Changing for the better: healthy lifestyles in Coventry 2007-12

Director of Public Health – Annual Report 2013

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Glossary

Abbreviation	In full
APHO	Association of Public Health Observatories
ASH	Action on Smoking and Health
DALY	Disability Adjusted Life Years One DALY can be thought of as one lost year of "healthy" life. The sum of these DALYs across the population can be thought of as the difference between current poor health and ideal health
DSR	Directly Standardised Rate This means that the data has been age standardised using a standard population (in this case England 2011). Age standardisation allows a fair comparison between the years because it neutralises any differences in the two sample population which are due to age differences.
ERPHO	Eastern Region Public Health Observatory
GLS	General Lifestyle Survey
HSE	Health Survey for England
LSOA	Lower Super Output Area A census geographical area consisting of 1000 to 3000 head of population. They were designed to improve the reporting of small area statistics.
MEL	Measurement Evaluation Learning. (A consultancy company)
MSOA	Middle Super Output Area
PHE	Public Health England
SPSS	Statistical package

Forward

This is my first report as Director of Public Health for Coventry City Council. It is a national requirement for me to report each year on the major health issues facing the city. This year, I have looked at healthy behaviours in the city and how these have changed over time.

We know more and more about the impact of how we live our lives on how healthy we are, and how long we can expect to live for. Advances in medical science and technology, improved access to health care and better overall living standards mean that life expectancy is rising in the UK, as in most other Western countries. But we are now facing a situation in which the biggest threat to health comes from the day to day decisions about how we live our life and the environment in which we live.

We now know that four factors: a poor diet, smoking, excessive alcohol consumption and low levels of exercise globally account for nearly a third of the disease burden, preventable deaths and years spent in poor health. In the UK, more than 100,000 smokers die from smoking related causes every year. Nearly 7,000 people die as a result of liver disease caused by alcohol abuse and around 34,000 people die each year as a result of illness due to obesity, caused by a poor diet and physical inactivity.

Coventry is no exception. Over the three years from 2009-11, 2,904 people died prematurely from diseases which could have been prevented. As a city, we rank 126th out of 150 councils and 10th out of 15 cities with similar populations. As a city, we do particularly badly for cancer, lung disease and liver disease, all of which are heavily affected by lifestyle factors such as smoking, diet, exercise and alcohol.

We know that someone who exhibits all four of these unhealthy behaviours has the same chance of dying as someone 12 to 14 years older, who exhibits none of these unhealthy behaviours.

In the past, it was assumed that if you gave people information about the impact that smoking or a poor diet would have on their health, this would be enough to make them change. Although we need to understand what impact our choices are having on our health, we know that this is not enough. Our own experience tells us that making changes is not easy. For example, the environment in which we live does not help. It is often easier and cheaper to buy poor quality food than it is to buy healthy food and, in a throw-back to times when food was scarce, we are genetically pre-disposed to prefer high-calorie, high carbohydrate food to healthier options.

But collectively we can make a change. Smoking rates have fallen across the UK and in Coventry. This is down to a combination of national action (such as the ban on smoking in public places and increases in duty on cigarettes), local action (including increasing access to stop smoking services, local campaigns such as Coventry's Smokefree Playgrounds) and most importantly, the will-power and determination of smokers themselves who have made a tough decision to quit and stuck with it.

And it's not just about what each individual does; the action of one person can have a huge ripple-effect. We know that we're all influenced by what our friends, family and peers do. Each person that makes a change, whether it's stopping smoking, taking up exercise or cutting down on fizzy drinks acts as a role model for the people around them, helping to make healthy choices the norm across society.

There is much more to be done but this example shows that the right collective action can have a massive impact on health. The proof is there; across the UK we now have lower rates of lung cancer and heart disease than we did when smoking was at its peak, all of which is contributing to the rise in life expectancy that we are seeing. European countries, which have not taken the sort of action to tackle smoking we have seen in the UK, are not seeing the same improvements in these diseases.

My report shows that collective effort may be starting to have an impact in Coventry. Smoking rates are falling, fewer people are drinking excessively, and there are early signs that more people may be taking more exercise and eating healthier diets. Big changes to the face of the city, including new investment in cycle lanes and the new Friargate scheme are all helping to build a healthier environment, making it easier for us all to do the right thing, without having to make difficult decisions.

This is good news. But there is a lot more to be done, and as a city we have a long way to go. We are now in a similar position to where the rest of the UK was five years ago and the positive changes we have seen have not affected some of the people in the city with the worst health status.

My report sets out what we have done to tackle this and what we need to do next. With the leadership of the Health and Well-being Board and working with the people of Coventry, we need to redouble our efforts to make Coventry a healthy place to live and to support people who have the most to gain, to make the most of their health.

Finally, I would like to thank the thousands of people across the city who, over the last five years, have shown that it can be done. To all those people who have quit smoking, who got on their bicycles and joined us on the ring-road to welcome Lady Godiva back to the city earlier this year or who have taken one small step to improve their health, you are the people who are making this happen.

Dr Jane Moore
Director of Public Health for Coventry

Executive summary

Changing behaviours

We know that the more healthy and less unhealthy behaviours someone has, the healthier they are likely to be. We also know that if people smoke, have a poor diet, do not exercise and drink excessively, they are more likely to have particularly poor health, with the same chance of dying as someone 12 to 14 years older. We also know that these factors do not work in isolation. A smoker may worry that, if they quit, they will snack more and might gain weight and this may be a significant disincentive to them in making a change. But we also know that some people have developed successful strategies for dealing with this, for example by making sure that they have healthy snacks so that they can actually improve their diet, while they stop smoking. We know that making a change can be a powerful incentive to do more, someone who has just done their first ever 5k Race for Life or parkrun may feel empowered to improve their diet.

In order to target services at the right people and create the right environment to help people make the change, we need to understand whether people are actually making several changes – and which ones.

How many people have several unhealthy behaviours?

We looked at how many people had several unhealthy behaviours (out of smoking, poor diet, low levels of exercise and excessive drinking) and how this has changed over time. We looked at the number of unhealthy behaviours people had and those who were high risk (3 or 4 unhealthy behaviours). We found that the proportion of people with four unhealthy behaviours had fallen from 10% to 5% from 2007 to 2012. The biggest decrease was in men, from 12% to 6%. By 2012, the number of people reporting just one unhealthy behaviour had increased from 19% to 27%.

Overall, there was a reduction in those people with high risk from 38% to 24% between 2007 and 2012. Additionally, the proportion of people reporting none of the unhealthy behaviours more than doubled from 3.1% to 6.9%. In the long term, this is likely to translate into significant health benefits.

There are early, and welcome, signs that we are improving quicker than the rest of England, but we still have a long way to go. The improvements we have seen to date put us where England, as a whole, was five years ago. We know that there is a strong link between deprivation and healthy behaviours and the picture in Coventry is similar to other deprived areas but we need to make sure that the accelerated change we have seen continues.

Are we closing the health inequality gap?

As a city which faces significant health inequalities and large gaps in life expectancy between different parts of the city, we need to understand not just whether healthy behaviours are changing across the city but also whether these changes are affecting groups with the worst health outcomes.

We have therefore looked at how changes have affected different people across the city. We found that:

- Men are currently twice as likely to have several unhealthy behaviours as women.

- There have been reductions in the number of people with three or more unhealthy behaviours in all age groups. However, this change had not been seen in older age groups, particularly those aged 55-64.

- The level of unhealthy behaviours in those of White ethnic background is higher than for other groups. There have been particularly large improvements across a range of other ethnicities.

- Improvements in healthy behaviours have not been seen in people who are economically inactive.

- There have been improvements in healthy behaviours across all socio-economic groups (or deprivation quintiles). However, the biggest changes have been in the least deprived section of society and the smallest changes in the most deprived. So although health may be improving across the city, more progress will be needed to close the inequality gap.

    - There is an association between unhealthy behaviours and the most deprived parts of the city (measured by Middle Super Output Areas – an area smaller than wards) with a clustering of deprivation and unhealthy behaviours in Wood End, Henley and Manor Farm and Willenhall in particular.

    - However, some of the greatest areas of deprivation in the city do not have a very high level of unhealthy behaviours, including Upper Foleshill. This may be because of the high proportion of certain ethnic minority communities who do not drink for religious and cultural reasons.

Smoking

During the five years we looked at, smoking rates in the city fell by 3.6%, from 28.1% of adults in the city to 24.5%, around 4,400 less smokers. We estimate that 17 lives each year will be saved as a result of this improvement. This is similar to the national picture but may be slightly better than the rest of the West Midlands which saw a 2% fall from 2006 to 2011. This fall has been particularly significant in men, where smoking fell from 31% in 2007 to 26% in 2012, with particularly large falls in younger men and middle-aged men but there may have been a rise in the 55-64 age group.

More worryingly though, levels in women have showed fewer signs of improvement, falling by just 1%. Historically, more men have smoked than women; what we are now seeing is a levelling off of this difference. There was a decrease in smoking in men aged 16-24 between 2007 and 2012, but levels remained fairly stable for women. This is of concern and needs urgent action to understand the reasons why health messages and campaigns do not appear to be working with this group.

Excessive drinking

Low and moderate levels of drinking are known to be associated with some health benefits. However, drinking more than three units of alcohol for women or four for men, on at least one day per week is associated with worsening health and this risk increases as the overall weekly consumption goes up. Coventry has historically had high levels of excessive drinking, above the average for the West Midlands and for England.

Over the last five years, the city has seen big improvements in the percentage of people drinking within healthy limits, with a drop in excessive drinking from 46.8% in 2007 to 30.5% in 2012. In 2007, 55% of men were drinking too much: by 2012 this had fallen to 38%. Women have always had lower levels of excessive drinking but have also seen a big fall, from 38% to 23%. Although there have been falls in the rest of England, Coventry has seen a more rapid change than England or the West Midlands where alcohol consumption has fallen by 7%. The biggest improvement has been in men and women aged between 25 and 44, but all ages have seen a fall in excessive drinking.

This is good news and overall translates into an estimated 16 fewer deaths each year in Coventry. However, we still have a long way to go as, despite making rapid progress, drinking levels for both men and women appear to still be higher than in England as a whole.

Healthy weight: diet and physical activity in Coventry

There is increasing evidence of the impact of a healthy diet on health. Five portions of fruit and vegetables is the key measure for assessing a healthy diet, although other factors such as low meat consumption (particularly processed meat), low salt and a diet low in saturated fat are all important. Poor diet, coupled with low levels of physical activity, is associated with a range of health conditions, including certain cancers and cardiovascular disease. Physical activity (30 minutes of physical activity which raises your heartbeat five times a week) is associated with a range of health benefits, including improvements in mental well-being. We estimate that the improvements we have seen in diet and physical activity over the last five years will save around 14 lives each year.

Are we getting our five a day?

Our analysis shows that from 2007 to 2012, the proportion of people having a healthy diet (which we measured by assessing how many people ate five or more portions of fruit and vegetables a day) increased from 21% in 2007 to 28% in 2012. We do not have up-to-date comparative data for England or the West Midlands but this suggests that Coventry is now at a similar level to the rest of England. Women tend to have a better diet than men, suggesting that more needs to be done to encourage healthy eating in men. Locally, we have seen particular improvements in people in middle-age with a 15% increase in the number of men aged 45-54 who are eating five a day and a 24% improvement in women. This is the group which had the lowest levels of healthy eating in 2007, so this improvement is encouraging.

Physical activity

There are signs that there has been an increase in the number of people in the city taking regular exercise. In 2007, 31% of people were reaching recommended levels, compared to 39% in 2012. Women tend to have higher levels of exercise than men, although there has been an increase in both men and women. There is evidence of particular improvements in women aged 25-44 and men aged 16-24. There are some signs of slight improvements in men and women aged 65 and over, although this group has the lowest levels of exercise overall. Older people should continue to be a priority, as this is likely to have benefits for older people's physical and mental health, help reduce social isolation and help older people maintain an independent life for as long as possible.

What are we doing to tackle these issues?

The issues outlined in this report are not new and there has been a lot of work carried out across the city to drive change. This includes:

- **Smoking**: from 2009 to 2012, the city's smoking services have supported more than 11,000 people to stop smoking. Coventry's Smokefree Alliance have led the way in promoting local services, running campaigns and developing smokefree spaces, including smokefree playgrounds.

- **Alcohol**: around 1,650 people have been treated through the alcohol service during 2011 and 2012. There have also been a number of campaigns promoting healthy drinking, the harms of drinking in pregnancy. Coventry and Rugby Clinical Commissioning Group have set up a dedicated team in A&E, to identify problem drinkers and sign-post them to appropriate support. Local GPs also provided alcohol screening to their patients.

- **Healthy Weight**: through the Coventry Health Improvement Programme, the NHS and City Council have run a series of programmes to promote physical activity and healthy eating, including the 'One Body One Life' programme, 'Food Dudes' schools programme and local cooking clubs. Other schemes, such as the National Child Measurement Programme and school nursing service help support weight management in children and the local breastfeeding team support new mothers to get the best nutritional start in life.

- **NHS Health Checks**: A new responsibility for local councils, the NHS Health Checks programme, provided by GPs and an outreach team, screen people aged 40 and over for early signs of cardiovascular disease and diabetes and also offer general lifestyle advice.

- **Health trainers**: Coventry's Health Trainer service provides outreach support to communities to improve their health and well-being. During 2012/13 around 570 people were supported.

- **Coventry as a Marmot City:** Since health and well-being became a responsibility for the City Council and partners, as part of the Health and Well-being Board, a new programme of work has been developed to identify practical steps that can be taken to reduce health inequalities across the city**.**

Recommendations

This report provides a snapshot of what progress we are making as a city to improve healthy behaviours. Although we are making progress, much more remains to be done. In particular, we need to understand why some parts of our city, and some groups, have not been affected by the changes we have seen across the city as a whole. We need to make sure that the services we provide locally, to support people to make a change, are fit for purpose for the people who need them most. We need to use the Coventry Household Survey to measure future progress.

Five key challenges for the City

There are five key challenges for the city. I set out 10 key actions to address these challenges which, if implemented, with the support of the Health and Well-being Board will drive progress over the next five years.

1. **Focus on closing the health gap**. Although healthy behaviours have improved across the board, they have improved most in the most affluent parts of the city. If this pattern continues, the health inequality gap will continue to widen. We know that healthy behaviours are closely linked to people's life chances and that factors such as whether children get a good start in life and go on to meaningful employment set the preconditions for their healthy behaviours. The city's Marmot programme, which is overseen by our Health and Well-being Board, contains a detailed action plan to improve life chances and reduce health inequalities. Implementing this is a key priority.

2. **Target the areas of the city and the people where we have seen the least improvement**. Local services, such as stop smoking services, must be open to everyone but should be incentivised to particularly target the eight areas of the city and in the specific groups where we have seen the least improvement. The eight areas are Longford Village, Wood End, Henley and Manor Farm, Stoke and Stoke Heath, Upper Stoke, Wyken Sowe Valley, Torrington and Canley and Lime Tree Park.

3. **Work with local communities to empower them to change.** We need to talk to local people and local community and voluntary groups to understand their lifestyles, what would help them to make a change and how we can co-design and co-produce services with local people. We need to recognise and work with the assets that lie in our communities, through rolling out asset-based working.

4. **Use social marketing, social media & technology to support behaviour change**. We need to make better use of social marketing and social media to target specific health messages at our key audiences. Drawing on the large number of people across the city who have made a change over the last five years, we also need to identify local champions who can act as advocates in their local communities.

5. **Make it easier for people to make the change**. We need to make sure that when people want to make a change, it is easy for them to do so, that services are easy and convenient to access either face-to-face or on-line, and that front-line staff from across the city are trained and able to support people into the right services at the right time.

Top 10 actions to improve health behaviours

Challenge 1: Closing the health gap	**Challenge 2: Target areas of the city and groups where there has been least improvement**	**Challenge 3: Working with local communities to understand their needs**	**Challenge 4: Using social media to drive behaviour change**	**Challenge 5: Making it easier for people to make a change**
1. Work across the City Council and with partners to tackle the broader determinants of health by implementing the local 'Marmot' Plan.	2. Work with local lifestyle services to incentivise the uptake of services in priority parts of the city and in priority groups.	3. Carry out engagement work with people in the following groups to understand the barriers to improving health: -Young female smokers -Physically inactive older people -People who economically inactive 4. Use social mobilisation techniques to galvanise communities to increase physical activity 5. Recognise the assets that lie in local communities and embed asset-based ways of working across Coventry	6. Identify people who have successfully made changes to their health and use social media to promote their stories. 7. Develop bespoke local campaigns to target priority communities.	8. Develop a 'single point of access' for lifestyle services which is integrated with council customer contact points, including the call centre. 9. Roll out the 'Making Every Contact Count' training programme to support front line staff to promote healthy behaviours. 10. Roll out the NHS Health Checks programme to support people age 40 or over to change their behaviour and identify preventable disease early.

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Introduction

There is a wealth of evidence that demonstrates that lifestyle risk factors such as smoking, drinking excessively, not eating healthily and not exercising regularly, cause higher rates of illness and death. Therefore, a lifestyle risk factor is the exposure to danger through choice, as a result of the way a person lives their life[1].

The World Health Organisation published a report in 2002 which focussed on the risk to human health in terms of global disease burden, disability adjusted life years (DALYs) and death, as a consequence of how we lead our lives. One DALY can be thought of as one lost year of "healthy" life. The sum of these DALYs across the population can be thought of as the difference between current poor health and ideal health (where the entire population lives to an advanced age, free of disease and disability)[2]. This is known as the burden of disease.

The Size of the Problem

Figure 1 shows the outcomes of smoking, excessive alcohol intake, not eating healthily and not exercising regularly, in terms of global DALYs, disease and death. It shows that these four lifestyle risk factors contribute to 29% of the disease burden worldwide. Smoking accounts for 59,100,000 DALYs worldwide (4.1% of total DALYs) resulting in 4,900,000 deaths which make up 8.8% of total deaths worldwide. Excessive alcohol consumption is responsible for 58,300,000 (4.0%) DALYs worldwide, and 1,800,000 (3.2%) deaths. Low fruit and vegetable consumption results in 26,700,000 (1.8%) DALYs worldwide, and 2,700,000 (4.9%) deaths. Physical inactivity accounted for 19,000,000 (1.3%) DALYs worldwide, which led to 1,900,000 deaths (3.4%). Each of these lifestyle risk factors is linked to several diseases such as cancer and heart disease, the leading causes of morbidity and mortality worldwide.

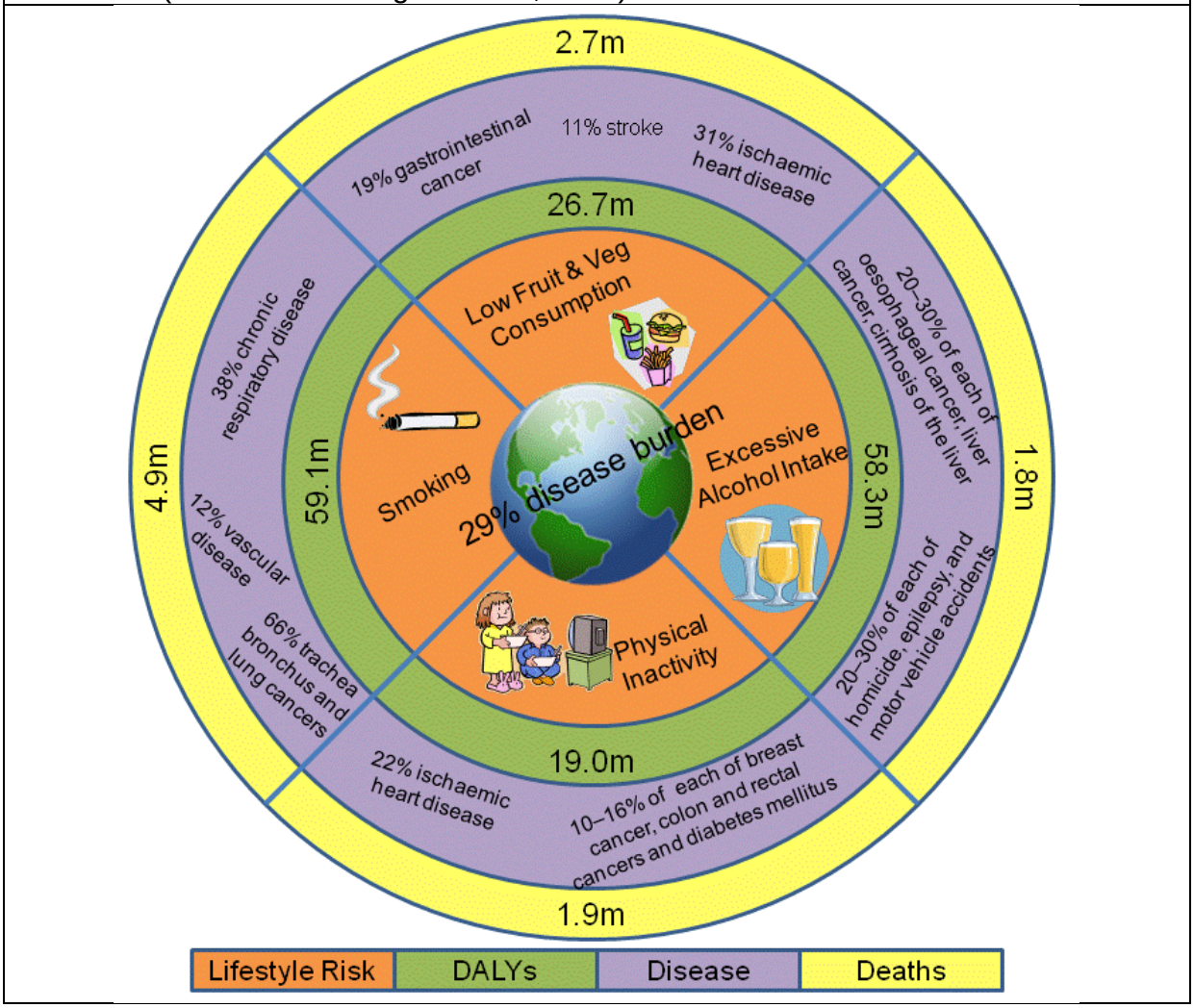
Figure 2 shows the preventable causes of deaths in England. The first three causes of death illustrated are attributed to the four lifestyle risk factors of smoking, excessive alcohol intake, not eating healthily and not exercising regularly. A study estimated that up to half of the cancers diagnosed in the Western World could be prevented if beneficial changes were made to lifestyle and behavioural factors[3].

In the UK over 100,000 smokers die from smoking related causes every year, as smoking accounts for over one-third of respiratory deaths, over one-quarter of cancer deaths, and about one-seventh of cardiovascular disease deaths[4]. In England, in 2011 there were 6,923 deaths directly related to alcohol; mainly due to alcoholic liver disease which accounted for 64% of all alcohol-related deaths in 2011[5]. Low levels of physical activity, and fruit and vegetable consumption lead to obesity, which is associated with major risk factors for cardiovascular disease and

[1] The Oxford Dictionary. Oxford University Press, 2012
[2] World Health Organization, 2013. Health statistics and health information systems. http://www.who.int/healthinfo/global_burden_disease/metrics_daly/en/
[3] F Li, 2009. Prevalence, trend, and sociodemographic association of five modifiable lifestyle risk factors for cancer in Alberta and Canada. Cancer Causes Control, Volume 20, pp. 395-407.
[4] ASH, 2013. Smoking Statistics: Illness and death. http://www.ash.org.uk/files/documents/ASH_107.pdf
[5] Health and Social Care Information Centre, 2013a. Statistics on Alcohol: England 2013. https://catalogue.ic.nhs.uk/publications/public-health/alcohol/alco-eng-2013/alc-eng-2013-rep.pdf

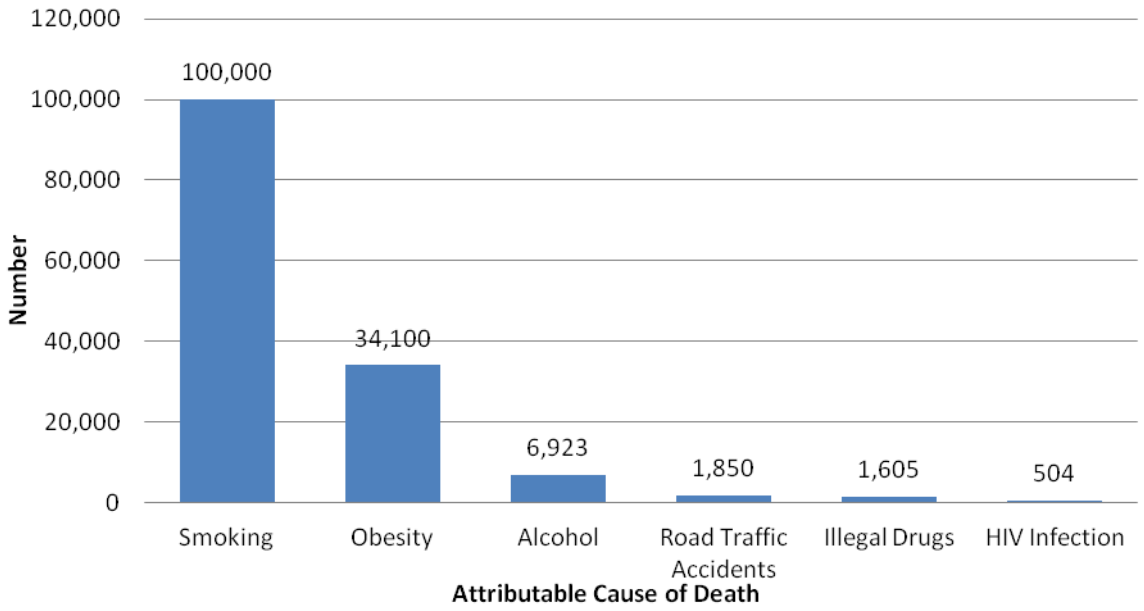
cardiovascular related mortality such as type 2 diabetes, high blood pressure, and hyperlipidaemia[6]. Obesity is also associated with cancer, disability, reduced quality of life, and can lead to premature death[7]. In England, it has been estimated that 34,100 deaths were due to obesity in 2012 which is around 6.8% of all deaths[8].

Figure 1: Worldwide DALYs, Disease Burden and Deaths
Data from (World Health Organization, 2002)



[6] High levels of fats in the blood that can lead to narrowing and blockages of blood vessels.
[7] Health and Social Care Information Centre, 2013b. Statistics on Obesity, Physical Activity and Diet. England 2013. http://www.hscic.gov.uk/catalogue/PUB10364/obes-phys-acti-diet-eng-2013-rep.pdf
[8] House of Commons Health Committee, 2004. Obesity: Third Report of Session 2003–04, London.

Figure 2: Preventable Deaths (Source ASH[9])



Note: Figures for England except HIV which is for UK and traffic accidents for Great Britain. Alcohol number has been updated with a more recent figure.

Key facts: Lifestyle and health

- Lifestyle risk factors (smoking, excessive alcohol intake, not eating healthily and not exercising regularly) are linked to several diseases such as cancer and heart disease, the leading causes of morbidity and mortality worldwide.
- A study estimated that up to half of the cancers diagnosed in the Western World could be prevented if beneficial changes were made to lifestyle and behavioural factors.
- In the UK over 100,000 smokers die from smoking related causes every year.
- In England in 2011 there were 6,923 deaths directly related to alcohol.
- In England it has been estimated that 34,100 (6.8%) deaths are due to obesity.

[9] ASH, 2013. Smoking Statistics: Illness and death. http://www.ash.org.uk/files/documents/ASH_107.pdf

The Picture in Coventry

Coventry had 2,904 premature deaths during 2009-11. Figure 3 shows information from Public Health England (PHE)[10] which divided all local authorities into 4 groups (Worst, Worse than average, Better than average, Best) depending on their rank for various diseases compared to England. Overall, Coventry was ranked 126th out of 150 in England (where 150 is the worst), resulting in Coventry falling into the 'worst' category and 10th out of 15 in similar local authorities, which is worse than average.

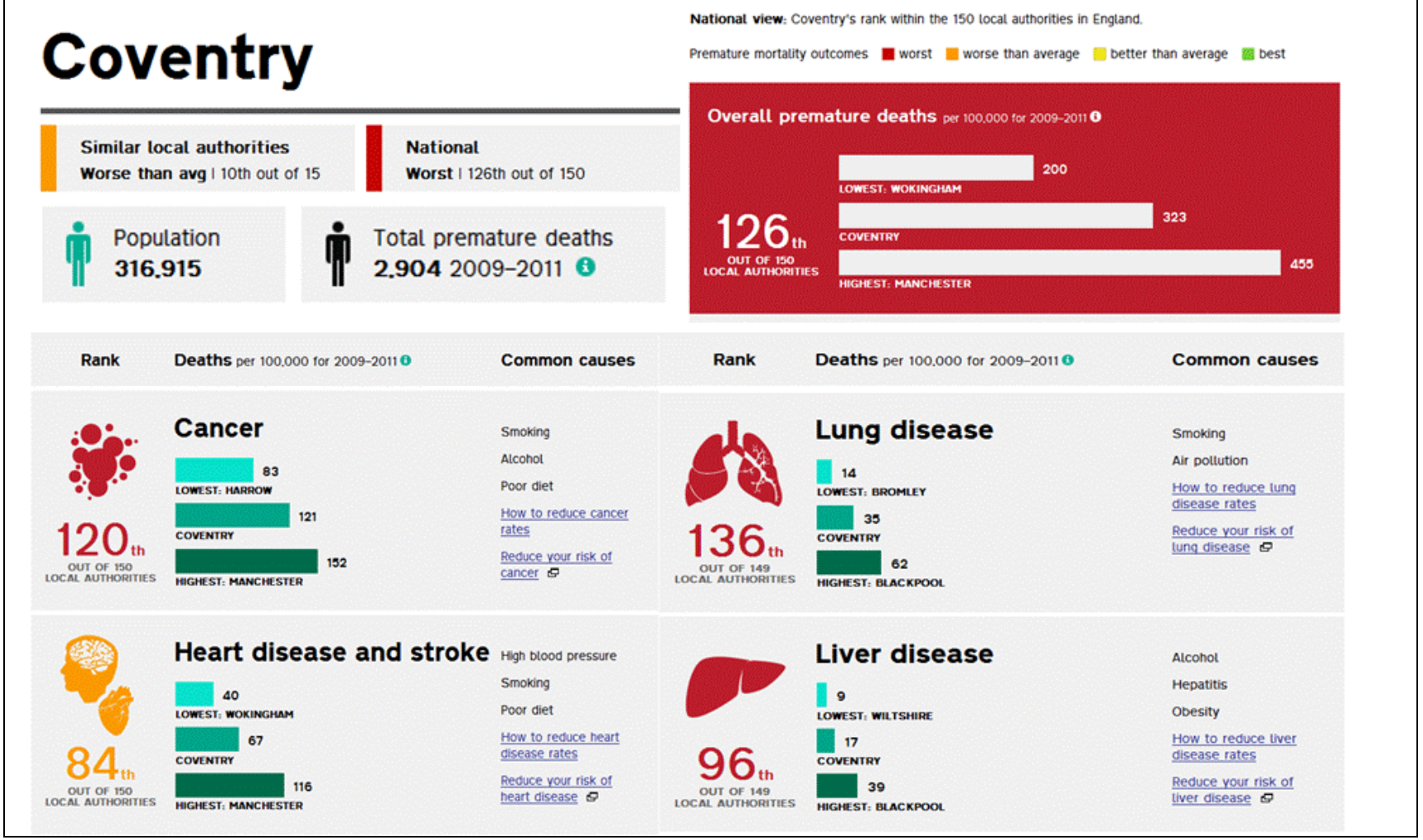
Coventry was put in the 'Worst' group for deaths from cancer, lung disease and liver disease compared to England, and the 'Worse than average' group for deaths from heart disease and stroke. All of these diseases have common causes that include one or more of smoking, alcohol, poor diet and obesity.

Key facts: Coventry premature deaths

- Coventry had 2,904 premature deaths during 2009-11.
- It was ranked 126th out of 150 in England (where 150 is the worst).
- It ranked 10th out of 15 in similar local authorities (where 15 is the worst).

[10] Public Health England, 2013. Longer Lives. http://longerlives.phe.org.uk/area-

Figure 3: Premature Deaths in Coventry (Adapted from Longer Lives[11])



[11] Public Health England, 2013. Longer Lives. http://longerlives.phe.org.uk/area-

Lifestyle Risk Factor Clusters

People who have one lifestyle risk factor will often have several others, for example often people who smoke will also drink and not worry about keeping active. This is referred to as 'clustering'. A recent survey[12] of six negative health behaviours (including nutrition, physical activity, tobacco, alcohol, drugs and sexual behaviour) identified that most adults report at least one negative health behaviour and more than 20% report three or more. Combining these unhealthy behaviours increases the risk of developing a disease, as they exert a multiplicative negative effect on health[13].

Clustering is important because having multiple risk has been shown to shorten lives. A study set in England and concerned with physical activity, diet, smoking, and alcohol consumption, demonstrated that those with all four risk factors had the equivalent mortality rate of people 12 years older (who had a healthy lifestyle)[14]. Another study found that the risk of death increased relative to the number of unhealthy behaviours participants engaged in[15]. Those with a higher number of lifestyle risk factors had an increased chance of getting cancer and premature mortality than those with less or no lifestyle risk factors. It has been demonstrated that changing behaviour results in health benefits, as shown by a Japanese study which found a 14% reduction in cancer for men and 9% for women when they changed a single risk behaviour to a single healthy behaviour[16].

There is evidence to show that the lifestyle risk factors of smoking, drinking excessively, not eating healthily and not exercising regularly are clustered in certain populations[12,13,17,18]. Being male, living in a deprived area, being from a lower social class and being less educated all result in having a higher number of multiple lifestyle risk factors. There are a couple of exceptions to this general trend. One exception was a study set in Brazil which found that females and people with black skin colour with more likely to have three or more risk factors[19]. The other was a study of Hong Kong Chinese adults, which found that those with higher levels of

[12] B Williams, 2013. Lifecourse Tracker - Wave 1 Spring 2012: Interim summary report, GfK NOP Social Research

[13] S Drieskens *et al*. 2009. Multiple risk behaviour: increasing socio-economic gap over time? European Journal of Public Health, 20(6), pp. 634-639.

[14] E Kvaavik, G Batty, G Ursin, R Huxley & C Gale, 2010. Influence of individual and combined health behaviors on total and cause-specific mortality in men and women: the United Kingdom health and lifestyle. Archives of Internal Medicine, 170(8)

[15] M Héroux *et al.* 2012. Clustering of unhealthy behaviors in the aerobics center longitudinal study. Prevention Science, Volume 13, pp. 183-195

[16] S Sasazuki *et al.* 2012. Combined impact of five lifestyle factors and subsequent risk of cancer: The Japan Public Health Center Study. Preventive Medicine, Volume 54, pp. 112-116

[17] E Ford *et al.* 2010. Trends in low-risk lifestyle factors among adults in the United States: Findings from the Behavioral Risk Factor Surveillance System 1996–2007. Preventive Medicine, Volume 51, pp. 403-407

[18] F Li, 2009. Prevalence, trend, and sociodemographic association of five modifiable lifestyle risk factors for cancer in Alberta and Canada. Cancer Causes Control, Volume 20, pp. 395-407.

[19] S Dumith *et al.* 2012. Clustering of risk factors for chronic diseases among adolescents from Southern Brazil. Preventive Medicine, Volume 54, pp. 393-396.

education were more likely have a higher prevalence of multiple lifestyle risk factors[20].

Changes to the clustering of unhealthy behaviour over time have been observed in several studies. A Canadian study[21] of 12 years duration found decreases in unhealthy behaviour related to smoking and physical activity, but increases in alcohol consumption and obesity in the general population. Overall there was an increase in the number of older people and chronically ill people with multiple risk factors, over the 12 year period. A Belgian study[22] of 3 year duration found increasing polarisation, with lower socioeconomic and lower education groups reporting increasing multiple risk behaviours while higher socioeconomic and higher education groups reporting decreasing numbers of multiple risk behaviours during the period. A study in the United States of America[23] with an 11 year duration found that multiple lifestyle risks were increasing over that period in the general population.

A study based in England supported by the King's Fund has also examined how clustering of unhealthy behaviours have changed over time[24]. The study used the Health Survey for England data to examine the four lifestyle risk factors of smoking, excessive alcohol use, poor diet, and low levels of physical activity. The key results from this study were:

- The overall proportion of the population that engages in three or four of these unhealthy behaviours has declined significantly, from around 33% of the population in 2003 to around 25% by 2008.
- The reductions have been seen mainly among those in higher socio-economic and educational groups: people with no qualifications were more than five times as likely as those with higher education to engage in all four poor behaviours in 2008, compared with only three times as likely in 2003.
- The health of the overall population will improve as a result of the improvement in these behaviours, but the poorest and those with least education will benefit least, leading to widening inequalities and avoidable pressure on the NHS.

[20] K Chou, 2008. The prevalence and clustering of four major lifestyle risk factors in Hong Kong Chinese older adults. Journal of Aging and Health, 20(7), pp. 788-803

[21] F Li, 2009. Prevalence, trend, and sociodemographic association of five modifiable lifestyle risk factors for cancer in Alberta and Canada. Cancer Causes Control, Volume 20, pp. 395-407.

[22] S Drieskens, *et al.* 2009. Multiple risk behaviour: increasing socio-economic gap over time? European Journal of Public Health, 20(6), pp. 634-639.

[23] E Ford, *et al.* 2010. Trends in low-risk lifestyle factors among adults in the United States: Findings from the Behavioral Risk Factor Surveillance System 1996–2007. Preventive Medicine, Volume 51, pp. 403-407

[24] D Buck & F Frosini, 2012. Clustering of unhealthy behaviours over time: Implications for policy and practice, London: King's Fund.

Key facts: Lifestyle clusters

- Combining unhealthy behaviours has a multiplicative effect on the risk of developing a disease.
- Most adults report at least one negative health behaviour and more than 20% report three or more.
- People most at risk of having higher number of multiple lifestyle risk factors are those from a lower social class, living in a deprived area, with lower levels of education and males.

Multiple Lifestyle Risk Taking Behaviours in Coventry

The King's Fund Study was the inspiration to carry out similar local analysis, using local data from the Coventry Household Survey. This research is presented in this report, to answer the question:

> **How have multiple lifestyle risk-taking behaviours, in the population aged 16+, changed in Coventry over the time period 2007 to 2012?**

The answer to this question will allow us to target interventions in order to help those at most risk to change their behaviour and achieve better health.

The research was based on the Coventry Household Surveys carried out in 2007 and 2012. More information on the Household Surveys can be found here. Four key risk factors (listed below) were analysed, both individually and grouped into 'high risk (3 or 4 risk factors) or 'low risk' (0, 1 or 2 risk factors). More information about the risk factors can be found here.

Key facts: Multiple lifestyle risk

Identifying populations with multiple lifestyle risk-taking behaviours will allow us to target interventions to help those at most risk to change their behaviour and achieve better health.

The Lifestyle Risk Factors

The four lifestyle risk factors were defined as following:

1. *Smoking*
   Smoking at least one cigarette per day.

2. *Excessive alcohol intake*
   Drinking more than 3 units of alcohol (for women) or 4 units (for men) on at least one day per week

3. *Poor diet*
   Eating less than 5 portions of fruit or vegetables per day

4. *Lack of physical activity*
   Performing less that 30 minutes of physical activity on 5 occasions per week (including brisk walking, cycling, housework, gardening, DIY, swimming, or sport)

The lifestyle risk factors were combined with other demographic data such as age, sex, ethnicity, employment, education level and geographic area. Age, sex and ethnicity affect both behaviour and lifestyle and also susceptibility to disease.

Employment and education level have also been strongly liked to behaviour and health outcomes. The geographic area links to deprivation level, which again affects health behaviour and outcome. It can also be linked to Mosaic, a market segmentation product, which indicates how certain groups prefer to be contacted and can be used when planning who to target with, and how to target, health interventions. Although all these different demographic data fields have been used in the analysis, it is not possible to combine them (for example to check the health behaviour of young Chinese females from deprived areas) because the numbers in these groups become so small that they are not statistically valid.

Are we comparing like with like

The 2012 sample was larger than the 2007 sample, but there were no significant differences in gender, age group, ethnicity or deprivation. This means that it is reasonable to compare the lifestyle behaviour of the two samples. The 2007 sample had significantly more people who were economically active, and there was a significant difference in the percentage in each of the educational groups, so any results linked to education level or employment should be regarded with more caution. More information about the demographic details of two samples can be found here.

More information about the techniques used to analyse the data can be found here.

Individual Lifestyle Risk Factors

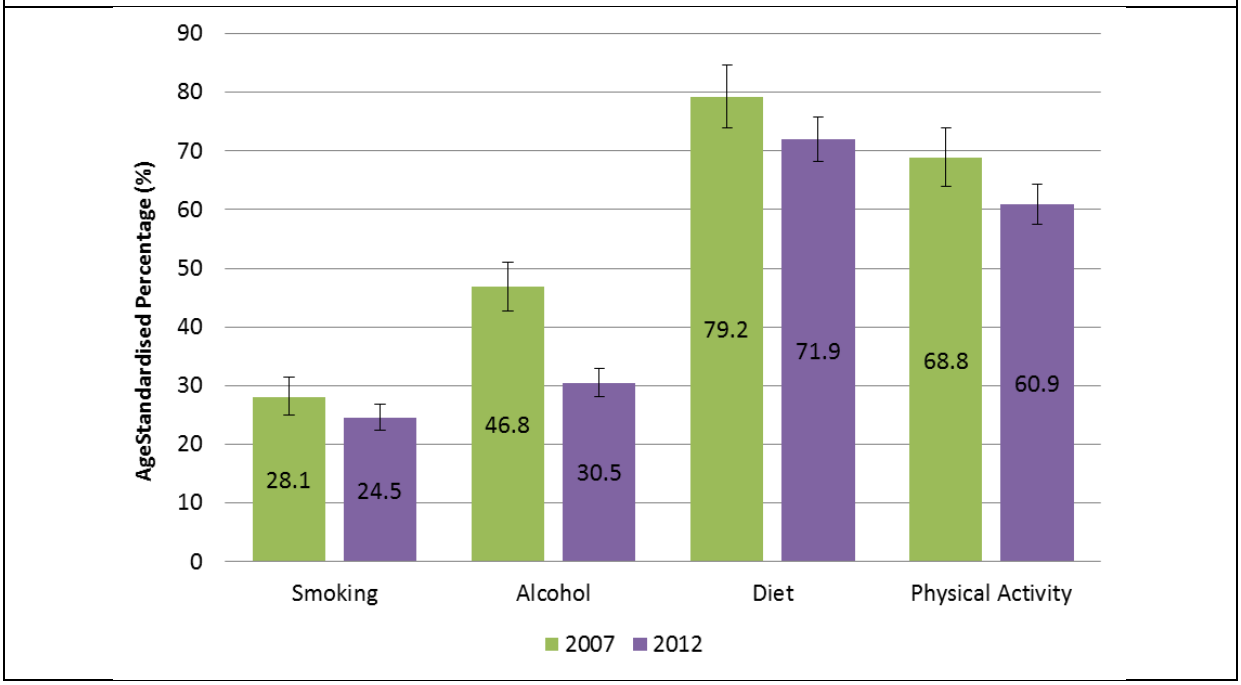
In this chapter the four lifestyle risk factors are analysed separately in order to note any patterns of change between 2007 and 2012 that are particular to these individual lifestyle behaviours. The behaviours are analysed using age standardised rates in the first section, and using overall trend and different age/sex groups in the second section.

Individual lifestyle risk factors - age standardised

Age standardisation allows a fair comparison between the years because it neutralises any differences in the two sample population, which are due to age differences. The age standardised percentage of each lifestyle risk factor for 2007 and 2012 can be seen in Figure 4. The prevalence of smoking, alcohol consumption, diet and physical activity have all statistically significantly decreased between 2007 and 2012.

The age and sex standardised prevalence of the presence of each lifestyle risk factor for each year are shown in Figures 5 and 6 (for men and women separately). There was a decrease for each lifestyle risk factor for both men and women, all decreases were statistically significant with the exception of women smoking. Men had a statistically significantly higher prevalence of excessive alcohol consumption than women in both 2007 and 2012. They were also significantly less likely to be physically active than women in 2012.

Figure 4: Age standardised prevalence of lifestyle risk factors for all persons, 2007 to 2012



The reduction in people reporting individual lifestyle risks will bring positive health benefits[25]. In addition there is the added benefit that for every reduction in an individual risk there must also be a reduction in the number of multiple lifestyle risks that are reported.

Figure 5: Age standardised prevalence of individual lifestyle risk factors for men, 2007 to 2012

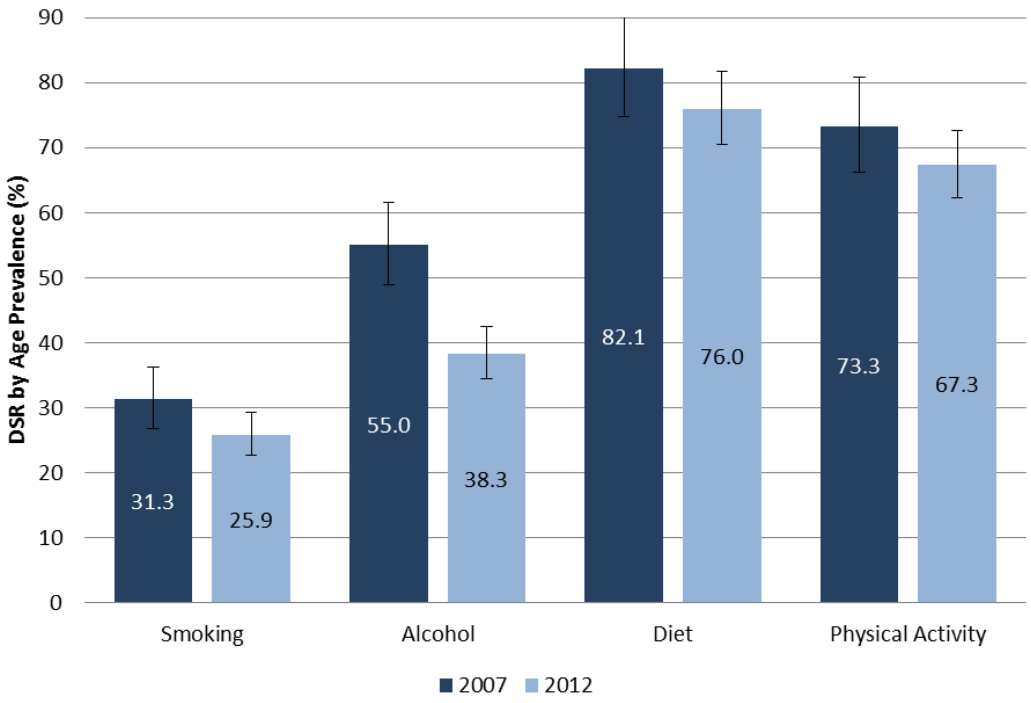
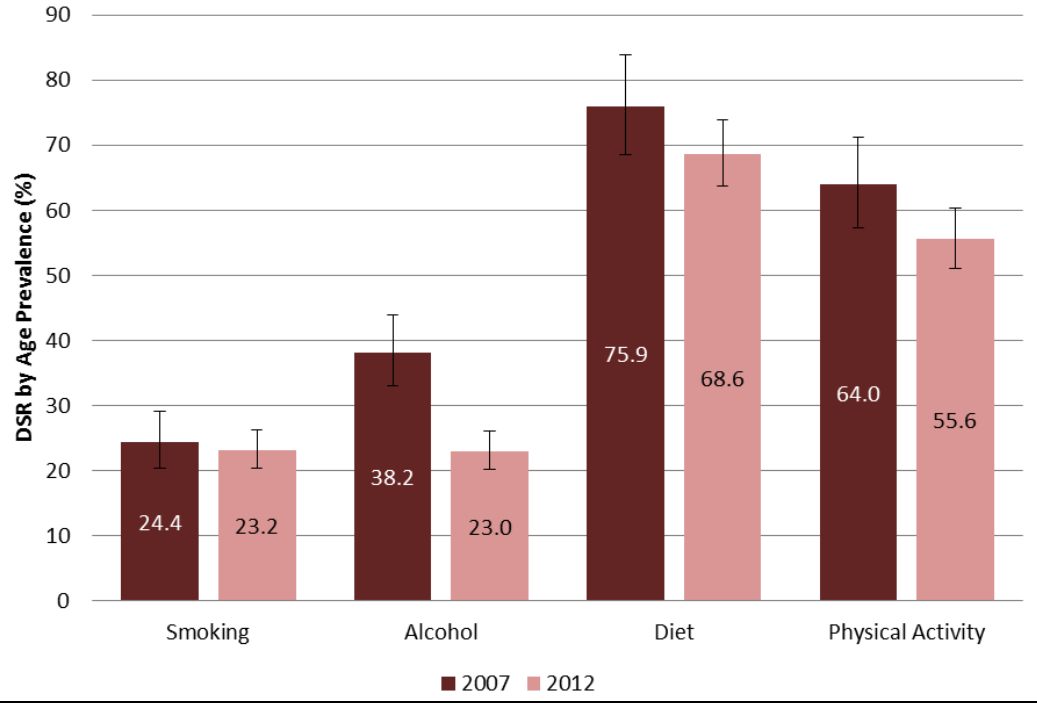


Figure 6: Age standardised prevalence of individual lifestyle risk factors for women, 2007 to 2012



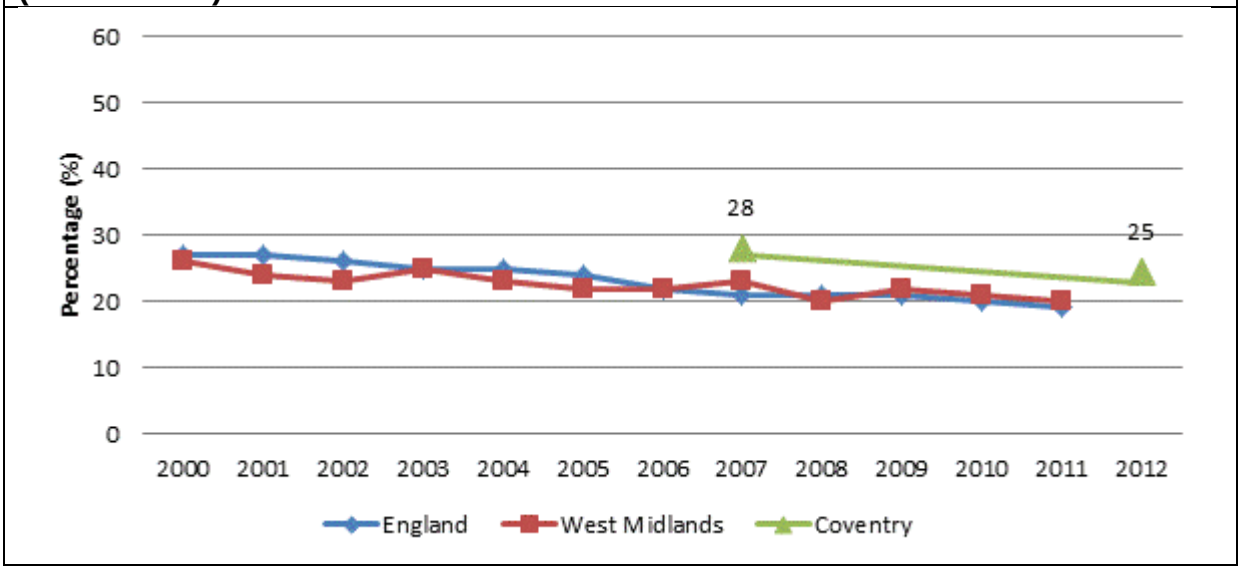
[25] S Sasazuki *et al.* 2012. Combined impact of five lifestyle factors and subsequent risk of cancer: The Japan Public Health Center Study. Preventive Medicine, Volume 54, pp. 112-116

Individual Lifestyle Risk Factors by age and gender

How many people smoke in Coventry and how has it changed?

Figure 7 shows the percentage of people who reported smoking in the 2007 and 2012 survey against the changes in smoking prevalence in the West Midlands and England from 2000 to 2012. There is a general decrease in smoking in England and the West Midlands between 2000 and 2011. Coventry has experienced a 3% decrease from 2007 to 2012 from 28% to 25%. In the five year period from 2006 to 2011, smoking in England decreased by 3% from 22% to 19%, and West Midlands decreased by 2% from 22% to 20%. It was calculated that smoking caused 460 deaths in Coventry in 2010; a decrease of 3.6% in the number of smokers should therefore save approximately 17 lives per year.

Figure 7: Coventry, West Midlands and England Prevalence of Smoking (Source GLS)



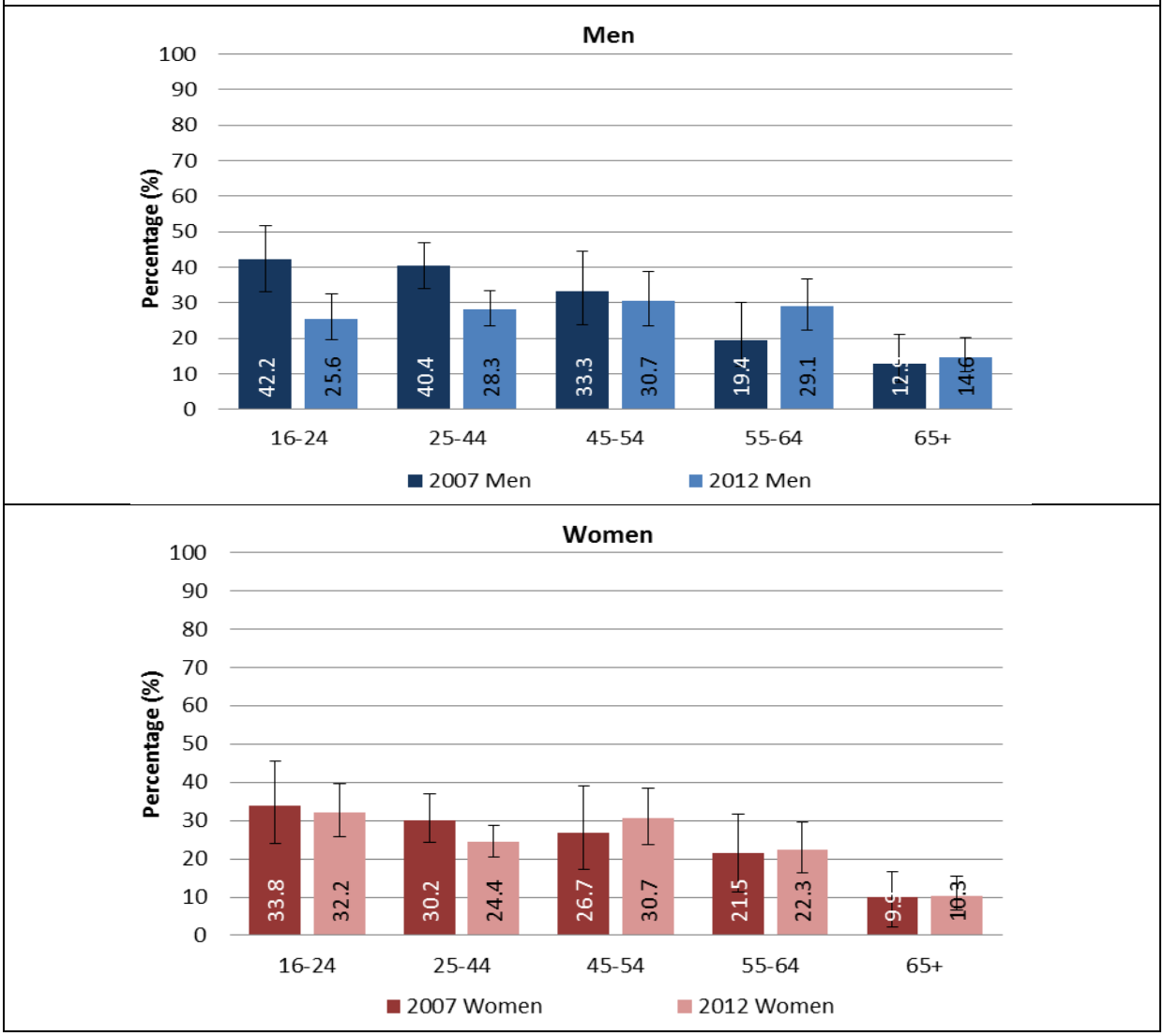
Other researchers have found similar results in similar populations to the UK, for example there was a significant decrease in smoking of around 5% in men and around 8% in women over a 12 year period in Canada[26] and a 4% decrease in 11 years in the United States[27]. In Coventry there was an overall decrease of 3% with no significant difference in the smoking prevalence between men and women. These trends are all consistent with each other.

Figure 8 shows the percentage who reported smoking in the two Coventry surveys by age group and gender. The smoking data for 2007 showed a decreasing prevalence with increasing age for both men and women. However, this relationship

[26] F Li, 2009. Prevalence, trend, and sociodemographic association of five modifiable lifestyle risk factors for cancer in Alberta and Canada. Cancer Causes Control, Volume 20, pp. 395-407.
[27] E Ford *et al.* 2010. Trends in low-risk lifestyle factors among adults in the United States: Findings from the Behavioral Risk Factor Surveillance System 1996–2007. Preventive Medicine, Volume 51, pp. 403-407

is not shown in the 2012 survey. In 2007, men and women over 65 years old had a statistically significantly lower smoking prevalence than those under 55. Similarly in 2012, women over 65 years old had a statistically significant lower smoking prevalence than those under 65 and men over 65 a lower prevalence than 25-64 year olds. There was a statistically significant decrease in the prevalence of smoking in men aged 16-24 and 25-44 years old between 2007 and 2012 but not in the older age groups. Smoking prevalence did not significantly change in the period for women.

Figure 8: Percentage of smokers (≥1 Cigarette a Day) for each age and gender Category, 2007 and 2012



Excessive drinking in Coventry

Figure 9 shows the survey results for excessive alcohol consumption in Coventry, against the change in percentage in the West Midlands and England from 2000 to 2012. The percentage reporting excessive drinking fluctuated over the period but there has been a general decrease of 6 or 7%, since 2007, for both genders. Coventry has experienced a greater (and statistically significant) decrease of 17% (from 55% to 38%) in men, and 15% (from 38% to 23%) in women between 2007 and 2012. In England, the decrease was from 41% to 34% in men, and 34% to 28% in women. In the West Midlands, the decrease was from 36% to 29% in men, and 28% to 21% in women. Approximately 100 people die because of alcohol related causes in Coventry per year, so an improvement in drinking levels by 16.3% should save approximately 16 lives per year.

Figure 9: Coventry, West Midlands and England Prevalence of Excessive Alcohol Consumption (>4 Units for Men and >3 Units for Women ≥1 Day A Week) (Source GLS)

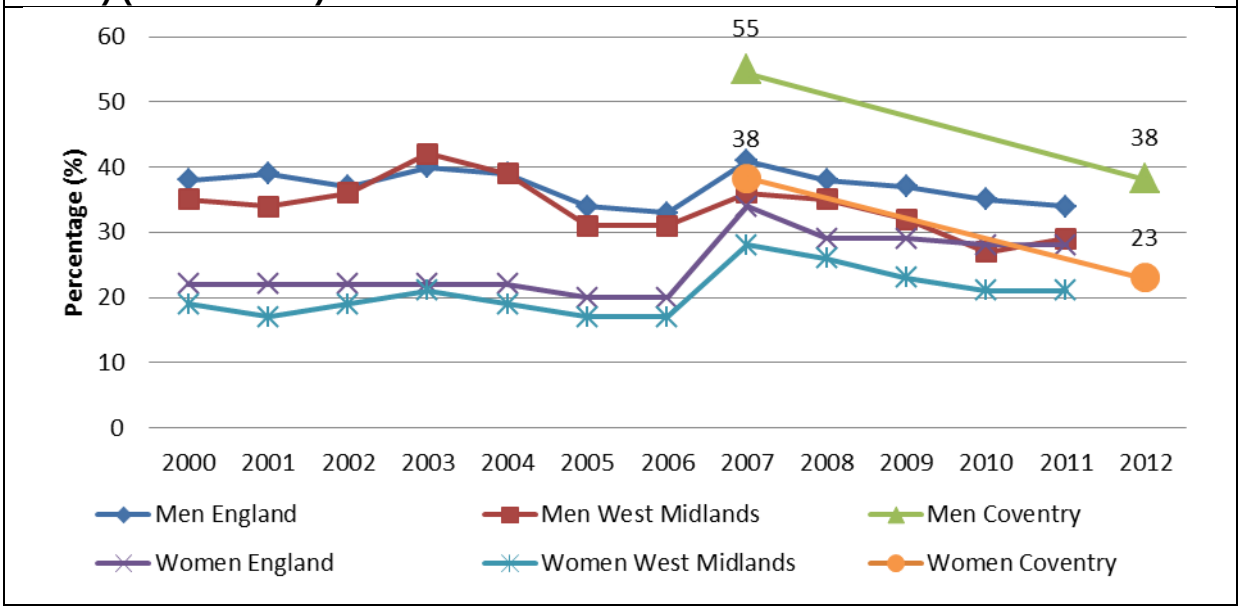
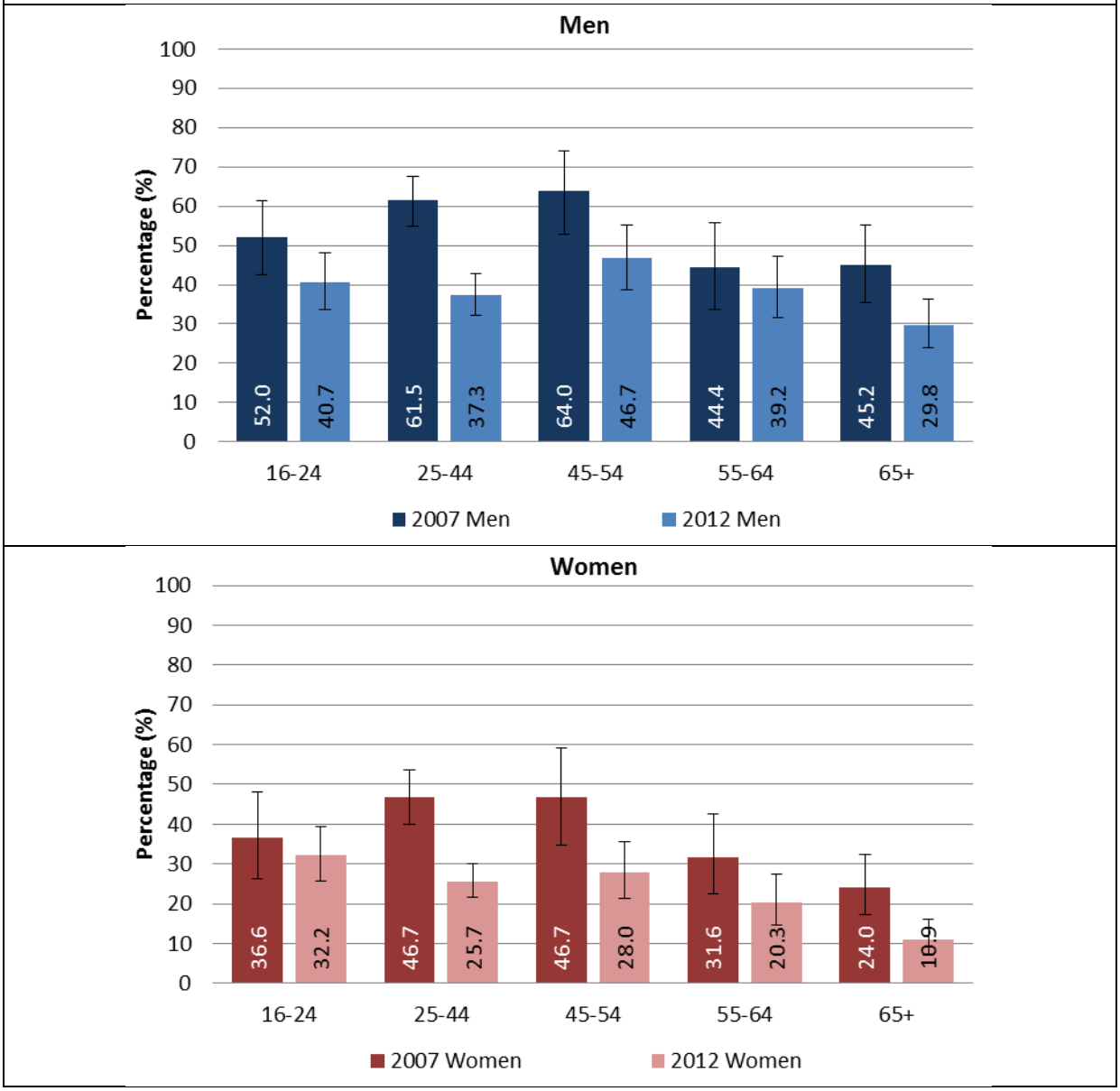


Figure 10 shows the prevalence of excessive alcohol consumption (>3 units a day for women, >4 for men, more than one day a week). In 2007, this generally decreases with age from a peak at 45-54 years for both for men and women, with a slight increase in 65+ year old men. The pattern was similar in 2012 except for the female 16-24 age group which had the highest level of excess alcohol consumption. In 2007, men had a statistically significant higher prevalence of excessive alcohol use than women in the 25-44 and 65+ age groups. In 2012, men aged 25 and over had a statistically significant higher prevalence of excessive alcohol use than women aged 25 and older. There was a statistically significant decrease in excessive alcohol consumption in men and women aged 25-54 between 2007 and 2012, and for men and women aged 65+.

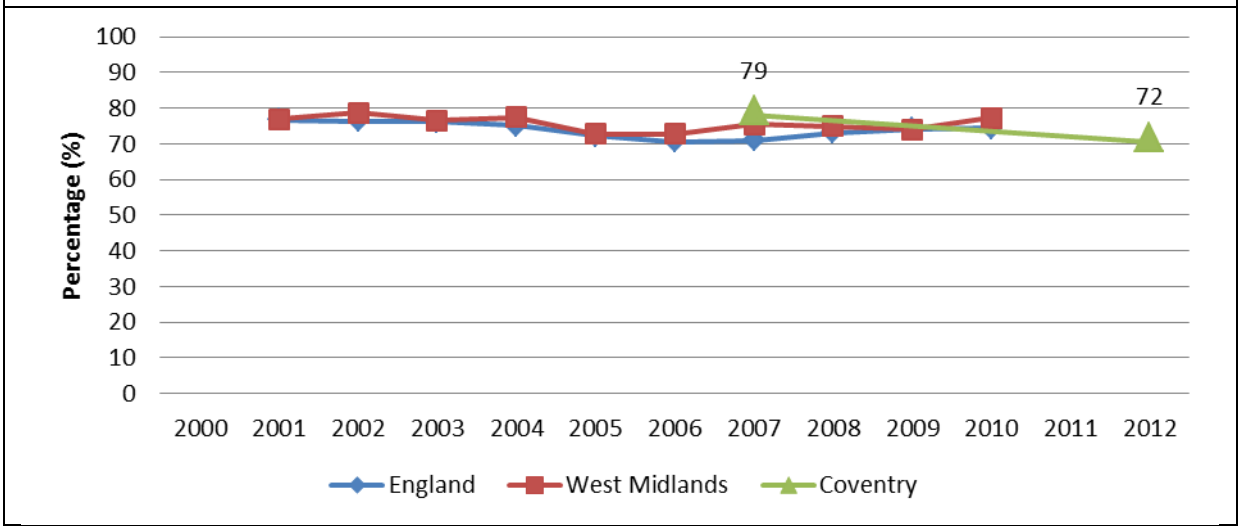
Figure 10: Percentage reporting excessive alcohol consumption (>4 Units for Men and >3 Units for Women ≥1 Day A Week) for each age and gender category, 2007 and 2012



Healthy diet

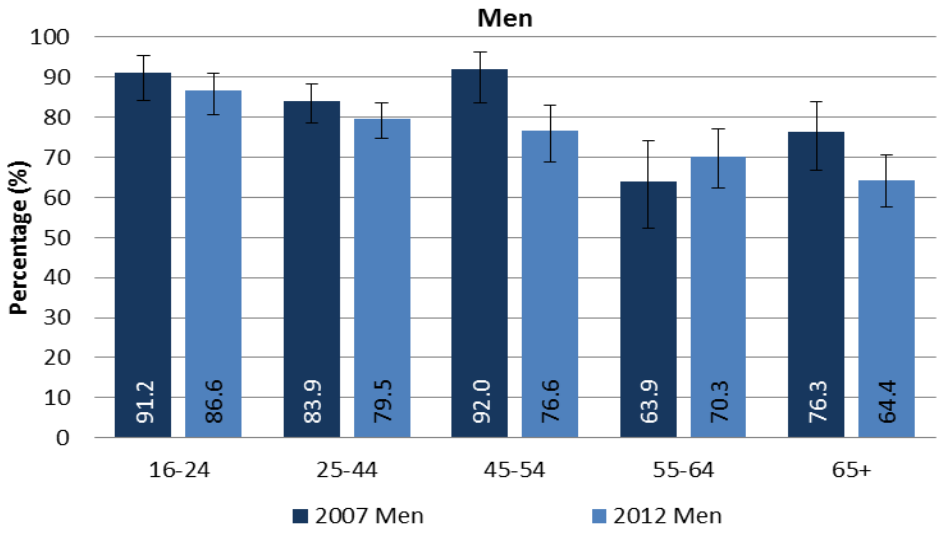
Figure 11 shows the changes in the prevalence of not eating five portions of fruit and vegetables a day reported in the Coventry survey, against the trend in the West Midlands and England, from 2001 to 2012. The prevalence of a poor diet has remained fairly stable for England and West Midlands during this period. Coventry has experienced a decrease in the prevalence of a poor diet from 2007 to 2012, from 79% to 72%, indicating that more people are eating their five portions of fruit and vegetables a day.

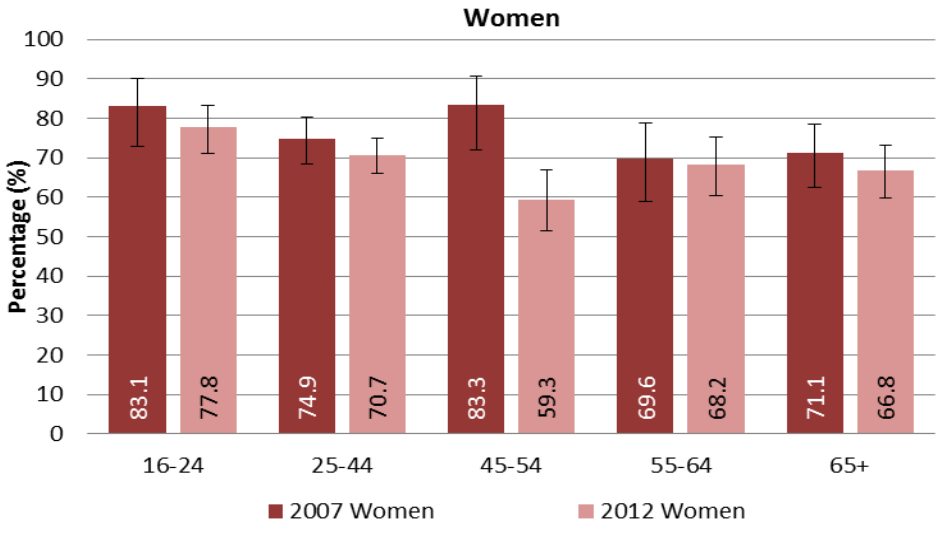
Figure 11: Coventry, West Midlands and England Prevalence of Poor Diet (<5 Portions of Fruit and Vegetables a Day (Source HSE)



The prevalence of eating less than five portions of fruit and vegetables a day by age group is shown in Figure 12. In both 2007 and 2012 the prevalence was greater than 70% for men and women under 55 years old, with the exception of women aged 45-54 in 2012. A lower percentage of the over 55 year olds report not eating five a day, but this is still a prevalence of greater than 60%. In 2012, men aged 45-54 had a statistically significant higher prevalence of eating less than five a day than women aged 45-54 years old. There was a statistically significant decrease in men and women aged 45-54 and men aged 65+ eating less than five a day prevalence between 2007 and 2012, which means that more men and women aged 45-54 are eating five a day.

Figure 12: Percentage reporting poor diet (<5 portions of fruit & vegetables a day) for each age and gender category, 2007 and 2012





Physical Inactivity

Figure 13 shows the prevalence changes in doing less than five lots of 30 minutes of physical activity a week reported in the Coventry survey, against the percentage in England from 2003 to 2012. There is a general decrease in the proportion of men (5%) and women (6%) reporting lack of physical activity in England between 2003 and 2008. Coventry has experienced a similar decrease of 6% (from 73% to 67%) in men and 8% (from 64% to 56%) in women between 2007 and 2012. Other researchers in Canada[28] and the United States[29] found a similar decrease in the proportion of people reporting that they were physically inactive like Coventry.

Figure 13: Coventry and England Prevalence of Physical Activity (Source HSE)

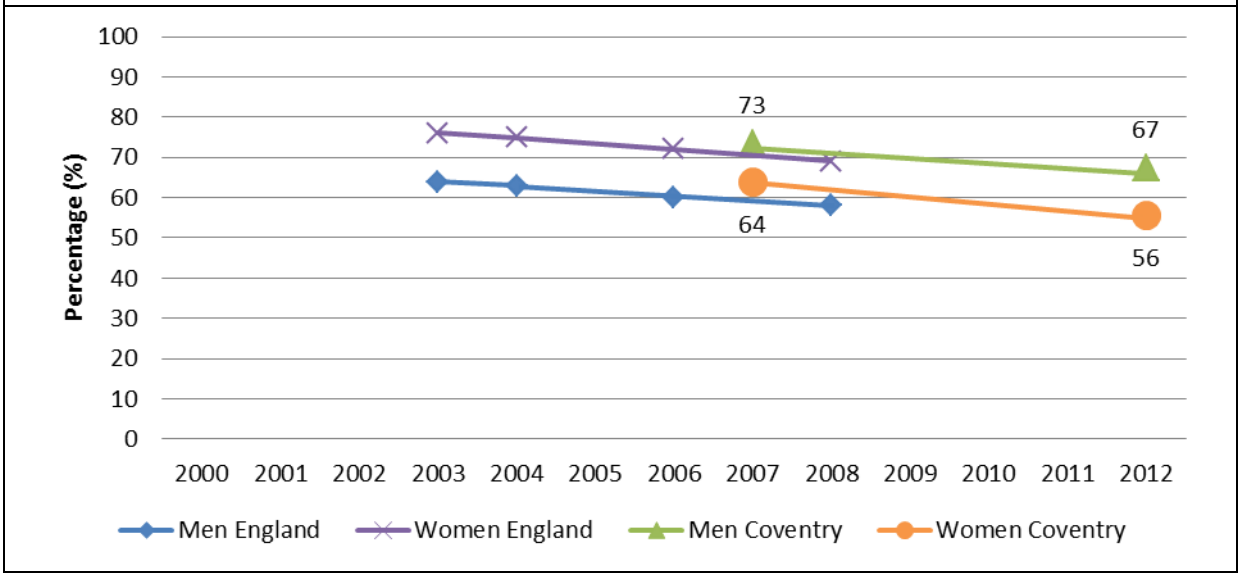
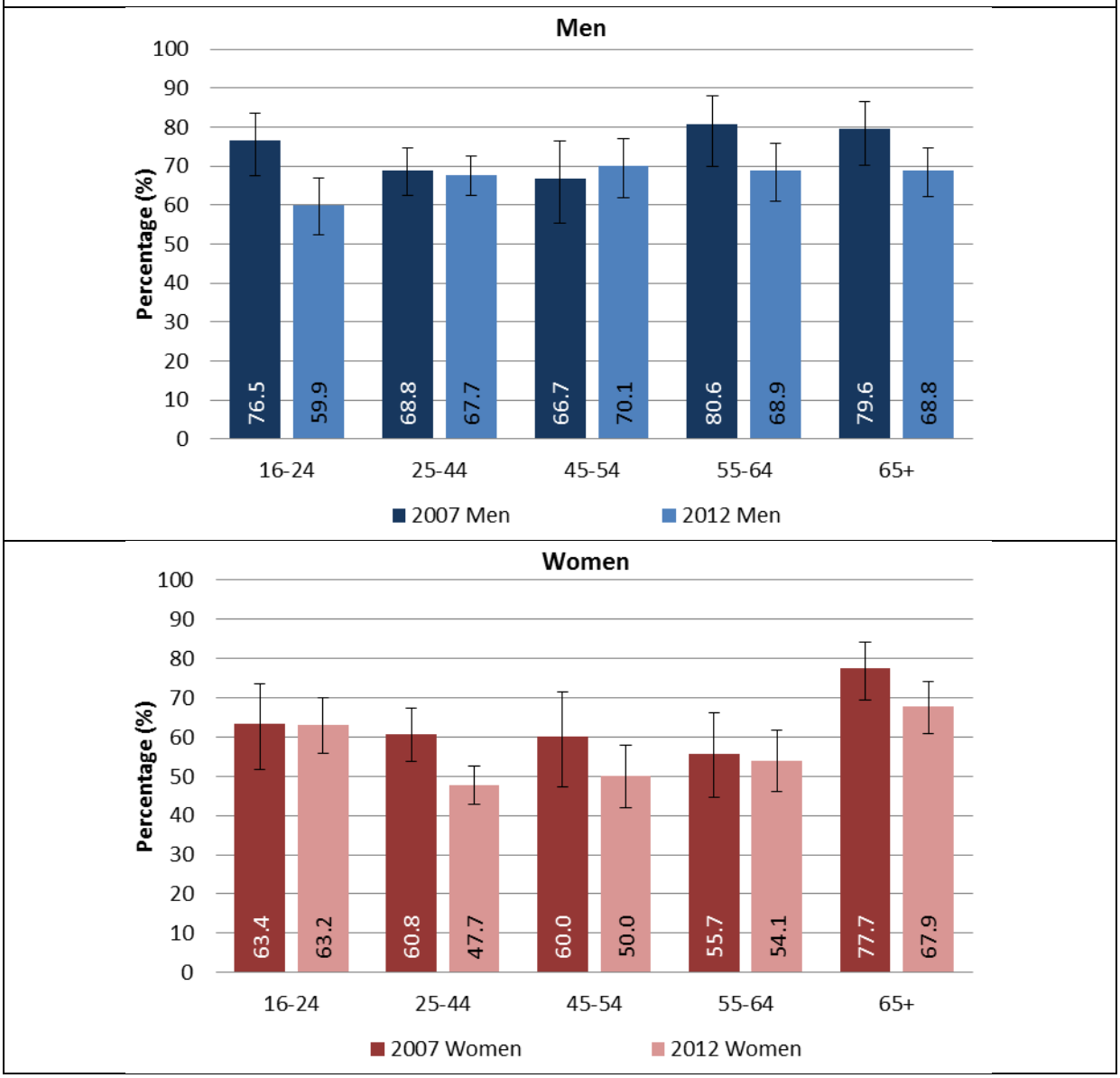


Figure 14 show the prevalence of physical inactivity by age and gender. In both 2007 and 2012 it was greater than 50% for men and women for all age groups, with the exception of women aged 25-44 in 2012. In 2007, men aged 55-64 had a statistically significant higher prevalence, of physical inactivity, than women aged 55-64 years old. In 2012, men had a statistically significant higher prevalence than women aged 25-44, 45-54 and 55-64 years old. There was a statistically significantly decrease in men aged 16-24 and women aged 25-44 being physically inactive between 2007 and 2012, which means that more men aged 16-24 and women aged 25-44 are doing five sessions of physical activity a week.

There was an overall prevalence decrease of around 7% for poor diet and around 8% for a lack of physical activity. If this led to an average reduction of 7.6% reduction in obesity this would save approximately 14 lives per year, based on the number of deaths in Coventry in 2011.

[28] F Li, 2009. Prevalence, trend, and sociodemographic association of five modifiable lifestyle risk factors for cancer in Alberta and Canada. Cancer Causes Control, Volume 20, pp. 395-407.
[29] E Ford *et al.* 2010. Trends in low-risk lifestyle factors among adults in the United States: Findings from the Behavioral Risk Factor Surveillance System 1996–2007. Preventive Medicine, Volume 51, pp. 403-407

Figure 14: Percentage reporting lack of physical activity (<5 x 30mins a week) for each age and gender category, 2007 and 2012



Key Facts: Individual lifestyle risk factors

- A decrease of 3.6% in the number of smokers should therefore save approximately 17 lives per year (based on approximately 460 smoking attributable deaths in Coventry in 2010).
- An improvement in drinking levels by 16.3% should save approximately 16 lives per year (based on the approximately 100 alcohol attributable deaths in Coventry per year).
- If the decrease of around 7% for poor diet and around 8% for a lack of physical activity led to an average reduction of 7.6% in obesity this would save approximately 14 lives per year (based on the number of deaths in Coventry in 2011).

Clustering of unhealthy behaviours

The main focus of the project was to analyse multiple risks in the population and see how these change with time, and so this chapter reports on the clustering of risk. This is important because combining these unhealthy behaviours increases the risk of developing a disease, as they exert a multiplicative negative effect on health[30,31]. All of the data presented in this chapter is age standardised, to allow fair comparison between the two survey years. The first section simply observes the number (0 – 4) of lifestyle risks reported. The following section presents high and low risk categories, and analyses sub-groups within the survey population. The final section predicts risk for the sub groups.

There are 16 possible combinations of risk factors ranging from no factors to all four factors. In both 2007 and 2012, more than 70% of participants reported lack of fruit and vegetable consumption and more than 60% reported lack of physical activity (see Figure 14). It is not therefore surprising that the combination of these two lifestyle factors accounted for 23% of the total possible combinations in 2007 and 25% in 2012. More information on the most common combinations can be found here.

Number of risk factors

Figure 15 shows the number of simultaneous lifestyle risks people have. These results have been age standardised for all persons, and age and sex standardised for men and women. The distribution of multiple risk at the start of the study in 2007 is different to that found in other studies. In 2007 the number reporting 3 and 4 lifestyle factors in 2007 were higher than was found in the 2008 results from the King's Fund research[32], suggesting that overall number of risky behaviours in Coventry are higher than in the population as a whole.

Also, Coventry showed greater variation in the distribution of number of risks by gender than the King's Fund research. The distribution of the multiple risks in the King's Fund study is shown in Figure 16. It is likely that the high levels of deprivation in Coventry contributed to the greater proportion of people reporting 3 and 4 lifestyle risks. By 2012 there had been a pronounced reduction in the percentage in Coventry reporting higher number of lifestyle risk. The 2012 proportions of people in all the risk factors groups were very similar to those found in an earlier English study [33] and to those found in the USA in 2007[34].

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[30] S Drieskens *et al*. 2009. Multiple risk behaviour: increasing socio-economic gap over time? European Journal of Public Health, 20(6), pp. 634-639.

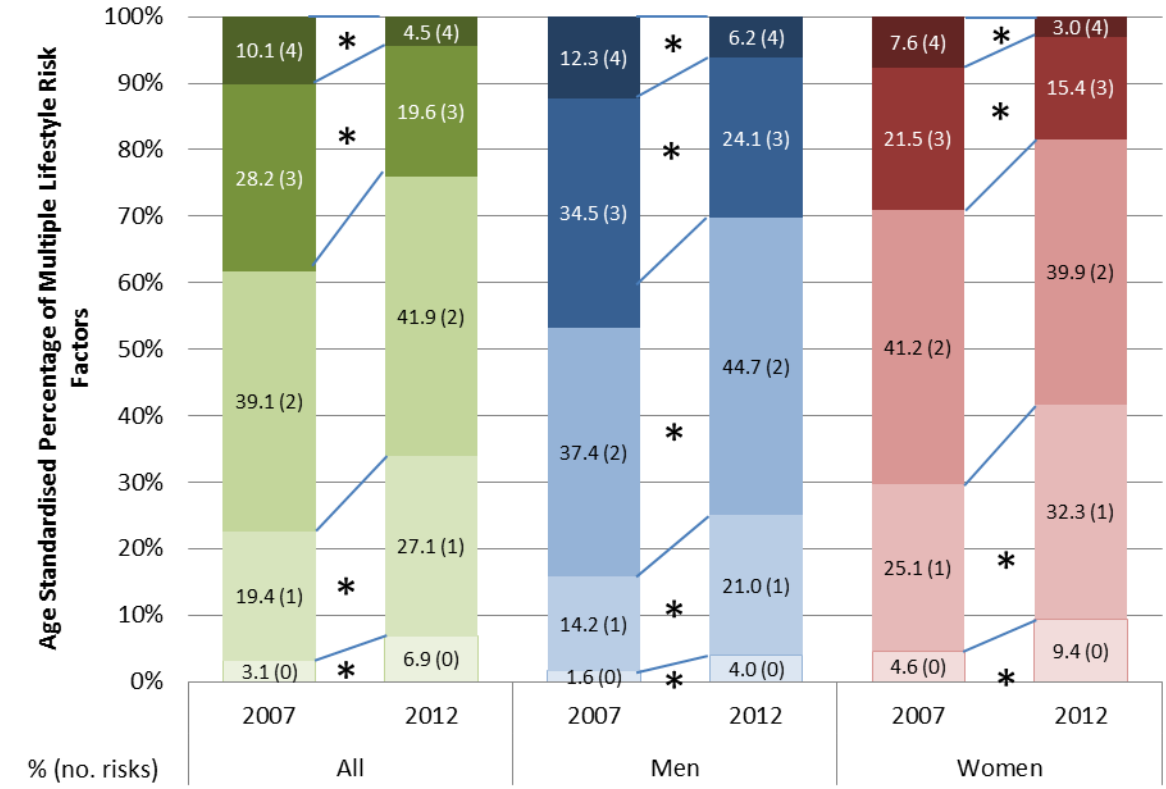
[31] E Kvaavik, G Batty, G Ursin, R Huxley & C Gale, 2010. Influence of individual and combined health behaviors on total and cause-specific mortality in men and women: the United Kingdom health and lifestyle. Archives of Internal Medicine, 170(8)

[32] D Buck & F Frosini, 2012. Clustering of unhealthy behaviours over time: Implications for policy and practice, London: King's Fund

[33] W Portinga, 2007. The prevalence and clustering of four major lifestyle risk factors in an English adult population. Preventive Medicine, Volume 44, pp. 124-128.

[34] E Ford *et al.* 2010. Trends in low-risk lifestyle factors among adults in the United States: Findings from the Behavioral Risk Factor Surveillance System 1996–2007. Preventive Medicine, Volume 51, pp. 403-407

Figure 15: Change in the prevalence of multiple lifestyle risk factors between 2007 and 2012, all persons and by gender



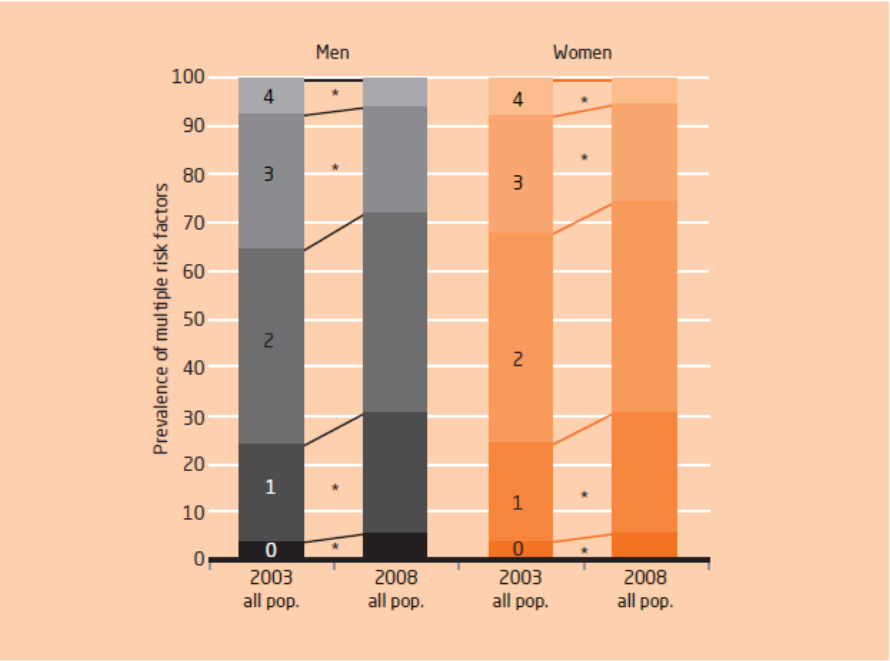
(number of risk factors shown in brackets)
*Statistically significant difference (p<0.05) between the years

In Coventry the proportion of men reporting 3 or 4 risks decreased between 2007 and 2012, and the proportion reporting 0, 1 or 2 risks has increased. The proportion of women reporting 2, 3 or 4 risks decreased, and the proportion reporting 0 or 1 risk increased.

The proportion of all persons reporting four lifestyle risk factors decreased from 10% to 5%, with the largest decrease in men from 12% to 6%. The proportion of people reporting one lifestyle risk factor increased from 19% to 27% and those with none from 3% to 7%. There was a reduction in the percentage of people who reported two or more lifestyle risk factors, from 77% in 2007 to 66% in 2012. Overall there was a reduction in the proportion of people reporting higher numbers of risks and an increase in those reporting zero or low numbers of risks. This is an encouraging improvement in healthy lifestyle behaviour and should result in fewer people developing lifestyle related illness and an improvement in life expectancy. Research has indicated that there is a 12 year difference in the mortality rates of those with zero and those with 4 risks[35].

[35] E Kvaavik, G Batty, G Ursin, R Huxley & C Gale, 2010. Influence of individual and combined health behaviors on total and cause-specific mortality in men and women: the United Kingdom health and lifestyle. Archives of Internal Medicine, 170(8)

Figure 16: Change in the prevalence of multiple lifestyle risk factors between 2003 and 2008 by gender. Source King's Fund[36]



Notes: 0 to 4, number of lifestyle risk factors; * significant change between years, p <0.05

Source: Authors' analysis of the Health Survey for England 2003 and 2008 (NHS Information Centre 2012)

The King's Fund research also reported improvements in the distribution of multiple lifestyle risk factors in England. There was a 2% reduction (from 7% to 5%) in the population reporting four lifestyle risk factors in the King's Fund study compared to a reduction of 7% (from 10% to 5%) in Coventry. There was a 2% increase (from 4% to 6%) in those with no lifestyle risk factors in the King's Fund Study compared to a 4% increase (from 3% to 7%) in Coventry. So in both cases the improvement over time was greatest in Coventry.

[36] D Buck & F Frosini, 2012. Clustering of unhealthy behaviours over time: Implications for policy and practice, London: King's Fund.

Key facts: Number of risk factors

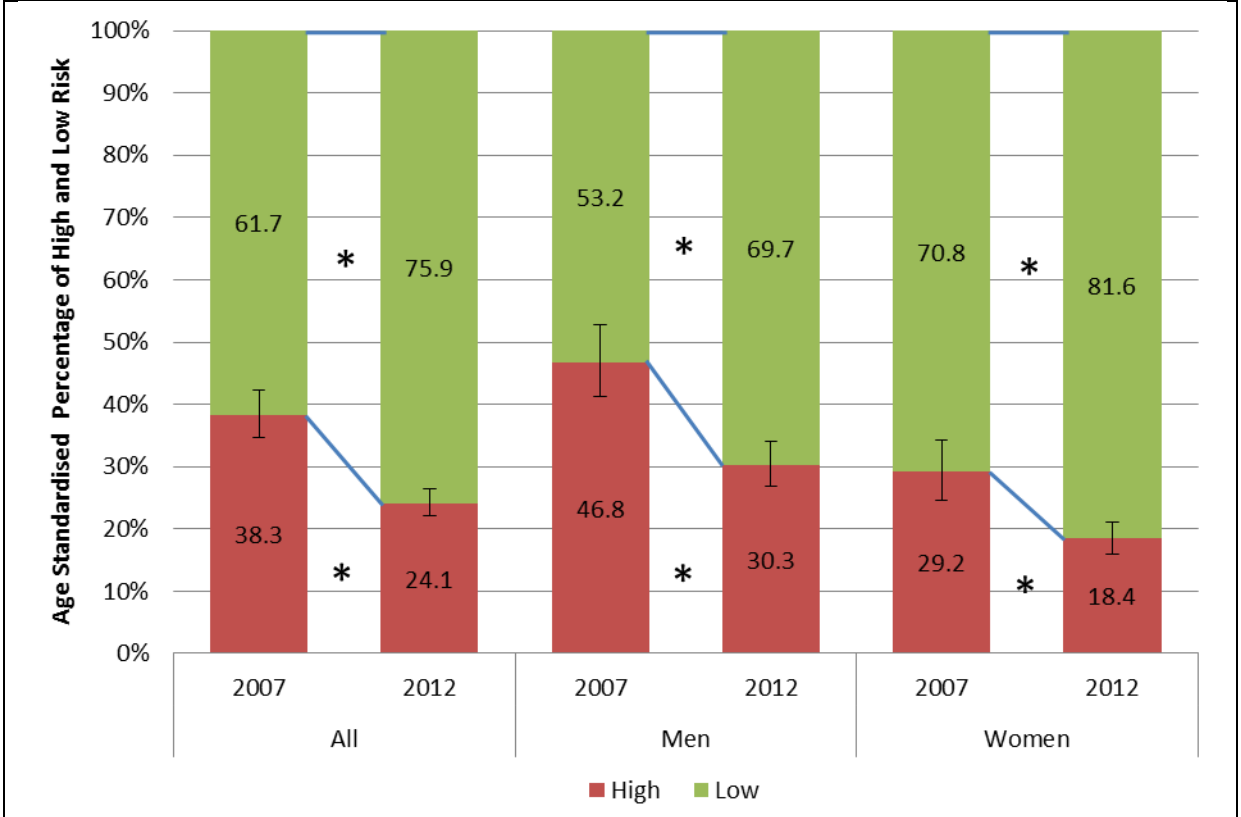
- There is a reduction in the proportion of people reporting higher numbers of risks and an increase in those reporting zero or low numbers of risks.
- This should result in fewer people developing lifestyle related illness and improvement in life expectancy.
- There is a 12 year difference in the mortality rates of those with zero and those with 4 risks[37].
- Coventry has shown a greater improvement over time than the King's Fund study demonstrated for England.

[37] E Kvaavik, G Batty, G Ursin, R Huxley & C Gale, 2010. Influence of individual and combined health behaviors on total and cause-specific mortality in men and women: the United Kingdom health and lifestyle. Archives of Internal Medicine, 170(8)

High and low risk categories

The number of multiple lifestyle risks were grouped into two categories: high risk (3 to 4 lifestyle risks) and low risk (0 to 2 risks), in order to make subgroup analysis more robust. For all subgroups (except age group analysis) the data has also been age standardised to make fair comparisons between years. The age standardised proportions for persons, men and women and are shown in Figure 17. A significantly higher proportion of men report high risk behaviour, compared to women, for both 2007 and 2012. In persons (men and women combined), the age standardised prevalence of the high risk category decreased from 38% to 24%, in men from 47% to 30% and in women from 29% to 18%. All of the decreases are statistically significant, and show a pronounced improvement in lifestyle, which should have beneficial health effects over time.

Figure 17: Change in the Prevalence of High and Low Risk Between 2007 and 2012, All and by Gender



*Statistically significant difference (p<0.05) between the years

This is in agreement with the overall findings from the King's Fund research, which found that the percentage of the sample reporting three or four unhealthy behaviours reduced from 33% in 2003 to 25% in 2008 in England, compared to 38% in 2007 to 24% in 2012 in Coventry. However many overseas studies have found a much lower prevalence of 3-4 risks: 13% in New Zealand in 2002/3[38] and 8% in Belgium in

[38] M Tobias *et al.* 2007. Do healthy and unhealthy behaviours cluster in New Zealand?. Australian and New Zealand Journal of Public Health, 31(2), pp. 155-163.

2004[39]. It is also noticeable that, in the Coventry survey, men have a statistically significantly higher prevalence of high risk than women for both 2007 and 2012. This has been a general finding in other studies[40,41,42] which all found that men were more likely to have multiple risk behaviour (three or more risks) than women.

Key facts: High and low risk categories

- The decreases in the percentage in the high risk category are statistically significant in men women and persons, and indicate a pronounced improvement in lifestyle which should have beneficial health effects over time.
- Men are more likely to have 3+ risk factors than women.

High Risk Category by Sub Populations

The prevalence for the high risk category (people with 3 or 4 risk behaviours) can be seen in Figures 18 to 22. These are all age standardised except for the age group analysis. The proportion of people reporting high risk lifestyles by age group is shown in Figure 18, with statistically significant decreases in the 16-24, 25-44 and 45-54 year old groups between 2007 and 2012. There was no statistically significant change for those aged 55+. In 2007, statistically more people aged under 55 years old reported 3+ risks than older people. In 2012, this changed to statistically more people aged under 65 years old than older people. Other studies[43] have found that younger people have a higher prevalence of multiple lifestyle risk than older people. It is possible that younger people regard the health issues caused by lifestyle as too far in the future to worry about now.

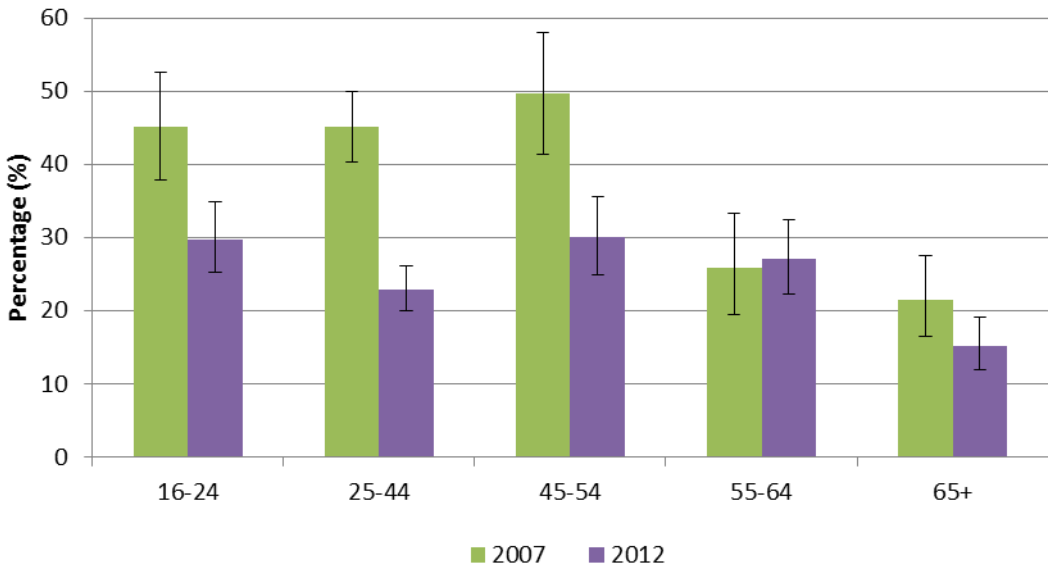
Figure 19 shows a significant reduction in the proportion of people in the high risk category in both White and Non-white ethnic groups, between 2007 and 2012. The 2012 survey results show that a statistically significantly higher proportion of the White population report high risk behaviour than the Non-white population. A study in the United States of America found that Non-whites were more at risk[44]. However,

[39] S Drieskens *et al*. 2009. Multiple risk behaviour: increasing socio-economic gap over time? European Journal of Public Health, 20(6), pp. 634-639.
[40] S Drieskens *et al*. 2009. Multiple risk behaviour: increasing socio-economic gap over time? European Journal of Public Health, 20(6), pp. 634-639.
[41] E Ford *et al.* 2010. Trends in low-risk lifestyle factors among adults in the United States: Findings from the Behavioral Risk Factor Surveillance System 1996–2007. Preventive Medicine, Volume 51, pp. 403-407
[42] G Duca *et al.* 2012. Clustering of unhealthy behaviors in a Brazilian population of industrial workers. Preventive Medicine, Volume 54, pp. 254-258.
[43] G Duca *et al.* 2012. Clustering of unhealthy behaviors in a Brazilian population of industrial workers. Preventive Medicine, Volume 54, pp. 254-258.
[44] E Ford *et al.* 2010. Trends in low-risk lifestyle factors among adults in the United States: Findings from the Behavioral Risk Factor Surveillance System 1996–2007. Preventive Medicine, Volume 51, pp. 403-407

they were studying different ethnic groups such as Hispanics and African-Americans. The minority ethnic population of Coventry includes many people from the Indian subcontinent, some of whom do not drink because of their religion and some cultures are likely to limit the participation of women in these lifestyle risk behaviours.

Figure 20 shows the change in proportion by quintiles of deprivation. The proportion of people reporting 3+ lifestyle risks had decreased significantly in all quintiles over the time period. In 2012 a significantly higher proportion of people living in the most deprived quintile reported 3+ lifestyle risks than those in the least deprived areas. Other studies[45] have also found that those with greatest neighbourhood deprivation had a lower healthy lifestyle score.

Figure 18: Change in Prevalence for the High Risk Category by Age Group, 2007 and 2012



[45] R Lakshman *et al.* 2010. Association between area-level socioeconomic deprivation and a cluster of behavioural risk factors: cross-sectional, population-based study. Journal of Public Health, 33(2), pp. 234-254.

Figure 19: Change in age standardised prevalence for the high risk category by ethnic group, 2007 and 2012

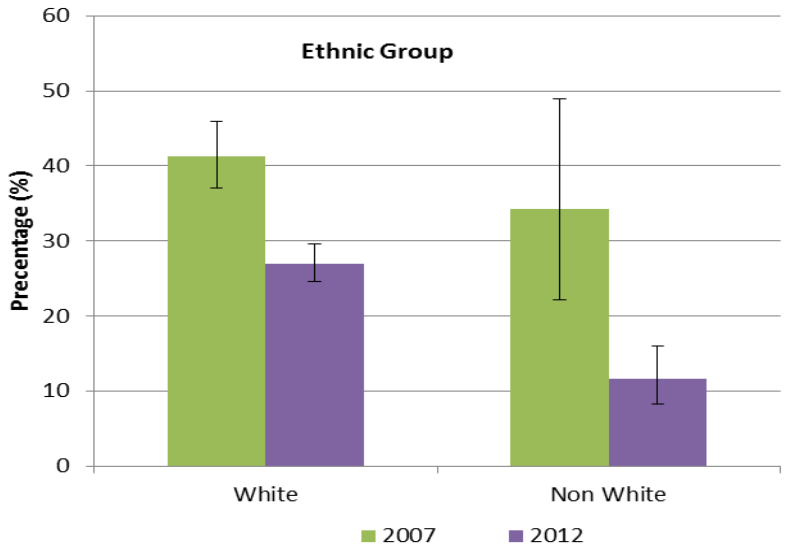


Figure 20: Change in age standardised prevalence for the high risk category by deprivation quintile (IMD 2010) in 2007 and 2012

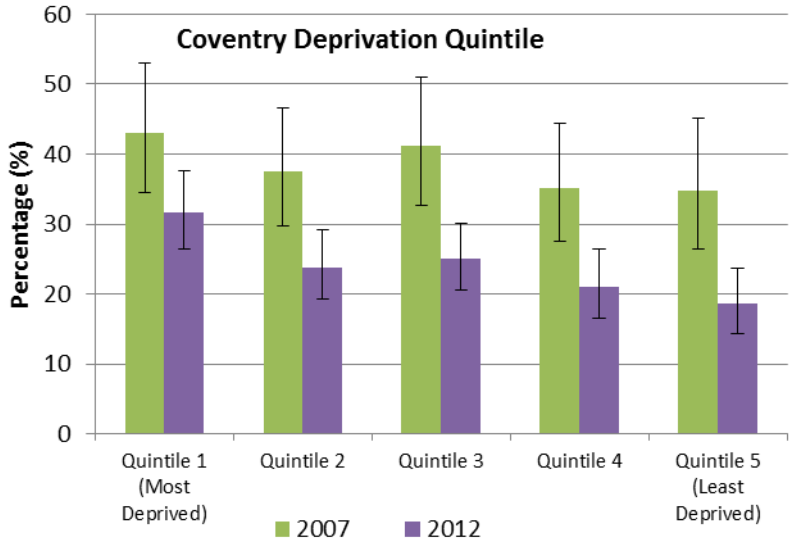


Figure 21 shows the change in percentage of people with high risk behaviours, by educational status. It should be noted that there were problems with the educational status coding because of difference in the questions in the two surveys. In the 2012 survey there was a significantly larger proportion of people reporting high risk behaviour in the 'no qualifications' category compared to those with higher education, which was not shown in 2007. There has been a statistically significant decrease in the proportion reporting high risk in all the educational groups over time.

Like Coventry, the King's Fund report found that there was a higher proportion reporting high risk behaviour among those with no qualifications, compared to those with higher education. It found that there was a greater reduction in the percentage of people with high risk behaviour in higher educational group, but in Coventry significant reductions were experienced in all educational groups. Research in Belgium[46] and Brazil[47] also reported that those with least education had the highest prevalence of multiple lifestyle risk.

Figure 22 shows the results for economic status, and shows a statistically significant decrease in the percentage of high risk behaviours, for those in the active status group and those who are retired. However it should be noted that the populations of the two survey years were not similar in terms of economic status so this could actually be an artefact. In the King's fund report, reductions were seen mainly among those in higher socio-economic groups, but it was not possible to compare directly with the Coventry results.

[46] S Drieskens *et al*. 2009. Multiple risk behaviour: increasing socio-economic gap over time? European Journal of Public Health, 20(6), pp. 634-639.
[47] G Duca *et al.* 2012. Clustering of unhealthy behaviors in a Brazilian population of industrial workers. Preventive Medicine, Volume 54, pp. 254-258.

Figure 21: Change in age standardised prevalence for the high risk category by educational status, 2007 and 2012

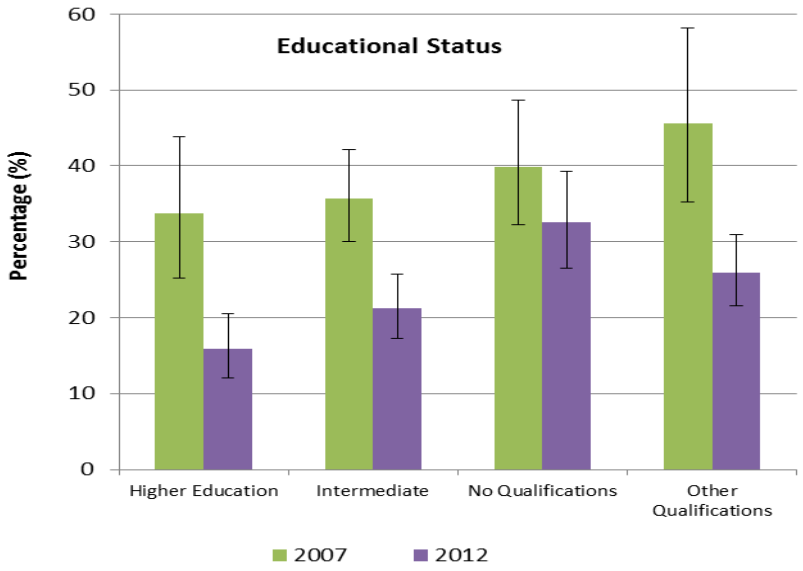
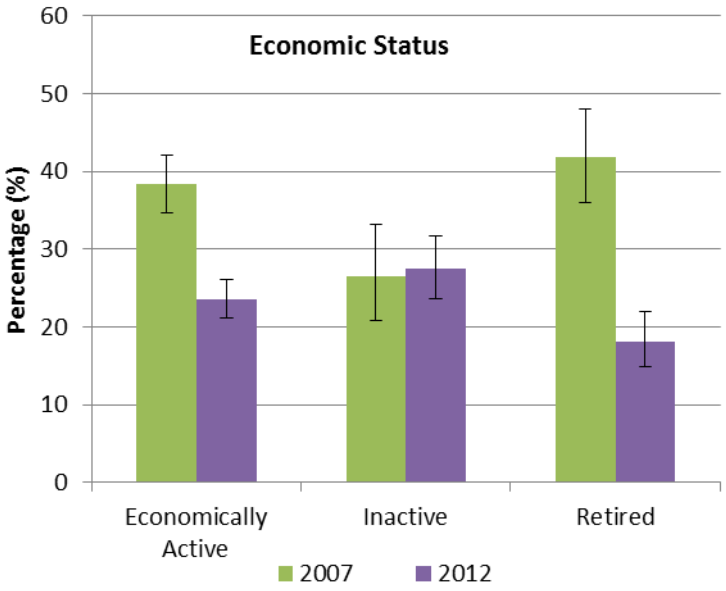


Figure 22: Change in age standardised prevalence for the high risk category by economic status, 2007 and 2012



The statistical testing of these results can be found here

Key facts: High risk category in sub-populations

- Younger people have higher prevalence of multiple lifestyle risk than older people.
- The White population report significantly more high risk behaviour than the Non-white population.
- People living in the most deprived quintile reported more high risk behaviour than those in the least deprived areas in 2012.

Predictors of Lifestyle Risk

In order to target the populations most in need of lifestyle advice and interventions, it is useful to know which groups are at greatest risk. In order to predict the likelihood of various groups in the population having multiple lifestyle risk factors, odds ratios were calculated for all of the subgroups. More information about odds ratios can be found here

The risks for each sub group are shown in Table 1 and the difference between 2007 and 2012 shown in Table 2. In each subgroup all the categories are compared to the category in brackets which is always set as 1. For example in the gender category in 2007 males are 2.25 times more likely to be in the high risk group than females. The p-values in blue text are statistically significant.

High and Low Risk Groups

In 2007, men were more than twice as likely to be in the high risk group versus low risk group, compared to women. Being 16 to 54 years old increased the chance of having high risk, versus low risk, by six times compared to being 65+. Living in the most deprived quintile increased the chance by around 80% of having high risk versus low risk, compared to living in the least deprived quintile. Being economically inactive reduced the chance of being in the high risk group versus low compared by around 60% to being retired.

In 2012, men were more than twice as likely to be in the high risk group versus low risk group, compared to women. Those younger than 65 years old had two to three times the likelihood of being in the high risk versus low risk group, compared to those aged 65+. Living in the most deprived quintile increased the likelihood of being in the high risk group versus low risk, compared to living in the least deprived quintile by around 70%. Having higher education reduced the chance by around 45% of being in the high risk group versus low risk, compared to other qualifications and having no qualifications increased the chance by around 50%.

Change in predictors of lifestyle risk

By 2012, 66% of people had two or more lifestyle risk factors compared to 77% in 2007. So there are improvements being made in the number of lifestyle risks, within our samples, but there are still many more to be made. There have been a couple of statistically significant changes, when looking at the odds ratios, for high and low risk from 2007 to 2012. Improvements were experienced for the 25-44 year old age group with them being less likely to be high risk in 2012 than 2007 than the 65+, but the economically inactive group were more likely to be high risk than the retired group by 2012.

Table 1: Odds Ratios for the Predictors of Multiple Lifestyle Risk Factors – High or Low for 2007 and 2012				
Category	**High Risk**			
	p- value	**Odds ratio**	**Confidence Interval**	
			Lower	**Upper**
2007				
Gender (Female)				
Male	**<0.01**	2.25	1.71	2.95
Age (65+)				
16-24	**<0.01**	6.86	3.05	15.44
25-44	**<0.01**	6.31	2.96	13.44
45-54	**<0.01**	6.58	2.99	14.50
55-64	0.07	1.80	0.96	3.38
Ethnicity (Non-White)				
White	**<0.01**	2.31	1.58	3.37
Coventry Deprivation Quintile (5th Quintile Least Deprived)				
1st Quintile (Most Deprived)	**0.01**	1.79	1.13	2.83
2nd Quintile	0.30	1.27	0.81	1.97
3rd Quintile	0.06	1.51	0.98	2.34
4th Quintile	0.42	1.20	0.77	1.87
Economic Status (Retired)				
Active	0.20	0.64	0.33	1.26
Inactive	**0.02**	0.42	0.21	0.88
Educational Status (Other Qualifications)				
Higher Education	0.25	0.75	0.46	1.23
Intermediate	0.10	0.70	0.46	1.07
No Qualification	0.82	0.95	0.61	1.47
2012				
Gender (Female)				
Male	**<0.01**	2.09	1.67	2.61
Age (65+)				
16-24	**<0.01**	3.02	1.67	5.47
25-44	**0.01**	2.16	1.23	3.79
45-54	**<0.01**	2.80	1.57	4.98
55-64	**0.01**	1.94	1.20	3.16
Ethnicity (Non-White)				
White	**<0.01**	3.16	2.26	4.43
Coventry Deprivation Quintile (5th Quintile Least Deprived)				
1st Quintile (Most Deprived)	**0.01**	1.67	1.16	2.41
2nd Quintile	0.37	1.19	0.82	1.72
3rd Quintile	0.12	1.33	0.93	1.90
4th Quintile	0.62	1.10	0.75	1.61
Economic Status (Retired)				
Active	0.22	1.35	0.84	2.17
Inactive	0.25	1.35	0.81	2.24
Educational Status (Other Qualifications)				
Higher Education	**<0.01**	0.56	0.40	0.81
Intermediate	0.46	0.89	0.67	1.20
No Qualification	**0.01**	1.52	1.11	2.07

Notes: The reference group for the dependent variable is no lifestyle risk factors. The reference groups for the independent variables are in brackets. Confidence intervals for Exp(B) at 95%. p-value <0.05 highlighted in blue.

Table 2: Change in Odds Ratios for the Predictors of Multiple Lifestyle Risk Factors – High or Low for 2007 and 2012			
Category	**High Risk**		
	2007	**2012**	**p-value 2012/2007**
Gender (Female)			
Male	2.25	2.09	0.68
Age (65+)			
16-24	6.86	3.02	0.11
25-44	6.31	2.16	**0.03**
45-54	6.58	2.80	0.09
55-64	1.80	1.94	0.85
Ethnicity (Non-White)			
White	2.31	3.16	0.23
Coventry Deprivation Quintile (5th Quintile Least Deprived)			
1st Quintile (Most Deprived)	1.79	1.67	0.82
2nd Quintile	1.27	1.19	0.83
3rd Quintile	1.51	1.33	0.66
4th Quintile	1.20	1.10	0.77
Economic Status (Retired)			
Active	0.64	1.35	0.07
Inactive	0.42	1.35	**0.01**
Educational Status (Other Qualifications)			
Higher Education	0.75	0.56	0.34
Intermediate	0.70	0.89	0.36
No Qualification	0.95	1.52	0.09

The following inequalities in odds of having the high lifestyle risk found in the Coventry survey in 2012 are similar to those found in other research:

- Men were more than twice as likely to have high risk versus low risk, compared to women.
- Being under 65 years old increased your chance of having high risk versus low risk by two to three times, compared to being 65+, particularly the 16-24 year age group.
- Being white more than tripled your chance of having high risk versus low risk, compared to being non-white.
- Living in the most deprived quintile increased your chance by around 70% of having high risk versus low risk, compared to living in the least deprived quintile.
- Having higher education reduced your chance by around 45% of having high risk versus low risk, compared to other qualifications and having no qualifications increased your chance by around 50%.

The sub groups listed above are the populations in which multiple lifestyle risk is clustered. These results should be used in any planning of targeted health promotion. Research in other countries confirms that these groups are most at risk. Studies in Belgium[48], Canada[49] and Brazil[50] found that men had a higher chance of having one or more risks compared to women. An Australian[51] and a Canadian study[49] both found that the older age groups had the fewest risk behaviours and younger people had most risk behaviours. The Belgian[48] and Brazilian[50] studies both found that multiple risk is more frequent in lower educational groups. Other studies in Ireland[52] and England[53,54] had noted the link between increased deprivation and lower social class and increased lifestyle risk.

Key facts: Predictors of lifestyle risk

- The groups with higher odds of having high lifestyle risk are males; those younger than 65; the deprived; and those with low education/qualifications.
- These groups are also identified in research as having higher risk.

[48] S Drieskens *et al*. 2009. Multiple risk behaviour: increasing socio-economic gap over time? European Journal of Public Health, 20(6), pp. 634-639.
[49] F Li, 2009. Prevalence, trend, and sociodemographic association of five modifiable lifestyle risk factors for cancer in Alberta and Canada. Cancer Causes Control, Volume 20, pp. 395-407.
[50] G Duca *et al.* 2012. Clustering of unhealthy behaviors in a Brazilian population of industrial workers. Preventive Medicine, Volume 54, pp. 254-258.
[51] French, S., Rosenberg, M. & Knaiman, M., 2008. The clustering of health risk behaviours in a Western Australian adult population. Health Promotion Journal of Australia, 19(3), pp. 203-209
[52] M Conry, *et al.* 2011. The clustering of health behaviours in Ireland and their relationship with mental health, self-rated health and quality of life. BMC Public Health, 11(692).
[53] W Portinga, 2007. The prevalence and clustering of four major lifestyle risk factors in an English adult population. Preventive Medicine, Volume 44, pp. 124-128.
[54] R Lakshman *et al.* 2010. Association between area-level socioeconomic deprivation and a cluster of behavioural risk factors: cross-sectional, population-based study. Journal of Public Health, 33(2), pp. 234-254.

Geographical Distribution in 2012

The Coventry Household Survey records geographical information, so it is possible to map areas with greater proportions of multiple lifestyle risk, and see where these populations cluster. The survey data has been mapped at Middle Super Output Area (MSOA) level. MSOAs are geographical areas used by National Statistics for data outputs, since the 2001 census, because their borders are more stable over time than political boundaries such as wards. There are 42 MSOAs in Coventry; they are smaller than wards and more equal in population size.

The percentage of people with 3 or 4 behaviour risk factors was calculated for each MSOA in Coventry. The MSOAs were ranked by their proportion of high risk population and then divided into five groups, ranging from the lowest percentage to the highest percentage; these groups are known as quintiles. Figures 23 and 24 both show Coventry's MSOAs, with Figure 23 showing the distribution of high risk behaviour, and Figure 24 showing the distribution of deprivation using IMD 2010.

There is some similarity between the two maps in the distribution of the highest and lowest quintiles of risk behaviour and the highest and lowest quintiles of deprivation. In particular 'Wood End', 'Henley & Manor Farm (WEHM)' and 'Willenhall' MSOAs are in the highest quintile for both risk behaviour and deprivation. 'Allesley Village & Bablake', 'Allesley Park', 'Finham & South Cheylesmore', and 'Green Lane' are in the lowest quintile for both.

High risk behaviour and deprivation do not match in many of the MSOAs but when they are plotted as a correlation, it is much easier to see their relationship. Figure 25 shows a statistically significant positive correlation between average deprivation score for each MSOA and the percentage of people living in the MSOA, who have high risk behaviour. This means that a higher proportion of people, with high risk behaviour, can be expected in MSOAs with higher deprivation scores.

There are exceptions to this general trend, one being 'University & Gibbet Hill' which has the least deprivation, but has a high proportion of reported high risk behaviour. This is probably because Warwick University is located in this ward, with many students living on campus. Having a large proportion of students in the population of the MSOA has probably increased the number of lifestyle risk factors present simply because of the younger age group of students. Coventry University is located in the 'City Centre' MSOA, but its influence is less pronounced as it is not a campus university, so the student population is more dispersed. The 'City Centre' MSOA is in the lowest quintile for high risk behaviour.

Figure 23: Map of High Risk Category Quintiles by MSOA for 2012

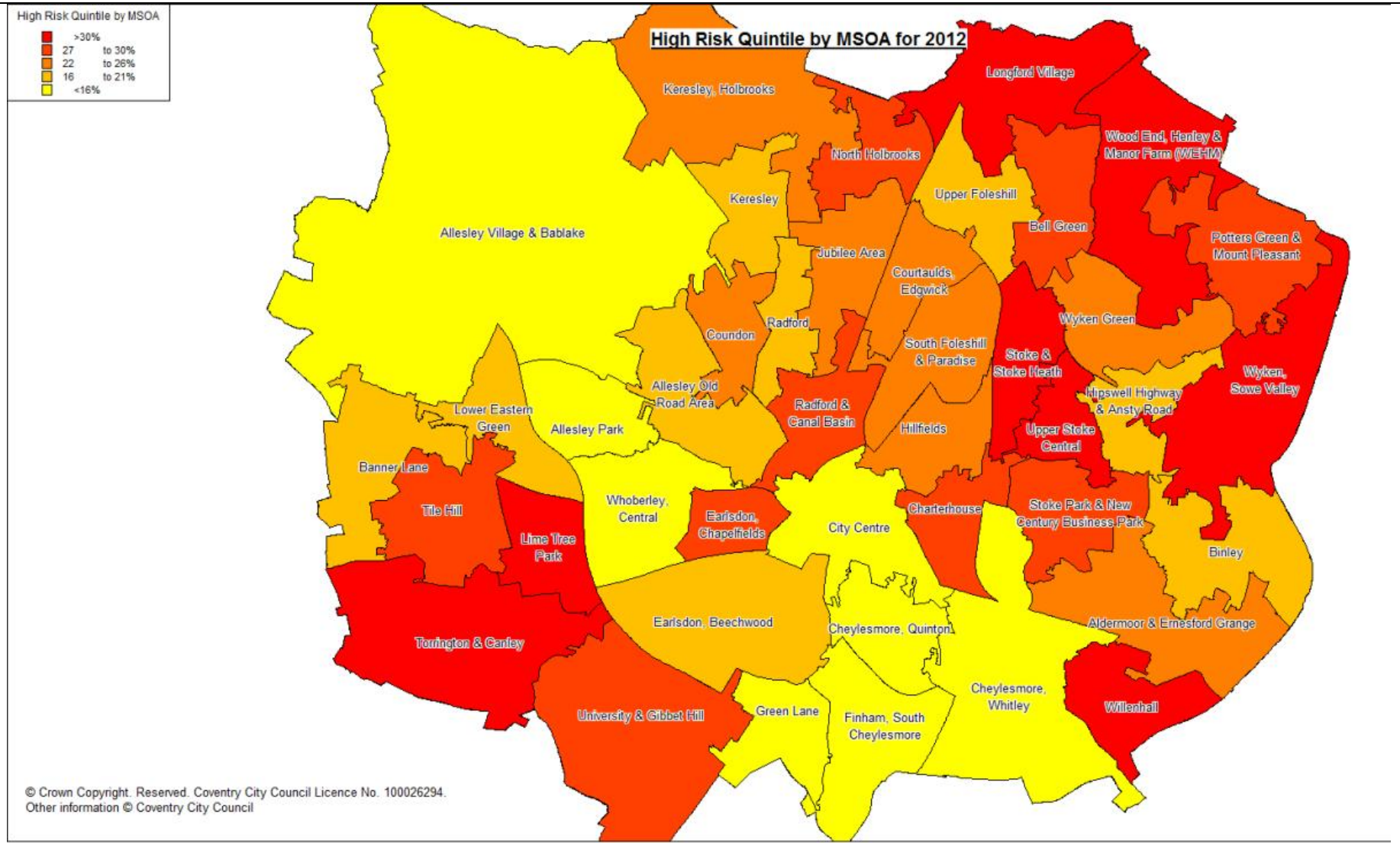


Figure 24: Map of Coventry Deprivation Quintiles 2010 by MSOA

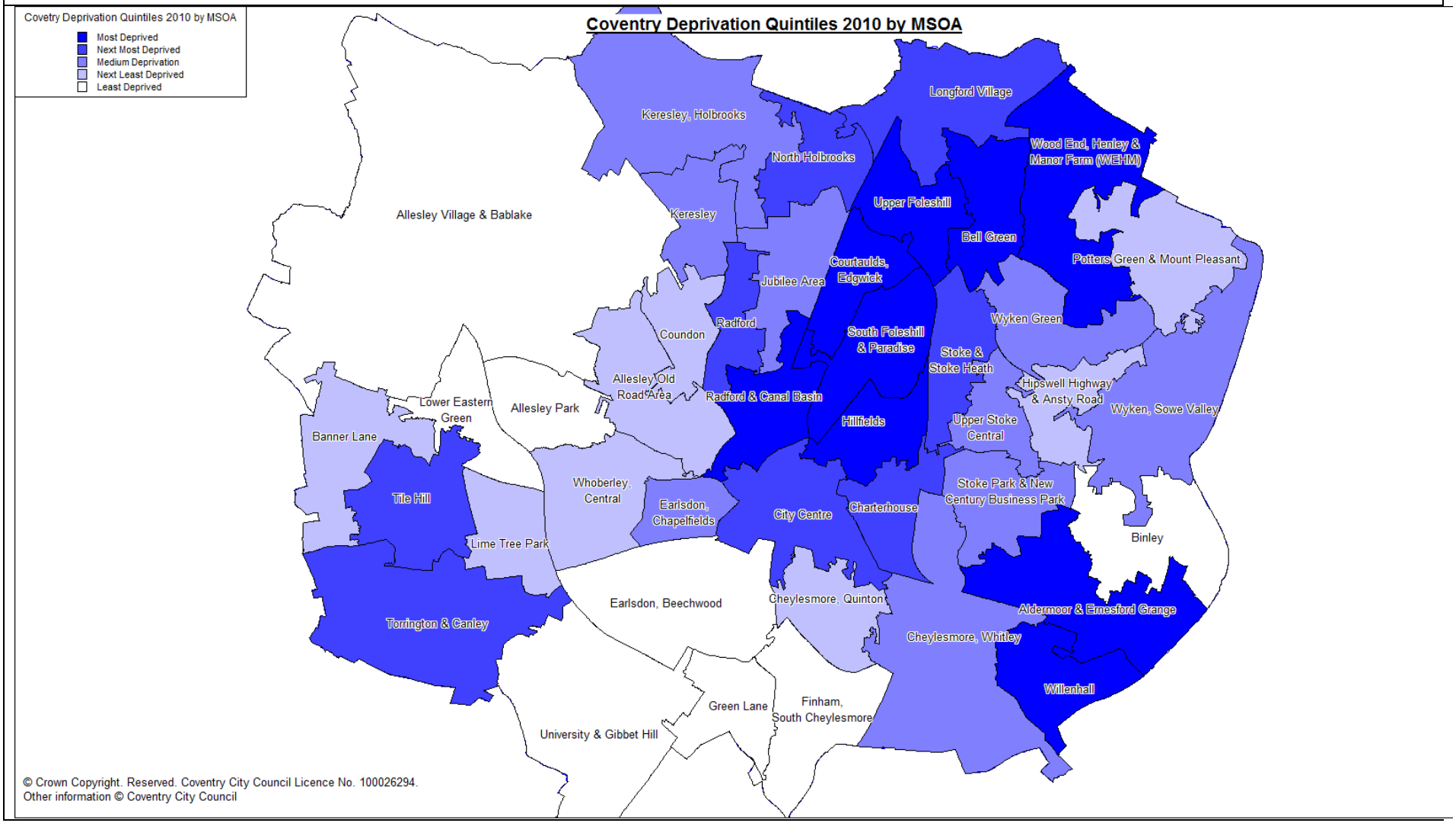
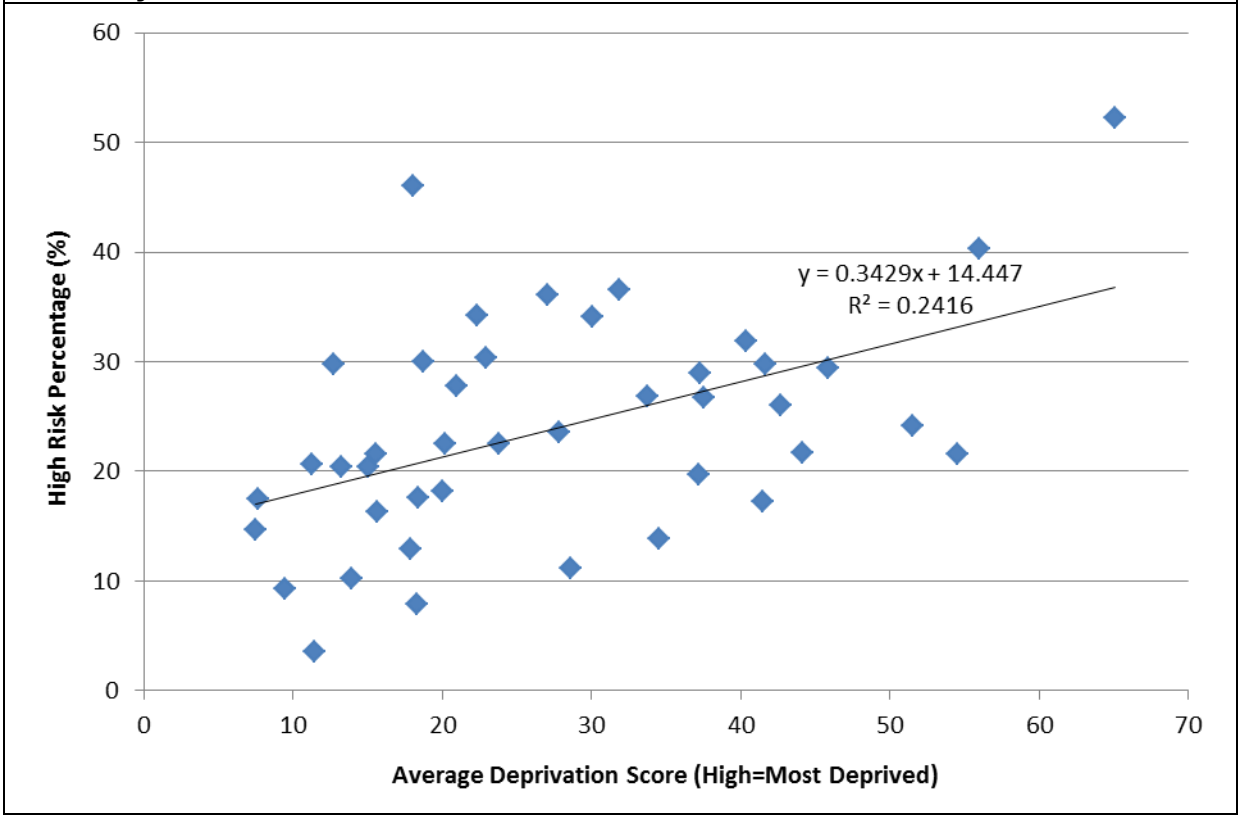


Figure 25: Correlation Between High Risk Prevalence and Average Deprivation Score by MSOA, 2012



Key facts: Geography and Mosaic groups

- A higher proportion of people living in deprived areas have high risk behaviour
- In Coventry the mosaic group with the highest proportion of people with high risk behaviour is 'Families in low-rise social housing with high levels of benefit need'
- The group with the lowest proportion is 'Middle income families living in moderate suburban semis'

Mosaic Analysis 2012

Mosaic market segmentation allocates individuals and/or households to groups, which give an understanding of the demographics, lifestyle and behaviour of the group. This gives insight into their needs and demands, and how to communicate with them[55]. Also mosaic groupings are used to help with social marketing and targeting of interventions. The groups can be seen in Table 3.

Each participant was allocated to a Mosaic group and type based on their postcode[56]. The mosaic group is the one which best fits the majority of residents, but not everyone living at that postcode will fit the description. The Mosaic groups have been mapped for Coventry and are shown in Figure 26 as a coloured spot at the centre of each postcode.

Table 3: Mosaic Public Sector Groups 2012 Key	
A	Residents of isolated rural communities
B	Residents of small and mid-sized towns with strong local roots
C	Wealthy people living in the most sought after neighbourhoods
D	Successful professionals living in suburban or semi-rural homes
E	Middle income families living in moderate suburban semis
F	Couples with young children in comfortable modern housing
G	Young, well-educated city dwellers
H	Couples and young singles in small modern starter homes
I	Lower income workers in urban terraces in often diverse areas
J	Owner occupiers in older-style housing in ex-industrial areas
K	Residents with sufficient incomes in right-to-buy social houses
L	Active elderly people living in pleasant retirement locations
M	Elderly people reliant on state support
N	Young people renting flats in high density social housing
O	Families in low-rise social housing with high levels of benefit need
U	Unclassified

These groups are broken down further into mosaic public sector types (sub-groups). Initial analysis by sector type found the numbers to be too small and the confidence intervals too wide for meaningful interpretation. Therefore, these figures are not reported, but the types are shown here.

The percentage of people with high risk behaviour (3 or 4 risk factors) for each of the Mosaic groups is shown in Figure 27. The 'Families in low-rise social housing with high levels of benefit need' (O) have a statistically significant higher prevalence (36.5%) than the Coventry average. The 'Middle income families living in moderate suburban semis' (E) have a statistically significantly lower prevalence (16.4%) than Coventry.

[55] Experian, 2011. *Mosaic Public Sector Interactive Guide.* http://guides.business-strategies.co.uk/mosaicpublicsector2009/html/visualisation.htm?*1

[56] Experian, 2012a. MOSAIC Group & Type Datafile URL

Figure 26: Map of Mosaic Public Sector Groups for Coventry 2012

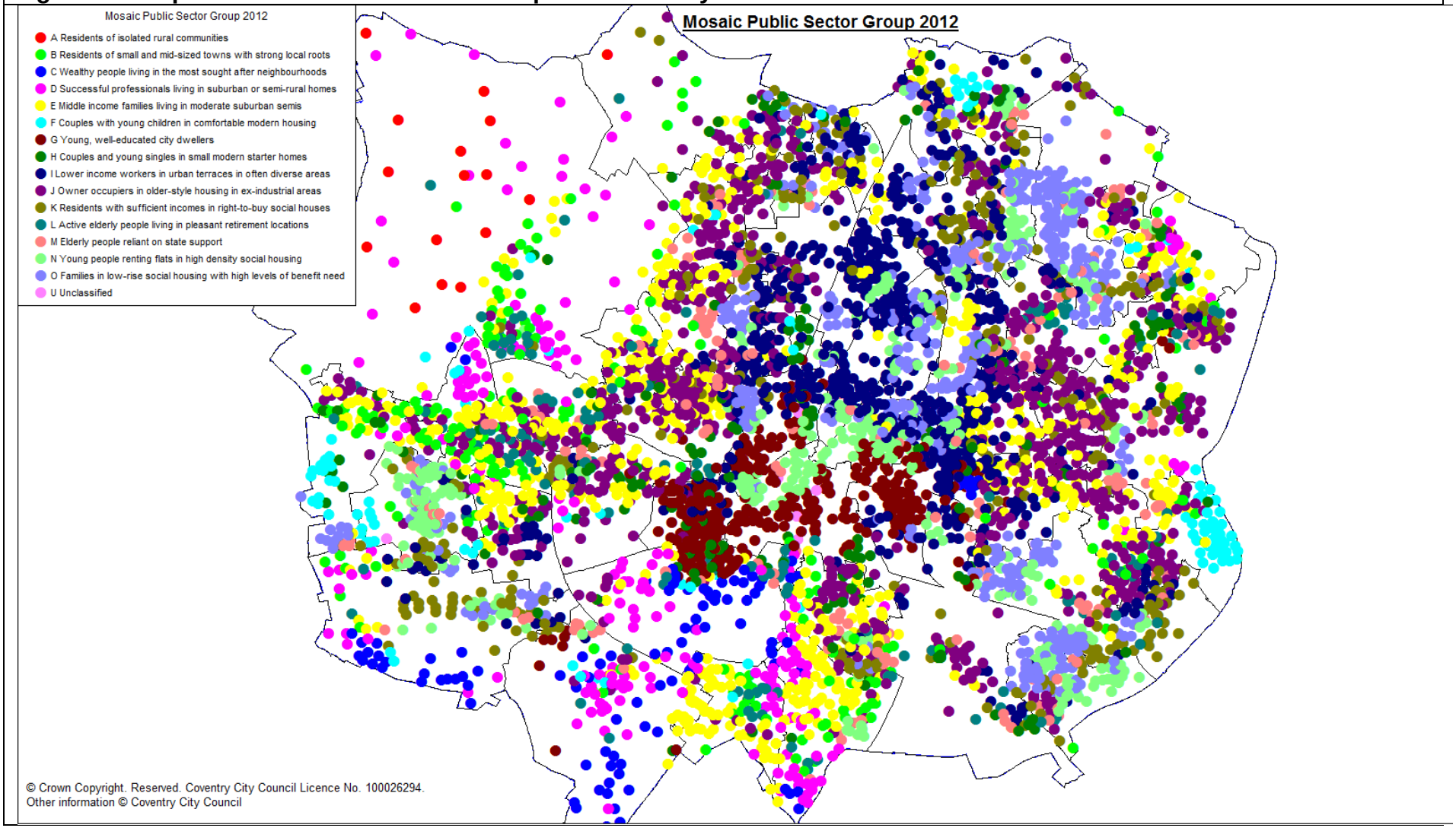
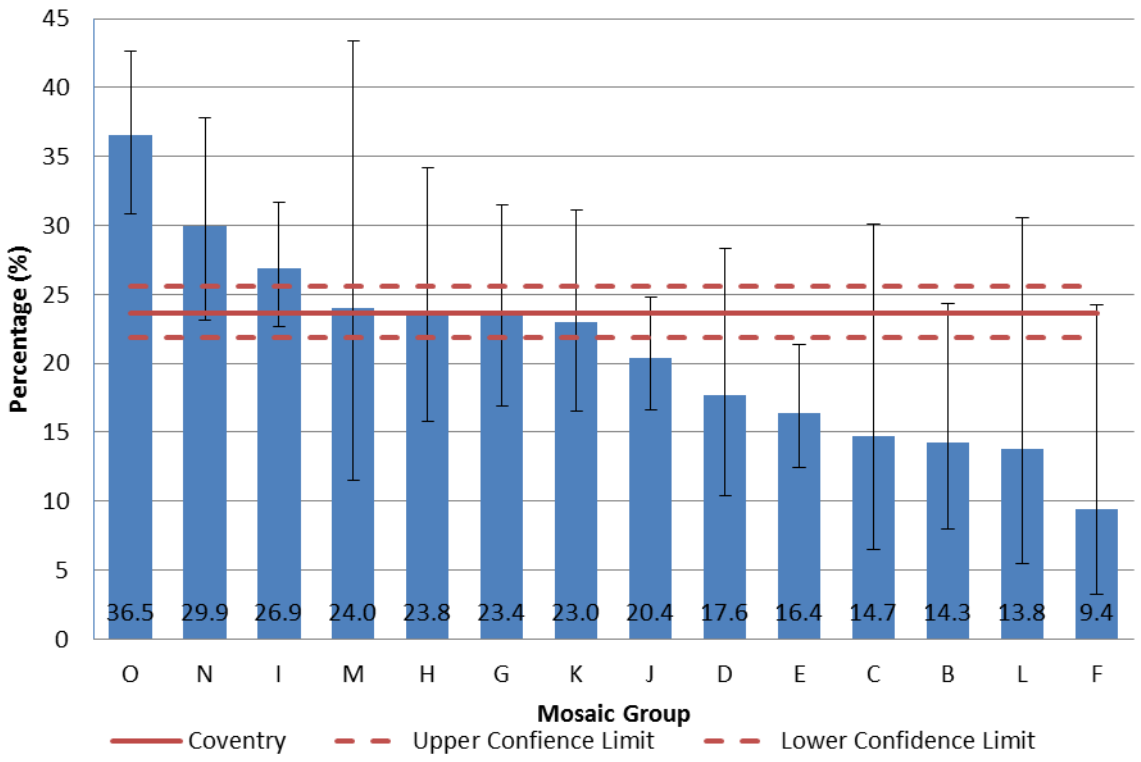


Figure 27: High Risk Prevalence for Each Mosaic Group 2012



The percentage of people with high risk behaviour in each mosaic group of the survey has been applied to the Coventry population as a whole, as it is known how many people there are in each mosaic group. This provides an estimate of how many people are likely to have high risk behaviour in Coventry. The results are shown here. The top three mosaic groups in terms of number of resident in Coventry are respectively:

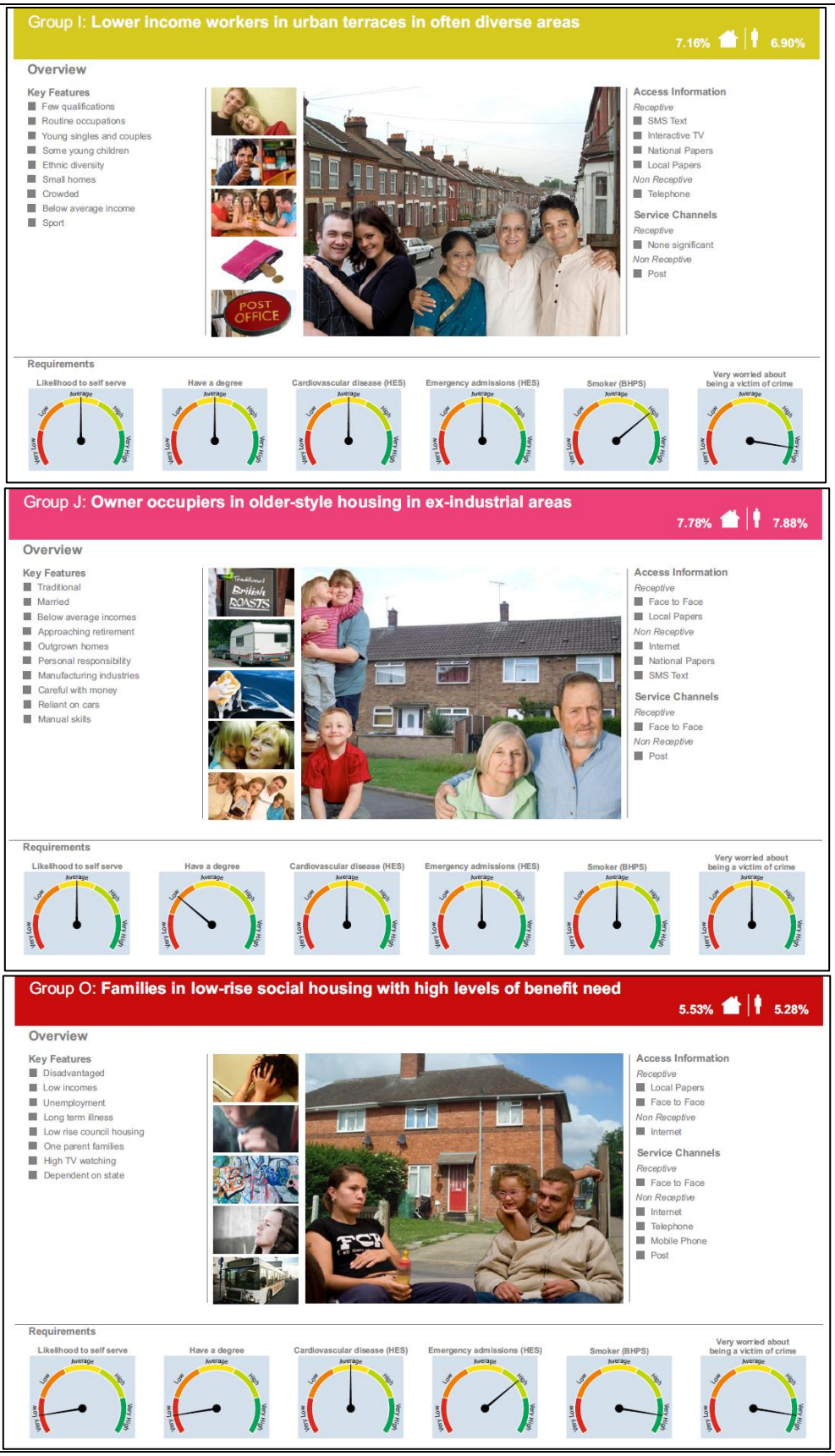
- J - Owner occupiers in older-style housing in ex-industrial areas (47,381 people)
- I - Lower income workers in urban terraces in often diverse areas (39,530 people)
- E - Middle income families living in moderate suburban semis (34,334 people)

However the top three mosaic groups, in terms of estimated numbers of people with high risk behaviour, are respectively:

- I - Lower income workers in urban terraces in often diverse areas (10,643 people)
- J - Owner occupiers in older-style housing in ex-industrial areas (9,654 people)
- O - Families in low-rise social housing with high levels of benefit need (7,737 people)

These three groups account for 50% of the estimated high risk population in Coventry. Figure 28 provides an overview of the three groups, including how they access information and service channels. This is useful when targeting interventions to these groups, for example none of these groups are receptive to posted items but two of the groups are responsive to face to face services.

Figure 28: Mosaic Public Sector Group Overview for Top Three High Risk Groups[57]



[57] Experian, 2012b. Mosaic Market Segmentation Software

Reasons for Change

Over the time period of the research, 2007 to 2012, there have been many national and local initiatives and legislative changes that may have affected the prevalence of lifestyle risk factors in the population. These changes may help to explain why the prevalence of individual lifestyle risk factors may have decreased. One of the local initiatives was the *Coventry Health Improvement Programme (CHIP).*

CHIP was launched in 2009 in Coventry and aimed to reduce the health inequalities that exist between the different areas of the city through various projects:

- Alcohol
- Children and young people – health
- Parenting and family support
- Health checks
- Healthy weight
- Mental well-being
- Sexual health
- Smoking
- Work and health

A huge investment was made into the CHIP programme and the various projects which may have contributed to the reduction in the prevalence of each of the lifestyle risk factors. More details about each area specific to this research can be found below in the relevant section.

Tobacco Control

On 1st July 2007 the smokefree legislation was introduced, which prevented people from smoking in enclosed and substantially enclosed places, as well as on public transport and in work vehicles. This may have been the trigger for people to stop smoking as it was inconvenient to have to go outside to smoke, potentially in the cold and rain.

There have been several other legislative changes that have been introduced in relation to tobacco that may have also had an impact on smoking prevalence. These include[58]:

- October 2007 - the minimum age to buy cigarettes was increased from 16 to 18 years old
- October 2008 - cigarette manufacturers include picture warnings on the packs of cigarettes
- October 2011 - sale of tobacco from vending machines banned in England

There have also been several Coventry initiatives, which complement the national changes. Coventry has a well-established Smokefree Alliance, who plan and implement initiatives to deliver on the tobacco control agenda. It was initially set up

[58] Li, F. X. et al., 2009. Prevalence, trend, and sociodemographic association of five modifiable lifestyle risk factors for cancer in Alberta and Canada. Cancer Causes Control (20) p395-407

to implement the Smokefree law of 1st July 2007. This group has continued with a more focussed direction since January 2010, with the appointment of a Tobacco Control Co-ordinator and the development of Coventry's Tobacco Control Strategy[59], which was published in June 2010. This set out the vision for 2010-2013 and was aligned closely to the Department of Health's report 'A Smokefree Future: A Comprehensive Tobacco Control Strategy for England'[60] . A 'Big Pledge' Campaign took place in 2010, with smokers pledging to quit for a specific reason. This may have helped people to start on their quitting journey. A similar campaign was run in 2011 with a focus on NHS Coventry and stop smoking services pledging to support smokers to quit.

Coventry participated in a pilot of the "any qualified provider" commissioning model for the delivery of stop smoking services and stop smoking in pregnancy services. This was part of a West Midlands three year pilot from April 2010 to March 2013. Stop smoking service providers were paid by results i.e. for 4 week and 12 week quitters and for pregnant women, who were quit at delivery. There was a higher tariff for targeted groups, such as those living in deprived areas, routine and manual workers, young people, black minority ethnic populations and people with mental health problems. The aim of the targeted group tariff was to reduce health inequalities by reducing the smoking prevalence in those groups with higher smoking rates. The aim of this commissioning model was to improve quality and efficiency, and provide value for money using an innovative approach. It also aimed to make increase the availability of smoking cessation services in Coventry by increasing the number of providers and hence the accessibility for clients.

Figure 29 shows 4 week quitters over time. Prior to 2010/11 there was only one provider delivering services, but this increased to around nine during the pilot. The number of quitters increased from 2009/10 to 2010/11 (year 1) and again in 2011/12 (year 2). However there was a slight decrease in 2012/13 (year 3), which was probably due to the uncertainty around future contracts.

Key facts: Smoking in Coventry

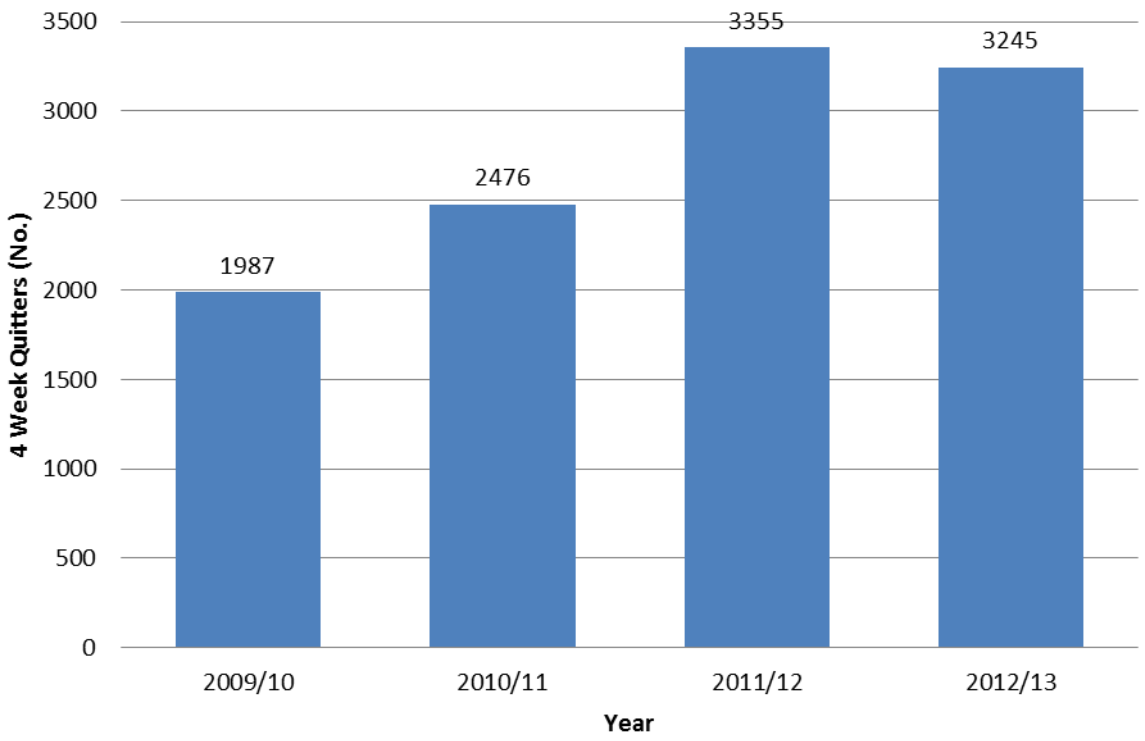
- Prevalence of Smoking in 2012: 25%
- Estimated deaths per year: 460

[59] A Angus, 2010. Coventry's Tobacco Control Strategy. 2010 – 2013. NHS Coventry and City Council http://www.webarchive.org.uk/wayback/archive/20130328175831/http://www.coventry.nhs.uk/CmsDocuments/198c4ede-a716-42a6-ad1c-419d42a7e537.pdf

[60] Department of Health. 2010. A Smokefree Future: A Comprehensive Tobacco Control Strategy for England http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/@ps/documents/digitalasset/dh_111789.pdf

Figure 29: Numbers of 4 Week Quitters 2007/08 - 2012/13

Data from Stop Smoking Services and the Coventry Household Survey



Alcohol

The national 'Why let good times go bad?' campaign was launched by Drinkaware in 2009 to encourage 18-24 year olds to evaluate their drinking habits and change the social acceptability of drunkenness[61]. Drinkaware also ran a campaign called 'What's your excuse?' in 2011, which was aimed at 30-45 year old 'increasing risk' drinkers. Both of these campaigns may have helped to reduce excessive alcohol consumption in these age categories.

The Coventry Alcohol Harm Reduction Strategy 2008-11[62] was published in 2008 and includes four themes; treatment and care, crime and community safety, young people, and licensing and the alcohol industry. Action plans were developed around each theme and were monitored through the Alcohol Harm Reduction Programme Delivery Group. There have been successes in the structured day-care service, working with probation, in the development of a 'recovery community', communications with the public to raise awareness of alcohol issues, demonstrating the effectiveness of joint drug and alcohol services, and closer working with the police. These developments and successes may have contributed to the reduction of excessive alcohol consumption between 2007 and 2012.

[61] Drinks Initiatives, 2009. Why let good times go bad? http://www.drinksinitiatives.eu/details-dynamic.php?id=313
[62] Coventry Partnership, 2008. Coventry Alcohol Harm Reduction Strategy 2008-11. http://beacon.coventry.gov.uk/downloads/download/87/alcohol_harm_reduction_strategy_and_action_plans_200811

Key facts: Alcohol in Coventry

- Prevalence of Excessive Drinking in 2012: 31%
- Estimated deaths per year : 100

Healthy Weight (Eating 5 A Day and Physical Activity)

In terms of improving diet and physical activity the 'Change 4 Life' campaign[63], that was launched to the public in January 2009, may have had an impact on poor diet and lack of exercise. The aim was for all individuals to be able to maintain a healthy weight through a behaviour change journey. This was targeted at parents with children under the age of 11, and then expanded to include pregnant women, parents of 0–2-year-olds, ethnic minority communities, and workforces. The strap line used is "Eat well, move more and live longer". The campaign's messages included encouragement to eat five portions of fruit and vegetables a day, and for children to do 60 minutes of physical activity a day. The campaign would have affected the parents' behaviour as well and so it may have helped to improve the prevalence of eating five a day and doing physical activity regularly among the 16+ population of Coventry.

Jamie Oliver's campaign to improve school meals may also have had an impact on the consumption of five portions of fruit and vegetables a day in the general public. The campaign led to the introduction of nutrition based standards for school meals in 2006, which became mandatory by 2009. Children may have passed the messages that they received at school to parents, who may also have improved their diet.

The Olympic Games 2012 may have improved the prevalence of physical activity. The torch was handed over at the Beijing Olympics in 2008 and then there was a lot of promotion of physical activity in the run up to the Olympics in London in 2012. The household survey took place in January 2012, so the Games had not started at that point, but there may have still have been some influence on the participants in the survey.

Coventry's Healthy Weight Strategy 2010 to 2015[64] was published in 2010 and aimed to promote healthy weight amongst the population, through the implementation of effective approaches. Targets were set for breast feeding, school meal uptake, 5 a day fruit and vegetable consumption and physical activity levels in children and adults. Many healthy eating and physical activity programmes have

[63] Department of Health, 2009. Change 4 Life Marketing Strategy. http://www.nhs.uk/change4life/supporter-resources/downloads/change4life_marketing%20strategy_april09.pdf

[64] NHS Coventry and Coventry City Council, 2010. Coventry Healthy Weight Strategy 2010 to 2015. http://www.webarchive.org.uk/wayback/archive/20130328175843/http://www.coventry.nhs.uk/CmsDocuments/c4338a2d-ea17-4d89-a990-fcb13391c467.pdf

been established as a result of the strategy and CHIP; these include Food Dudes and One Body One Life. The successes are as follows:

- 31 cooking clubs allowing people within our communities to learn or develop their cooking skills.
- 9,438 children involved in Food Dudes, reporting evidence based healthy eating behaviour change in Coventry primary school children.
- £192,000 allocated to 40 food and health community projects.
- 54,279 adults and children taking part in physical activity.
- 28 Coventry schools promoting walking either as travel to and from school or within the school day.

These may have contributed to the improvement in eating five a day and participating in five sessions of 30 minutes of physical activity a week.

Key facts: Unhealthy diet and physical inactivity in Coventry

- Prevalence of unhealthy eating in 2012: 72%
- Prevalence of physical inactivity in 2012: 61%
- Estimated deaths per year caused by obesity : 179

General

The economic collapse in 2008 may have contributed to the reduction in smoking and alcohol consumption. Research has shown that if people have less money to spend, they may cut back on unhealthy behaviours, and increase physical activity[65]. On the other hand if people lose their jobs and become stressed they may turn to smoking and alcohol, and some studies have shown that economic downturn can be linked to either improved or worsening health behaviour[66]. The duty paid on tobacco and alcohol has increased over recent years, and other studies have shown that this may also reduce consumption[67,68].

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[67] J Townsend, P Roderick, J Cooper. Cigarette smoking by socioeconomic group, sex, and age: effects of price, income, and health publicity. BMJ volume 309 8 October 1994

[68] P Anderson, D Chisholm, D Fuhr. Alcohol and Global Health 2. Effectiveness and cost-effectiveness of policies and programmes to reduce the harm caused by alcohol. *Lancet* 2009; 373: 2234–46

What Next?

Research has shown that lifestyle risk is strongly linked to mortality rate[69, 70] and also demonstrated that changing lifestyle risk behaviour results in health benefits[71]. The reduction in the percentage of people reporting lifestyle risk in Coventry is good news, but there is a need to reduce lifestyle risks further.

It has also been demonstrated that multiple risk factors are the norm[72,73] and therefore there is a need for simultaneous behaviour interventions. Identifying which lifestyle risk behaviours occur simultaneously in an individual can help to inform the interventions that should take place[69]. Health issues such as overweight and obesity, cardiovascular disease, cancer and diabetes are influenced by multiple lifestyle risk factors. Lifestyle risk behaviours can be categorised into two groups: addictive behaviours, which include smoking and alcohol consumption, and health promoting behaviours, which include physical activity and eating five portions of fruit and vegetables a day[74]. The first group requires restraining, refraining or abstinence and the second actively engaging in health promotion interventions. For example, a multiple behaviour approach works for nutrition and physical activity together, but neither work with smoking cessation[75]. The Coventry household surveys identified which behaviours cluster together in the local population, which will aid planning interventions.

It has also been demonstrated that multiple risk factors tend to cluster in populations[71].It is important to focus health promotion interventions at those with the highest prevalence of lifestyle risk. The highest need for intervention is generally in the lower socio-economic classes[76]. This is also true in Coventry where deprivation is an important factor. Higher lifestyle risk is also more prevalent in males, those under 65 years old, the white population, and those with no qualifications.

The mapping of the geographic areas where multiple lifestyle risks are clustered will help to focus the location of interventions. The market segmentation analysis (Mosaic) indicates the most effective way to interact with each group. In Coventry, 50% of the estimated high risk population is clustered in three groups. The best way to access these groups is through text messages, interactive TV, local and national papers or face to face.

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[70] M Héroux *et al.* 2012. Clustering of unhealthy behaviors in the aerobics center longitudinal study. Prevention Science, Volume 13, pp. 183-195

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[74] Vries, H. et al, 2008. Clusters of lifestyle behaviors: Results from the Dutch SMILE study. Preventive Medicine, Volume 46, pp. 203-208.

[75] Smeets *et al.* (2007) cited in Vries, H. et al, 2008. Clusters of lifestyle behaviors: Results from the Dutch SMILE study. Preventive Medicine, Volume 46, pp. 203-208.

[76] S Drieskens *et al*. 2009. Multiple risk behaviour: increasing socio-economic gap over time? European Journal of Public Health, 20(6), pp. 634-639.

Recommendations

This report provides a snapshot of what progress we are making as a city to improve healthy behaviours. Although we are making progress, much more remains to be done. In particular, we need to understand why some parts of our city, and some groups, have not been affected by the changes we have seen across the city as a whole. We need to make sure that the services we provide locally, to support people to make a change, are fit for purpose for the people who need them most. We need to use the Coventry Household Survey to measure future progress.

Five key challenges for the City

There are five key challenges for the city. I set out 10 key actions to address these challenges which, if implemented, with the support of the Health and Well-being Board will drive progress over the next five years.

1. **Focus on closing the health gap**. Although healthy behaviours have improved across the board, they have improved most in the most affluent parts of the city. If this pattern continues, the health inequality gap will continue to widen. We know that healthy behaviours are closely linked to people's life chances and that factors such as whether children get a good start in life and go on to meaningful employment set the preconditions for their healthy behaviours. The city's Marmot programme, which is overseen by our Health and Well-being Board, contains a detailed action plan to improve life chances and reduce health inequalities. Implementing this is a key priority.

2. **Target the areas of the city and the people where we have seen the least improvement**. Local services, such as stop smoking services, must be open to everyone but should be incentivised to particularly target the eight areas of the city and in the specific groups where we have seen the least improvement. The eight areas are Longford Village, Wood End, Henley and Manor Farm, Stoke and Stoke Heath, Upper Stoke, Wyken Sowe Valley, Torrington and Canley and Lime Tree Park.

3. **Work with local communities to empower them to change.** We need to talk to local people and local community and voluntary groups to understand their lifestyles, what would help them to make a change and how we can co-design and co-produce services with local people. We need to recognise and work with the assets that lie in our communities, through rolling out asset-based working.

4. **Use social marketing, social media & technology to support behaviour change**. We need to make better use of social marketing and social media to target specific health messages at our key audiences. Drawing on the large number of people across the city who have made a change over the last five years, we also need to identify local champions who can act as advocates in their local communities.

5. **Make it easier for people to make the change**. We need to make sure that when people want to make a change, it is easy for them to do so, that services are easy and convenient to access either face-to-face or on-line, and that front-line staff from across the city are trained and able to support people into the right services at the right time

Top 10 actions to improve health behaviours

Challenge 1: Closing the health gap	**Challenge 2: Target areas of the city and groups where there has been least improvement**	**Challenge 3: Working with local communities to understand their needs**	**Challenge 4: Using social media to drive behaviour change**	**Challenge 5: Making it easier for people to make a change**
1. Work across the City Council and with partners to tackle the broader determinants of health by implementing the local 'Marmot' Plan.	2. Work with local lifestyle services to incentivise the uptake of services in priority parts of the city and in priority groups.	3. Carry out engagement work with people in the following groups to understand the barriers to improving health: -Young female smokers -Physically inactive older people -People who are economically inactive 4. Use social mobilisation techniques to galvanise communities to increase physical activity 5. Recognise the assets that lie in local communities and embed asset-based ways of working across Coventry	6. Identify people who have successfully made changes to their health and use social media to promote their stories. 7. Develop bespoke local campaigns to target priority communities.	8. Develop a 'single point of access' for lifestyle services which is integrated with council customer contact points, including the call centre. 9. Roll out the 'Making Every Contact Count' training programme to support front line staff to promote healthy behaviours. 10. Roll out the NHS Health Checks programme to support people age 40 or over to change their behaviour and identify preventable disease early.