LABOUR FORCE PROJECTIONS

2006-2020

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Introduction

This article sets out the latest ONS labour force projections, including the detailed methodology underpinning them. User demand for projections is driven by the fact that the size and composition of the future labour force are significant parameters to take into account when making assessments of long-term socio-economic trends. The characteristics of the labour force in the future have important implications for a variety of issues, ranging from the economy's productive capacity to the sustainability of social security and pension systems.

Projections of the labour force were last published by ONS in 1998 and referred to Great Britain for the period between 1998 and 2011. Due to various population revisions since (including reweighting of the Labour Force Survey (LFS) to post-Census population), these projections are now inconsistent with published LFS data. The current project has focused on producing labour force projections for the UK covering the period from 2006 to 2020, which are fully consistent with published LFS data.

The estimates in this article are projections and they do not depend on any forecasts of future economic conditions. They have been produced by using econometric modelling techniques to show the future pattern of age/sex specific labour market activity rates indicated by past trends. These projected rates have been applied to published UK population projections to yield labour force projections by age and sex.

This set of projections represents ONS's best estimate of the future labour force, based on current demographic and activity rate trends. Inevitably, there are uncertainties associated with such projections, primarily due to the long time period that they cover. Trends in activity rates may change, for example, in response to changing economic conditions and population projections may be subject, among other things, to changing trends in migration and life expectancy.

Definition of the labour force

The labour force includes those people who are aged 16 and over and are economically active. Economic activity is defined as the sum of people who are in employment and unemployment, using the International Labour Organization (ILO) definition. Under the ILO definition, a person is defined as being unemployed if they are without a job, are available to start work and are actively seeking a job, or are waiting to start a job already obtained. The other side of economic activity is economic inactivity. Economic inactivity refers to those people who are not in employment and are either not looking for work or are not available to start. The sum of the active and the inactive makes up the entire population.

These labour force projections refer to the number and percentage of people who are economically active. Projections of the components of economic activity, namely employment and unemployment, are not produced by ONS.

Overview of the Methodology

The projections of the labour force are based on two key components:

1. Projections of the population.
2. Projections of economic activity rates.

The first component refers to a purely demographic effect. The size and composition of the labour force depend on changes in the UK population. In addition, the overall activity rate is influenced by the relative movements of people between age groups. For example, other things being equal, as the population is ageing the overall activity rate is expected to fall, since older people are associated with lower labour market participation. These demographic changes are captured through the 2004-based population projections produced by the Government Actuary's Department (GAD)[1].

The second component refers to non-demographic factors that affect the participation decision and is captured through the modelling of activity rates. The population is disaggregated into 28 subgroups according to sex, age and student status and econometric modelling is used to project the activity rates of each subgroup. In this way, the demographic effect is removed and the analysis focuses on long-term trends, due to structural socio-economic factors. In addition, an attempt is made to capture the effect of the economic cycle on past activity and the future is essentially projected as acyclical. Annex A provides a detailed description of the estimated econometric models. These projections also take into explicit account the effects of the equalisation of the state pension age, whereby pensionable age for women will rise from 60 to 65 by 2020. This is described in more detail in Annex B.

Demographic Trends and Projections

Both the size and composition of the population in the future affect the projections of the labour force. Projections of the UK population are derived from GAD's 2004-based resident population projections, published 20 October 2005. The projections of the labour force use the principal population projections produced by GAD, although sensitivity analysis is carried out based on GAD's variant population projections. These variant population projections capture different demographic assumptions on migration, life expectancy and fertility and have a significant effect on the labour force projections. The results of the sensitivity analysis with respect to demographic assumptions are discussed in more detail later on.

Household Population Projections

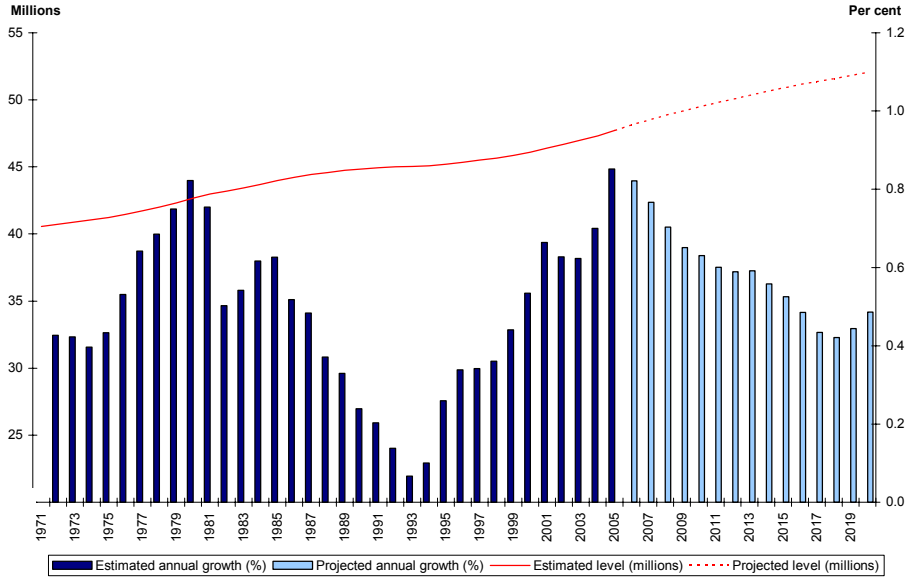
The population projections produced by GAD refer to the resident population in the UK. LFS population covers only households and excludes most communal establishments (with the exception of students in halls of residence and nurses in NHS accommodation). In order to maintain consistency with the LFS, the GAD resident population projections are adjusted to exclude the population of communal establishments not covered by the LFS sampling frame. In particular, the proportion of the population in communal establishments is assumed constant at its 2004 level and applied to the GAD resident population projections, to calculate the projected population of communal establishments. This is, in turn, subtracted from the GAD projections of resident population to calculate the projected household population.

[1] Following the recommendations of the Morris Review of the Actuarial Profession, the responsibility for producing national population projections has transferred from GAD to the new Centre for Demography at the ONS. For more details see: http://www.statistics.gov.uk/pdfdir/ndp1105.pdf.

People aged 16 and Over

As, by definition, people below the age of 16 are not included in the labour force, the segment of the population that is relevant to the labour force projections is people aged 16 and over. The household population aged 16 and over is projected to increase from 47.7 million in 2005 to 52.1 million in 2020. This implies an average annual growth rate of 0.6 per cent throughout the period from 2005 to 2020 (see Figure 1).

Figure 1: Household population aged 16 and over; United Kingdom; 1971 to 2020



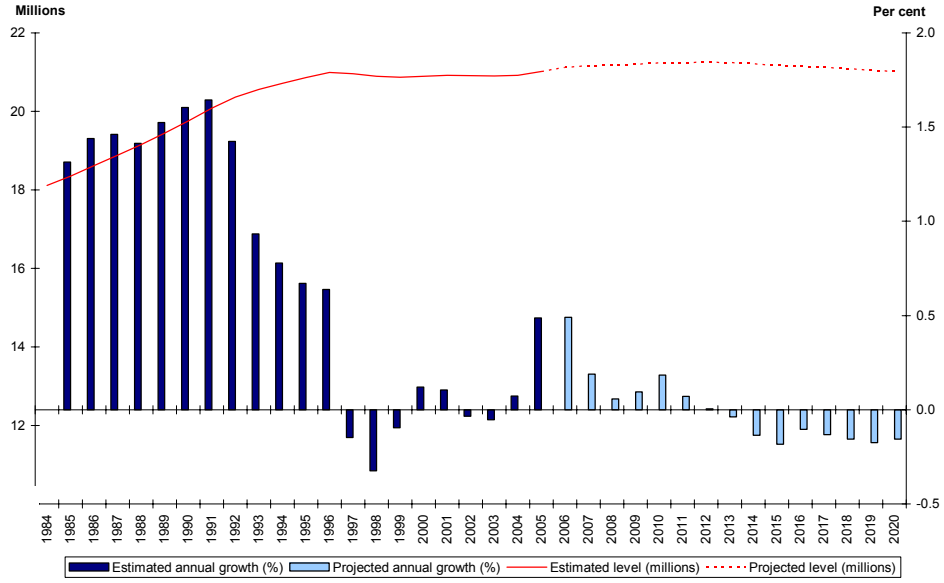
Source: Office for National Statistics

However, the growth in the overall population aged 16 and over conceals movements of people within age groups. Such movements have significant implications for the projected labour force, as different age groups are associated with different labour market activity rates.

Prime Age Population

We define the population of prime age to refer to people aged between 25 and 49. Historically, men and women in this age group have achieved the highest rates of participation in the labour market. The number of people in this age group is projected to rise until 2011 and then decline from 2012 onwards, mainly due to the 'baby boom' generation leaving the 25 to 49 age group. In 2020 there are expected to be 21.0 million people aged between 25 and 49, the same number as in 2005 (Figure 2).

Figure 2: Household population aged 25 to 49; United Kingdom; 1984 to 2020

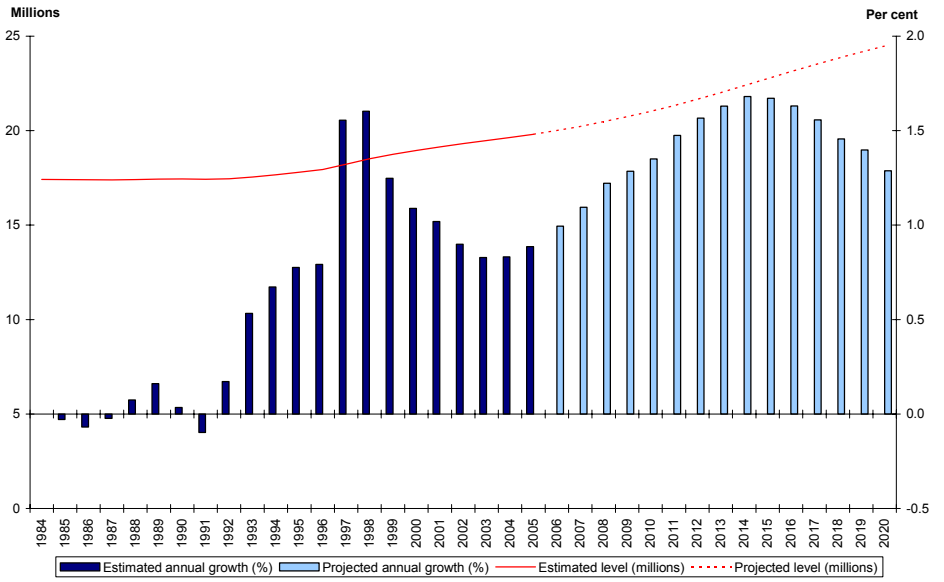


Source: Office for National Statistics

People Aged 50 and over

The most significant demographic trend affecting the size and composition of the labour force over the next 15 years is the rapid increase in the number of people aged 50 and over. The labour market activity rates of people aged 50 and over are lower than average and, as such, the increasing number of people in this age group relative to other age groups tends to depress the overall economic activity rate. Over the period from 2005 to 2020, the number of people aged 50 and over is expected to increase from 19.8 million to 24.5 million, equivalent to an increase of 23.5 per cent (Figure 3). This sharp increase is associated both with the overall trend towards higher life expectancy as well as the transition of the 'baby-boom' generation to the 50 and over age group.

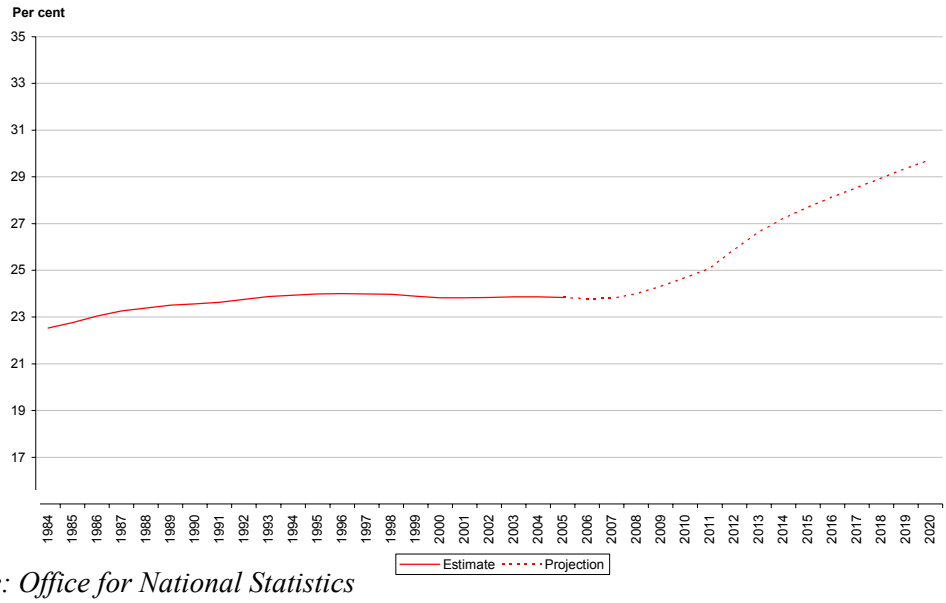
Figure 3: Household population aged 50 and over; United Kingdom; 1984 to 2020



Source: Office for National Statistics

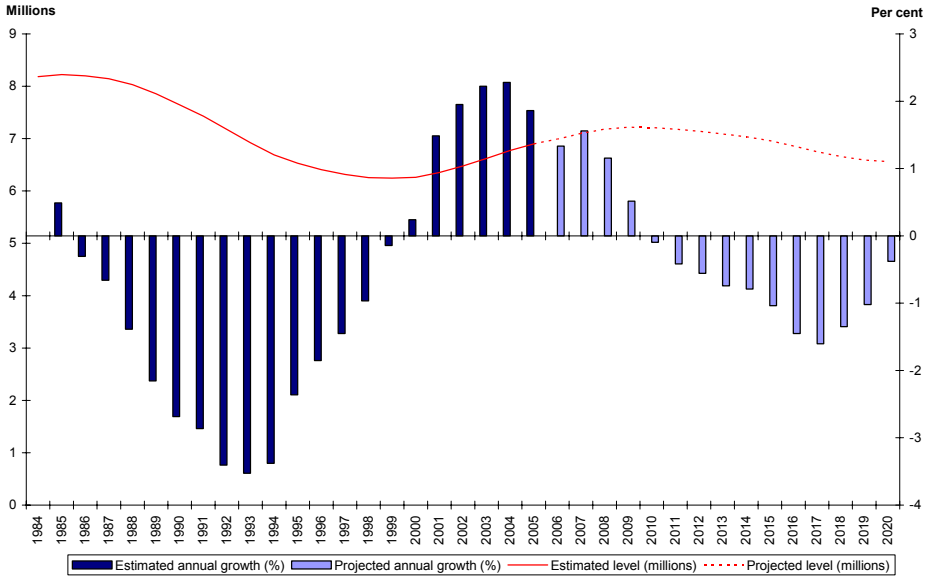
The magnitude of this demographic effect is also evident through the trend in the old-age dependency ratio. This is a demographic indicator and can be defined in a number of different ways. Here it is defined as the number of people aged 65 and over as a proportion of the number of people aged 16 to 64. This definition is convenient because in 2020, when state pension age will be defined at 65 for both men and women, it will be equivalent to the ratio of the number of people exceeding state pension age over the number of people of working age. The old-age dependency ratio is projected to increase from 23.8 per cent in 2005 to 29.7 per cent in 2020. The projected trend in the dependency ratio is shown in Figure 4.

Figure 4: Old-age dependency ratio: People aged 65 and over as a percentage of people aged 16 to 64; United Kingdom; 1984-2020



Source: Office for National Statistics

Figure 5: Household population aged 16 to 24; United Kingdom; 1984 to 2020



Source: Office for National Statistics

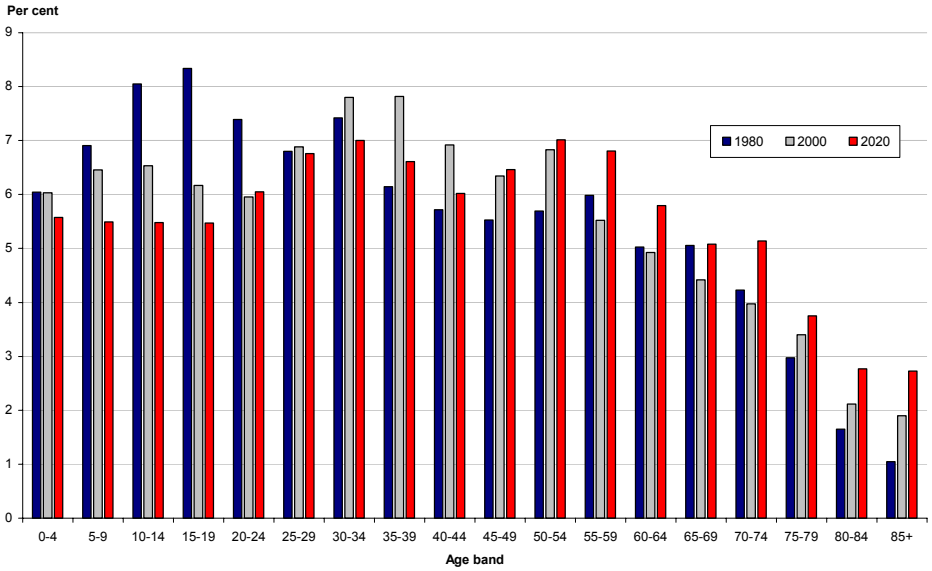
Young People

Young people are defined as those aged between 16 and 24. Their activity in the labour market is lower than average, primarily due to their participation in further and higher education. The number of people aged between 16 and 24 is projected to fall from 6.9 million in 2005 to 6.6 million in 2020, equivalent to a fall of 4.9 per cent (Figure 5).

Age Structure of the Population

Overall, the age structure of the population is shifting towards older age groups. Figure 6 compares the age structure of the population at three different points in time: in 1980 and 2000 based on ONS population estimates and in 2020 based on GAD 2004-based population projections[2]. There is an evident shift of the age distribution towards older age groups, with the peak of the distribution (the age group containing the largest proportion of people in the population) also moving to the right.

Figure 6: Age structure of the population: Number of people in age group as a proportion of total population; United Kingdom; 1980, 2000 and 2020



Source: Office for National Statistics, Government Actuary's Department

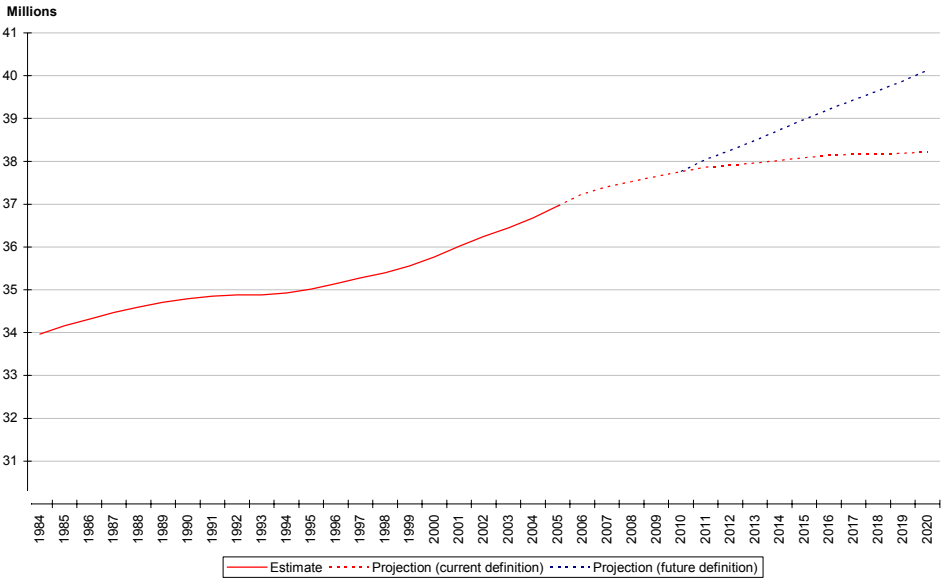
Population of Working Age

In terms of the labour force projections, the most relevant segment of the population is that of working age, as the activity rates of people outside working age are significantly lower. Working age is defined by the minimum school-leaving age on the lower bound (16 years of age for both men and women) and by state pension age on the upper bound. Currently, state pension age is defined at 65 years of age for men and 60 years of age for women. However, the Government has announced that state pension age for women will increase to 65 years of age, to equal that of men. This will be achieved gradually through a ten-year transition period between 2010 and 2020. The announced change in the state pension age for women will also affect the

[2] Note that Figure 6 refers to resident population, rather than LFS (household) population. This is because the interim-reweighted LFS population is not broken down by five-year age bands for all ages.

definition of working age. Figure 7 shows the projected number of people of working age under two scenarios. First, under the current definition of working age and not allowing for the equalisation of the state pension age. Second, allowing for the Government's announced plans to gradually increase the state pension age for women between 2010 and 2020. As shown in the graph, under the current definition, working-age population is projected to grow until 2020, although at a declining rate. This decline, however, is compensated by the equalisation of the state pension age, with more women remaining within the bounds of working age. Overall, under the current definition of working age, working-age population is projected to increase by 3.4 per cent from 2005 to 2020. Allowing, however, for the change in the definition of working age, working-age population is projected to increase by 8.6 per cent.

Figure 7: Household population of working age under current and future definitions; United Kingdom; 1984-2020



Source: Office for National Statistics

Projections of Student Numbers

In addition to the split by sex, young people (aged 16 to 17 and 18 to 24) are further disaggregated by student status, i.e. whether in full-time education or not. In the LFS, full-time education is defined as being at school, in a sandwich course or full-time at university, polytechnic or college. By disaggregating further, according to student status, a total of eight subgroups is derived for young people. The reason for this additional split lies in the inherent differences in labour market participation between students and non-students. In addition, there are differences in the trends evident over time in the activity rate series of the two.

In order to estimate the projected number of young people who are economically active in the future by student status, we require projections of the proportion of young people who will be in full-time education in the future. For a discussion on how projections of this proportion are constructed, see Annex C.

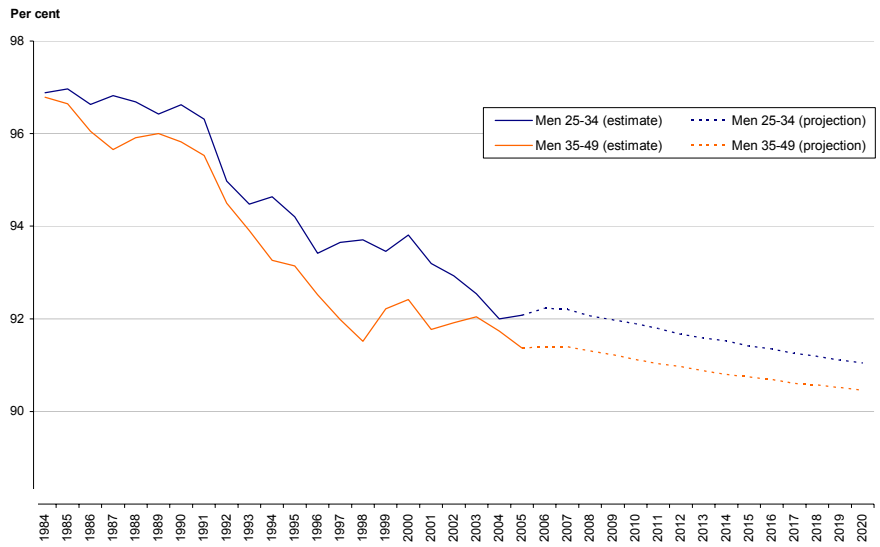
Activity Rate Trends and Projections

In order to control for the demographic effect, the population is split into 28 subgroups according to sex, age and student status and econometric modelling is used to project the activity rate series of each subgroup into the future. A detailed description of the methodology for projecting economic activity rates is provided in Annex A. This section discusses the projected activity rates for men and women, disaggregated by broader age groups (16-17, 18-24, 25-39, 40-49, 50-59/64, 60/65 and over), for ease of comparison with the Integrated First Release (IFR). The tables in Annex D include the projected activity rates for all 28 age/sex/student groups.

Prime Age Men

The economic activity rates for prime age men (aged 25 to 49) have seen a significant decline since the 1980s. The literature on the labour supply of men has proposed a number of possible explanations for this fall. These include the declining number of jobs in manufacturing industry, which typically employs a higher proportion of men, the shift of labour demand against unskilled labour and the administration of the social benefit system throughout the 1980s and early 1990s. For men aged 25 to 34, the downward trend evident throughout the period of observation is projected to continue into the future, although at a declining rate. For men aged 35 to 49, a clear structural break is evident in the activity rate series in the mid-1990s, coinciding with key labour market reforms such as the introduction of Jobseeker's Allowance in 1996 and Incapacity Benefit in 1995. The activity rate of men in this age group is projected to continue falling, although at a lower rate compared with that of the 1980s and early 1990s.

Figure 8: Activity rates for men aged 25 to 34 and 35 to 49; United Kingdom; 1984 to 2020

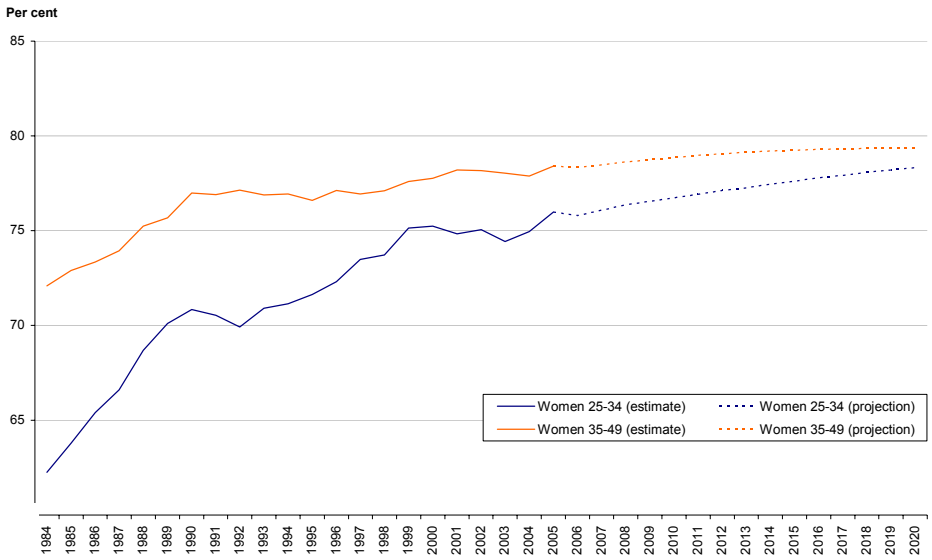


Source: Office for National Statistics

Prime Age Women

The labour market participation rates for prime age women (aged 25 to 49) showed rapid growth throughout the 1980s and the early 1990s. A number of factors driving these movements have been suggested by the literature on the labour supply of women. These include changes in social attitudes towards the employment of women, increased opportunities for the employment of mothers (part-time jobs, teleworking, etc.), improvements in the provision of child care as well as changes in family structure. Since the mid-1990s, the rate of increase in the labour market participation of women has slowed down, although it remains positive. This trend is projected to continue into the future, with the activity rates of prime age women increasing further, although at a declining rate.

Figure 9: Activity rates for women aged 25 to 34 and 35 to 49; United Kingdom; 1984 to 2020



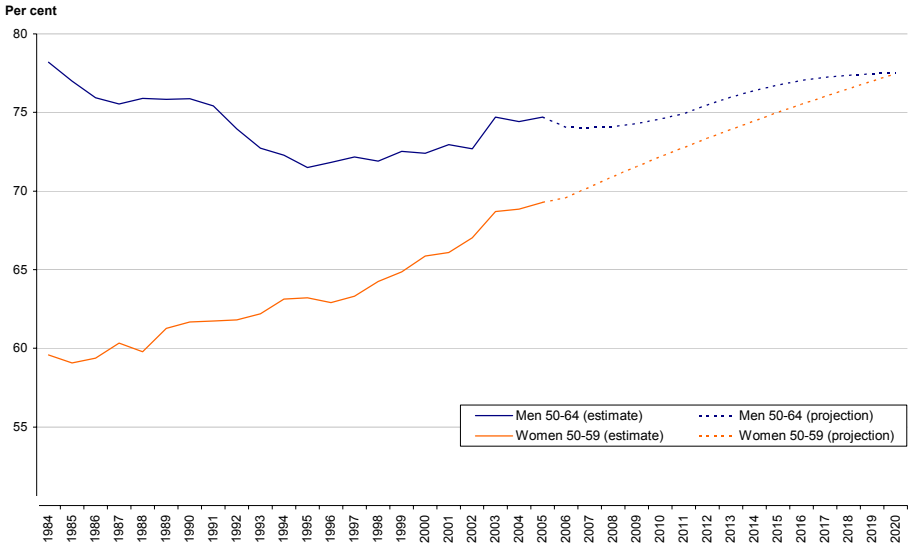
Source: Office for National Statistics

Men Aged 50 and Over

The economic activity rates of men aged between 50 and 64 saw a decline throughout the 1980s and the early 1990s. However, there is an evident structural break in the mid-1990s, with labour market participation of men in this age group now following an upward trend. Again, a number of possible explanations has been put forward by the literature on the labour supply of older workers, including the reform of disability benefits, changes in occupational pension schemes and early retirement provisions and the adoption of policies to tackle age discrimination in the workplace. This upward trend is projected to continue into the future, with men aged between 50 and 64 becoming increasingly active in the labour market over time (Figure 10)[3]. The economic activity rate of men aged 65 over has been fluctuating around the same level throughout the period of observation. It is projected to remain around this level in the future, with small fluctuations driven mostly by movements of people between age groups (Figure 11).

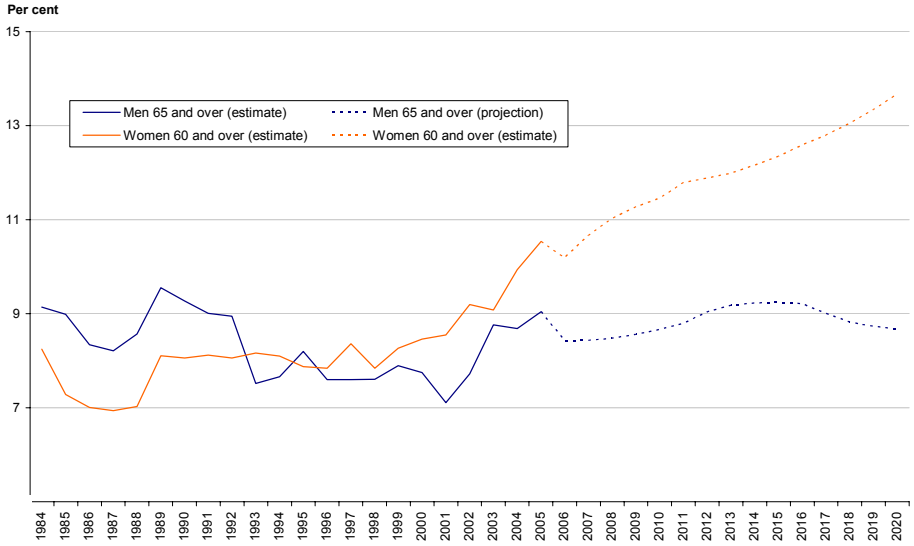
[3] Note that in Figures 10 and 11, the male and female age groups are not identical and, as such, not directly comparable.

Figure 10: Activity rates for men aged 50 to 64 and women aged 50 to 59; United Kingdom; 1984 to 2020



Source: Office for National Statistics

Figure 11: Activity rates for men aged 65 and over and women aged 60 and over; United Kingdom; 1984 to 2020



Source: Office for National Statistics

Women Aged 50 and Over

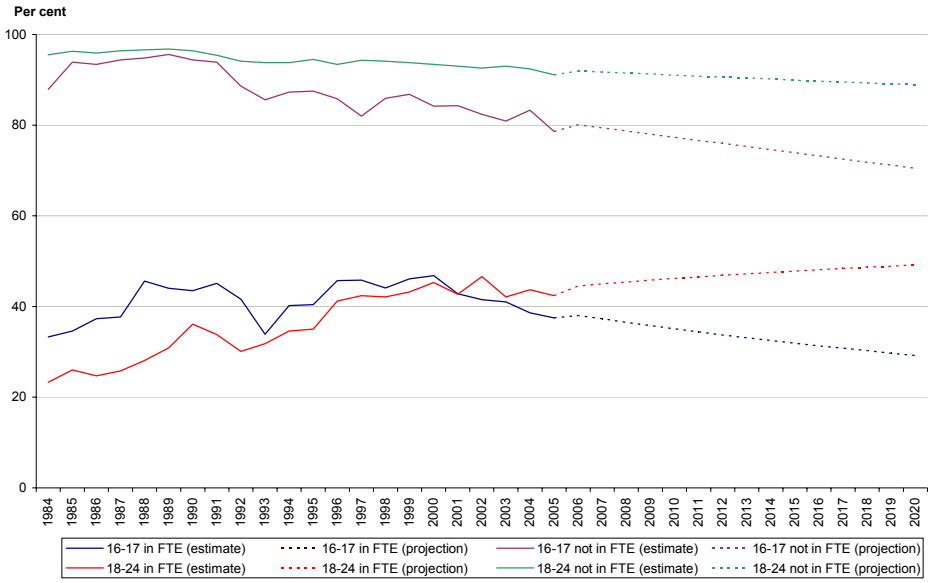
The economic activity rates of women aged 50 and over have been increasing steadily over the period between 1984 and 2005. For women aged 50 to 59, this increase is showing no signs of levelling off and is, thus, projected to increase at a robust rate over the period between 2006 and 2020. This is consistent with the view that, as younger cohorts of women who have been more active in the labour market throughout their lifetimes enter older age groups, the activity rates associated with these older age groups will rise (Figure 10). Similar trends are evident for women aged 60 and over (Figure 11). In addition to these long-term trends, however, this age

group also includes the fraction of women who will be directly affected by the equalisation of the state pension age, namely, women aged between 60 and 64. The Government has announced that the state pension age for women will increase from 60 to 65 over a ten year transition period (from 2010 to 2020). This is expected to lead to a significant increase in the activity rate of women in the 60 to 64 age group as, by 2020, their retirement decision will be affected by the fact that they will not be eligible for state pension. For a detailed discussion of how this set of projections takes into explicit account the equalisation of the state pension age, see Annex B.

Young Men

The activity rate series for young men have been more volatile over the period from 1984 to 2005, although there are evident trends that can be identified in the series. For men aged 16 to 17 who are in full-time education, there is a clear structural break in the activity rate series in 1998, which coincides with the introduction of the active policy measures adopted by the Government to increase the participation of 16 to 18 year-olds in full-time education. Since 1998, the labour market participation of men, aged 16 to 17, who are in full-time education, has been declining steadily and this trend is projected to continue into the future. For men in the same age group, but not in full-time education, the activity rate series shows a clear downward trend. This is in line with the trends observed in older male age groups and is projected to fall further in the future. For men, aged 18 to 24, who are in full-time education, the activity rate series has been following an upward trend, which appears to have levelled off slightly since 2000. The activity rate for this age group is projected to continue to grow, although at a slower rate than in the 1980s and 1990s. For men aged 18 to 24 who are not in full-time education, the economic activity rate has been falling over time, a trend that is consistent with the declining labour market participation of men in older age groups and this trend is projected to continue in the future.

Figure 12: Activity rates for men aged 16 to 17 and 18 to 24; United Kingdom; 1984 to 2020

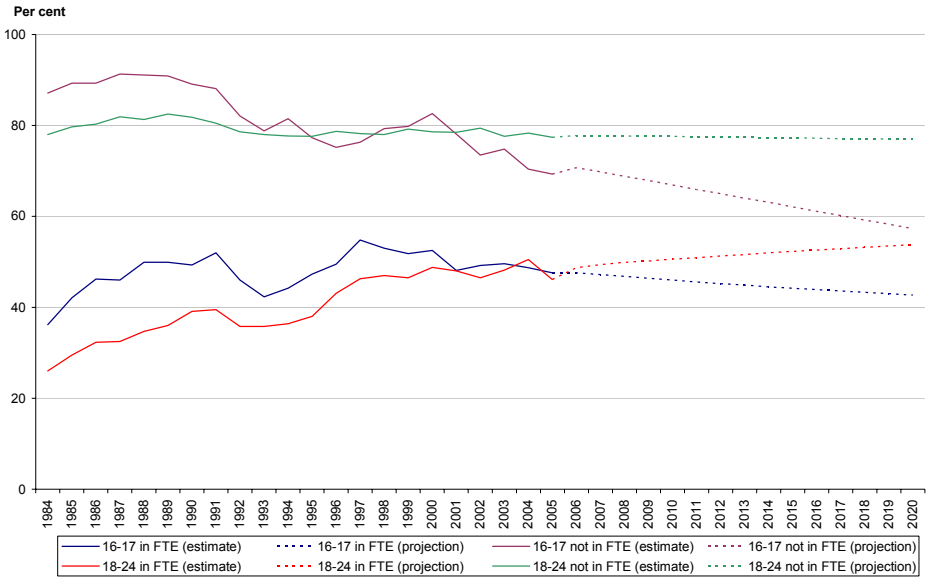


Source: Office for National Statistics

Young Women

Similarly to men, the activity rate series for young women have been relatively volatile over the period between 1984 and 2005. For women aged 16 to 17 who are in full-time education, there is an evident structural break in the series in 1998, with the activity rate following a downward trend since. This trend appears to have levelled off slightly since 2001 and, as such, the activity rate is projected to decline at a slow rate throughout the projection period. For women aged 16 to 17 who are not in full-time education, the downward trend in the activity rate has been stronger and their labour market participation is projected to continue to fall until 2020. Looking at the 18 to 24 age group for women in full-time education there has been a strong increase in their labour market participation since 1984, although this has levelled off slightly since 2000. The activity rate for this group is projected to increase at a declining rate in the future. For women aged 18 to 24, but not in full-time education, the activity rate appears to have been fluctuating around the same level since the mid-1990s. This is in contrast to other female groups, where increasing trends in activity rates have been evident. The activity rate for this groups is projected to remain relatively constant over the period from 2006 to 2020.

Figure 13: Activity rates for women aged 16 to 17 and 18 to 24; United Kingdom; 1984 to 2020

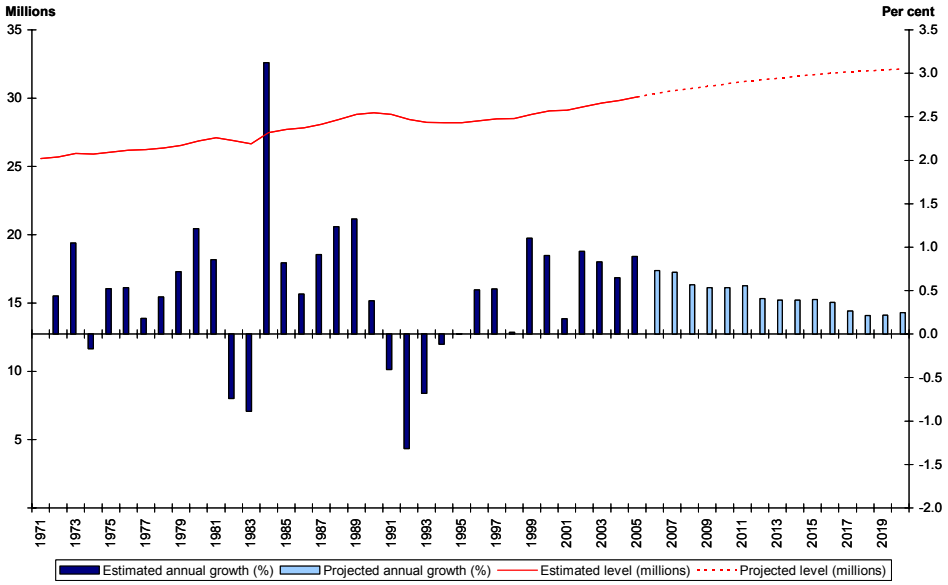


Source: Office for National Statistics

Labour Force Projections

By applying the projected activity rates to the household population projections, the overall labour force projections can be derived. Figure 14 plots the estimated and projected level and annual growth rate of the UK labour force for the period between 1971 and 2020. Annex D provides a summary of the projected size of the entire labour force up to 2020, as well as projections of the labour force disaggregated by age, sex and student status.

Figure 14: Labour force level and annual growth rate; United Kingdom; 1971 to 2020



Source: Office for National Statistics

The labour force is projected to grow continuously until 2020. The number of active people aged 16 and over is projected to increase by 6.7 per cent between 2005 and 2020 and reach 32.1 million in 2020. However, the annual growth rate in the labour force is projected to follow a declining trend. In particular, the average annual growth rate for the five-year period 2006 to 2010 is expected to be 0.62 per cent, compared with 0.43 per cent for the period 2011 to 2015 and 0.26 per cent for the period 2016 to 2020.

Activity Rate of People of Working Age

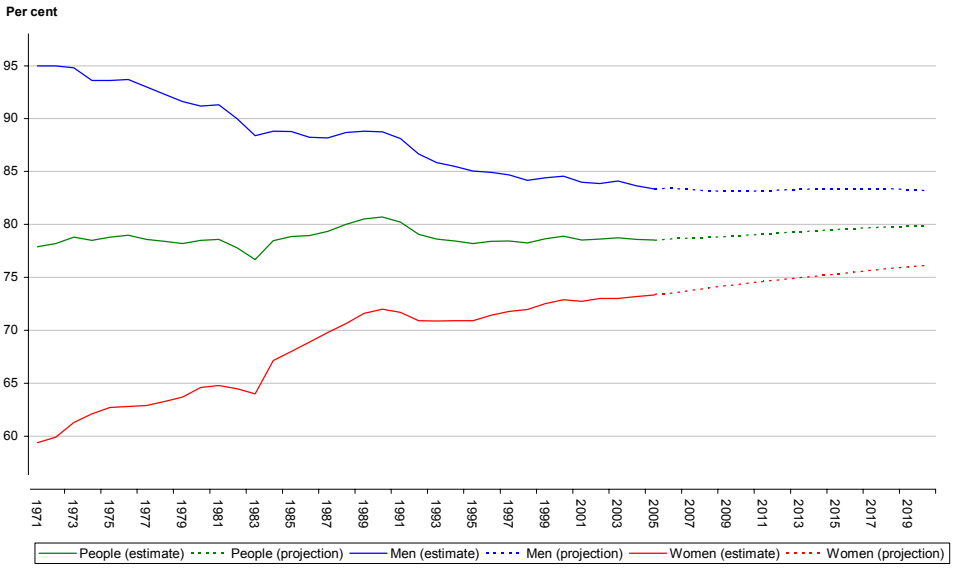
As explained earlier, the equalisation of the state pension age will affect the definition of the population of working age. Currently, the population of working age comprises of men, aged 16 to 64, and women, aged 16 to 59. With the state pension age for women rising to 65 by 2020, the population of working age will comprise of men and women, both aged 16 to 64. Given this definitional change, it is not possible to make meaningful comparisons of the working-age activity rate over time. As such, the two definitions are discussed separately.

Given the current definition of the working-age population, the activity rate for people of working age is projected to reach 79.8 per cent in 2020, an increase of 1.3 percentage points from 2005. This implies an average annual growth rate of 0.11 per cent over the period between 2005 and 2020. Within this, the working-age activity rate for men is projected to fall to 83.2 per cent in 2020 compared with 83.4 per cent in 2005, while for women it is projected to increase to 76.1 per cent in 2020 from 73.4 per cent in 2005.

Given the new definition of working-age population, the activity rate for people aged between 16 and 64 is projected to reach 78.1 per cent, an increase of 1.5 percentage points from 2005. This implies an average annual growth rate of 0.13 per cent over the period between 2005 and 2020. Within this, the working-age activity rate for men is projected to fall to 83.2 per cent in 2020 compared with 83.4 per cent in 2005, while for women it is projected to increase to 73.1 per cent in 2020 from 69.9

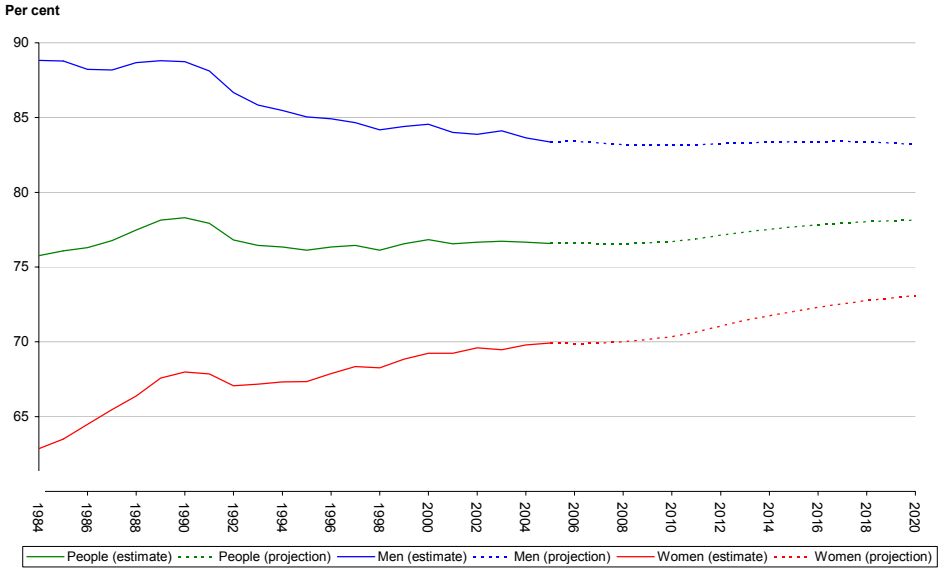
per cent in 2005. One would expect the overall activity rate under the new definition of working age to show a slower increase over the period 2005 to 2020 than under the old one. This is because it includes women, aged 60 to 64, whose participation in the labour market is lower than average. With the size of this age group increasing relative to younger age groups due to demographic movements, the activity rate should be growing slower. However, this is offset by the effect that the equalisation of the state pension age is expected to have on the activity rate of women in the 60 to 64 age group. Indeed, if one assumes that the effect of state pension age equalisation on economic activity is nil, then the activity rate of the working-age population under the new definition grows slower than under the old definition. When one factors in the expected increase in participation due to the equalisation of the state pension age, then growth is stronger under the new definition.

Figure 15: Working age (current definition) activity rates; United Kingdom; 1971 to 2020



Source: Office for National Statistics

Figure 16: Working age (future definition) activity rates; United Kingdom; 1984 to 2020



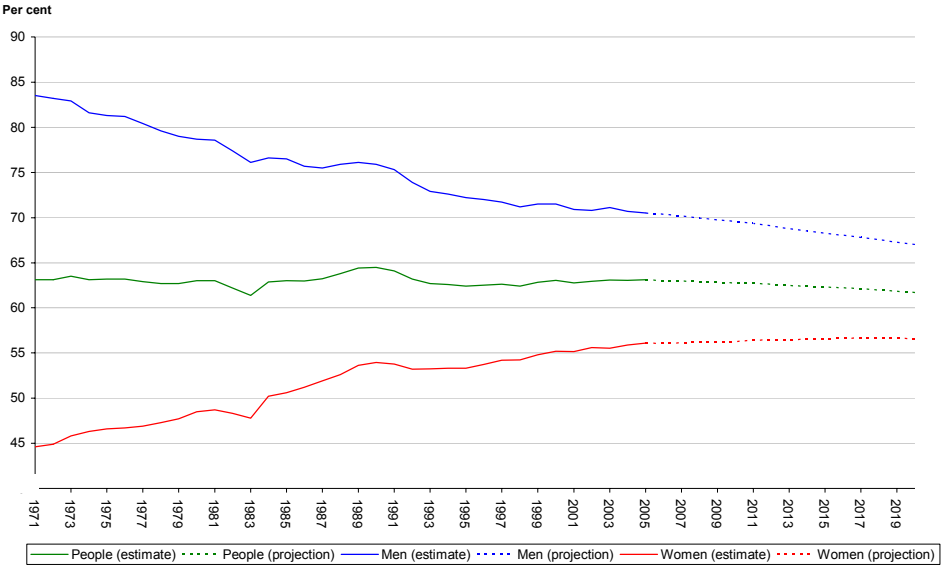
Source: Office for National Statistics

Activity Rate of People Aged 16 and Over

From 2005 to 2020, the activity rate for people aged 16 and over is projected to decrease by 1.4 percentage points, from 63.1 per cent in 2005 to 61.7 per cent in 2020. This implies a negative average annual growth rate of -0.15 per cent in the activity rate of people aged 16 and over throughout the projection period. The activity rate for men in this age group is projected to fall to 67.0 per cent in 2020 from 70.5 in 2005. For women aged 16 and over, the activity rate is projected to increase to 56.6 per cent in 2020 from 56.1 per cent in 2005.

The driving force behind the projected decrease in the activity rate of people aged 16 and over is demographic movements, with more people entering older age groups, which are associated with lower labour market participation. Although these demographic trends affect both men and women, the 16 and over activity rate for men is declining, while for women it is increasing. This occurs for two reasons: first, because for men the demographic effect is compounded by the overall declining trend in labour market participation. On the contrary, for women the demographic effect is partially offset by the trend towards increased participation in the labour market. The second reason is the expected effect of the equalisation of the state pension age. With state pension age for women increasing to 65 by 2020, the activity of women in the 60 to 64 age group is expected to rise significantly. Overall, the demographic effect for women is offset by increasing trends in labour market participation and the equalisation of the state pension age.

Figure 17: Activity rates for those aged 16 and over; United Kingdom; 1971 to 2020



Source: Office for National Statistics

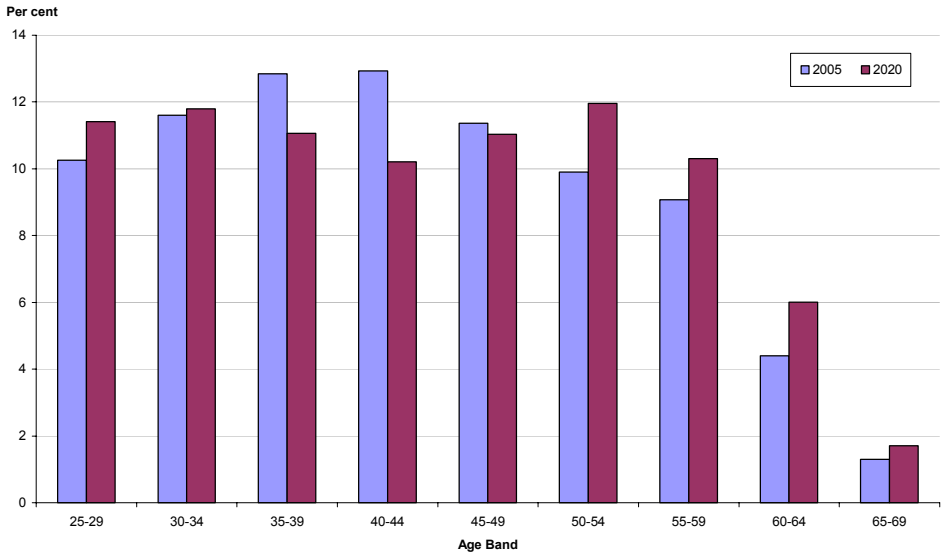
A Snapshot of the Labour Force in 2020

In 2020, the number of economically active people is projected to be 32.1 million. Of these, 53.3 per cent (17.1 million) will be men and 46.7 per cent (15.0 million) will be women. This compares with 54.2 per cent and 45.8 per cent respectively in 2005.

Looking at age structure, the ageing of the labour force will be the most significant development over the next 15 years. Figure 18 shows the number of

economically active people as a percentage of the entire labour force in five-year age bands for those aged between 25 and 69. The proportion of economically active people that belong to older age groups will be significantly higher in 2020, compared with 2005. This is a direct effect of the underlying demographic trends that are expected to prevail throughout the period from 2005 to 2020.

Figure 18: Estimates and projections of the number of economically active people in age group as a proportion of the entire labour force; United Kingdom; 2005 and 2020



Source: Office for National Statistics

As a corollary to this, one of the most interesting characteristics of the labour force in 2020 relates to the number of economically active people who have exceeded the age at which they are eligible for state pension. In particular, there are projected to be 775,000 economically active people above the age of 65 in 2020. This compares with 582,000 economically active people above the age of 65 in 2005 and represents an increase of around 33 per cent. This is a combined effect of the increasing number of people in older age groups due to demographic movements as well as the increasing trend in the labour market participation of older people in the labour market.

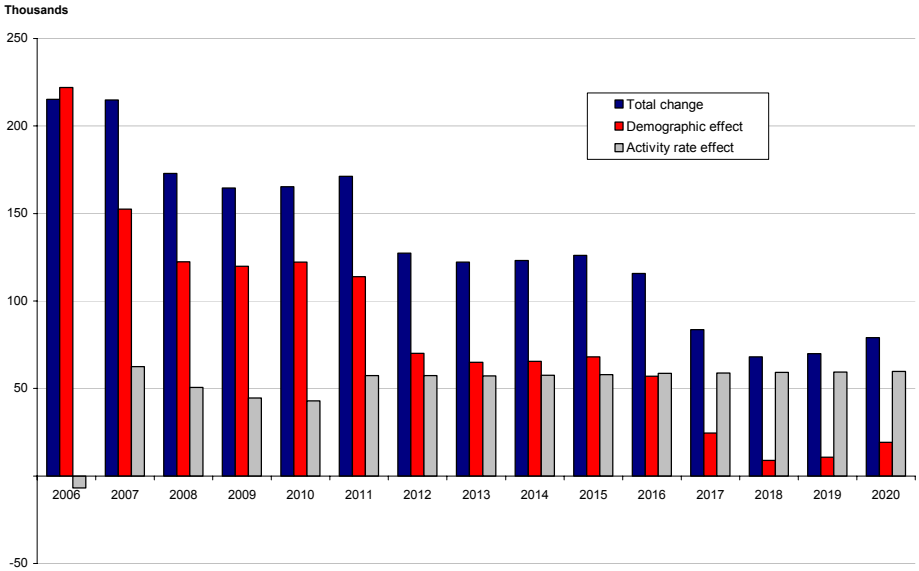
Demographic and Activity Rate Effects

As explained earlier, changes in the labour force arise due to two components: changes in the size and structure of the population, the demographic effect, and changes in economic activity rates due to structural and cyclical factors, the activity rate effect. The sum of the two effects adds up to the total change in the labour force. To calculate the demographic effect, the annual change in the labour force is estimated assuming that the activity rate remains constant. Similarly, to calculate the activity rate effect, the annual change in the labour force is estimated assuming that the population remains constant.

Figure 19 shows the decomposition of the overall projected change in the labour force into demographic and activity rate effects. The population effect is declining throughout the period from 2006 to 2020. This is due to the ageing of the population, with a significant proportion of the population reaching older age groups and exiting the labour market through retirement.

On the contrary, the activity rate effect is positive throughout most of the projection period and becomes the main driver of growth in the labour force from 2016 onwards. The activity rate effect is only negative in 2006 and this is purely an effect of the modelling exercise. When the long-term trend in the activity rate series of each population subgroup is estimated, the actual value in the last year of the observation period (2005) can be either above or below trend. The fact that the activity rate effect is negative in 2006 implies that, according to the estimated models, the activity rates for the population subgroups in 2005 are, on average, above trend. As such, the negative activity rate effect in 2006 can be interpreted as a corrective effect, with the activity rate series returning back to trend.

Figure 19: Decomposition of annual projected change in the labour force into demographic and activity rate effects; United Kingdom; 2006 to 2020



Source: Office for National Statistics

Sensitivity Analysis to Demographic Assumptions

As discussed earlier, one of the key components of the labour force projections are population projections produced by GAD. These are based on a particular set of assumptions, which are discussed in more detail in http://www.gad.gov.uk/. GAD also produces variant population projections based on alternative demographic assumptions. It is, thus, sensible to assess the sensitivity of the labour force projections to these variant assumptions.

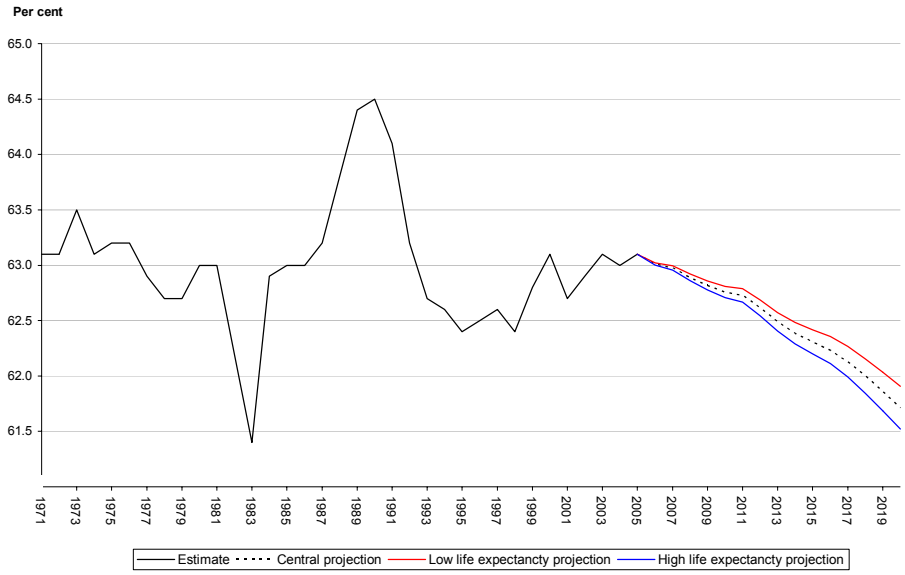
In terms of the future size and composition of the population (and, as such, the labour force), there are three sources of uncertainty: the future fertility rate, the future level of life expectancy and the future level of migration.

As the entirety of the people who will be reaching the age of 16 by 2020 have already been born, uncertainty about the future course of the fertility rate does not affect the projected population aged 16 and over and, thus, the projections of the labour force.

Looking at life expectancy, GAD produces two variants of the principal population projections for the UK: a high life expectancy scenario and a low life expectancy scenario. By feeding the two variant population projections into the projected activity rates it is possible to examine the sensitivity of the labour force

projections to different levels of life expectancy in the future. In terms of the activity rate of people aged 16 to 59/64 (people of working age under the current definition), the effects are negligible. This is because any changes to the life expectancy assumption affect primarily the segment of the population that has already exceeded the ages of 59 and 64. Looking at the activity rate of people aged 16 and over, the different assumptions concerning life expectancy affect the labour force projections more markedly. In particular, higher life expectancy is associated with a lower projected activity rate of people aged 16 and over. This is because, keeping everything else constant, higher life expectancy implies a larger proportion of the population in older age groups. As labour market participation of older people is lower than average, the overall activity rate of those aged 16 and over falls. This effect is illustrated in Figure 20.

Figure 20: Sensitivity of projections to life expectancy assumptions: activity rate for those 16 and over; United Kingdom; 1971 to 2020

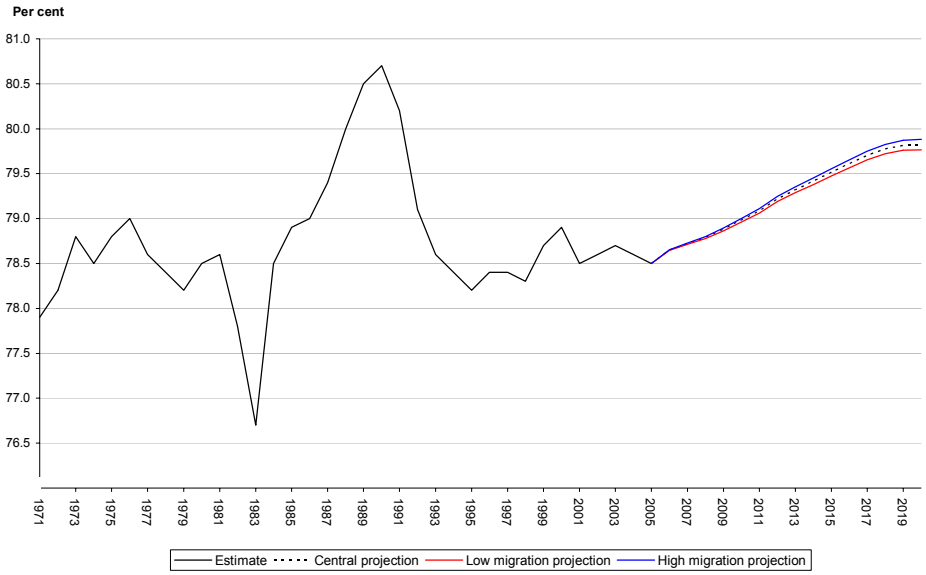


Source: Office for National Statistics

Similarly, looking at migration, the two variants of the principal population projections produced by GAD, based on a low and a high assumed level of future migration, are fed into the projected activity rates. In terms of the activity rate of people of aged 16 to 59/64, an increase in the future level of migration results in a higher projected activity rate for people in this age group. This is because the majority of migrants coming into the country are between the ages of 15 and 34, and as such, are more likely to participate in the labour market, pushing the overall activity rate higher. This effect is illustrated in Figure 21.

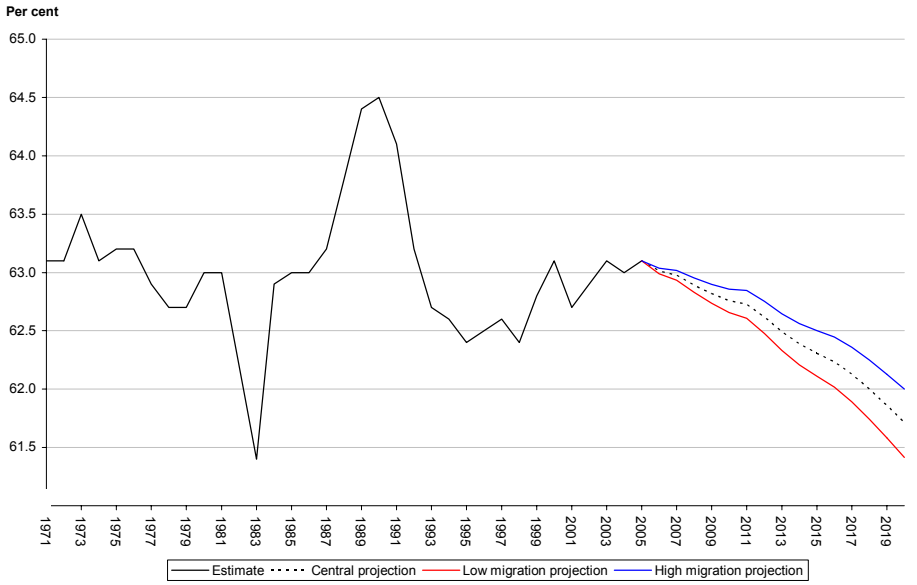
Looking at the activity rate of people aged 16 and over, a higher level of migration in the future is associated with a higher projected activity rate. From a demographic point of view, a higher level of migration partially offsets the ageing of the population, with most immigrants belonging to the younger age groups. As such, higher migration in the future results in a younger population, whose probability of being active is higher, thus pushing the overall activity rate higher. This effect is illustrated in Figure 22.

Figure 21: Sensitivity of projections to migration assumptions: activity rate for those aged 16 to 59/64; United Kingdom; 1971 to 2020



Source: Office for National Statistics

Figure 22: 16 : Sensitivity of projections to migration assumptions: activity rate for those aged 16 and over; United Kingdom; 1971 to 2020



Source: Office for National Statistics

It may appear surprising that the migration variant has a larger effect on the activity rate of people aged 16 and over, compared with the activity rate of people of working age. This is because the activity rate of the age groups to which the majority of migrants belongs is slightly higher than the working-age activity rate (giving a small positive effect of higher future migration), but significantly higher than the 16 and over activity rate (giving a larger positive effect of higher future migration). Overall, the migration variants clearly portray the beneficial effects of migration from a demographic point of view, by partially offsetting the process of population ageing.

The projections of the population are of particular importance to the projections of the labour force. As such, users may find it useful to feed in different

populations projections, based on various demographic assumptions, to create variant labour force projections. A spreadsheet allowing users to do this can be found online on the National Statistics website at:
www.statistics.gov.uk/StatBase/Product.asp?vlink=1945.

Future Work

Updating the projections of the labour force is an important aspect of the project. This is due to the significant degree of uncertainty involved in producing labour force projections so far into the future. Labour force projections are expected to be updated every two years. This is in line with the current policy for updating the UK population projections biennially. In this way, the updated set of labour force projections will be able to incorporate the latest population projections, as well as the latest activity rate data from the LFS.

ANNEX A: Modelling Methodology

i. Overview

The population is broken down by sex, age group and student status, giving 28 subgroups. This allows us to capture different long-term trends in the activity rate series of different subgroups, while controlling for demographic effects. The population split is given in Table A.1.

Table A.1: Disaggregation of the population in sex/age/student groups

Male, 16-17 (in full-time education)	Female, 16-17 (in full-time education)
Male, 16-17 (not in full-time education)	Female, 16-17 (not in full-time education)
Male, 18-24 (in full-time education)	Female, 18-24 (in full-time education)
Male, 18-24 (not in full-time education)	Female, 18-24 (not in full-time education)
Male, 25-29	Female, 25-29
Male, 30-34	Female, 30-34
Male, 35-39	Female, 35-39
Male, 40-44	Female, 40-44
Male, 45-49	Female, 45-49
Male, 50-54	Female, 50-54
Male, 55-59	Female, 55-59
Male, 60-64	Female, 60-64
Male, 65-69	Female, 65-69
Male, 70+	Female, 70+

The methodology for projecting activity rate series is based on time-trend regressions. Most of the age/sex/student groups exhibit clear trends over time and econometric modelling is used to estimate these trends and extrapolate them into the future. The long-term movements in the activity rate series can be attributed to a combination of structural factors, such as changes in the composition of family structure, shifts in government policies, changes in occupational pension schemes, technological advances, etc. For the purposes of this project, however, we have not attempted to model these factors individually, but have opted to use a purely statistical technique, by capturing the net effect of these structural factors through a time trend.

The fitted time trends fall into four main categories:

1. Linear trend.
2. Logarithmic trend.
3. Linear or logarithmic trends with a structural break.
4. No time trend - constant activity rates.

The choice between these four options is primarily data-driven. For example, the activity rate of women aged 50-54 has shown a strong linear increase throughout the period of observation and, as such, a linear trend is included in the equation. The activity rate of women aged 25-29 showed a strong increase in the 1980s and early 1990s, but the growth rate has tapered off since the late 1990's. As such, the logarithmic trend outperforms the linear trend, because the latter fails to account for the deceleration in the growth of the activity rate of women in this age group. Similarly, most male age groups show clear breaks in their long-term activity rate

trends in the mid-1990s. These can be attributed to key labour market reforms such as the introduction of Jobseeker's Allowance and the replacement of the Sickness and Invalidity Benefits with the Incapacity Benefit. As such, these age groups have been modelled using a structural break, which allows for a change in the long-term trend in the mid-1990s. Finally, in the case of women aged 70 and over, the activity rate series does not exhibit any long-term trend and, as such, has been assumed to remain constant at its average value between 1984 and 2005 throughout the projection period.

In addition to the time trend, the output gap (or a lag of the output gap) is included as an explanatory variable in the equations, to account for any cyclical movements around the long-term trend. The activity rate of most age/sex/student groups appears to be affected by the degree of spare capacity in the economy. However, in some cases, particularly for older female groups, the activity rate does not seem to be significantly affected by movements in the output gap. The output gap is assumed to equal zero throughout the projection period and, as such, the future is essentially projected as acyclical.

Algebraically, the basic model takes the following form:

$$AR_{it} = f\left(GAP_t, T, \sum_{k=1}^{n} AR_{i(t-n)} \right)$$

where AR_{it}: the activity rate of subgroup i, at time t
GAP_t: the output gap at time t
T: the time trend

For each age/sex/student group, Ordinary Least Squares (OLS) regression is used to estimate the above equation[4]. In terms of the model selection process, the following criteria were taken into account:

- The coefficients are significant and of the expected sign.
- The model is robustly specified. The residuals are free from auto-correlation, homoskedastic, normally distributed and stationary.
- In-sample forecasts from the model outperform in-sample forecasts from other models.
- The model generates a sensible projection profile.

None of the above criteria are overriding. For example, if the coefficient on a particular variable was statistically insignificant at the 5% level, but the presence of this variable makes economic sense and/or improves other statistical properties of the equation, then the variable was retained in the final specification.

This methodology is applied to all age/sex/student groups with the exception of one, namely women aged 55-59. The activity rate of this age group shows strong growth throughout the period of observation. However, there is an acceleration in the growth rate in the period between 1997 and 2005, compared with the period between 1984 to 1997. As such, there are problems in applying the aforementioned methodology to this age group. In particular, if a linear trend is fitted, it does not account for the acceleration in the growth observed in the series post-1997 and the

[4] For some female groups, the average number of dependent children for women in that age group was considered as a potential explanatory variable. However, the data could not reject the hypothesis of a spurious regression between the activity rate and the average number of children. As such, it was decided to exclude this variable from the estimated equations.

residuals are autocorrelated and non-stationary. If a linear trend with a break is included, the projected activity rate exceeds 80 per cent in 2020 and is above the activity rate for men in the same age group. This was rejected as nonsensical. To overcome this problem, we make the simplifying assumption that the activity rate in the future will grow at the same annual rate as the average annual growth rate throughout the period of observation. As such, we calculate the average annual growth rate in the activity rate series between 1984 to 2005 and apply this throughout the period between 2006 and 2020. Although this technique has significant limitations, primarily because it does not make optimal use of the information available from the history of the series, it was seen as a necessary compromise in order to overcome the modelling difficulties just mentioned. In addition, looking at the projected activity rate, the percentage increase from 2006 to 2020 as well as the ratio of the female activity rate to the male activity rate in 2020 appear consistent with what is observed in other similar age groups for women.

ii. Data and Variables

The following data series are used as inputs in the modelling of activity rates.

Dependent Variables

Annual activity rate series are constructed for the 28 age/sex/student groups based on microdata from the LFS for the period 1984-2005. In constructing the series, two issues arise. First, pre-1992 data are not consistent with post-1992 data, due to changes in the methodology of the LFS (e.g. introduction of quarterly LFS, separate classification of unpaid family workers, extension of the LFS sampling frame to include NHS accommodation and student halls of residence). In order to overcome this, the pre-1992 annual data are prorated to the historical consistent LFS estimates of activity and population levels [5]. In this way, it is possible to construct reasonably consistent annual activity rate series for the individual age/sex/student groups. Second, post-92 microdata from the LFS are not consistent with published Integrated First Release (IFR) data, due to the interim reweighting of the LFS. In order to overcome this, a population adjustment factor is calculated for the age/sex/student groups of interest. This factor is, in turn, applied to the activity level derived from the microdata. As such, it is possible to construct activity rate series for the age/sex/student groups, which are consistent with the published IFR activity rate series[6].

Independent Variable

The output gap is defined as the difference between actual and potential output in the economy and is a measure of the degree of spare capacity in the economy. There are different ways of estimating the output gap, ranging from purely statistical techniques (e.g. using a Hodrick-Prescott filter) to more elaborate assessments based on a combination of statistical models, data sources and surveys relating to the degree

[5] See Doyle, P. (2003) *Consistent Historical Time Series of Labour Market Data* available online at: http://www.statistics.gov.uk/articles/labour_market_trends/Consistent_Time_Series_web_article.pdf

[6] Note that although the historical estimates of economic activity, household population and economic activity rates are consistent with National Statistics as published in the Integrated First Release, they do not hold National Statistics status on their own right.

of spare capacity in the economy. For the purposes of this study, we use HM Treasury's assessment of the output gap, which is published regularly and is available on a quarterly basis[7]. For a detailed discussion on the choice of the output gap as an explanatory variable in the equations see Section (iii) of this Annex.

Dummy Variables

In addition, three dummy variables have been included in some of the models. First, a dummy variable to account for the introduction of Jobseeker's Allowance (JSA) in 1996, resulting in a structural break in some of the activity rate series for prime age men. Second, a dummy variable to account for the replacement of the Sickness and Invalidity Benefits with the Incapacity Benefit in 1995, resulting in a structural break in some of the activity rate series for older men. Third, a dummy variable to allow for a shift in the Government's education policy in 1998, through active policy measures to increase the number of young people in education.

All variables used in the models are defined in Table A.2.

Table A.2: Input variables in the estimated regression models

MG1	Activity rate, Men aged 16-17 (in FTE)
MG2	Activity rate, Men aged 16-17 (not in FTE)
MG3	Activity rate, Men aged 18-24 (in FTE)
MG4	Activity rate, Men aged 18-24 (not in FTE)
MG5	Activity rate, Men aged 25-29
MG6	Activity rate, Men aged 30-34
MG7	Activity rate, Men aged 35-39
MG8	Activity rate, Men aged 40-44
MG9	Activity rate, Men aged 45-49
MG10	Activity rate, Men aged 50-54
MG11	Activity rate, Men aged 55-59
MG12	Activity rate, Men aged 60-64
MG13	Activity rate, Men aged 65-69
MG14	Activity rate, Men aged 70 and over
FG1	Activity rate, Women aged 16-17 (in FTE)
FG2	Activity rate, Women aged 16-17 (not in FTE)
FG3	Activity rate, Women aged 18-24 (in FTE)
FG4	Activity rate, Women aged 18-24 (not in FTE)
FG5	Activity rate, Women aged 25-29
FG6	Activity rate, Women aged 30-34
FG7	Activity rate, Women aged 35-39
FG8	Activity rate, Women aged 40-44
FG9	Activity rate, Women aged 45-49
FG10	Activity rate, Women aged 50-54
FG11	Activity rate, Women aged 55-59
FG12	Activity rate, Women aged 60-64
FG13	Activity rate, Women aged 65-69
FG14	Activity rate, Women aged 70 and over

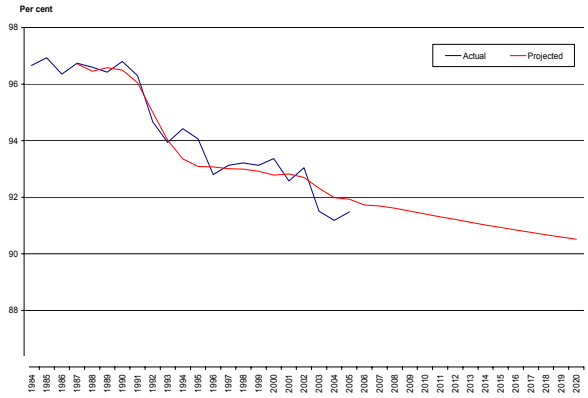
[7] The output gap estimate used for this project was published in HM Treasury (2005) *Evidence on the UK economic cycle* at: http://www.hm-treasury.gov.uk/media/2E6/A5/economic_cycles190705.pdf.

GAP	Output Gap $\times 10^{-3}$
T	Time Trend
JSA	Dummy variable taking the value 0 for all years before the introduction of Jobseeker's Allowance (1984-1995) and the value 1 for all other years (1996-2005).
IB	Dummy variable taking the value 0 for all years before the replacement of the Sickness and Invalidity benefits with the Incapacity benefit (1984-1994) and the value 1 for all other years (1995-2005).
STUD	Dummy variable taking the value 0 for all periods before 1998 and the value 1 for all periods after 1998, to account for a shift in the Government's education policy.

iii. Econometric Results

Men 25-29

$$MG5_t = \underset{(0.161)}{0.5961} - \underset{(0.004)}{0.0165}* \log(T) + \underset{(0.065)}{0.1706}* GAP_{t-1} + \underset{(0.16)}{0.4071}* MG5_{t-1}$$



Equation Statistics:

Adjusted R^2: 0.9276
RMSE: 0.0049
F-Statistic: 86.473
LM(2):0.70

Men 30-34

$$MG6_t = \underset{(0.118)}{0.5356} - \underset{(0.003)}{0.013}* \log(T) + \underset{(0.026)}{0.0723}* GAP_{t-1} + \underset{(0.118)}{0.2387}* MG6_{t-1} + \underset{(0.109)}{0.2273}* MG6_{t-2}$$

Equation Statistics:

Adjusted R^2: 0.9467
RMSE: 0.0027
F-Statistic: 88.679
LM(2): 0.14

Men 35-39

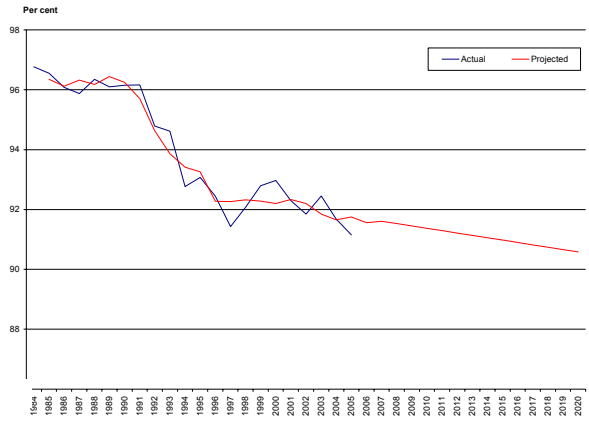
$$MG7_t = \underset{(0.192)}{0.6777} - \underset{(0.005)}{0.0169}* \log(T) + \underset{(0.05)}{0.104}* GAP_{t-1} + \underset{(0.19)}{0.3244}* MG7_{t-1}$$

Equation Statistics:

Adjusted R^2: 0.9464
RMSE: 0.0037
F-Statistic: 118.792
LM(2): 0.37

Men 40-44

$$MG8_t = \underset{(0.004)}{0.9768} - \underset{(0.0004)}{0.0033}* T - \underset{(0.011)}{0.0417}* JSA_t + \underset{(0.001)}{0.0025}* JSA_t * T + \underset{(0.051)}{0.1904}* GAP_{t-1}$$



Equation Statistics:

Adjusted R^2: 0.9309
RMSE: 0.0044
F-Statistic: 68.36
LM(2): 0.24

Men 45-49

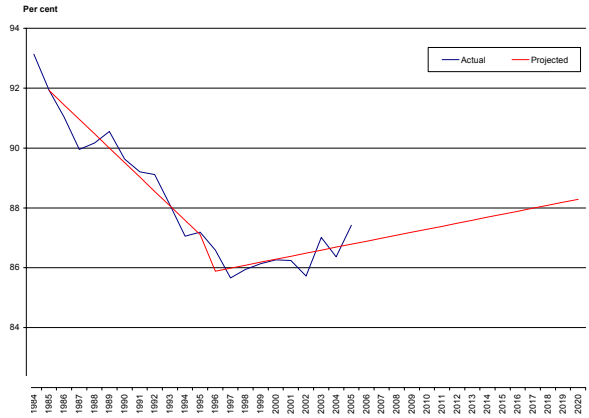
$$MG9_t = \underset{(0.004)}{0.9591} - \underset{(0.001)}{0.0028}* T - \underset{(0.011)}{0.0465}* JSA_t + \underset{(0.001)}{0.0024}* JSA_t * T + \underset{(0.053)}{0.1169}* GAP_{t-1}$$

Equation Statistics:

Adjusted R^2: 0.9423
RMSE: 0.0046
F-Statistic: 65.363
LM(2): 0.60

Men 50-54

$$MG10_t = \underset{(0.003)}{0.9289} - \underset{(0.0004)}{0.0048}* T - \underset{(0.001)}{0.083}* JSA_t + \underset{(0.01)}{0.0058}* JSA_t * T$$

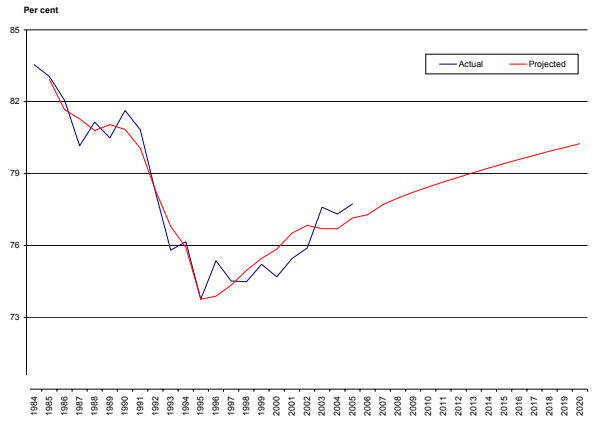


Equation Statistics:

Adjusted R^2: 0.9467
RMSE: 0.0046
F-Statistic: 125.335
LM(2): 0.69

Men 55-59

$$MG11_t = \underset{(0.156)}{0.6302} - \underset{(0.008)}{0.0306}* \log(T) - \underset{(0.054)}{0.197}* IB_t + \underset{(0.019)}{0.0716}* IB_t * \log(T) + \underset{(0.096)}{0.3017}* GAP_{t-1} + \underset{(0.179)}{0.2764}* MG11_{t-1}$$

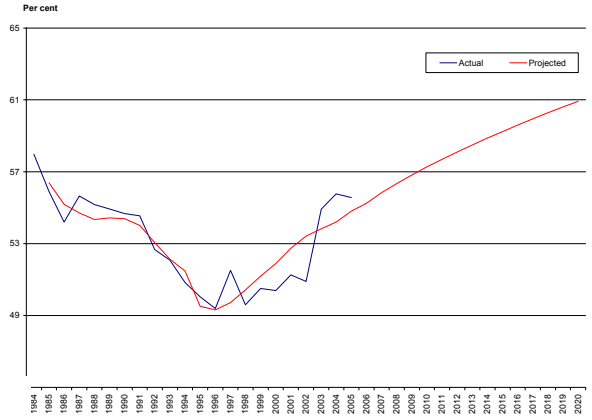


Equation Statistics:

Adjusted R^2: 0.9114
RMSE: 0.0074
F-Statistic: 42.169
LM(2): 0.79

Men 60-64

$$MG12_t = \underset{(0.109)}{0.3094} - \underset{(0.006)}{0.0131}* \log(T) - \underset{(0.081)}{0.1988}* IB_t + \underset{(0.029)}{0.0733}* IB_t * \log(T) + \underset{(0.083)}{0.1582}* GAP_{t-1} + \underset{(0.183)}{0.464}* MG12_{t-1}$$

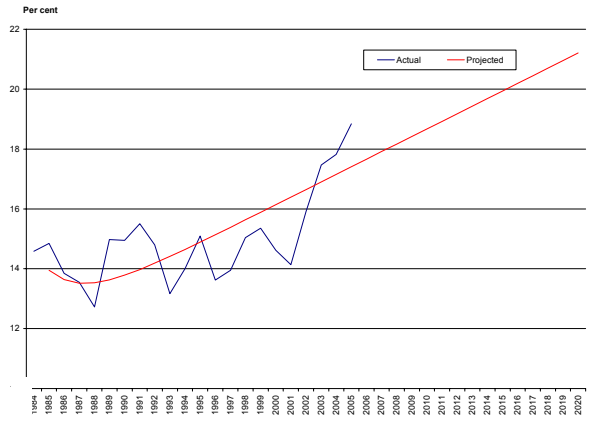


Equation Statistics:

Adjusted R^2: 0.7299
RMSE: 0.0106
F-Statistic: 11.814
LM(2): 0.77

Men 65-69

$$MG13_t = \underset{(0.029)}{0.0434} + \underset{(0.0004)}{0.0009}* T + \underset{(0.213)}{0.6471}* MG13_{t-1}$$



Equation Statistics:

Adjusted R^2: 0.5776
RMSE: 0.0109
F-Statistic: 14.676
LM(2): 0.60

Men 70 and over

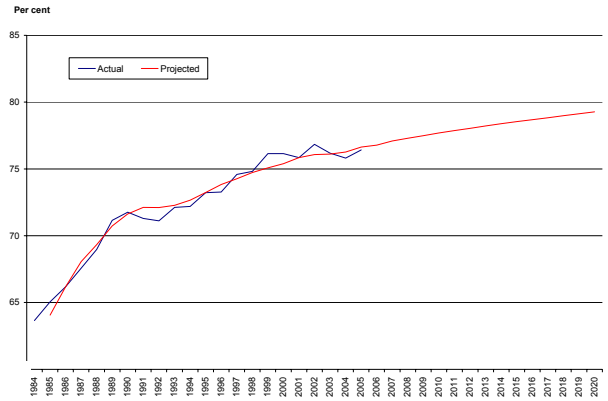
$$MG14_t = \underset{(0.016)}{0.0361} - \underset{(0.003)}{0.0043}* \log(T) + \underset{(0.217)}{0.4491}* MG14_{t-1}$$

Equation Statistics:

Adjusted R^2: 0.6517
RMSE: 0.0046
F-Statistic: 19.71
LM(2): 0.69

Women 25-29

$$FG5_t = \underset{(0.005)}{0.6112} + \underset{(0.002)}{0.0503} * \log(T) + \underset{(0.06)}{0.1559} * GAP_{t-1}$$

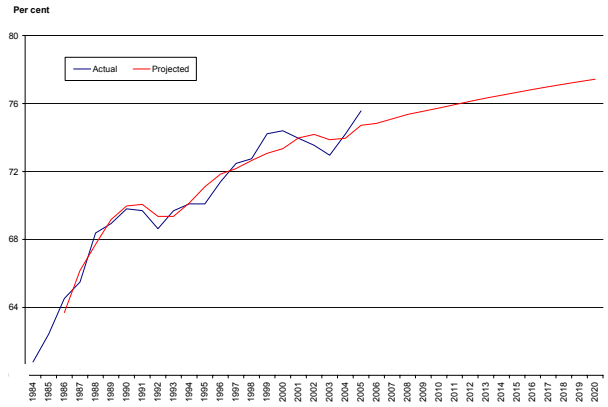


Equation Statistics:

Adjusted R^2: 0.9709
RMSE: 0.0055
F-Statistic: 334.545
LM(2): 0.47

Women 30-34

$$FG6_t = \underset{(0.118)}{0.795} + \underset{(0.015)}{0.0755} * \log(T) + \underset{(0.092)}{0.3306} * GAP_{t-1} - \underset{(0.217)}{0.38} * FG6_{t-2}$$

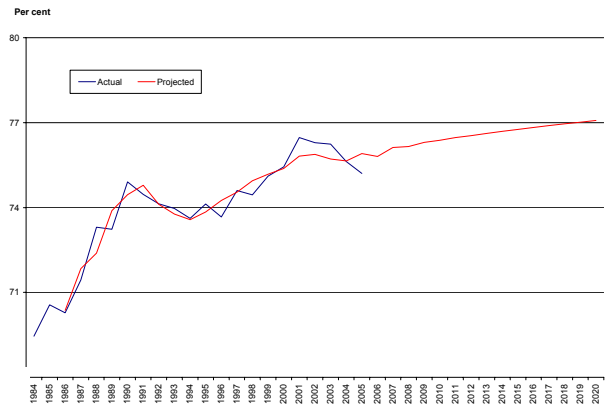


Equation Statistics:

Adjusted R^2: 0.9418
RMSE: 0.0064
F-Statistic: 103.512
LM(2): 0.78

Women 35-39

$$FG7_t = \underset{(0.098)}{0.5011} + \underset{(0.005)}{0.0153} * \log(T) + \underset{(0.05)}{0.2606} * GAP_{t-1} + \underset{(0.148)}{0.2786} * FG7_{t-2}$$

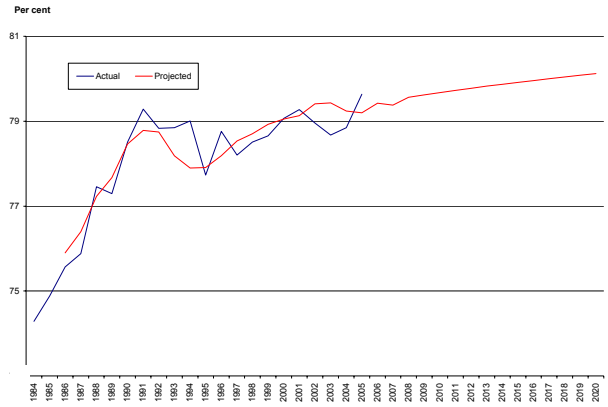


Equation Statistics:

Adjusted R^2: 0.9069
RMSE: 0.0044
F-Statistic: 62.688
LM(2): 0.77

Women 40-44

$$FG8_t = \underset{(0.005)}{0.7497} + \underset{(0.002)}{0.0143} * \log(T) + \underset{(0.05)}{0.1835} * GAP_{t-2}$$

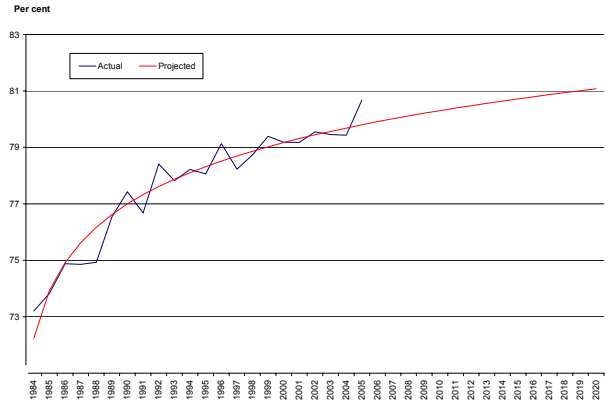


Equation Statistics:

Adjusted R^2: 0.7851
RMSE: 0.0046
F-Statistic: 35.702
LM(2): 0.65

Women 45-49

$$FG9_t = \underset{(0.003)}{0.7223} + \underset{(0.001)}{0.0245} * \log(T)$$

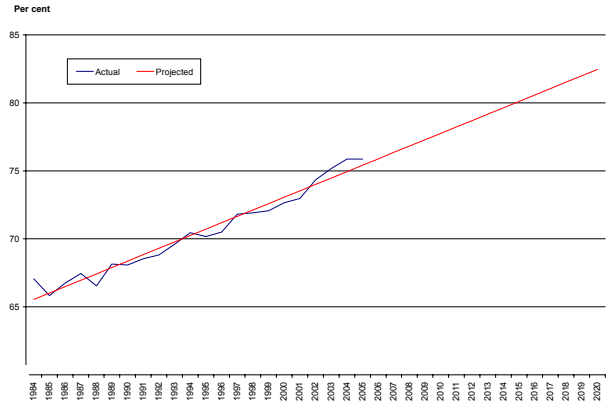


Equation Statistics:

Adjusted R^2: 0.9302
RMSE: 0.0053
F-Statistic: 280.917
LM(2): 0.91

Women 50-54

$$FG10_t = \underset{(0.003)}{0.6508} + \underset{(0.0002)}{0.0047} * T$$

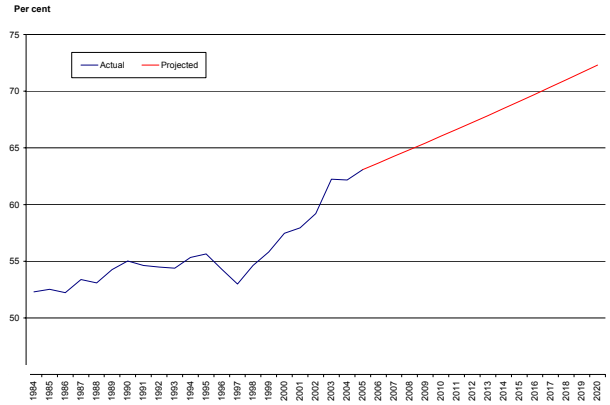


Equation Statistics:

Adjusted R^2: 0.9626
RMSE: 0.0057
F-Statistic: 541.494
LM(2): 0.7

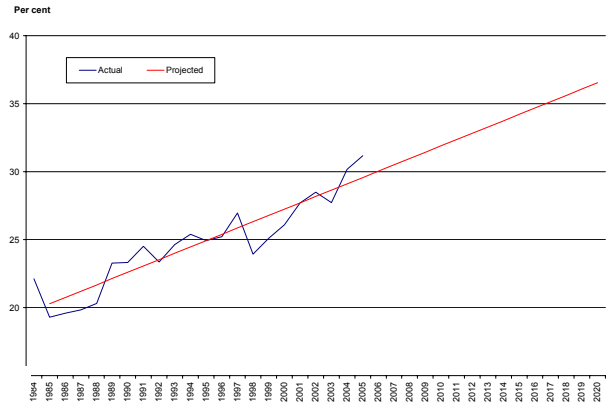
Women 55-59

$$\frac{FG11_t - FG11_{t-1}}{FG11_{t-1}} = Constant = Average\ \ annual\ \ growth\ \ rate\ \ (1984 - 2005),\ for\ all\ t = 2006,..., 2020$$



Women 60-64

$$FG12_t = \underset{(0.006)}{0.1935} + \underset{(0.0004)}{0.0046} * T$$

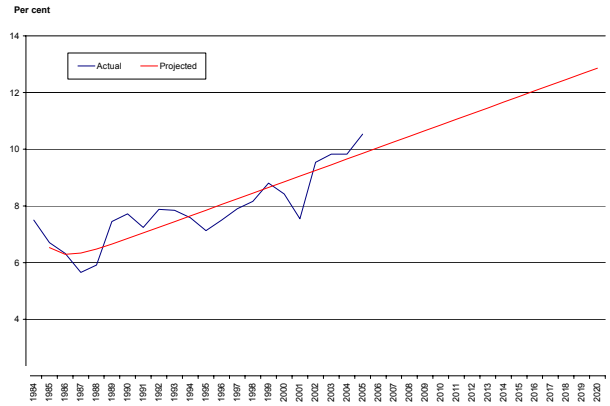


Equation Statistics:

Adjusted R^2: 0.8478
RMSE: 0.0121
F-Statistic: 117.966
LM(2): 0.65

Women 65-69

$$FG13_t = \underset{(0.012)}{0.0352} + \underset{(0.0004)}{0.0013} * T + \underset{(0.203)}{0.367}\, FG13_{t-1}$$

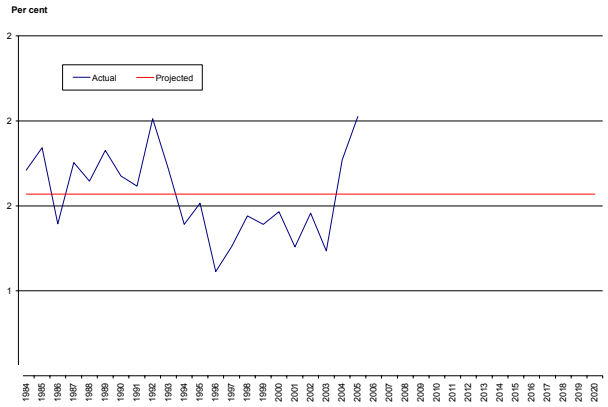


Equation Statistics:

Adjusted R^2: 0.7881
RMSE: 0.0058
F-Statistic: 38.203
LM(2): 0.47

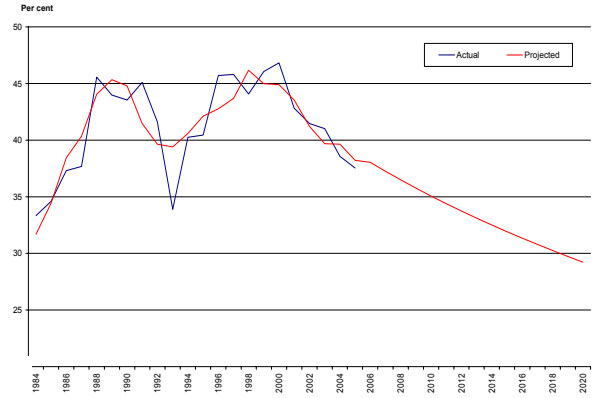
Women 70+

$FG5_t = 0.0164$



Men 16-17 (Students)

$$MG1_t = \underset{(0.017)}{0.3505} + \underset{(0.008)}{0.0327} * \log(T) + \underset{(0.196)}{0.6119} * STUD_t - \underset{(0.067)}{0.2183} * STUD_t * \log(T) + \underset{(0.239)}{0.9597} * GAP_t$$

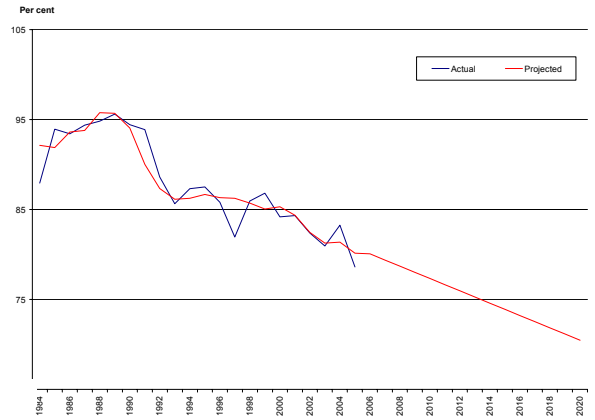


Equation Statistics:

Adjusted R^2: 0.6819
RMSE: 0.0206
F-Statistic: 12.254
LM(2): 0.12

Men 16-17 (Non-Students)

$$MG2_t = \underset{(0.009)}{0.9584} - \underset{(0.001)}{0.0069} * T + \underset{0.194}{0.8606} * GAP_t$$

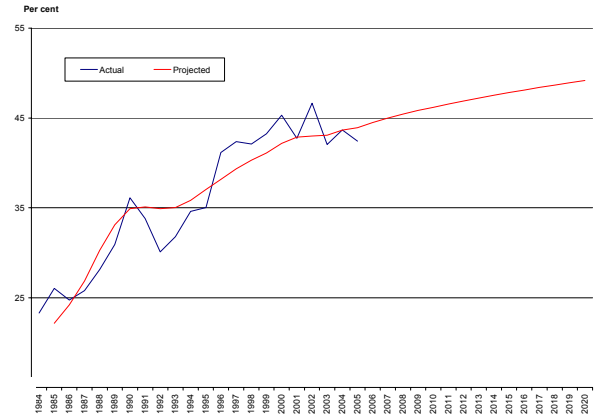


Equation Statistics:

Adjusted R^2: 0.8587
RMSE: 0.018
F-Statistic: 64.798
LM(2): 0.69

Men 18-24 (Students)

$$MG3_t = \underset{(0.03)}{0.0776} + \underset{(0.021)}{0.0418} * \log(T) + \underset{(0.264)}{0.3429} * GAP_t + \underset{(0.189)}{0.5378} * MG3_{t-1}$$



Equation Statistics:

Adjusted R^2: 0.8783
RMSE: 0.024
F-Statistic: 49.096
LM(2): 0.53

Men 18-24 (Non-Students)

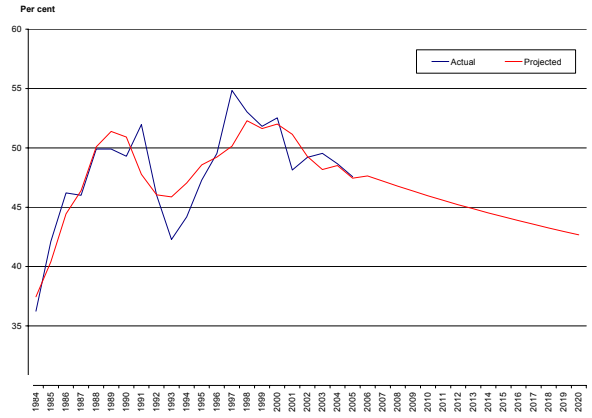
$$MG4_t = \underset{(0.002)}{0.9695} - \underset{(0.0001)}{0.0022}* T + \underset{(0.04)}{0.2544}* GAP_t$$

Equation Statistics:

Adjusted R^2: 0.9348
RMSE: 0.0037
F-Statistic: 151.657
LM(4): 0.15

Women 16-17 (Students)

$$FG1_t = \underset{(0.016)}{0.4072} + \underset{(0.008)}{0.0357}* \log(T) + \underset{(0.188)}{0.3969}* STUD_t - \underset{(0.065)}{0.1402}* STUD_t * \log(T) + \underset{(0.23)}{0.9292}* GAP_t$$

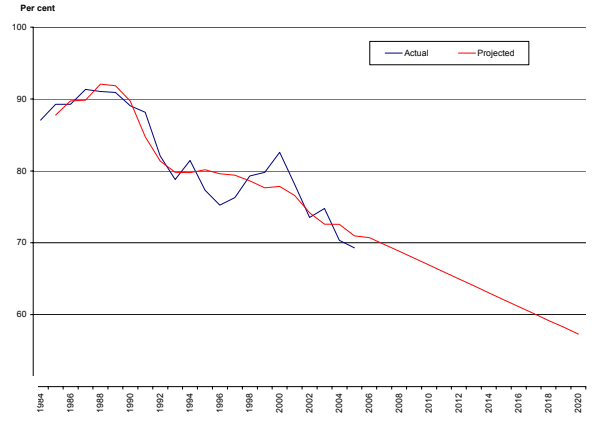


Equation Statistics:

Adjusted R^2: 0.7105
RMSE: 0.0199
F-Statistic: 13.888
LM(2): 0.27

Women 16-17 (Non-Students)

$$FG2_t = \underset{(0.01)}{0.9283} - \underset{(0.001)}{0.0096}* T + \underset{(0.234)}{1.0401}* GAP_t$$

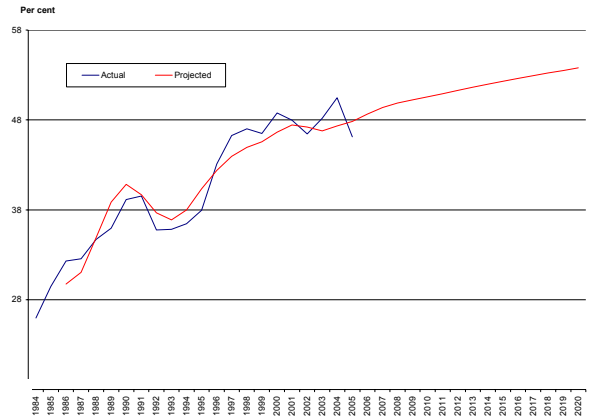


Equation Statistics:

Adjusted R^2: 0.8878
RMSE: 0.0217
F-Statistic: 80.087
LM(2): 0.43

Women 18-24 (Students)

$$FG3_t = \underset{(0.0328)}{0.0996} + \underset{(0.0229)}{0.0605} * \log(T) + \underset{(0.244)}{0.5351} * GAP_t + \underset{(0.248)}{0.7441} * FG3_{t\ 1} - \underset{(0.247)}{0.3347} * FG3_{t-2}$$



Equation Statistics:

Adjusted R^2: 0.9034
RMSE: 0.0179
F-Statistic: 45.404
LM(2): 0.34

Women 18-24 (Non-Students)

$$FG4_t = \underset{(0.082)}{0.6233} - \underset{(0.003)}{0.0131} * \log(T) + \underset{(0.073)}{0.4118} * GAP_t + \underset{(0.099)}{0.2516} * FG4_{t-2}$$

Equation Statistics:

Adjusted R^2: 0.8596
RMSE: 0.0054
F-Statistic: 39.768
LM(2): 0.15

iii. Choice of the Output Gap as an Explanatory Variable

In addition to the long-term trends, activity rate series display variation that is closely related to the economic cycle. The use of the output gap series as an independent variable attempts to capture the cyclicality observed in the activity rate series.

The equilibrium in the labour market, just as in any other market, is determined by the interaction of demand and supply. The factors affecting the supply side are primarily structural factors and include the organisation of the welfare state, skills and education, changes in family structure as well as changes in social attitudes (e.g. employment of women and older workers). On the contrary, the demand for labour is closely associated with the economic cycle. This is essentially because labour demand is derived demand, in that it arises as a means of producing goods and services demanded by consumers. Thus, when the economy is growing and there is strong consumer demand, this is expected to spur higher demand for labour in order to meet increased output requirements. As such, the cyclicality observed in the activity rate series can be attributed to variation in the demand for labour.

Given this background, various series were considered as potential variables to account for the observed cyclicality. A first group included labour market variables such as employment, unemployment, hours worked, etc. to proxy for the level of labour demand. A second group included non-labour market variables, primarily GDP, to account for underlying changes in demand in the economy, which give rise to changes in the demand for labour.

Starting with the labour market variables, a number of possibilities were considered to proxy for the level of labour demand in the economy. These included the employment rate, actual weekly hours worked, the unemployment rate, the claimant count rate and the claimant count as a proportion of the population. These variables, however, are (directly or indirectly) linked with the activity rate due to the following fundamental identity: the number of active people equals the number of people in employment plus the number of people in unemployment. As such, there were concerns relating to the possibility that the OLS assumption of exogenous regressors would be violated. Due to these concerns, it was decided not to opt for labour market variables.

Looking at non-labour market variables, two possibilities were examined. The annual rate of GDP growth and the level of the output gap. The annual rate of GDP growth measures the year-on-year percentage change of total actual output produced in the economy. The output gap is defined as the difference between actual and potential output and measures the degree of spare capacity in the economy.

From a theoretical point of view, the output gap is a better measure of the economic cycle than the rate of GDP growth. Total output produced in an economy is viewed as following a long-term trend, whilst exhibiting short-term fluctuations around this trend. Trend output, also known as potential output, refers to the level of output that is consistent with stable inflation at each point in time. The economic cycle refers to the fluctuations around this trend[8]. As such, the annual rate of GDP growth may be a misleading indicator of the economic cycle because it refers to actual output and does not distinguish between trend output and any short-term fluctuations. For example, a permanent increase in productivity growth may result in a higher rate

[8] For a more detailed discussion of the economic cycle and the output gap see HM Treasury (2005) *Evidence on the UK economic cycle* at:
http://www.hm-treasury.gov.uk/media/2E6/A5/economic_cycles190705.pdf.

of GDP growth. This, however, is not an indicator of the economic cycle as it refers to trend output. Contrary to GDP growth, the output gap is *defined* as an indicator of the economic cycle, i.e. the short-term deviations of actual output from trend output. From a statistical point of view, the output gap provided a better explanation of the movements in the activity rate series than the rate of GDP growth and improved the goodness-of-fit of the estimated equations. As such, it was decided to opt for the output gap as an explanatory variable to account for the cyclicality in the activity rate series.

For the purposes of this study, we have chosen HM Treasury's estimate of the output gap as an input variable in the modelling exercise. However, as the output gap is not a directly measurable quantity, output gap estimates may vary[9]. The fact that we have focused only on one measure of the output gap is a limitation of the methodology and needs to be noted. Different estimates of the output gap may give different results on the effects of the economic cycle on labour market activity. This could affect the projections of the labour force, but is not something we have investigated for the purposes of this project.

[9] For example, the Bank of England and the Organisation for Economic Co-operation and Development (OECD) produce different estimates of the output gap.

ANNEX B: Equalisation of the State Pension Age

The Government has announced that the state pension age (SPA) for women will increase from 60 to 65, to equal that of men. This will be achieved gradually, through a ten-year transition period, starting in 2010 and ending in 2020. For more details see: http://www.thepensionservice.gov.uk/pdf/np46/np46apr05.pdf (pages 16-17).

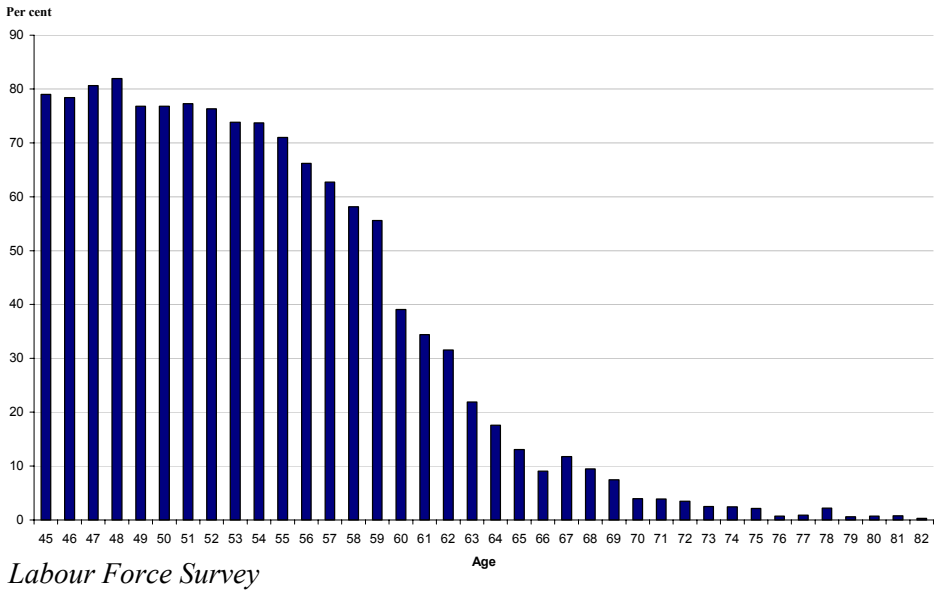
The equalisation of the SPA is expected to have a significant effect on labour market participation, particularly for women aged between 60 and 64. In addition, there are reasons to expect the activity of other population subgroups to be affected as well (e.g. men aged 60-64, women aged 55-59 and 65-69). This project, however, focuses only on any potential effects of the equalisation on the activity rate of the 60-64 age group for women. This is because attempting to account for the effects of the equalisation on other age groups would be based on very approximate methods, which were not deemed to provide significant added value to the overall projections. However, this is a limitation of the methodology and should be noted by users.

To account for the equalisation of the SPA in this set of labour force projections, two different approaches have been adopted. The results of the two approaches differ significantly and, thus, sensitivity analysis is carried out to examine how the different assumptions affect the overall activity rate.

Both approaches are based on an additive methodology. The activity rate series for women aged between 60 and 64 is projected, assuming nothing changes. Then, an 'augmented' activity rate is estimated, i.e. the activity rate given the increase in the state pension age. Having done so, the 'augmented' activity rate is applied to the proportion of women who have not reached state pension age and the original activity rate to the proportion of women who have reached state pension age for each year in the period from 2010 to 2020.

The first approach attempts to calculate a numerical estimate of the effect of reaching state pension age on the activity rate of women. The results of this approach are used as part of the central projections of the labour force. The following graph shows the activity rate of women by single age, taken from the LFS microdata for the autumn quarter of 2004. As can be seen, the activity rate falls as age increases but the fall is greatest at the age of 60, when state pension age is reached.

Figure B.1: Female activity rate by single age; United Kingdom; Autumn 2004



Source: Labour Force Survey

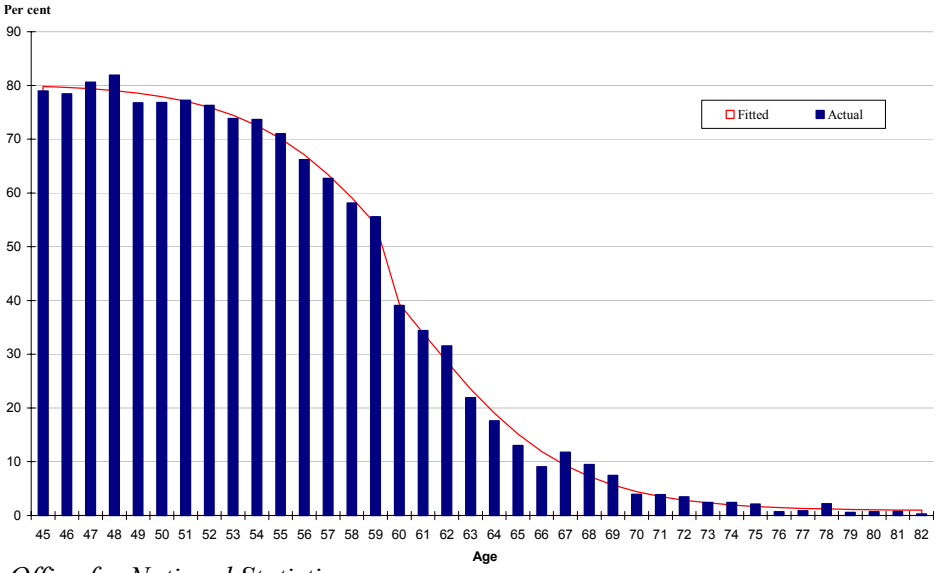
In order to estimate the effect of reaching state pension age, the activity rate is modelled against single age and a dummy variable as follows:

$$AR = tanh(AGE) - SPAdummy \quad (Eq.1)$$

where SPAdummy=0 for all ages until 59 and SPAdummy=1 from the age of 60 onwards. The *tanh* function was chosen purely because of its functional form, which is a good approximation of the activity rate series as age increases. The equation was estimated by minimising the sum of squares of the residuals.

The following graph provides a comparison of the fitted and actual values of the activity rates.

Figure B.2: Fitted and actual values: female activity rate by single age; United Kingdom; Autumn 2004



Source: Office for National Statistics

Equation (1) was estimated for each quarter since 2002 and the average of the estimated coefficients on the dummy variable was calculated[10]. The result was -7.56 percentage points, which can be interpreted as the overall effect of reaching SPA on women's activity rate. In other words, reaching state pension age reduces the probability that a woman is active by 7.56 percentage points.

The rationale behind this approach is the following. Given detailed LFS microdata on labour market participation of women by age, the effect of reaching the state pension age can be estimated through statistical techniques. As such, this estimate can be removed for the proportion of women who have not reached state pension age in the transition period. In effect, this approach argues that, in 2020, the overall activity rate for women, aged 60-64, will be 7.56 percentage points higher, due exclusively to the increase in women's SPA.

The second approach makes the assumption that, after the equalisation of the state pension age, women will behave in the same way as men in their retirement decision. More explicitly, we assume that the ratio of the female activity rate over the male activity rate will remain constant between the 55-59 and 60-64 age groups.

[10] An average was taken to reduce the standard error of the estimate. However, the retirement behaviour may be changing over time and, as such, more recent observations may be preferable. 2002 was chosen to balance the trade off between averaging the estimates over time and using more recent observations that may be more relevant.

Algebraically:

$$\frac{F(55-59)}{M(55-59)} = \frac{F(60-64)}{M(60-64)}$$

This is equivalent to assuming that the percentage change in the activity rate when moving from the 55-59 age group to the 60-64 age group will be the same for men and women. Algebraically, this equivalence can be shown as follows:

$$\%\Delta(\text{Female from } 55-59 \text{ to } 60-64) = \%\Delta(\text{Male from } 55-59 \text{ to } 60-64)$$

$$\frac{F(60-64) - F(55-59)}{F(55-59)} = \frac{M(60-64) - M(55-59)}{M(55-59)}$$

$$\Rightarrow \frac{F(60-64)}{F(55-59)} - 1 = \frac{M(60-64)}{M(55-59)} - 1$$

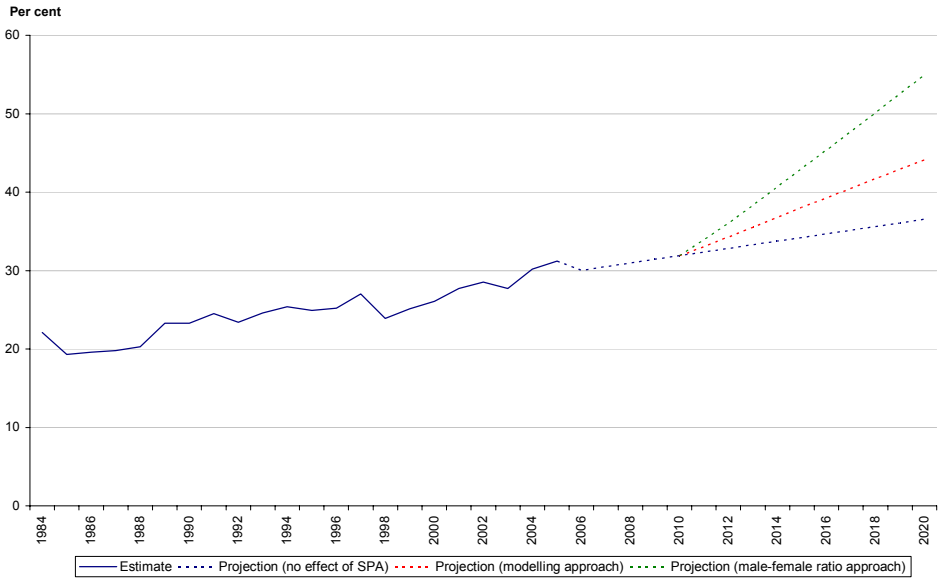
$$\Rightarrow \frac{F(60-64)}{F(55-59)} = \frac{M(60-64)}{M(55-59)}$$

$$\Rightarrow \frac{F(55-59)}{M(55-59)} = \frac{F(60-64)}{M(60-64)}$$

The rationale behind this assumption is the following. The reason why women's activity rate falls faster from the 55-59 to the 60-64 age groups is due to the current definition of the state pension age for women at 60. However, after the equalisation, there is no *a priori* reason to expect women to retire at an earlier age. As such, the rate of decrease between the two age groups should be the same for both men and women.

The two approaches give significantly different results for the activity rate of women, aged 60-64. The following graph compares the activity rate of women aged 60-64 under three scenarios: first, that the equalisation will have no effect on the participation behaviour of women. Second, using LFS microdata to estimate the effect of the equalisation on the participation of women. Third, assuming that, after the equalisation of the state pension age, women will behave in the same way as men in their retirement decision.

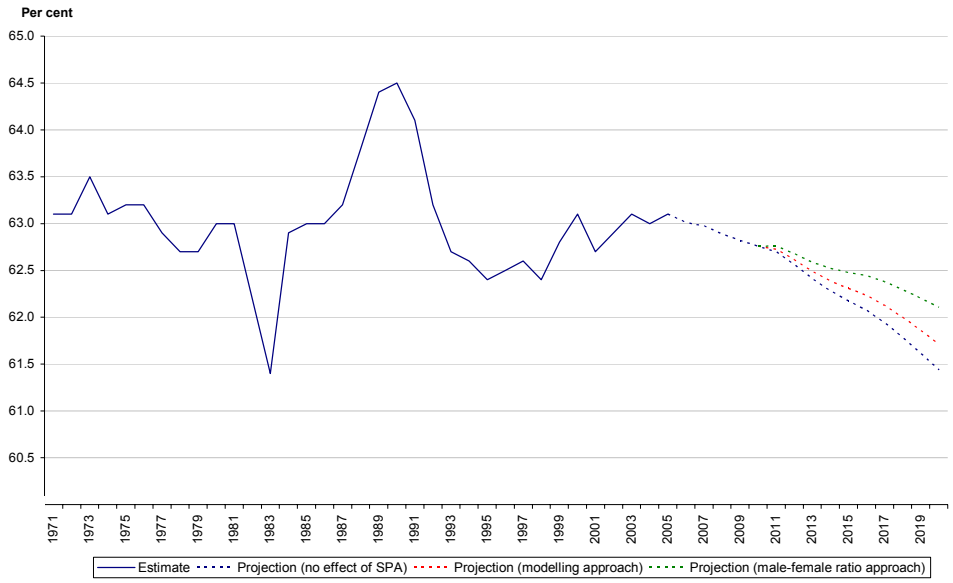
Figure B.3: Activity rates for women aged 60 to 64 under three scenarios; United Kingdom; 1984 to 2020



Source: Office for National Statistics

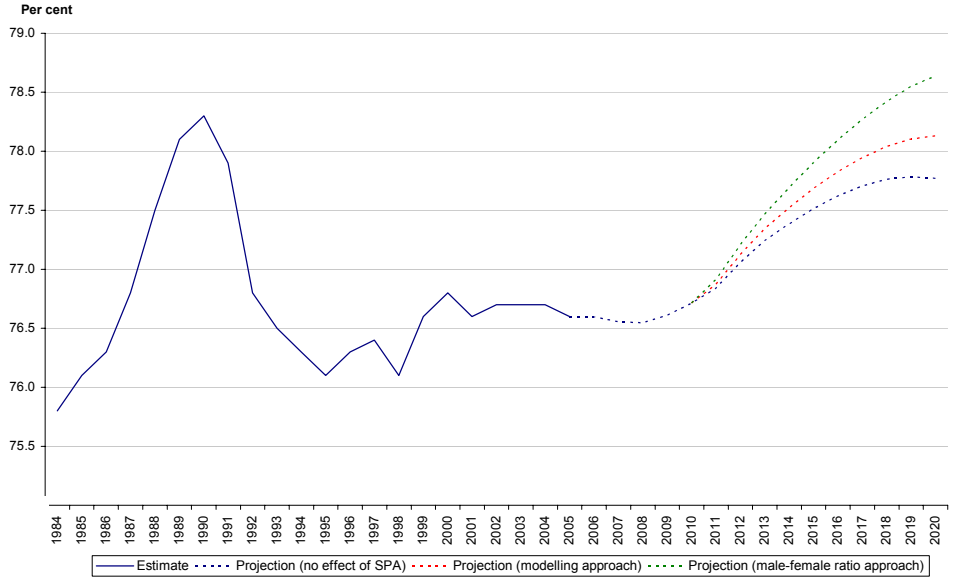
Sensitivity analysis is carried out to determine the effect of the two approaches on the overall activity rate for people aged 16 and over and people of working age, under the future definition (16-64). The results are shown in the following graphs.

Figure B.4: Activity rates for people aged 16 and over under three scenarios; United Kingdom; 1971 to 2020



Source: Office for National Statistics

Figure B.5: Activity rates for people aged 16 to 64 under three scenarios; United Kingdom; 1984 to 2020



Source: Office for National Statistics

As can be seen in the above graphs, the two approaches for accounting for state pension age equalisation give distinct results, which affect the overall projections for the activity rate of people of working age (under the future definition) and of people aged 16 and over. The results from the first approach are used in our central projections of the labour force. This is because it is a more analytical approach,

attempting to quantify the effect of reaching state pension age on the participation behaviour of women, rather than making an ad-hoc assumption. However, the effect of SPA equalisation on labour market activity is an ambiguous area, as there are no well-documented precedents of such changes in the UK[11]. Since both approaches entail a significant degree of uncertainty, two different sets of labour force projections have been produced to allow users to choose their preferred approach for accounting for the equalisation effect as they see appropriate. These are presented in Annex E.

[11] However, lessons can be learned from other countries that have announced or implemented similar changes to pensionable age (for example, New Zealand).

ANNEX C: Projections of Student Numbers

In addition to the split by sex, the youngest age groups, 16-17 and 18-24, are further disaggregated by student status, i.e. whether in full-time education or not. Full-time education is defined as being at school, in a sandwich course or full-time at university, polytechnic or college. The reason for this further split lies in the inherent differences in labour market participation between students and non-students. In addition, there are differences in the trends evident over time in the activity rate series of the two.

In order to project the activity level for those age groups, projections of the proportion of young people (16-17 and 18-24, for both men and women) in full-time education are required. These can be applied to the population of each age/sex subgroup to get a projection of the population broken down by age, sex and student status. In turn, these population projections can be applied to the projected activity rates, to derive the projected activity level.

Future numbers of students in full-time education in any year have been calculated for each of the four age/sex groups. This has been done by applying the growth rate implied by the latest DfES student projections for England to the 2005 LFS figures for students in the UK. In more detail:

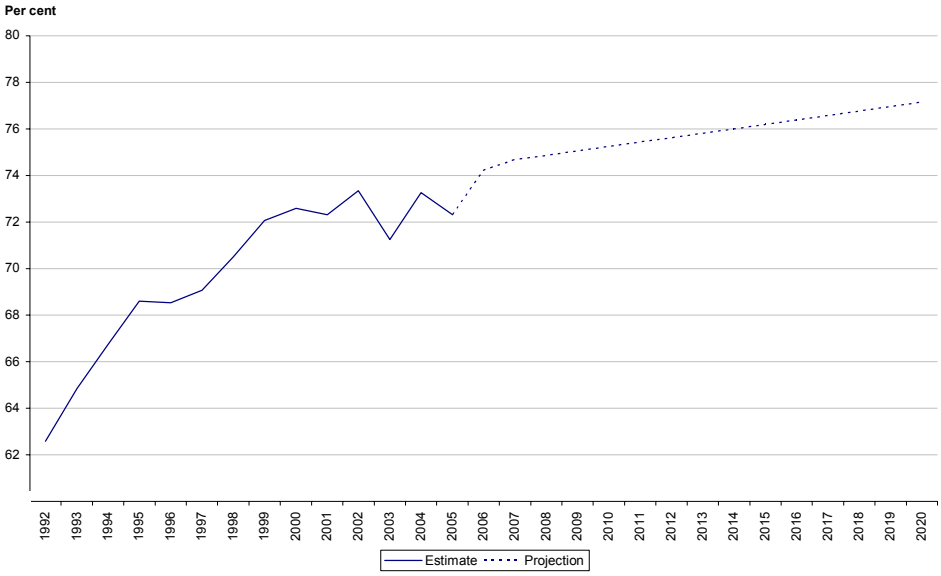
For those aged 16-17, it is assumed that people in full-time education are in further education. DfES projections of students in further education run until 2007/08. The annual growth rates implied by the DfES projections of student numbers are applied to the LFS data for each year until 2007/08. After that, the annual growth rate is assumed to remain constant at its value for 2007/08.

The 18-24 age group includes people both in further education and in higher education. For those in further education, the approach followed is the same as that for the 16-17 age group. For those in higher education, DfES projections cover the period until 2007/08. As before, the annual growth rates implied by the DfES projections are applied to the LFS data until 2007/08. After that, the annual growth rate is assumed to remain constant at its value for 2007/08.

For both age groups, the male-female split is assumed to remain constant at its average level for the period 2000-2005.

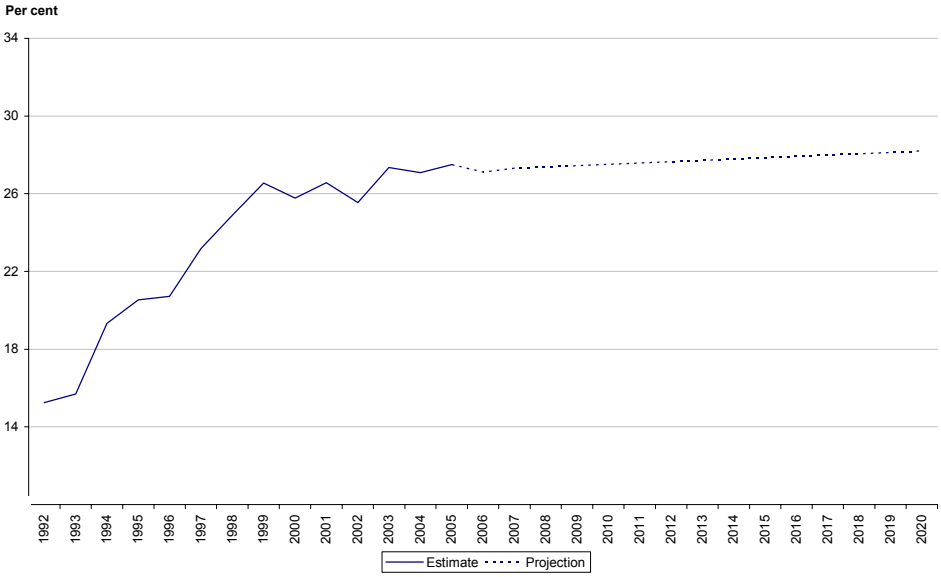
Based on these calculations, the projected proportion of young people in full-time education is shown in Figures C.1 and C.2.

Figure C.1: Proportion of people aged 16 to 17 in full-time education; United Kingdom; 1992 to 2020



Source: Office for National Statistics

Figure C.2: Proportion of people aged 18 to 24 in full-time education; United Kingdom; 1992 to 2020



Source: Office for National Statistics

ANNEX D: Historical and Projected Data

i. Economic Activity Rates

Economic activity rates, Broad Age Bands[1,2]

United Kingdom (per cent), Seasonally adjusted

	People, Aged 16 and Over	People, Aged 16-59/64	People, Aged 16-64	Men, Aged 16 and Over	Men, Aged 16-64	Women, Aged 16 and Over	Women, Aged 16-59	Women, Aged 16-64
1971	63.1	77.9	..	83.5	95.0	44.6	59.4	..
1972	63.1	78.2	..	83.2	95.0	44.9	59.9	..
1973	63.5	78.8	..	82.9	94.8	45.8	61.3	..
1974	63.1	78.5	..	81.6	93.6	46.3	62.1	..
1975	63.2	78.8	..	81.3	93.6	46.6	62.7	..
1976	63.2	79.0	..	81.2	93.7	46.7	62.8	..
1977	62.9	78.6	..	80.4	93.0	46.9	62.9	..
1978	62.7	78.4	..	79.6	92.3	47.3	63.3	..
1979	62.7	78.2	..	79.0	91.6	47.7	63.7	..
1980	63.0	78.5	..	78.7	91.2	48.5	64.6	..
1981	63.0	78.6	..	78.6	91.3	48.7	64.8	..
1982	62.2	77.8	..	77.4	90.0	48.3	64.5	..
1983	61.4	76.7	..	76.1	88.4	47.8	64.0	..
1984	62.9	78.5	75.8	76.6	88.8	50.2	67.1	62.9
1985	63.0	78.9	76.1	76.5	88.8	50.6	68.0	63.5
1986	63.0	79.0	76.3	75.7	88.2	51.2	68.9	64.5
1987	63.2	79.4	76.8	75.5	88.2	51.9	69.8	65.5
1988	63.8	80.0	77.5	75.9	88.7	52.6	70.6	66.4
1989	64.4	80.5	78.1	76.1	88.8	53.6	71.6	67.6
1990	64.5	80.7	78.3	75.9	88.7	54.0	72.0	68.0
1991	64.1	80.2	77.9	75.3	88.1	53.8	71.7	67.8
1992	63.2	79.1	76.8	73.9	86.7	53.2	70.9	67.1
1993	62.7	78.6	76.5	72.9	85.8	53.3	70.9	67.2
1994	62.6	78.4	76.3	72.6	85.5	53.3	70.9	67.3
1995	62.4	78.2	76.1	72.2	85.0	53.3	70.9	67.3
1996	62.5	78.4	76.3	72.0	84.9	53.8	71.4	67.9
1997	62.6	78.4	76.4	71.7	84.7	54.2	71.8	68.3
1998	62.4	78.3	76.1	71.2	84.2	54.2	72.0	68.2
1999	62.8	78.7	76.6	71.5	84.4	54.8	72.5	68.8
2000	63.1	78.9	76.8	71.5	84.6	55.2	72.9	69.2
2001	62.7	78.5	76.6	70.9	84.0	55.1	72.7	69.2
2002	62.9	78.6	76.7	70.8	83.9	55.6	73.0	69.6
2003	63.1	78.7	76.7	71.1	84.1	55.5	73.0	69.5
2004	63.0	78.6	76.7	70.7	83.7	55.9	73.2	69.8
2005	63.1	78.5	76.6	70.5	83.4	56.1	73.4	69.9
2006 (p)	63.0	78.6	76.6	70.4	83.4	56.1	73.5	69.9
2007 (p)	63.0	78.7	76.6	70.2	83.3	56.1	73.8	69.9
2008 (p)	62.9	78.8	76.5	70.0	83.2	56.2	74.0	70.0
2009 (p)	62.8	78.9	76.6	69.8	83.2	56.2	74.2	70.2
2010 (p)	62.8	79.0	76.7	69.6	83.2	56.3	74.4	70.4
2011 (p)	62.7	79.1	76.9	69.4	83.2	56.4	74.6	70.6
2012 (p)	62.6	79.2	77.1	69.1	83.3	56.5	74.8	71.1
2013 (p)	62.5	79.3	77.3	68.8	83.3	56.5	75.0	71.4
2014 (p)	62.4	79.4	77.5	68.5	83.4	56.5	75.1	71.7
2015 (p)	62.3	79.5	77.7	68.3	83.4	56.6	75.3	72.0
2016 (p)	62.2	79.6	77.8	68.1	83.4	56.6	75.5	72.3
2017 (p)	62.1	79.7	77.9	67.8	83.4	56.7	75.7	72.5
2018 (p)	62.0	79.8	78.0	67.6	83.4	56.7	75.9	72.8
2019 (p)	61.9	79.8	78.1	67.3	83.3	56.6	76.0	72.9
2020 (p)	61.7	79.8	78.1	67.0	83.2	56.6	76.1	73.1

[1] Historical estimates are consistent with published National Statistics in the Integrated First Release. Source: ONS

For more details on how historical estimates were calculated see Annex A.

[2] Figures refer to the spring quarter of each year (March to May)

* Full-time education

Economic activity rates[1,2], Men

United Kingdom (per cent), Seasonally adjusted

	16-17 (In FTE*)	16-17 (Not in FTE*)	18-24 (In FTE*)	18-24 (Not In FTE*)	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
1984	33.3	87.9	23.3	95.5	96.7	97.1	97.8	96.8	95.5	93.1	83.5	58.0	14.6	6.3
1985	34.6	93.9	26.0	96.3	96.9	97.0	97.9	96.6	95.1	91.9	83.1	55.9	14.8	5.9
1986	37.3	93.4	24.7	95.9	96.4	96.9	96.9	96.1	94.9	91.0	82.1	54.2	13.8	5.3
1987	37.7	94.4	25.8	96.4	96.7	96.9	96.7	95.9	94.1	90.0	80.2	55.6	13.6	5.2
1988	45.6	94.8	28.1	96.6	96.6	96.7	96.8	96.4	94.4	90.2	81.1	55.2	12.7	6.1
1989	44.0	95.6	30.9	96.8	96.4	96.4	97.1	96.1	94.6	90.5	80.5	54.9	15.0	6.2
1990	43.5	94.4	36.1	96.4	96.8	96.5	96.2	96.1	95.0	89.6	81.6	54.7	14.9	5.8
1991	45.1	93.9	33.8	95.4	96.3	96.3	96.0	96.2	94.3	89.2	80.8	54.6	15.5	5.3
1992	41.6	88.6	30.1	94.1	94.7	95.4	95.3	94.8	93.4	89.1	78.2	52.7	14.8	5.7
1993	33.9	85.6	31.8	93.8	93.9	95.1	94.4	94.6	92.7	88.1	75.8	52.1	13.2	4.5
1994	40.2	87.3	34.6	93.8	94.4	94.9	94.4	92.8	92.6	87.1	76.1	50.8	14.0	4.3
1995	40.4	87.5	35.0	94.5	94.1	94.4	94.5	93.1	91.9	87.2	73.8	50.0	15.1	4.6
1996	45.7	85.8	41.2	93.4	92.8	94.0	93.9	92.4	91.2	86.6	75.4	49.4	13.6	4.5
1997	45.8	82.0	42.4	94.3	93.1	94.1	93.2	91.4	91.2	85.7	74.5	51.5	13.9	4.4
1998	44.1	85.9	42.1	94.1	93.2	94.2	92.9	92.1	89.3	85.9	74.5	49.6	15.0	3.9
1999	46.1	86.8	43.2	93.8	93.1	93.7	93.2	92.8	90.5	86.1	75.2	50.5	15.4	4.2
2000	46.8	84.2	45.3	93.4	93.4	94.2	93.8	93.0	90.1	86.3	74.7	50.4	14.6	4.4
2001	42.8	84.3	42.7	93.0	92.6	93.8	92.9	92.3	89.8	86.2	75.5	51.3	14.1	3.7
2002	41.5	82.4	46.6	92.6	93.0	92.8	92.8	91.8	90.8	85.7	75.9	50.9	15.9	3.8
2003	41.0	80.9	42.1	93.0	91.5	93.4	92.7	92.4	90.7	87.0	77.6	54.9	17.5	4.6
2004	38.6	83.3	43.7	92.4	91.2	92.7	93.1	91.7	90.1	86.4	77.3	55.8	17.8	4.3
2005	37.5	78.6	42.4	91.1	91.5	92.6	92.4	91.2	90.4	87.4	77.7	55.6	18.8	4.4
2006 (p)	38.0	80.1	44.5	91.9	91.7	92.7	92.4	91.6	90.1	86.9	77.3	55.3	17.7	4.1
2007 (p)	37.3	79.4	45.0	91.7	91.7	92.7	92.4	91.6	90.1	87.0	77.7	55.8	17.9	4.1
2008 (p)	36.5	78.7	45.4	91.5	91.6	92.6	92.3	91.5	90.1	87.1	78.0	56.3	18.2	4.1
2009 (p)	35.8	78.0	45.8	91.3	91.5	92.5	92.2	91.5	90.0	87.2	78.2	56.8	18.4	4.0
2010 (p)	35.1	77.3	46.2	91.0	91.4	92.4	92.1	91.4	90.0	87.3	78.4	57.3	18.7	4.0
2011 (p)	34.4	76.6	46.5	90.8	91.3	92.3	92.0	91.3	89.9	87.4	78.7	57.7	18.9	4.0
2012 (p)	33.7	76.0	46.9	90.6	91.2	92.2	91.9	91.2	89.9	87.5	78.9	58.1	19.2	3.9
2013 (p)	33.1	75.3	47.2	90.4	91.1	92.1	91.8	91.1	89.8	87.6	79.0	58.5	19.4	3.9
2014 (p)	32.5	74.6	47.5	90.2	91.0	92.0	91.8	91.1	89.8	87.7	79.2	58.9	19.7	3.9
2015 (p)	31.9	73.9	47.8	89.9	90.9	91.9	91.7	91.0	89.7	87.8	79.4	59.2	19.9	3.9
2016 (p)	31.3	73.2	48.1	89.7	90.8	91.9	91.6	90.9	89.7	87.9	79.6	59.6	20.2	3.8
2017 (p)	30.8	72.5	48.4	89.5	90.8	91.8	91.5	90.8	89.6	88.0	79.8	59.9	20.4	3.8
2018 (p)	30.3	71.8	48.7	89.3	90.7	91.7	91.4	90.7	89.6	88.1	79.9	60.3	20.7	3.8
2019 (p)	29.7	71.2	48.9	89.1	90.6	91.6	91.4	90.7	89.5	88.2	80.1	60.6	21.0	3.8
2020 (p)	29.2	70.5	49.2	88.9	90.5	91.6	91.3	90.6	89.5	88.3	80.2	60.9	21.2	3.7

[1] Historical estimates are consistent with published National Statistics in the Integrated First Release. For more details on how historical estimates were calculated see Annex A

Source: ONS

[2] Figures refer to the spring quarter of each year (March to May)

* Full-time education

Economic activity rates[1,2], Women

United Kingdom (per cent), Seasonally adjusted

	16-17 (In FTE*)	16-17 (Not in FTE*)	18-24 (In FTE*)	18-24 (Not In FTE*)	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
1984	36.2	87.1	26.0	78.0	63.7	60.8	69.5	74.3	73.2	67.1	52.3	22.1	7.5	1.7
1985	42.1	89.3	29.5	79.7	65.1	62.4	70.6	74.9	73.8	65.8	52.5	19.3	6.7	1.8
1986	46.2	89.3	32.3	80.3	66.2	64.5	70.3	75.6	74.9	66.7	52.2	19.6	6.3	1.5
1987	46.0	91.3	32.5	81.9	67.6	65.5	71.4	75.9	74.9	67.5	53.4	19.8	5.7	1.8
1988	49.9	91.1	34.7	81.3	69.0	68.4	73.3	77.5	74.9	66.6	53.1	20.3	5.9	1.7
1989	49.9	90.9	36.0	82.5	71.1	68.9	73.2	77.3	76.5	68.1	54.3	23.3	7.4	1.8
1990	49.3	89.1	39.1	81.8	71.8	69.8	74.9	78.5	77.4	68.1	55.0	23.3	7.7	1.7
1991	52.0	88.1	39.5	80.5	71.3	69.7	74.5	79.3	76.7	68.5	54.6	24.5	7.2	1.7
1992	46.0	82.1	35.8	78.6	71.1	68.6	74.1	78.8	78.4	68.8	54.5	23.4	7.9	1.9
1993	42.3	78.8	35.8	78.0	72.1	69.7	74.0	78.8	77.8	69.6	54.4	24.6	7.8	1.7
1994	44.2	81.5	36.4	77.7	72.2	70.1	73.6	79.0	78.2	70.5	55.3	25.4	7.6	1.5
1995	47.3	77.3	38.0	77.6	73.2	70.1	74.1	77.7	78.1	70.2	55.6	24.9	7.1	1.6
1996	49.5	75.2	43.1	78.7	73.3	71.4	73.7	78.8	79.1	70.5	54.3	25.2	7.5	1.4
1997	54.8	76.3	46.3	78.2	74.6	72.5	74.6	78.2	78.2	71.8	53.0	27.0	7.9	1.5
1998	53.0	79.3	47.0	78.0	74.8	72.7	74.4	78.5	78.7	71.9	54.6	23.9	8.2	1.6
1999	51.8	79.8	46.5	79.2	76.1	74.2	75.1	78.7	79.4	72.1	55.8	25.1	8.8	1.5
2000	52.5	82.6	48.8	78.6	76.1	74.4	75.4	79.1	79.2	72.7	57.5	26.1	8.4	1.6
2001	48.1	78.1	48.0	78.5	75.8	74.0	76.5	79.3	79.2	73.0	57.9	27.7	7.5	1.5
2002	49.2	73.5	46.5	79.4	76.8	73.5	76.3	79.0	79.5	74.3	59.2	28.5	9.5	1.6
2003	49.6	74.8	48.2	77.6	76.2	73.0	76.2	78.7	79.5	75.2	62.2	27.7	9.8	1.4
2004	48.7	70.4	50.5	78.3	75.8	74.2	75.6	78.8	79.4	75.9	62.2	30.2	9.8	1.8
2005	47.6	69.3	46.1	77.4	76.4	75.6	75.2	79.6	80.7	75.9	63.1	31.2	10.5	1.9
2006 (p)	47.6	70.7	48.7	77.8	76.8	74.8	75.8	79.4	79.9	75.9	63.7	30.0	10.1	1.6
2007 (p)	47.2	69.8	49.4	77.7	77.1	75.1	76.1	79.4	80.0	76.4	64.2	30.5	10.3	1.6
2008 (p)	46.8	68.8	49.9	77.7	77.3	75.4	76.2	79.6	80.1	76.8	64.8	31.0	10.5	1.6
2009 (p)	46.4	67.9	50.2	77.6	77.5	75.6	76.3	79.6	80.2	77.3	65.4	31.4	10.7	1.6
2010 (p)	46.0	66.9	50.6	77.6	77.7	75.7	76.4	79.7	80.3	77.8	66.0	31.9	10.9	1.6
2011 (p)	45.6	65.9	50.9	77.5	77.9	75.9	76.5	79.7	80.4	78.2	66.6	33.1	11.1	1.6
2012 (p)	45.2	65.0	51.3	77.4	78.0	76.1	76.5	79.8	80.5	78.7	67.2	34.3	11.3	1.6
2013 (p)	44.9	64.0	51.6	77.4	78.2	76.3	76.6	79.8	80.6	79.2	67.9	35.5	11.5	1.6
2014 (p)	44.5	63.1	52.0	77.3	78.4	76.5	76.7	79.9	80.6	79.6	68.5	36.8	11.7	1.6
2015 (p)	44.2	62.1	52.3	77.3	78.5	76.7	76.8	79.9	80.7	80.1	69.1	38.0	11.9	1.6
2016 (p)	43.9	61.1	52.6	77.2	78.7	76.8	76.8	80.0	80.8	80.6	69.7	39.3	12.1	1.6
2017 (p)	43.6	60.2	52.9	77.1	78.8	77.0	76.9	80.0	80.9	81.1	70.4	40.5	12.3	1.6
2018 (p)	43.3	59.2	53.2	77.1	79.0	77.1	77.0	80.0	80.9	81.5	71.0	41.7	12.5	1.6
2019 (p)	43.0	58.3	53.5	77.0	79.1	77.3	77.0	80.1	81.0	82.0	71.7	42.9	12.7	1.6
2020 (p)	42.7	57.3	53.8	77.0	79.3	77.4	77.1	80.1	81.1	82.5	72.3	44.1	12.9	1.6

[1] Historical estimates are consistent with published National Statistics in the Integrated First Release. For more details on how historical estimates were calculated see Annex A

Source: ONS

[2] Figures refer to the spring quarter of each year (March to May)

* Full-time education

Economic activity rates[1,2], People

United Kingdom (per cent), Seasonally adjusted

	16-17 (In FTE*)	16-17 (Not in FTE*)	18-24 (In FTE*)	18-24 (Not In FTE*)	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
1984	34.8	87.5	24.5	86.8	80.2	79.0	83.6	85.6	84.4	80.0	67.5	39.0	10.7	3.4
1985	38.5	91.8	27.7	88.0	81.0	79.8	84.2	85.8	84.5	78.8	67.4	36.6	10.4	3.3
1986	41.9	91.5	28.2	88.1	81.3	80.8	83.6	85.9	84.9	78.8	66.8	36.0	9.7	3.0
1987	41.9	92.9	29.0	89.2	82.1	81.2	84.0	85.9	84.5	78.7	66.5	36.9	9.2	3.0
1988	47.7	93.0	31.3	89.0	82.8	82.5	85.0	86.9	84.6	78.3	66.8	37.0	9.0	3.3
1989	47.0	93.5	33.3	89.7	83.8	82.6	85.1	86.7	85.6	79.3	67.1	38.4	10.9	3.4
1990	46.5	92.0	37.6	89.1	84.2	83.1	85.5	87.3	86.2	78.8	68.1	38.4	11.0	3.3
1991	48.6	91.3	36.5	88.0	83.7	82.9	85.2	87.7	85.4	78.8	67.6	38.9	11.1	3.0
1992	43.9	85.7	32.8	86.3	82.8	81.9	84.6	86.8	85.9	78.9	66.2	37.5	11.1	3.4
1993	38.2	82.6	33.7	85.9	83.0	82.3	84.1	86.7	85.2	78.8	65.0	37.9	10.3	2.8
1994	42.2	84.6	35.5	85.7	83.2	82.4	83.9	85.8	85.4	78.7	65.6	37.7	10.6	2.6
1995	43.9	82.9	36.4	85.9	83.6	82.1	84.2	85.3	84.9	78.6	64.6	37.1	10.8	2.8
1996	47.7	81.2	42.1	86.0	83.0	82.6	83.7	85.5	85.1	78.5	64.7	37.0	10.4	2.6
1997	50.4	79.4	44.3	86.3	83.8	83.2	83.8	84.8	84.7	78.7	63.6	38.9	10.7	2.6
1998	48.8	83.2	44.5	86.0	83.9	83.3	83.6	85.2	84.0	78.9	64.4	36.5	11.4	2.5
1999	49.1	83.9	44.9	86.5	84.5	83.9	84.0	85.7	84.9	79.0	65.4	37.5	11.9	2.6
2000	49.8	83.5	47.1	86.0	84.7	84.2	84.5	85.9	84.6	79.4	66.0	38.0	11.4	2.7
2001	45.6	81.7	45.5	85.8	84.1	83.7	84.6	85.7	84.4	79.5	66.6	39.2	10.7	2.4
2002	45.4	78.5	46.5	86.1	84.9	83.1	84.5	85.3	85.1	80.0	67.4	39.4	12.6	2.5
2003	45.4	78.4	45.2	85.4	83.8	83.0	84.4	85.5	85.0	81.0	69.8	41.0	13.5	2.7
2004	43.7	77.9	47.1	85.4	83.5	83.3	84.3	85.2	84.7	81.1	69.6	42.7	13.7	2.8
2005	42.7	74.7	44.3	84.4	83.9	84.0	83.7	85.3	85.5	81.6	70.3	43.1	14.5	3.0
2006 (p)	43.0	76.3	46.6	85.0	84.2	83.7	84.0	85.4	84.9	81.3	70.4	42.3	13.7	2.7
2007 (p)	42.4	75.5	47.2	84.9	84.3	83.8	84.2	85.4	85.0	81.6	70.9	42.9	13.9	2.7
2008 (p)	41.8	74.7	47.7	84.8	84.4	83.9	84.1	85.5	85.0	81.9	71.3	43.3	14.2	2.7
2009 (p)	41.2	73.9	48.1	84.7	84.5	84.0	84.2	85.5	85.1	82.2	71.7	43.8	14.4	2.7
2010 (p)	40.7	73.1	48.4	84.5	84.5	84.0	84.1	85.5	85.1	82.5	72.1	44.2	14.6	2.7
2011 (p)	40.2	72.4	48.8	84.4	84.6	84.1	84.2	85.4	85.1	82.7	72.5	45.1	14.9	2.7
2012 (p)	39.7	71.6	49.1	84.2	84.7	84.1	84.2	85.4	85.1	83.0	72.9	45.9	15.1	2.7
2013 (p)	39.2	70.8	49.5	84.1	84.7	84.1	84.2	85.4	85.1	83.3	73.3	46.7	15.3	2.7
2014 (p)	38.7	70.0	49.8	84.0	84.8	84.2	84.2	85.4	85.2	83.6	73.7	47.5	15.5	2.6
2015 (p)	38.2	69.2	50.1	83.8	84.8	84.3	84.2	85.4	85.2	83.9	74.2	48.3	15.8	2.6
2016 (p)	37.8	68.4	50.4	83.7	84.8	84.3	84.2	85.4	85.2	84.2	74.6	49.1	16.0	2.6
2017 (p)	37.4	67.6	50.7	83.5	84.9	84.4	84.1	85.4	85.2	84.5	75.0	49.9	16.2	2.6
2018 (p)	36.9	66.8	51.0	83.4	84.9	84.5	84.1	85.4	85.2	84.8	75.4	50.7	16.4	2.6
2019 (p)	36.5	66.0	51.3	83.3	84.9	84.5	84.1	85.3	85.2	85.0	75.8	51.5	16.7	2.6
2020 (p)	36.1	65.2	51.5	83.1	85.0	84.6	84.2	85.3	85.2	85.3	76.2	52.3	16.9	2.6

[1] Historical estimates are consistent with published National Statistics in the Integrated First Release. For more details on how historical estimates were calculated see Annex A

Source: ONS

[2] Figures refer to the spring quarter of each year (March to May)

* Full-time education

ii. Population

Population, Broad Age Bands[1,2,3]

United Kingdom (thousands)

	People, Aged 16 and Over	People, Aged 16-59/64	People, Aged 16-64	Men, Aged 16 and Over	Men, Aged 16-64	Women, Aged 16 and Over	Women, Aged 16-59	Women, Aged 16-64
1971	40,550	31,855	..	19,285	16,571	21,265	15,284	..
1972	40,723	31,898	..	19,383	16,611	21,340	15,287	..
1973	40,895	31,946	..	19,481	16,650	21,414	15,296	..
1974	41,057	31,982	..	19,576	16,685	21,481	15,298	..
1975	41,235	32,043	..	19,682	16,734	21,553	15,309	..
1976	41,454	32,179	..	19,801	16,803	21,653	15,376	..
1977	41,720	32,379	..	19,936	16,888	21,783	15,491	..
1978	42,006	32,622	..	20,076	16,975	21,930	15,647	..
1979	42,321	32,903	..	20,244	17,092	22,078	15,811	..
1980	42,669	33,123	..	20,423	17,222	22,246	15,901	..
1981	42,991	33,323	..	20,581	17,346	22,411	15,977	..
1982	43,207	33,480	..	20,686	17,447	22,521	16,034	..
1983	43,441	33,704	..	20,808	17,590	22,633	16,114	..
1984	43,709	33,963	35,672	20,953	17,753	22,756	16,210	17,919
1985	43,983	34,161	35,830	21,096	17,838	22,887	16,323	17,992
1986	44,211	34,317	35,929	21,206	17,885	23,004	16,432	18,044
1987	44,425	34,474	36,042	21,315	17,939	23,110	16,535	18,103
1988	44,590	34,600	36,137	21,402	17,986	23,188	16,614	18,151
1989	44,737	34,707	36,222	21,481	18,029	23,257	16,678	18,193
1990	44,844	34,791	36,293	21,547	18,068	23,297	16,723	18,225
1991	44,935	34,854	36,344	21,594	18,084	23,341	16,770	18,260
1992	44,997	34,879	36,358	21,623	18,080	23,374	16,800	18,278
1993	45,027	34,885	36,348	21,632	18,062	23,394	16,823	18,286
1994	45,072	34,923	36,367	21,646	18,055	23,425	16,868	18,313
1995	45,189	35,018	36,446	21,710	18,090	23,479	16,928	18,356
1996	45,342	35,146	36,564	21,794	18,145	23,547	17,001	18,419
1997	45,497	35,274	36,694	21,876	18,198	23,621	17,076	18,496
1998	45,661	35,397	36,831	21,961	18,253	23,700	17,144	18,578
1999	45,862	35,563	37,018	22,071	18,338	23,791	17,226	18,680
2000	46,107	35,766	37,235	22,202	18,437	23,905	17,328	18,797
2001	46,413	36,016	37,483	22,377	18,566	24,036	17,450	18,917
2002	46,704	36,244	37,711	22,550	18,688	24,154	17,555	19,023
2003	46,995	36,449	37,941	22,723	18,808	24,272	17,641	19,132
2004	47,324	36,675	38,204	22,910	18,944	24,414	17,731	19,261
2005	47,727	36,961	38,537	23,136	19,117	24,591	17,845	19,421
2006 (p)	48,119	37,234	38,874	23,357	19,292	24,762	17,941	19,582
2007 (p)	48,488	37,407	39,166	23,565	19,444	24,923	17,962	19,722
2008 (p)	48,829	37,531	39,376	23,757	19,553	25,072	17,977	19,823
2009 (p)	49,147	37,644	39,532	23,936	19,635	25,211	18,008	19,897
2010 (p)	49,457	37,756	39,667	24,110	19,707	25,347	18,049	19,960
2011 (p)	49,754	37,861	39,776	24,277	19,767	25,478	18,093	20,009
2012 (p)	50,047	37,905	39,755	24,441	19,764	25,607	18,141	19,991
2013 (p)	50,343	37,960	39,755	24,605	19,771	25,738	18,189	19,984
2014 (p)	50,624	38,023	39,793	24,760	19,796	25,864	18,226	19,997
2015 (p)	50,890	38,088	39,847	24,907	19,829	25,983	18,258	20,018
2016 (p)	51,137	38,139	39,906	25,043	19,864	26,094	18,275	20,042
2017 (p)	51,359	38,165	39,956	25,165	19,893	26,194	18,272	20,063
2018 (p)	51,575	38,174	39,998	25,282	19,918	26,292	18,256	20,080
2019 (p)	51,804	38,189	40,048	25,406	19,949	26,399	18,240	20,099
2020 (p)	52,056	38,223	40,126	25,538	19,994	26,518	18,229	20,132

[1] Population resident in private households, student halls of residence and NHS accomodation

Source: ONS

[2] Historical estimates are consistent with published National Statistics in the Integrated First Release.

For more details on how historical estimates were calculated see Annex A.

[3] Figures refer to the spring quarter of each year (March to May)

* Full-time education

Population[1,2,3], Men

United Kingdom (thousands)

	16-17 (In FTE*)	16-17 (Not in FTE*)	18-24 (In FTE*)	18-24 (Not In FTE*)	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
1984	456	470	277	2,937	1,957	1,891	2,018	1,647	1,559	1,514	1,508	1,518	1,105	2,095
1985	455	451	323	2,931	2,012	1,874	2,041	1,690	1,569	1,504	1,496	1,491	1,130	2,128
1986	453	434	350	2,904	2,072	1,876	2,052	1,751	1,559	1,495	1,486	1,454	1,177	2,145
1987	481	392	348	2,891	2,132	1,894	1,978	1,874	1,558	1,493	1,476	1,424	1,228	2,148
1988	469	386	351	2,849	2,186	1,917	1,911	1,965	1,579	1,505	1,464	1,404	1,283	2,133
1989	439	379	349	2,800	2,241	1,951	1,879	2,006	1,620	1,522	1,451	1,393	1,331	2,120
1990	443	329	376	2,718	2,290	1,999	1,862	2,031	1,663	1,531	1,442	1,384	1,310	2,169
1991	438	295	445	2,578	2,305	2,058	1,862	2,043	1,724	1,522	1,436	1,378	1,281	2,229
1992	414	287	468	2,452	2,305	2,115	1,885	1,972	1,851	1,522	1,437	1,373	1,260	2,283
1993	413	259	458	2,358	2,290	2,163	1,911	1,904	1,943	1,545	1,451	1,365	1,245	2,325
1994	429	229	532	2,175	2,263	2,211	1,944	1,872	1,988	1,586	1,470	1,356	1,237	2,355
1995	449	231	554	2,047	2,229	2,256	1,992	1,855	2,012	1,632	1,481	1,351	1,233	2,387
1996	468	252	516	1,983	2,199	2,283	2,046	1,857	2,021	1,696	1,475	1,349	1,231	2,418
1997	489	250	560	1,869	2,158	2,298	2,098	1,878	1,951	1,816	1,476	1,355	1,230	2,448
1998	486	250	611	1,787	2,106	2,293	2,147	1,908	1,887	1,908	1,498	1,372	1,230	2,478
1999	493	237	631	1,766	2,046	2,279	2,198	1,945	1,857	1,954	1,538	1,394	1,227	2,507
2000	500	231	607	1,798	1,992	2,258	2,246	1,993	1,843	1,978	1,585	1,407	1,227	2,537
2001	516	236	626	1,808	1,932	2,242	2,280	2,046	1,847	1,977	1,654	1,404	1,233	2,578
2002	545	226	626	1,860	1,859	2,215	2,304	2,100	1,867	1,909	1,774	1,403	1,245	2,617
2003	522	258	690	1,867	1,808	2,173	2,311	2,151	1,897	1,849	1,857	1,424	1,264	2,651
2004	555	241	710	1,916	1,801	2,111	2,304	2,200	1,931	1,819	1,895	1,459	1,282	2,684
2005	551	253	719	1,971	1,833	2,057	2,284	2,250	1,978	1,805	1,913	1,502	1,293	2,726
2006 (p)	562	238	726	2,024	1,881	1,993	2,264	2,287	2,031	1,809	1,915	1,563	1,292	2,773
2007 (p)	570	238	744	2,064	1,922	1,926	2,233	2,311	2,083	1,829	1,848	1,676	1,294	2,827
2008 (p)	573	237	756	2,098	1,964	1,880	2,191	2,315	2,132	1,860	1,791	1,756	1,318	2,886
2009 (p)	564	231	767	2,123	2,000	1,875	2,133	2,306	2,182	1,895	1,764	1,795	1,355	2,946
2010 (p)	553	224	772	2,131	2,036	1,898	2,076	2,283	2,231	1,940	1,750	1,814	1,398	3,004
2011 (p)	544	219	774	2,130	2,071	1,935	2,008	2,261	2,265	1,991	1,754	1,817	1,456	3,054
2012 (p)	538	215	773	2,121	2,119	1,973	1,939	2,229	2,288	2,041	1,773	1,754	1,564	3,112
2013 (p)	539	214	768	2,101	2,168	2,014	1,893	2,188	2,292	2,090	1,803	1,701	1,641	3,193
2014 (p)	537	210	763	2,082	2,197	2,050	1,888	2,131	2,284	2,139	1,838	1,676	1,679	3,285
2015 (p)	528	205	759	2,064	2,208	2,087	1,912	2,074	2,260	2,187	1,882	1,664	1,698	3,379
2016 (p)	518	199	751	2,035	2,224	2,121	1,949	2,006	2,239	2,221	1,931	1,668	1,702	3,477
2017 (p)	506	192	743	2,005	2,232	2,170	1,986	1,938	2,208	2,244	1,981	1,687	1,645	3,626
2018 (p)	500	187	734	1,977	2,220	2,219	2,027	1,893	2,167	2,249	2,029	1,717	1,597	3,766
2019 (p)	505	188	726	1,946	2,207	2,248	2,063	1,888	2,111	2,240	2,077	1,750	1,575	3,881
2020 (p)	521	192	718	1,918	2,184	2,260	2,100	1,911	2,055	2,218	2,124	1,793	1,565	3,979

[1] Population resident in private households, student halls of residence and NHS accomodation

Source: ONS

[2] Historical estimates are consistent with published National Statistics in the Integrated First Release. For more details on how historical estimates were calculated see Annex A.

[3] Figures refer to the spring quarter of each year (March to May)

* Full-time education

Population[1,2,3], Women

United Kingdom (thousands)

	16-17 (In FTE*)	16-17 (Not in FTE*)	18-24 (In FTE*)	18-24 (Not In FTE*)	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
1984	457	431	231	2,922	1,945	1,883	2,021	1,635	1,557	1,543	1,584	1,709	1,355	3,482
1985	487	387	289	2,901	2,002	1,864	2,049	1,680	1,569	1,523	1,571	1,669	1,375	3,520
1986	478	380	296	2,904	2,070	1,870	2,063	1,742	1,560	1,510	1,559	1,612	1,425	3,535
1987	486	357	319	2,872	2,136	1,894	1,994	1,869	1,559	1,506	1,544	1,568	1,477	3,530
1988	473	352	327	2,824	2,193	1,926	1,928	1,967	1,582	1,516	1,526	1,537	1,534	3,504
1989	464	320	321	2,787	2,249	1,966	1,897	2,014	1,622	1,534	1,505	1,515	1,583	3,481
1990	475	264	355	2,688	2,300	2,021	1,880	2,044	1,667	1,545	1,484	1,502	1,544	3,527
1991	457	244	382	2,588	2,330	2,086	1,885	2,059	1,732	1,537	1,470	1,490	1,493	3,588
1992	446	228	417	2,463	2,337	2,145	1,908	1,993	1,859	1,537	1,467	1,478	1,457	3,639
1993	442	205	421	2,365	2,323	2,198	1,941	1,928	1,957	1,562	1,480	1,463	1,431	3,678
1994	434	201	510	2,178	2,301	2,253	1,982	1,898	2,006	1,604	1,500	1,444	1,413	3,699
1995	469	189	513	2,079	2,265	2,303	2,031	1,882	2,034	1,651	1,514	1,428	1,404	3,719
1996	502	194	519	1,976	2,234	2,334	2,086	1,886	2,045	1,716	1,509	1,419	1,396	3,732
1997	516	200	567	1,865	2,196	2,350	2,142	1,909	1,980	1,838	1,512	1,420	1,387	3,737
1998	536	178	586	1,823	2,148	2,347	2,196	1,943	1,917	1,934	1,536	1,434	1,378	3,745
1999	542	164	645	1,768	2,090	2,334	2,251	1,983	1,889	1,984	1,576	1,454	1,364	3,747
2000	541	162	637	1,785	2,038	2,311	2,306	2,033	1,878	2,013	1,624	1,469	1,354	3,754
2001	547	171	671	1,779	1,969	2,293	2,341	2,088	1,883	2,016	1,693	1,467	1,349	3,770
2002	559	175	644	1,843	1,888	2,268	2,363	2,145	1,904	1,951	1,816	1,468	1,353	3,778
2003	564	180	704	1,837	1,829	2,226	2,365	2,200	1,939	1,891	1,905	1,491	1,366	3,775
2004	584	174	703	1,889	1,817	2,162	2,356	2,256	1,976	1,864	1,949	1,530	1,383	3,770
2005	583	181	747	1,895	1,846	2,103	2,333	2,311	2,023	1,851	1,972	1,576	1,395	3,775
2006 (p)	596	163	748	1,935	1,901	2,026	2,314	2,346	2,077	1,859	1,976	1,640	1,391	3,789
2007 (p)	604	160	767	1,954	1,950	1,951	2,288	2,366	2,132	1,882	1,908	1,759	1,393	3,807
2008 (p)	608	160	779	1,974	1,993	1,899	2,247	2,365	2,186	1,917	1,850	1,845	1,418	3,831
2009 (p)	598	155	790	1,992	2,024	1,890	2,186	2,355	2,241	1,953	1,824	1,888	1,456	3,858
2010 (p)	586	150	796	1,999	2,046	1,916	2,123	2,330	2,293	1,998	1,812	1,911	1,501	3,886
2011 (p)	577	146	798	1,996	2,063	1,961	2,046	2,309	2,327	2,052	1,819	1,915	1,563	3,906
2012 (p)	570	142	797	1,985	2,092	2,007	1,970	2,283	2,346	2,106	1,842	1,851	1,678	3,937
2013 (p)	572	141	791	1,964	2,128	2,050	1,919	2,242	2,346	2,159	1,876	1,795	1,761	3,993
2014 (p)	570	139	787	1,945	2,152	2,080	1,910	2,182	2,336	2,213	1,913	1,771	1,804	4,063
2015 (p)	560	135	782	1,927	2,162	2,103	1,936	2,120	2,311	2,265	1,957	1,760	1,826	4,139
2016 (p)	549	131	774	1,902	2,175	2,120	1,981	2,043	2,291	2,299	2,009	1,767	1,831	4,222
2017 (p)	537	127	765	1,874	2,180	2,149	2,026	1,968	2,265	2,318	2,063	1,790	1,770	4,361
2018 (p)	530	125	757	1,847	2,167	2,185	2,069	1,916	2,225	2,318	2,115	1,824	1,718	4,495
2019 (p)	535	124	748	1,820	2,153	2,209	2,100	1,908	2,166	2,308	2,169	1,860	1,696	4,604
2020 (p)	552	126	741	1,797	2,131	2,219	2,122	1,934	2,103	2,284	2,221	1,903	1,686	4,700

[1] Population resident in private households, student halls of residence and NHS accomodation

Source: ONS

[2] Historical estimates are consistent with published National Statistics in the Integrated First Release. For more details on how historical estimates were calculated see Annex A.

[3] Figures refer to the spring quarter of each year (March to May)

* Full-time education

Population[1,2,3], People

United Kingdom (thousands)

	16-17 (In FTE*)	16-17 (Not in FTE*)	18-24 (In FTE*)	18-24 (Not In FTE*)	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
1984	914	901	508	5,860	3,902	3,775	4,039	3,282	3,115	3,058	3,092	3,227	2,460	5,577
1985	941	838	612	5,832	4,014	3,739	4,090	3,370	3,138	3,027	3,068	3,161	2,505	5,648
1986	931	813	646	5,808	4,142	3,746	4,115	3,493	3,119	3,004	3,045	3,067	2,602	5,679
1987	966	749	666	5,763	4,267	3,788	3,971	3,744	3,117	2,998	3,020	2,992	2,704	5,679
1988	941	738	679	5,673	4,379	3,843	3,840	3,931	3,161	3,021	2,991	2,941	2,816	5,637
1989	903	699	670	5,586	4,490	3,917	3,776	4,021	3,242	3,055	2,956	2,908	2,914	5,601
1990	917	593	731	5,406	4,590	4,020	3,742	4,075	3,331	3,076	2,927	2,886	2,855	5,696
1991	896	539	827	5,166	4,634	4,144	3,747	4,102	3,456	3,059	2,906	2,867	2,774	5,817
1992	861	514	885	4,915	4,642	4,260	3,793	3,965	3,709	3,059	2,904	2,851	2,717	5,922
1993	856	464	879	4,723	4,613	4,361	3,853	3,832	3,900	3,108	2,932	2,827	2,676	6,003
1994	863	430	1,042	4,353	4,564	4,464	3,927	3,770	3,994	3,190	2,970	2,800	2,650	6,054
1995	917	420	1,067	4,126	4,494	4,558	4,022	3,738	4,046	3,284	2,995	2,779	2,637	6,106
1996	970	445	1,035	3,959	4,433	4,616	4,133	3,744	4,065	3,412	2,985	2,768	2,627	6,150
1997	1,005	450	1,127	3,734	4,354	4,647	4,240	3,788	3,931	3,655	2,988	2,775	2,618	6,185
1998	1,022	427	1,197	3,609	4,254	4,640	4,342	3,852	3,804	3,842	3,035	2,806	2,607	6,223
1999	1,035	401	1,277	3,533	4,136	4,613	4,449	3,928	3,746	3,937	3,114	2,848	2,591	6,254
2000	1,041	393	1,244	3,583	4,030	4,569	4,552	4,025	3,721	3,991	3,209	2,876	2,581	6,291
2001	1,063	407	1,297	3,587	3,900	4,534	4,621	4,134	3,730	3,992	3,348	2,871	2,582	6,348
2002	1,104	401	1,270	3,703	3,747	4,482	4,667	4,245	3,771	3,860	3,590	2,871	2,598	6,394
2003	1,086	438	1,394	3,704	3,638	4,399	4,676	4,352	3,836	3,741	3,762	2,915	2,629	6,426
2004	1,138	416	1,414	3,805	3,618	4,274	4,660	4,456	3,908	3,683	3,844	2,988	2,666	6,454
2005	1,134	434	1,466	3,865	3,679	4,160	4,617	4,560	4,002	3,656	3,885	3,079	2,687	6,502
2006 (p)	1,157	402	1,473	3,959	3,782	4,020	4,578	4,633	4,108	3,667	3,891	3,203	2,683	6,562
2007 (p)	1,174	398	1,510	4,018	3,872	3,877	4,520	4,677	4,215	3,711	3,756	3,436	2,688	6,634
2008 (p)	1,180	396	1,535	4,071	3,957	3,779	4,438	4,681	4,318	3,777	3,641	3,601	2,736	6,717
2009 (p)	1,161	386	1,557	4,115	4,024	3,765	4,320	4,661	4,423	3,849	3,588	3,683	2,811	6,804
2010 (p)	1,139	375	1,568	4,130	4,082	3,815	4,199	4,612	4,524	3,938	3,562	3,725	2,900	6,890
2011 (p)	1,121	365	1,571	4,125	4,133	3,897	4,054	4,571	4,592	4,042	3,572	3,732	3,019	6,960
2012 (p)	1,108	357	1,570	4,107	4,211	3,980	3,910	4,512	4,635	4,147	3,615	3,605	3,242	7,050
2013 (p)	1,111	354	1,559	4,065	4,295	4,064	3,812	4,430	4,639	4,248	3,680	3,496	3,402	7,186
2014 (p)	1,107	349	1,550	4,027	4,349	4,131	3,799	4,313	4,619	4,353	3,751	3,447	3,483	7,348
2015 (p)	1,088	340	1,541	3,991	4,370	4,189	3,848	4,194	4,571	4,452	3,839	3,423	3,524	7,518
2016 (p)	1,067	330	1,525	3,937	4,399	4,241	3,930	4,049	4,531	4,520	3,941	3,435	3,533	7,698
2017 (p)	1,043	319	1,508	3,879	4,412	4,319	4,012	3,906	4,473	4,563	4,044	3,477	3,416	7,987
2018 (p)	1,030	312	1,492	3,824	4,388	4,404	4,096	3,809	4,392	4,567	4,144	3,541	3,316	8,261
2019 (p)	1,040	311	1,474	3,765	4,360	4,457	4,163	3,796	4,276	4,549	4,247	3,610	3,271	8,485
2020 (p)	1,073	318	1,459	3,715	4,315	4,479	4,222	3,845	4,158	4,502	4,345	3,696	3,251	8,679

[1] Population resident in private households, student halls of residence and NHS accomodation

Source: ONS

[2] Historical estimates are consistent with published National Statistics in the Integrated First Release. For more details on how historical estimates were calculated see Annex A.

[3] Figures refer to the spring quarter of each year (March to May)

* Full-time education

iii. Economically Active

Economically active, Broad Age Bands[1,2]

United Kingdom (thousands), Seasonally adjusted

	People, Aged 16 and Over	People, Aged 16-59/64	People, Aged 16-64	Men, Aged 16 and Over	Men, Aged 16-64	Women, Aged 16 and Over	Women, Aged 16-59	Women, Aged 16-64
1971	25,582	24,815	..	16,097	15,741	9,485	9,074	..
1972	25,694	24,935	..	16,121	15,782	9,573	9,153	..
1973	25,963	25,165	..	16,152	15,792	9,811	9,373	..
1974	25,919	25,121	..	15,974	15,624	9,944	9,497	..
1975	26,054	25,259	..	16,004	15,663	10,051	9,597	..
1976	26,193	25,408	..	16,084	15,752	10,109	9,656	..
1977	26,240	25,456	..	16,030	15,707	10,210	9,750	..
1978	26,352	25,560	..	15,984	15,661	10,368	9,899	..
1979	26,541	25,730	..	16,000	15,657	10,541	10,072	..
1980	26,863	25,987	..	16,070	15,715	10,794	10,272	..
1981	27,093	26,192	..	16,180	15,832	10,913	10,360	..
1982	26,892	26,040	..	16,015	15,694	10,877	10,346	..
1983	26,653	25,856	..	15,839	15,551	10,814	10,305	..
1984	27,485	26,653	27,031	16,061	15,768	11,425	10,885	11,263
1985	27,710	26,939	27,261	16,129	15,836	11,581	11,103	11,425
1986	27,837	27,100	27,416	16,056	15,779	11,781	11,321	11,637
1987	28,092	27,358	27,669	16,095	15,818	11,996	11,540	11,851
1988	28,439	27,684	27,996	16,242	15,949	12,197	11,735	12,047
1989	28,815	27,952	28,305	16,340	16,010	12,475	11,942	12,295
1990	28,925	28,073	28,423	16,357	16,034	12,569	12,039	12,389
1991	28,807	27,958	28,323	16,251	15,935	12,556	12,023	12,388
1992	28,428	27,581	27,926	15,987	15,670	12,441	11,911	12,256
1993	28,234	27,429	27,789	15,774	15,506	12,460	11,923	12,284
1994	28,201	27,395	27,762	15,709	15,434	12,492	11,961	12,328
1995	28,202	27,389	27,745	15,682	15,385	12,520	12,004	12,360
1996	28,345	27,554	27,912	15,686	15,409	12,658	12,145	12,503
1997	28,492	27,666	28,049	15,687	15,408	12,805	12,258	12,641
1998	28,497	27,700	28,044	15,647	15,365	12,850	12,336	12,679
1999	28,811	27,974	28,339	15,774	15,480	13,037	12,494	12,859
2000	29,071	28,223	28,606	15,882	15,590	13,189	12,633	13,016
2001	29,122	28,288	28,694	15,867	15,596	13,255	12,692	13,098
2002	29,399	28,494	28,913	15,971	15,673	13,428	12,821	13,240
2003	29,643	28,697	29,111	16,162	15,819	13,481	12,879	13,292
2004	29,835	28,827	29,288	16,192	15,847	13,643	12,979	13,441
2005	30,101	29,027	29,518	16,301	15,937	13,800	13,090	13,581
2006 (p)	30,321	29,284	29,776	16,435	16,092	13,886	13,191	13,684
2007 (p)	30,536	29,446	29,983	16,543	16,196	13,992	13,250	13,787
2008 (p)	30,709	29,569	30,141	16,622	16,265	14,087	13,304	13,876
2009 (p)	30,873	29,693	30,286	16,695	16,327	14,178	13,366	13,959
2010 (p)	31,038	29,821	30,430	16,770	16,388	14,269	13,433	14,042
2011 (p)	31,210	29,943	30,576	16,838	16,441	14,371	13,501	14,135
2012 (p)	31,337	30,027	30,661	16,879	16,457	14,458	13,570	14,204
2013 (p)	31,459	30,110	30,748	16,918	16,474	14,542	13,636	14,274
2014 (p)	31,582	30,196	30,847	16,958	16,500	14,624	13,695	14,347
2015 (p)	31,708	30,285	30,955	17,003	16,533	14,706	13,752	14,421
2016 (p)	31,824	30,363	31,057	17,043	16,565	14,781	13,797	14,491
2017 (p)	31,908	30,419	31,144	17,065	16,590	14,843	13,829	14,554
2018 (p)	31,976	30,453	31,214	17,080	16,606	14,896	13,847	14,608
2019 (p)	32,046	30,481	31,279	17,095	16,619	14,950	13,862	14,660
2020 (p)	32,125	30,510	31,350	17,115	16,634	15,010	13,876	14,716

[1] Historical estimates are consistent with published National Statistics in the Integrated First Release. Source: ONS
For more details on how historical estimates were calculated see Annex A.

[2] Figures refer to the spring quarter of each year (March to May)

* Full-time education

Economically active[1,2], Men

United Kingdom (thousands), Seasonally adjusted

	16-17 (In FTE*)	16-17 (Not in FTE*)	18-24 (In FTE*)	18-24 (Not In FTE*)	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
1984	152	414	65	2,804	1,891	1,837	1,973	1,594	1,489	1,410	1,260	880	161	131
1985	157	424	84	2,821	1,950	1,818	1,998	1,632	1,492	1,382	1,243	833	168	125
1986	169	405	86	2,785	1,996	1,819	1,989	1,682	1,479	1,361	1,219	788	163	114
1987	181	370	90	2,786	2,062	1,836	1,912	1,797	1,466	1,343	1,183	792	166	111
1988	213	366	99	2,753	2,112	1,855	1,849	1,893	1,490	1,357	1,188	775	163	129
1989	193	363	108	2,710	2,161	1,881	1,824	1,928	1,533	1,378	1,168	765	199	130
1990	193	311	136	2,621	2,216	1,928	1,791	1,953	1,580	1,372	1,178	757	196	127
1991	198	277	151	2,461	2,220	1,982	1,788	1,964	1,625	1,358	1,161	752	199	117
1992	172	254	141	2,307	2,182	2,016	1,796	1,869	1,729	1,357	1,124	723	186	131
1993	140	222	146	2,212	2,151	2,056	1,804	1,802	1,801	1,361	1,100	711	164	104
1994	173	200	184	2,041	2,137	2,097	1,836	1,736	1,841	1,381	1,119	689	173	102
1995	181	202	194	1,934	2,097	2,128	1,882	1,727	1,848	1,423	1,092	676	186	111
1996	214	216	212	1,852	2,041	2,146	1,922	1,717	1,842	1,469	1,112	666	168	110
1997	224	205	237	1,763	2,010	2,163	1,955	1,717	1,780	1,556	1,100	698	172	108
1998	214	215	257	1,682	1,963	2,159	1,995	1,757	1,686	1,640	1,116	681	185	97
1999	227	206	273	1,656	1,906	2,136	2,048	1,805	1,680	1,683	1,157	704	188	106
2000	234	194	275	1,679	1,860	2,127	2,108	1,852	1,661	1,706	1,184	709	179	112
2001	221	199	268	1,681	1,788	2,102	2,118	1,888	1,659	1,705	1,248	720	174	97
2002	226	187	292	1,723	1,730	2,056	2,139	1,929	1,696	1,637	1,346	714	198	100
2003	214	209	290	1,737	1,655	2,029	2,143	1,989	1,721	1,609	1,441	782	221	122
2004	214	201	310	1,771	1,642	1,957	2,145	2,017	1,741	1,571	1,465	814	228	116
2005	207	199	305	1,796	1,677	1,905	2,111	2,051	1,788	1,578	1,487	835	244	120
2006 (p)	214	191	323	1,860	1,725	1,848	2,092	2,094	1,830	1,572	1,480	864	228	115
2007 (p)	212	189	335	1,893	1,763	1,785	2,062	2,118	1,877	1,591	1,436	936	232	116
2008 (p)	209	186	343	1,919	1,799	1,740	2,022	2,119	1,920	1,620	1,397	989	239	117
2009 (p)	202	180	351	1,938	1,830	1,734	1,967	2,109	1,964	1,653	1,380	1,020	250	119
2010 (p)	194	173	357	1,940	1,861	1,754	1,912	2,086	2,007	1,693	1,373	1,039	261	120
2011 (p)	187	168	360	1,934	1,891	1,786	1,847	2,064	2,037	1,740	1,379	1,048	276	121
2012 (p)	181	164	362	1,922	1,933	1,818	1,783	2,033	2,057	1,786	1,398	1,019	300	123
2013 (p)	179	161	362	1,899	1,975	1,855	1,739	1,994	2,059	1,830	1,426	995	319	125
2014 (p)	175	157	363	1,878	2,000	1,887	1,733	1,940	2,050	1,876	1,456	987	330	128
2015 (p)	169	151	363	1,857	2,008	1,918	1,753	1,887	2,028	1,920	1,494	986	339	131
2016 (p)	162	146	361	1,826	2,020	1,949	1,785	1,824	2,008	1,952	1,537	994	344	133
2017 (p)	156	139	359	1,795	2,026	1,991	1,817	1,760	1,979	1,975	1,580	1,011	336	138
2018 (p)	151	134	357	1,765	2,013	2,035	1,854	1,717	1,942	1,981	1,621	1,035	331	143
2019 (p)	150	134	355	1,733	1,999	2,060	1,885	1,712	1,890	1,976	1,664	1,061	330	146
2020 (p)	152	135	353	1,704	1,977	2,069	1,917	1,731	1,839	1,958	1,705	1,092	332	149

[1] Historical estimates are consistent with published National Statistics in the Integrated First Release. For more details on how historical estimates were calculated see Annex A.

Source: ONS

[2] Figures refer to the spring quarter of each year (March to May)

* Full-time education

Economically active[1,2], Women

United Kingdom (thousands), Seasonally adjusted

	16-17 (In FTE*)	16-17 (Not in FTE*)	18-24 (In FTE*)	18-24 (Not In FTE*)	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
1984	166	375	60	2,280	1,238	1,145	1,404	1,215	1,139	1,035	828	378	102	60
1985	205	346	85	2,311	1,302	1,164	1,446	1,258	1,158	1,003	825	322	92	64
1986	221	339	96	2,333	1,370	1,207	1,450	1,317	1,168	1,008	814	316	90	54
1987	223	326	104	2,353	1,443	1,241	1,424	1,418	1,167	1,016	824	311	83	62
1988	236	320	114	2,295	1,512	1,317	1,413	1,523	1,185	1,009	810	312	91	59
1989	232	291	115	2,300	1,600	1,355	1,389	1,557	1,241	1,045	817	353	118	63
1990	234	235	139	2,198	1,650	1,411	1,408	1,605	1,291	1,052	816	350	119	60
1991	238	215	151	2,084	1,661	1,454	1,404	1,633	1,328	1,053	803	365	108	60
1992	205	187	149	1,936	1,662	1,472	1,415	1,571	1,457	1,058	799	345	115	69
1993	187	161	151	1,846	1,675	1,531	1,436	1,520	1,523	1,088	805	361	112	64
1994	192	164	186	1,691	1,661	1,579	1,459	1,500	1,569	1,130	830	367	107	57
1995	222	146	195	1,613	1,658	1,614	1,505	1,463	1,587	1,159	842	356	100	60
1996	249	146	224	1,555	1,637	1,666	1,537	1,485	1,618	1,209	819	358	105	51
1997	283	152	262	1,458	1,638	1,703	1,598	1,493	1,549	1,320	801	383	110	54
1998	284	141	276	1,421	1,607	1,707	1,634	1,526	1,509	1,391	839	343	112	59
1999	281	131	300	1,400	1,592	1,732	1,691	1,560	1,500	1,429	879	365	120	58
2000	284	134	311	1,403	1,552	1,720	1,740	1,607	1,487	1,463	933	383	114	59
2001	263	133	322	1,397	1,493	1,696	1,790	1,655	1,491	1,471	981	406	102	55
2002	275	129	299	1,464	1,451	1,668	1,803	1,694	1,515	1,450	1,075	418	129	59
2003	279	135	339	1,425	1,394	1,624	1,803	1,731	1,541	1,422	1,186	413	134	54
2004	284	123	355	1,479	1,378	1,604	1,782	1,779	1,570	1,414	1,211	462	136	66
2005	277	126	344	1,467	1,411	1,589	1,755	1,840	1,632	1,404	1,244	491	147	72
2006 (p)	284	116	364	1,506	1,460	1,516	1,754	1,863	1,660	1,410	1,258	493	140	62
2007 (p)	285	112	378	1,518	1,503	1,465	1,741	1,878	1,706	1,437	1,226	537	143	62
2008 (p)	284	110	389	1,534	1,541	1,431	1,711	1,882	1,751	1,473	1,200	571	148	63
2009 (p)	277	105	397	1,546	1,568	1,428	1,668	1,875	1,797	1,510	1,193	594	155	63
2010 (p)	269	101	402	1,550	1,589	1,451	1,622	1,856	1,841	1,554	1,196	609	163	64
2011 (p)	263	96	406	1,547	1,606	1,489	1,565	1,841	1,871	1,605	1,212	633	173	64
2012 (p)	258	92	409	1,537	1,633	1,528	1,508	1,821	1,888	1,657	1,239	634	189	65
2013 (p)	257	90	409	1,520	1,664	1,564	1,470	1,790	1,890	1,709	1,273	638	202	66
2014 (p)	254	88	409	1,504	1,687	1,591	1,465	1,743	1,884	1,763	1,310	652	210	67
2015 (p)	248	84	409	1,489	1,698	1,612	1,486	1,694	1,865	1,815	1,352	669	217	68
2016 (p)	241	80	407	1,468	1,712	1,629	1,522	1,634	1,851	1,853	1,401	694	221	69
2017 (p)	234	77	405	1,445	1,719	1,654	1,558	1,574	1,832	1,879	1,452	725	217	72
2018 (p)	229	74	403	1,424	1,712	1,686	1,592	1,534	1,801	1,890	1,502	761	214	74
2019 (p)	230	72	400	1,402	1,704	1,707	1,617	1,528	1,754	1,893	1,555	798	215	76
2020 (p)	236	72	398	1,383	1,689	1,718	1,635	1,549	1,705	1,883	1,606	839	217	77

[1] Historical estimates are consistent with published National Statistics in the Integrated First Release. For more details on how historical estimates were calculated see Annex A.

Source: ONS

[2] Figures refer to the spring quarter of each year (March to May)

* Full-time education

Economically active[1,2], People

United Kingdom (thousands), Seasonally adjusted

	16-17 (In FTE*)	16-17 (Not in FTE*)	18-24 (In FTE*)	18-24 (Not In FTE*)	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
1984	318	789	125	5,084	3,129	2,982	3,377	2,808	2,628	2,445	2,088	1,258	263	192
1985	362	769	169	5,132	3,253	2,982	3,444	2,890	2,651	2,385	2,068	1,156	260	189
1986	390	744	182	5,117	3,366	3,025	3,439	2,999	2,647	2,368	2,033	1,104	253	168
1987	405	696	193	5,138	3,505	3,077	3,336	3,216	2,633	2,359	2,007	1,103	250	173
1988	449	686	212	5,048	3,624	3,172	3,263	3,416	2,675	2,366	1,998	1,087	254	189
1989	425	653	223	5,010	3,761	3,235	3,213	3,485	2,774	2,423	1,984	1,118	317	193
1990	427	545	275	4,819	3,867	3,339	3,199	3,557	2,871	2,424	1,994	1,107	315	187
1991	435	492	301	4,544	3,880	3,436	3,192	3,597	2,953	2,411	1,964	1,117	307	177
1992	378	441	290	4,243	3,844	3,489	3,210	3,440	3,186	2,414	1,923	1,068	301	200
1993	327	383	296	4,057	3,826	3,588	3,240	3,322	3,324	2,449	1,905	1,071	276	168
1994	364	364	370	3,732	3,798	3,676	3,295	3,236	3,410	2,510	1,949	1,056	280	159
1995	403	348	389	3,546	3,755	3,742	3,387	3,190	3,435	2,582	1,934	1,032	286	171
1996	463	362	436	3,407	3,678	3,812	3,459	3,203	3,460	2,678	1,931	1,024	272	161
1997	507	358	500	3,221	3,648	3,866	3,553	3,211	3,329	2,876	1,901	1,081	281	162
1998	498	356	533	3,103	3,570	3,867	3,629	3,283	3,195	3,031	1,955	1,024	297	156
1999	508	337	573	3,056	3,497	3,868	3,739	3,365	3,180	3,112	2,036	1,069	308	164
2000	518	328	586	3,082	3,412	3,847	3,847	3,460	3,148	3,169	2,117	1,092	293	171
2001	484	333	590	3,077	3,281	3,797	3,909	3,543	3,150	3,176	2,229	1,126	276	152
2002	501	315	591	3,187	3,180	3,723	3,942	3,623	3,210	3,086	2,421	1,132	327	159
2003	494	344	629	3,162	3,048	3,653	3,946	3,720	3,261	3,031	2,627	1,195	355	177
2004	498	324	665	3,250	3,020	3,561	3,927	3,796	3,311	2,985	2,676	1,275	364	182
2005	484	324	650	3,262	3,088	3,493	3,865	3,891	3,421	2,982	2,731	1,326	390	192
2006 (p)	498	306	687	3,367	3,185	3,365	3,847	3,957	3,490	2,982	2,738	1,356	368	177
2007 (p)	498	301	713	3,411	3,266	3,250	3,804	3,995	3,583	3,028	2,662	1,472	375	178
2008 (p)	493	296	732	3,452	3,340	3,171	3,733	4,001	3,671	3,092	2,596	1,561	388	180
2009 (p)	479	285	748	3,483	3,399	3,162	3,635	3,984	3,762	3,162	2,573	1,613	405	182
2010 (p)	463	274	759	3,490	3,451	3,205	3,534	3,942	3,848	3,247	2,569	1,648	424	184
2011 (p)	450	264	766	3,481	3,497	3,275	3,412	3,906	3,908	3,345	2,591	1,681	448	185
2012 (p)	439	256	771	3,459	3,565	3,346	3,291	3,855	3,945	3,443	2,637	1,653	489	187
2013 (p)	435	251	771	3,419	3,639	3,419	3,209	3,784	3,949	3,539	2,699	1,633	521	191
2014 (p)	428	245	771	3,381	3,686	3,478	3,198	3,683	3,934	3,639	2,766	1,638	541	194
2015 (p)	416	235	772	3,346	3,706	3,530	3,239	3,581	3,894	3,735	2,847	1,655	555	198
2016 (p)	403	226	769	3,295	3,732	3,577	3,307	3,457	3,860	3,805	2,938	1,688	565	203
2017 (p)	390	216	764	3,241	3,745	3,646	3,376	3,334	3,811	3,854	3,032	1,736	553	210
2018 (p)	381	208	760	3,189	3,726	3,720	3,446	3,251	3,743	3,871	3,124	1,796	545	217
2019 (p)	380	206	755	3,135	3,703	3,768	3,502	3,239	3,645	3,868	3,218	1,859	545	222
2020 (p)	388	207	752	3,088	3,666	3,788	3,553	3,281	3,544	3,841	3,311	1,931	549	226

[1] Historical estimates are consistent with published National Statistics in the Integrated First Release. For more details on how historical estimates were calculated see Annex A.

Source: ONS

[2] Figures refer to the spring quarter of each year (March to May)

* Full-time education

ANNEX E: Results of Alternative Methods for Accounting for State Pension Age Equalisation

Economic Activity Rates[1,2]

United Kingdom (per cent), Seasonally adjusted

	Women, Aged 60-64 (Method 1)[3]	Women, Aged 60-64 (Method 2)[3]	Women, Aged 16 and Over (Method 1)[3]	Women, Aged 16 and Over (Method 2)[3]	Women, Aged 16-64 (Method 1)[3]	Women, Aged 16-64 (Method 2)[3]	People, Aged 16 and Over (Method 1)[3]	People, Aged 16 and Over (Method 2)[3]	People, Aged 16-64 (Method 1)[3]	People, Aged 16-64 (Method 2)[3]
1971	..	..	44.6	44.6	..	..	63.1	63.1	..	..
1972	..	..	44.9	44.9	..	..	63.1	63.1	..	..
1973	..	..	45.8	45.8	..	..	63.5	63.5	..	..
1974	..	..	46.3	46.3	..	..	63.1	63.1	..	..
1975	..	..	46.6	46.6	..	..	63.2	63.2	..	..
1976	..	..	46.7	46.7	..	..	63.2	63.2	..	..
1977	..	..	46.9	46.9	..	..	62.9	62.9	..	..
1978	..	..	47.3	47.3	..	..	62.7	62.7	..	..
1979	..	..	47.7	47.7	..	..	62.7	62.7	..	..
1980	..	..	48.5	48.5	..	..	63.0	63.0	..	..
1981	..	..	48.7	48.7	..	..	63.0	63.0	..	..
1982	..	..	48.3	48.3	..	..	62.2	62.2	..	..
1983	..	..	47.8	47.8	..	..	61.4	61.4	..	..
1984	22.1	22.1	50.2	50.2	62.9	62.9	62.9	62.9	75.8	75.8
1985	19.3	19.3	50.6	50.6	63.5	63.5	63.0	63.0	76.1	76.1
1986	19.6	19.6	51.2	51.2	64.5	64.5	63.0	63.0	76.3	76.3
1987	19.8	19.8	51.9	51.9	65.5	65.5	63.2	63.2	76.8	76.8
1988	20.3	20.3	52.6	52.6	66.4	66.4	63.8	63.8	77.5	77.5
1989	23.3	23.3	53.6	53.6	67.6	67.6	64.4	64.4	78.1	78.1
1990	23.3	23.3	54.0	54.0	68.0	68.0	64.5	64.5	78.3	78.3
1991	24.5	24.5	53.8	53.8	67.8	67.8	64.1	64.1	77.9	77.9
1992	23.4	23.4	53.2	53.2	67.1	67.1	63.2	63.2	76.8	76.8
1993	24.6	24.6	53.3	53.3	67.2	67.2	62.7	62.7	76.5	76.5
1994	25.4	25.4	53.3	53.3	67.3	67.3	62.6	62.6	76.3	76.3
1995	24.9	24.9	53.3	53.3	67.3	67.3	62.4	62.4	76.1	76.1
1996	25.2	25.2	53.8	53.8	67.9	67.9	62.5	62.5	76.3	76.3
1997	27.0	27.0	54.2	54.2	68.3	68.3	62.6	62.6	76.4	76.4
1998	23.9	23.9	54.2	54.2	68.2	68.2	62.4	62.4	76.1	76.1
1999	25.1	25.1	54.8	54.8	68.8	68.8	62.8	62.8	76.6	76.6
2000	26.1	26.1	55.2	55.2	69.2	69.2	63.1	63.1	76.8	76.8
2001	27.7	27.7	55.1	55.1	69.2	69.2	62.7	62.7	76.6	76.6
2002	28.5	28.5	55.6	55.6	69.6	69.6	62.9	62.9	76.7	76.7
2003	27.7	27.7	55.5	55.5	69.5	69.5	63.1	63.1	76.7	76.7
2004	30.2	30.2	55.9	55.9	69.8	69.8	63.0	63.0	76.7	76.7
2005	31.2	31.2	56.1	56.1	69.9	69.9	63.1	63.1	76.6	76.6
2006 (p)	30.0	30.0	56.1	56.1	69.9	69.9	63.0	63.0	76.6	76.6
2007 (p)	30.5	30.5	56.1	56.1	69.9	69.9	63.0	63.0	76.6	76.6
2008 (p)	31.0	31.0	56.2	56.2	70.0	70.0	62.9	62.9	76.5	76.5
2009 (p)	31.4	31.4	56.2	56.2	70.2	70.2	62.8	62.8	76.6	76.6
2010 (p)	31.9	31.9	56.3	56.3	70.4	70.4	62.8	62.8	76.7	76.7
2011 (p)	33.1	33.9	56.4	56.5	70.6	70.7	62.7	62.8	76.9	76.9
2012 (p)	34.3	36.0	56.5	56.6	71.1	71.2	62.6	62.7	77.1	77.2
2013 (p)	35.5	38.3	56.5	56.7	71.4	71.7	62.5	62.6	77.3	77.5
2014 (p)	36.8	40.6	56.5	56.8	71.7	72.1	62.4	62.5	77.5	77.7
2015 (p)	38.0	43.0	56.6	56.9	72.0	72.5	62.3	62.5	77.7	77.9
2016 (p)	39.3	45.4	56.6	57.1	72.3	72.8	62.2	62.4	77.8	78.1
2017 (p)	40.5	47.7	56.7	57.2	72.5	73.2	62.1	62.4	77.9	78.3
2018 (p)	41.7	50.1	56.7	57.2	72.8	73.5	62.0	62.3	78.0	78.4
2019 (p)	42.9	52.5	56.6	57.3	72.9	73.8	61.9	62.2	78.1	78.5
2020 (p)	44.1	54.9	56.6	57.4	73.1	74.1	61.7	62.1	78.1	78.6

[1] Historical estimates are consistent with published National Statistics in the Integrated First Release.

For more details on how historical estimates were calculated see Annex A.

Source: ONS

[2] Figures refer to the spring quarter of each year (March to May)

[3] 'Method 1' refers to the modelling approach and 'Method 2' refers to the male-female ratio approach. See Annex B.