

THE SCOTS MAY BE BRAVE BUT THEY ARE NEITHER HEALTHY NOR HAPPY

David Bell and David G. Blanchflower***

ABSTRACT

On almost all measures of physical health, Scots fare worse than residents of any other region of the UK and often worse than the rest of Europe. Deaths from chronic liver disease and lung cancer are particularly prevalent in Scotland. The self-assessed well-being of Scots is lower than that of the English or Welsh, even after taking into account any differences in characteristics. Scots also suffer from higher levels of self-assessed depression or phobia, accidental death and suicide than those in other parts of Great Britain. This result is particularly driven by outcomes in Strathclyde and is consistent with the high scores for other measures of social deprivation in this area. On average, indicators of social capital in Scotland are no worse than in England or Wales. Detailed analysis within Scotland, however, shows that social capital indicators for the Strathclyde area are relatively low. We argue that these problems need to be directly targeted as they seem unlikely to be fixed by more indirect policies aimed at raising economic growth.

I INTRODUCTION

The principal policy objective of the Scottish Executive is to increase Scotland's rate of economic growth.¹ Yet, as Oswald (1997), points out 'economic performance is not intrinsically interesting. No one is concerned in a genuine sense about the level of gross national product last year or about next year's exchange rate'. The proposition that measures of economic performance are not valued in themselves is very plausible. It is therefore reasonable to ask why economic growth is elevated above all other policy objectives by the Scottish Executive.

Economists' usual response is that growth increases gross national income, which in turn leads to increases in 'well-being', 'welfare' or 'life satisfaction' among the population. Growth is therefore a means to an end. It permits higher

*University of Stirling

**Dartmouth College

¹This policy was agreed in May 2003 by the Liberal-Democrat/Labour coalition. At this time, it was believed that Scotland's growth rate lagged well behind that of the UK as a whole. But data revisions published in 2004 show that differences in growth rates between Scotland and the rest of the UK over the last four decades have been negligible.

levels of consumption, which in turn leads to higher levels of well-being among the population.

Until recently, economists have tended not to question the link from measures of economic performance to individual well-being or happiness. But with the advent of surveys which question individuals about their views of 'life satisfaction' or 'happiness', a substantial literature on these links has built up. There is even a world database on happiness.² For a summary of this literature, see Blanchflower and Oswald (2004a, b). The questions asked in the Eurobarometer survey are fairly typical. In a majority of the Eurobarometer surveys respondents have been asked the question: On the whole, are you very satisfied, fairly satisfied, not very satisfied, or not at all satisfied with the life you lead? For the years 1975–1986 respondents were also asked about their happiness – Taking all things together how would you say things are these days, would you say you're very happy, fairly happy or not too happy these days? Even though such questions have been asked for a considerable time in Scotland, to our knowledge there has been no attempt to analyse such data. This paper is the first to examine these data for Scotland in detail.

Most of the recent literature has focused on the analysis of *subjective* measures of well-being. There is however, a wealth of *objective* indicators of well-being in Scotland other than those that are commonly rehearsed in the economics literature. These relate to issues such as health, crime and lifestyle. For example, if the self-assessed well-being data are meaningful, one might expect to see correlations between these measures and objective measures of mental health, at least at an aggregate level, and this is what we find.

As well as making a broad assessment of its relation to a variety of socio-economic indicators, this paper extends the previous literature on well-being by including information on individuals' assessments of their own mental health. It also discusses an extreme manifestation of mental ill-health – suicide. It also extends research on the association between individual well-being and social capital. The geographical context for these developments is Scotland.

Thus we report how Scotland fares in relation to standard indicators such as the labour force participation rate, employment and unemployment rates, income inequality, poverty, the performance of its schools as well as to indicators of health and well-being. Our conclusions are generally pessimistic. The self-assessed well-being of Scots is lower than that of the English or Welsh, even after taking into account the differences in the characteristics of the Scots, Irish and Welsh. Scots also suffer from higher levels of self-assessed depression or phobia, accidental death and suicide than those in other parts of Great Britain. This result is particularly driven by outcomes in Strathclyde³ and is consistent with the high scores for other measures of social deprivation in this area.

²<http://www1.eur.nl/fsw/happiness/>

³This is the area of western Scotland centered round Glasgow, Scotland's largest population centre.

Crime is lower in Scotland than in the UK as a whole although it does have a higher homicide rate. The contrast between Scotland and the UK as a whole is also much greater on health and well-being measures than it is on measures of poverty or income inequality. Real household incomes in Scotland have risen dramatically over the last decade or so, even for those at the lowest quintile of the income distribution. Scotland also scores relatively well on social capital compared with the rest of Great Britain. Scotland's main problems are its low levels of health and well-being.

At the start of the 20th century in Scotland, infant mortality was high and disease and malnutrition was rampant particularly in the major cities. During the 20th century Strathclyde experienced significant industrial decline due to the almost complete demise of heavy manufacturing including steel making, engineering, shipbuilding and coal mining. Housing conditions continued to be generally poor, leaving a legacy of ill health. Local authority policies aimed at improving housing conditions resulted in the creation of large 'peripheral estates' of socially rented housing, particularly around Glasgow. In time these estates themselves became focal points for unemployment, ill health and disability. The latest data available at the time of writing for September 2005, when the unemployment rate in the UK was 4.7%, the unemployment rate in Scotland was 5.4% and 7.8% in Glasgow City.⁴

We begin by reviewing some relevant literature. We then look at some descriptive statistics, which compare how Scotland compares with other areas in respect of subjective well-being and in relation to objective health and welfare-related measures. We estimate some econometric models to explain these phenomena in the penultimate section, while the final section draws together some policy lessons from what has gone before.

II LITERATURE REVIEW

The simplest way to measure well-being is to ask individuals how they feel about their lives. In the literature on subjective well-being, psychologists have traditionally preferred life-satisfaction questions to most others. It is believed that (compared with questions about happiness levels, for example) such questions translate more readily across languages and cultures. Introductions to the psychology literature on the interpretation of well-being data are contained in Campbell (1981) and Argyle (1987). An overview paper written from the economist's perspective is Oswald (1997), while Easterlin (1974) made an early influential contribution.

A number of objections have been raised to the use of data on self-reported well-being. One is that such data are unreliable and of no value in discussions of economic welfare. Another is that they are accurate and reliable guides to comparisons between societies at a single point in time, but that comparisons through time are invalid because individuals' understanding of the language describing happiness or well-being changes and evolves. Of course, this assumes

⁴ Source: Office of National Statistics <http://www.statistics.gov.uk/statbase/Product.asp?vlnk=14160>

that comparisons across cultures are also meaningful, and there are reasons to be cautious about this – for example, the Japanese may view very positive responses to life satisfaction questions as impolite.

However, studies which analyse individual's reports about their level of life satisfaction have found a number of consistent results – both through time and across countries. These include:

- (a) For affluent Western economies, there is a rather weak link between self-reported well-being and income. Income does buy some happiness but much less than most economists would probably have expected – non-money items such as marriage, sex and employment provide a lot of happiness (Blanchflower and Oswald, 2004b). Conversely, divorce and unemployment bring much unhappiness (Blanchflower and Oswald, 2004a).
- (b) Employment is a key determinant of self-reported well-being. The self-employed report higher levels of well-being than the employed and in turn than the unemployed (Blanchflower, 2004). Although not previously discussed in the literature, we are also able to show here that the inactive – those of working age who have lost contact with the labour market – also report lower levels of well-being than the employed. This is an important result for our final policy discussion, bearing in mind that inactivity has grown rapidly in recent years. Bell and Jack (2002) point out that the number of households where no adult was active in the labour market increased from 241,000 to 364,000 between 1991 and 2001. In Strathclyde in 2001, 27% of households had no adult active in the labour market, while in the Rest of Scotland the proportion of households with no active adult was only 18%.
- (c) Relative things matter. Individuals compare themselves with others. In happiness equations both income and relative income have effects. Individuals appear to get happier the closer their incomes come to that of rich people around them. There is also some evidence that people do not want to be far above the poorest people (Blanchflower and Oswald, 2004a). Paterson (2002) argues that social attitude surveys suggest that Scots' identity is closely linked to notions of egalitarianism and equity. Alesina *et al.* (2004) find evidence that inequality adversely affects the happiness of the European poor. Luttmer (2005) finds for the United States that controlling for an individual's own income, higher earnings of neighbours are associated with lower levels of self-reported happiness.

The literature on the relationship between economic well-being and mental ill health is less developed. This is not surprising as a fundamental tenet of conventional economic analysis is that consumers behave rationally. Thus, while some studies have attempted to measure the economic costs of mental illness, very few have considered individual characteristics, including economic characteristics, which are associated with self-reported mental ill health. An

exception is Gardner and Oswald (2006), who show that mental well-being has a 'U'-shaped relationship with education. Those with degrees or relatively low levels of education experience higher rates of mental stress than those with intermediate qualifications. However, for those with similar incomes and economic status, more education is associated with less stress.

Some may query the subjectivity inherent in analysing self-reported mental stress data, again because respondents may interpret such questions differently through space and time. However, one objectively measurable manifestation of extreme mental ill health is suicide. The classic paper on the economic interpretation of the increase in youth suicide is Cutler *et al.* (2001). Suicide rates in the United States among those aged 15–24 have tripled in the last 50 years. In the past, suicide rates increased with age, but between 1950 and 1990, suicide rates among the elderly in the United States fell by 30%.

In the United States, youth suicide has not been centred on deprived inner cities although social stresses and drugs appear to be influential. Social interactions are important: teenagers are more likely to attempt suicide if they know someone else who has attempted suicide. The most important aggregate variable explaining the increase in youth suicide is the increase in the numbers of young men staying at home with a divorced parent. Divorce rates are better predictors of suicide rates than is the share of children staying in single-parent families or with step parents. When modelling the factors which might explain unsuccessful suicide attempts using micro-data, Cutler *et al.* find that poor interaction with parents and activities such as drug taking, sex and violence significantly increase the risk that a young person will attempt to commit suicide (unsuccessfully). But establishing the direction of causation among activities is problematic.

Links between health and economic outcomes are also unclear. Poverty and inequality have long been associated with relatively poor health outcomes (Kawachi *et al.*, 1999). However, recent evidence from Deaton and Paxson (2004) has cast doubt on these arguments, at least as far as recent US and British history is concerned. Deaton and Paxson use data on age-specific mortality in Britain and the United States from 1950. Of the decline in these mortality rates, they argue that

neither trends in income nor in income inequality provide plausible explanations. Britain and the US had different patterns of income growth but similar patterns of mortality decline. Patterns of income inequality were similar in both countries, but adult and elderly mortality rates declined most rapidly during the period when inequality increased.

Instead they suggest that improvements in mortality have largely been driven by technical improvements in treatment. This argument suggests that any assumptions that increased incomes and/or reduced inequality will have a direct impact on health outcomes are perhaps misplaced.

We conclude this section with a discussion of social capital and its relationship to well-being and health. Putnam (1993) defines social capital as 'features of social organizations, such as trust, norms and networks that can

improve the efficiency of society by facilitating coordinated actions'. He argues that it comprises the 'networks, norms, and trust that enable participants to act together more effectively to pursue shared objectives' (Baron *et al.*, 2000). Measures of social capital tend to focus measures of community organisation, engagements in public affairs, community volunteerism, informal sociability and trust. There is general agreement that higher social capital is associated with lower crime rates and better health. Education is positively related with social capital (Putnam, 2000). Helliwell (2003) argues that individual well-being is positively associated with both individual and societal indicators of social capital. Perhaps poor health, addictive behaviours and high levels of violent crime are associated with low levels of social capital. Parkes and Kearns (2004), using the Scottish Household Survey, argue that poor health outcomes are caused by perceptions of adverse neighbourhood characteristics such as unfriendly or unhelpful neighbours and lack of community involvement. While causality is more difficult to assign than they suggest, there is value in investigating, as we shall subsequently, whether social capital indicators align with those from the labour market and with data on mental and physical health.

III DESCRIPTIVE STATISTICS

We continue our investigation by establishing some basic social and economic facts about Scotland. Table 1 includes a series of key comparisons between Scotland and the UK as a whole. In general Scotland ranks behind most of the rest of the UK on wages, incomes and unemployment and, on many measures of health and well-being, below both Wales and Northern Ireland. The gap between Scotland's unemployment rate and that of the UK as a whole appears to have widened over the last decade. In 1994 the unemployment rate in Scotland of those aged 16 and over was 9.9% and in 2004 was 5.9% (Scottish Economic Statistics, 2004, Table 4.2) compared with rates for the UK as a whole of 9.8% and 4.8% in 1994 and 2004, respectively (Annual Abstract of Statistics, 2005, Table 7.1).

There are some high points: Scottish schools appear to be of high quality, based on the proportion that obtain passes at the GCSE level (or its Scottish equivalent) and overall crime rates are lower than in the rest of the UK. Economic activity and employment rates are about the same as in the rest of the UK. However, the proportion of those individuals who are out of the labour force (OLF) reporting that the reason is because of long-term sickness or disability is particularly high in Scotland, whether such individuals wanted a job or not. Moreover, the proportion saying they wanted a job but had not looked for work in the last 4 weeks – the truly discouraged – was especially high in Scotland (31.7%) than in Wales (21.5%), Northern Ireland 17.6% or England 24.0% (*Source*: Labour Force Survey, 2004).

The percentage of households earning under £150 per week in the UK is only slightly lower than it is in Scotland (18% and 21%, respectively). There are also relatively small differences in the proportion of households classified into

Table 1
Key statistics

	UK	Scotland
Population, 2002 (thousands)	59,229	5055
Percentage aged under 16	19.9	18.9
Percentage pension age and over (65 males 60 females)	18.4	18.8
Male life expectancy at birth 2002–2004	76.25	73.8
% pupils achieving ≥ 5 GCSE grades A*-C 2001/02	52.5	60.4
Crime rate per 100,000 population 2002	11,327	8448
Economic activity rate, spring 2005 (%)	78.7	79.7
Employment rate, spring 2003 (%)	74.7	74.6
Unemployment rate, September 2005 (%)	4.7	5.4
% Inactive – long-run sickness/disability does not want job	18.1	22.3
% Inactive – long-run sickness/disability wants job	8.9	11.6
% Inactive – wants job but not seeking in last 4 weeks	24.3	31.7
Average gross weekly household income, 1999–2002 (£)	510	446
Average weekly household expenditure, 1999–2002 (£)	379.7	344.7
Average gross weekly full-time earnings 2002 (£)	462.6	427.0
Households in receipt of income support 2005 (%)	3.9	5.5
% Incomes from social security benefits 1999–2002	12	14
% Households earning $<£150$ per week 1999–2002	18	21
% Households bottom quintile before housing costs 2001–2002	20	22
% Households bottom quintile after housing costs 2001–2002	20	19
% Taxpayers annual taxable incomes $<£5000$	2.7	2.7
% Taxpayers annual taxable incomes $>£30,000$	13.9	11.2

Source: Regional Trends (2004).

bottom income quintile before and after housing costs are included. The proportion of taxpayers with annual taxable incomes less than £5000 is the same in Scotland as in the UK (2.7%) although the proportion earning over £30,000 is lower in Scotland (13.9% and 11.2%, respectively). There is also evidence that real incomes in Scotland have increased – ‘overall median income in Scotland has risen by 3.3% per annum in real terms since 1996/7, growth has been highest for those in households in the second quintile of the income distribution (4.2% per annum)’ (Scottish Economic Statistics, 2004, p. 157). This group is likely to include households with low-income earners, who will mostly have benefited from income-related benefits such as tax credits. In 2003, 22% of households in Scotland lived in low-income households – defined as incomes below 60% of the Great Britain median – down from 24% in 1996/1997.

Overall 17% of the working age population in Scotland (29% in Glasgow), at February 2004 were in receipt of one or more state benefits. Moreover, 11% of the working age population in Scotland reported being sick and disabled compared with 18% in Glasgow City (Scottish Economic Statistics, 2004, Table 5.3). The Scottish Index of Multiple Deprivation (2004) shows that deprivation is highly concentrated in Strathclyde and Glasgow. The index

Table 2

Offences committed against households, 2001^a per 10,000 households^b

	Vandalism	Burglary ^c	Vehicle thefts ^d	All offences ^e
England	1217	455	1528	3664
Wales	999	235	1534	3240
Scotland	999	548	385	2374
Northern Ireland	1110	272	781	2485

^aData for Scotland relate to 1999. Data for Northern Ireland relate to the period 1 September 2000 to 31 August 2001.

^bThe vehicle theft risks are based on vehicle-owning households only.

^cThe term used in Scotland is housebreaking. The figures include attempts at burglary/housebreaking.

^dComprises theft of vehicles, thefts from vehicles and associated attempts.

^eComprises the three individual categories plus thefts of bicycles and other household thefts.

Source: British Crime Survey, Home Office; Scottish Crime Survey, Scottish Executive; Northern Ireland Crime Survey, Northern Ireland Office.

measures deprivation in terms of health, income, education, labour market experience, housing and access to facilities and telecommunications. Deprivation scores are formed for each of 6500 areas. Of the 500 areas with the highest deprivation scores, 423 are in Strathclyde and 282 of these lie within Glasgow. By contrast, Scotland's other major city, Edinburgh, has only 36 areas within the 500 highest deprivation scores.⁵ Now we consider some of these socio-economic indicators in greater depth.

Crime against households in Scotland is low compared with the rest of the UK (Table 2). Data from the relevant British and Scottish Crime Surveys show that, although burglaries are relatively high in Scotland compared with Wales and Northern Ireland, both vandalism and vehicle thefts are sharply lower in Scotland than elsewhere. As a result, the rate of offences against households in Scotland, at 2374 per 10,000 households, is 44% lower than in England and Wales. Table 2 provides further information on the crime rate. Although it has the lowest overall crime rate of 2374 per 10,000 households, Scotland has a very high prison population. Individuals are slightly more likely to be put in jail in Scotland than in the rest of the UK. There were 6400 individuals locked up in Scotland in 2002 out of a total of 66,000 in the UK as a whole. Thus, although the Scottish population comprises only 8.6% of the UK population (Table 1), the number of prisoners in Scottish jails is 9.6% of the UK total. This is partly because crimes of violence, including murder, are more common in Scotland. The male homicide rate in Scotland is 70% above that in England and Wales. Female murder rates differ little across Great Britain. Homicide using sharp instruments (knives) and hitting or kicking by males known to the victim are particularly prevalent (Scottish Executive, 1999a). Again, the distribution within Scotland is instructive. Recorded crime data for 2003 show that for many crimes, rates of offending in Strathclyde and the Rest of Scotland are quite

⁵ *Source:* Scottish Executive <http://www.scotland.gov.uk/library5/society/simd04-00.asp>

Table 3
Deaths in Scotland analysed by cause as percentage of GB, 2003

	England and Wales	Scotland	Scotland % of GB
Population	52,794,000	5,057,000	8.74
Total deaths	538,254	58,472	9.80
Deaths from natural causes	519,297	56,161	9.76
Certain infectious and parasitic diseases	4763	660	12.17
Neoplasms	139,360	15,412	9.96
Malignant neoplasm of trachea, bronchus and lung	28,765	3893	11.92
Alcohol abuse (including alcoholic psychosis)	469	356	43.15
Drug dependence and non-dependent abuse of drugs	655	228	25.82
Diseases of the circulatory system	205,508	22,102	9.71
Ischaemic heart diseases	99,790	11,441	10.29
Cerebrovascular diseases	57,808	6497	10.10
Diseases of the respiratory system	75,138	7454	9.03
Diseases of the digestive system	24,948	3215	11.42
Chronic liver disease	5844	1170	16.68
Accidental falls	2732	668	19.65
Suicide and intentional self-harm	3270	560	14.62
Homicide and assault	318	101	24.11
Event of undetermined intent	1754	234	11.77

Source: Annual Abstract of Statistics (2005, Table 9.6, ONS).

similar. These include burglary, motor offences and crimes of dishonesty. But the violent crime rate in Strathclyde is twice that of the rest of Scotland.⁶

There is a vast array of statistics showing that Scots are relatively unhealthy. Recent investigations have shown that Scots have higher rates of obesity (See Chin and Rona, 2001) and asthma⁷ than in other parts of the UK and indeed Europe. Diabetes in Scotland is 24 per 100,000 per year in the under 15-year old population and is one of the highest incidence areas in the world. Scottish men and women have among the highest premature mortality rates from coronary heart disease and one of the highest rates of stroke in the Western World. It is estimated that half a million Scots have coronary heart disease, of which 180,000 require treatment.

Table 3 reports the numbers of deaths, by cause, in England and Wales and separately for Scotland in 2003 along with the proportion of British deaths

⁶ Scottish Executive (2005). Recorded Crime in Scotland (2003; <http://www.scotland.gov.uk/stats/bulletins/00338-11.asp>).

⁷ See Masoli et al. (2004) in a report presented by the Global Initiative for Asthma (GINA) at the World Asthma meeting in Bangkok, Thailand on 16 February 2004 show that more than a third of 13–14-year olds in Scotland had suffered symptoms of the disease in the last year compared with 30% in England and 34% in Wales. Overall more than 18% of all Scots experience symptoms compared with 17.0% in Wales, 15.3% in England. Switzerland has a rate of 2.3% and Greece 1.9%. The UK has twice as many adults with some degree of asthma (25%) as France (triple the Italian figure). UK children are up to three times more likely to suffer from asthma than children in France, Germany or Italy. The report suggests that more than 1200 people died of asthma in Scotland between 1990 and 1999 of which 43% were under the age of 65.

accounted for by Scottish residents. Overall Scotland accounts for 8.74% of the population but 9.8% of all deaths. The table indicates that Scottish death rates are particularly high for reasons of alcohol abuse, drug dependency and to a lesser degree for lung cancer and chronic liver disease. Deaths due to suicide and intentional self-harm, accidental falls and homicide are also particularly prevalent in Scotland. Indeed, the incidence of chronic liver disease is more than double the incidence found in the United States while deaths from lung cancer were over 40% higher in Scotland.⁸

More than half of middle-aged Scots are overweight. The middle-aged Scot also has a blood pressure, which rates as one of the highest in the Western World. The Scottish Executive acknowledges that the Scottish diet is, next to smoking, the most significant reason for Scotland's poor health record – premature death is twice as likely in Scotland as in many western countries (Scottish Executive, 1999b).

Table 4 provides information for England, Wales, Scotland and Northern Ireland on mortality, fertility and birth rates plus self-reported health, smoking and alcohol consumption. The main findings are as follows:

- (1) Infant mortality rates and perinatal mortality rates are a little higher in Scotland than for the UK as a whole.
- (2) Overall mortality rates are particularly high in Scotland for cerebrovascular disease, bronchitis and cancer.
- (3) Cancer rates in Scotland are relatively high for both men and women but are the same as the rest of the UK for breast and cervical cancer.
- (4) The population in Scotland is declining. The UK population has increased 5.9% since 1971 compared with a decline of 3.5% in Scotland (Regional Trends, 2004, Table 3.1).
- (5) Suicide rates are high in Scotland.
- (6) Heavy cigarette smoking and alcohol consumption are particularly prevalent in Scotland.
- (7) The proportion of the population who report that their health is good is lower in Scotland for men, for all age groups, than it is in England. In the case of women the reverse is true for those over 44 years of age.

Although death rates from heart disease and, to a lesser extent, cancer have been falling in recent years, the incidence of these diseases is well above both UK and European averages. The immediate causes of poor health and high mortality rates may be well understood, but the underlying causes are much less clear. It was thought that Scotland's excess death rate was associated with high levels of deprivation, but recent evidence (Public Health Institute for Scotland, 2001) shows that while deprived areas in Strathclyde have the highest rates of excess deaths in the UK, all other parts of Scotland experience death rates above the

⁸ *Source:* US Statistical Abstract of the United States (2005, Table 103) shows that the death rate by 'chronic liver disease and cirrhosis' in the United States in 2002 was 9.3 per 100,000 population compared with 23.1 in Scotland in 2003. The figures for deaths from 'malignant neoplasms of trachea, bronchus and lung' were 54.9 and 77.0 per 100,000 population, respectively.

Table 4

Death and birth rates, health, smoking and alcohol consumption by country

	UK/GB	England	Wales	Scotland	North Ireland
Infant mortality rate/1000 live births	6	5	5	6	6
Perinatal mortality rate/1000 live births	8	8	8	9	8
Mortality rates – all	954	935	988	1085	977
Males	892	870	921	1044	924
Females	999	981	1039	1121	1019
Mortality rates – cerebro-vascular	103	100	108	124	104
Males	129	126	136	155	130
Females	75	73	77	92	76
Mortality rates – bronchitis	44	42	46	54	40
Males	45	45	46	54	43
Females	40	38	45	54	36
Mortality rates – cancer	251	246	259	288	249
Males	254	248	260	298	259
Females	243	238	251	277	235
Mortality rates – cervical cancer females	5	5	8	5	4
Mortality rates – breast cancer females	55	55	56	55	53
Mortality rates – suicides+open verdicts	10	9	11	17	10
Males	16	14	19	26	17
Females	5	4	4	9	3
Fertility rate per 1000 women	2	2	2	1	2
% live births outside marriage	40	40	48	43	33
Cigarette smoking 20+/day – males %	10	9	9	13	N/A
Cigarette smoking 20+/day – females %	7	7	6	9	N/A
Alcohol >8 units last week – males %	N/A	21	20	28	N/A
Alcohol >6 units last week – females %	N/A	9	11	13	N/A
% reporting good health males	N/A	62	55	58	57
16–44	N/A	73	66	68	72
45–64	N/A	56	53	53	48
≥ 65	N/A	38	32	36	31
% reporting good health females	N/A	58	55	57	52
16–44	N/A	69	72	66	66
45–64	N/A	54	53	59	47
≥ 65	N/A	37	25	39	26

Notes: Mortality rates are all per 100,000 population. Cigarette smoking and alcohol consumption and self-reported health are for 2001/2002. Mortality rates are for 2001. Perinatal and infant mortality rates are for 2002.

Source: Regional Trends, (2004).

English and Welsh median during the 1990s. For example death rates per 1000 population in the UK in 2002 were 10.2%; they were 13.1% in South Ayrshire; 13.5% in the Western Isles and 12.0% in the Scottish Borders (Regional Trends, 2004, Table 16.2). No clear-cut causal explanation of the economic, social and psychological factors that underlie this outcome has been forthcoming.

Scotland also has high accident rates from road accidents, from falls and from assaults. For males according to the General Register Office Scotland and the Office of National Statistics deaths by falls in 2002 for males in Scotland

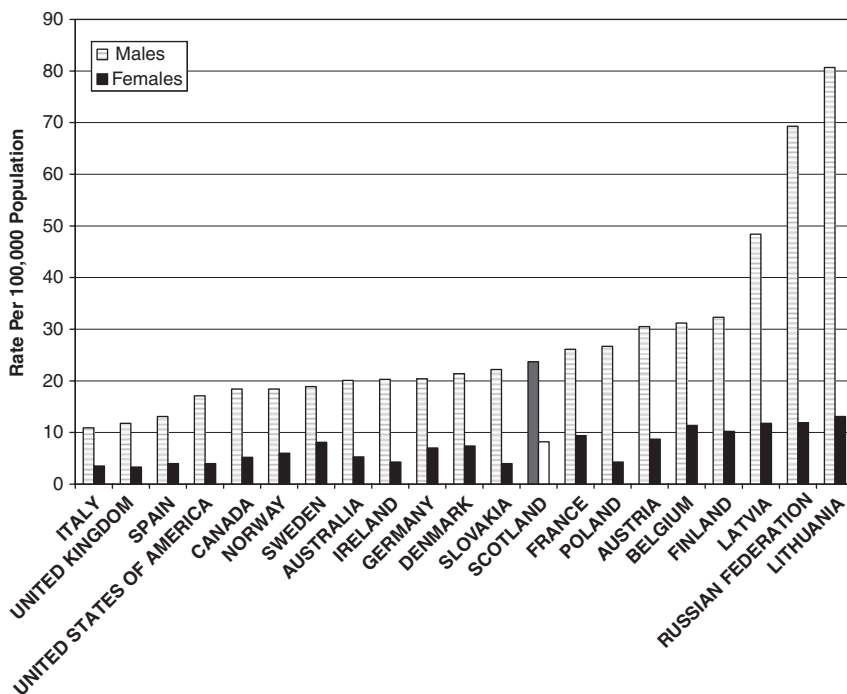


Figure 1. Suicide rate per 100,000 population (most recent year observed).

Source: General Register Office (Scotland) and World Health Organisation

(http://www.who.int/mental_health/prevention/suicide/country_reports/en/index.html).

were 10% (16%) compared with 4% (4%) for England and Wales and 4% (2%) for Europe.⁹ In the case of deaths by assault the figures for males in Scotland were 4% (1%) compared with 1% (1%) for England and Wales as well as for Europe. Each of these causes is probably influenced by excessive use of alcohol in Scotland, which we document below.

Figure 1 shows that the suicide rate in Scotland is significantly higher than that of other English speaking countries including the USA, Canada, Australia, New Zealand and Ireland and higher than the Scandinavian countries, with the exception of Finland. However, it is lower than many of the transition economies of Eastern Europe, which have among the highest suicide rates in the world. Figure 2 reports the change in the rate of deaths by both 'intentional self-harm' and 'undetermined cause' in Scotland, 1980–2004. It is clear that there has been a rise in the incidence over time for men but not for women. Though the absolute rates of suicide for women are lower, there is a sevenfold differential in their suicide rates between deprived and affluent areas. Because deprivation is concentrated in Strathclyde, this suggests higher suicide rates in this part of Scotland. In 2003, male suicide rates in Strathclyde were 9% higher than in

⁹ Figures in parentheses are for females.

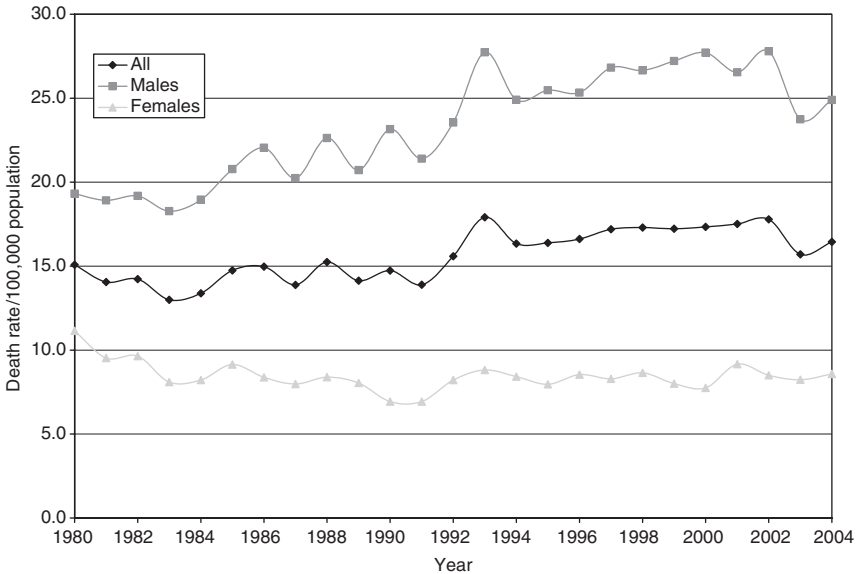


Figure 2. Intentional self-harm and undetermined death rate, Scotland 1980–2004.

Source: <http://www.chooselife.net/web/site/Statistics/ScottishTrends.asp>

Scotland as a whole. In Glasgow the male rate was 40% higher, while that for females was 53% higher than that in Scotland as a whole. As can be seen from Table 5, there is also a high incidence of suicides in the more rural areas of Scotland including the Highlands, Shetland and the Western Isles.¹⁰

Suicide rates are especially high for men ages 35–44 which in Scotland in 2004 were 47.2 per 100,000 population. Cutler *et al.* (2001) suggest that the variability of individual welfare has increased through time. This may be the result of family breakdown, with children having less access to family relations as a ‘buffer’ to deal with emotional upheavals. More variability implies more individuals with very low perceptions of their own well-being and consequently more predisposition to attempt suicide. At the 2001 Census, 11.3% of the adult population of Glasgow were divorced or separated compared with 8.9% in Strathclyde and 8.3% in Scotland as a whole.

Overindulgence in alcohol and smoking are prevalent in Scotland. Table 4 shows that 28% of men in Scotland drank more than 8 units in the previous week compared with 21% in England and 20% in Wales. Females in Scotland also reported drinking slightly more than those in the rest of the UK, but the differences were smaller than was the case for males. In a study of European drinking patterns and suicide rates, Ramstedt (2002) argues that there is a relationship between alcohol consumption and suicide rates which is strongest in those countries with traditionally low levels of alcohol consumption. However, the UK as a whole is classed as having medium consumption levels. Links

¹⁰ Source: <http://www.chooselife.net/web/site/Statistics/LocalAuthorityAreas.asp>

Table 5

Deaths caused by intentional self-harm and events of undetermined intent by local authority and time period

	1980–1984	1985–1989	1990–1994	1995–1999	2000–2004
Both sexes combined					
Aberdeen City	14.2	13.0	12.2	19.2	17.1
West Dumbartonshire	10.0	13.3	17.5	19.8	22.0
City of Dundee	14.0	16.4	18.9	21.9	19.1
East Renfrewshire	9.2	10.9	8.8	8.2	8.7
City of Edinburgh	13.9	14.7	16.9	15.8	15.8
City of Glasgow	20.7	19.1	23.3	21.9	22.6
Highland	18.2	19.2	20.4	20.0	24.0
Shetland Islands	15.7	8.1	15.0	20.2	23.7
Eilean Siar (Western Isles)	10.8	19.6	17.0	22.8	20.5
Scotland (Males)	18.9	21.3	24.2	26.3	26.1
Scotland (Females)	9.3	8.4	7.9	8.3	8.4
Scotland	13.9	14.6	15.7	16.9	17.0

Notes: Rates are the number of deaths divided by the LA population per 100,000 population.

Source: <http://www.chooselife.net/web/site/Statistics/LocalAuthorityAreas.asp>

between suicide and alcohol consumption are less clear for countries in this consumption category.

Table 4 also shows that a higher proportion of both men and women in Scotland are heavy smokers – that is they smoke more than 20 cigarettes a day. In England in 1998 10% of girls ages 11–15 and 17% of boys of these ages smoked. In Scotland 14% of girls ages 12–15 and 19% of boys smoked (Drever *et al.*, 2000). According to the 2003/2004 Scottish Household Survey 27% of adult Scots smoked with the highest rate in Glasgow City (33%) and the lowest in East Dumbartonshire (18%; see Martin *et al.*, 2005). This likely explains the very high prevalence of lung cancer among the causes of death.

There is also evidence from Table 3 that Scotland accounts for a considerably higher proportion of deaths from drug dependence and non-dependent abuse of drugs than is true in the rest of Great Britain. Scotland's share of deaths by this cause has shown a strong increase since 1997–1998. According to the Scottish Crime Surveys, however, there has been some decline in the use of drugs in Scotland.¹¹ It appears that drug misuse, particularly among the younger age groups, increased in the mid-1990s but fell at the end of the 1990s. Looking at use in the last year (the most reliable indicator of change), there was a significant decrease in respondents reporting the use of any drug from 9% to 6.6%. There was also a significant decrease in the proportion of respondents who had 'ever' used drugs, from 22.5% to 19.2%.

These indicators together paint a fairly depressing picture of the overall health of the Scottish population. On almost all measures of physical health, Scots fare worse than residents of any other region of the UK and often worse

¹¹ <http://www.scotland.gov.uk/cru/kd01/green/dmis-04.asp>

than the rest of Europe. High suicide rates are also indicative of poor states of mental health. Scottish men in particular are less likely to report that their health is good than is true in the rest of the UK. Many of the adverse health outcomes are avoidable in the sense that they are the result of lifestyle choices made by Scots. These inevitably reflect societal and cultural pressures – but they also depend on the economic environment. The labour market is key to this interaction and we now consider how labour market experiences differ between Scotland and other parts of the UK.

IV ECONOMETRIC ANALYSIS

The labour market

To see how Scots fare in the UK labour market we conducted an econometric analysis using data from the quarterly Labour Force Surveys for the period January 1992–May 2005. To do this we merged together 39 separate quarterly surveys. We include every quarterly survey since 1995 and exclude spring and fall quarters in 1993–1995 only to be consistent with later analysis on depression, which is only asked in these quarters. Nothing of importance hinges on these sample exclusions. We thus have a large, recent dataset with approximately four million observations in which all of the questions in which we were interested were asked in a consistent fashion.

We first restricted our analysis to individuals of working age between the ages of 16 and 64. We conducted separate econometric analyses where we examined the rankings of Strathclyde and the Rest of Scotland compared with the other regions in the UK: we report separate results also for Wales, Northern Ireland, Inner London, Outer London and the Rest of England with the Rest of the South East as the excluded category. First, we model the probability of an individual being unemployed (relative to being employed or self-employed) followed by the probability of an individual reporting being ‘inactive due to long-term sickness or disability’ compared with everyone else in our sample. Table 6 models the probability of an individual in the labour force being unemployed¹² and uses a relatively recent sample from March 1997 to May 2005 of just over two million individuals. In this table anyone who is out of the labour force (OLF) is excluded; the dependent variable is set to one if the individual is unemployed and zero if working as an employee or as self-employed. Robust standard errors are used. The equations control for age, gender, race, schooling, month of interview, an annual time trend and region of residence. The probability of an individual being unemployed, holding constant this host of personal characteristics, is higher in Strathclyde than in any other region of the country and especially so for men. The Rest of Scotland fares a little better. Unemployment is also high for men living in Inner London. Unemployment trends down in Scotland and Strathclyde.

The next analysis models those who are inactive due to ‘long-term sickness or disability’ and tells a further depressing tale. Table 7, which has a sample size of

¹²We use the conventional ILO definition of unemployment.

Table 6
Dprobit unemployment equations

	All	Scotland	Strathclyde
Strathclyde	0.0475 (48.67)	0.0190 (18.71)	N/A
Rest of Scotland	0.0228 (28.24)	N/A	N/A
Wales	0.0195 (24.13)	N/A	N/A
Northern Ireland	0.0208 (23.52)	N/A	N/A
Inner London	0.0393 (42.58)	N/A	N/A
Outer London	0.0114 (16.85)	N/A	N/A
Rest of England	0.0073 (22.99)	N/A	N/A
Time	-0.0020 (33.57)	-0.0021 (10.06)	-0.0026 (7.22)
Age	-0.0072 (110.03)	-0.0091 (39.14)	-0.0114 (28.17)
Age ²	0.0001 (84.88)	0.0001 (30.59)	0.0001 (21.97)
Male	0.0127 (44.86)	0.0217 (20.92)	0.0345 (19.08)
Mixed race	0.0544 (38.70)	0.0603 (6.14)	0.0426 (11.84)
Indian, Pakistani and Bangladeshi	0.0397 (43.54)	0.0313 (4.93)	0.0382 (4.19)
Black	0.0713 (54.82)	0.0784 (40.04)	0.0584 (35.05)
Chinese	0.0194 (6.97)	0.0134 (3.36)	0.0837 (3.37)
Other races	0.0544 (38.70)	0.0574 (25.16)	0.0777 (4.61)
<i>N</i>	2,121,113	194,312	78,761
Wald χ^2	65,694	6982.4	0.1012
Pseudo- R^2	0.0842	0.0873	0.0814

Notes: Region is based on residence. Excluded categories Rest of South East and White. Ages 16–64. Robust standard errors. Sample consists of the workforce only – employed plus unemployed.

Dprobit reports marginal effect rather than coefficients. That is, it gives the change in the probability for an infinitesimal change in each independent, continuous variable and reports the discrete change in the probability for dummy variables.

Source: Labour Force Survey: March 1997–May 2005. All equations also include 47 schooling dummies and 11 month dummies.

nearly 3.5 million as it includes the employed, the unemployed and those out of the labour force; the dependent variable is set to one if the individual is OLF due to ‘sickness or disability’ and zero if employed, unemployed or OLF for other reasons, with robust standard errors. The full time-run of data are used from January 1992 through May 2005 in column 1 and for the period 1992–February 1997 in column 2 and for the period March 1997 through May 2005 in column 3.¹³ There is evidence in column 1 that a higher proportion of individuals in Strathclyde have withdrawn from the labour force for reasons of sickness or disability. The coefficient on the Strathclyde dummy of 0.07 is large, given that it has an overall unweighted mean in the data of 0.06. There is evidence also that the gap is widening over time as the coefficient grew from 0.065 in the earlier period to 0.077 in the second. The coefficient is also increasing in the Rest of Scotland, which has a higher proportion of individuals who have withdrawn from the labour force because of sickness than is found in the Rest of England, Outer London and the Rest of the South East. In contrast

¹³ The choice of time periods is designed to be consistent with the analysis of depression in the next table where there was a change in the health question from March 1997. Nothing crucial hinges on this choice of date.

Table 7
Dprobit 'inactive due to long-term sickness or disability' equations

	1992-2005: All	1992-February 1997: All	March 1997-2005: All	Scotland	Strathclyde
Strathclyde	0.0657 (96.79)	0.0649 (57.44)	0.0657 (77.87)	0.0249 (30.09)	N/A
Rest of Scotland	0.0273 (49.57)	0.0244 (27.44)	0.0286 (41.30)	N/A	N/A
Wales	0.0551 (92.74)	0.0541 (54.79)	0.0552 (74.75)	N/A	N/A
Northern Ireland	0.0457 (66.61)	0.0414 (25.36)	0.0446 (57.48)	N/A	N/A
Inner London	0.0329 (49.75)	0.0284 (26.44)	0.0349 (42.02)	N/A	N/A
Outer London	0.0078 (16.64)	0.0079 (10.46)	0.0077 (13.08)	N/A	N/A
Rest of England	0.0191 (73.80)	0.0167 (40.25)	0.0200 (61.54)	N/A	N/A
Time	0.0018 (155.87)	0.0047 (50.55)	0.0005 (10.84)	-0.0003 (1.96)	-0.0009 (2.84)
Age	0.0021 (47.45)	0.0015 (21.27)	0.0023 (41.50)	0.0019 (8.99)	0.0019 (5.31)
Age ²	-0.0000 (0.08)	0.000003 (3.83)	-0.0000 (1.21)	0.00001 (4.94)	0.00002 (5.34)
Male	0.0066 (35.91)	0.0063 (21.05)	0.0065 (28.13)	0.0085 (9.67)	0.0147 (9.32)
Asian	0.0111 (21.29)	0.0099 (11.25)	0.0119 (18.41)	-0.0193 (4.47)	-0.0230 (3.51)
Black	0.0030 (4.01)	0.0046 (3.60)	0.0024 (2.51)	-0.0173 (1.58)	0.0090 (0.43)
Chinese	-0.0225 (15.19)	-0.0177 (7.10)	-0.0245 (13.29)	-0.0397 (5.26)	-0.0607 (4.27)
Other races	0.0056 (6.41)	-0.00003 (0.02)	0.0074 (7.03)	-0.0259 (3.55)	-0.0367 (2.91)
<i>N</i>	3,900,435	1,202,226	2,697,794	247,952	104,855
Wald χ^2	2.3e+05	59,967	1.7e+05	20,866	11,117
Pseudo-R ²	0.1582	0.1594	0.1591	0.1834	0.1972

Notes: Region is based on residence. Excluded categories Rest of South East and White. Ages 16-64. Robust standard errors.

Source: Labour Force Survey: March 1992-May 2005. All equations also include 47 schooling dummies and 11 month dummies. The variables 'Inecaca', 'Inecacv', 'Inecacr', and 'Ineca05' are used to define the dependent variable which is set to 1 if it was in one of the following three categories: (09) inactive-seeking, unavailable, long-term sick or disabled; (16) inactive-not seeking, would like work, long-term sick or disabled; (25) inactive-not seeking, not like work, long-term sick or disabled, zero otherwise.

to the evidence on unemployment presented above, the proportion of individuals reporting that they are inactive due to long-term sickness is rising over time. Interestingly despite the fact that there has been an overall rise in the incidence of reporting being inactive due to sickness the trend is *downward* in Scotland and Strathclyde, for which there is no obvious explanation.

Many of the long-term disabled are likely to be discouraged workers who have failed to escape unemployment and then have moved onto different types of social security benefits. Scotland accounts for 8.7% of the GB population, but 11.7% of incapacity benefit claimants, 11% of disability living allowance (DLA) claimants and 10.5% of income support claimants in May 2005. Thus the benefits data are consistent with the weakness of the labour market revealed by the econometric analysis of unemployment and long-term sickness or disability.

The local authority data also reveal the same consistency between benefit claims and labour market status. Strathclyde accounts for 43% of the Scottish population, but 52% of the unemployment, while Glasgow, which accounts for 11% of the population had 17.5% of Scotland's unemployed in May 2005. The rate of claims for DLA in Strathclyde is 32% above that for Scotland as a whole, while the rate in Glasgow it is 202% higher. DLA claims increased by 12% between 2002 and 2005 both in the UK as a whole and in Scotland.

Thus our relatively simple comparisons of labour market and social security benefit statistics and the more robust econometric results from large samples drawn from the Labour Force Survey reveal a weakness in the Scottish labour market that is particularly focused on the Strathclyde area in general and Glasgow in particular. These findings are reasonably well known. We now attempt to tie this analysis both to considerations of mental health and to life satisfaction and happiness.

Mental illness

In the Labour Force Surveys a series of questions have been asked since 1992 about an individual's health and the extent to which any health problems limit that individual's ability to work, to get about and generally how their daily lives are affected. The questions have been asked in each quarter from spring 1992 to winter 1992, summer and winter quarters only from summer 1993 to winter 1995 and then each quarter from spring 1996 to winter 1996.¹⁴ The respondents are asked whether they have health problems or disabilities, which 'limit the kind of paid work they can do'. Respondents are not asked about the extent of the limitation. Each quarter to winter 1996 respondents reported that they had 'depression, bad nerves' and reported up to three 'health problems which affect you the most'. From winter 1996 on respondents reported on their *most important* health problem with the classification now changed to 'depression, bad nerves or anxiety'. The focus and number of questions on health and disability further changed in spring 1997 to reflect the provisions of the

¹⁴Note that in the LFS the spring quarter is March, April and May; the Summer quarter is June, July and August; the fall quarter is September, October and November and the Winter quarter December and January and February of the following year.

Table 8

Proportion of working-age population with 'depression, bad nerves or anxiety'

	UK (%)	Scotland (%)	Strathclyde (%)	Rest of Scotland (%)
1998	0.93	1.33	1.73	1.00
1999	1.02	1.24	1.54	1.00
2000	1.08	1.34	1.62	1.12
2001	1.22	1.53	1.97	1.19
2002	1.40	1.92	2.58	1.46
2003	1.52	1.84	2.22	1.60
2004	1.65	2.03	2.74	1.54
2005(Q2)	1.64	2.21	3.09	1.59

Source: Labour Force Surveys.

Disability Discrimination Act 1995. In particular, the new questions are concerned with all health problems, while until spring 97 the emphasis had been on problems which affect respondent's work. Since that time there has been a dramatic increase in a number of the health problems reported, including in the incidence of 'depression, bad nerves or anxiety'. Its (unweighted) incidence has nearly doubled since 1998, as is shown in Table 8.

More disturbing, however, is the high incidence of self-reported depression in Strathclyde, which was over 3% using the latest estimates for mid-2005. Table 9 shows the results of an analysis, which estimates the probability that an individual reports being depressed, given their personal characteristics. It shows that the incidence in Strathclyde is high even after controlling for individual characteristics. For the period before February 1997 the dependent variable is set to one if the respondent reported that they were depressed on any one of the three health variables. After February 1997, the dependent variable uses the response to the single health variable covering the 'most important illness'. The first column is for the whole period 1992–2005 while the second column is for the period up to February 1997 using the first definition of the health variable where three possible options are available and the response relates to a condition limiting their ability to work. Column 3 uses the single variable where respondents reported the single most important health problem; column 4 is for Scotland and column 5 for Strathclyde only. In all five equations there is an upward time trend (1992 = 1 and so on) which is especially large in Strathclyde (0.0018 compared with 0.0011 for the UK), despite the fact that the proportion of individuals reporting being inactive due to disability and sickness in Table 6. Even after allowing for differences in age, race, gender, month of interview and level of education, those living in Strathclyde are significantly more likely to report depression, bad nerves and anxiety than is the case in any other area in the UK and the gap is rising over time which is a cause for concern.

Taken together, this evidence suggests a picture of ill health – both physical and mental – in Scotland in general and in Strathclyde in particular. The evidence comes from objectively measured health outcomes – such as mortality data – and from self-reported health measures. We have also seen that labour

Table 9
Depression Dprobits

	1992–2005 All	1992–February 1997 All	March 1997–2005 All	March 1997–2005 Scotland	March 1997–2005 Strathclyde
Strathclyde	0.0126 (36.44)	0.0111 (20.57)	0.0131 (30.52)	0.0065 (14.31)	N/A
Rest of Scotland	0.0043 (15.00)	0.0034 (7.79)	0.0045 (12.97)	N/A	N/A
Wales	0.0112 (36.87)	0.0140 (27.61)	0.0096 (25.97)	N/A	N/A
Northern Ireland	0.0064 (19.15)	0.0001 (0.08)	0.0077 (19.98)	N/A	N/A
Inner London	0.0068 (19.82)	0.0079 (14.20)	0.0060 (14.50)	N/A	N/A
Outer London	0.0011 (4.22)	0.0023 (5.72)	0.0005 (1.64)	N/A	N/A
Rest of England	0.0036 (25.41)	0.0036 (16.77)	0.0034 (19.60)	N/A	N/A
Time	0.0006 (42.96)	0.0002 (3.71)	0.0011 (44.32)	0.0013 (13.82)	0.0018 (10.34)
Age	0.0015 (58.48)	0.0010 (25.70)	0.0016 (51.66)	0.0020 (17.64)	0.0027 (13.67)
Age ²	-0.000016 (51.09)	-0.000009 (20.68)	-0.0000 (46.92)	-0.00002 (16.43)	-0.00003 (12.84)
Male	-0.0016 (15.51)	-0.0004 (2.29)	-0.0021 (17.06)	-0.0045 (9.38)	-0.0047 (5.59)
Asian	-0.0032 (12.02)	-0.0011 (2.65)	-0.0041 (12.63)	-0.0058 (2.62)	-0.0039 (1.14)
Black	-0.0025 (6.35)	-0.0008 (1.28)	-0.0032 (6.88)	N/A	N/A
Chinese	-0.0065 (7.60)	-0.0052 (3.85)	-0.0068 (6.66)	N/A	N/A
Other races	0.0009 (1.97)	-0.0002 (0.30)	0.0011 (2.11)	-0.0126 (3.08)	N/A
<i>N</i>	3,900,416	1,201,642	2,697,775	246,010	103,613
Wald χ^2	22,543.2	8318.0	14,389.3	2128.3	1190.2
Pseudo- <i>R</i> ²	0.0433	0.0664	0.0393	0.0509	0.0534

Notes: Region is based on residence. Excluded categories are White and employee. Ages 16–64.

Source: Labour Force Survey: March 1992–May 2005. Each quarter from Spring 92 to Winter 92, Summer and Winter quarters only from Summer 93 to Winter 95. Each quarter from Spring 96 to Winter 96. The respondents are asked whether they have health problems or disabilities, which limit the kind of paid work they can do. Respondents are not asked about the extent of the limitation. Each quarter to Winter 96 respondents reported that they had 'depression, bad nerves' and reported up to three 'health problems which affect you the most'. From Winter 1996 on respondents reported on their most important health problem with the classification now changed to 'depression, bad nerves or anxiety'. Robust standard errors. All equations also include 47 schooling dummies and 11 month dummies.

market outcomes – such as inactivity and unemployment are linked to health status. Attributing the direction of causation is extremely difficult with such relationships. This is not an area that we investigate here. However, one point we would wish to make is that a number of the health conditions from which Scots particularly suffer are associated with lifestyle choices including drug taking, alcohol consumption and diet. Such choices are properly of interest to economists as well as to other professional groups. An economists' explanation of why they occur would centre around two possibilities. The first is that perhaps Scots are poorly informed about the future implications of the choices they make. This argument is difficult to support as there is no obvious reasons why information on the implications of lifestyle choices should be any different in Scotland from the rest of the UK. The second reason is that Scots may discount the future more than people in other parts of the UK. That is, their choices are more dominated by short-term than long-term considerations. If this were the case, then short-run choices that might lead to long-term adverse health consequences might seem rational. Unfortunately, economics is not very adept at explaining why individual discount rates vary. There is an extensive literature on the potential effects of differences in discount rates, but little to explain why they might arise. A plausible proposition is that high discount rates are linked to low self-esteem, which in turn has been linked to other potentially adverse behaviours such as smoking, drinking, drug taking and obesity. This would be consistent with the objective evidence, which we have collected, particularly in relation to Strathclyde. Third, there is a legacy of the past that has been very difficult to overcome. Poverty and disease existed in and around Glasgow at the beginning of the 20th century and it appears that this is also true at the start of the 21st century, although its manifestation in the form of lung cancer, heart disease and poor mental health is seemingly different. We see few signs that there will be a marked improvement any time soon.

Social capital

Another hypothesis that we have sought to test is that the adverse indicators for Scotland and Strathclyde are due to low levels of social capital. For this test we used the social capital data collected with the 2000–2001 General Household Survey which highlights five dimensions of social capital: these comprise civic engagement, neighbourliness and reciprocity, social networks, social support and views about the local area (for details see Coulthard *et al.*, 2002). These are intended to capture individuals' views of: the neighbourliness of their area; their views of local social facilities; whether they feel that they have an adequate network of friends; whether they feel that they have an adequate network of family and whether they are 'civically engaged'. There were 8200 observations in Great Britain as a whole, 730 of which were in Scotland. No subdivisions within Scotland were available. We tested whether there is a significant 'Scotland effect' associated with these six summary measures of social capital.

Table 10 shows the value of the Scotland dummy (with England as the base case) for our five index measures of social capital. Some of the dependent

Table 10
Social capital regressions

Dependent variable	Scotland coefficient	<i>T</i>	<i>N</i>	Method	R^2 (OLS)/pseudo- R^2 (Dprobit)	F (OLS)/LM (Dprobit)
Neighbourliness score	0.007	(0.10)	8137	OLS	0.016	13.29
Local facilities score	-0.033	(0.45)	8137	OLS	0.011	9.17
Network of friends	0.039	(1.84)	8137	Dprobit	0.009	101.2
Family network	0.055	(2.51)	8137	Dprobit	0.023	112.3
Not civically engaged	0.011	(0.64)	8137	Dprobit	0.013	114.3

Source: General Household Survey (2000/2001). Robust standard errors.

variables are continuous while others are dichotomous. We therefore use a mixture of OLS and probit estimators. In each equation we include age, gender and marital status as controls. Both on neighbourliness and on views of local facilities, the Scotland dummy is not statistically significant, implying no difference between Scotland and England in these categories. But Scots tend to have better friendship and family networks. This is implied by the significance of the dummy variables for the relevant equations. Finally, using the variable that ONS argue is most closely aligned with Putnam's concept of social capital, namely 'lack of social engagement', there is again no statistically significant difference between Scotland and England. These findings suggest that social capital levels in Scotland are certainly no lower than in the rest of Great Britain. Thus, a low level of social capital is not a strong contender as an explanation of low levels of well-being in Scotland as a whole.

There were two findings. First, there were no significant differences between Scotland, England and Wales in perceptions of neighbourliness, local problems or local facilities. Second, Wales and Scotland had substantially higher scores than England on closeness to friends and family. For Wales the relevant p value is 1% , while for Scotland it is somewhat weaker at 7% . These findings were robust to the addition of variables measuring household income, economic activity and housing tenure.

The preceding analysis did not investigate social capital within Scotland. We now rectify this by using data from the Scottish Household Survey for the 2 years 2001/2002 and 2002/2003 to model some indicators of social capital collected by this survey (see Hope *et al.*, 2003). These capture similar concepts to the General Household Survey. Hope *et al.* (2003), which is the main source book on the data, show that overall 51% of adult Scots report that their neighbourhood is a 'very good' place to live compared with a low of 33% in Glasgow City and a high of 70% in both Orkney and the Western Isles (Table 4.28).

Specifically we use the micro-data to model whether respondents feel that they live in a neighbourhood with 'friendly people', how they rate their neighbourhood as a place to live and whether they feel safe when walking after dark. Using the appropriate ordered logit or probit estimator, these indicators

Table 11
Social capital within Scotland

Area	Friendly people	Area as a place to live	Safe walking after dark
Glasgow	-0.001 (0.04)	-0.584 (11.09)	-0.856 (14.78)
North Lanarkshire	0.047 (2.95)	-0.151 (2.39)	-0.484 (7.27)
South Lanarkshire	-0.042 (2.66)	-0.246 (3.83)	-0.301 (4.49)
Dunbartonshire	-0.039 (2.14)	-0.228 (3.14)	-0.171 (2.17)
Renfrewshire and Inverclyde	-0.067 (4.54)	-0.555 (9.59)	-0.172 (2.60)
Ayrshire	-0.054 (3.69)	-0.283 (4.96)	-0.163 (2.57)
Fife	0.000 (0.03)	-0.039 (0.71)	-0.151 (2.35)
Highlands and Islands	0.042 (3.24)	1.683 (30.54)	0.483 (8.61)
Grampian	-0.051 (3.60)	-0.160 (2.82)	0.058 (0.94)
Tayside	-0.027 (1.85)	0.251 (4.22)	-0.078 (1.22)
Central	0.010 (0.65)	-0.054 (0.95)	-0.220 (3.43)
Lothian	0.044 (2.90)	0.140 (2.39)	-0.008 (0.13)
Southern Scotland	0.054 (3.23)	0.767 (10.83)	0.365 (5.03)
<i>N</i>	26,609	26,609	26,609
Pseudo- <i>R</i> ²	0.0106	0.0869	0.0422
Method	Dprobit	Ologit	Ologit

Notes: Excluded area is Edinburgh. Area as a place to live rating varies from 4 (very good) to 1 (very poor). Safety after dark varies from 4 (very safe) to 1 (very unsafe). Friendly people and community spirit are both dichotomous variables where 1 signifies agreement, 0 signifies disagreement. Areas within Strathclyde are shown in bold. Robust standard errors.

Source: Scottish Household Survey (2001–2003).

are regressed on age, economic status and a set of dummy variables that distinguish 13 areas within Scotland. Table 11 shows the coefficients on these estimated area effects. Edinburgh City is the excluded category.

The results imply that some parts of Scotland are perceived as friendlier than Edinburgh, including the Highlands and Southern Scotland. Within Strathclyde, Lanarkshire is perceived as more friendly, Ayrshire less friendly and Glasgow not significantly different from Edinburgh. Again the Highlands and Southern Scotland are rated by their inhabitants as better places to live than Edinburgh, but all parts of Strathclyde are perceived as worse, with the strongest effect in Glasgow, followed by North Lanarkshire. Glasgow residents feel least safe venturing out after dark. Indeed all parts of Strathclyde perform poorly on this indicator, while Tayside, Southern Scotland and particularly the Highlands are perceived as safe.

Our first analysis showed that Scotland has levels of social capital at least as high as those in England. However, our second analysis shows that there is wide variation within Scotland and that again the areas which comprise Strathclyde are not seen as either particularly good or safe places to live. Again, this evidence accords with our previous analyses of health, crime and the labour market.

The final link in our puzzle is to relate the foregoing evidence to information on life satisfaction. That is, we now present some data on how individuals in Scotland respond to questions about how satisfied they are with the life they lead.

Table 12
Life satisfaction, Scotland and Great Britain, 1973–2002

	% not at all satisfied	% not very satisfied	% fairly satisfied	% very satisfied
(a) GB				
1973–1977	4	11	54	31
1978–1982	4	10	53	33
1983–1987	4	10	55	31
1988–1992	4	10	55	31
1993–1997	3	10	57	31
1998–2002	2	9	55	35
(b) Scotland				
1973–1977	3	12	57	28
1978–1982	2	10	62	26
1983–1987	5	9	61	25
1988–1992	4	11	58	27
1993–1997	4	11	58	27
1998–2002	3	11	58	28

Source: Eurobarometer Surveys (1975–1979 and 1982–1986).

Life satisfaction and happiness

Data on life satisfaction are available in a number of sweeps of the Eurobarometer survey. We make use of data for the period 1973–2003 excluding the years 1974, 1996 and 1999 when no data were available (Table 12). Data for a shorter number of years for Great Britain were previously examined in Blanchflower and Oswald (2004a). Life satisfaction for Great Britain is tabulated below. It appears from these data that the Scots report lower levels of satisfaction than those in Great Britain as a whole.

As we noted above data are also available on happiness in the Eurobarometers for the years 1975–1979 and then again for 1982–1986. Individuals also report their life satisfaction; below we tabulate responses from both happiness and life satisfaction for 14,341 respondents from Great Britain and then separately for 1536 observations from Scotland (Table 13). We report the overall percentages in each cell so 17% means that 17% of the sample said both that they were very happy and were very satisfied with their life. It is clear from both measures of well-being that the Scots are less happy and less satisfied with life than is the case for the British population as a whole. Overall 31% report being very satisfied with life compared with 24% in Scotland while 26% report being very happy overall compared with 21% of Scots. The vast majority of the sample is on the main diagonal, suggesting the two measures are highly correlated.

We now focus on life satisfaction as this is available for a long run of years as well as for the recent period: it also includes data from Southern Ireland. Table 14 reports ordered logit models of life satisfaction and for males and females separately in columns 1–3; columns 4–6 separates Scotland into five separate

Table 13
Happiness and life satisfaction, Scotland and Great Britain

Happiness (%)	Life satisfaction			
	% very satisfied	% fairly satisfied	% not very satisfied	% not at all satisfied
(a) GB				
Very happy	17	8	1	0
Pretty happy	11	41	5	1
Not too happy	2	6	5	2
Total	31	56	10	4
(b) Scotland				
Very happy	12	8	0	0
Pretty happy	10	47	5	1
Not too happy	2	7	5	2
Total	24	61	10	4

Source: Eurobarometer Surveys (1973–2003).

components – Strathclyde, Borders, Highlands and Islands, Grampian. It is only possible from 1989 on to identify the regions within Scotland so for the years before 1989 we include only a *Scotland pre 1989* dummy. Table 10 reports results for the UK as a whole and includes controls for age and its square, gender, schooling, labour market status and a time trend. Confirming findings in Blanchflower and Oswald (2004a) there is an upward trend in happiness. Males are less satisfied with their lives than females though the trend for men is upwards, while females' life satisfaction shows no distinct trend. Married people are happier than single people and happiness is U shaped in age. Individuals who are married are more satisfied than individuals who are living together. Separated individuals are especially miserable. After allowing for these influences, it is still the case that residing in Scotland has a negative and significant effect on life satisfaction whatever time period is used. Residents of Strathclyde are particularly unhappy and this is true both for men and women. In two recent papers Blanchflower and Oswald (2005, 2006) also found that happiness, and other measures of well-being including job satisfaction, and suicide were correlated in Australia; happiness was low in Australia compared with other English-speaking countries but it also has the highest suicide rate.¹⁵

Our well-being results do not control for social capital. Nevertheless our previous regressions with various measures of social capital suggest that, on average, indicators of social capital in Scotland are no worse than in England or Wales. However, the detailed analysis within Scotland shows that social capital indicators for the Strathclyde area are relatively low. This is consistent with the lower self-reported well-being in this part of Scotland.

¹⁵ Leigh and Wolfers (2006) argue that Australia's ranking on happiness is higher using an earlier dataset.

Table 14
Life satisfaction equations

	All	Males	Females	All	Males	Females
Scotland	-0.1533 (5.78)	-0.1585 (4.17)	-0.15020 (4.00)	-0.2929 (5.84)	-0.2858 (4.16)	-0.2995 (4.02)
Strathclyde				-0.0638 (1.01)	-0.0660 (0.70)	-0.0745 (0.85)
Borders				0.1402 (1.15)	0.0275 (0.14)	0.2066 (1.34)
Highlands				0.0750 (0.75)	0.0107 (0.08)	0.1446 (0.97)
Grampian				-0.1652 (4.43)	-0.1561 (2.94)	-0.1685 (3.23)
Scotland pre 1989				0.0652 (4.77)	0.0292 (1.49)	0.1052 (5.39)
Eire	0.0652 (4.77)	0.0291 (1.49)	0.1055 (5.40)	0.1817 (10.09)	0.1575 (6.08)	0.2060 (8.11)
North Ireland	0.1818 (10.09)	0.1575 (6.09)	0.2061 (8.11)	0.0374 (0.93)	0.0610 (1.06)	0.0199 (0.36)
Wales	0.0374 (0.94)	0.0610 (1.06)	0.0200 (0.36)	0.0023 (3.23)	0.0041 (3.87)	-0.0004 (0.34)
Time	0.0024 (3.36)	0.0041 (3.93)	-0.0003 (0.27)	-0.0351 (15.72)	-0.0400 (12.06)	-0.0300 (9.77)
Age	-0.0352 (15.74)	-0.0401 (12.08)	-0.0301 (9.79)	0.0004 (20.36)	0.0005 (15.19)	0.0004 (13.25)
Age squared	0.0004 (20.39)	0.0005 (15.21)	0.0004 (13.28)	-0.1833 (14.65)		
Male	-0.1836 (14.67)			0.2813 (15.95)	0.2381 (9.92)	0.3460 (12.80)
Married	0.2819 (15.99)	0.2384 (9.94)	0.3470 (12.84)	0.0974 (2.63)	0.1152 (2.21)	0.0841 (1.53)
Living together	0.0981 (2.65)	0.1156 (2.21)	0.0854 (1.56)	-0.5827 (13.91)	-0.3564 (5.17)	-0.6856 (12.62)
Divorce	-0.5819 (13.89)	-0.3572 (5.18)	-0.6841 (12.59)	-0.6853 (14.22)	-0.6310 (8.40)	-0.7063 (11.08)
Separated	-0.6844 (14.20)	-0.6315 (8.41)	-0.7037 (11.04)	-0.3024 (10.50)	-0.3223 (6.40)	-0.2370 (6.29)
Widowed	-0.3024 (10.50)	-0.3222 (6.40)	-0.2370 (6.29)	0.0942 (4.51)	0.0987 (3.99)	0.0986 (2.29)
Self-employed	0.0942 (4.50)	0.0984 (3.98)	0.0988 (2.29)	0.0502 (1.08)	0.1175 (1.59)	-0.0117 (0.20)
Student	0.0495 (1.06)	0.1165 (1.57)	-0.0122 (0.20)	-0.0823 (3.37)	-0.0841 (2.36)	-0.1317 (3.66)
Retired	-0.0828 (3.39)	-0.0850 (2.38)	-0.1316 (3.66)	-0.1109 (6.28)	-0.3739 (4.05)	-0.1295 (6.24)
Housewife	-0.1116 (6.32)	-0.3765 (4.07)	-0.1303 (6.28)	-1.1835 (43.33)	-1.383 (41.27)	-0.7880 (16.58)
Unemployed	-1.184 (43.37)	-1.383 (41.32)	-0.7883 (16.58)	-3.5592	-3.5217	-3.4143
Cut_1	-3.5587	-3.5225	-3.4126	-2.1316	-2.1203	-1.9534
Cut_2	-2.1312	-2.1212	-1.9519	0.5846	0.6267	0.7362
Cut_3	0.58467	0.6256	0.7373	117.775	56.612	59.956
N	117.775	56.612	59.956	6141	3586	2573
χ^2	6109	3572	2556	0.0281	0.0352	0.0217
Pseudo- R^2	0.0280	0.0352	0.0216			

Source: Eurobarometer Surveys (1973-2003). Robust standard errors.

V CONCLUSIONS AND POLICY LESSONS

Let us now return to the issue of economic growth, which is where we started. Our paper paints a relatively depressing picture of Scotland over a range of objective and subjective indicators of health, welfare and well-being. Interestingly, the well-being indicators are all telling a consistent story; Scotland has low levels of well-being whether we look at suicide, depression or life satisfaction. Some of these indicators may stem from economic factors, while others have a basis in the social and cultural environment and possibly even the Scottish gene pool (in respect of some diseases which have a strong inherited predisposition). Economic factors are likely only to make a difference at the margin to these welfare outcomes. Nevertheless, as mentioned above, economic growth is accorded the highest priority in terms of the policy ambitions of the Scottish Executive. Increased growth will involve some combination of more workers and/or higher incomes. How will this impact on welfare outcomes?

It is clear from our analysis that incomes among the employed in Scotland are not substantially lower than in other parts of the UK. And household income has been increasing rapidly in real terms, particularly among those households with employed people on low earnings. As a consequence poverty levels have been declining. Indeed, the proportions of households on low incomes or in receipt of social security benefits is not that much different than in the rest of the UK (Table 1). However, though employment levels in Scotland are high, there is still a substantial pool of inactivity, often associated with poor health, and particularly concentrated in Strathclyde in general and Glasgow City in particular. Our results show that higher incomes for this group will not necessarily improve their well-being. And Deaton and Paxson's work implying that there is not necessarily a strong link between mortality rates and income levels in the UK does not suggest that higher incomes will necessarily improve health outcomes.

There is no *prima facie* evidence that public goods provision enhances individuals' well-being. Further, public spending has increasingly focused on those areas with high levels of deprivation. Yet our analysis shows no discernible improvements of outcomes in Strathclyde compared with the rest of Scotland in recent years. Indeed, some indicators, such as violent crime, appear to be worsening. This suggests that the economic levers on health and well-being are much less powerful than economists and politicians have imagined. In consequence, the solutions to the many problems we have described may have more to do with institutions and social structure rather than higher public spending and increased private income. Part of the lesson must be that the economic policy cannot be divorced from social and health policy as well as from institutional change. Although inactivity and unemployment have adverse effects on well-being, it would also be wrong to focus development strategies simply on trying to get the inactive and unemployed back into work, as this does not address the mechanism whereby these individuals have very low well-being outcomes.

The paper has also shown that economic, health and social problems in Scotland have a geographic focus. The difficulties experienced in Strathclyde especially may have their roots in the demise of production industries in recent decades, but the consequences in terms of poorer lifestyle-related physical and mental health, more adverse labour market outcomes and lowered well-being seem both persistent through time and resistant to policy initiatives aimed at reducing inequalities in health and labour market outcomes. New initiatives are needed that are directly targeted at lowering suicide, improving the diet of Scotland's citizens, reducing alcohol consumption and reducing cigarette smoking. This will not be a simple matter and will require careful examination of what remedies will and will not work. Based on our analysis it seems that policies aimed at raising economic growth, such as those advocated by the Scottish Executive, are unlikely to be successful in raising the overall well-being of the Scots.

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