of consumption (Glaeser et al., 2001). Glaeser and colleagues analysed, among others, the presence of a rich variety of services and consumer goods and the availability of good public services. The presence of consumer amenities became important in the location decisions of firms and households, which is reflected in the higher growth rates of amenity-rich places. Especially the higher-educated part of the workforce is attracted to the consumption variety in large cities (Lee, 2010). The benefits of urbanization are, amongst others, the convenience of goods and services and the availability of jobs and educational facilities. Moreover, the ease of interpersonal contact in dense cities also explains why many young and single people choose to live in cities (Costa and Kahn, 2000). Large cities often function as a promising marriage market while in more rural places there is less chance to find the love of your life. Since the relation between life satisfaction and age is u-shaped the life satisfaction of these groups might be higher.

2.2 Explaining differences in urban-rural life satisfaction

For European countries several researchers analysed the urban-rural differences in life satisfaction or subjective well-being. Rodriguez-Pose and Maslauskaitė (2012) report a significantly lower life satisfaction for people living in big cities (more than half a million inhabitants) in Central and Eastern European countries while they do not find any effect for people living in a remote area (less than two thousand inhabitants). Sørensen (2014) used the European Value Survey to discover that rural dwellers have a higher life satisfaction than city dwellers; both in the total European sample as well in the three subsamples grouping the member states by their GDP per capita. Gerdtham and Johannesson (2001) analysed the relationship between happiness and urbanisation in Sweden and they found that happiness decreases with the degree of urbanisation. In Europa, Piper (2015) found a negative association between living in a capital city and happiness when compared to citizens who live elsewhere in that country; even when taking into account socio-economic and environmental controls. Lenzi and Perucca (2016) stress the direct but also indirect effect of urbanization on well-being as they find that residents in rural communities located in urbanized regions can benefit from the positive externalities generated by larger cities in the region, and enjoy their advantages without suffering their greater costs. In other words, living in rural communities generates a premium in terms of life satisfaction only if these communities are located in urbanized regions.

Small rural town characterised by informal social contact and stable, homogeneous populations facilitate strong social networks and good psychological health. Densely populated cities, on the other hand, with a mobile and heterogeneous population and conflicting social norms lead to weak social networks, low involvement in local activities, low neighbourhood satisfaction and poor psychological health (Adams, 1992; De Vos et al., 2016).

For a long time, the urban-rural dichotomy led to two opposing schools of thought. At one end of the spectrum was the anti-urban view which idealised and regretted the disappearance of rural life; at the other end was the pro-urban view which considered urbanisation as the engine of progress, innovation and modernisation (Davoudi and Stead, 2002). Although the biggest group of people, both in Europe and America, still prefer to live in low-density environments, people preferring (high-density and mixed-use) urban neighbourhoods are substantial and growing (Myers and Gearin, 2001).

Previous research in the United States has shown that people living in large cities are less happy compared to people living in smaller cities or villages (Berry and Okulicz-Kozaryn, 2011). They found an upward pressure towards greater happiness in lower-density areas and a downward pressure towards greater unhappiness in larger central cities. In earlier research, Berry and Okulicz-Kozaryn (2009: 122) found that *“at higher levels of development place of residence does influence life dissatisfaction, which is higher in large cities and much lower in rural areas. Rural residence increases happiness at double the rate that big-city residence boosts malaise”*. Based on data of the World Value Survey, the authors make a distinction between different types of countries all

across the globe. Wealthier countries with an Anglo-Saxon heritage are more likely to display a strong level of satisfaction with rural living and dissatisfaction with big-city residence while countries with a Latin heritage do not indicate any preference for either rural or urban living. For rapidly-urbanising countries in Asia they found higher levels of life satisfaction in big cities than elsewhere.

There is some evidence across a range of geographical locations that living in large cities is detrimental to life satisfaction and living in rural areas is beneficial (Dolan et al., 2008). Already in 1938, Wirth argued that urbanism itself led to negative effects such as urban unhappiness. It is questionable whether city characteristics might explain lower levels of life satisfaction (and rural conditions might have a positive influence on people's life satisfaction). The reasons why people are less happy in urban areas can be explained by a wide range of socio-economic, contextual and environmental factors. Urban areas are often associated with air pollution, noise of cars and public transport, and a lack of green space which negatively affects the people's life satisfaction. Overall, city life is arguably more expensive than rural life. Especially in capital cities, like London, the affordability of housing but also the commuting costs are under pressure. The higher costs of living can cause lower levels of happiness. Large cities are often associated with persistent poverty which might be one of the city characteristics explaining urban unhappiness. Compared to smaller town or suburbs, large cities often have higher levels of inequality than smaller cities, and higher inequality negatively influence subjective well-being or life satisfaction (Graham and Felton, 2006). The aspiration level of urban citizens can also be an explanation for lower levels of urban happiness. People with a relatively low income are confronted with a style of living in large cities which they cannot achieve and this can create frustration with one's own income situation (Easterlin, 2001). People in larger cities can feel more anonymous or lonely and less connected to others as they often do not know their neighbours. Subsequently, there is a lower sense of neighbourhood-based social capital which could affect residents' life satisfaction (Hoogerbrugge and Burger, 2017). In general, cities are collections of heterogeneous people with different specialisations and density and heterogeneity predict lower social capital (Helliwell and Wang, 2010).

Fischer (1975) raised the question whether cities themselves, in terms of size, density and heterogeneity, lead to unhappiness, or is it problems people typically associate with cities – notably poverty, crime and lack of support – that make people unhappy? Okulicz and Mazalis (2016: 12) argued that *“it is possible that cities have the ability to change people in such a way that they become less happy. For instance, cities may intensify the pecuniary and consumerist orientation in people, and make them more stressed and overworked”*. In their research they conclude that urbanism (in terms of city size and density) is at least partially responsible for lower happiness in cities, regardless of urban problems like crime, housing stress and persistent poverty.

Explanations for higher levels of rural life satisfaction is that rural areas in general offer better living conditions than urban areas. There is a positive relationship between subjective well-being and exposure to green or natural environments in daily life (Ambrey and Fleming, 2014). In general, people report to be significantly and substantially happier outdoors in all green or natural habitat types than they are in urban

environments (McKerron and Mourato, 2013). Stated preference research listed the advantages of living in suburbs – e.g. affordable housing and a safe and attractive place to raise children – while these characteristics perceived to be absent in inner urban neighbourhoods (Townshend, 2006). A higher level of social capital in rural areas explains a part of the rural-urban difference in life satisfaction (Sørensen, 2014). Although a higher social capital in rural areas raises rural life satisfaction, it cannot fully explain the entire urban-rural difference.

Migrants who opted for rural areas, including the countryside, smaller towns and suburbs, are typically families with young children and elderly people. Families with young children often chose to leave the city and move towards a suburb. In the United Kingdom the countryside is, at least in large parts of society, strongly associated with a beautiful landscape and a specific country life. Representations of the English countryside are closely linked with the concept of the rural idyll: a positive image surrounding many aspects of rural lifestyle, community and landscape. The rural idyll “*presents happy, healthy and problem-free images of rural life safely nestling with both a close social community and a contiguous natural environment*” (Clope and Milbourne, 1992: 359). Retired people are free to make locational decisions unconstrained by place of work. Throughout Europe the number of elderly people is increasing which is often referred to as the ageing society.

2.3 Selectiveness of urban-rural migration

According to Glaeser et al. (2016) people make decisions in order to jointly maximize expected future happiness and other objectives. Compensating differences in other dimensions offset persistent spatial differences in happiness. Following Benjamin et al. (2012) people have life objectives other than being satisfied and consequently make choices that reduce happiness if those choices further other aims. People are willing to make a trade-off between their own happiness and the happiness of their family and friends. In terms of urban or rural migration, people might be willing to move out of the city to raise their children in a rural area even when this do not increase their own happiness. Moreover, people make trade-offs between short-lived happiness and goals like long-term career success (Benjamin et al., 2012). Someone may choose a more competitive environment and yet know that this environment will – by opening up opportunities and inviting comparisons with high achievers – lead to less satisfaction. For this reason, people might be willing to move towards a city which offer plenty of career opportunities but also high costs of living and strong competition, despite recognizing that it will lead to less satisfaction (Glaeser et al., 2016). Based on panel data Glaeser and colleagues (2016) reject the hypothesis that the happiest individuals are selectively moving out of declining areas. The data do not support the hypothesis that unhappy migrants choose declining cities, but the results are not strong enough to reject the possibility of selective migration.

A range of studies highlight the selectivity of the migration stream to both urban or rural areas and the reasons migrants choose their destination. Easterlin and colleagues (2011) discussed whether the observed

urban-rural differences in life satisfaction can be explained by the selectivity of rural-urban migration. In their research they found that rural out-migrants tend to be better educated than their peers. *“Presumably this would also imply higher life satisfaction of out-migrants at origin, in which case out-migration would lower the rural life satisfaction average. If urban life satisfaction remained constant, rural out-migration would, in consequence, contribute to an urban life satisfaction advantage”* (Easterlin et al., 2011: 2194). According to them, people moving towards urban areas are in general more satisfied with their life because they are higher educated. This is in line with Florida’s theory on the attractiveness of cities for the ‘creative class’, defined as knowledge-based workers in a wide range of occupations (e.g. business, education, research) (Florida, 2003). According to Florida and colleagues (2013) the happiness of cities can be explained by its human capital levels. Based on research in the United States they found that human capital plays a central role in the happiness of cities, outperforming income and other variables. It is, however, questionable whether their findings are unique for the United States or whether we will find similar results for European countries, like the UK. While there is a striking difference in human capital levels between metropolitan regions and non-metropolitan regions in the United States, this difference might be less significant for urban and rural areas in the UK. Veenhoven (1994) discussed the selectiveness of rural-urban migration and argued that among people of rural origin, the unhappy may be somewhat more likely to move to a city, whereas among the city people that move to suburbs or the country the happy may be overrepresented. Selective migration is linked with social success as people who are moving to the city are often in search for better chances while people moving towards rural areas do typically well socioeconomically, especially the ones who moves to suburbs (Veenhoven, 1994). Due to selective migration it may be possible that ‘deviant’ people choose to live in cities and that they may be less happy than others and consequently depress overall city happiness. People with unusual interests or members of small subcultures would be more common in cities.

A similar selectiveness seems to occur with respect to mental health. People who are ‘difficult’ or behave ‘deviant’ tend to be trusted out from rural communities to the city, whereas equally problematic city-dwellers mostly remain in the city (Veenhoven, 1994). Research on depressive symptoms among older adults in urban and rural areas found some variation among older adults living in predominantly rural regions, in small towns and in urban areas but did not detect significant rural-urban differences (St. John et al., 2006). The potential negative effects of rural life on depression include long distances to social activities and services and engagement, and the out migration of younger people. On the other hand, smaller communities may promote a greater sense of neighbourliness, and the residential stability of these communities may encourage long-term friendships and a sense of belonging to a community.

Both studies (Easterlin et al., 2011; Florida et al., 2013) do not mention that large cities or metropolitan regions also offer plenty of low-skilled jobs which makes cities not only attractive for high-educated people but also for lower-educated people who are in general less satisfied with their life. The influx of immigrants in large cities affect urban happiness as immigrants report lower levels of life satisfaction compared to natives (Hendriks, 2015). Immigrants tend to concentrate in larger cities because there are more job opportunities and cheaper places to live and they prefer to live in cities (Damm, 2009). Cities play an

important role in acclimating new arrivals to their new home and its society. The lower levels of life satisfaction might be transitory or explained by unobserved individual heterogeneity, especially if some areas attract people who are disproportionately prone to be more or less happy.

2.4 Heterogeneity

The needs and desires of people are not static; they change over the life course. Following the life stage models, individuals are expected to move through a series of stages over their lifetimes (Barcus, 2004). Life stage changes may strongly influence a move as well as an individuals' level of satisfaction following the move as migration strongly interrelates with major life events such as marriage, getting a child, unemployment or retirement. Migration often involves disruption of individual's life and adaptation to a new environment, migrants tend to be selective for personal characteristics that foster their ability to handle change and adapt to new environments.

3. Data and methodology

3.1 Panel database

For this research we use the British Household Panel Survey (BHSP) which is a nationally representative sample of private households in United Kingdom. The same adults are interviewed each successive year and children are interviewed when they reach the age of 16. If anyone splits from their original household to form a new household, then all adult members of the new household are also interviewed. The core questions elicits information on income, labour market status, housing tenure, household composition, education and health. In 1999 an additional sample of 1,500 Scottish households was added to the main sample and in 2001 a sample of 2,000 households in Northern Ireland was included in the dataset, making the panel suitable for UK-wide research. This research uses a longitudinal dataset spanning thirteen years from 1996 to 2008. From 1996 onwards the life satisfaction question was introduced in the survey. The only exception is the year 2001 as in this year the life satisfaction question was not included in the survey. In 2009 the BHSP sample was incorporated into the larger sample of Understanding Society. Due to discontinuity in the data, we cannot use data from 2009 onwards as the sample is much bigger and the gap between interviews changed. For these reasons, this research is based on thirteen waves of the BHSP. The BHSP attempts to follow all migrants who remain in UK. Although, as expected, attrition among migrants is higher than among non-migrants, its extent is relatively small and does not pose a problem for the analysis of geographical mobility (Nowok et al., 2013).

The panel database is constructed by taking the following four selection criteria into account:

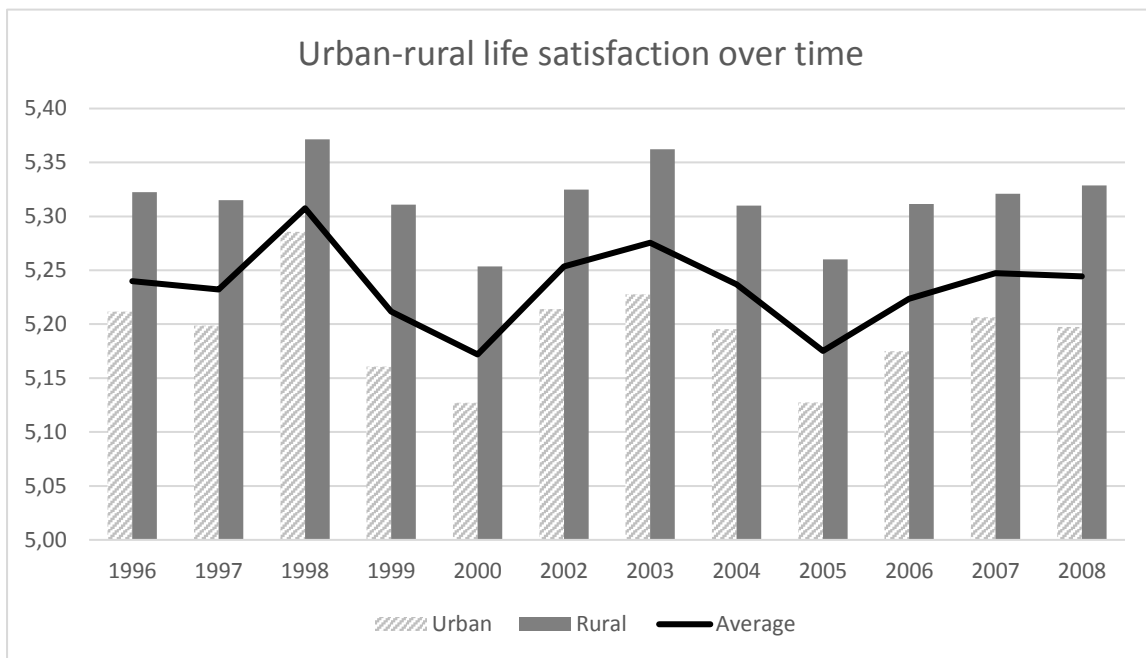
- (1) *Availability of urban-rural indicator:* the urban and rural classification of postcode for England, Wales, Scotland and Northern Ireland is used to make a distinction between urban and rural areas. Urban areas are defined as settlements with a population of 10,000 or more, and settlements with less than 10,000 inhabitants are defined as rural areas. There are some limitations of using a classification based on the population size of administrative units, but due to data limitations it is the only way to analyse the urban-rural gradient as we do not have information about the density or urbanity of the areas or respondents' self-classification of the size of the place of residence. We are aware of the limitations of this urban-rural indicator as there are severe differences between rural areas of only a few hundred inhabitants and cities of, for example, nine thousand inhabitants. Unfortunately, we cannot take this variation into account in this research. The urban-rural indicator is not available for all migrants in the database. Especially in the first waves of the BHSP the indicator is missing for respondents moving in or towards Scotland and Northern Ireland. We only take into account the migration movements of which the urban-rural indicator is known.
- (2) *Internal moves within the UK:* The migration behaviour of the respondents in the BHSP can be tracked using the individual mover status variable. For each year this variable indicates whether or not a person has moved. Only internal moves within the UK are taken into account. Respondents who moved back to the UK and the new entrances for each wave are not included in the analysis as we do not know their life satisfaction before they moved.
- (3) *Single migration:* About 56 percent of these migrants moved one time during the survey period while the remaining 44 percent of the respondents moved multiple times (varying from two to four times). We only consider the first occurrence of an internal migration event observed in the entire period. Consequently, observations for subsequent migration events are not taken into account.
- (4) *Distance:* The distance people move varied from less than 1 kilometre up to more than 700 kilometres. We only take into account a moving distance of more than five kilometres. In this research we are mainly interested in the effect of an urban or rural environment on an individual's life satisfaction and we do not expect much difference within a moving distance of five kilometres.

This research distinguishes four different groups of respondents: urban and rural residents (including respondents who lived in respectively an urban and rural area during the entire survey period), urban-rural migrants (including respondents who moved from an urban towards a rural area) and (rural-urban migrants (including respondents who moved from a rural towards an urban area).

3.2 *Self-reported life satisfaction*

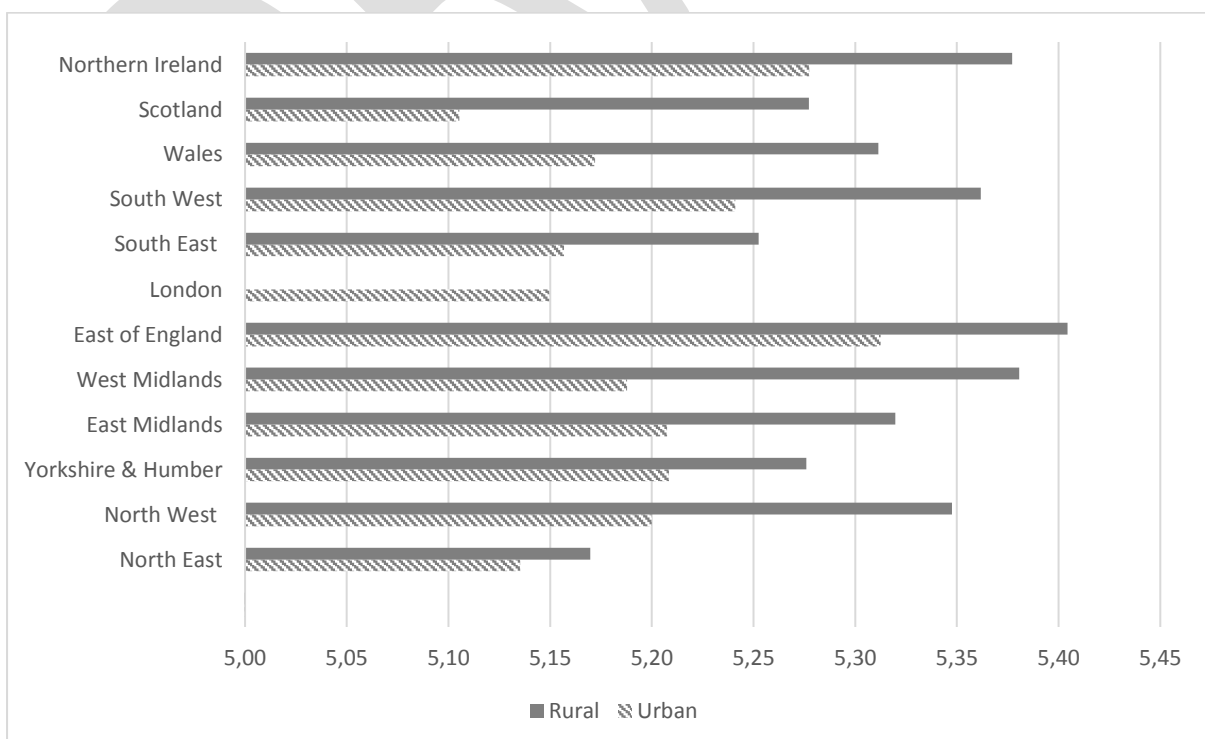
The dependent variable is the self-reported life satisfaction of the respondents based on the surveys question: "How dissatisfied or satisfied are you with your life overall?" on a seven-point scale varying from completely dissatisfied to completely satisfied. Respondents were able to respond neutrally by reporting 4 meaning that they were neither satisfied nor dissatisfied. Overall, the respondents are relatively satisfied with their lives as the average score of all respondents is 5.23. There is no evidence that the respondents are getting more or less satisfied over the years (1996-2008) as the yearly scores fluctuate around the average with the highest average life satisfaction in 1998 and the lowest score in 2000. Figure 1 envisions the average life satisfaction score for the twelve waves of the BHSP breakdown by urban and rural areas. The figure shows that respondents living in urban areas are less satisfied with their lives compared to people living in rural areas. The average life satisfaction score for urban residents is 5.19 while for rural residents this is slightly higher with 5.33. In urban areas the percentage of people who reported to be not satisfied with their life (defined as the lowest two scores on a seven-point scale) is 4 percent against 3 percent in rural areas. In urban areas the variation in terms of life satisfaction is slightly larger compared to rural areas with a standard deviation of 1.27 (rural) against 1.31 (urban). These facts and figures make clear that the UK follows the same pattern as other developed Western countries in which urban citizens are less satisfied with their life compared to rural citizens.

Figure 1: Urban and rural life satisfaction over time (1996-2008)



Note: the results for the year 2001 are missing as the life satisfaction questions was not included in this wave of the BHSP. Subsequently, there are striking regional differences between the twelve NUTS-1 regions in the UK (see Figure 2). People in the rural parts of East of England report the highest life satisfaction while the lowest level of life satisfaction is reported in urban Scotland. The urban areas in the southern part of England (e.g. London, South East and West England) are attracting high percentages of internal migrants as there are plenty of job opportunities here.

Figure 2: Urban and rural life satisfaction for 12 NUTS-1 regions



There is a difference in terms of life satisfaction of people who did not move during the survey period and stayed at the same address (non-migrants) and people who moved within the UK. The results showed that people who migrate are in generally less satisfied with their life than non-migrants, respectively 5.15 versus 5.24. This is in line with the literature discussing that people who are less satisfied with their life are more likely to migrate in search for a better life and better opportunities.

3.3 Methodology and estimation strategy

To find a causal or a selection effect, we analyse the life satisfaction of internal migrants who moved from an urban area to a rural areas (or vice versa). To trace the effect we follow the individual's reported life satisfaction scores for a period of seven years; from three years prior to the migration event, the year itself and three year afterwards. To effectively follow alterations in life satisfaction over time we apply a fixed-effect panel model. Panel data allows us to measure the effect of migration for one and the same person over time. The fixed-effect estimator exploits the within dimension of the data, but cannot take the between dimension into account. Time invariant characteristics such as gender or nationality are not included in the model as well as the variable age as this variable changed in the same amount of time as the survey waves. By using fixed effects a time-invariant base level of life satisfaction for each individual is taken into account.

$$LS_{it} = \alpha_i + \beta X_{it} + M_i + \epsilon_{it}$$

Where LS_{it} denotes the life satisfaction of individual i in period t . X_{it} is a vector of time-varying covariates, to be detailed below. The individual fixed effect (α_i) controls for any time-constant unobserved heterogeneity. The variable M indicates if a person i migrates in the period. Finally, ϵ_{it} is a stochastic error term, indexed i for the individual and t for time. We have repeated observations on the same individual, and as such the standard errors are clustered at the individual level.

To isolate the effect of an urban or rural place of residence on a person's self-reported life satisfaction, the following control individual and household variables are taken into account in the vector X : occupation status (6 categories), marital status (4 categories), number of children in household (3 categories), log of annual household income, social capital¹ (4 categories) and objective health² (4 categories). See Appendix A for the descriptive characteristics of the panel group. Additionally a set of year dummies are taken into account. The year dummies are jointly significant at the one percent level. This means that it is appropriate

¹ Social capital is measured based on the survey question: "How often do you meet friends or relatives who are not living with you?"

² Objective health is measured by the number of health problems reported in the survey. The respondents were asked about 15 different types of health problems (e.g. problems such as blood pressure, epilepsy, migraine or cancer) and were able to fill-in another type of health problem by themselves.

to run a two-way fixed effect model that takes these dummies into account as they explain a part of the unexplained variance.

We applied a random-effect regression model and compared this model with the fixed-effect model by a Hausmann test. The test rejects the null hypothesis that the difference in the coefficients is not systematic and therefore we choose a fixed-effect model for our analysis. A similar modelling approach was adapted for examining life satisfaction effects of major life events by Clark et al. (2013), Frijters et al. (2011) and Nowok et al. (2013).

4. Results

4.1 *Compositional differences*

To understand the variation in terms of life satisfaction we gain more insights in the compositional differences of the people who decided to move within the UK. There are some striking differences between the four groups of migrants (see Table 1). First, in terms of life satisfaction, urban-rural migrants are more satisfied with their lives (5.29) compared to rural-urban migrants (5.14). On average, rural residents report the highest life satisfaction (5.32) while the life satisfaction of urban residents is substantially lower (5.19). Second, on average the urban-rural migrants are older than rural-urban migrants. Third, a high percentage of the rural-urban migrants are students (12%) who are moving towards a city with a university or college to study. Fourth, urban-rural migrants are more likely to be a household with children compared to rural-urban migrants. This indicates that especially households with children move out of the city towards the countryside. Most likely, rural areas are (still) seen as an ideal place to raise children. Fifth, people are more likely to move out of the city when they are retired as the group urban-rural migrants report a higher percentage of retired people compared to the group rural-urban migrants. Sixth, the highest percentage unemployment is reported among the rural-urban migrants. Most likely people move towards a city to increase their chances to find a new job (or to start their own business). Seventh, in terms of average household income urban-rural migrants report a higher income compared to the rural-urban migrants. Eighth, in terms of health we do not find much differences between the percentages of urban-rural and rural-urban migrants. In general, the group urban residents report the highest percentage of people with a poor health. Unfortunately, there are no data available for mental health as previous research indicated that especially people with a mental disorder are more likely to gravitate in (large) cities.

Table 1: Compositional differences

	Urban residents	Rural residents	Urban-rural migrants	Rural-urban migrants	Rural-rural migrants	Urban-urban migrants
Life satisfaction (average)	5.23	5.36	5.29	5.14	5.20	5.20
Age (average)	50.06	51.14	46.16	41.57	46.03	42.99
Student (%)	6.86	5.53	2.10	11.62	3.35	4.00
Household with children (%)	21.83	21.63	35.38	27.14	37.13	39.52
Unemployment (%)	2.92	2.57	1.71	3.27	2.82	3.26
Retirement (%)	28.10	28.03	21.13	16.08	19.13	14.86
Household income (average)	13,839	13,872	19,343	14,084	15,597	16,467
Poor health (%)	19.63	15.73	13.20	13.63	18.11	15.11
N	34,601	21,337	2,281	1,592	4,390	11,099

Based on these findings it is arguably that selective migration might explain why people living in rural areas happier are compared to people living in urban areas. Selective migration can to a certain extent explain the higher levels of life satisfaction in rural areas as people migrating towards rural areas are in general happier compared to people migrating towards urban areas. This can be explained by various individual and household characteristics such as for example age, income and/or occupation status. On average, urban-rural migrants seems to have a higher socio-economic status than rural-urban migrants.

To indicate the importance of considering individual fixed effects we first present OLS estimations (see Table 2). We find a significant negative effect of urban residence on individual life satisfaction. In other words, city life decreases a person's life satisfaction with 0.07-point (on a 7-point scale). With the fixed effect setting, the effect of urban residence on individual life satisfaction became negligible and insignificant. Comparing estimates between OLS and fixed effects, it is arguably that the OLS estimates are partly driven by negative selection in a way that cities are more likely to attract people who are less satisfied with their life. This selection effect explains around 90% of the negative association between urban residence and life satisfaction.

Table 2: Relationship between urban-rural migration and life satisfaction; OLS and individual fixed effects

OLS		
Urban residence	-0.124*** (0.009)	-0.072*** (0.008)
Urban-rural migrant	0.030 (0.019)	0.009 (0.020)
Rural-urban migrant	-0.124*** (0.022)	-0.092*** (0.021)
Urban-urban migrant	-0.133*** (0.010)	-0.040*** (0.010)
Rural-rural migrant	-0.036** (0.015)	0.025* (0.014)
Fixed Effects		
Urban-rural migrant	0.015 (0.027)	0.006 (0.027)
Controls	NO	YES
Number of observations	94,716	94,716
Number of households	19,539	19,539

Table 2 reports the OLS regressions for four different groups of migrants with and without controlling for individual and household characteristics such as marital status, job status, education level, number of children, annual household income, health status and social capital. We find a significant negative effect for people moving towards urban areas (both from a rural area and another urban area) and a positive but mainly insignificant effect for moving towards a rural area.

4.2 Alterations in life satisfaction

To test whether there is a selection or causal effect we analyse the self-reported life satisfaction of migrants for a period of seven years; from three years prior to the year when a person reports a move up to three years after the move. Figure 3 illustrates the alterations in life satisfaction for the four groups of migrants. Migration gives a positive boost to migrants' life satisfaction as all migrants report a substantial increase in terms of life satisfaction between the year prior to the move ($t=-1$) and the year of the move itself ($t=0$). The positive boost of migration is temporarily as we see a drop in average life satisfaction in the years after the move. The drop in the first year after migration turns to be stronger for rural-urban migrants (-0.6 point) than for urban-rural migrants (-0.3 point). Three years after migration, urban-rural migrants are slightly more satisfied with their lives than three years prior to migration. Migrants seem to adapt to the change in urban or rural environment and returns in two or three years to their initial level of life

satisfaction. The figure shows that the average life satisfaction of urban-rural migrants is higher compared to the life satisfaction of the other types of migrants. In other words, people moving from a city towards the countryside are rather satisfied with their lives. A selection effect might explain the lower levels of urban happiness as cities seem to attract migrants with a lower level of life satisfaction while rural areas attract migrants with a higher level of life satisfaction. Although urban-rural migrants are slightly more satisfied after migration, this effect is too modest to argue that moving towards the countryside positively boosts life satisfaction.

Figure 3: Alteration in life satisfaction prior to and after migration

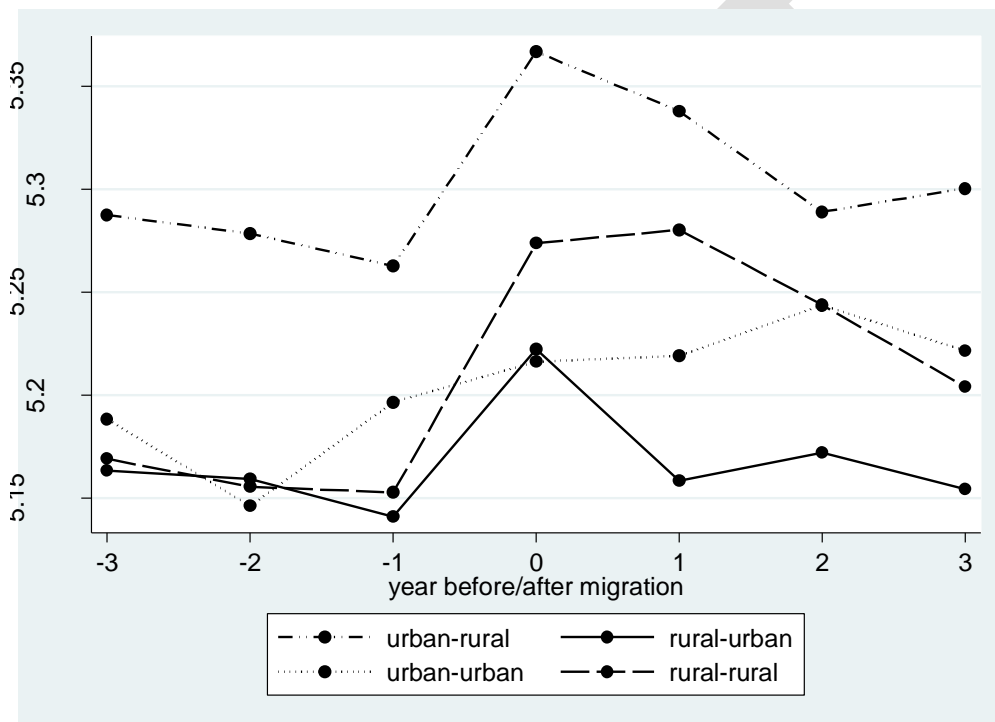


Table 3 reports the alterations in life satisfaction for the four different types of migrants controlled for a bevy of control variables. Most of the control variables are in line with previous studies on life satisfaction. Unemployed people are relatively less satisfied with their life as well as people with a poor health or less social contacts. Table 3 shows that migrants are relatively unsatisfied with their lives the years prior to migration. Migration gives a positive boost to their level of life satisfaction as in the year of migration all coefficients turn positive. This is in line with previous migration research as most people are looking forward to move to another place, although this of course depends on the reason of migration. If people migrate because they to start a new job or to move in together, it is likely that this has a significant positive influence on their life satisfaction. In the third and fourth year after migration, people seem to get adapted to their new situation as the coefficients become smaller and less significant. According to the adaptation theory, people get adjusted to life changes such as internal migration. Urban-rural migration (model I, Table 3) has a positive effect on life satisfaction in the year of migration although this effect is not lasting for

another year. In the years succeeding the internal move, urban-rural migrants report negative but insignificant coefficients. Rural-urban migrants report a small positive but insignificant effect for the year of migration (Model II, Table 3).

We do not find any prove for a causal effect explaining why people in rural areas are in general more satisfied with their lives than people in urban areas. People who migrate towards rural areas do not report a lasting positive effect after their migration. Only in the year of migration urban-rural migrants report a significantly higher satisfaction with life but this effect does not last for another one or two year. Simultaneously we do not find that people who are moving towards urban areas report significantly lower levels of life satisfaction after their move.

Table 3: Fixed-effect model

<i>Dependent variable: Life satisfaction</i>				
	Model I - Urban-rural migrants	Model II - Rural-urban migrants	Model III - Urban-urban migrants	Model IV - Rural-rural migrants
3 years prior	-0.050 (0.062)	0.049 (0.134)	-0.040 (0.030)	-0.071 (0.048)
2 years prior	-0.022 (0.061)	0.045 (0.105)	-0.105** (0.030)	-0.038 (0.047)
1 year prior	-0.177** (0.062)	0.088 (0.101)	-0.058** (0.028)	-0.092* (0.049)
year of migration	0.114** (0.055)	0.041 (0.099)	0.025 (0.036)	0.020 (0.039)
1 year after	-0.101 (0.078)	0.114 (0.082)	-0.014 (0.027)	-0.003 (0.041)
2 years after	-0.079 (0.057)	0.058 (0.082)	-0.015 (0.026)	0.021 (0.042)
3 years after	-0.075 (0.051)	0.105 (0.095)	-0.013 (0.025)	-0.019 (0.041)
Control variables				
Marital status (ref: married)				
never married	-0.016 (0.103)	-0.009 (0.084)	-0.076 (0.068)	-0.127 (0.087)
separated/divorced	0.042 (0.131)	-0.027 (0.125)	-0.186** (0.121)	-0.199** (0.095)
widowed	-0.231 (0.335)	-0.105** (0.324)	-0.088 (0.046)	-0.271 (0.250)
Job status (ref: employed)				
unemployed	-0.490*** (0.143)	-0.424** (0.152)	-0.325*** (0.062)	-0.355** (0.120)
retired	0.115 (0.113)	-0.037 (0.173)	-0.109 (0.074)	-0.079 (0.119)

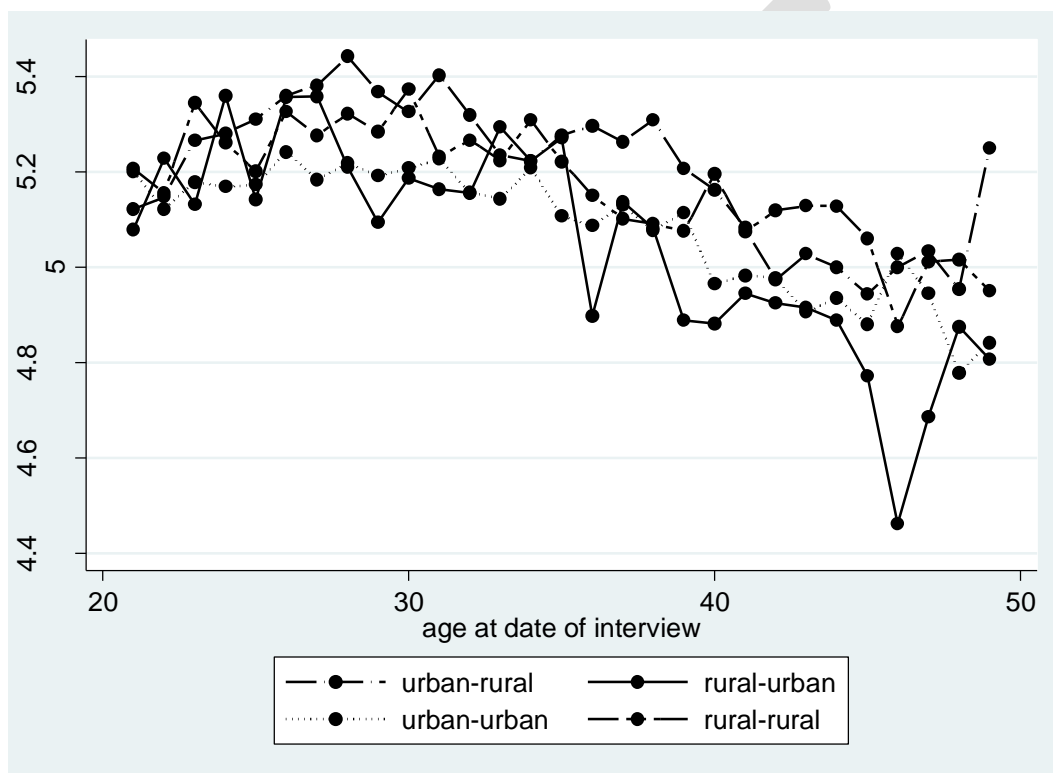
student	0.145 (0.141)	-0.093* (0.109)	-0.015 (0.046)	0.196* (0.108)
family care	0.023 (0.083)	-0.127 (0.109)	0.039 (0.057)	-0.123 (0.079)
sick/disabled	-0.052 (0.193)	-0.613** (0.213)	-0.431*** (0.089)	-0.516*** (0.135)
Educational level (ref: higher)				
low	0.147 (0.255)	-0.296* (0.159)	-0.051 (0.090)	-0.034* (0.229)
middle	0.028 (0.104)	-0.222** (0.108)	0.076 (0.050)	0.026 (0.022)
Annual household income	-0.001 (0.001)	-0.001 (0.001)	-0.000* (0.000)	0.001 (0.002)
Children in household (ref: no children)				
one child	0.085 (0.062)	0.054 (0.098)	0.037 (0.037)	0.133* (0.072)
two or more children	-0.015 (0.080)	0.031 (0.115)	-0.035 (0.045)	-0.036 (0.083)
Health problems (ref: no problems)				
one problem	-0.108** (0.045)	-0.179** (0.056)	-0.142*** (0.023)	-0.066* (0.039)
two problems	-0.186** (0.061)	-0.311*** (0.083)	-0.268*** (0.032)	-0.191*** (0.053)
three or more problems	-0.314*** (0.089)	-0.495*** (0.112)	-0.393*** (0.043)	-0.390*** (0.072)
Social contacts (ref: on most days)				
once or twice a week	-0.005 (0.037)	-0.035 (0.044)	-0.039** (0.019)	-0.066** (0.031)
less than once a week	-0.002 (0.052)	-0.082 (0.065)	-0.071** (0.031)	-0.101** (0.049)
Constant	5.359*** (0.106)	5.535*** (0.086)	5.408*** (0.040)	5.436*** (0.089)
Number of observations	3,556	3,076	18,166	6,752
Number of households	627	572	3,745	1,341

4.3 Explaining heterogeneity

Age – Figure 3 shows deviations in life satisfaction for different ages. The graph shows a downward trend in life satisfaction, which is in line with the literature on the U-shaped relationship between life satisfaction and age and a minimum level of satisfaction occurring in middle age (between 35-50 year) (Frijters and Beaton, 2012). Urban residents report lower levels of life satisfaction compared to rural residents, although

this difference is smaller for residents in the age category 20 to 35 year and larger for residents in the age category 35 to 50 years. The graph illustrates that for rural-urban migrants it is less detrimental for their life satisfaction to move towards the city when they are younger (aged younger than 35) while it is more detrimental if they are older. For the group urban-rural migrants we do not see such strong differences across age although urban-rural migrants aged between 30 and 35 year are noticeably highly satisfied with their lives. How younger the urban-rural migrants is, how more satisfied they are (higher than 5.2) but also the urban-rural migrants in their forties are rather satisfied (fluctuating around 5.1).

Figure 3: Effect of age on life satisfaction



5. Conclusion

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Appendix: Descriptive Statistics of Variables Included in the Analysis

	Mean	SD	Min	Max
Life satisfaction	5.227	1.273	1	7
Age	46.687	18.219	15	100
Gender				
male	0.454	0.498	0	1
female	0.546	0.498	0	1
Marital status				
married	0.541	0.498	0	1
never married	0.278	0.448	0	1
divorced/separated	0.106	0.307	0	1
widowed	0.075	0.264	0	1
Occupation status				
employed	0.597	0.490	0	1
retired	0.217	0.412	0	1
family care	0.069	0.253	0	1
sick/disabled	0.047	0.212	0	1
student	0.040	0.196	0	1
unemployed	0.030	0.170	0	1
Annual household income				
< 5.000	0.173	0.378	0	1
5.000-10.000	0.229	0.420	0	1
10.000-15.000	0.200	0.400	0	1
15.000-20.000	0.141	0.348	0	1
> 20.000	0.257	0.437	0	1
Children in household				
no child	0.706	0.455	0	1
one child	0.126	0.332	0	1
two or more children	0.168	0.374	0	1
Health problems				
no problem	0.390	0.488	0	1
one problem	0.277	0.448	0	1
two problems	0.168	0.374	0	1
three or more problems	0.165	0.371	0	1
Social contacts				
on most days	0.457	0.498	0	1
once or twice a week	0.411	0.492	0	1
less than once a week	0.132	0.338	0	1