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Stalling life expectancy in the UK: a local analysis

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Abstract

Over the past century, life expectancy has increased steadily, yet recent years have witnessed a stall in that improvement in the UK and many other countries. Since 2010, national life expectancy improvement has slowed, halted or even reversed in many developed countries and this become an increasing concern for media, politicians, academics and the public. What is not clear is whether the stall in life expectancy occurred only in some parts of Britain or whether it is a more widespread demographic trend experienced over the whole of the UK. Spatial patterns in the extent of stall in life expectancy may provide clues as to the underlying causes that remain contested. This research project quantifies the stall in life expectancy in districts across the UK using a time series of mortality statistics then examines whether area characteristics are predictive of the kinds of places where people are living shorter lives. The key finding is that the stall in life expectancy is widespread across areas within the UK and not clearly related to area characteristics such as indicators of area deprivation.

Introduction

After 100 years of improvement in life expectancy, it is now generally accepted that in many countries these improvements stalled or even reversed in the years following 2010. Each of the UK's constituent countries experienced stall in life expectancy that is confirmed by National Statistical Agencies. A number of theories are suggested and these are explored below.

One theory proposes that cuts in public spending following the financial crisis of 2008 are to blame for the stall/decline in life expectancy improvement. It is due some to cuts in the NHS that all individuals are not receiving fair treatment plans or care. For example, the Independent stated 'The number of people in the UK who receive state-funded care in the home or in their community has fallen from around 1.8 million in 2008-09 to 1.3 million in 2012-13'. One issue with this theory is that the stall in life expectancy is not experienced in all countries including some that both experienced the financial crisis and implemented austerity policies.

Life expectancy is also dependant on factors such as flu outbreaks or cold winters. For example, in the winter months from 2014 to 2015, 2016 to 2017 and 2017 to 2018 there was a large increase in deaths as many people caught the flu. The flu subtype A (H3N2) mostly affects the elderly and young people leading to large increases in hospital admissions in 2015 at these ages and potential for higher mortality rates and consequently reductions in life expectancy. A key weakness of such theories is that the UK has not experienced a prolonged spell of cold winters or flu outbreaks for the duration of the observed stall in life expectancy.

Other non-communicable diseases conditions linked to unhealthy life choices that are increasing in prevalence may contribute to stalling or decreasing life expectancy. For example, strokes are the third leading cause of death in England' and it is known that risk of suffering a stroke is reduced by leading healthy lifestyle. . If the population maintain healthy lifestyles then they might be expected to live longer. Unhealthy lifestyle choices include smoking, alcohol consumption, poor diet and lack of physical activity. The office for national statics implies smoking was the main cause of deaths in England as approximately 79,000 deaths were involved with smoking. Areas in the UK where there is a large population of smokers tend to have lower life expectancy than other areas. Consuming alcohol also has lasting, harmful, behavioural and damaging effects on the body, these can also cause a number of people to be admitted to hospitals as there were greater than 1,200 alcohol based hospital admissions out of 100,000 individuals in Blackpool alone. The issues linked to alcohol can lead to lower life expectancy due to its powerful effects it has on the body. A healthy diet is also important for a longer life expectancy. A healthy diet includes fruit and vegetables, vitamins and plenty of water. Successfully more than half of England completes their five portions of fruit and vegetables per day in 2015, which may lead to a happier, healthier and longer life. The final healthy habit was physical exercise, moderately an individual should complete a minimum of 150 minutes of exercise per week, and this was successful obtained by 57% of adults in England between 2013 and 2015. Obtaining these

healthy habits on a daily basis in moderation will leading you to having a longer life expectancy to others who ignore these factors and their consequences. An issues with this theory that lifestyle choices underpin the stall in life expectancy some unhealthy lifestyle choices appear to be on the increase (e.g. sedentary lifestyles) others are declining (e.g. smoking and alcohol consumption among young people)

This project will examine which parts of the UK experienced a stall in life expectancy and explore whether the stall is related to particular area characteristics. In doing so it will reflect on the plausible drivers of the demographic trends in mortality that are observed. the specific research question for this report are:

1. After 2010 was the stall in life expectancy experienced similarly all over the UK?
2. Do certain characteristics of areas in the UK predispose them to a stall life expectancy?

Data and Methods

The data for the project was taken from the Nomis website. The focus of the project is on districts within England and Wales and female life expectancy at 65. Data was taken from this specific gender and age group as research suggests a particularly pronounced stall in life expectancy in this group over recent years. The data distinguished 337 districts and a period of years spanning the stall in life expectancy. Data from the 2001 census, accessed through Nomis gave area characteristics including the % of unemployed, the % aged over 65, the % from a non-white ethnic group, the % in rented accommodation, and the % divorced in each district. The stall in life expectancy was operationalised by calculating the change in life expectancy (LE) prior to 2010 (2006 to 2010) and the change in life expectancy after 2010 (2010 to 2014) as below:

Stall in LE = change in LE between 2010 and 2014 - change in LE between 2006 and 2010

We observe a stall in LE if the stall in LE variable is negative, indicating the change in LE after 2010 is less than observed to the change prior to 2010.

Dependant variable:

- LE stall variable (less than zero indicates a stall in LE and greater than zero the opposite; faster improvement in LE after 2010 compared to before)

Independent variables:

- %Non-white- people who are from a non-white ethnic background
- % rented- this shows peoples income
- % divorced- show people stability
- % over 65- people over 65 in that area
- %unemployed- this shows people income, lifestyle

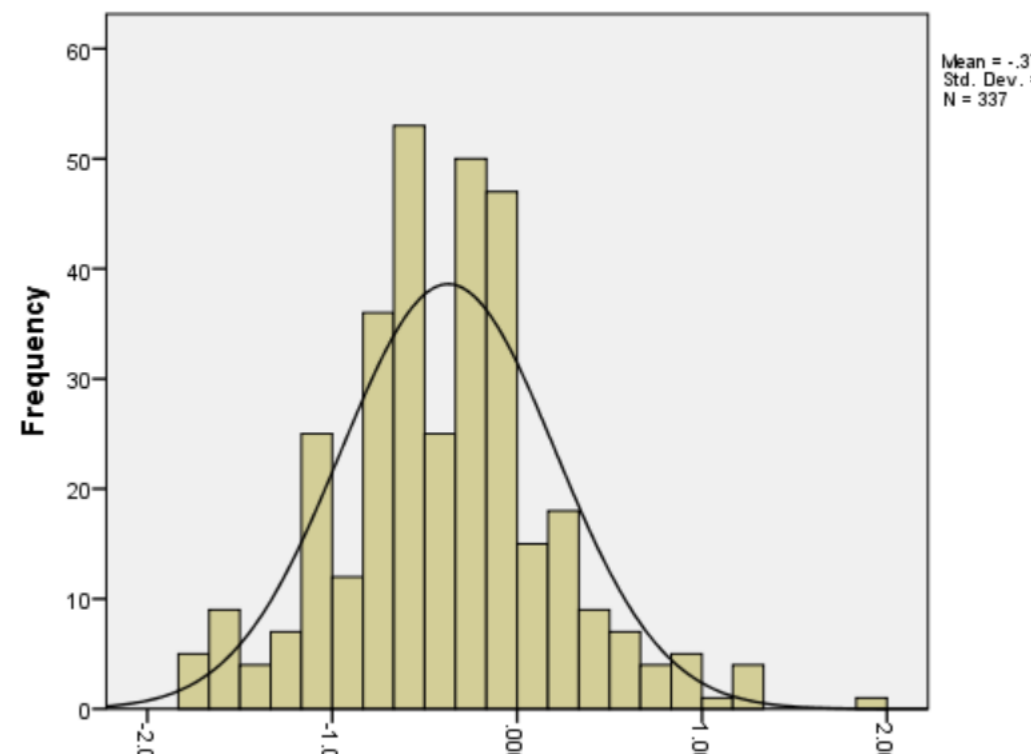
Life expectancy is a measure of long a person lives for. Over years life expectancy of populations can change. Life expectancy at birth is a measure of how long a new born baby can live for if he or she experienced the current age and sex-specific death rates over the course of their entire life. Life expectancy at an older age, 65, similarly is defined as a measure of approximately how long an individual at that age can live for if the age/sex specific death rates remain the same for the remainder of their life.

The scatter graphs were created on Excel between the dependant variable and each of the independent variables. R square and regression line were added to these graphs to add interpretation of the association on the scatter graphs and its strength. A Histogram was created using R for the dependant variable, a normal curve was added to the histogram and analysis was then extracted from it.

Results

Chart 1 shows the distribution of stall in life expectancy across districts in England and Wales. The majority of districts have a negative score indicating that most districts experienced slower increase in LE after 2010 prior to before.

Chart 1: Histogram of the stall in life expectancy variables



The following charts below show the relationship between the extent of stall in life expectancy and each of the area characteristics. There is little evidence of an association between the stall in life expectancy and any of the area characteristics included in the model. This is interesting in that it suggests the extent of stall in life expectancy is not explained by area deprivation (as conceptualised by deprivation or renting accommodation), it is not associated with the challenge of dealing with a large proportion of older people or something experienced in areas of high ethnic minority populations who are known to be disadvantaged and discriminated against in other areas. Rather it seems that a stall in life expectancy was widespread and not predicted by any of the area characteristics investigated here. One conclusion might be that if austerity is a cause of the stall in LE, it is likely that other factors are involved, since it is known that deprived areas with high unemployment who those hit hardest by such cuts.

Chart 2

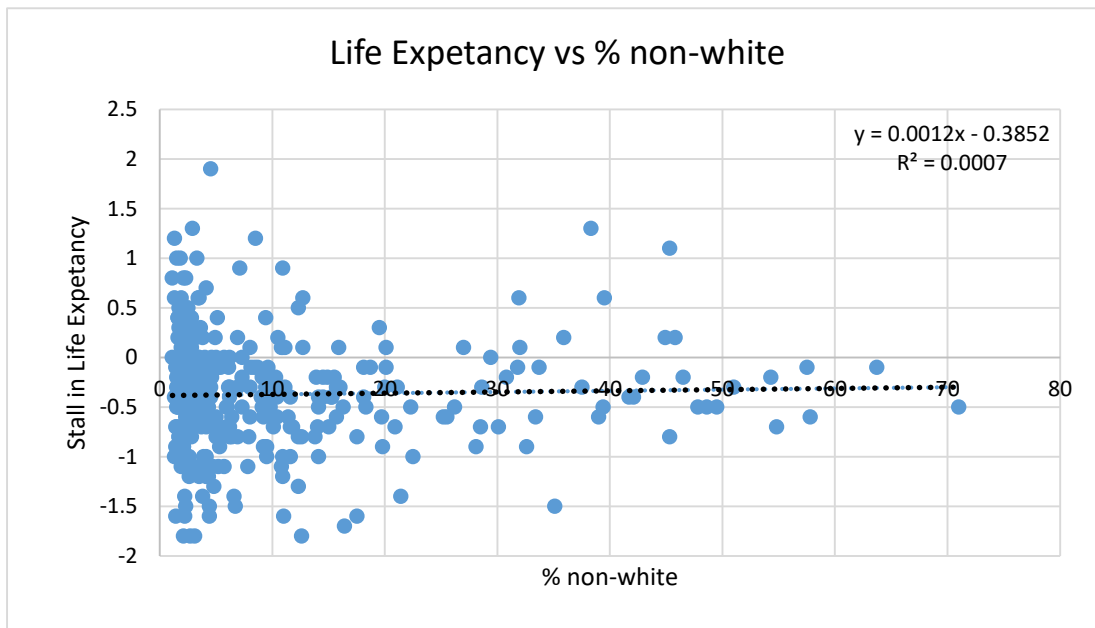


Chart 3

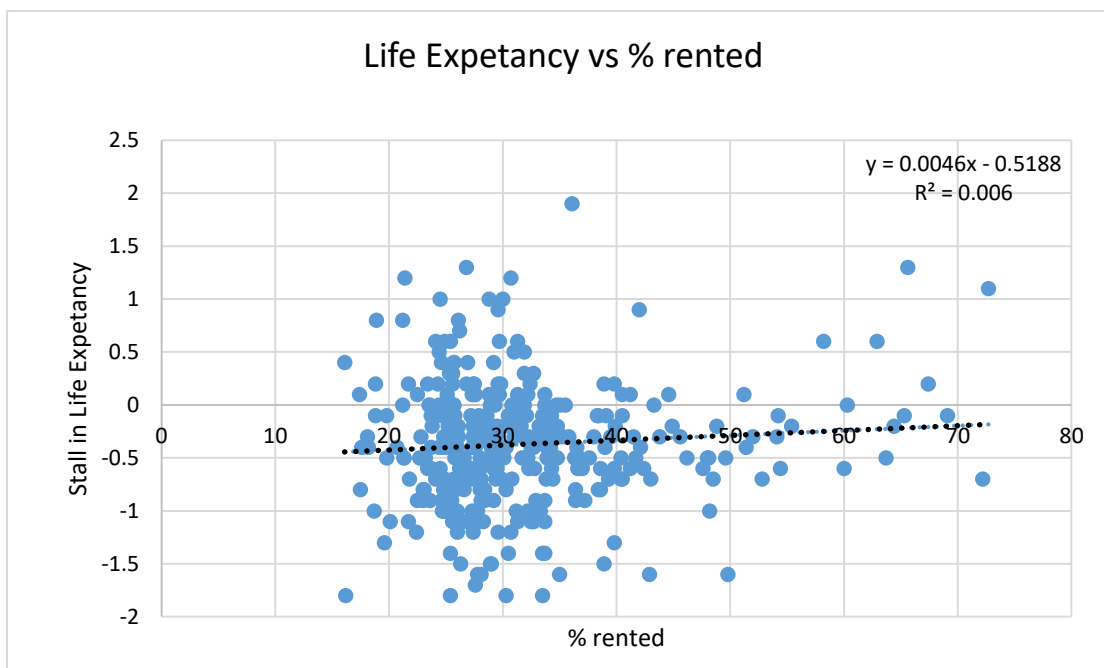


Chart 4

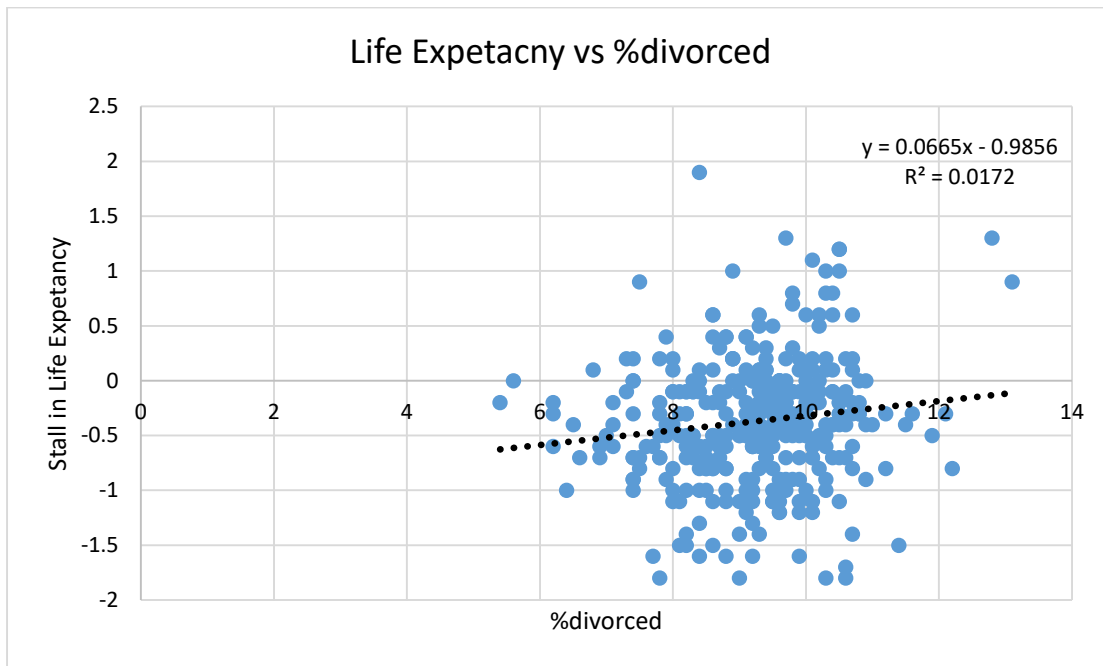


Chart 5

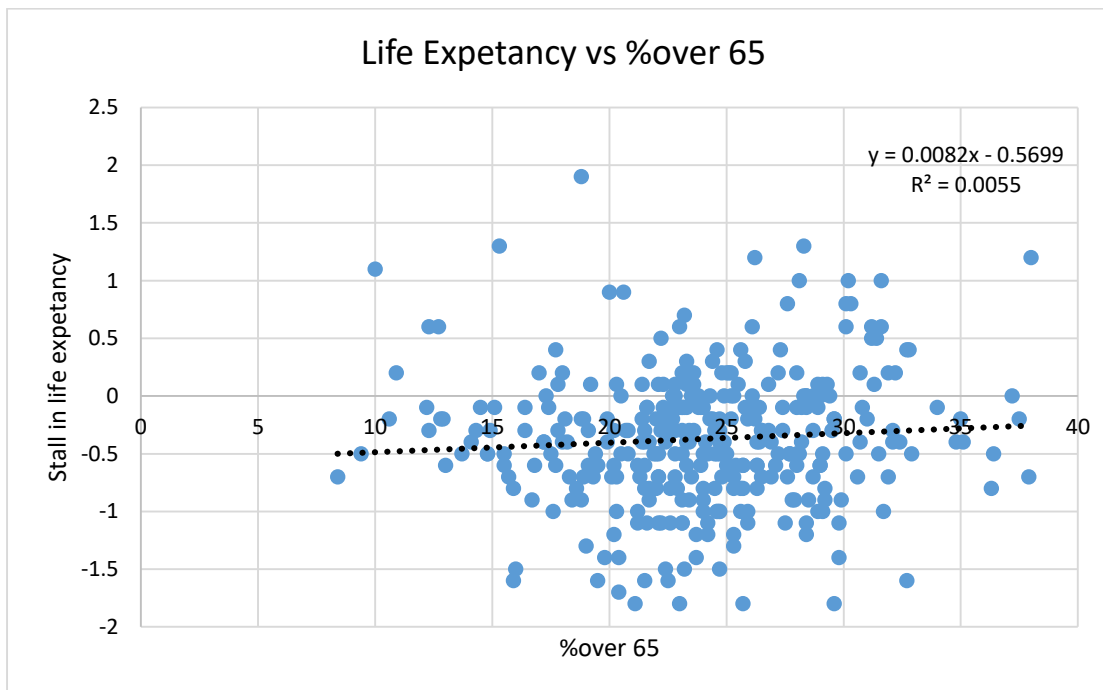
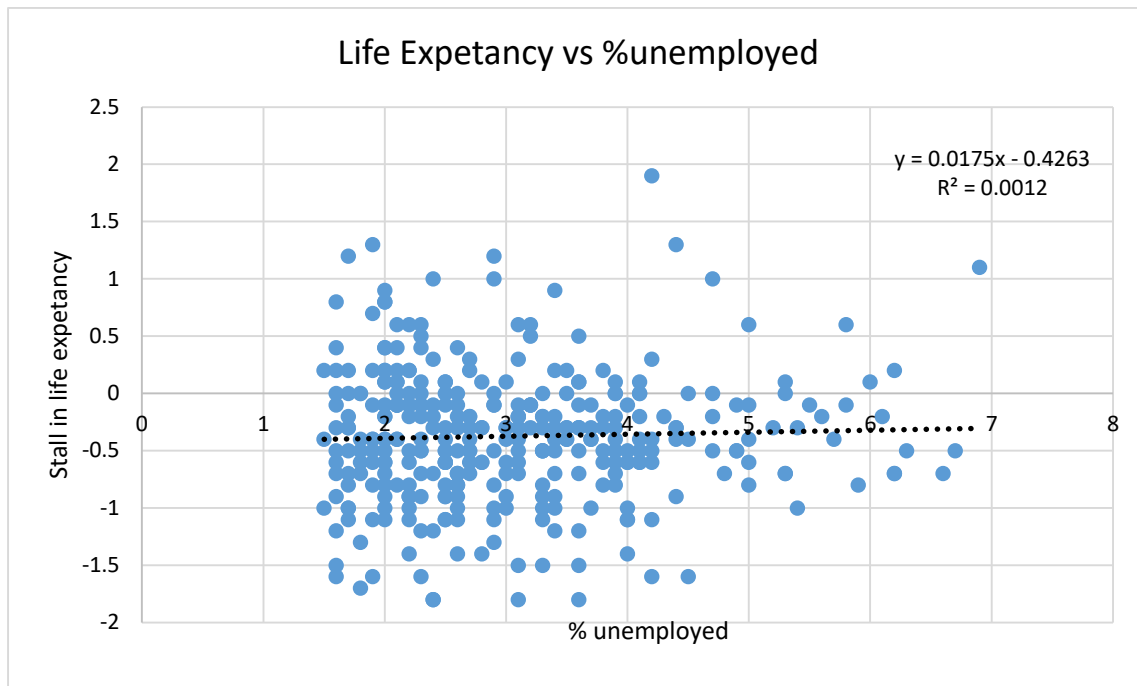


Chart 6



Reflections and further research

When collecting all the data from the source and extracting an excel file from it, I had to match up all information carefully by area code. This was extremely time consuming and some problems arose. Both sets of data were in a different order and so area codes/districts were missing. As a result of this the data had to be reset and done over. The data preparation for this project was very challenging as a result of bringing together data from various sources. However, this also offers a strengths, there is little research exploring stalling life expectancy within countries.

When collecting data for the whole UK the independent variables for Scotland were missing. This is due to the years for the rest of the data not matching in the correct columns. As a result of this my graphs are composed of England and Wales data only and this offers an avenue for further research.

Before creating the excel document with all data composed on it, I completed several practical exercises. These exercises were beneficial to me as it allowed me to before more familiar with excel and the data source website. During my research I continuously referred back to these practical exercises and used the knowledge I gained to form my own excel data document.

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Data source Reference

Website:

<https://www.nomisweb.co.uk/query/select/getdatasetbytheme.asp?opt=3&theme=&subgrp=>

Nomis

Office for National statistics

Access Date: 08/08/19