Health Behaviours in Suffolk

Health Needs Assessment: NHS Health Checks

June 2022

Contents

Note

Please note that this report is part of the wider Health Behaviour Health Needs Assessment (HNA) for Suffolk. For other topic areas, please see the Healthy Suffolk website.

COVID-19 and data limitations

The data within this report mostly cites 2019/20 data sets and therefore does not examine the impact of COVID-19 on service provision, health behaviours or outcomes. Rather, the impact of COVID-19 is currently being explored through interviews with stakeholders and service users throughout Suffolk, which are not included in this report.

Please note that report was written in October 2021 and published in May 2022. At the time of publication, 2020/21 data has been published. Therefore, future work streams related to health behaviour services will reflect new data sources.

Quality and Outcome Framework data

The adult weight management data and smoking prevalence data relate to Quality and Outcomes Framework (QOF) data provided by GP practices. 2020/21 QOF data is now available on the Office for Health Improvement and Disparities (OHID) Fingertips website. As this report was written in 2021 and published in 2022, the QOF data within this report refers to 2019/20.

Recommendations

- **Deliver NHS Health Check invites based on deprivation**
  Public Health and Communities Suffolk to work with Provide (invite distribution company) to weight invites towards GP populations in the 40% most deprived areas relative to England.

  Public Health and Communities Suffolk should also increase the use of innovative invitation methods, including texting, analysing invite methods, undertaking service user engagement, and working with the Behavioural Insights Team to improve uptake from invites

- **Creating local solution to NHS Health Check coverage**
  Public Health and Communities Suffolk should develop local solutions to increase coverage and close the gap in non-attendance between men and women as well as least and most deprived populations. Public Health and Communities Suffolk can pilot the use of community assets such as Primary Care Networks (PCNs) and Integrated Neighbourhood Teams (INTs) to follow up non-attendances, as well as evaluating prototypes such as the Healthy Heart Fund and increasing non-health care settings such as Leisure Providers to assess impact.

  Additionally, Public Health and Communities Suffolk will explore the potential to increase the invite frequency for at-risk audiences, reducing the invite frequency for those less at risk of cardiovascular disease (CVD) through population health management.

- **Improving systems for evaluation and monitoring**
  Public Health and Communities Suffolk will agree a standardised approach to collecting NHS Health Check data across Suffolk which will allow for robust insight and planning.

  Working with those administering NHS Health Checks, Public Health and Communities Suffolk will enable appropriate auditing to identify GP practice level gaps in uptake among high-risk communities as well as other outcomes from NHS Health Checks.

  There is also a need to tackle the lack of recorded ethnicity data relating to completed NHS Health Checks. Improving data capture systems will begin to highlight health behaviour inequalities by area and ethnicity.

- **Investment in training**
  Public Health and Communities Suffolk will work with the Behavioural Insights Team and other partners to identify suitable behaviour change and motivational interview training to upskill Health Care Assistants where required.

- **Continued collaboration**
  Public Health and Communities Suffolk will work with CVD Prevention and Primary Care Integrated Care System (ICS) colleagues to:

  Identify suitable PCNs or Practices who may want to engage in specific targeted work. For example:

  - Those that have high levels of undiagnosed hypertension and atrial fibrillation (AF) (estimated) and work collaboratively to risk stratify and target invites for a NHS Health Check.

- Review the whole care pathway for NHS Health Check from invite through to follow up to identify strengths and challenges in the patient pathway for successful behaviour change and prevention of CVD.
- Learn from GP practices with high numbers of patients living in areas of deprivation and achieve high levels of uptake.
- Explore what support Practices with very little NHS Health Check delivery activity need.

What it is and why it matters

The NHS Health Check programme is a cardiovascular disease prevention programme which is delivered across England to adults aged 40-74[1]. It is the largest cardiovascular risk assessment and management programme in the world[2]. The check takes around 20 to 30 minutes and includes questions about lifestyle and family history, measurement of height, weight, and blood pressure and a blood test and the administering of personalised advice for risk reduction[3].

The programme was launched in 2009 and since 2013 has been led by local authorities who are responsible for offering an NHS Health Check every five years to all eligible adults. Local authorities have the flexibility to decide on many aspects of the delivery of the programme, such as how the service is promoted, how individuals will be identified, and who will deliver checks[4]. The most common provider of NHS Health Checks are GPs; 93% of local authorities use GPs to deliver at least some checks with the clinical patient record system being used to identify those who are eligible[4].

In 2017, a report examining the effectiveness of the NHS Health Check programme concluded that they were contributing to early diagnosis of high-risk conditions and helping to tackle health inequalities[5]. Furthermore, NHS Health Checks are associated with a decrease in CVD risks, BMI, smoking prevalence, blood pressure and total cholesterol[6].

However, there are issues with take up and quality of follow up care. Attendance rates at health checks vary by region with uptake between 41.3% and 49.2%, well below the 75% target rate[6]. Results of a quasi-randomised controlled trial published in 2019 found that invitation for a health check increased the detection of cardiovascular risk factors, but rates of uptake in evidence-based medical therapies were below those expected by the Department of Health[5].

Additionally, NHS Health Checks may not be helping to address health inequalities due to unequal take up by socioeconomic group and characteristics. Those most likely to attend a health check are female, White British, and aged 60 or more, with those who are highly deprived and those who smoke less likely to attend[6].

National policy

In 2008 the Department of Health set out an ambition to introduce an England-wide vascular risk-reduction and management program, and the NHS Health Check program was formally introduced in 2009[7]. In 2013 the responsibility for implementation passed from Primary Care Trusts to local government in line with reforms to the public health system that were introduced at that time[8].

During 2020/21 invites and delivery of NHS Health Checks were significantly reduced nationally due to the COVID-19 pandemic. On 7th January 2021 NHSE/I wrote to all CCGs in England directing them to immediately suspend any locally commissioned services and reporting requirements[9]. On 9th April 2021 PHE published guidance on restart preparation for health checks, stating that the decision on when to restart was one for local authorities to take[10].

Relevant NICE guidance

There is no specific NICE guidance directing the implementation of the NHS Health Checks Programme, only NICE guidance on managing the risk of cardiovascular disease more generally. However, PH38 and QS84 have some relevant sections and are summarised below.

Type 2 diabetes: prevention in people at high risk (PH38) (2012)[11]

This guideline covers how to identify adults at high risk of type 2 diabetes and its recommendations can be used alongside the NHS Health Checks programme. Key recommendations relevant to health checks include:

- Encouraging people to have a risk assessment: explain that those who are eligible can be risk assessed through the NHS Health Check Programme
- Commissioning plans should set out organisational responsibilities for local Type 2 diabetes risk assessments which could take place as part of the NHS Health Check Programme

QS84: Physical activity: for NHS staff, patients and carers[12]

This quality standard covers encouraging physical activity in people of all ages who are in contact with the NHS, including staff, patients and carers. Quality statements that are relevant to health checks are as follows:

- Quality Statement 1: Advice for adults during NHS Health Checks. Adults having their NHS Health Check are given brief advice about how to be more physically active.

Other relevant guidance

A basic diagram showing the flow of the patient through the NHS Health Check programme has been published on the NHS Health Check website.[13]

Although not NICE guidance, UK Health Security Agency (formerly Public Health England) has published 'NHS Health Checks: applying All Our Health', which is a resource for health and care professionals on the health checks programme and includes an e-learning session[14].

In January 2021 UK Health Security Agency (formerly Public Health England) published a blog entitled 'Cardiovascular disease: building back better' which recommended that the recovery of the NHS Health Check programme was prioritised and new delivery models for it were explored[15].

At the time of writing, the Office for Health Improvement and Disparities published a review of the NHS Health Check programme, with the aim of making recommendations to improve both the content and delivery of the programme[16]. The review found that[17]:

- the NHS Health Check programme has largely achieved its aims, reaching 2 in 5 eligible people, including those at higher risk of disease, and delivering better outcomes for attendees
- multiple opportunities exist to improve the NHS Health Check across the entire pathway
- people's risks set in early, so behaviour change is needed sooner
- a wider view of health could address the current burden of disease
- greater use of technology may help target, reach and personalise the NHS Health Check for individuals

The review also made six recommendations[17]:

- build sustained engagement
- launch a digital service
- start younger

- improve participation
- address more conditions
- create a learning system

Health checks in Suffolk

In Suffolk, GPs are commissioned to carry out the vast majority of health checks in the county (about 98% of the target).

OneLife Suffolk, who provide the integrated lifestyle service for the county, are commissioned to carry out a small percentage of checks each year (between 2-4% of the target) through outreach health checks. These are provided to workplaces and in clinics at venues such as churches and community centres.

Health checks: a national and local perspective

The NHS Health Check programme is a national cardiovascular disease (CVD) screening programme designed to help prevent and detect early signs of heart disease, kidney disease, Type 2 diabetes, and dementia. Each year, over 20,000 Health Checks are delivered by GP practice in Suffolk.

The NHS Health Check programme supports the NHS England's Right Care CVD prevention pathway and the ambitions to address the A, B and C of secondary prevention and reduce the health inequalities associated with cardiovascular disease (CVD) over the next 10 years. Improving the detection and treatment of the high-risk conditions of AF, hypertension (high BP) and high cholesterol has the potential to unlock considerable health gains.

Cardiovascular disease (CVD) causes a quarter of all deaths in the UK and is the largest cause of premature mortality in deprived areas[18]. Early detection and prevention is an important priority for the National Health Service (NHS) in England, and the NHS Long Term Plan (2019) commits to taking wider action on prevention to tackle the underlying causal factors. Over the course of 2020, it has also become clear that many risk factors associated with CVD, and existing health inequalities, are associated with poorer outcomes for patients with COVID-19[19]. The UK government has therefore highlighted the potential role that the NHS Health Check may have to play in helping to address these risk factors[20].

An analysis of the Global Burden of Diseases, Injuries and Risk Factors Study found that cardiovascular diseases were prominent among four of the top five behavioural risks linked to disability adjusted life years[1] (DALYs) in Suffolk. Cardiovascular diseases accounted for 6,962 DALYS linked to tobacco usage, 12,537 DALYs linked to dietary risk, 173 DALYs linked to alcohol use, 1,614 linked to physical activity[21].

Invitations

National perspective

Nationally, invitations are issued in different formats, though letters are the most common. Recent studies of the effectiveness of different formats have found that modifications to standard letters, text message invitations/reminders, telephone and opportunistic face-to-face invitations can increase uptake[2223]. One cross-sectional study suggests that different invitation methods may be more or less effective for different ethnic and gender groups[24]. Telephone calls including the option to book an appointment during the call may overcome anticipated difficulties in making appointments and offer an opportunity to increase participants' understanding of the Health Check[25], which may be barriers

[1] The sum of years lost due to premature death (YLLs) and years lived with disability (YLDs). DALYs are also defined as years of healthy life lost.

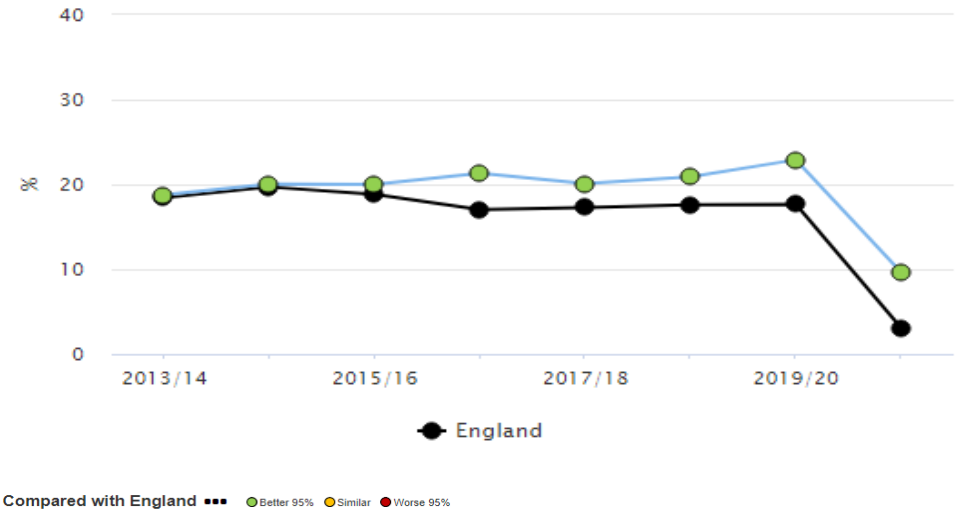
to uptake. Other barriers may include aversion to preventive medicine and, for community pharmacy and outreach settings, concerns about privacy and confidentiality[2524]. Some qualitative evidence highlights the convenience of these settings and the value of community ambassadors[23].

Suffolk

Health check performance is monitored on a 5-year rolling basis. In Suffolk, this means inviting 223,151 people and aiming to deliver a Health Checks to 50% of those over a five-year period.

Whilst Suffolk has historically performed well against England and East of England neighbours regarding invites (see Figure 1 and Table 1), NHS Health Checks during 2020/21 were severely disrupted due to the pandemic. This has continued into 2021/22.

Figure 1: People invited to an NHS Health Check per year, Suffolk compared to England, 2013/14 to 2019/20



Source: PHE Fingertips

Table 1: People invited to an NHS Health Check per year, Suffolk compared to East of England and England, 2013/14 to 2019/20

Period		Suffolk Count	Value	95% Lower CI	95% Upper CI	East of England	England
2013/14	●	42,575	18.8%	18.6%	18.9%	19.9%*	18.4%
2014/15	●	46,890	20.0%	19.9%	20.2%	20.4%*	19.7%
2015/16	●	46,878	20.0%	19.9%	20.2%	19.7%*	18.8%
2016/17	●	47,536	21.3%	21.2%	21.5%	20.1%*	17.0%
2017/18	●	44,844	20.1%	19.9%	20.2%	18.5%*	17.3%
2018/19	●	46,730	20.9%	20.7%	21.1%	17.0%*	17.6%
2019/20	●	51,333	22.9%	22.7%	23.1%	17.5%	17.7%
2020/21	●	21,536	9.7%	9.5%	9.8%	5.0%	3.1%

Compared with England ▪▪▪ ● Better 95% ● Similar ● Worse 95%

Source: PHE Fingertips

Health check invites by deprivation

In Suffolk, 98% of Health Checks are carried out by GP practices. The remaining 2% of Health Checks are delivered by OneLife Suffolk, with specific intent on targeting the 20% most deprived areas of Suffolk. At present, data collection for the 2021/22 financial year has not been completed so the most recent complete data set for 2019/20 has been used for the purpose of this report.

In 2019/20, Health Check invites were proportionately sent to Suffolk residents by deprivation decile. 9.0% of all invites during 2019/20 were sent to Suffolk residents in the 20% most deprived areas relative to England. This is in line with the proportion of the population in Suffolk living in the 20% most deprived areas relative to England (8.8%).

Table 2: Health Check invites by IMD, 2015 decile compared Suffolk population, 2019-20 financial year

IMD decile	% of invites	% of Suffolk LSOAs	Difference (% invites vs % LSOAs)	Suffolk 40+ population	% of Suffolk 40+ population	Difference (% invites vs % 40+ population)
1	3.90%	4.80%	-0.90%	14,505	3.50%	0.40%
2	5.10%	7.00%	-1.90%	22,103	5.30%	-0.20%
3	5.50%	6.10%	-0.70%	21,516	5.10%	0.30%
4	8.00%	10.00%	-1.90%	40,191	9.60%	-1.60%
5	14.40%	13.80%	0.60%	60,123	14.40%	0.10%
6	21.20%	17.50%	3.70%	80,748	19.30%	1.90%
7	15.10%	13.80%	1.30%	62,784	15.00%	0.10%
8	9.50%	9.80%	-0.30%	42,836	10.20%	-0.70%
9	8.40%	9.10%	-0.70%	39,410	9.40%	-1.00%
10	8.90%	8.20%	0.70%	34,644	8.30%	0.60%

Source: Public Health and Communities Suffolk

Uptake

National perspective

Attendance following invitation varies across regions and at GP practice level[1826]. The evidence on uptake in different groups is wide-ranging. There is relatively consistent evidence that older people and women are more likely to take up invitations, but mixed findings in relation to ethnicity and deprivation, with some studies showing higher uptake in specific groups, whereas others show no difference[26]. There is also clear evidence that uptake is lower among smokers nationally[26].

Suffolk

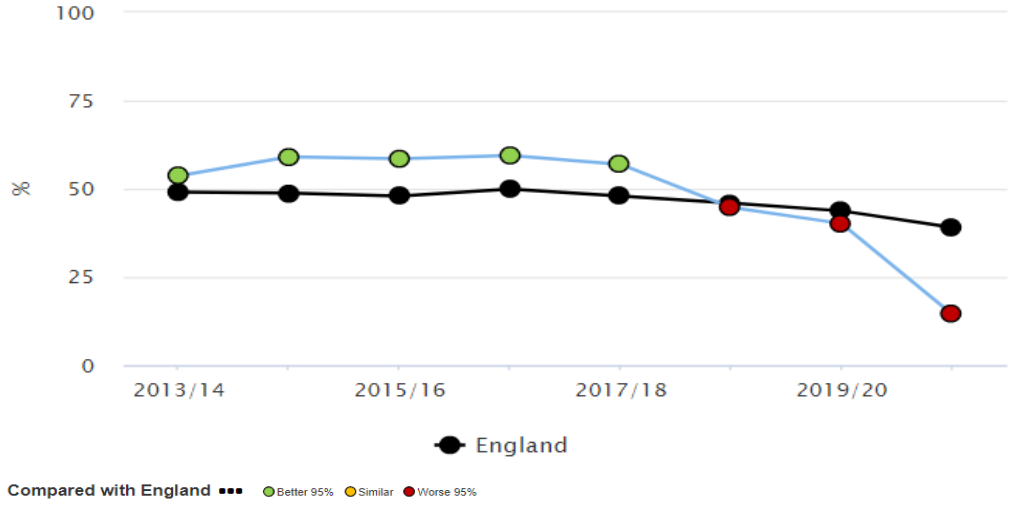
Suffolk's current delivery model is mainly by GP practice (98%) which is reflective of the model utilised nationally by most local authorities. GP targets have been halved for Suffolk Practices for 2021-22 to reflect the ongoing pressures they are experiencing due to the COVID-19 pandemic. At the time of writing this report, many GP Practices have resumed their NHSHC programme but there are still a minority that are still unable to deliver.

By the end of 2022, (if half targets are achieved) there will be 46,000 outstanding invites and 30,000 outstanding Health Checks for the 2020-2022 period. Due to ongoing pressures within primary care and imminent winter pressures, it is unlikely that the reduced targets set for 2021-22 will be met without additional intervention, which will increase the outstanding invites and delivery from 2020-21.

Although uptake of Health Checks after invite has historically been statistically significantly higher in Suffolk compared to England, Suffolk has performed statistically significantly worse than England from 2018/19 to 2020/21 (see Figure 2). This is primarily due to the COVID-19 pandemic, which has seen

Suffolk report significantly lower uptake after invite compared to England in the last three quarterly reporting periods. This skews the yearly data collection as quarterly report are measure from Q1 2017/18 to Q1 2020/21, and so on (see Table 3).

Figure 2: People taking up an NHS Health Check invite per year, Suffolk compared to England, 2013/14 to 2019/20



Source: PHE Fingertips

Table 4: People taking up an NHS Health Check invite per year, Suffolk compared to East of England and England, 2013/14 to 2019/20

Period	Suffolk					East of England	England
		Count	Value	95% Lower CI	95% Upper CI		
2013/14	●	22,857	53.7%	53.0%	54.4%	52.6%*	49.0%
2014/15	●	27,674	59.0%	58.3%	59.7%	53.0%*	48.8%
2015/16	●	27,416	58.5%	57.8%	59.2%	50.1%*	47.9%
2016/17	●	28,242	59.4%	58.7%	60.1%	48.3%*	49.9%
2017/18	●	25,526	56.9%	56.2%	57.6%	50.2%*	47.9%
2018/19	●	20,878	44.7%	44.1%	45.3%	52.5%*	45.9%
2019/20	●	20,604	40.1%	39.6%	40.7%	47.6%	43.7%
2020/21	●	3,117	14.5%	14.0%	15.0%	24.6%	39.0%

Compared with England ■■■ Better 95% Similar Worse 95%

Source: PHE Fingertips

Table 5: People taking up an NHS Health Check invite per year, Suffolk compared to East of England and England, 2017/18 Q1 - 2019/20 Q1 to 2017/18 Q1 – 2021/22 Q1

Period	Suffolk					East of England	England
		Count	Value	95% Lower CI	95% Upper CI		
2017/18 Q1 - 2019/20 Q1	●	52,799	50.2%	49.7%	50.6%	50.6%	46.5%
2017/18 Q1 - 2019/20 Q2	●	58,169	49.1%	48.7%	49.5%	50.0%	46.2%
2017/18 Q1 - 2019/20 Q3	●	63,528	48.2%	47.8%	48.6%	50.0%	46.0%
2017/18 Q1 - 2019/20 Q4	●	67,008	46.9%	46.5%	47.2%	50.1%	45.8%
2017/18 Q1 - 2020/21 Q1	●	67,008	46.9%	46.5%	47.2%	50.0%	45.8%
2017/18 Q1 - 2020/21 Q2	●	67,124	46.4%	46.0%	46.7%	49.5%	45.6%
2017/18 Q1 - 2020/21 Q3	●	68,704	43.3%	43.0%	43.6%	48.1%	45.4%
2017/18 Q1 - 2020/21 Q4	●	70,125	42.6%	42.3%	43.0%	47.8%	45.5%
2017/18 Q1 - 2021/22 Q1	●	71,424	42.9%	42.6%	43.2%	47.2%	45.3%

Compared with England ▪▪▪ ● Better 95% ● Similar ● Worse 95%

Source: PHE Fingertips

Coverage

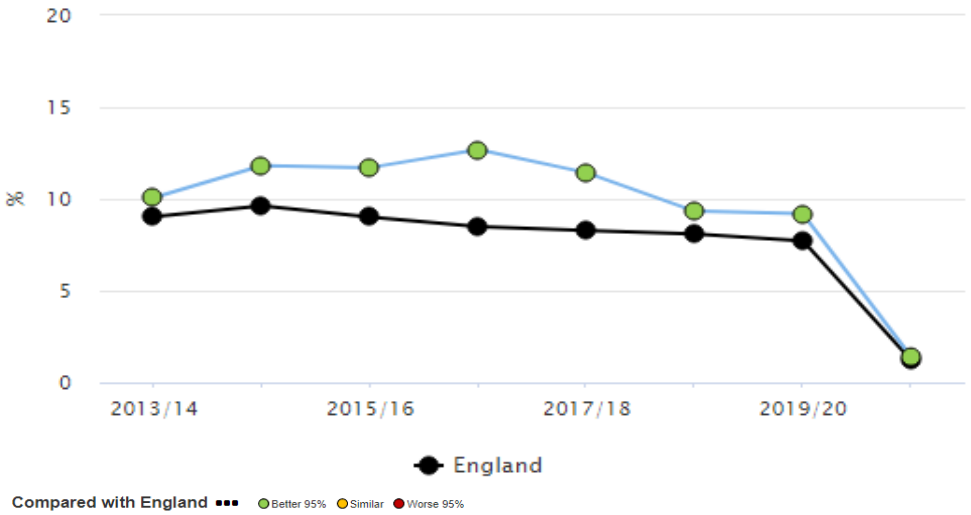
National perspective

The proportion of the eligible population who receive a health check varies substantially across regions and settings in England, but is consistently higher in older people, women and in more deprived populations (although this may reflect targeting)[23]. Studies suggest that community outreach services can reach particular sociodemographic groups[27], but one study suggests that these services may create inaccuracies in reporting[26].

Suffolk

Although the delivery of Health Checks has been reduced nationally and locally due to the COVID-19 pandemic, Suffolk continues to deliver a statistically significantly higher proportion of Health Checks to the eligible population (see figure 3). However, during 2020/21, just under half of the 'usual' 45,000 invites were sent to the eligible population and only 3,117 were delivered, just 14% of the target of 22,258.

Figure 3: People receiving an NHS Health Check per year, Suffolk compared to England, 2013/14 to 2019/20



Source: PHE Fingertips

Table 6: People receiving an NHS Health Check per year, Suffolk compared to England and East of England, 2013/14 to 2019/20

Period		Suffolk Count	Value	95% Lower CI	95% Upper CI	East of England	England
2013/14	●	22,857	10.1%	10.0%	10.2%	10.4%	9.0%
2014/15	●	27,674	11.8%	11.7%	12.0%	10.8%	9.6%
2015/16	●	27,416	11.7%	11.6%	11.8%	9.9%	9.0%
2016/17	●	28,242	12.7%	12.5%	12.8%	9.7%*	8.5%
2017/18	●	25,526	11.4%	11.3%	11.6%	9.3%*	8.3%
2018/19	●	20,878	9.3%	9.2%	9.5%	8.9%*	8.1%
2019/20	●	20,604	9.2%	9.1%	9.3%	8.3%	7.7%
2020/21	●	3,117	1.4%	1.3%	1.4%	1.2%	1.2%

Compared with England ▪▪▪ Better 95% Similar Worse 95%

Source: PHE Fingertips

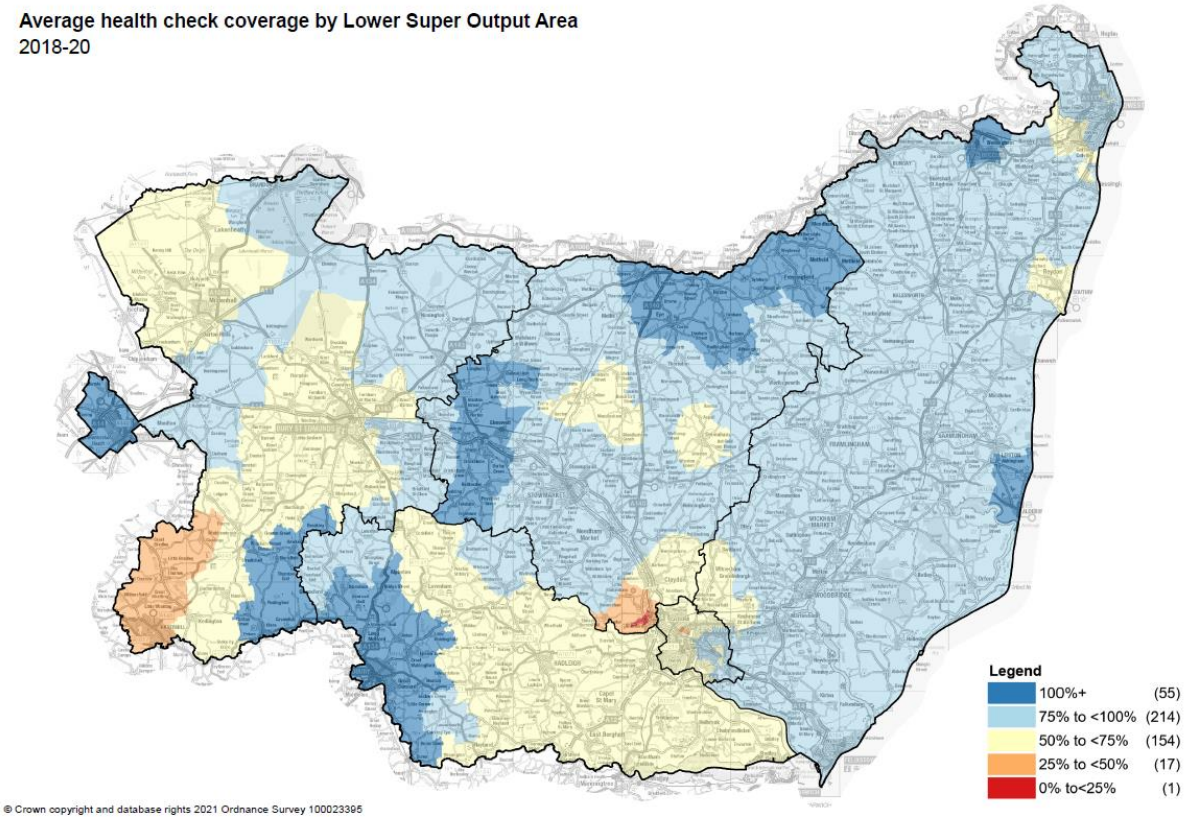
Suffolk: coverage by GP practice

Due to COVID-19, there were fewer NHS Health Checks delivered within GP practices in Suffolk during 2020/21. Therefore, data sets for 2018/19 and 2019/20 have been used for this report. Data for the 2021/22 period has yet to be completed, so this has also been excluded from this report.

The average uptake based on GP practice targets for 2018/19 was 79%. However, there was a large range in uptake across Suffolk, ranging from 0% to 166%. A similar distribution can be seen in 2019/20: although the average uptake across GP practices was better (81%), uptake ranged from 0% to 155%.

The map below shows coverage by GP practices across Suffolk. The proportion of health checks delivered against a GP practice's target has been allocated to the GP practice's respective LSOAs. It shows that delivery of health checks varies across the county and CCGs. An average has been calculated for LSOAs that are covered by multiple GP practices.

Figure 4: Average Health Check coverage by GP practices attributed to LSOAs, Suffolk, 2018-20



Consistently high performers

When combining data for 2018/19 and 2019/20, 16 GP practices have delivered more health checks than their target. The 'top 10' performing GP practices over the 2018-2020 period had a combined target of 5,773 and delivered 7,017 – an additional 1,244 above their combined target.

Table 7: top 10 GP practices for number of health checks delivered against target, Suffolk, 2018/19 and 2019/20 combined

GP practice	Target combined	Delivered combined	% of target
D83054 - The Peninsula Practice	265	282	106%
D83030 - Kirkley Mill Health Centre	256	274	107%
D83069 - Fressingfield Medical Centre	444	492	111%
D83055 - Woolpit Health Centre	892	1012	113%
D83009 - Beccles Medical Centre	1114	1318	118%
D83043 - Eye Health Centre	401	497	124%
D83060 - Hardwicke House Group Practice	1056	1328	126%
D83615 - The Barham & Claydon Surgery	143	181	127%
D83029 - The Rookery Medical Centre	674	885	131%
D83075 - Siam Surgery	529	748	141%

Consistently low performers

When combining data for 2018/19 and 2019/20, 30 GP practices have delivered less than 75% of their health check target. The 'top 10' lowest performing GP practices over the 2018-2020 period had a combined target of 6,125 and delivered 2,288 – a shortfall of 3,837 health checks. Seven of these GP practices had completed less than 50% of their target.

Table 8: lowest 10 GP practices for number of health checks delivered against target, Suffolk, 2018/19 and 2019/20 combined

GP practice	Target combined	Delivered combined	% of target
D83056 - Hawthorn Drive Surgery	381	0	0%
D83012 - Christmas Maltings and Clements Practice	968	94	10%
D83050 - Deben Road Surgery	412	103	25%
D83078 - The Reynard Surgery	408	127	31%
D83021 - Haverhill Family Practice	665	269	40%
D83024 - Ivry Street Medical Practice	693	312	45%
D83040 - Victoria Surgery	788	366	46%
D83013 - The Guildhall and Barrow Surgery	708	381	54%
D83045 - Lakenheath Surgery	299	171	57%
D83014 - The Long Melford Practice	803	465	58%

Health check uptake and coverage: inequality and deprivation

As mentioned earlier in the report, the proportion of the eligible population who receive a health check varies substantially across regions and settings in England, but is consistently higher in older people, women and in more deprived populations.

In Suffolk, health check uptake is statistically significantly higher in older people and women. However, unlike England, more deprived populations have a statistically significantly lower attendance rate compared to less deprived areas.

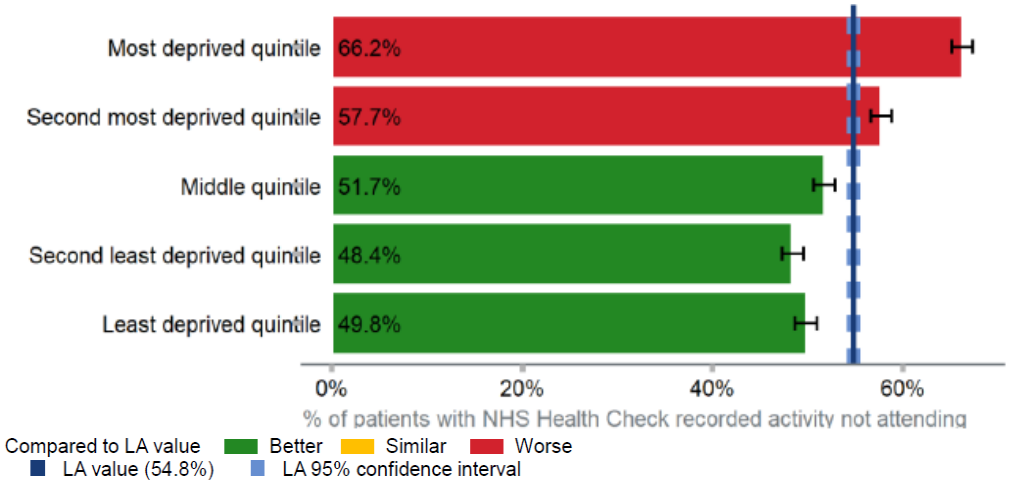
Key insights for Health Check non-attendance in Suffolk:

- Statistically significantly higher non-attendance in the 40% most deprived population.
- Statistically significantly higher non-attendance in 40–54-year age bandings.
- Statistically significantly higher non-attendance among males.

Non-attendance by deprivation

UK Health Security Agency (formerly Public Health England)'s latest Cardiovascular Disease Prevention Pack 2021 shows that Suffolk residents in the most and second most deprived quintiles (most 40% deprived relative to England) had a statistically significantly higher non-attendance rate compared to the average. There is a 16.4 percentage point gap between non-attendance in the least deprived quintile (49.8%) compared to the most deprived quintile (66.2%) in Suffolk.

Figure 5: Non-attendance for NHS Health Checks by deprivation quintile (IMD2015), Suffolk, 2017-18



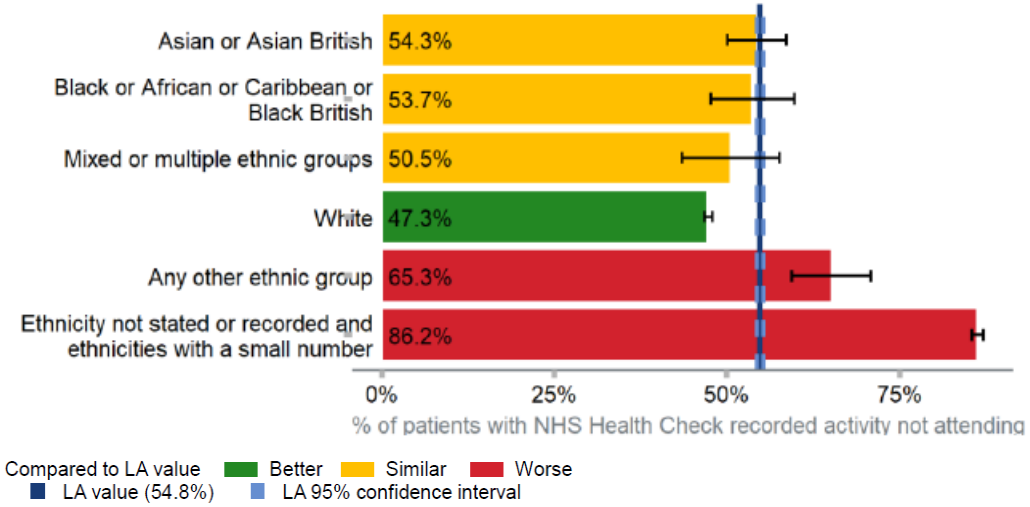
Source: UK Health Security Agency (formerly Public Health England), CVD Prevention Pack, 2021

Non-attendance by ethnicity

The only ethnic group in Suffolk with a statistically significantly better non-attendance proportion compared to the average where 'white' (47.3%). Asian, Black, and mixed ethnic groups had a similar non-attendance proportion compared to the Suffolk average.

Although 'any other ethnic group' presented a statistically significantly higher proportion of non-attendances compared to the Suffolk average, this group is comprised of too many subgroups to form a meaningful inference.

Figure 6: Non-attendance for NHS Health Checks by ethnic group, Suffolk, 2017-18



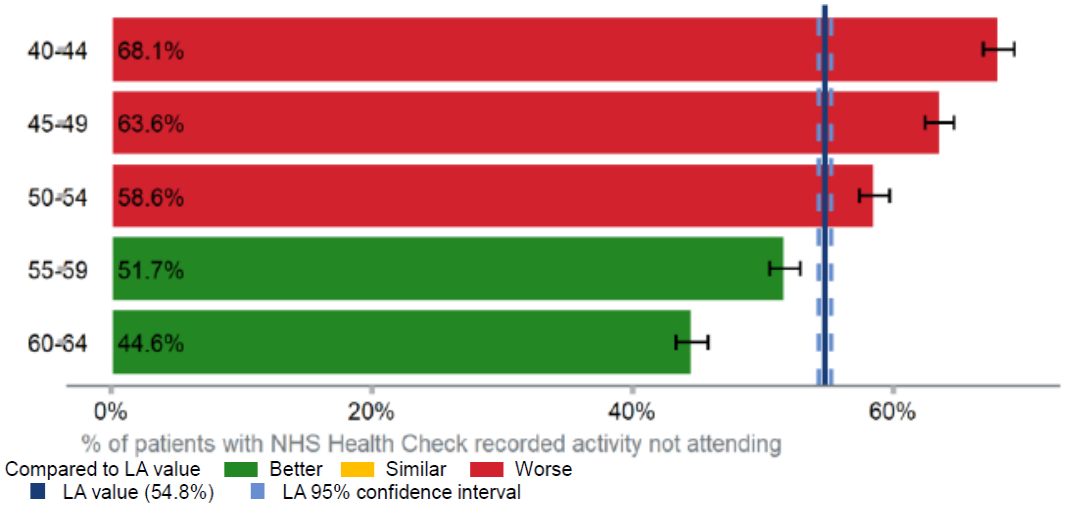
Source: UK Health Security Agency (formerly Public Health England), CVD Prevention Pack, 2021

Non-attendance by age

The highest proportion of non-attendees in Suffolk is seen in the 40-44 age banding (68.1%). The non-attendance proportion decreases with every 5-year age banding increment: 45-49 (63.6% - statistically significantly worse than Suffolk), 50-54 (58.6% - statistically significantly worse than Suffolk), 55-59 (51.7% - statistically significantly better than Suffolk), and 60-64 (44.6% - statistically significantly better than Suffolk).

There is a 23.5 percentage point gap between non-attendance in the youngest cohort, 40-44 age banding (68.1%%) compared to the oldest cohort, 60-64 age banding (44.6%).

Figure 7: Non-attendance for NHS Health Checks by age group, Suffolk, 2017-18

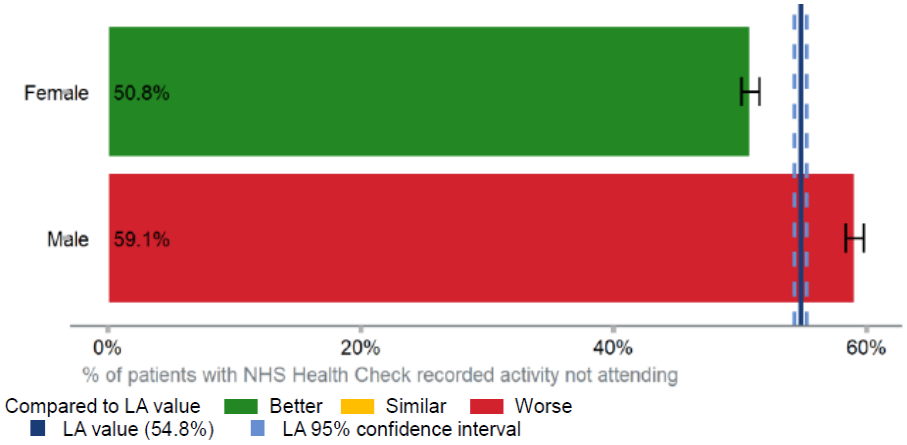


Source: UK Health Security Agency (formerly Public Health England), CVD Prevention Pack, 2021

Non-attendance by sex

There is an 8.3 percentage point gap between female non-attendees (50.8%) and male non-attendees (59.1%). A statistically significantly higher proportion of males are non-attendees compared to the Suffolk average.

Figure 8: Non-attendance for NHS Health Checks by sex, Suffolk, 2017-18



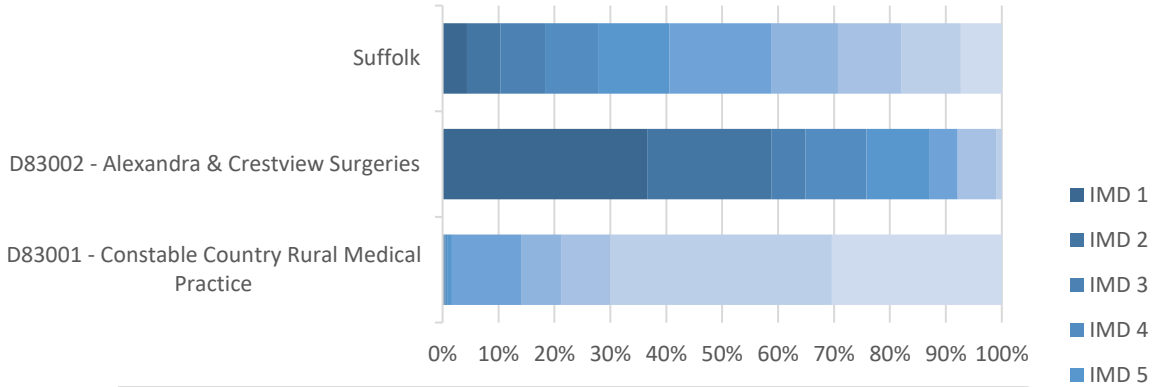
Source: UK Health Security Agency (formerly Public Health England), CVD Prevention Pack, 2021

Health check uptake and coverage: deprivation by GP practice

Although Health Check invites are broken down by deprivation decile for targeting purposes, uptake/coverage by GP practice cannot be broken down by deprivation decile due to the current data collection methods.

Patients registered to each Suffolk-based GP practice by LSOA of residents as of January 1st 2020 have been matched to the Index of Multiple Deprivation LSOA data for 2019. This allows for a breakdown of GP practice population by IMD decile. Two opposing GP practice and Suffolk have been used as an example below.

Figure 9: Example of GP population by IMD decile, NHS GP patients' registration data for Jan 2020



	D83001 - Constable Country Rural Medical Practice	D83002 - Alexandra & Crestview Surgeries	Suffolk
IMD 1	0%	37%	4%
IMD 2	0%	22%	6%
IMD 3	0%	6%	8%
IMD 4	0%	11%	10%
IMD 5	1%	11%	13%
IMD 6	12%	5%	18%
IMD 7	7%	0%	12%
IMD 8	9%	7%	11%
IMD 9	40%	1%	11%
IMD 10	30%	0%	7%

Source: NHS Digital

GP practices with a high proportion of residents in the bottom 20% of relative deprivation

Based on populations registered to GP practices in Suffolk in January 2020, 10% of the Suffolk-based GP population are in the 20% most deprived areas relative to England. For the purpose of this report, GP practices with more than 1 in 5 (20%) of their registered population in the 20% most deprived areas of relative to England have been examined.

There are 13 GP practices in Suffolk with more than 1 in 5 (20%) of their registered population in the 20% most deprived areas of relative to England (this is 18% of the total 71 GP practices in Suffolk). These practices delivered 70% of their combined target for 2018-2020 (5,512 of 7,878 target).

Table 9: Suffolk-based GP practices with over 20% of their registered patients living in the 20% most deprived LSOAs relative to England, 2020

GP name	Proportion of patients in bottom 20%	Proportion of patients in top 20%	Target (2018-2020)	Delivered (2018-2020)	2018-2020 uptake
D83081 - Haven Health	21%	9%	425	309	73%
D83051 - The Derby Road Practice	22%	15%	923	918	99%
D83024 - Ivry Street Medical Practice	23%	23%	693	312	45%

GP name	Proportion of patients in bottom 20%	Proportion of patients in top 20%	Target (2018-2020)	Delivered (2018-2020)	2018-2020 uptake
D83074 - Orchard Medical Practice	26%	9%	468	350	75%
Y01794 - Ravenswood Medical Practice	26%	14%	815	621	76%
D83073 - Dr Solway & Dr Mallick Practice	27%	7%	473	342	72%
D83016 - Victoria Road Surgery	32%	9%	583	492	84%
D83050 - Deben Road Surgery	33%	13%	412	103	25%
D83059 - Barrack Lane Medical Centre	49%	6%	804	470	58%
D83008 - Burlington Road Surgery	50%	7%	848	791	93%
D83056 - Hawthorn Drive Surgery	56%	3%	381	0	0%
D83002 - Alexandra & Crestview Surgeries	59%	1%	798	530	66%
D83030 - Kirkley Mill Health Centre	63%	2%	256	274	107%
Total			**7878**	**5512**	**70%**

Delivery

National perspective

Delivery of the Health Checks vary considerably across settings, despite the standardisation provided by PHE's guidance and the legislation that mandates its delivery. Providers delivering NHS Health Checks have reported challenges with workload, information technology (IT), funding, training and the need to cover multiple aspects within one consultation[18]. A recent review found that although many providers recognised the importance of behaviour change to reduce CVD risk, professionals have different views on the contributions of behavioural versus pharmacological interventions and on the clinical and cost-effectiveness of the Health Check programme[23]. Providers recognise the difficulty patients face in making sustained behaviour and lifestyle changes, acknowledging the need to take patients' social circumstances and resources into account[26]. Professionals have also expressed concerns about limited access to appropriate lifestyle services for onward referrals and about stretched resources and workload in primary care.

Suffolk

Many of the findings from national reviews regarding variation in delivery across GP practices, challenges with capacity in the system, insufficient training, and unstructured targeting of more deprived populations have been echoed in Suffolk. To tackle these issues, Public Health and Communities Suffolk have recently set up a Health Check Transformation Group to address ongoing issues across the system.

Using Health Checks to tackle unmet need of hypertension

In the UK, high blood pressure is the third biggest risk factor for disease after tobacco smoking and poor diet. It is also the largest single known risk factor for cardiovascular disease and related disability. High blood pressure increases the risk of heart failure, coronary artery disease, and stroke[16]. Health Checks can therefore help GP practices tackle unmet need for CVD conditions such as hypertension and atrial fibrillation.

A study published in the British Journal of General Practice, looking at the first 5 years of the NHS Health Check programme in 3 London areas (City and Hackney, Tower Hamlets and Newham) found that 50% more new cases of hypertension were diagnosed in NHS Health Check attendees compared to non-attendees[28].

UK Health Security Agency (formerly Public Health England)'s CVD Prevention Pack for 2020 provides an opportunity for structured targeting of Health Checks to uncover hypertension and atrial fibrillation, along with the opportunity for GP practices in Suffolk to meet the UK Health Security Agency's 10-year CVD ambitions regarding the diagnosis of hypertension.

For the purpose of this report, hypertension across IESCCG has been used as an example. UK Health Security Agency (formerly Public Health England) estimate that there are 15,800 residents across IESCCG that require a hypertension diagnosis to meet the PHE/UK Health Security Agency target (see figure 10), and only 64.2% of the IESCCG population thought to have hypertension have received a formal diagnosis. Increasing uptake of Health Checks across low performing GP practices would undoubtedly be a win-win.

Figure 11: Hypertension QOF recorded prevalence compared with estimated prevalence and estimated additional number of people with hypertension required to be diagnosed to meet the PHE ambition, by GP practice, IESCCG, 2019/20 (1)

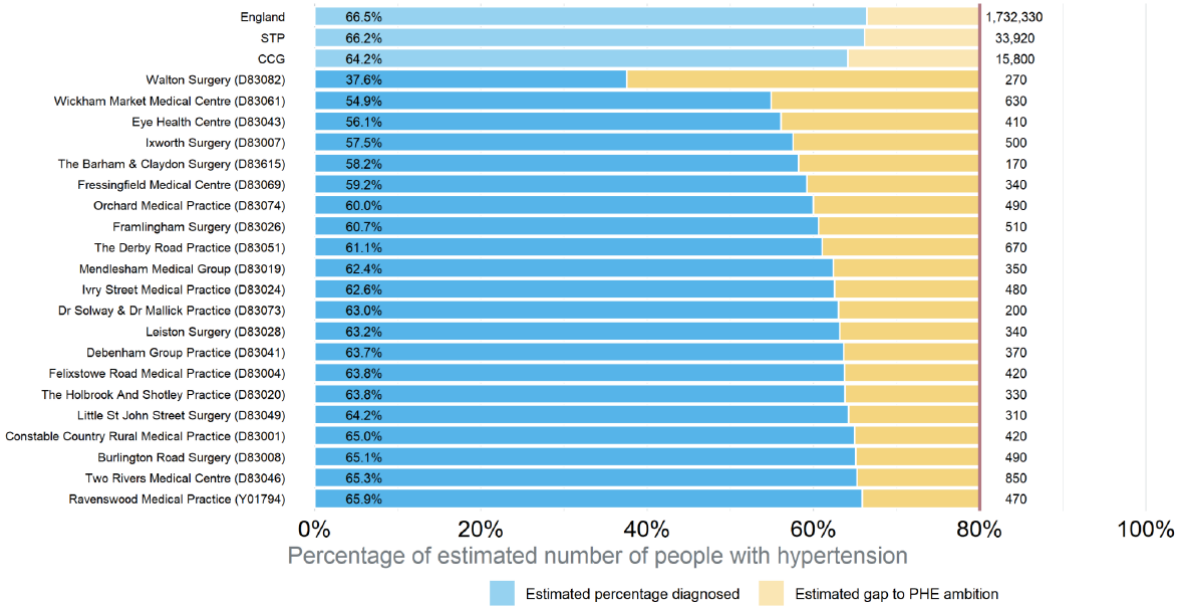
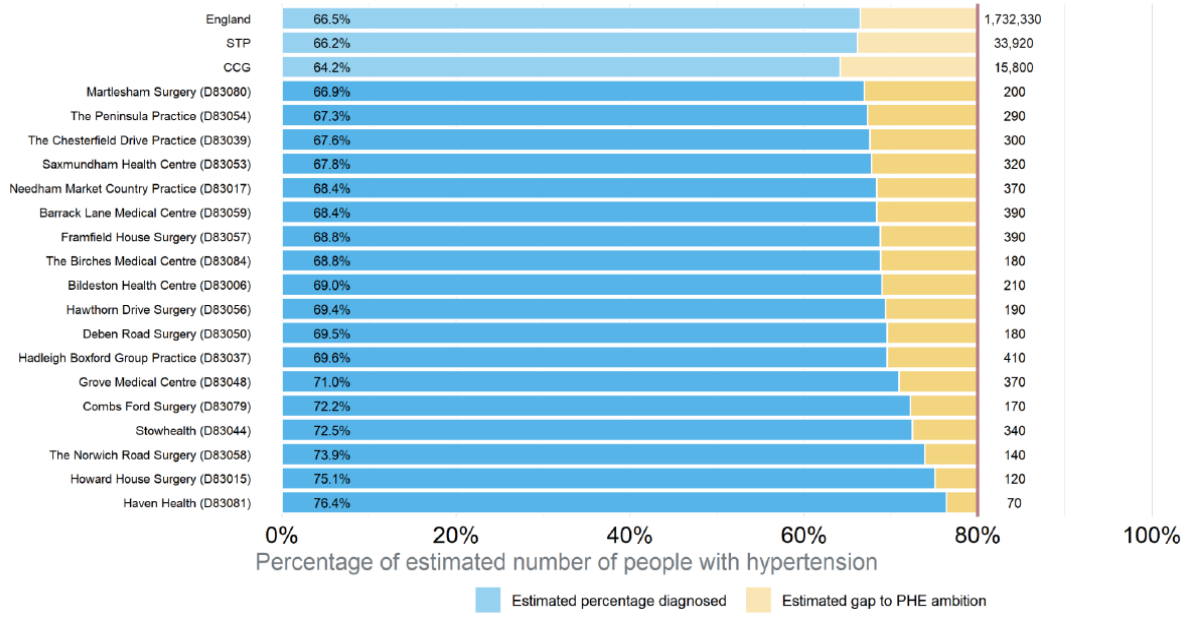


Figure 12: Hypertension QOF recorded prevalence compared with estimated prevalence and estimated additional number of people with hypertension required to be diagnosed to meet the PHE ambition, by GP practice, IESCCG, 2019/20 (2)



Source: QOF 2019/20 / estimated prevalence from NCVIN 2020

Targeting

Summarising this chapter, the following can be concluded of Health Check delivery in Suffolk:

Invites: Health Check invites proportionally match Suffolk's population by IMD decile. However, the literature shows that if you live in England's most deprived areas, you are almost 4 times more likely to die prematurely of CVD than someone in the least deprived areas. Therefore, CVD is one of the conditions most strongly associated with health inequalities and Health Check invites in Suffolk should be weighted towards population in more deprived areas.

Coverage: although Health Check coverage in Suffolk is statistically significantly higher than England, there are statistically significantly higher non-attendance rates among 1) the 40% most deprived residents, 2) residents who are 40-54 years old, and 3) males.

Monitoring: there are currently significant issues with monitoring Health Check delivery in Suffolk as the postcode / IMD for attendees is not recorded. This means that it is not possible to know whether Health Checks are tackling CVD inequalities in deprived areas. This also impacts on community outreach targeting.

The table below outlines how the current concerns could be overcome.

Table 10: Approaches to overcoming current concerns related to the application of Health Checks in Suffolk

Area of work	Current concerns	Suggested approach
Invites	Evidence shows a need to weight invites towards populations in areas of derivation	Public Health and Communities Suffolk to work with Provide (invite distribution company) to weight invites towards GP populations in the 40% most deprived areas relative to England
Coverage	Statistically significantly higher non-attendance rates among 1) the 40% most deprived residents, 2) residents who are 40-54 years old, and 3) males	Pilot the use of community assets such as Primary Care Networks and Integrated Neighbourhood Teams to follow up non-attendances
Monitoring	The postcode / IMD decile of attendees is not recorded across all GP practices. This results in poor accountability regarding CVD outcomes in deprived areas	Agree a standardised approach to collecting Health Check data across Suffolk which will allow for robust insight and planning

Targeting based on geography

As discussed above, there has been a statistically significantly lower uptake of Health Checks among those in the 40% most deprived areas of Suffolk, increasing to 66.2% non-attendance in the 20% most deprived areas. The map and table below show LSOAs in the 20% most deprived areas of relative deprivation. These highlight areas that can be targeted based on geography and/or key GP practices that have a higher proportion of patients in areas of deprivation (see Tables 11-13).

Please note that Tables 11 - 13 present LSOAs aggregated to MSOAs for LSOAs that are 1) in the bottom 20% most deprived relative to England, and 2) have over 100 patients registered to a Suffolk-based GP practice.

Figure 13: LSOAs in the 20% most deprived areas of Suffolk relative to England, IMD 2019

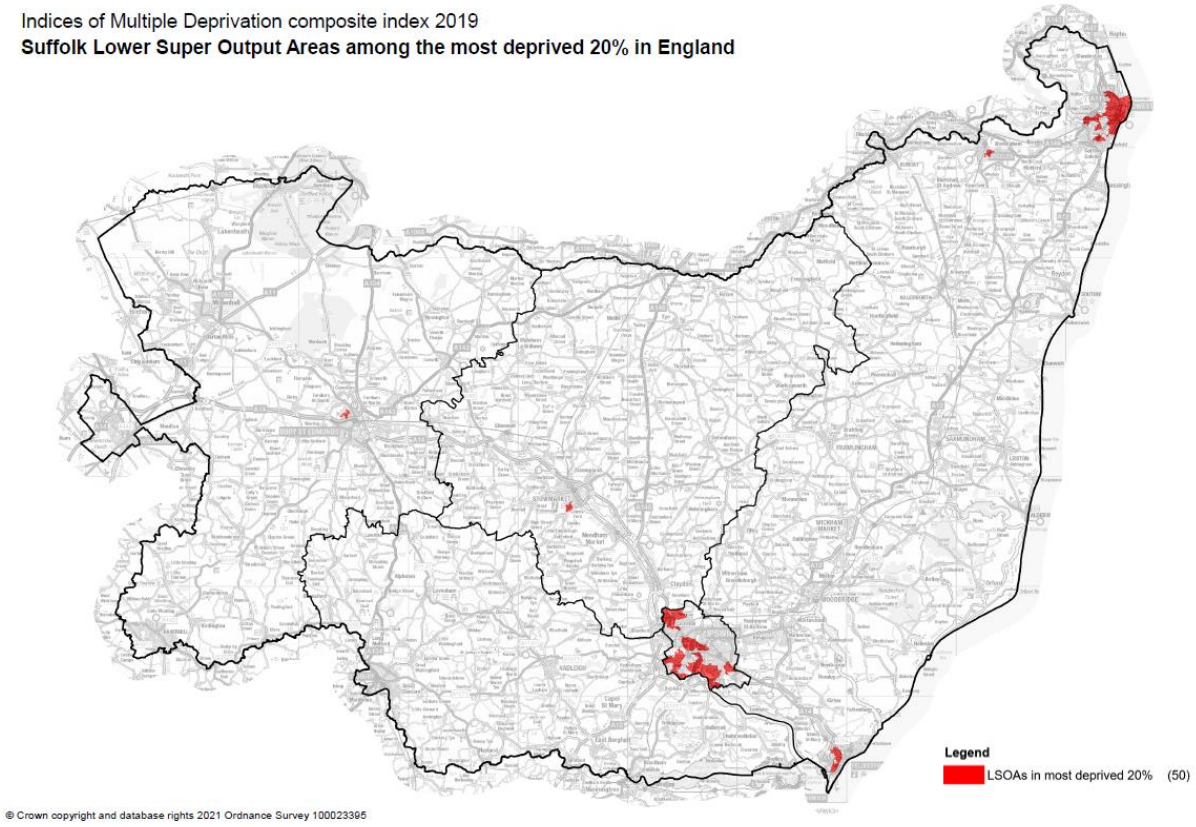


Table 11: Number of patients in LSOAs in the 20% most deprived areas of Suffolk relative to England grouped by MSOA and GP practice, IESCCG

GP practice and MSOA name	Number of patients
BARRACK LANE MEDICAL CENTRE	9208
Belstead Hills	405
Gipping & Chantry Park	913
Ipswich Central	478
Maidenhall, Stoke & Port	3266
Stoke Park	1405
Westgate	2057
Whitehouse	351
Whitton	333
BURLINGTON ROAD SURGERY	8431
Belstead Hills	391
Gainsborough, Greenwich & Orwell	139
Gipping & Chantry Park	1933
Ipswich Central	737
Maidenhall, Stoke & Port	1410
Priory Heath	104
Stoke Park	478
Westgate	2324
Whitehouse	394

GP practice and MSOA name	Number of patients
Whitton	521
CARDINAL MEDICAL PRACTICE	**8823**
Gainsborough, Greenwich & Orwell	377
Gipping & Chantry Park	237
Priory Heath	162
Westgate	1681
Whitehouse	2240
Whitton	4126
COMBS FORD SURGERY	**1106**
Stowmarket West	1106
DR SOLWAY & DR MALLICK PRACTICE	**781**
Ipswich Central	781
FELIXSTOWE ROAD MEDICAL PRACTICE	**1333**
Gainsborough, Greenwich & Orwell	741
Priory Heath	592
GROVE MEDICAL CENTRE	**1024**
Felixstowe West	1024
HAVEN HEALTH	**1817**
Felixstowe West	1817
HAWTHORN DRIVE SURGERY	**5250**
Belstead Hills	1759
Gipping & Chantry Park	1667
Maidenhall, Stoke & Port	619
Stoke Park	1205
HOWARD HOUSE SURGERY	**608**
Felixstowe West	608
IVRY STREET MEDICAL PRACTICE	**1822**
Gipping & Chantry Park	157
Ipswich Central	191
Westgate	1105
Whitehouse	100
Whitton	269
ORCHARD MEDICAL PRACTICE	**2756**
Gainsborough, Greenwich & Orwell	228
Gipping & Chantry Park	138
Ipswich Central	1376
Maidenhall, Stoke & Port	671
Priory Heath	100
Westgate	243
RAVENSWOOD MEDICAL PRACTICE	**3697**
Gainsborough, Greenwich & Orwell	2008
Priory Heath	1689
STOWHEALTH	**589**
Stowmarket West	589
THE DERBY ROAD PRACTICE	**3633**
Belstead Hills	1223
Gainsborough, Greenwich & Orwell	476

GP practice and MSOA name	Number of patients
Gipping & Chantry Park	515
Maidenhall, Stoke & Port	506
Priory Heath	117
Stoke Park	796
TWO RIVERS MEDICAL CENTRE	665
Gainsborough, Greenwich & Orwell	243
Ipswich Central	198
Priory Heath	224
Grand Total	51543

Table 12: Number of patients in LSOAs in the 20% most deprived areas of Suffolk relative to England grouped by MSOA and GP practice, WSCCG

GP practice and MSOA name	Number of patients
ANGEL HILL SURGERY	491
Howard Estate & Northgate	491
MOUNT FARM SURGERY	171
Howard Estate & Northgate	171
SWAN SURGERY	451
Howard Estate & Northgate	451
THE GUILDHALL AND BARROW SURGERY	286
Howard Estate & Northgate	286
VICTORIA SURGERY	399
Howard Estate & Northgate	399
Grand Total	1798

Table 13: Number of patients in LSOAs in the 20% most deprived areas of Suffolk relative to England grouped by MSOA and GP practice, GYWCCG (Suffolk-based GP practices only)

GP practice and MSOA name	Number of patients
ALEXANDRA & CRESTVIEW SURGERIES	8772
Gunton West	2802
Lowestoft Central	5190
Lowestoft Harbour & Kirkley	780
ANDAMAN SURGERY	1010
Lowestoft Harbour & Kirkley	203
Pakefield North	807
BECCLES MEDICAL CENTRE	1548
Beccles	1548
BRIDGE ROAD SURGERY	1267
Gunton West	464
Lowestoft Central	803
KIRKLEY MILL HEALTH CENTRE	3577
Lowestoft Central	389
Lowestoft Harbour & Kirkley	2820
Pakefield North	368
ROSEDALE SURGERY	1489

GP practice and MSOA name	Number of patients
Lowestoft Harbour & Kirkley	568
Normanston & Oulton Broad East	246
Pakefield North	675
VICTORIA ROAD SURGERY	3409
Lowestoft Harbour & Kirkley	1337
Normanston & Oulton Broad East	1125
Pakefield North	947
Grand Total	21072

Suffolk's integrated healthy lifestyles commissioned services

Health Checks

Although the majority of Health Checks are provided by Suffolk GP practices (98%) with 2% provided by Outreach Services, this section of the report will review the Health Check delivery through Public Health and Communities Suffolk's integrated healthy lifestyles provider OneLife Suffolk for 2019/20.

Summary

- A total of 2,432 clients (Female = 1,500, 62%; Male = 932, 38%), aged between 40 to 74 years (mean age = 52.5 years), predominantly White British (2,304, 95%) attended a OLS HC.
- Out of all clients, 40% were from the 40% most deprived areas and approximately the same proportion (42%) were from the 40% least deprived areas of Suffolk.
- Out of all clients, 545 (23%), 427 (18%), and 334 (14%) had a family history of hypertension, diabetes, and ischemic heart disease, respectively.
- While less than a tenth (9%) of clients were current smokers, most of them had never smoked (1,588, 65%) and a quarter (26%) were ex-smokers.
- A total of 905 (37%) clients reported that they were active, 552 (23%) were moderately active, 427 (18%) were moderately inactive, and 544 (22%) were inactive.
- A total of 1566 (64%) reported having their last health check less than a year ago.
- Non-White clients were statistically younger (48.2 years) than White clients (52.7 years).

Health Checks at OneLife Suffolk

OLS IHLS offer the NHS Health Checks to all adults aged 40-74 years in Suffolk. This service is delivered in accordance with the NHS Health Checks delivered across England. The NHS Health Check provides an overall picture of the health of an individual.

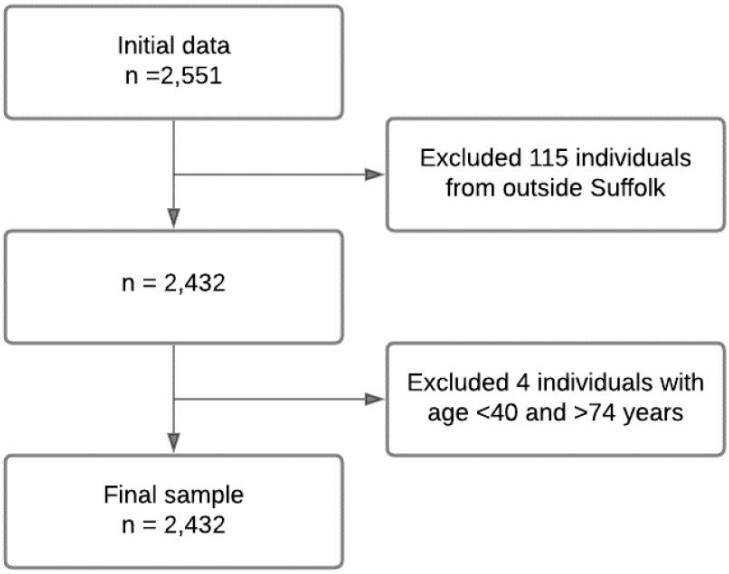
NHS Health Checks take about 20-30 minutes, where questions about lifestyle and family history of health conditions are asked. A range of objective measures such as height and weight, blood pressure, and cholesterol are also taken. Based on this information, personalised advice is provided about improving diet, increasing PA, appropriate medicinal support, weight loss and smoking cessation. Where relevant, people who are eligible are referred to OLS Weight Management, Smoking and PA services.

Client characteristics

Referrals

The initial dataset from the NHS Health Check programme involved a total of 2,656 clients. Out of these, 115 were from outside Suffolk, 4 clients did not meet inclusion criteria (2 were aged below 40 years and 2 were aged above 74 years). The data from these clients has been excluded in this report.

Figure 14: OneLife Suffolk Health Check referrals management process, 2019/20



Demographics

A total of 2,432 clients (Female = 1,500 (62%); Male = 932 (38%), aged between 40 to 74 years (Mean age = 52 years), who were predominantly White British (2,304 (95%)) attended a OLS IHLS NHS Health Check.

Out of all clients, 40% were from the 40% most deprived areas in Suffolk and approximately the same percentage (42%) were from the 40% least deprived areas of Suffolk.

Out of all clients, 545 (23%), 427 (18%), and 334 (14%) had a family history of hypertension, diabetes, and ischemic heart diseases, respectively.

Table 14: Client characteristics at baseline, OneLife Suffolk Health Checks, 2019/20

		n	%
Gender	Female	1500	61.7
	Male	932	38.3
Ethnicity	White	2304	94.7
	Non-White	126	5.2
	Missing	2	0.1
IMD quantile	1 (20% most deprived)	501	20.6
	2	463	19.0
	3	432	17.8
	4	469	19.3
	5 (20% least deprived)	543	22.3
	Missing	24	1.0
Family history of hypertension	No	1883	77.4
	Yes	545	22.4
	Missing	4	0.2
Family history of diabetes	No	2001	82.3
	Yes	427	17.6
	Missing	4	0.2
Family history of ischaemic heart disease	No	2094	86.1
	Yes	334	13.7
	Missing	4	0.2
Age (*years*)	Min=40; Max =74	Mean ± SD = 52.48 ± 8.48	

Healthy behaviour indicators

While less than a tenth (9%) of clients were current smokers, the majority had never smoked (1588, 65%) and a quarter (26%) were ex-smokers.

A total of 905 (37%) clients reported that they are active, 552 (23%) were moderately active, 427 (18%) were moderately inactive, and 544 (22%) were inactive.

A total of 1566 clients (64%) reported to have had their last health check less than <1 year ago, 523 (22%) between 1-2 years ago, 203 (8%) between 3-5 years ago, 53 (2%) between 5-10 years ago, and 14 (0.6%) >10 years ago.

Table 15: healthy behaviour indicators, OneLife Suffolk Health Checks, 2019/20

		n	%
Smoking status	Never	1588	65.3
	Ex-smoker	621	25.5
	Current smoker	219	9.0
	Missing	4	0.2
Physical Activity level	Inactive	544	22.4
	Moderately Inactive	427	17.6
	Moderately Active	552	22.7
	Active	905	37.2
	Missing	4	0.2
Last Health Check	<1 year	1566	64.4
	1-2 years	523	21.5
	3-5 years	203	8.3
	5-10 years	53	2.2
	>10 years	14	0.6
	Missing	73	3.0

Health indicators

Several indicators were used in the NHS Health Check. An average client in the programme weighed 79.2 kg and had a BMI of 27.9 $kg.m^{-2}$. An average client's waist circumference and total cholesterol was 93.8 cm and 5.2 ± 1.09 mmol. l^{-1}, respectively. The average QRISK 2 CVS was 5.2 and QRISK 2 Heart Age was 54.8 years. Other indicators are shown in the table below.

Table 16: Health Check health indicators, OneLife Suffolk Health Checks, 2019/20

	Minimum	Maximum	Mean ± SD
Weight (kg)	37	169	79.22 ± 17.69
Height (cm)	142	197	168.38 ± 9.16
BMI ($kg.m^2$)	16.23	62.83	27.90 ± 5.74
Waist Circumference (cm)	62	174	93.77 ± 15.46
Diastolic BP (mmHg)	50	134	81.88 ± 10.55
Systolic BP (mmHg)	82	209	127.61 ± 15.68
Resting Heart rate (bpm)	32	136	71.06 ± 11.75
Total Cholesterol (mmol. l^{-1})	1.93	10.36	5.19 ± 1.09
TC/HDL Cholesterol Ratio	1.17	18.77	3.92 ± 1.50
HbA1C level (%)	3.5	9.7	5.25 ± 0.58
HbA1C level (mmol. l^{-1})	15	83	33.83 ± 6.37
HDL/Good Cholesterol (mmol. l^{-1})	0.38	3.6	1.45 ± 0.46
QRISK 2 CVS	0.25	37.02	C
QRISK 2 Heart Age	31	85	54.76 ± 9.98

Health indicators: ethnicity

An independent t-test showed that Non-White clients were statistically younger (48.2 years) than their White counterparts (52.7 years, p=0.670).

The mean QRISK 2 Heart age and QRISK 2 CVD absolute risk were also statistically lower in Non-White clients compared to White clients (p<0.001). In contrast, Non-White clients had higher mean resting heart rate compared to the White clients (p=0.001).

Other health indicators such as Systolic and Diastolic BP, Total Cholesterol, HDL cholesterol, TC/HDL ratio and Waist circumference were not statistically different between White and Non-White clients.

Health indicators: deprivation

Clients from the most deprived areas had a larger mean waist circumference when compared to those from the least deprived areas of Suffolk (Figure 15). Similarly, clients from the most deprived areas had the highest mean BMI compared to those from the least deprived areas (Figure 16).

Figure 17: Line graph of mean waist circumference by IMD quintile, OneLife Suffolk Health Checks, 2019/20

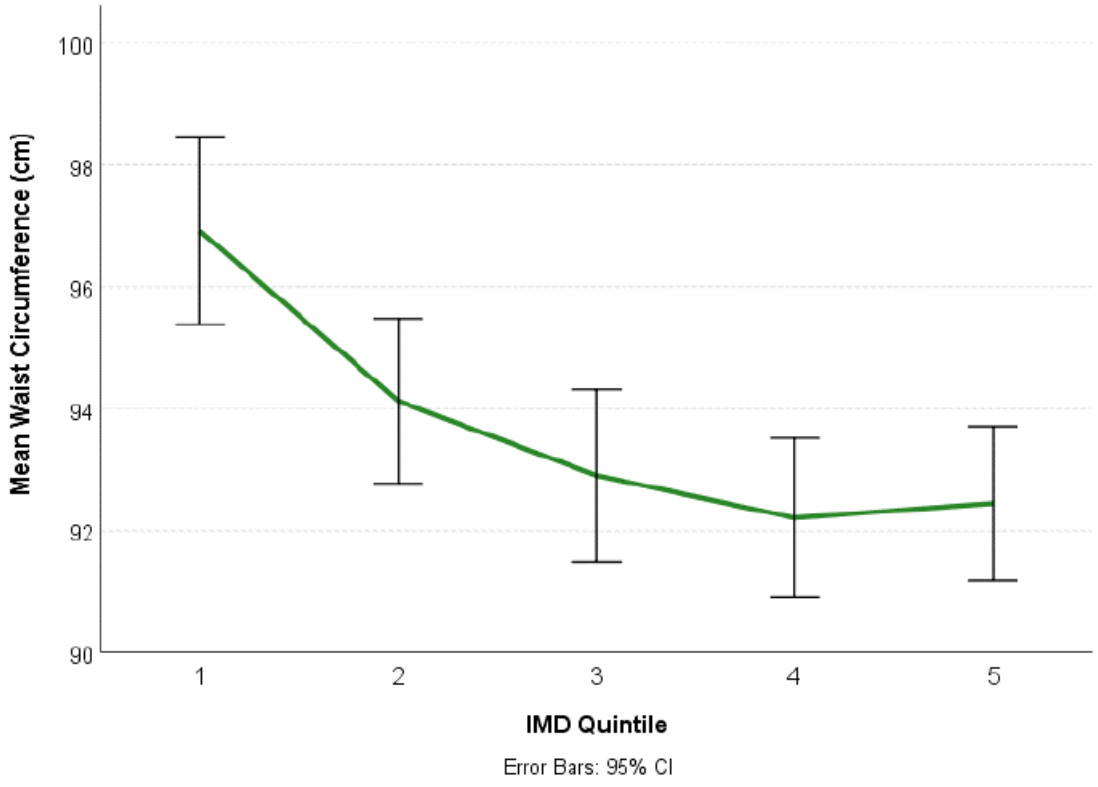
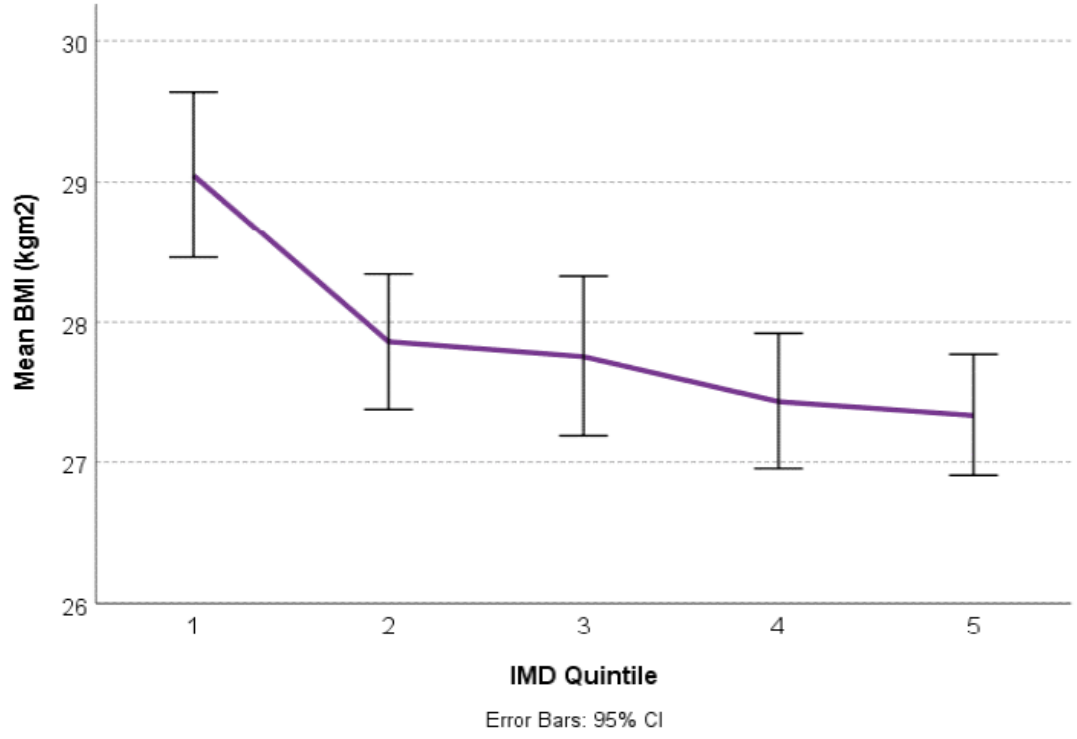


Figure 18: Line graph of mean BMI by IMD quintiles, OneLife Suffolk Health Checks, 2019/20



References

1. NHS Digital. NHS Digital (2020) NHS Health Check programme: supporting information. Published online 2020. https://digital.nhs.uk/data-and-information/publications/statistical/nhs-health-check-programme/nhs-health-check-programme-supporting-information

2. Impact of the National Health Service Health Check on cardiovascular disease risk: a difference-in-differences matching analysis. Published online 2016. https://pubmed.ncbi.nlm.nih.gov/27141033/

3. NHS England. NHS (2019) What is an NHS Health Check? ww.nhs.uk. Published online 2019. https://www.nhs.uk/conditions/nhs-health-check/what-is-an-nhs-health-check-new/

4. Findings from the 2019 / 20 NHS Health Check Delivery Survey. 2021;(March).

5. NHS England. How effective is the NHS Health Check? Published online 2017. https://www.england.nhs.uk/blog/matt-kearney-8/

6. Tanner L, Kenny RPW, Still M, et al. NHS Health Check programme: A rapid review update. *BMJ Open*. 2022;12(2). doi:10.1136/bmjopen-2021-052832

7. Fenton K, Kelly MP, Newton J, Patrick Z, Richards M. NHS Health Check : our approach to the evidence. 2013;(July):1-6. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/224537/NHS_Health_Check_our_approach_to_the_evidence_v2.pdf

8. Heath S. Local authorities ' public health responsibilities. Published online 2014:19. http://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN06844#fullreport

9. Publication O. Freeing up practices to support COVID vaccination. 2020;file:///C: https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/C1026_Freeing-up-GP-practices-letter_070121.pdf

10. Check NHSH, Government T, Check NHSH, et al. NHS Health Check : Restart Preparation. 2021;(April):1-4.

11. National Institute for Health and Care Excellence(NICE). Type 2 diabetes: prevention in people at high risk Public health guideline. *Natl Inst Heal Care Excell*. 2017;(September). https://www.nice.org.uk/guidance/ph38/chapter/glossary

12. Quality-statement-1-Advice-for-adults-during-NHS-Health-Checks @ www.nice.org.uk. https://www.nice.org.uk/guidance/qs84/chapter/Quality-statement-1-Advice-for-adults-during-NHS-Health-Checks

13. https://www.gov.uk/government/publications/nhs-health-checks-applying-all-our-health/nhs-health-checks-applying-all-our-health40c9388fa1093fb7edb22722892839 @ www.healthcheck.nhs.uk. https://www.healthcheck.nhs.uk/commissioners-and-providers/delivery/

14. Disparities O for HI and. NHS Health Checks: applying All Our Health. Published online 2022. https://www.gov.uk/government/publications/nhs-health-checks-applying-all-our-health/nhs-health-checks-applying-all-our-health

15. UK Health Security Agency. https://pubmed.ncbi.nlm.nih.gov/3920711/. Published online 2021. https://ukhsa.blog.gov.uk/2021/02/12/cardiovascular-disease-building-back-better/

16. NHS England. NHS Health Check e-Bulletin - August 2020. Published online 2020.

https://www.nhshealthcheck.nhs.uk/nhs-health-check-e-bulletin-august-2020/front-page/nhs-health-check-e-bulletin-august-2020

17. preventing-illness-and-improving-health-for-all-a-review-of-the-nhs-health-check-programme-and-recommendations @ www.gov.uk. https://www.gov.uk/government/publications/nhs-health-check-programme-review/preventing-illness-and-improving-health-for-all-a-review-of-the-nhs-health-check-programme-and-recommendations

18. Duddy C, Wong G, Gadsby EW, Krska J, Hibberd V. NHS Health Check programme: A protocol for a realist review. *BMJ Open*. 2021;11(4):1-12https://www.nhs.uk/conditions/coronavirus-covi. doi:10.1136/bmjopen-2021-048937

19. NHS England. Who is at high risk from coronavirus (COVID-19). Published online 2020. https://www.nhs.uk/conditions/coronavirus-covid-19/people-at-higher-risk/who-is-at-high-risk-from-coronavirus/

20. Office C. Our plan to rebuild: The UK Government's COVID-19 recovery strategy. Published online 2020. https://www.gov.uk/government/publications/our-plan-to-rebuild-the-uk-governments-covid-19-recovery-strategy

21. Global Burden of Disease. Global Burden of Disease. https://vizhub.healthdata.org/gbd-compare/

22. NHS England. NHS Health Check e-bulletin - November 2020. Published online 2020. https://www.nhshealthcheck.nhs.uk/nhs-health-check-e-bulletin-november-2020/print

23. Usher-Smith JA, Harte E, Maclure C, et al. Patient experience of NHS health checks: A systematic review and qualitative synthesis. *BMJ Open*. 2017;7(8):1-12. doi:10.1136/bmjopen-2017-017169

24. Maria Woringer, Elizabeth Cecil, Hillary Watt, Kiara Chang, Fozia Hamid, Kamlesh Khunti, Elizabeth Dubois, Julie Evason AM& MS. Evaluation of community provision of a preventive cardiovascular programme - the National Health Service Health Check in reaching the under-served groups by primary care in England: cross sectional observational study. Published online 2017. https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-017-2346-5

25. Claire Duddy, Geoff Wong, E W Gadsby, Janet Krska VH. NHS Health Check programme: a protocol for a realist review. https://bmjopen.bmj.com/content/11/4/e048937#ref-1

26. Bunten A, Porter L, Gold N, Bogle V. A systematic review of factors influencing nhs health check uptake: Invitation methods, patient characteristics, and the impact of interventions. *BMC Public Health*. 2020;20(1):1-16. doi:10.1186/s12889-019-7889-4

27. Ruth Riley, Nikki Coghill, Alan Montgomery, Gene Feder JH. The provision of NHS health checks in a community setting: an ethnographic account. Published online 2015. https://pubmed.ncbi.nlm.nih.gov/26651487/

28. Robson J, Dostal I, Madurasinghe V, et al. NHS Health Check comorbidity and management: An observational matched study in primary care. *Br J Gen Pract*. 2017;67(655):e86-e93. doi:10.3399/bjgp16X688837