

Digital exclusion in population screening programmes

Appendix 1

An Equality Impact Assessment of channel shift from printed media to online information within NHS England's population screening programmes

Appendix 1 - Screening Programmes and Digital Exclusion

EXISTING COVERAGE AND POTENTIAL CHANNEL SHIFT IMPACT

Screening programmes are monitored via a number of Key Performance Indicators (KPIs). These focus around the following:

- **Coverage:**
 - Refers to the percentage of the target population who were screened adequately within a particular period.
 - May identify target population numbers for different **levels** of screening e.g. initial screening, annual and quarterly surveillance in the case of AAA, or;
 - May identify target population numbers for different **age groups**, as for cervical screening.
- **Uptake:**
 - Refers to the proportion of people adequately screened *out of those invited for screening*.
 - May identify target numbers to complete the screening process in % terms.
- **Process Targets:**
 - May include timeliness of appointment / consultation following invitation.
 - May include timeliness of follow up when a screen is positive.

Our research is concerned with any potential significant impact on coverage or uptake, when providing information online. But not with KPIs around timeliness of follow-up.

Coverage and uptake levels vary for each of the screening programmes. Figure 3 shows the Young Person & Adult Screening Programmes. Coverage levels are significantly higher for the Antenatal & Newborn Screening Programmes, as shown in Figure 4.

Coverage / uptake also varies across the country, in part because of differential take-up associated with demographic groups. While uptake of breast screening is falling slightly, these levels are broadly static. In the sections on each of the screening programmes below, we explore the extent to which coverage may be affected by moves towards providing information online. Our recommendations aim to prevent negative impacts on these trends.

Figure 3: % Screening coverage / uptake for Young Person & Adult Screening Programmes, 2013-18.

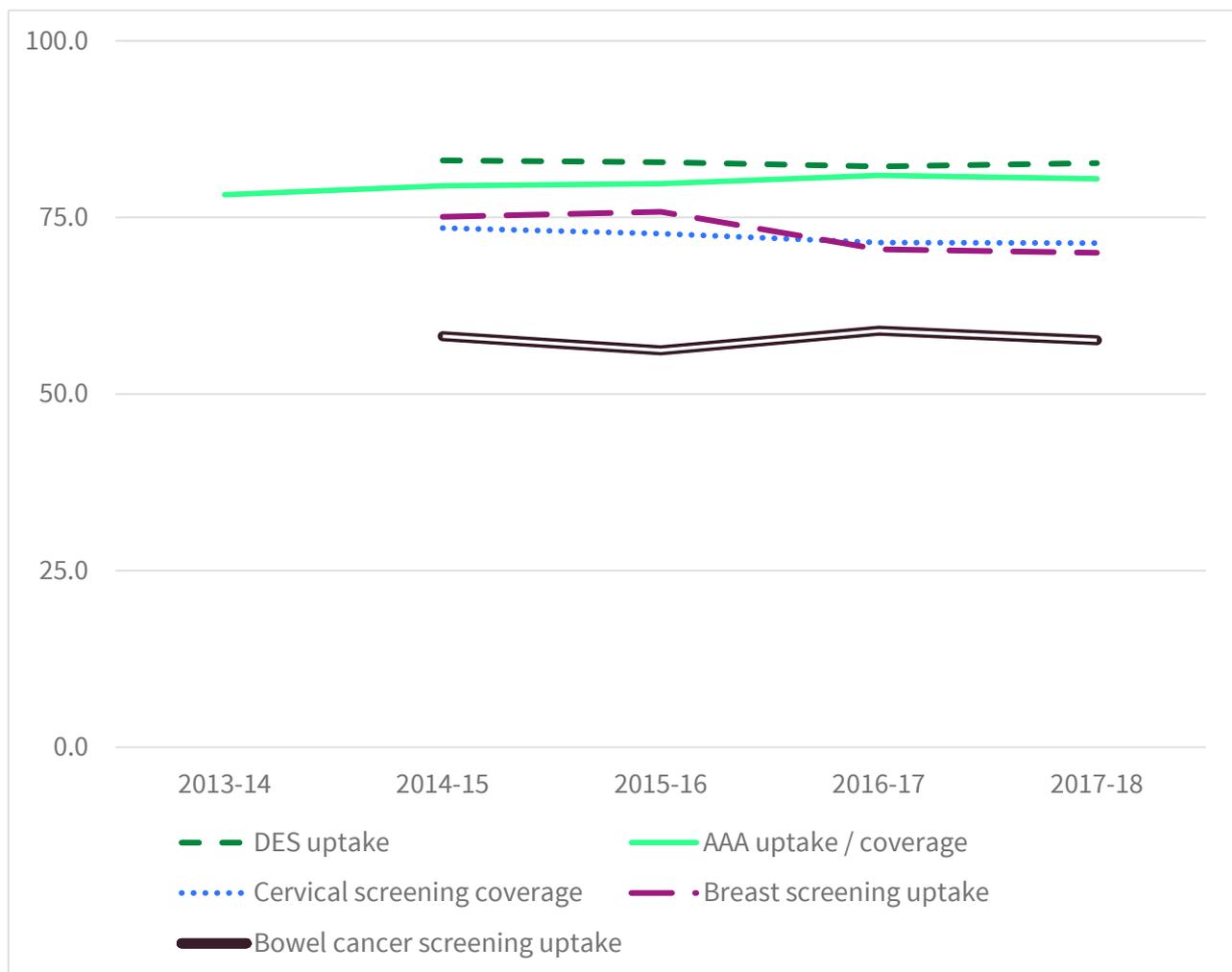
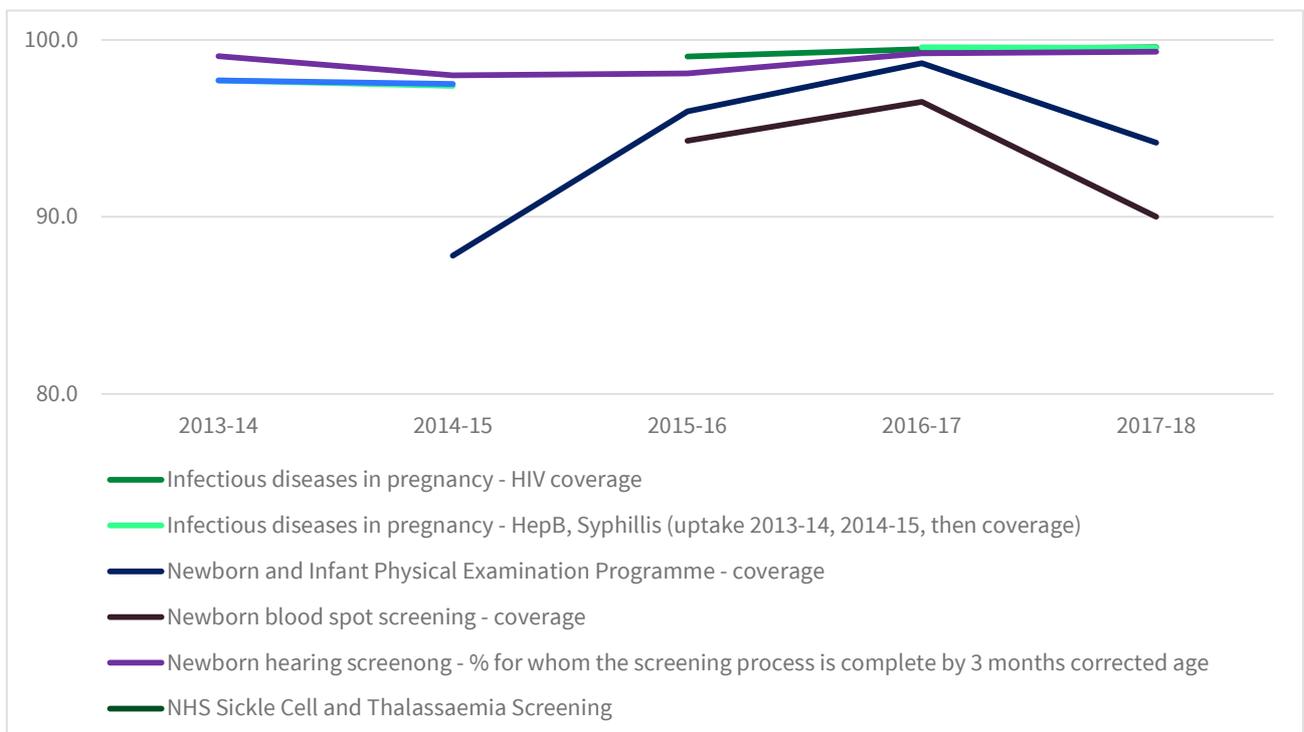


Table 2: % Screening coverage / uptake for Young Person & Adult Screening Programmes, 2013-18.

Adult and Young person screening programmes	2013-14	2014-15	2015-16	2016-17	2017-18
Diabetic Eye Screening Programme (DES) uptake		83.1	82.8	82.2	82.7
Abdominal Aortic Aneurysms Screening Programme (AAA) coverage / uptake*	78.2	79.5	79.8	80.9	80.5
Cervical Screening Programme (CSP) coverage**		73.5	72.7	71.5	71.4
Breast Screening Programme (BSP) uptake		75.1	75.8	70.5	70
Bowel Cancer Screening (BCS) uptake		58.2	56.2	58.9	57.6
*AAA figures are "uptake" for 2013-14, 2014-15, "coverage" thereafter					
**Cervical screening coverage is the percentage screened adequately within the previous 3.5/5.5 years, depending on age bracket					

Figure 4: % Screening coverage for Antenatal and Newborn Screening Programme (ANNB), 2013-18.



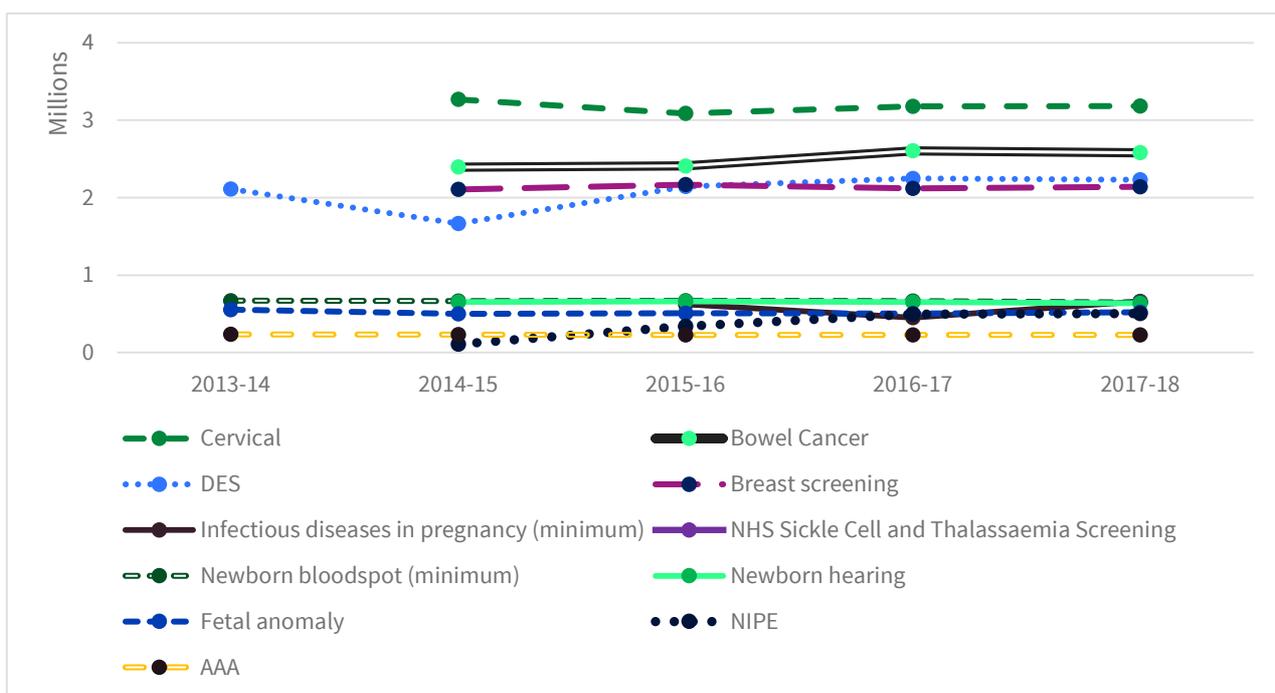
The target groups for each screening programme vary significantly. Data on the number of people tested annually (Table 3) provides insight into the relative order of magnitude of the programmes. Changes in coverage rates could affect total numbers tested, but we will set this

aside for now. Due to the different age profiles of people offered screening, these proportions do not necessarily transfer over to the numbers of people who may be offline, as we explore below.

Table 3: No. of people tested by screening programme, 2017-18, and approx. % of tests.

Screening programme	People tested	Approx. % of tests
Cervical	3,181,762	23
Bowel Cancer screening	2,579,831	18
DES	2,232,797	16
Breast screening	2,138,448	15
Infectious diseases in pregnancy (minimum)	659,995	5
NHS Sickle Cell and Thalassaemia Screening	651,652	5
Newborn bloodspot (minimum)	647,025	5
Newborn hearing	635,562	5
Fetal anomaly	519,864	4
NIPE	504,389	4
AAA	229,956	2
Approx. total (exc. two of three infectious diseases in pregnancy tests)	13,981,281	100

Figure 5: Millions of tests completed, by screening programme, 2013-14 to 2017-18



ESTIMATES OF DIGITAL EXCLUSION WITHIN SCREENING PROGRAMME POPULATIONS

We have produced estimates for how many people in each YPA screening programme target group might be offline. We calculated these by applying ONS estimates for the proportion of people offline, by age band to population, by single year of age. All calculations are based on the population who could be offered screening between 2020 and 2025. For example, we have taken the ONS estimate for the number of people aged 53-72 in 2018, who will be aged 60-74 between 2020-25.³²

We have made all calculations on the basis of the most recent ONS Internet Users dataset, which is only one way to estimate levels of digital exclusion. These figures report that 3,883,000 adults aged 16 years and over in England, or 8.7% (and 9% across the UK), have never used the internet or last used it over three months ago. We have used this dataset as it has a large sample size and allows for both demographic and geographic analysis.

Other datasets are likely to produce higher figures for digitally excluded people.³³ Yates, Kirby and Lockley (2015:1) suggest “41% of the UK population have no access, limited access, or are limited users of digital media.” As such, our estimates in this report represent the minimum number of people who are unlikely to engage with online screening information.

Finally, ***we have only made estimates of the number of people offline in each target group, based on age.*** Estimates do not take account of other factors associated with digital exclusion, or differentiate between geographic areas with similar age profiles, based on localised digital exclusion estimates. Age is the most significant factor when considering engagement with online information. Other factors, including disability and financial exclusion, are important and, if added, would increase the number of people expected to have some difficulty with online access.

³² We have not attempted to account for the phenomenon of “digital disengagement”, whereby people who have become internet users reduce or abandon digital technologies (Olphert and Damodaran, 2013 cited in McGillivray, Jenkins and Mamattah, 2017). Accounting for this process would elevate the proportions of people who are not internet users in the demographic groups.

³³ Based on people who have never or last the internet over three months ago

DIGITAL EXCLUSION FACTORS ACROSS THE PROGRAMMES

Table 4 summarises our estimates for the number and proportion of people who are offline, by screening programme. We estimate that across all programmes around 7.8% of individuals invited may be offline. This is lower than the national average estimate for England (8.7%) because of the different age profile. Specifically, because no screening programme covers people aged over 71.

Table 4: Estimated number and proportion of people who are offline, by screening programme

Screening Programme	Target Group	People in target group (2020-2025)	% Target populations	Approx. number of people in target group who are offline	% of target group who are offline	Share of digitally excluded population within programme
Bowel Cancer screening	Anyone aged 60-74 (aged 53-72 in 2018)	12,772,963	27.8	1,250,000	9.8	37%
Diabetic Eye	People with diabetes aged 12 of over	3,721,200	8.1	1,000,000	28.4	31%
Breast Screening	Women aged 50-71 (aged 43-69 in 2018)	7,961,334	17.3	580,000	7.3	17%
Cervical Screening	Women aged 25-64 (aged 18-62 in 2018)	16,356,023	35.6	325,000	2.0	10%
Antenatal & Newborn	Pregnant women, trans men, and non-binary people. Calculated from ONS Births by parent characteristics data, 2018	Approx. 3,300,000 (one parent only)	7.0	16,000	0.5	4%
Abdominal Aortic Aneurysms	Men turning 65 (aged 58-63 in 2018)	1,877,616	4.1	130,000	7.0	1%
Total	Combined total (ignoring overlaps)	45,922,738	100		7.8	100%

The following set of Figures include six maps, highlighting the CCGs ranked highest for digital exclusion risk, once adjustments for population are made. There is a map for each of the YPA programmes. There are differences in levels of risk for different areas, but there are also clear patterns, which are summarised in the combined map shown first.

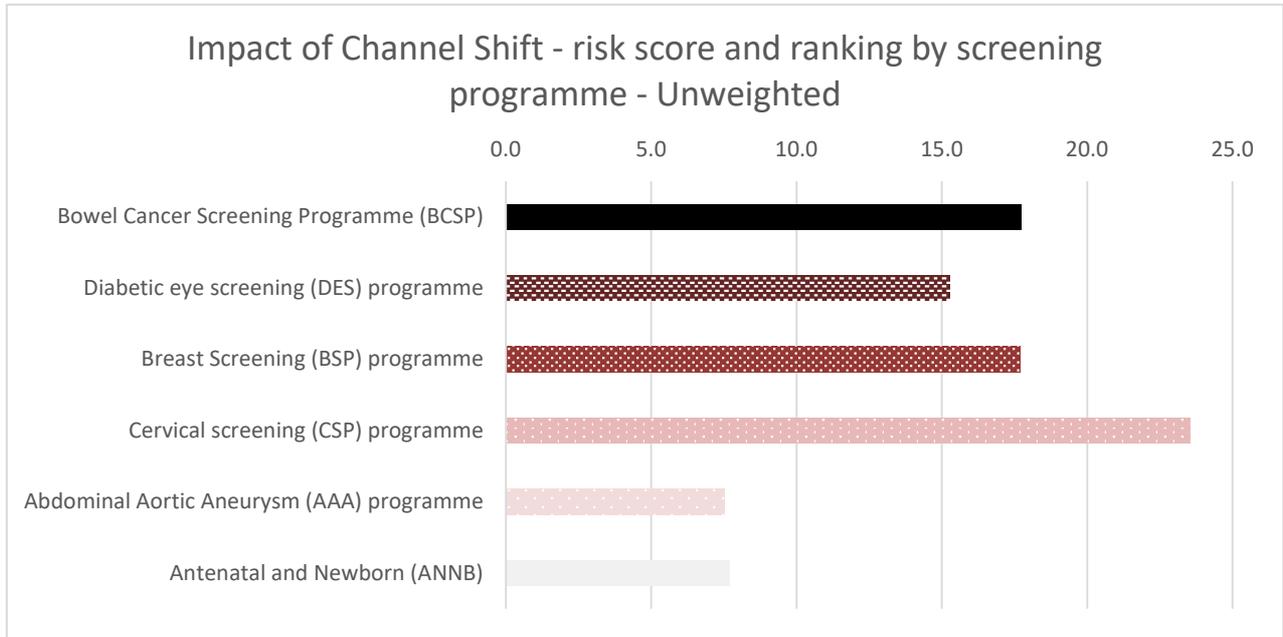
Areas highlighted include the South East coast (from Sussex to Kent), the East of England (around Norfolk and Lincolnshire) and in the West of England (in Herefordshire, Eastern Cheshire and Fylde and Wyre). These maps are intended as **a guide to where paper, face-to-face, or phone-based communication about screening programmes may be most needed** in numerical terms. They are adjusted to avoid over-representation of CCGs that have higher populations. Table 4 (above) represents a simplified version of a more complex and comprehensive analysis that returned a final risk score for each programme and enabled us to order them in priority. Our formula analysed data across 16 numerical or percentage metrics within each programme, comparing target populations over five years, offline populations within age groups and KPI data we were able to obtain from the PHE Performance Outcomes Framework, showing trends in uptake for example. Once we had obtained data for each metric, we applied risk weightings to different elements, to help us arrive at our risk score.

These were made up of the following:

- Scale of target population within the programme (0.5 weighting point) made up of three metrics:
 - Share of population
 - Share of print production
 - Share of print budget
- KPI performance (1 weighting point) made up of two metrics:
 - KPI trend (e.g. positive / negative / static)
 - KPI variance from the target
- Qualitative insights on the programme (1 weighting point) made up of 3 metrics:
 - Offline population
 - Equality Act protected characteristics impact
 - Programme sensitivities (anecdotal / literature review)
- Estimated share of offline contacts from the public (4 weighting points) made up of three metrics:
 - Offline demographic in relation to the programme
 - Age profile in relation to the programme
 - Estimates over 5 years, 2020-2025

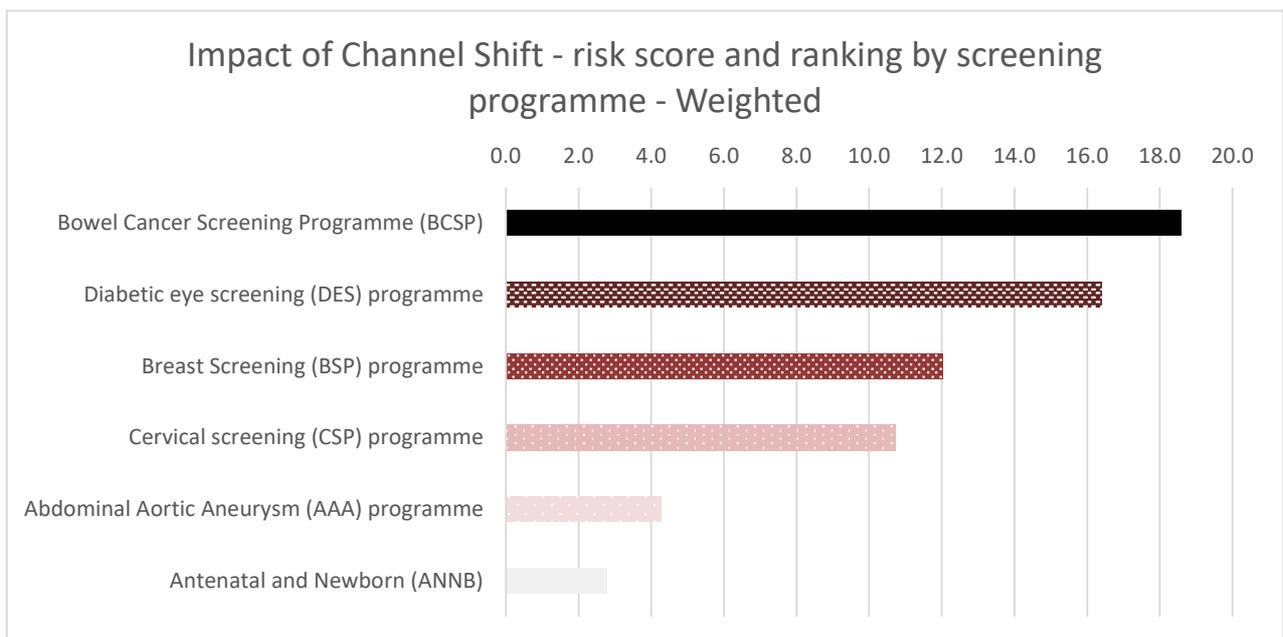
The final scoring of risk and impact, without the above weightings, is as follows:

Figure 6 Unweighted Risk Prioritisation of programmes



With the weightings applied, which are intended to include the specific digital exclusion impacts on each of the programmes, the prioritisation changes as follows:

Figure 7 Weighted Risk Prioritisation of programmes



In Table 5, we provide a summary of each of the programmes and their most relevant associated risks, including any headline statistics or estimates. The Population Targets are based on our best estimate of the number of people eligible to access each programme over the five years, 2020-2025. Our estimates of Offline Populations (as a number or percent of the Target Population) are based on current age-related offline population data from the Office for National Statistics (ONS).

Table 5 Summary of each screening programme risks

Risk Rating 1 = Highest 6 = Lowest	Programme	Programme Metrics (2020-25)	Risk Description
1	Bowel Cancer Screening Programme (BCSP)	Target Population: 12.8m Estimate Percent Offline: 9.8% Estimate Number Offline: 1.25m	We estimate this target group has the most people likely to be offline over five years . The percentage of offline people in this target group is second highest across all programmes. Over a third of the cases across all programmes, where we think people are less likely to access online information, are in the BCSP. This is because of the large target group size <i>and</i> older people being invited to the screening programme (Eligibility is age 60+ not including one off Scope Screening offered in some areas at ages 55-59).
2	Diabetic Eye Screening Programme (DES)	Target Population: 3.7m Estimate Percent Offline: 28.4%	We estimate around 1 million people in this programme are offline . ³⁴ As age is a key factor in diabetes and digital exclusion, the proportion (%) of people we suggest are offline is highest in this group . The true figure may be higher, as we have made digital exclusion

³⁴ The Target Population estimate for the DES is based on multiple factors including age and ethnic background, while our estimates for offline population are based on age alone (ONS data). Over 5 years, the target number does not multiply each year at the same high rate as other programmes, because screening is invited annually from the age of 12 and so the number of new people entering the programme happens at a lower rate.

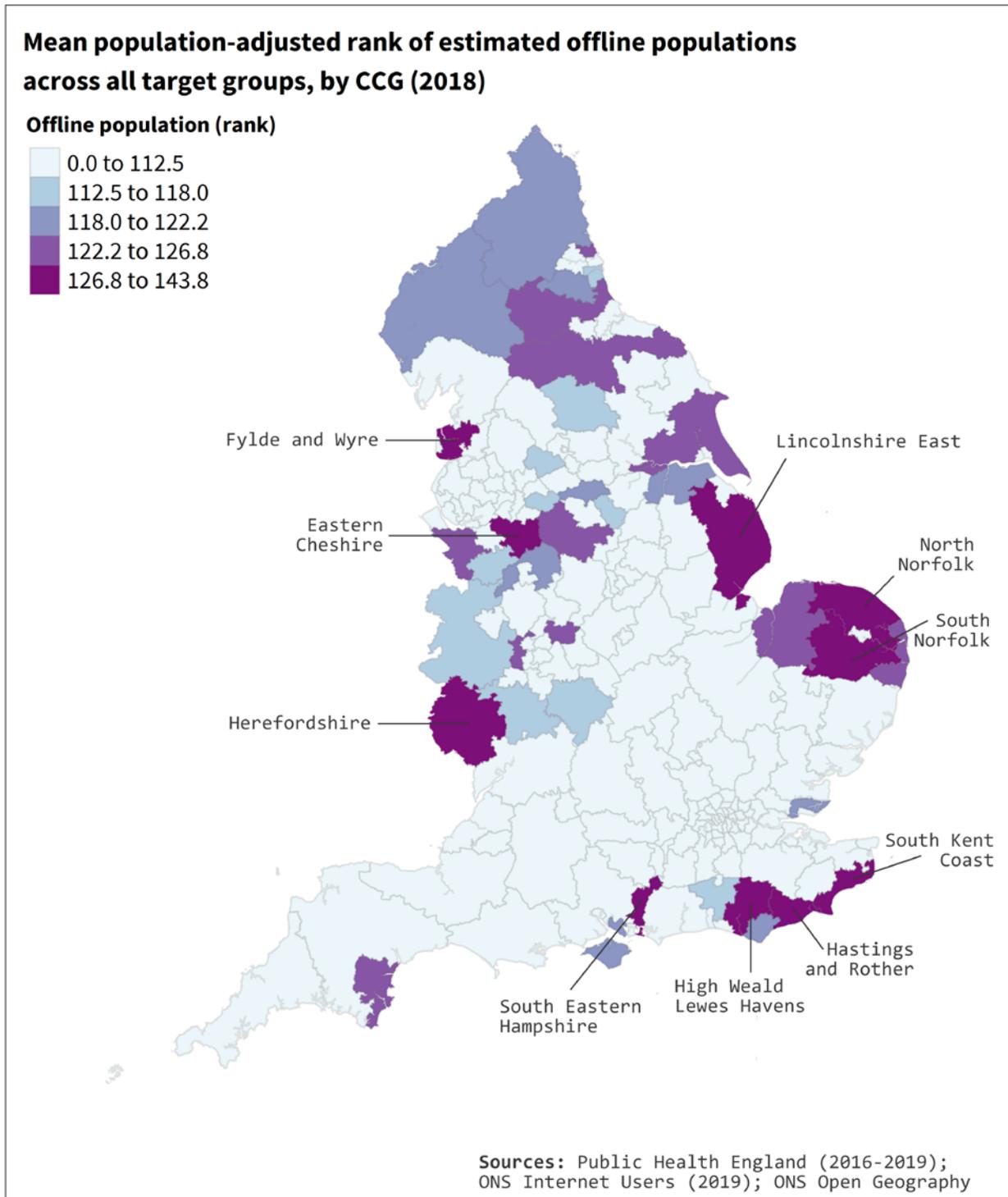
Risk Rating 1 = Highest 6 = Lowest	Programme	Programme Metrics (2020-25)	Risk Description
		Estimate Number Offline: 1m	estimates based only on the age profile. There are other digital exclusion factors where Diabetes is more likely, such as deprivation and BAME ³⁵ population. We estimate 28.4% of people in this programme are more likely to request non-digital information . However, people with diabetes are already symptomatic and linked in with an NHS service which may offset some of the need over time.
3	Breast Screening Programme (BSP)	Target Population: 8m Estimate Percent Offline: 7.3% Estimate Number Offline: 0.6m	The Breast Screening programme accounts for 17% of cases where an alternative to online information is more likely to be needed. We estimate this to be at least 580,000 women , which is around 7.3% of the 7.9 million to be invited to the screening programme between 2020 and 2025.
4	Cervical Screening Programme (CSP)	Target Population: 16.4m Estimate Percent Offline: 2% Estimate Number Offline: 0.3m	This screening programme has the largest target population and the largest leaflet screening budget across the programmes – however as the target group is younger, the proportion and number of people (328,000) estimated to be offline is significantly low, and low in comparison to other programmes. These two extreme factors balance out the risks meaning this programme takes one of the middle places in the overall risk rating.

³⁵ Black, Asian and Minority Ethnic (BAME)

Risk Rating 1 = Highest 6 = Lowest	Programme	Programme Metrics (2020-25)	Risk Description
5	Abdominal Aortic Aneurysms Screening Programme (AAA)	Target Population: 1.9m Estimate Percent Offline: 7% Estimate Number Offline: 0.1m	The estimated offline population for AAA population screening is relatively high compared to others at 7%. Yet, the lower number of people in the target group amongst the YPA programmes, results in a low number of people estimated to be offline - 130,000 . The AAA programme is the lowest risk amongst the YPA programmes. All invitations will remain Prevalent and it is unlikely there will be any change to printing immediately.
6	Antenatal & Newborn Screening Programme (ANNB)* *across six programmes	Target Population: 3.3m Estimate Percent Offline: 0.5% Estimate Number Offline: 0.02m	The ANNB programme remains the lowest risk overall across all programmes, when considering digital exclusion risk. While the Target Population for invitations is estimated to be high, the lower age group and the fact that all women will receive face to face advice, information and support in the course of their pregnancy, makes this the lowest risk programme. The estimated offline population within this target group is 16,000

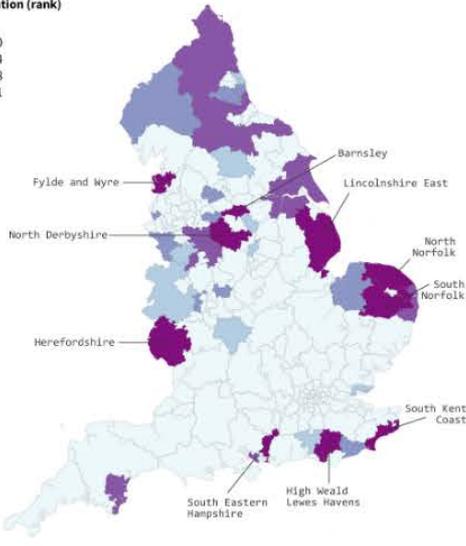
The simplest way to understand the change is to consider the cervical screening programme, which in the unweighted version is the highest risk impact. This is due to the large scale of the programme and its budget – but when the weightings are applied, the age demographic begins to play a more important role in the risk rating and the CSP is rated lower risk impact for this reason. Whereas the Bowel Cancer Screening Programme begins to get a higher impact rating, largely because of the expected offline populations within the target age group for invitations.

Figure 8: Mean population-adjusted rank of estimated offline populations across all target groups, by CCG (2018)



Population-adjusted rank of estimated offline population within AAA target group, by CCG (2018)

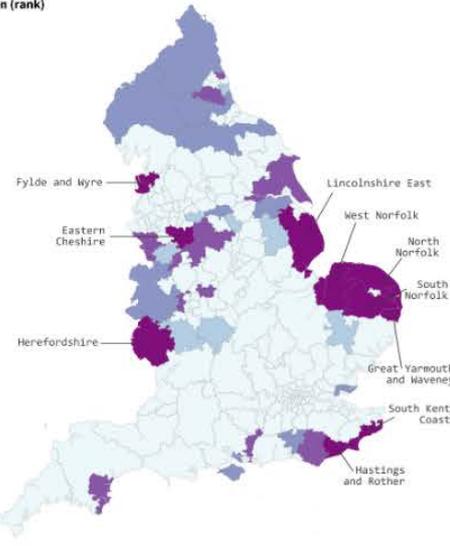
Offline population (rank)



Sources: Public Health England (2016-2019); ONS Internet Users (2019); ONS Open Geography

Population-adjusted rank of estimated offline population within breast cancer target group, by CCG (2018)

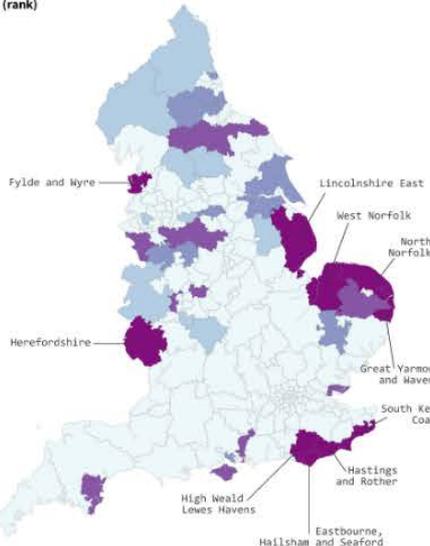
Offline population (rank)



Sources: Public Health England (2016-2019); ONS Internet Users (2019); ONS Open Geography

Population-adjusted rank of estimated offline population within bowel cancer target group, by CCG (2018)

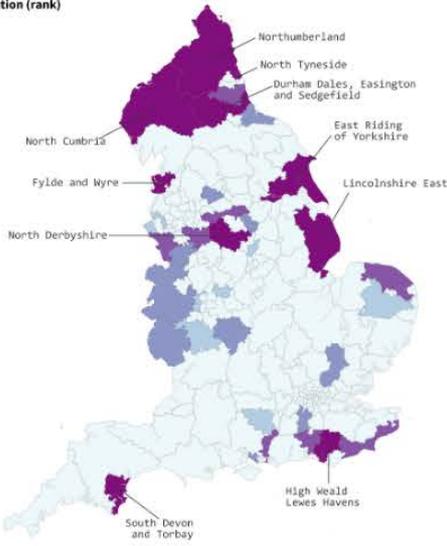
Offline population (rank)



Sources: Public Health England (2016-2019); ONS Internet Users (2019); ONS Open Geography

Population-adjusted rank of estimated offline population within cervical cancer target group, by CCG (2018)

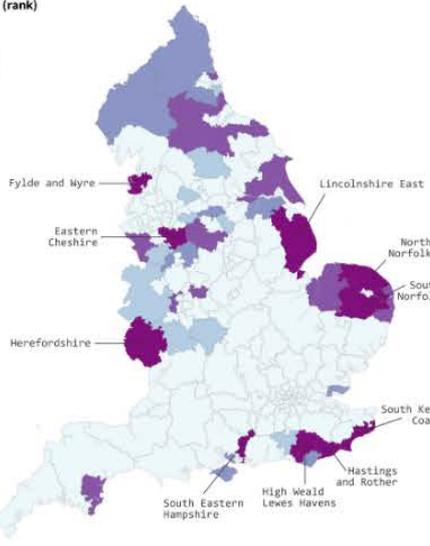
Offline population (rank)



Sources: Public Health England (2016-2019); ONS Internet Users (2019); ONS Open Geography

Mean population-adjusted rank of estimated offline populations across all target groups, by CCG (2018)

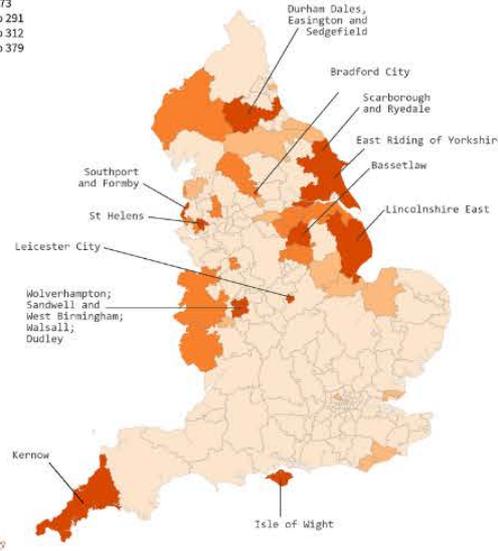
Offline population (rank)



Sources: Public Health England (2016-2019); ONS Internet Users (2019); ONS Open Geography

Combined prevalence ranking, by CCG (2019)

Combined rank



Sources: Public Health England National Cardiovascular Intelligence Network (2016); Prevalence estimates of diabetes by CCG (2019); ONS Census population estimates (2018) (Nomis); ONS Internet users estimates (2017-2019 mean) (derived from Labour Force Survey); Map boundaries: ONS Open Geography

LEAFLET PRINTING BUDGET

The purpose of this section is to offer PHE a future scenario of ‘demand’ on the leaflet printing budget and enable a prediction as to which programmes are more likely to experience pressures if public or NHS screening services continue to request printed information.

Table 5 presents the current % share of the printing budget (column A) alongside a % share of a future budget (column B)³⁶ based on our estimates of future offline populations in each programme between 2020 and 2025 placing a demand on the services.

In column B, we allocate the share according to the estimated levels of demand arising from digitally excluded people targeted in each programme. Our intention is to show where future demand is likely to be felt, not to advise on how to adjust future budgets. These decisions need to be made by PHE, based on a multitude of factors that go beyond our future digital exclusion scenario.

Table 6: Estimated share of digitally excluded contacts across programmes 2020-2025

Screening Programme	(A) Share of existing leaflet printing budget (%)	(B) Estimated future share based on demand from offline population (%)
Cervical	36.9	9.7
Bowel Cancer	26.9	37.2
Breast	19.0	17.3
Antenatal and newborn	8.8	0.5
Diabetic Eye	6.7	31.4
Abdominal Aortic Aneurysm	1.7	3.9
Total	100	100

ANALYSIS

Change from printed to digital information will be hardest at the beginning on all programmes. We have made estimates, over five years, on the numbers of ‘offline populations’ and our modelling saw the differentials on demand (represented in column B) widening as time went

³⁶ We have not estimated cost reductions that might be achieved through ceasing to send leaflets with incident invitations or looked at budgets in detail. For the calculation we also assume that future ‘offline’ populations will translate directly into a demand for printed leaflets. In reality this is likely to only be a proportion of the total offline population.

on. Therefore, we would advise caution across change in all programmes at the start of this process.

Bowel Cancer Screening: Due to the age group in this target population and the higher numbers of people offline, we estimate a higher share of demand on future printed materials.

Diabetic Eye Screening: Our calculations suggest this is the programme with the second largest share of future demand on the printing budget. This is due to the high numbers in the target population and the age band of the older cohorts invited each year for the test. However, this needs to be balanced with the fact that people invited to DE Screening are already symptomatic, receiving an NHS service and linked-in with support, so the demand for additional printed information may actually be less than indicated by future offline population estimation. The small share of the current budget would also support this. It may be possible to move the DES Programme to a Prevalent Invitation only system for leaflets in the near future.

Breast Screening: Largely unchanged – a small increase in share of demand on printed materials. Remains ‘third place’ in the list.

Cervical Screening: Currently the largest share of budget – however, owing to the age group of the target population, there are fewer people offline and therefore we predict a much lower demand for printed materials in future.

Abdominal Aortic Aneurysm Screening: While we predict a slightly higher share of future demand, the size of the current budget share is very small and target population is also small compared to other programmes. All invitations are prevalent and so we suggest little to no change with the future share of budget.

Antenatal & Newborn Screening: Our future demand scenario sees demand in this area drop even further than it currently is, but with an already smaller share of the current budget, some minimal level of printing capacity is expected to be necessary in future.

BOWEL CANCER SCREENING (BCSP)

Bowel Cancer Screening is offered to all men and women aged 60-74 every two years, and in some areas of the country people aged 55 are invited for a one-off bowel scope screening test. People aged 75 or over can also request screening over the phone. Looking at the first of these age bands, we can explore risk of digital exclusion. We do not make estimates for people aged 55 as this is not a country-wide offer, nor for people aged over 75. Assuming self-referral by phone is maintained, the people in this age group who are offline should not be affected by online screening information.

- There were over 12.8 million people in England aged 53-72 in 2018, who will be aged 60-74 in 2020-2025.
- This is equivalent to 22.8% of the population,³⁷ approaching one in every four people.
- The CCGs with the highest numbers and proportions of people in these age bands are presented in Tables 6 and 7, together with basic estimates for the number of people in these areas who are not internet users in Table 8.³⁸

Table 7: 10 CCGs ranked highest for number of people in the Bowel Cancer Screening target group

CCG Name	People aged 53-72, who will be 60-74 in 2020-25	% of total pop'n	Est people offline in target group
Northern, Eastern and Western Devon	236,405	26.0	23,943
Birmingham and Solihull	223,863	19.0	21,387
Dorset	207,829	26.9	21,267
Cambridgeshire and Peterborough	200,975	22.6	19,690
Bristol, North Somerset and South Gloucestershire	198,100	20.6	19,347
Gloucestershire	163,139	25.7	16,159
Cornwall	162,110	28.5	16,639
Nene	156,794	23.8	15,419
Somerset	155,956	27.9	15,851
Leeds	155,723	19.7	15,122

³⁷ ONS 2018 Mid-Year Estimate

³⁸ These crude estimates are based on applying the national average for the age band, and do not take into account local factors, nor regional variation in the proportions of people who are offline or lacking digital skills.

Table 8: 10 CCGs ranked highest for proportion of people in Bowel Cancer Screening target group

CCG	2020-25 Bowel screening (anyone 53-72 will be 60-74)	% of total population to be screened 2020-25 Bowel screening	Est offline 2020-25 Bowel screening (anyone 53-72 will be 60-74)	% of Bowel screening 2020-25 bracket estimated to be offline
North Norfolk	54,273	31.2	5,723	10.5
Isle of Wight	42,940	30.3	4,459	10.4
Lincolnshire East	71,559	30.1	7,426	10.4
Northumberland	95,983	30.0	9,647	10.1
South Devon and Torbay	85,206	29.9	8,745	10.3
East Riding of Yorkshire	94,524	29.8	9,681	10.2
Fylde and Wyre	56,848	29.5	5,811	10.2
Hambleton, Richmondshire and Whitby	45,179	29.5	4,573	10.1
Scarborough and Ryedale	33,179	29.3	3,368	10.1
Hastings and Rother	53,903	28.6	5,542	10.3

Table 9: 10 CCGs ranked highest for number of people estimated to be offline in target group

CCG Name	2020-25 Bowel screening (anyone 53-72 will be 60-74)	% of total population to be screened 2020-25 Bowel screening	Est offline 2020-25 Bowel screening (anyone 53-72 will be 60-74)	% of Bowel screening 2020-25 bracket estimated to be offline
Northern, Eastern and Western Devon	236,405	26.0	23,943	10.1
Birmingham and Solihull	223,863	19.0	21,387	9.6
Dorset	207,829	26.9	21,267	10.2
Cambridgeshire and Peterborough	200,975	22.6	19,690	9.8
Bristol, North Somerset and South Gloucestershire	198,100	20.6	19,347	9.8
Cornwall	162,110	28.5	16,639	10.3
Gloucestershire	163,139	25.7	16,159	9.9
Somerset	155,956	27.9	15,851	10.2
Nene	156,794	23.8	15,419	9.8
Leeds	155,723	19.7	15,122	9.7

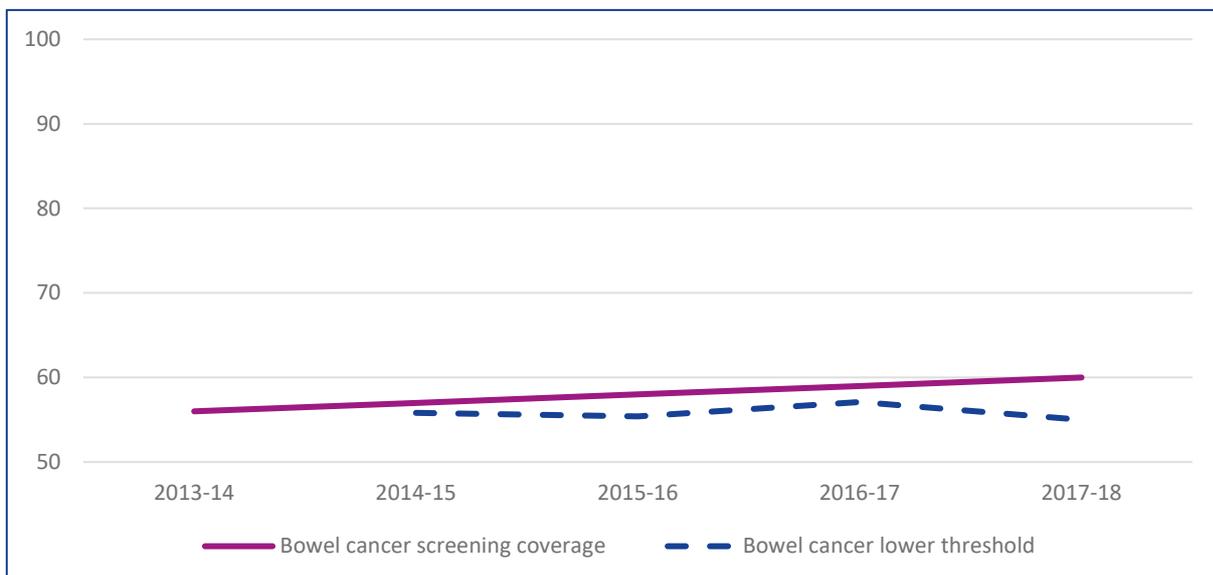
EXISTING COVERAGE AND POTENTIAL CHANNEL SHIFT IMPACT

The Independent Review (Richards, 2019) found performance against bowel screening targets is improving, and that further improvement is expected. As shown in Figure 9, bowel cancer screening met its lower threshold targets in 2017/18 – though it fell just short of the standard target (59.6% compared to 60%). There is considerable variation among local authorities; a 1.8-fold difference between the lowest coverage rate of 37.3% and the highest of 67% (PHE, 2017). Indeed, “One in five (32 out of 152) local authorities have less than half their eligible population with a screening test result recorded in the last 2.5 years” (ibid. 134).

However, while The Atlas reports that the “socioeconomic profile of the local population can also affect uptake of the screening test for bowel cancer”, there is no information regarding affected groups. While we have not made a quantitative analysis regarding coverage and digital exclusion, there is a risk that a shift to online information could negatively impact take-up, as these groups are likely to be those more likely to be digitally excluded. Further, The Atlas reports that there have been trials and initiatives to increase uptake and, rather than online materials, these have emphasised enhanced leaflets and face-to-face consultation:

- a letter of endorsement from the person’s GP
- an enhanced patient leaflet
- health promotion in a face-to-face consultation

Figure 9: Bowel Cancer Screening coverage against lower threshold target



DIABETIC EYE SCREENING (DES)

All members of the public with a diagnosis of diabetes, who are 12 years or over, are invited for diabetic eye screening annually. Identifying the prevalence of diabetes geographically within England, and cross referencing this with areas where we understand there to be higher prevalence of digital exclusion (offline populations), can provide some insight into the areas where the public might find it harder to engage with online information about the DES Programme.

The new Diabetes Prevalence Model (PHE, 2015) estimates the total number of adults (aged over 16) with both Type 1 and Type 2 diabetes in England as 3.8 million in England (2015)

- It is estimated that 3.8 million people aged 16 years and over in England have diabetes (diagnosed and undiagnosed). This is equal to 8.6% of the population of this age group.
- Diabetes prevalence is higher in men than in women; 9.6% versus 7.6%.
- Prevalence is higher in people from South Asian and black ethnic groups, compared with people from white, mixed or other ethnic groups; 15.2% versus 8.0%.
- There is a clear association between increasing age and higher diabetes prevalence; from 9.0% aged 45-54, to 23.8% aged and over.

At CCG level, diabetes prevalence ranges from 6.5% to 11.5%. CCGs with the highest estimated diabetes prevalence have high proportions of South Asian and black ethnic groups and high levels of deprivation. The CCGs with the highest numbers of people with diabetes, and the highest prevalence as a proportion of population are demonstrated in Table 9.

Table 10 breaks down our estimates for people with diabetes who may also be digitally excluded by age band.

Figure 10 shows a combined prevalence ranking for diabetes and digital exclusion, while the graphic on the following page shows the elements that are included in the combined ranking – and an alternative set of CCGs where risk of digital exclusion is highest in numerical, rather than proportional, population-adjusted terms.

Table 10: Top ten CCGs ranked by prevalence of Diabetes – number of people

CCG	Number	Prevalence
North, East, West Devon	64,861	8.8%
Dorset	57,473	9.0%
Birmingham Cross city	56,452	9.9%
Cambridgeshire and Peterborough	55,218	7.8%
Cornwall	44,779	9.8%
Sandwell and West Birmingham	43,324	11.5%
Gloucestershire	42,305	8.4%
Nene	42,108	8.2%
Somerset	41,240	9.2%
Oxfordshire	39,560	7.3%

Table 11: Top ten CCGs ranked by prevalence of Diabetes, proportion

CCG	Number	Prevalence
Sandwell and West Birmingham	43,324	11.5%
Brent	29,552	11.4%
Bradford City	6,665	11.1%
Wolverhampton	22,294	11.0%
Leicester City	29,194	10.9%
Redbridge	24,903	10.8%
Harrow	21,408	10.8%
Ealing	29,145	10.7%
Croydon	30,994	10.4%
Newham	26,801	10.4%

Table 12: Diabetes prevalence and digital exclusion risk by age group

Age band	Never used internet, or last used over 3 months ago (%) (UK) (2015) ²	Expected diabetes prevalence (%) (England) (2015) ³	Estimated population with diabetes (England) (derived)	Estimated offline population with diabetes
16-24	0.7	0.8	49,543	347
25-34	1.2	1.2	89,832	1,078
35-44	2.6	3.5	248,758	6,468
45-54	6.1	9.0	693,032	41,582
55-64	13.2	12.7	785,246	103,653
65-74	29.3	16.9	893,293	261,735
75+	66.7	23.8	961,595	641,384
Total			3,721,300	1,056,246

Figure 10: Combined prevalence ranking - diabetes and non-internet users, by CCG (2019)

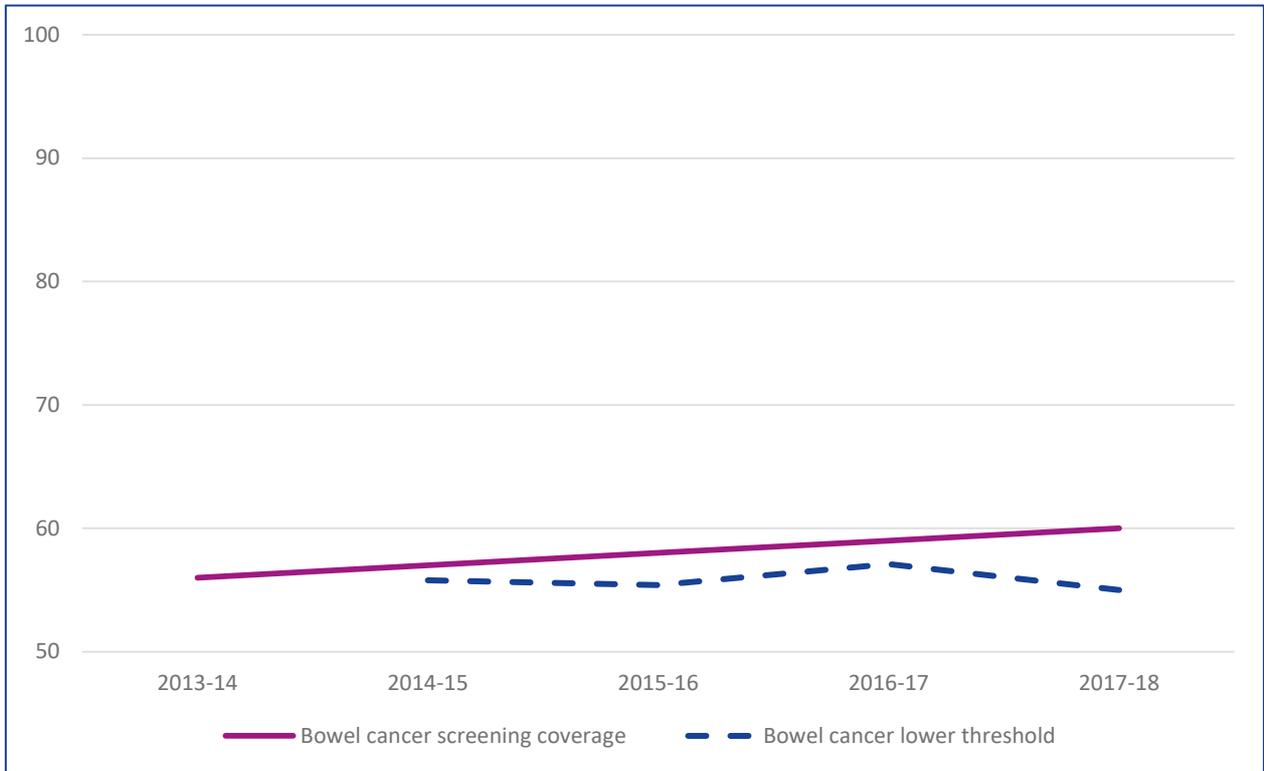
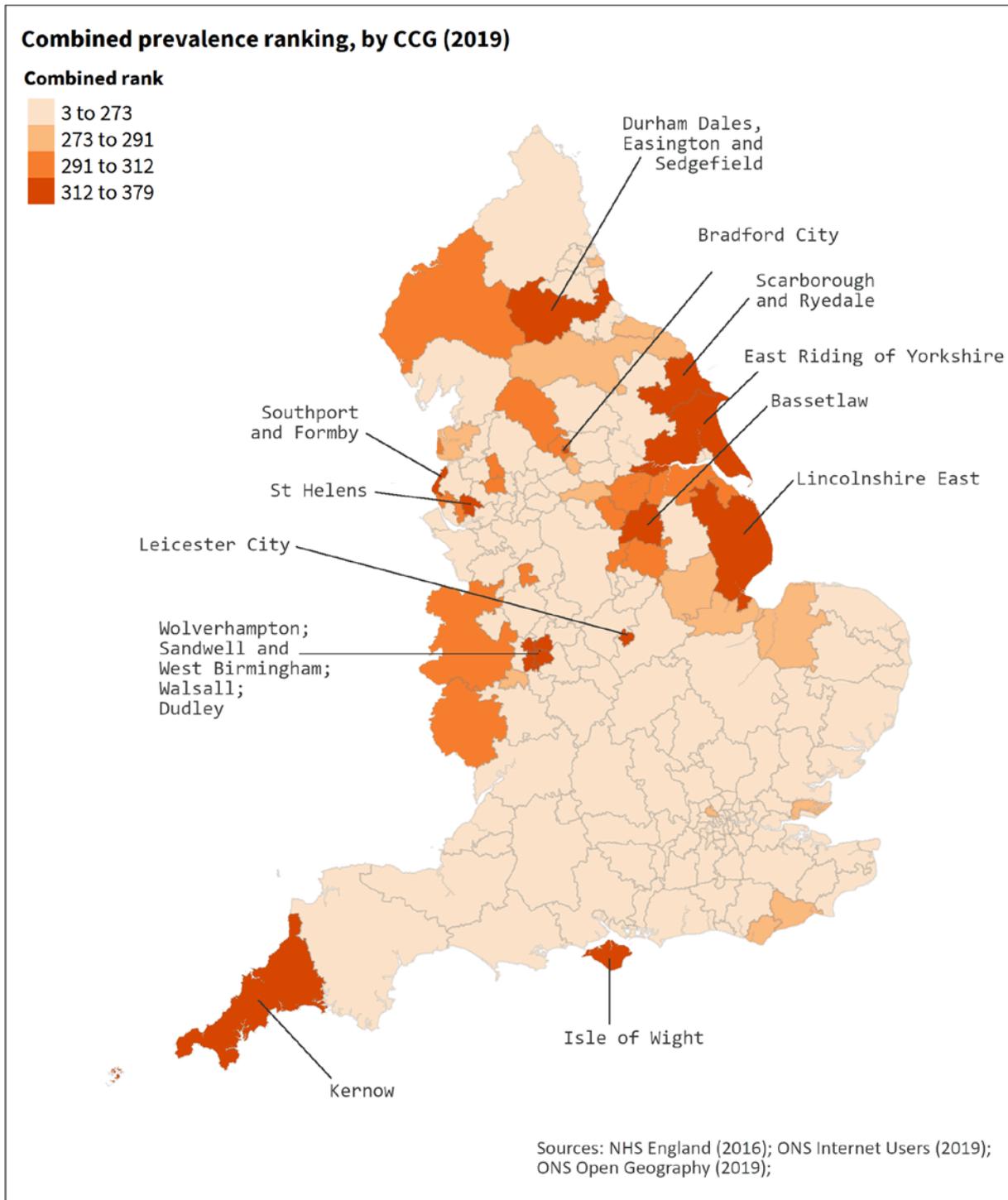
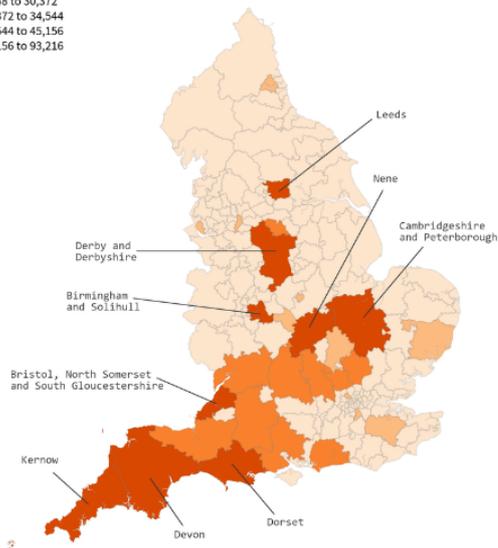


Figure 11: Diabetic Eye Screening Coverage, vs lower threshold (75%)



Adult population with diabetes, by CCG (2019)

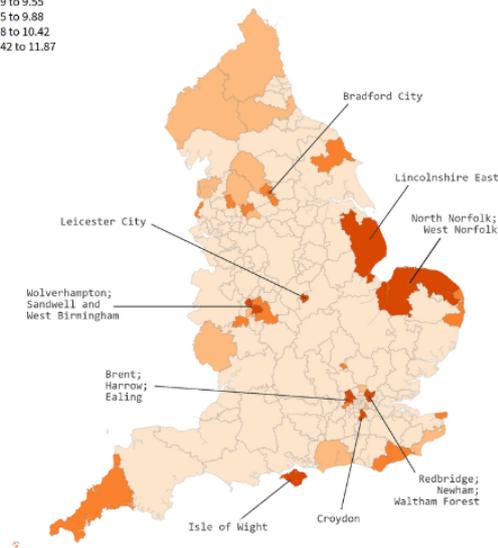
Population with diabetes



Sources: Public Health England National Cardiovascular Intelligence Network (2016); Prevalence estimates of diabetes by CCG (2019); ONS Census population estimates (2018) (Nomis); Map boundaries: ONS Open Geography

Prevalence of diabetes, by CCG (2019)

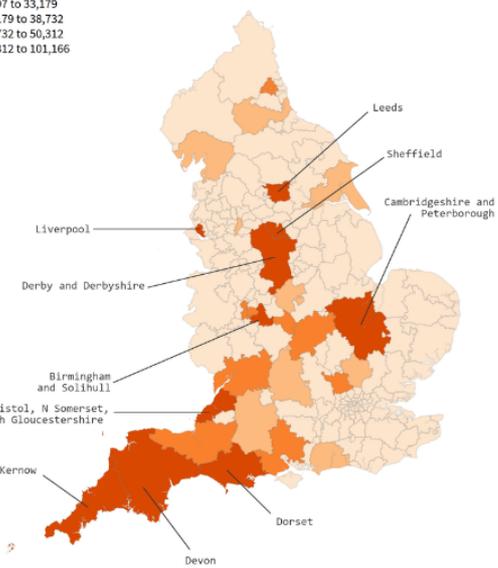
Prevalence (% popn)



Sources: Public Health England National Cardiovascular Intelligence Network (2016); Prevalence estimates of diabetes by CCG (2019); ONS Census population estimates (2018) (Nomis); Map boundaries: ONS Open Geography

Non-internet users population, by CCG (2019)

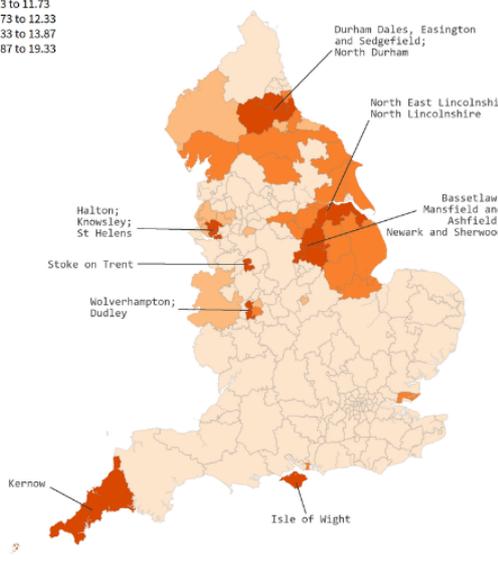
Population



Sources: ONS Census population estimates (2018) (Nomis); ONS Internet users estimates (2017-2019 mean) (derived from Labour Force Survey); Map boundaries: ONS Open Geography

% non-internet users, by CCG (2019)

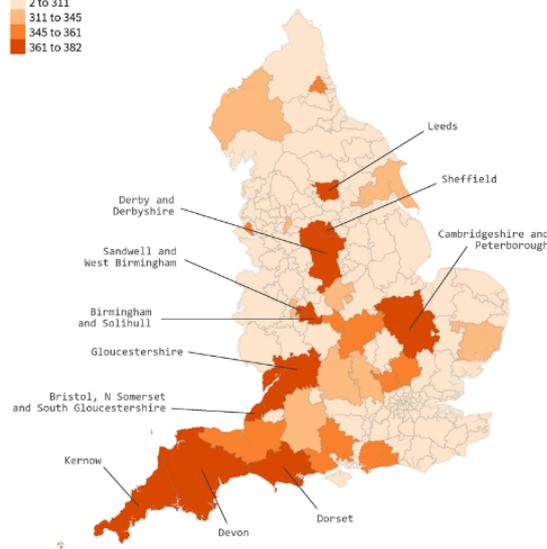
Percentage



Sources: ONS Census population estimates (2018) (Nomis); ONS Internet users estimates (2017-2019 mean) (derived from Labour Force Survey); Map boundaries: ONS Open Geography

Combined ranking of populations, by CCG (2019)

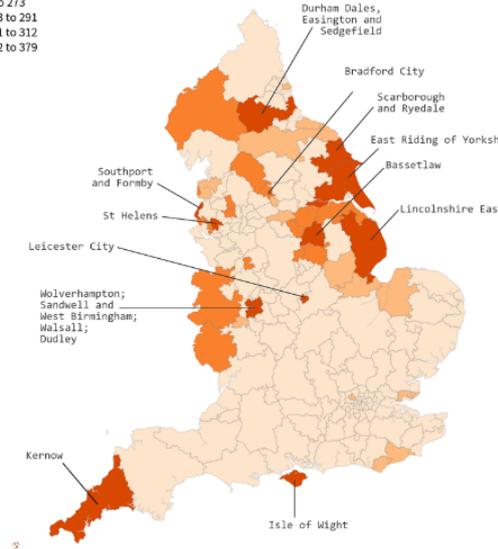
Combined rank



Sources: Public Health England National Cardiovascular Intelligence Network (2016); Prevalence estimates of diabetes by CCG (2019); ONS Census population estimates (2018) (Nomis); ONS Internet users estimates (2017-2019 mean) (derived from Labour Force Survey); Map boundaries: ONS Open Geography

Combined prevalence ranking, by CCG (2019)

Combined rank



Sources: Public Health England National Cardiovascular Intelligence Network (2016); Prevalence estimates of diabetes by CCG (2019); ONS Census population estimates (2018) (Nomis); ONS Internet users estimates (2017-2019 mean) (derived from Labour Force Survey); Map boundaries: ONS Open Geography

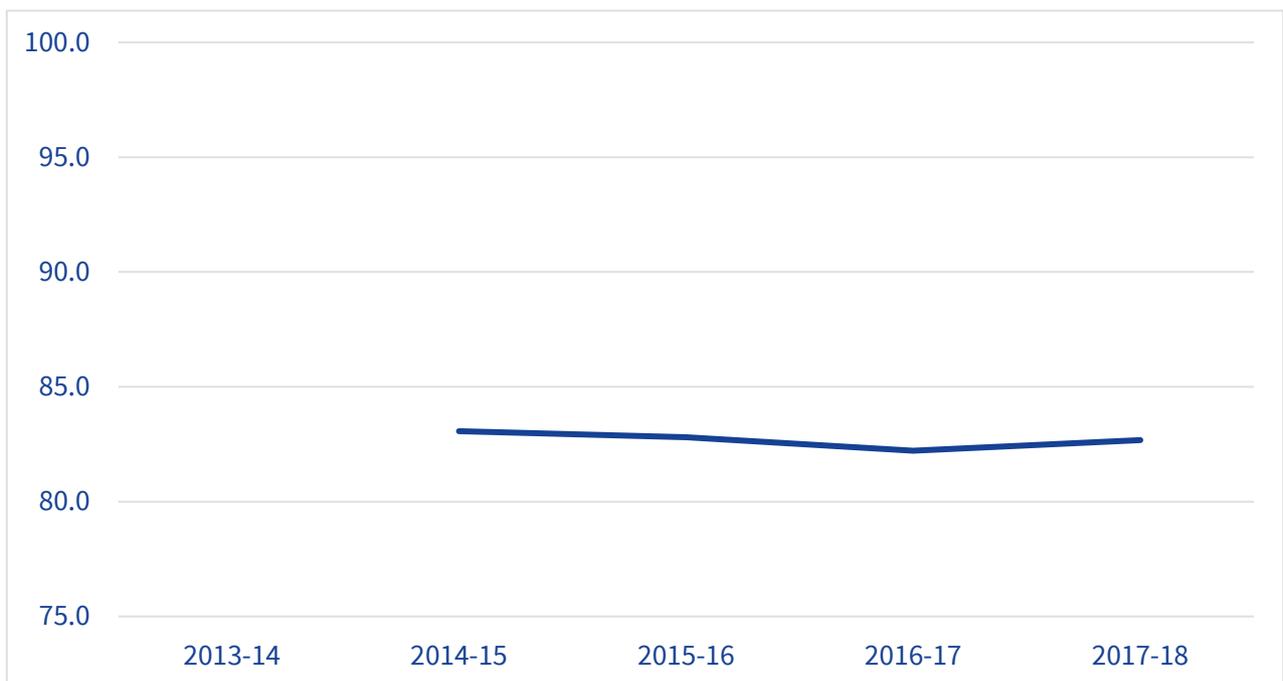
EXISTING COVERAGE AND CHANNEL SHIFT IMPACT

There is no analysis of Diabetic Eye Screening in The Atlas (PHE, 2017). The Independent Review (Richards, 2019) reports that “The service is seen as successful as diabetes is no longer the leading cause of blindness in working age people. Uptake of screening is generally high” Coverage – at 82.7% in 2017/18 – exceeds the lower threshold of 75% (see Figure 12), while still falling below the agreed standard (85%).

As with other screening programmes there are demographic groups less likely to attend, in this case younger people (age 20-45) and socioeconomically deprived groups. Like Richards (ibid.), Ahmad and Neilson (2019) identify “low screening uptake in the working age population, especially those living in the most socioeconomically deprived areas.”

Factors associated with lower uptake were cited as: living in areas of high socioeconomic deprivation, young age, having a long duration of diabetes, poor glycaemic and blood pressure control or belonging to BAME groups. While not all of these factors are associated with digital exclusion, socioeconomic deprivation is – as discussed above. Having a long duration of diabetes is likely to be associated with people who are older, which would also be associated with digital exclusion.

Figure 12: Diabetic Eye Screening Coverage, vs lower threshold (75%)



BREAST SCREENING (BSP)

Breast screening is offered routinely to women aged 50-71.

- There were over 9.4 million women in England aged 43-69 in 2018, who will be 50-71 in 2020-2025.
- This is equivalent to 33.3% of women;³⁹ approximately one in every three (or 16.8% of the population; approximately one in every six people).

The CCGs with the highest numbers and proportions of people in these age bands are presented in Tables 12 and 13, together with basic estimates for the number of people in these areas who are not internet users (Table 14).⁴⁰

There are ten CCGs with over 7,000 women in the target group, and two where over 10,000 women are expected to be offline. While it may be appropriate to see risk in proportional terms, these numbers are significantly higher than the 2-4,000 women who are offline in the areas where the highest proportion of women are in the target group for breast screening.

Figure 13 maps CCGs ranked highest for estimated offline population within the breast screening target group, once adjusted for population.

This again highlights CCGs around the periphery of England, with a particular emphasis on the east of England – in alphabetical order: Eastern Cheshire, Fylde and Wyre, Great Yarmouth and Waveney, Hastings and Rother, Herefordshire, Lincolnshire East, Norfolk (North, South and West), and South Kent Coast.

³⁹ ONS 2018 Mid-Year Estimate

⁴⁰ These crude estimates are based on applying the national average for the age band, and do not take into account local factors, nor regional variation in the proportions of people who are offline or lacking digital skills.

Table 13: 10 CCGs ranked highest for number of people in Breast Screening target group

CCG	Women 43-69, who will be 50-71 in 2020-2025	% of women	Est women offline in target group	% of Breast screening 2020-25 bracket estimated to be offline
Birmingham and Solihull	173,632	28.9	10,275	5.9
Northern, Eastern and Western Devon	162,532	35.2	10,679	6.6
Cambridgeshire and Peterborough	148,543	33.4	9,081	6.1
Bristol, North Somerset and South Gloucestershire	147,265	30.5	8,980	6.1
Dorset	140,553	35.9	9,376	6.7
Leeds	117,544	29.2	7,128	6.1
Nene	116,435	34.9	7,150	6.1
Gloucestershire	116,405	36.1	7,402	6.4
Oxfordshire	112,147	33.3	6,799	6.1
Cornwall	110,356	37.8	7,372	6.7

Table 14: 10 CCGs ranked highest for proportion of people in the Breast Screening target group

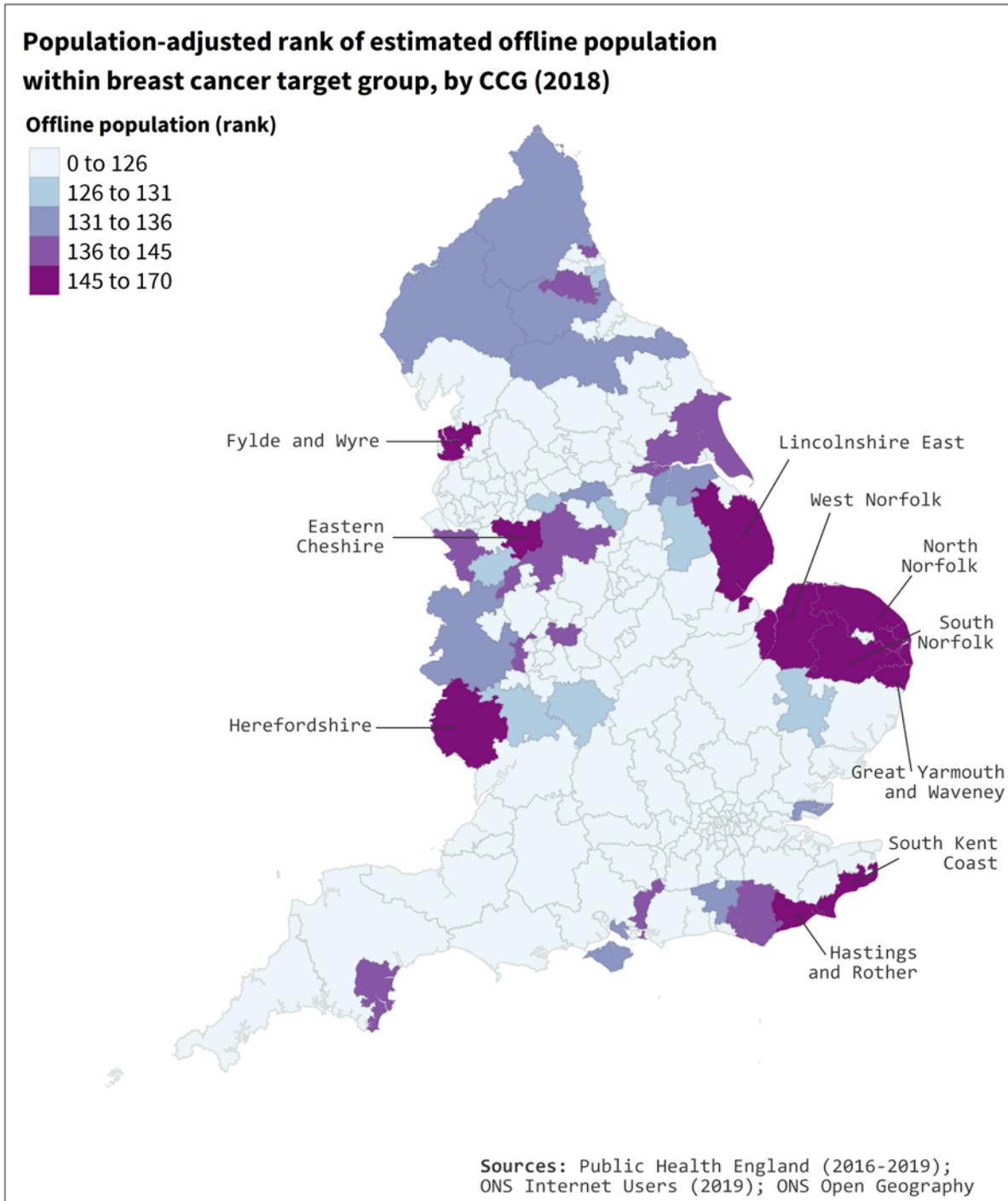
CCG	Women 43-69, who will be 50-71 in 2020-2025	% of women	Est women offline in target group	% of Breast screening 2020-25 bracket estimated to be offline
Hambleton, Richmondshire and Whitby	29,929	39.6	2,005	6.7
Northumberland	64,572	39.4	4,336	6.7
East Riding of Yorkshire	63,313	39.1	4,218	6.7
Isle of Wight	28,253	39.1	1,930	6.8
North Norfolk	34,691	38.9	2,434	7.0
High Weald Lewes Havens	34,589	38.7	2,194	6.3
Lincolnshire East	46,776	38.7	3,212	6.9
South Devon and Torbay	56,635	38.5	3,852	6.8

Eastern Cheshire	38,803	38.3	2,450	6.3
North Cumbria	61,788	38.3	4,021	6.5

Table 15: 10 CCGs ranked highest for number of people estimated to be offline in target group

CCG	Women 43-69, who will be 50-71 in 2020-2025	% of women	Est women offline in target group	% of Breast screening 2020-25 bracket estimated to be offline
Northern, Eastern and Western Devon	162,532	35.2	10,679	6.6
Birmingham and Solihull	173,632	28.9	10,275	5.9
Dorset	140,553	35.9	9,376	6.7
Cambridgeshire and Peterborough	148,543	33.4	9,081	6.1
Bristol, North Somerset and South Gloucestershire	147,265	30.5	8,980	6.1
Gloucestershire	116,405	36.1	7,402	6.4
Cornwall	110,356	37.8	7,372	6.7
Nene	116,435	34.9	7,150	6.1
Leeds	117,544	29.2	7,128	6.1
Somerset	106,547	37.2	7,035	6.6

Figure 13: Population-adjusted rank of estimated offline population within the breast screening target group, by CCG (2018)



EXISTING COVERAGE AND CHANNEL SHIFT IMPACT

The Independent Review of Adult Screening Programmes in England found that “Coverage of breast screening has decreased over the years, but is still reasonably good in comparison with that in other developed countries” (Richards, 2019: 120). Coverage was 74.9% on 31st March 2018, compared to 75.4% in 2016/17 (Figure 14), and 75.9% in 2007/08 – peaking at 77.2% in 2011/12. Further, coverage varies across the country, ranging from 69.3% (London), to 78.4% (East Midlands):

- Seven local authorities reported coverage of 80% or more, while 35 of the 150 reported coverage below 70%.
- Only 60% of women who received their first invitation were screened, compared with 86.3% of those who had been screened within the last five years. Uptake was lowest amongst those who received a routine invitation, having failed to respond to a previous invitation.
- Uptake has fallen markedly amongst those receiving a first invitation for screening (from 68.1% in 2007/08 to 60.0% in 2017/18).

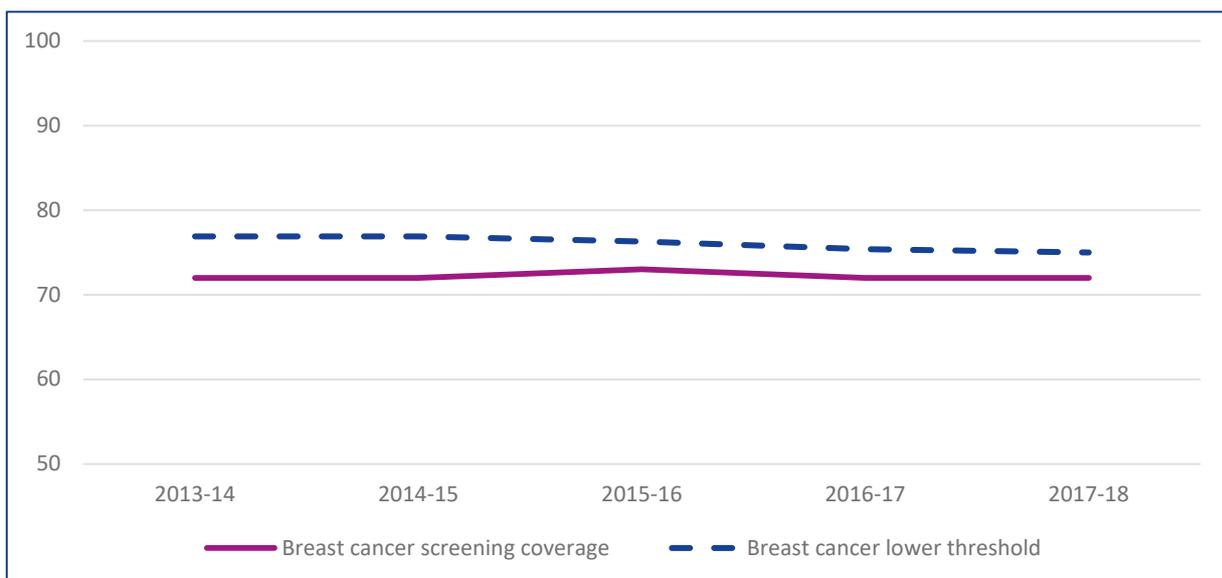
The Atlas (PHE, 2017) reports that local authority values ranged from 56.3% to 86.4%, which is a 1.5-fold difference between local authorities – and that almost one-quarter of local authorities (n=35) failed to meet the national minimum standard of 70% of women to be adequately screened.

Again, the “socioeconomic profile of local populations, which affects rates of screening acceptance” is mentioned, but with no detail about the demographic groups less likely to take up screening.

There is a hint of a suggestion that information currently provided – based on fully informed consent – may have an influence “according to the profile of the local population served.” Interviews with the Breast Screening National Programme Manager and team suggest people in socially deprived areas, people who are BAME, and people who have learning disabilities or are transient (in particular London, but also North West) are hardest to reach (in common with other programmes).

This would suggest some overlap with people who are more likely to be digitally excluded, and a risk that a shift to online information could reduce coverage. Interviews also identified that take-up is lowest for first mammograms, when women haven't established habit, and it is possible that online information could help to reduce anxiety about this, in a way printed material cannot. Interviewees felt that the benefits of videos that are already available are known already. There was concern about anything that might reduce take up, including move to online-only information and leaflets which emphasise risks, particularly when information found through online search could be from alternative sources, such as news emphasising risks (e.g. BBC, 2018).

Figure 14: Breast screening coverage against lower threshold target



We have not conducted quantitative analysis on the relationship between coverage and digital exclusion. However, the lower age profile of the breast screening target group suggests this may not be as much of an issue as with other screening programmes. Further, there is some evidence that social media campaigns have been able to increase coverage rates – indicating that digital screening information may not be a barrier to increased coverage:

“First-time appointments at the North Midlands Breast Screening Service increased by an average of 12.9% between three-year screening cycles from 2014 to 2018. The service has also shot up the league table for uptake levels, going from 58th to 11th in the country between 2016-17 and 2017-18.” (Digital Health Age, 2019).

CERVICAL SCREENING PROGRAMME (CSP)

Cervical screening is offered to women aged 25-49 every three years, and women aged 50-64 every five years. Recently, it was identified that coverage has fallen: “During the past 5 years, 5-year coverage has fallen from just over 80% to just under 80%, and more so in 25- to 30-year-olds” (Albrow et al., 2012):

- In England, there are 16.4 million women who will be in these age brackets in 2020-25, 9 million who will be aged 25-49 and 5.7 million who will be aged 50-64.
- We estimate approximately 335,000 women will not be internet users (2.0%)
- There are far more women in the older age bracket who are not internet users: 277,427 women aged 43-62 (who will be 50-64 between 2020-25) are estimated to be offline, compared to just 50,899 aged 18-42 (who will be 25-49 between 2020-25).

Tables 15 and 16 show the number and proportion of women who are not internet users, according to the ONS Internet Users data (from the 2019 Labour Force Survey). This data suggests there are 557,000 women who are not internet users in the Cervical Screening Programme target demographic (2.5% of the 21.9 million people in the demographic, according to this dataset). However, this figure is reduced by applying the proportional figures to 2018 estimates of people who will be within the target demographic in 2020-2025.

Table 16: Women who are (not) internet users, by age band – UK, 2019.

	No. of women who have used internet in last 3 months	No. of women who are not internet users	No. of women who have never used internet	No. of women who have used internet over 3 months ago
All	24,255	2,771	2,354	417
16-24	3,373	10	7	3
25-34	4,436	18	9	9
35-44	4,164	43	25	18
45-54	4,477	115	84	31
55-64	3,830	266	196	70
65-74	2,747	583	478	105
75+	1,229	1,735	1,554	181
25-54	13,077	176	118	58
45-64	8,307	381	280	101
Cervical screening population	21,384	557	398	159

Table 17: Proportion of women who are/not internet users, by age band – UK, 2019

	Proportion of women who have used internet in last 3 months	Proportion of women who are not internet users	Proportion of women who have never used internet	Proportion of women who have used internet over 3 months ago
All	89.6	10.2	8.7	1.5
16-24	99.5	0.3	0.2	0.1
25-34	99.5	0.4	0.2	0.2
35-44	98.9	1	0.6	0.4
45-54	97.5	2.5	1.8	0.7
55-64	93.4	6.5	4.8	1.7
65-74	82.4	17.5	14.3	3.2
75+	41.4	58.4	52.3	6.1
25-54	98.6	1.3	0.9	0.4
45-64	95.6	4.4	3.2	1.2
Cervical screening population	97.5	2.5	1.8	0.7

Tables 18 to 19 show that the highest numbers of women in the target group for the Cervical Screening Programme are urban; in the top ten ranked CCGs by this measure, only Manchester and Brighton and Hove are outside London.

The proportion of women in the target group is above two-thirds of women in eight of these CCG areas, and virtually two-thirds in the remaining two CCGs.

The number of women estimated to be offline is over 1,000 in each of these CCGs. However, the number of women who are offline is – as with the other screening programmes – higher (above 3,700) in the larger CCGs, with rural south-west CCGs featuring alongside Leeds, and Birmingham and Solihull.

Finally, the proportion of women estimated to be offline is higher (above 2.5%) in rural eastern and northern CCGs, North Norfolk, Hambleton, Richmondshire and Whitby, Fylde and Wyre (Table 19). These CCGs have a larger population of older women, who are more likely to be offline.

Figure 15: CCGs ranked by population estimated to be offline within Cervical Screening target group

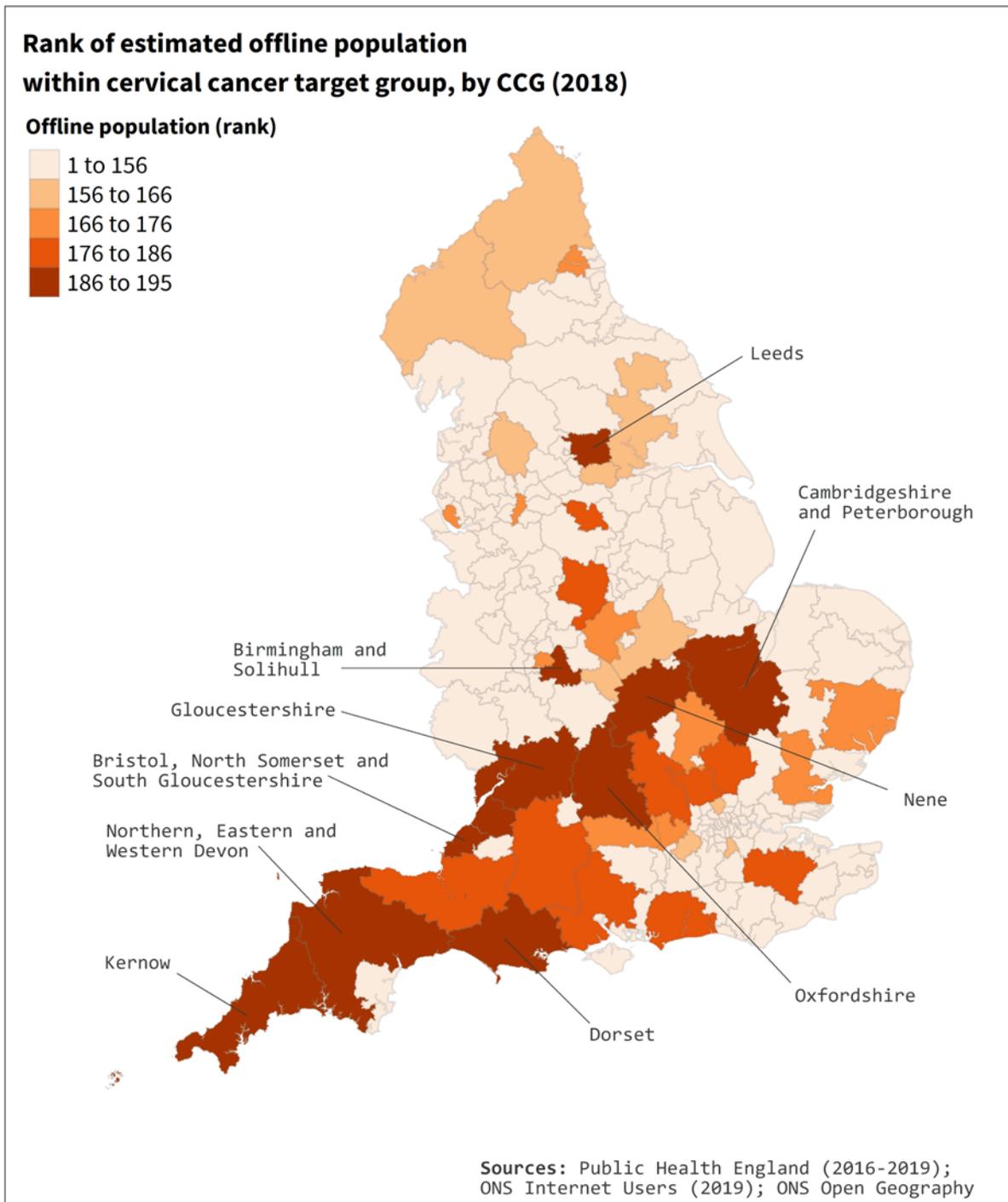


Table 18: Top ranked CCGs where the age profile of population indicates higher estimated proportion of women who are in the Cervical Screening Programme target demographic

CCG	No. of women aged 18-62, 2020-2025 target group	Proportion of women in target group (%)	Estimated number of women offline	Estimated proportion of women offline (%)
Islington	85,159	71.6	1,200	1.4
Lambeth	114,247	70.5	1,742	1.5
Wandsworth	118,917	70.0	1,708	1.4
Southwark	110,202	69.4	1,764	1.6
Tower Hamlets	104,656	68.9	1,317	1.3
City and Hackney	98,020	67.9	1,454	1.5
Hammersmith and Fulham	62,651	66.8	1,043	1.7
Brighton and Hove	96,475	66.8	1,625	1.7
Lewisham	102,134	66.5	1,761	1.7
Manchester	178,887	66.2	2,578	1.4

Table 19: Top ranked CCGs where the age profile of population indicates higher estimated numbers of women who are not internet users in the Cervical Screening Programme target demographic

CCG	No. of women aged 18-62, 2020-2025 target group	Proportion of women in target group (%)	Estimated no. of women offline (%)	Estimated proportion of women offline (%)
Birmingham and Solihull	352,327	58.7	6,415	1.8
Northern, Eastern and Western Devon	254,453	55.1	5,602	2.2
Bristol, North Somerset and South Gloucestershire	289,264	59.8	5,352	1.9
Cambridgeshire and Peterborough	254,279	57.2	5,229	2.1
Dorset	206,981	52.9	4,767	2.3
Leeds	245,365	61.0	4,359	1.8
Nene	189,296	56.7	4,045	2.1
Gloucestershire	178,989	55.5	4,018	2.2
Oxfordshire	195,241	57.9	3,989	2.0
Cornwall	156,270	53.5	3,721	2.4

Table 20: Top ranked CCGs where the age profile of population indicates higher estimated proportion of women who are not internet users in the Cervical Screening Programme target demographic

CCG	No. of women aged 18-62, 2020-2025 target group	Proportion of women in target group (%)	Estimated no. of women offline (%)	Estimated proportion of women offline (%)
North Norfolk	44,406	49.8	1,139	2.6
Hambleton, Richmondshire and Whitby	39,798	52.6	1,010	2.5
Fylde and Wyre	50,595	51.4	1,279	2.5
Isle of Wight	37,043	51.3	935	2.5
South Devon and Torbay	75,912	51.6	1,902	2.5
Lincolnshire East	62,713	51.8	1,567	2.5
East Riding of Yorkshire	84,557	52.3	2,113	2.5
Northumberland	89,088	54.3	2,220	2.5
Southport and Formby	30,693	50.8	757	2.5
Scarborough and Ryedale	30,505	52.5	751	2.5

EXISTING COVERAGE AND CHANNEL SHIFT IMPACT

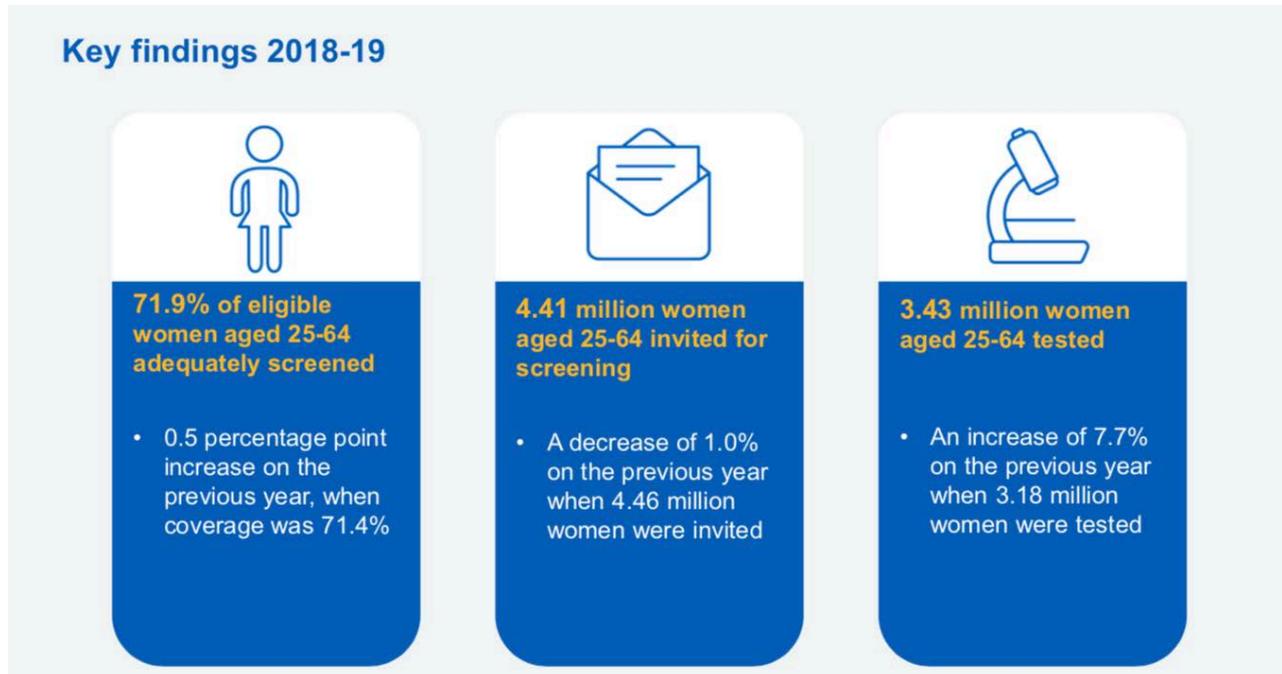
Coverage varies across the country and was historically at a 20-year low around 8 years ago (Albrow et al., 2012), with coverage reducing further since that time.

The Independent Review (Richards, 2019) noted that coverage is “is particularly low in deprived populations and populations with high proportions of ethnic minority populations”, and among women in the youngest age band (25-29 years).

In the case of deprived populations and some ethnic minority populations, this is likely to be associated with higher risk of digital exclusion.

However, the situation is changing, and the programme has moved to a new pathway nationally from December 2019, using HPV primary screening; this may well see a different response to screening coverage over the coming years.

Figure 16 Cervical Screening Programme England 2018-19 Key Findings⁴¹



Coverage remains lowest in the younger screening cohort, where there are also the highest number of abnormalities picked up.

Given the youngest age groups are more likely to be digitally capable and engaged, they may be less affected by the digitisation of information – however, other factors affect digital exclusion, such as poverty, language, literacy, numeracy and lower levels of educational attainment.

The Atlas (PHE, 2017) finds that – compared to an England value in 2015 of 73.5%, rates at different local authorities ranged from 56.5% to 84%, a 1.5-fold difference between local authorities.

There was only one local authority district where the minimum threshold rate of 80% coverage was reached. The existence and effectiveness of “strategies used to reach underserved groups in the local population” are identified as possible causes of unwarranted variation, and pre-screening reminders, personalised reminders for non-participants, and GP endorsement of

⁴¹ Image copyright 2019 NHS Digital

cervical screening are recommended as effective interventions to increase coverage. Again, there is no mention of online information as likely to improve coverage and, given the potential overlap with digitally excluded groups, there is some risk that a shift to online information will reduce take-up.

Figure 17: Cervical screening coverage against lower threshold target



However, the younger demographic suggests coverage issues are less likely to be exacerbated by online information than other screening programmes.

As Albrow et al. (2012) state, “The problem is that women who have not taken up invitations for screening constitute a difficult-to-reach group, and it would seem that there is no 'one-size-fits-all' solution to this problem. Different women require different strategies to encourage increased uptake.”

They argue, “Initiatives to increase uptake will need to be research-led, because there have not been convincingly effective strategies identified to date. Candidate initiatives include self-sampling for HR-HPV, text messaging, and other forms of help for women.”

There has since been some evidence (Richards, 2019) that technology can be utilised to increase uptake:

- A large-scale pilot in London has shown that it is possible to send text reminders to the large majority of women who are due for screening. This includes women who have never previously attended screening. Furthermore, this pilot resulted in an increase in uptake of over 4%.
- Social media programmes, in some areas, have led to increases in uptake. A peak in the number of women tested in 2009 can almost certainly be attributed to the widespread publicity, following the death of Jade Goody from cervical cancer.

Overall, we summarise that, while this evidence has not explored the impact of moving to online screening information, it suggests that coverage is unlikely to be dramatically exacerbated by greater use of technology.

ABDOMINAL AORTIC ANEURYSM SCREENING (AAA)

Screening for abdominal aortic aneurysms is offered to men in the year they turn 65. Once someone has attended screening, they may have follow-up ‘surveillance’ appointments annually or quarterly:

- The ONS Mid-Year Estimate for 2018 suggests that, in England, the number of men aged 58-63 (those who will turn 65 in the next five years) is 1.9 million.
- The ONS Labour Force Survey 2019 identified that, across the UK, 7% of people in this age bracket (55-64) are not internet users.⁴²
- This means **there are approximately 131,000 men who are not internet users** (assuming the proportion holds for England⁴³ – and over the time period⁴⁴) in the target group.

Assuming PHE continue to send printed leaflets with all prevalent invitations, the plan to shift to online information will not affect the AAA screening programme, because all invitations in this programme are prevalent and sent as a ‘one-off’. Follow-up appointments for those who have attended screenings (surveillance) may happen quarterly or annually.

⁴² The ONS Labour Force Survey for 2019 suggests 4.9% of men aged 55-64 in the UK have never used the internet, and 2.1% of people in this category last used the internet over 3 months ago.

⁴³ Data by age is not available for England, but as England makes up 84% of the UK population, and 80% of people who are not internet users, we consider it reasonable to apply the same proportion. If anything, the proportion of people who are not internet users may be slightly lower, but it would be advisable to exercise caution and retain the higher estimate.

⁴⁴ The proportion of people who are not internet users is expected to decline, but it is not possible to predict the rate at which this will happen. Over the past decade, the rate at which people become internet users has begun to stall. It is also possible that people who are currently internet users lose their interest as they age. For the purposes of this exercise it is perhaps best to assume that the number of people who are not internet users in this demographic group is not likely to change *significantly* one way or the other – at least during the next few years. Even if many people in this group do become internet users, as new users they may lack the skills and/or confidence to feel comfortable with online information about screening programmes.

Tables 20 and 21 show the top ten Clinical Commissioning Groups (CCGs) where the *proportion* of men in the target group is highest, and those where the *number* of people estimated to be offline in the target group is highest.

As the total population in CCG areas varies significantly, there is no overlap between these two lists. In Northumberland for example, 9% of men are in the target group for the AAA Screening Programme. However, as the total population of men in the area is just 156,000, the total number of people estimated to be offline is under 1,000. By contrast, in Bristol, North Somerset and South Gloucestershire CCG areas just 6% of men are in the target group, yet because the population of men is higher – 476,500 – the estimated number of men who are not online is more than twice as high, and among the highest in England: 2,000.

Table 21 Clinical Commissioning Group by proportion of men in target group for AAA screening

CCG Name	Target group men 58-63 turning 65 in 2020-2025)	Proportion of total men (%)	Estimated no. of men offline in target group
Northumberland	14,041	9.0	983
North Norfolk	7,359	8.7	515
Isle of Wight	5,991	8.6	419
North Cumbria	13,521	8.6	946
East Riding of Yorkshire	13,362	8.6	935
Fylde and Wyre	8,067	8.6	565
South Devon and Torbay	11,833	8.6	828
South Tyneside	6,214	8.5	435
Scarborough and Ryedale	4,691	8.5	328
Lincolnshire East	9,874	8.5	691

Table 22: Clinical Commissioning Groups by number of men aged 55-64 estimated not to be internet users

CCG Name	No. of men in target group (men aged 58-63, turning 65 in 2020-2025)	Proportion of total men (%)	Estimated no. of men offline in target group
Northern, Eastern and Western Devon	33,941	7.6	2,376
Birmingham and Solihull	33,371	5.8	2,336
Cambridgeshire and Peterborough	29,442	6.6	2,061
Dorset	28,871	7.6	2,021

Bristol, North Somerset and South Gloucestershire	28,565	6.0	2,000
Gloucestershire	23,657	7.6	1,656
Cornwall	22,785	8.3	1,595
Nene	22,595	6.9	1,582
Leeds	22,461	5.8	1,572
Somerset	22,102	8.1	1,547

Men aged over 65 can self-refer. The proportion of this population that are not internet users is considerably higher. Among men aged 65-74, 15.9% are estimated not to be internet users (12.7% have never used the internet). Among men aged 75 and over, this figure rises to 46.2% (40.1% have never used the internet). Arrangements for self-referral should not be based on an expectation that people will engage with online information.

None of the CCGs identified as those with the highest levels of multiple deprivation are among those with the highest numbers of men in the target group for AAA Screening, nor those with the highest numbers estimated to be offline by age profile. However, this does not mean there is no relationship between the two sets of CCGs.

In addition to the factor of age, we already know that coverage for AAA Screening is lower in the most deprived deciles. Moving to a system where more information about screening programmes is delivered online could risk worsening coverage in areas of high, multiple deprivation.

EXISTING COVERAGE AND CHANNEL SHIFT IMPACT

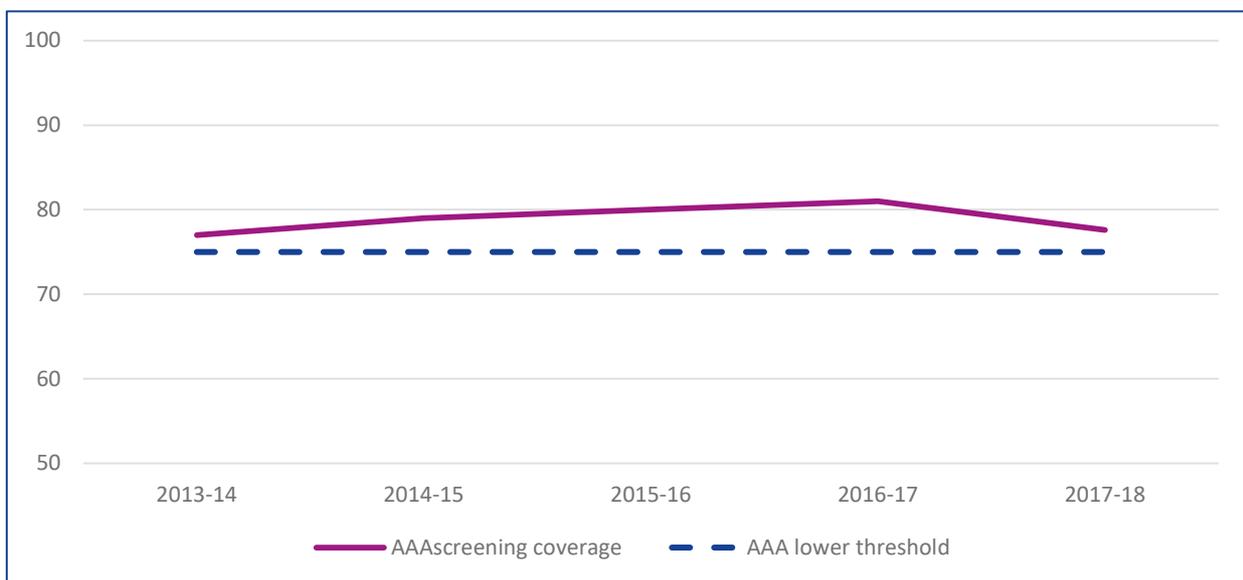
The Independent Review of Adult Screening Programmes in England (Richards, 2019) found uptake of AAA Screening is high; with 80.5% of eligible men tested within a year and three months of being invited for screening.

Coverage is generally improving (2013/14 to 2017/18, Figure 18 – a dip in the final year is attributed to a commissioning process in London). However, there is variation among CCGs, with rates ranging from 59.0% to 87.2% in 2014/5, a 1.5-fold difference (PHE, 2017).

The 2nd Atlas of Variation in NHS Diagnostic Services in England (henceforth ‘The Atlas’, PHE, 2017: 131), states that the “socio-economic profile of local populations... is known to affect rates of screening acceptance.”

This is confirmed by the Independent Review, which notes that coverage was “lowest in the most deprived decile (70.5%) and highest in the most affluent decile (87.6%).” This has an impact on the aim of the screening programme, as “detection of aneurysms is highest in the most deprived populations.” Were the AAA Programme to be affected by a shift from paper-based to online screening information, it is likely this effect would be exacerbated, as digital exclusion is associated with greater deprivation.

Figure 18: AAA Screening coverage against lower threshold target



ANTENATAL & NEWBORN SCREENING PROGRAMME (ANNB)

The Antenatal and Newborn (ANNB) Screening Programmes have a lower combined risk rating and potential impact from changes than the YPA programmes, for three main reasons:

- 1) Every woman who receives the screening invitation has some form of face-to-face contact with a health professional (e.g. midwife), whose role it is to explain screening options and help women make an informed choice. This increases the chances of effective messaging and information transfer.
- 2) The demographic for pregnant women is younger than 55, therefore this group have a lower risk of being digitally excluded (they are more likely to be digitally literate and own a connected device).
- 3) In terms of printed leaflet spend, the ANNB Programme is a very small percentage of the overall budget and so, in trying to ascertain where the risks will arise from any budget cut, other programmes are affected to a much greater degree.

When we commenced our research, we were made aware of these lower risk factors by PHE, however we continued to investigate equality impacts in this programme. Our tests of the system continued to support PHE's theories that this programme was lower risk – however ANNB is not entirely without risk from change.

PHE RESEARCH INTO ANNB AND DIGITAL INFORMATION

In summer 2019, prior to the Early Adopter pilots, PHE carried out focus group and observation / interview work to gather qualitative evidence about attitudes toward digital information in the ANNB Programme. PHE sought to find out the views of pregnant women on the existing screening information and the proposed changes.

The focus groups took place in London, at St Mary's Hospital in East London, and also in Kirkby, Liverpool. The groups included women for whom English isn't a first language and also women from more disadvantaged backgrounds.

The main headline findings were:

- Overall the vast majority of women were positive about the changes and welcomed online information.
- The ANNB video was very popular.
- The majority of women were confident using the internet and used to finding out information online.
- However, although not directly affected themselves, women did comment that not everyone has the internet or a smartphone, connection can be limited and there is a risk of confusion in information from other websites.

EARLY ADOPTER SITES

ANNB was chosen by PHE to pilot new changes and approaches to offering online / digital information instead of printed leaflets – these were tested at 10 ‘Early Adopter’ NHS Trust sites across England, who expressed an interest in trying out new information delivery methods.

For the Early Adopter sites, PHE Screening mapped the process for how a pregnant woman would receive information leaflets and had suggested an alternative process for signposting pregnant women to the information online, including ‘business cards’ with links and QR codes that women could scan or type in with a mobile device.

There were still leaflets available for women, but the team asked midwives to record a reason why the leaflet had been given, such as:

- a) I don’t have access to the internet
- b) I’m not confident using the internet, etc.

Flyers and posters were produced to raise awareness of the online information. Although this was still printed on paper, it was necessary in the transition period to embed the new website with information. The current ANNB leaflet is also 57 pages long, so the flyers and posters were still a significant reduction in the print costs.

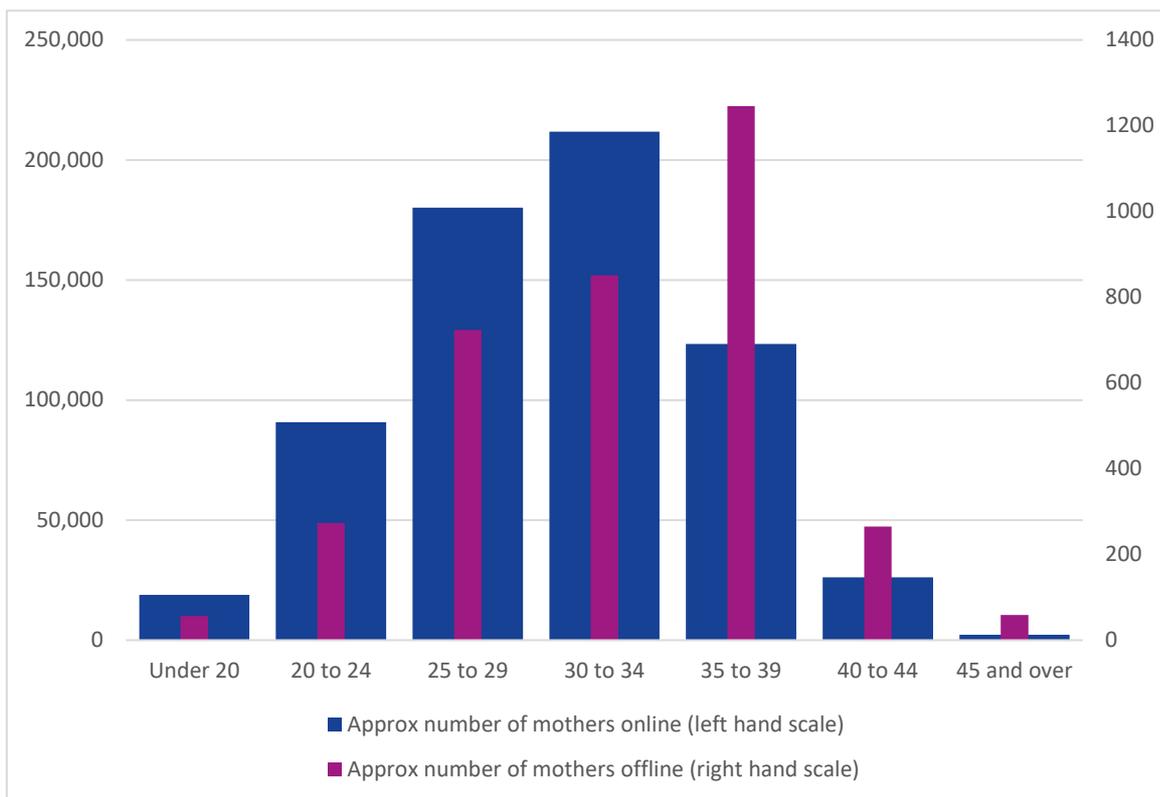
The PHE screening team continued to monitor the phased roll-out with the Early Adopter sites throughout our research period.

BEING OFFLINE IN MOTHERHOOD

The chart below shows data from ONS “Births by parents' characteristics” dataset on annual live births in England and Wales, by age of mother.⁴⁵ We have split the data on total number of mothers into those estimated to be online and offline, for each age group. The blue wide bars show the proportion of mothers in each age band (left-hand scale), the purple narrow bars show the *different* proportions of mothers estimated to be offline.

The age band where a higher *number* of mothers are expected to be offline is the 35-39 age group (a higher *proportion* of older mothers are offline, but the *numbers* of mothers in these age bands are lower).

Figure 19: Distribution of mothers estimated to be on/offline, by age band



⁴⁵ ONS Births by parents' characteristics data is available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/livebirths/datasets/birthsbyparentscharacteristics>, accessed 18/03/2020.

Copyright 2020

Citizens Online is a charity registered in England and Wales no. 1087794 and in Scotland no. SC039737, and a company limited by guarantee registered in England and Wales no. 3963007.

Registered office: The Exchange, Brick Row, Stroud, Gloucestershire, GL5 1DF www.citizensonline.org.uk