NHS FIFE ANNUAL IMMUNISATION REPORT 2024

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ANNUAL IMMUNISATION REPORT 2024

1. Executive Summary

1.1. Delivery of effective population immunisation programmes is an NHS Scotland priority. Vaccination programmes aim both to protect the individual and to prevent the spread of these diseases within the wider population and are very effective in reducing the burden of disease. This report highlights the findings from surveillance data on vaccine preventable disease in Fife, as well as vaccine uptake rates across childhood, teenage and adult immunisation programmes.

1.2. Surveillance data demonstrate low incidence rates of vaccine preventable disease during 2023 in Scotland and in Fife. However, some infections saw increases from the very low rates observed when transmission pathways were disrupted by pandemic restrictions. Emerging concerns relating to vaccine preventable disease included the increased numbers of measles cases seen in the final quarter of 2023 in England. Provisional data indicates increase in cases of TB in 2023 compared with 2022 in Scotland, and the highest incidence since 2017.

1.3. There have been declines in vaccination uptake across childhood vaccinations in both Fife and Scotland over the past 10 years, and these continued in 2023. Annual uptake rates in Fife for the 6-in-1 vaccine were slightly below the 95% target for children aged 12 months in 2023 but children aged 24 months reach this target. Uptake by deprivation category shows that Fife has similar uptake to the rest of Scotland in the least deprived quintiles, but has lower uptake among the most deprived than the equivalent population elsewhere in Scotland. However, the decline in Fife previously seen among children at 12 months living the most deprived areas appeared to stabilise in Fife between 2022 and 2023. Uptake of MMR1 (offered at 1 year) at 24 months improved slightly from 2022 to 93.2%. By 5 years uptake of the vaccines offered at 1 year of age meet the 95% uptake target and are similar to rates seen elsewhere in Scotland. Rates of pre-school vaccinations (offered from 3 year 4 months) remain below 90% in Fife. MMR2 coverage evaluated at age of 5 years was unchanged from 2022 in Fife. Rates at 5 years elsewhere in Scotland were higher than Fife but the gap narrowed due to a declining trend between 2022 and 2023 in the rest of Scotland.

1.4. Management data on uptake of the childhood programme by ethnicity was made available to health boards for the first time in 2023. Whilst cohort numbers for some ethnic groups are very small, the data suggest those with lower uptake in the childhood programme mirror uptake patterns by ethnicity seen in adult vaccinations programmes. Early uptake data (at time points earlier than the standard published 12 month, 24 month and 5 year evaluation points, i.e. closer to the time of the initial vaccine offer) is now also available and has demonstrated an improvement in early uptake of childhood vaccinations in Fife in 2023 across all deprivation quintiles. Childhood vaccination uptake by locality area is also reported for the first time.

1.5. Fife uptake of the teenage boosters in both S3 and S4 has seen a decline in school year 2022/23 compared to 2021/2. A decline in uptake was also seen in the rest of Scotland in S3 but not in S4. The teenage booster programme in Fife demonstrates marked

socioeconomic gradient in vaccination uptake that is similar to that seen in the rest of Scotland. Uptake of HPV vaccine at both S1 and S2 is lower in Fife than elsewhere in Scotland. In general, uptake is lower in males than females. Uptake of the HPV vaccine has fallen across all SIMD quintiles in the school year 2022/23, with the gap in uptake between the least and most deprived widening. This is true for both uptake in girls and boys, with the uptake between the least and most deprived boys being the widest.

1.6. Vaccination coverage for adult pneumococcal vaccine (PPV23) is higher in Fife than the rest of Scotland. The coverage of the shingles vaccine is lower than the rest of Scotland. During the 2023/24 season, uptake of adult flu and COVID vaccinations were similar in Fife to that reported for Scotland.

1.7. In relation to selective programmes, comparisons with the rest of Scotland are not readily available, and denominator definitions can differ over time and between area. Uptake of pertussis vaccination among pregnant women 23-24 was 86% in Fife. There were no babies born to mothers with hepatitis B infection in 2023 in Fife. BCG uptake among at-risk children turning 12 months had improved in 2022 and 2023 from a previous fall in 2021, but remained below the Scottish average. However, this data does not reflect a new pathway for newborns introduced in February 2024. Provisional data from the new pathway suggests uptake comparable with the rest of Scotland.

1.8. Vaccinations carried out within sexual health services include HPV, hepatitis A&B, and mpox. Whilst cumulative coverage of HPV since 2017 for patients attending Fife sexual health services appears lower than the rest of Scotland, it is not possible to examine recent data only reflecting current service delivery.

2. Introduction

2.1. This is the sixth Annual Immunisation Report for NHS Fife[1]. The purpose of the report is to provide an annual monitoring report of vaccine preventable disease surveillance data, along with uptake data for the NHS immunisation programmes delivered within Fife.

2.2. Immunisation is a global health success story, saving millions of lives every year. Vaccination programmes aim both to protect the individual and to prevent the spread of these diseases within the wider population. A recent major study published in the Lancet in May 2024 found that in the 50 years since the launch of the WHO 'Expanded Programme on Immunisation' in 1974, vaccinations have saved 154 million deaths globally, and have accounted for 40% of the observed decline in infant mortality over that period[2]. When a large proportion of a population have immunity to a particular disease which is normally spread from person to person, chains of transmission are disrupted and the spread of diseases to those not immune can be prevented ('herd immunity'); this protects those who are unable to build up immunity such as those who are immunosuppressed.[3] As a public health measure, they are very effective in reducing the burden of disease and underpin global health security.

2.3. Monitoring the proportion of the eligible population vaccinated enables continuous improvement and is complemented by monitoring of vaccine preventable disease surveillance data. Inadequate coverage makes the possibility of disease transmission and outbreaks of vaccine preventable disease more likely. High levels of coverage are needed to eliminate highly infectious diseases such as measles. The Scottish Government, as with the rest of the UK, have adopted recommendations made by the World Health Organisation (WHO) that at least 95% of children should be immunised against vaccine preventable diseases on the routine schedule. The United Nations Convention on the Rights of the Child (Incorporation Scotland) Act 2024 will become law in Scotland in July 24 and includes the right to good quality healthcare.

2.4. The routine childhood & adult schedule in the UK (appendix 1) is based on advice from the independent Joint Committee on Vaccination and Immunisation (JCVI) and provides protection against the following vaccine preventable infections:

- Haemophilus influenza type b (Hib)
- Hepatitis B
- Human Papilloma Virus (HPV)
- Influenza
- Meningococcal disease
- Mumps
- Pertussis (whooping cough)
- Pneumococcal disease
- Polio
- Rotavirus

[1] Previous Annual Reports submitted 2018, 2019, 2021, 2022, 2023 (no submission 2020 due to COVID pandemic).
[2] Shattock et al. Contribution of vaccination to improved survival and health: modelling 50 years of the Expanded Programme on Immunization. Lancet May 2024: https://doi.org/10.1016/S0140-6736(24)00850-X
[3] Herd immunity does not protect against all vaccine-preventable diseases; exposure to tetanus for example is from the environment rather than another person

- Rubella
- Shingles
- Tetanus

2.5. Additional vaccinations that are not on the routine schedule are offered to specific high-risk groups. For example, BCG vaccine which protects against tuberculosis (TB) is offered to those babies who are more likely than the general population to come into contact with someone with TB. In addition, certain travel vaccinations are provided via the NHS such as hepatitis A and typhoid. Vaccination to protect against COVID-19 was introduced in December 2020 and JCVI policy for eligibility for booster programmes continuing to be regularly updated.

2.6. The most recently published data has been used throughout the report. Variation in data release timings and reporting intervals mean that the period covered in this report varies by programme. There are time lags between when a vaccination is first offered within the routine childhood schedule and when uptake is routinely evaluated, for example MMR2 appointments are scheduled from 3 years 4 months but uptake is evaluated based on the cohort of children who reach 5 years in the 2022 reporting period. Therefore, uptake data in a particular reporting year reflect delivery practices over a longer period of time preceding this. Early uptake data is now available as management information for the childhood programme, and where appropriate has been referenced in this report.

Summary of period covered in this report

Cohort	**Reporting Period**
Childhood routine programme	1 January 2023 – 31 December 2023
Teenage routine programme	2022 – 2023 School Year
Adult Shingles programme	September 2022 – August 2023
Adult Pneumococcal programme	September 2022 – August 2023
Seasonal Flu Programme	September 2023 – March 2024
COVID Winter Booster	September 2023 – March 2024

3. Vaccine Preventable Disease

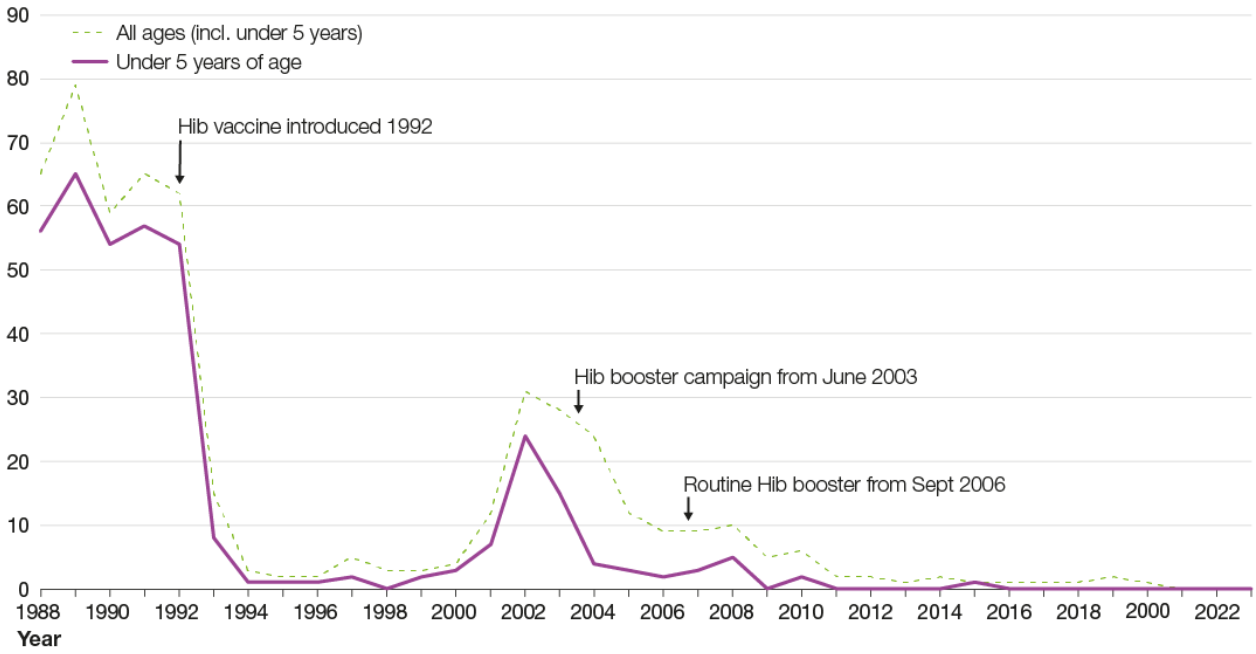
3.1. Data for vaccine preventable diseases are summarised at both a national and Fife level where data is available. Cases notified to Public Health, meeting clinical case definitions but without laboratory confirmation are not included, and individuals may not present to healthcare, or be tested if they have milder presentations of diseases.

3.2. The number of reported cases of vaccine-preventable diseases in Scotland increased in 2023 for some infections from the low rates seen in 2020 & 2021 over the period of COVID restrictions. Figures 1 to 9 show trends in selected vaccine preventable diseases across Scotland over time based on Public Health Scotland surveillance data[4].

Haemophilus influenza

3.3. Haemophilus influenzae can cause acute invasive disease including meningitis and septicaemia. Across Scotland there were 102 H.influenzae cases in Scotland in 2023, which is higher than the pre-pandemic years of 2018 (82 cases) and 2019 (83 cases).. Vaccination provides the most effective strategy for prevention of the most severe type (*H. influenzae* type b) having a significant impact on disease rates across Scotland since it was introduced in 1992 (figure 1). In Fife, there have been <5 cases of invasive *H. influenzae* type b infection since 2009, and there were no cases in 2023 .

Figure 1: Laboratory reports of invasive Haemophilus influenza type b disease in Scotland, 1988 to 2023



[4] Source: Public Health Scotland Immunisation and vaccine-preventable diseases quarterly reports, published March 2023

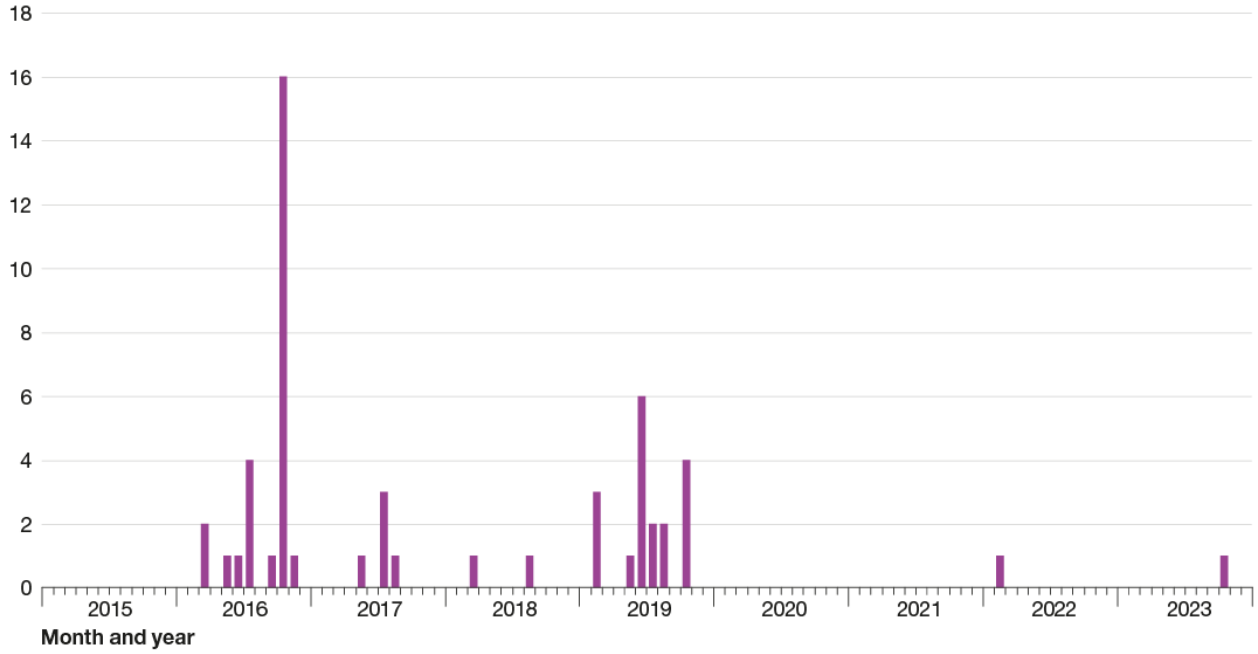
Measles

3.4. Measles is highly infectious and can lead to serious complications, particularly in immunosuppressed individuals and young infants. It is also more severe in pregnancy, and increases the risk of miscarriage, stillbirth or preterm delivery. Measles is a vaccine-preventable disease targeted for elimination in most WHO regions, including the European Region. Sustaining at least 95% routine coverage with 2 doses of a measles-containing vaccine will interrupt transmission of the virus and prevent the return of large outbreaks.

3.5. After briefly achieving measles elimination status in the UK in 2016 and 2017, by 2018 measles virus transmission had re-established in the UK. An alert issued by WHO Europe in February 2023 identified that missed doses of measles vaccines during the pandemic due to disruption of routine immunisation programmes was resulting in increasing measles activity in some European countries. Across Europe cases steadily increased since June 2023 with outbreaks in Austria, France & Romania. A CMO letter *'Averting the Resurgence of Measles in Scotland 2023'* was issued in August 2023 highlighting the WHO Europe call to action, an updated UKHSA risk assessment and the risk of imported cases and onward transmission within Scotland. An updated UKHSA alert was issued in February 2024 regarding a measles outbreak focused on the West Midlands that emerged from October 2023 and since spread to elsewhere in the England. Between 01/10/23 and 30/05/24 there have been 1,666 laboratory confirmed measles cases reported in England

3.6. There were no cases in Fife or elsewhere in Scotland during 2020 & 2021. There was a single laboratory-confirmed case in Scotland in October 23 and 0 cases within Fife in 2023 (figure 2). The position in Scotland changed with cases emerging in the first quarter of 2024; 2024 cases in Fife and Scotland will be reported in full in the 2025 annual report next year.

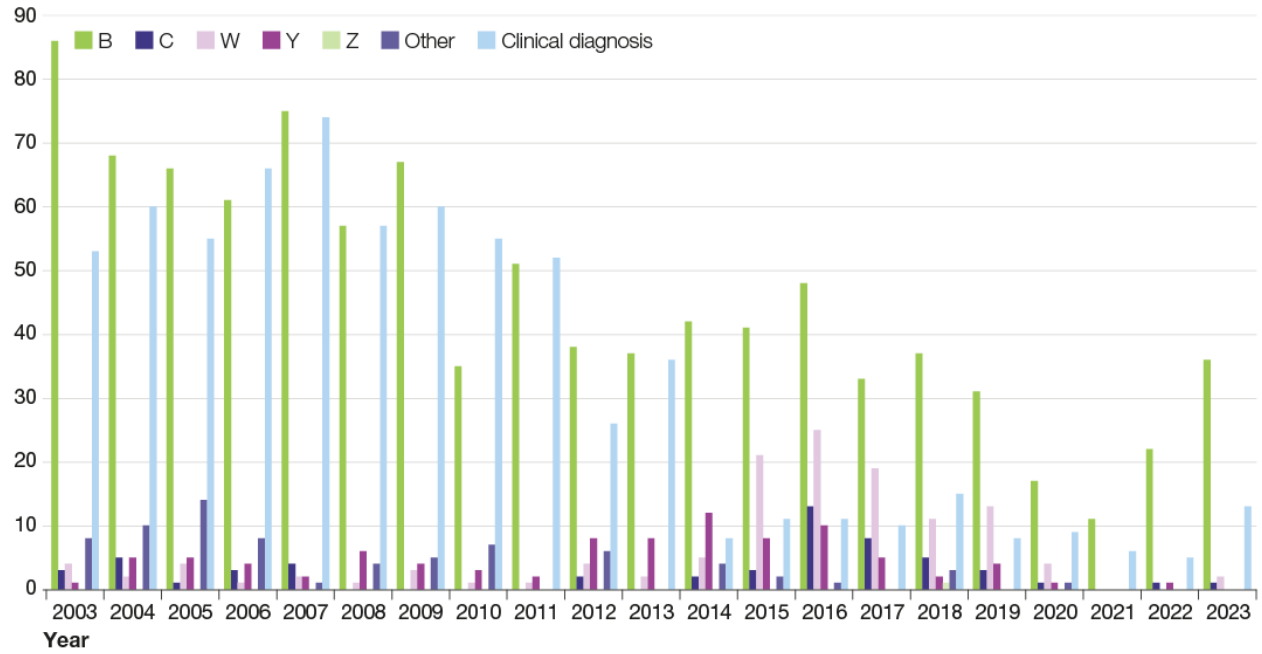
Figure 2: Laboratory confirmed cases of measles in Scotland, 2015 to 2023



Meningococcal disease

3.7. Meningococcal disease can be a significant cause of morbidity and mortality in children and young people. Across Scotland, the number of cases of meningococcal disease increased in 2023 across Scotland from the low case numbers in 2020 & 2021 (figure 3). There were four confirmed invasive meningococcal case in Fife in 2023, and a total of 52 across Scotland, of which 31 were in those aged under 25 years. There were 4 deaths from meningococcal disease across Scotland in 2023 (2 serogroup W, 2 clinical diagnosis) The serogroup data shows the impact of the MenACWY programme introduced in 2015 as part of the teenage secondary school programme and to those attending university for the first time.

Figure 3: Confirmed meningococcal cases by serogroup in Scotland, 1999 – 2023



Pneumococcal disease

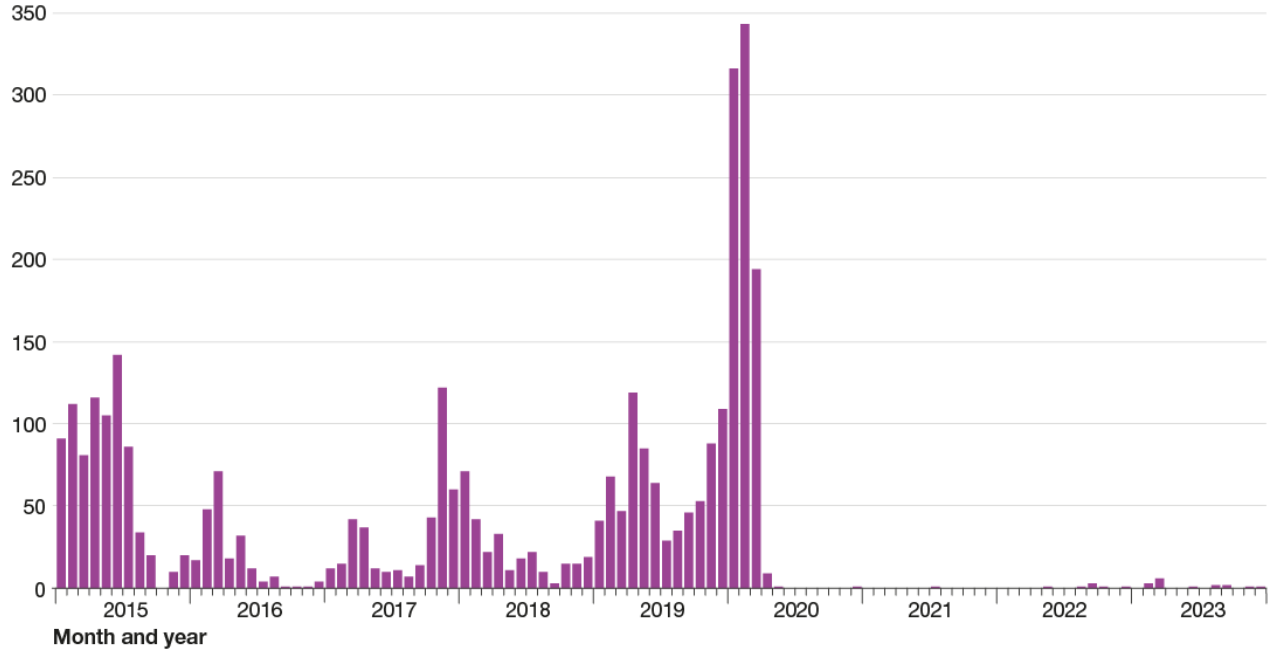
3.8. Invasive pneumococcal disease is caused by infection with the bacterium Streptococcus pneumoniae in normally sterile sites (mainly blood and cerebrospinal fluid) and can be a cause of morbidity and mortality among the very young, the elderly and those with impaired immunity. The total number of cases across Scotland in 2023 was 462, which is higher than the numbers in 2020, 2021 & 2022, but remains lower than 2019. Within this total, 52 were aged <5 years (3 of which in Fife).

Mumps

3.9. Whilst mumps infection may be mild, it can lead to serious complications. Following the introduction of the MMR vaccine in 1988, the incidence of mumps substantially decreased. However, since 2004, there had been ongoing widespread increased incidence of mumps throughout the UK until the introduction of lockdown restrictions in 2020 (figure 4). There was one confirmed cases of mumps reported in Fife in 2023, and only 16 across the rest of Scotland. Laboratory reports will represent an underestimate of mumps cases, as some

cases will only be diagnosed clinically without laboratory confirmation, and cases may not attend healthcare settings for diagnoses.

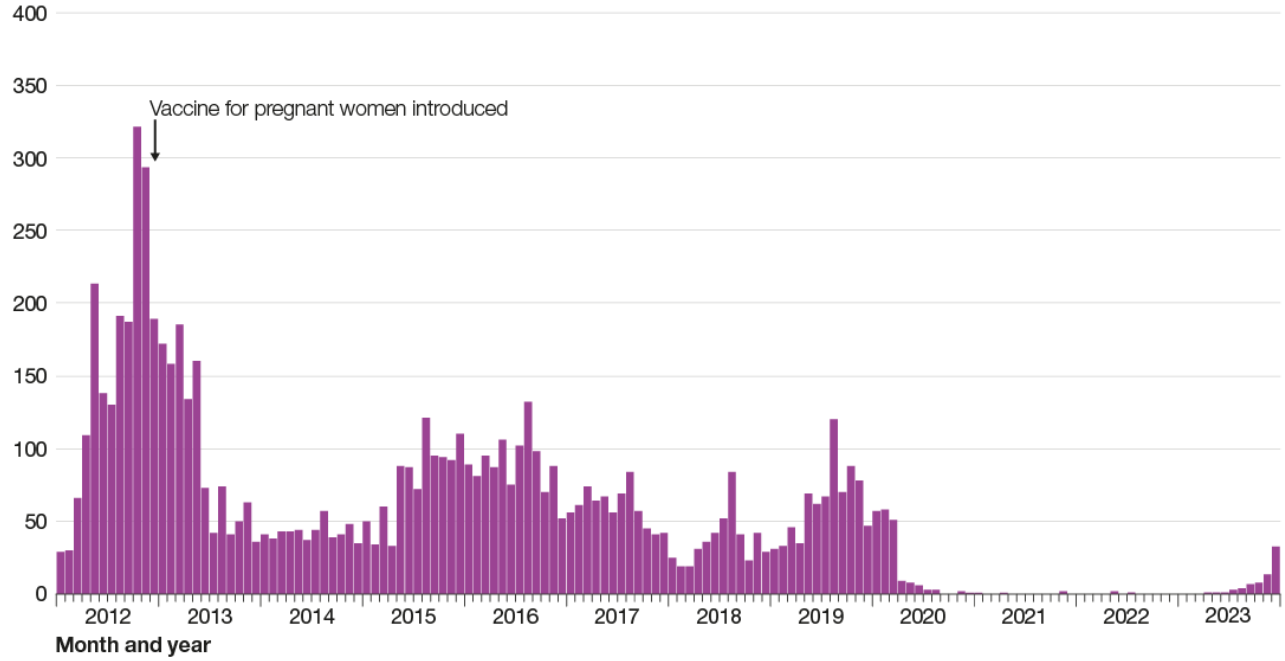
Figure 4: Number of laboratory confirmed cases of mumps in Scotland by month & year, 2015 to 2023



Pertussis (whooping cough)

3.10. Young infants are at particular risk of complications from infection with pertussis which can require hospital treatment and can sometimes be fatal. Since 2012 pertussis vaccination has been offered to all pregnant women. There were no laboratory confirmed cases of *Bordatella pertussis* reported in Fife in 2023, and a total of 73 across the whole of Scotland, most of these were in the final quarter of 2023 (figure 5). The first quarter of 2024 has seen a significant rise in cases across the UK with numbers in Scotland already exceeding those seen in 2012. Scotland and Fife 2024 cases will be included in the 2025 annual report next year.

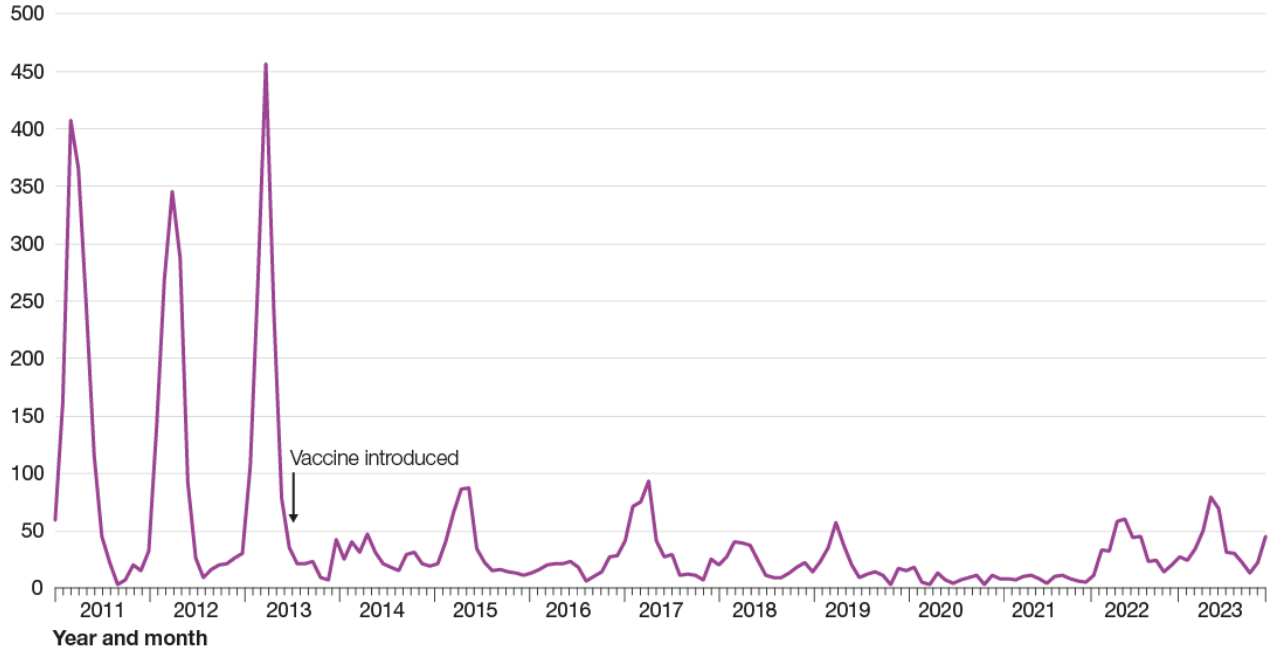
Figure 5: Number of laboratory reports of Bordatella pertussis in Scotland by month & year, 2012 to 2023



Rotavirus

3.11. Rotavirus infections can cause severe diarrhoea, vomiting, stomach cramps and mild fever. Rotavirus infections have reduced significantly across Scotland since the introduction of the immunisation programme in July 2013 (figure 6). Hospitalisation rates for children <5 years and GP consultations gastrointestinal illness for infants <1 year are also monitored and have reduced since introduction of the vaccine.

Figure 6: Laboratory reports of rotavirus in Scotland, 2011 to 2023



Polio

3.12. Poliomyelitis (polio) is an acute viral illness where most infectious cause no symptoms. However, in a small number of people infection can cause temporary or permanent paralysis and can be life threatening. Poliovirus is targeted by the World Health Organization (WHO) for eradication and, due to the efforts of countries worldwide, polio is now eliminated from four of the six WHO regions. Polio outbreaks do occur in countries when the disease is spread amongst people who may not be fully vaccinated. The last imported case of polio in the UK as 1993.

3.13. Vaccine-derived poliovirus type 2 (VDPV2) was detected in sewage samples from London sewage works in 2022, suggesting spread between linked individuals. This led to an offer to all children in London aged 1 year to 9 years of an additional dose of polio-containing vaccine, irrespective of vaccine status in order to prevent cases of paralysis and interrupt transmission. No associated cases of paralysis or human infections of poliovirus have been reported in the UK, but wastewater surveillance activity has increased and there is enhanced surveillance in place for clinical presentations of acute flaccid paralysis.

Diphtheria

3.14. Diphtheria is an acute bacterial infection caused by the diphtheria toxin produced by toxogenic Corynebacterium diphtheriae and toxogenic Corynebacterium ulcerans. Symptoms of upper respiratory tract diphtheria infection include membranous pharyngitis, which can lead to life-threatening airway obstruction. Cutaneous diphtheria may cause pus-filled blisters on legs, hands and feet and ulceration of the skin. There were two cases of toxigenic diphtheria in Scotland in 2023. The UK Health Security Agency reported an increase in cases of confirmed toxigenic C.diphtheriae among asylum seekers newly arriving into England in 2022 & 2023 (total 86 Jan 22 – Dec 23), with similar increases reported in Europe.

Rubella

3.15. Rubella is generally a mild illness, but if acquired by women in early pregnancy (in the first 16 weeks) can cause congenital rubella syndrome leading to serious birth defects. Before the introduction of rubella vaccination, more than 80% of adults had evidence of previous exposure to rubella. The UK has achieved eliminated status under WHO criteria in 2016 and this has been maintained since. There have been no cases across Scotland since 2017.

Human Papilloma Virus

3.16. Human papillomavirus (HPV) infections are very common and over 225 types of HPV have been identified, 40 of which infect the genital tract. In Europe HPV types 16 and 18 are responsible for approximately 75% of cervical cancer cases, 90% of anal cancer cases, 85% of head and neck cancers and 50% of penile cancers; HPV types 6 and 11 are responsible for approximately 90% of genital wart cases. A recently published study based in Scotland has shown that no cases of cervical cancer have been detected in women who

have been fully vaccinated following the introduction of the HPV immunisation programme in 2008 for girls in S1 in school[5].

Shingles

3.17. Herpes zoster or shingles is caused by reactivation of latent varicella zoster virus. The main complication of shingles is post-herpetic neuralgia which can persist and severity increases with age. The vaccination programme was introduced in 2013 with a routine offer to those aged 70 and opportunistic offer to those aged 71 to 79 who have not been immunised. The vaccine reduces the risk of developing shingles by over 70%. From 1st September 2023 the 2-dose non-live Shingrix vaccine has been used for all those eligible (previously this had been available only for those where the live vaccine was contraindicated), and the eligibility criteria also expanded. However, these changes were introduced after the 2022/23 reporting period within this report which runs 01/09/22 to 31/08/23. Shingles is not a notifiable disease, so the number of hospital admissions are used for surveillance purposes. The latest surveillance data published by Public Health Scotland shows a gradual downward trend for the oldest age groups. In 2022, there were 268.6 hospital admissions per 100,000 population for shingles and related complications across Scotland.

Tetanus

3.18. Tetanus is a disease resulting from a neurotoxin produced during infection with *Clostridium tetani*. Immunisation against tetanus is the most effective method of disease prevention, and has been part of the childhood immunisation schedule since 1961. No cases have been reported in Scotland since 2014.

Tuberculosis

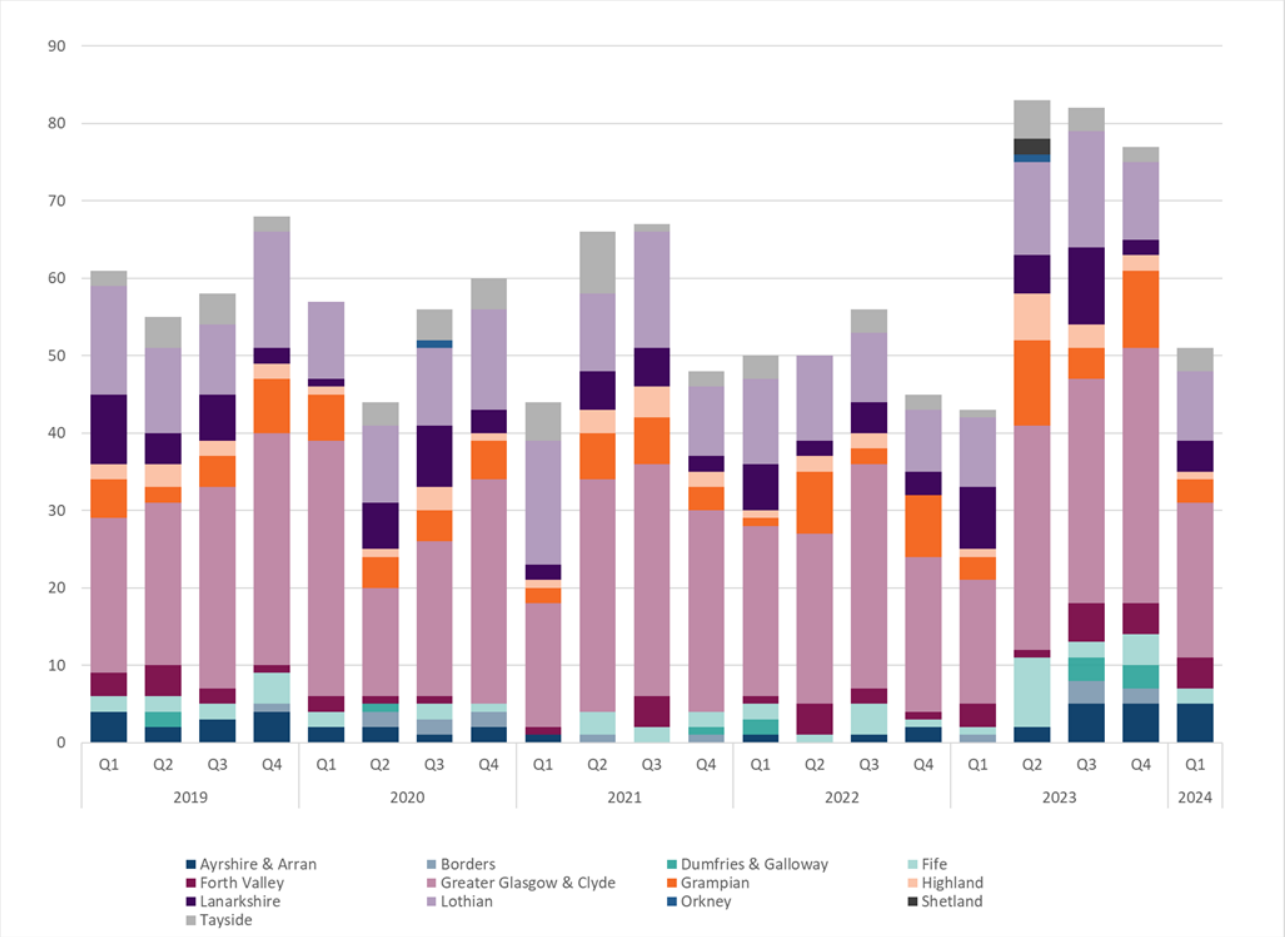
3.19. Transmission of tuberculosis (TB) is by inhalation of infected droplets. After infection, the bacteria can remain latent in the body for a long time causing no symptoms of disease. The latest release of the annual national surveillance report was December 2023 which included data to 2022[6]. The number of TB notifications in Scotland showed a consistent downward trend during the period 2010 to 2020, then increased slightly in 2021. In 2022, 201 tuberculosis cases in Scotland were reported, which was a small decrease from 2021. In 2022 72% were born outside the UK and the most reported risk factor was being a refugee or asylum seeker. 38% of cases live in the most deprived quintile on the Scottish Index of Multiple Deprivation. Incidence in Fife in 2022 was 2.1 per 100,000 which is lower than the Scottish average (3.7 per 100,000). Although final data for 2023 will not be published until later in 2024, provisional data released by Public Health Scotland shows an approximately 40% increase in cases of TB in 2023 compared with 2022 (285 cases), and the highest incidence since 2017. This increase has been seen across the country (figure 8). This has led to the recent publication of a quarterly surveillance report[7] and increased efforts nationally to raise awareness of tuberculosis symptoms.

[5] https://doi.org/10.1093/jnci/djad263

[6] https://publichealthscotland.scot/publications/tuberculosis-annual-report-for-scotland/tuberculosis-annual-report-for-scotland-2022/

[7] National quarterly report of tuberculosis in Scotland: quarter 1, 2024 - National quarterly report of tuberculosis in Scotland - Publications - Public Health Scotland

Figure 7: Number of TB notifications in Scotland by NHS board by quarter, January 2019 to quarter 1, 2024



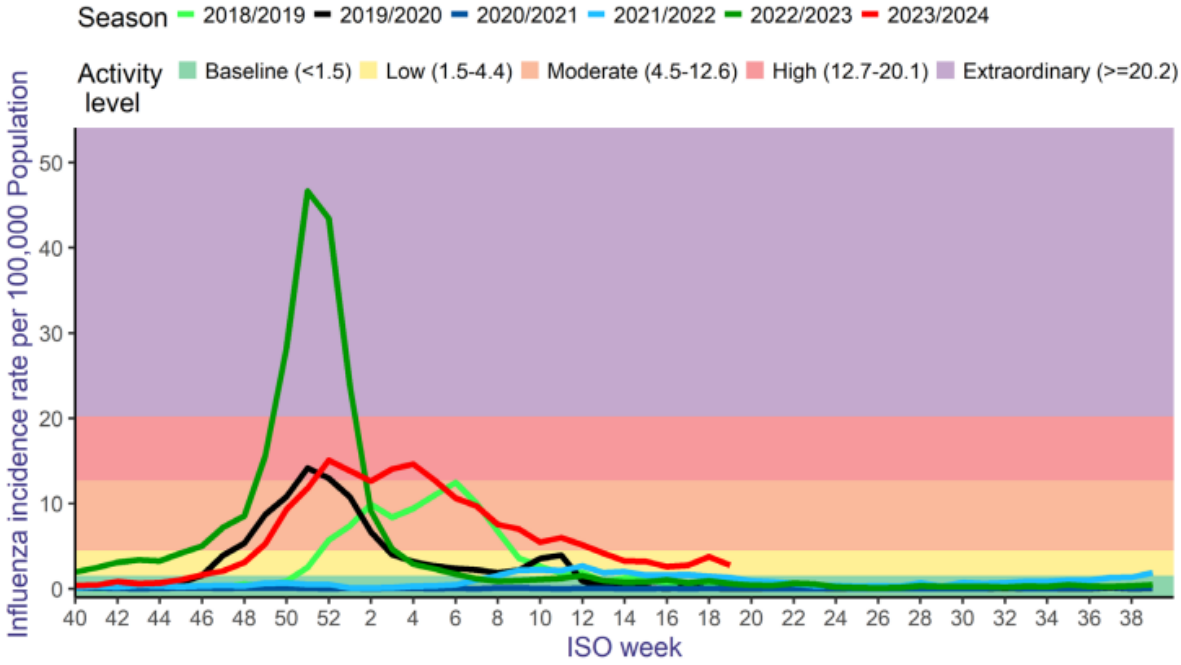
Influenza

3.20. Influenza is associated with significant morbidity and mortality during the winter months, particularly in those at risk of complications of flu, e.g. the elderly, those with chronic health problems, and pregnant women. The spectrum of influenza illness varies from asymptomatic illness to mild/moderate symptoms to severe complications, including death. Spread can occur rapidly in the community, and especially in hospital and institutional settings. The most effective means of prevention is flu vaccine, which is tailored to the likely viruses in circulation each season. The annual UK influenza surveillance report for the 2023-24 season has recently been published[8]. Influenza activity in the 2023 to 2024 season was more prolonged than the 2022 to 2023 season, but peak activity was lower (figure 9). The influenza hospitalisation rate peaked between week 51 2023 and week 4 2024 and were lower than the previous influenza season. Across Scotland, 89% of laboratory confirmed samples to date have been influenza A[9].

[8] Surveillance of influenza and other seasonal respiratory viruses in the UK, winter 2023 to 2024 - GOV.UK (www.gov.uk)

[9] Viral respiratory diseases (including influenza and COVID-19) in Scotland surveillance report 16 May 2024 - Viral respiratory diseases (including influenza and COVID-19) in Scotland surveillance report - Publications - Public Health Scotland

Figure 8: Influenza incidence rate (per 100,000 population) in 2023/24 compare with previous seasons, Scotland.

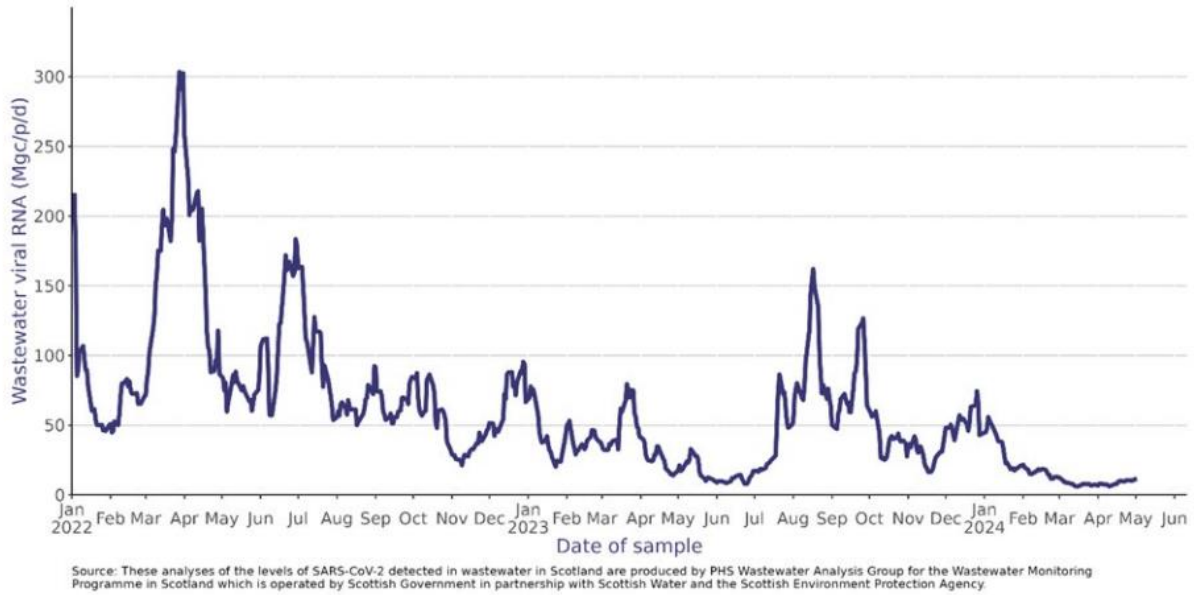


Source: PHS-ECOSS

COVID

3.21. Changes in testing policy since 2022 mean that trend data for COVID infection based on samples taken from community or hospital data are difficult to interpret. An estimate of community prevalence can be derived from analysis of wastewater concentrations of the virus, taken from sites across Scotland (figure 10). COVID transmission continues to occur in waves throughout the year and has not yet settled into a clear seasonal pattern.

Figure 9: National average trends in COVID-19 identified in wastewater from January 2022 to May 2024



Source: These analyses of the levels of SARS-CoV-2 detected in wastewater in Scotland are produced by PHS Wastewater Analysis Group for the Wastewater Monitoring Programme in Scotland which is operated by Scottish Government in partnership with Scottish Water and the Scottish Environment Protection Agency.

Mpox

3.22. Mpox is a zoonotic infection, caused by the monkeypox virus, that occurs mostly in West and Central Africa. Prior to 2022, cases diagnosed in the UK had been either imported from countries where mpox is endemic or contacts with epidemiological links to imported cases. Between 2018 and 2021, there had been 7 cases of mpox in the UK. There was no documented community transmission in previous outbreaks.

3.23. Detection of cases of mpox infection acquired within the UK were confirmed in England from May 2022 with 3,732 confirmed and highly probable mpox cases reported in the UK up to the end of that year. Of these, most were in England, with 97 in Scotland. In 2023 and 2024 (up to 30 April 2024) there have been a total of 196 cases of mpox in the UK. Of these, only 6 were in Scotland, of which 4 were imported cases acquired outside the UK[10].

[10] Mpox (monkeypox) outbreak: epidemiological overview, 9 May 2024 - GOV.UK (www.gov.uk)

4. Vaccine Uptake

4.1. Vaccination coverage is the percentage of people from the target population who have received a specific vaccine. The risk to public health increases if immunisation rates fall below herd immunity levels as this makes the possibility of communicable disease transmission more likely. In line with the WHO target, the standard for routine childhood immunisations up to five years of age is set at 95% uptake.

Childhood routine immunisations

4.2. In 2023 (babies born 1 Jan 2022 to 31 December 2022), the 95% target for uptake at 12 months for the primary immunisations delivered at the 8 week, 12 week and 16 week appointments was met in Fife for PCV (1 dose; 12 weeks), but not for the 6-in-1 DTP/Pol/Hib/Hep B vaccine (3 doses; 8,12 & 16 weeks), MenB (2 doses; 8 & 16 weeks) and Rotavirus vaccinations (table 1, figure 10). In 2023 Fife rates continue to see a small decline in uptake. This has also been seen in the rest of Scotland. Uptake is below 95% for all vaccines delivered during the first 12 months, other than PCV.

4.3. Uptake of the completed two dose course of rotavirus vaccine is lower than completed courses of the other vaccines offered in the first year of life because it is given within strict age limits, with the first dose before 15 weeks and second dose before 24 weeks of age. It is also a live vaccine and so may be contraindicated if a child has other health conditions.

4.4. Scottish Index of Multiple Deprivation (SIMD) data is available based on GP practice level data, these are matched onto national reference files to obtain information on SIMD, with SIMD quintile assigned based on the postcode of the practice. A socioeconomic gradient can be seen in uptake at 12 months, with lower uptake in quintile 1 (most deprived). In 2023 the 95% target is met across all vaccines, except Rotavirus for quintile 5 (least deprived), which is a pattern seen across Scotland. Uptake of the 5-in-1/6-in-1 vaccine at 12 months follows this trend (figure 11), however the difference in uptake between the most deprived and least deprived in Fife is wider than that seen in Scotland.

Table 1: Immunisation uptake rates by 12 months of age in NHS Fife, by year 2019 to 2023

	2019	2020	2021	2022	2023
5-in-1/ 6-in-1	95.7	95.3	94.6	94.6	93.8
PCV	96.2	96.0	96.0	95.9	95.7
Rotavirus	94.0	94.3	92.7	92.1	91.4
MenB	95.9	95.7	94.4	94.2	93.4

Figure 10: Immunisation trend by 12 months for 5-in-1/6-in-1 and Meningitis B, NHS Fife (solid lines) & Scotland (dashed lines); 2013 to 2023

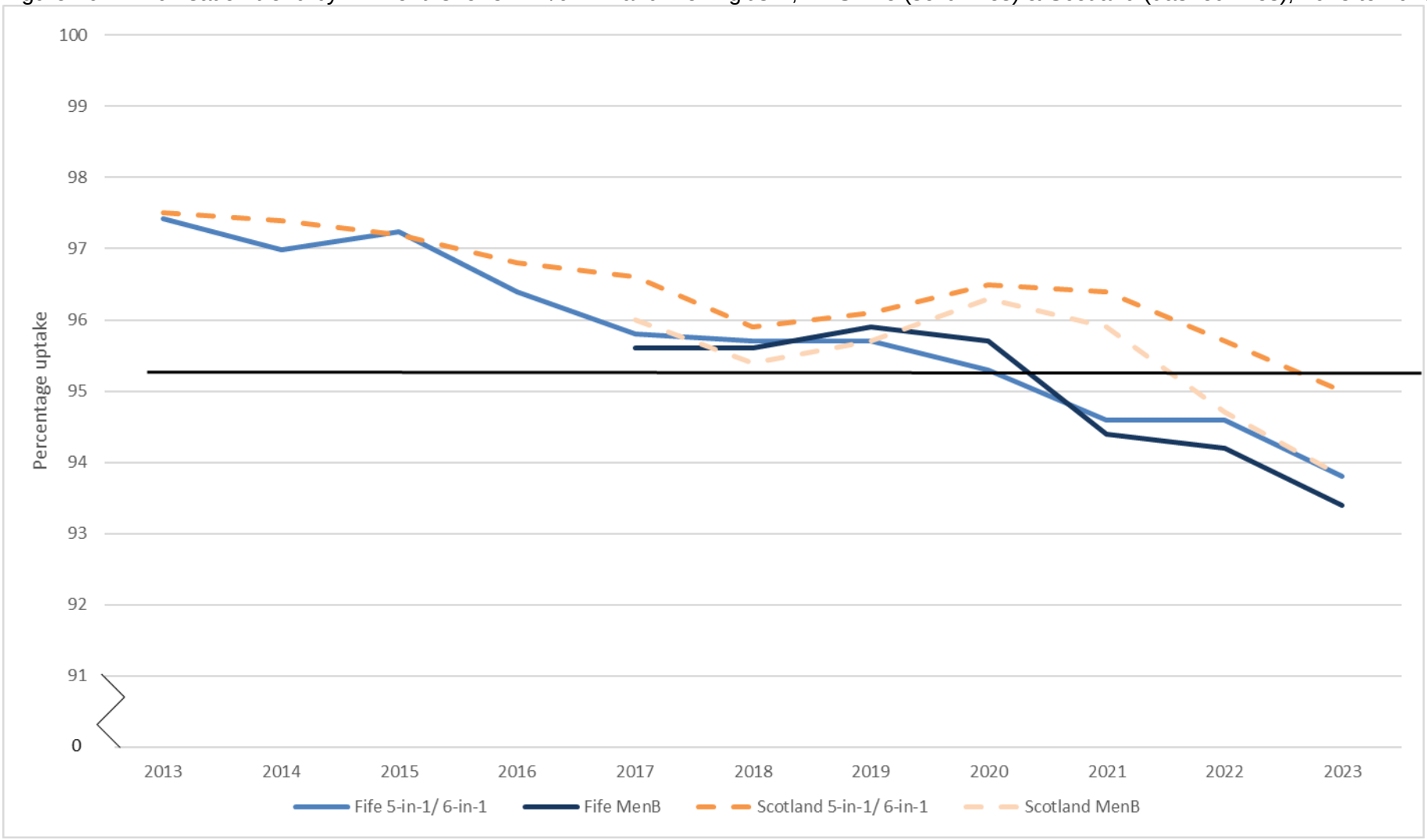
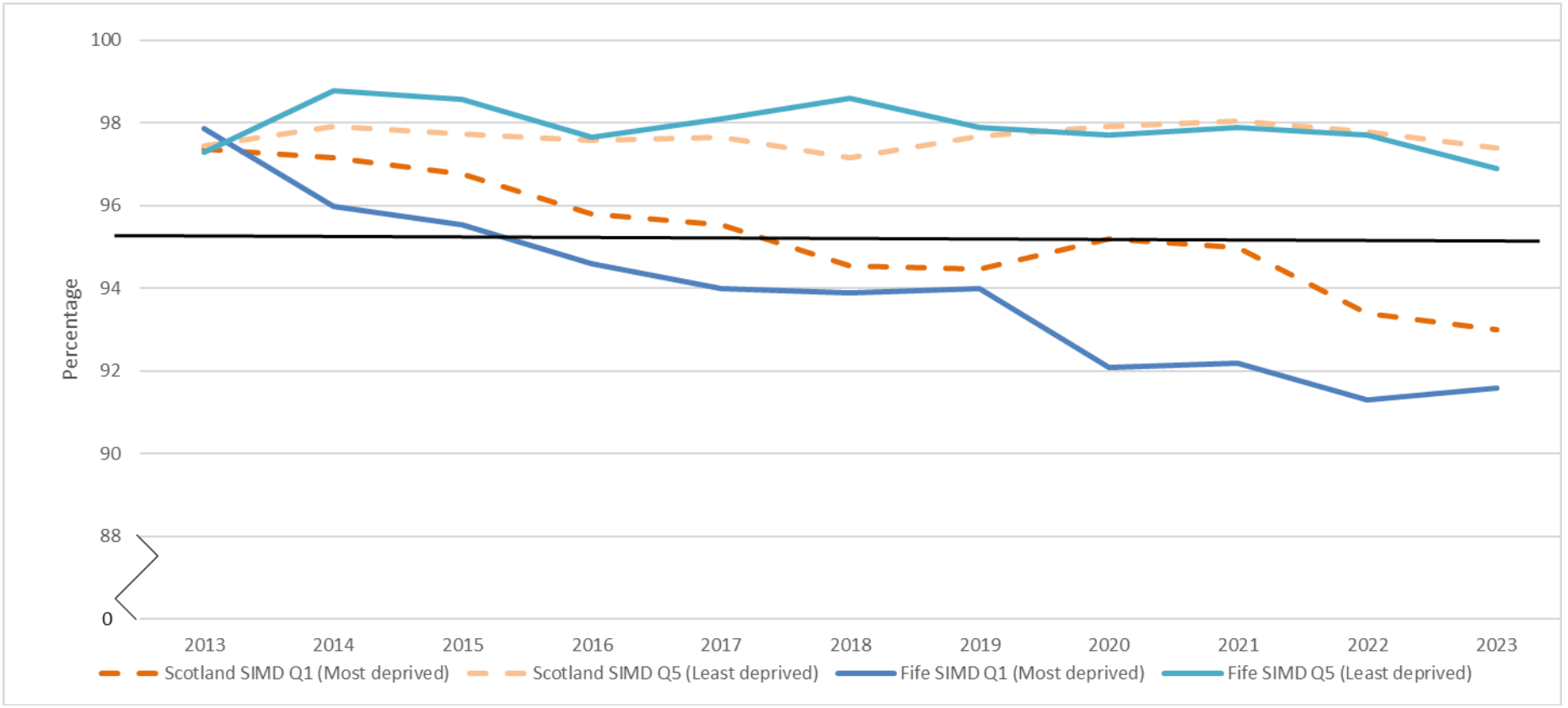


Figure 11: Immunisation trend by 12 months for 5-in-1/6-in-1 by SIMD, NHS Fife (solid lines) & Scotland (dashed lines); 2013 to 2023



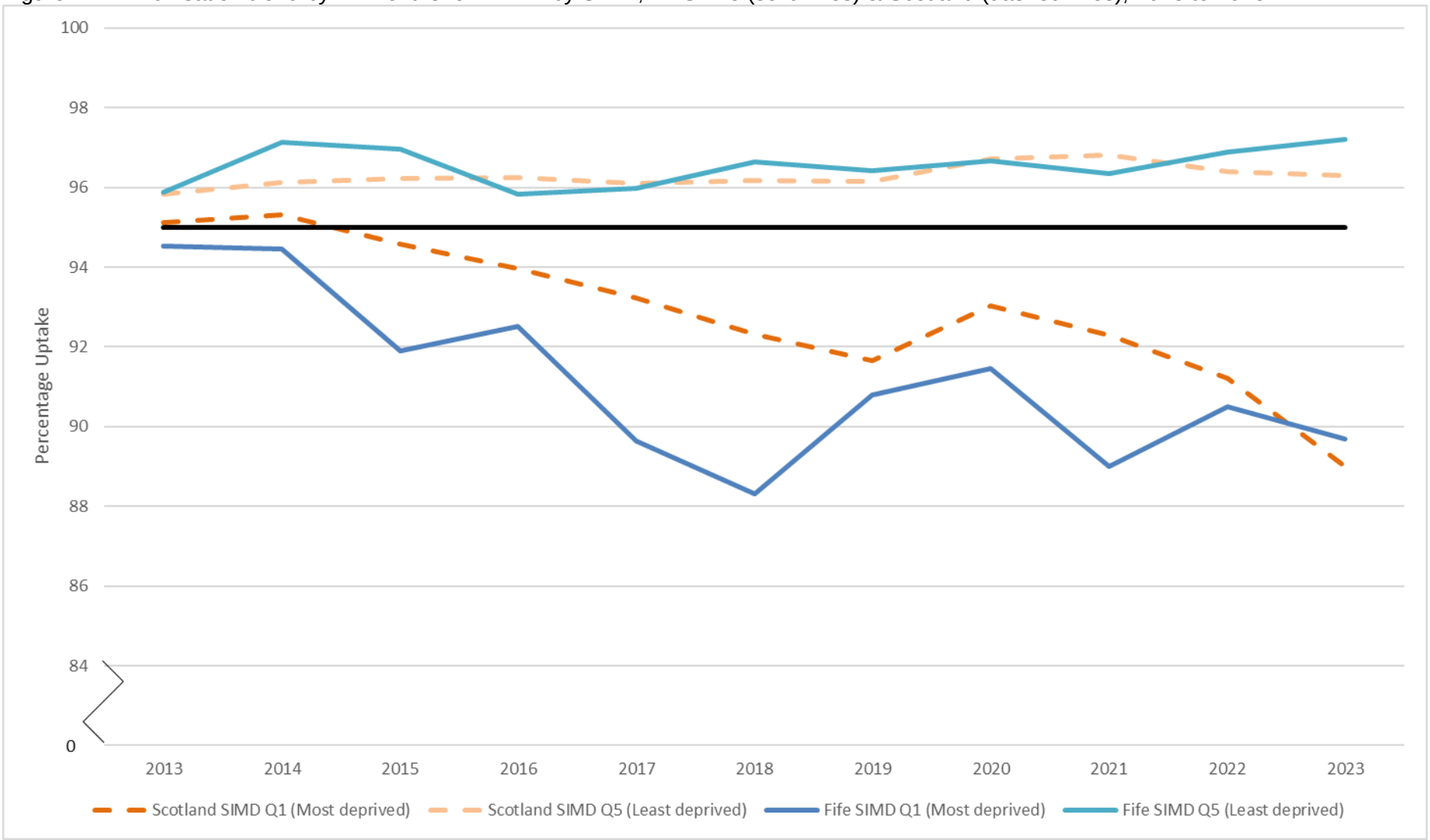
4.5. Uptake rates by 24 months of age (children born 1 January to 31 December 2021) show that by 24 months, uptake of the primary 6-in-1 vaccine are above the 95% target (table 2). However, rates are below 95% for the vaccine doses given on or after a child's first birthday: first dose of MMR vaccine, Hib/MenC, PCV boosters, and Men B booster are below 95% at 24 months, which is a trend also seen in the rest of Scotland. Fife has seen very small rises in vaccination uptake since 2022. This small rise is different from the rest of Scotland where a small decrease in uptake has been seen.

4.6. Again, uptake of immunisations at 24 months of age is lowest in the most deprived areas (quintile 1) compared to the least deprived (quintile 5). This trend is in line with the trend across Scotland. However, the 95% target is met by SIMD quintiles 3 to 5 for all vaccines at 24 months. Uptake rates in 2023 for MMR 1 in Fife were similar to those in Scotland with a 7 percentage point difference in uptake between the least and most deprived. (figure 12).

Table 2: Immunisation uptake rates by 24 months of age in NHS Fife, by year 2019 to 2023

	2019	2020	2021	2022	2023
Primary:					
5-in-1/ 6-in-1	96.8	96.5	96.4	95.8	95.5
MMR1	93.9	93.7	93.2	92.9	93.2
Booster:					
Hib/MenC	94	93.7	93.0	92.6	93.0
PCVB	93.7	93.6	93.3	92.8	92.9
MenB Booster	93.3	93.2	92.7	92.1	92.3

Figure 12: Immunisation trend by 24 months for MMR1 by SIMD, NHS Fife (solid lines) & Scotland (dashed lines); 2013 to 2023



4.7. By 5 years, the Hib/MenC and MMR1 vaccines (given at 1 year) are similar in uptake in Fife to elsewhere in Scotland, suggesting that catch-up activity has taken place between 2 and 5 years (table 3). However, uptake of the vaccines normally given around three years four months of age (4-in-1[11] and 2nd dose MMR) remains below 95% at 5 years in Fife. This is also the case elsewhere in Scotland; Fife has continued below the Scottish average since 2017 on MMR2, but the gap appears to have narrowed in the second half of 2021 (figure 13).

4.8. SIMD data was made available for the 4-in-1 and MMR2 vaccine in 2022. As with SIMD trends at earlier reporting ages uptake is lower for quintile 1 (most deprived) compared to quintile 5 (least deprived) (figure 14).

Table 3: Immunisation uptake rates by 5 years of age in NHS Fife, by year 2019 to 2023

	2019	2020	2021	2022	2023
MMR1	96.4	96.1	96.1	95.4	95.7
Hib/MenC	96.1	95.6	95.8	95.2	95.3
4-in-1	87.6	88.7	89.7	88.3	87.8
MMR2	87.4	88.4	89.3	88.0	88.0

[11] Diphtheria, tetanus, pertussis (whooping cough), and polio

Figure 13: Immunisation rates by 5 years for MMR1 and MMR2, NHS Fife (solid lines) & Scotland (dashed lines); 2013 to 2023

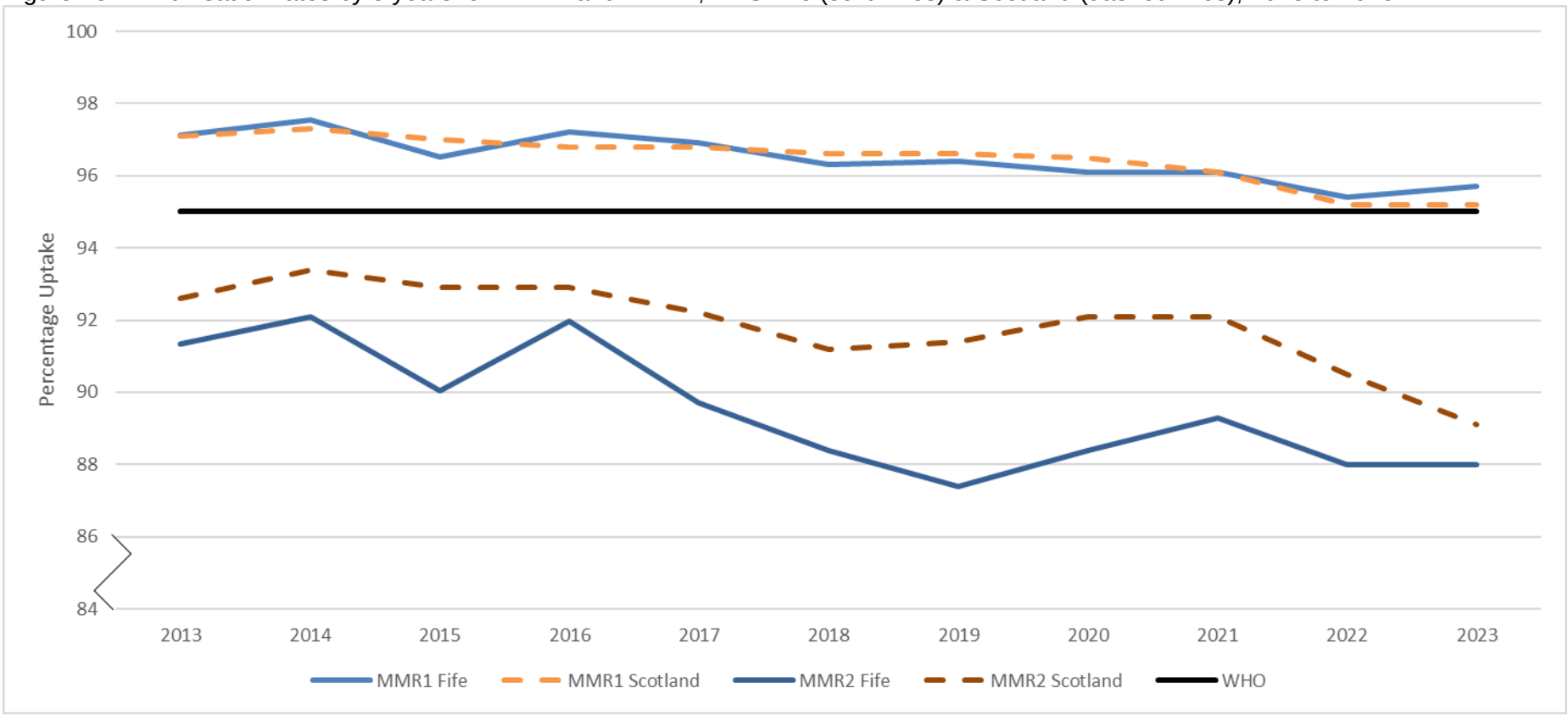
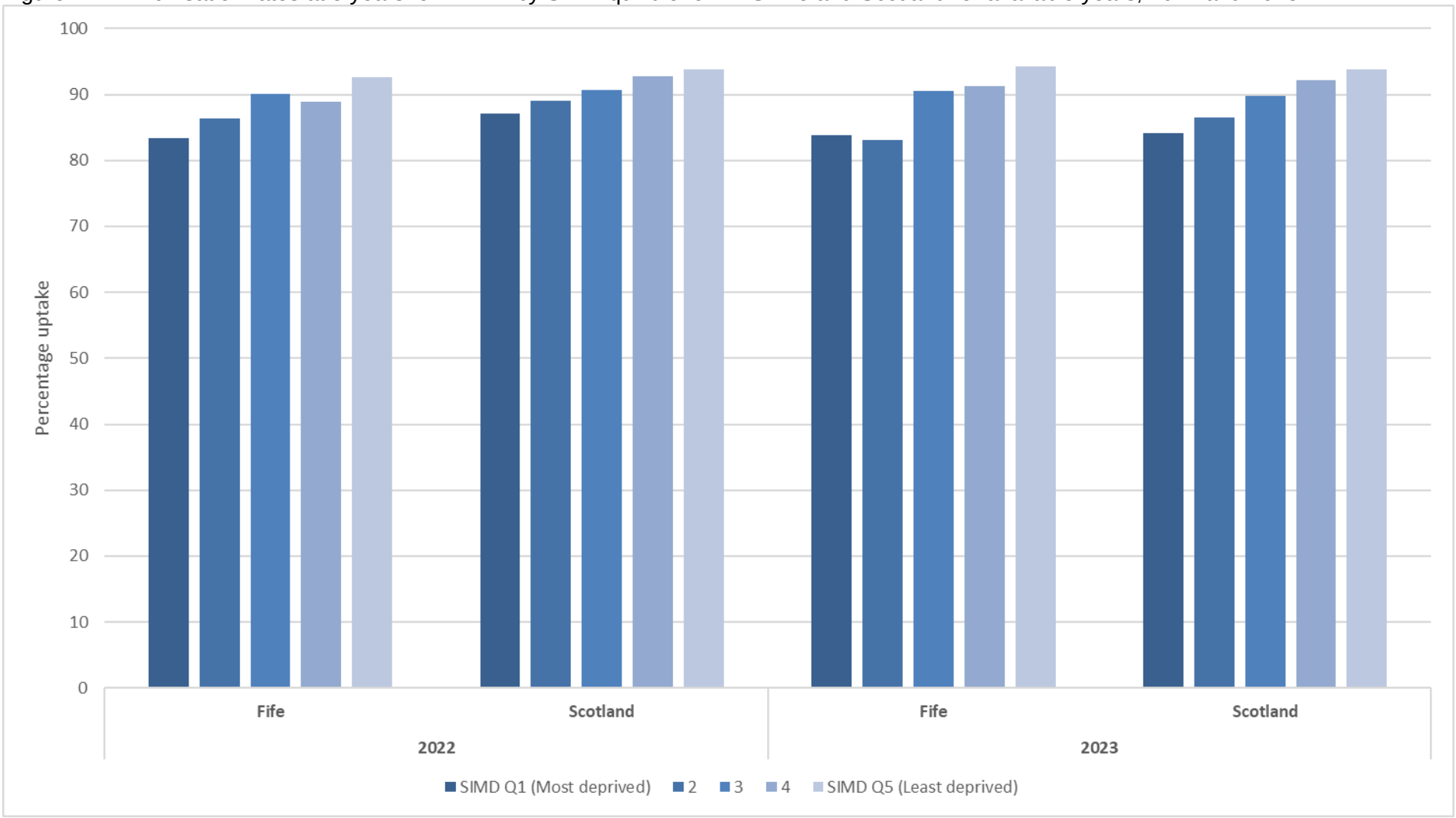


Figure 14: Immunisation rates at 5 years for MMR2 by SIMD quintile for NHS Fife and Scotland for available years, 2022 and 2023



4.9. Data is also available at six years of age (prior to 2006 this was the standard reporting age instead of five years); rates are slightly improved at this age indicating that some children are receiving pre-school immunisations after 5 years (table 4). At 6 years MMR 1 (delivered at 1 year) is similar to that seen elsewhere in Scotland, but MMR2 and the 4 in 1 booster remain below the Scottish average.

Table 4: Immunisation uptake rates by 6 years of age in NHS Fife, by year 2019 to 2023

	2019	2020	2021	2022	2023
MMR1	96.4	96.2	95.6	95.6	94.8
4-in-1	91.6	90.9	91.4	91.5	89.3
MMR2	91.2	90.7	91.1	91.3	88.9

Ethnicity

4.10. Health boards have access to data on ethnicity and vaccination uptake for the first time this year. In Fife lower uptake is seen in some ethnic groups across the stages where childhood vaccinations are offered. These groups are within the African communities, Indian communities, and Gypsy/Traveller communities. A similar trend is seen with adult vaccinations in Fife and nationally, however numbers in Fife are relatively small.

Early uptake

4.11. Early uptake data shows a consistent trend across all stages, with a significant uptake in the vaccine when children first become eligible. In 2023 uptake was quicker after becoming eligible compared to previous years (figure 15). Children living in the least deprived areas of Fife are more likely to be vaccinated when first eligible compared to those who live in the most deprived areas, however in 2023 an increase in early uptake across all deprivation quintiles can be seen (figure 16).

Figure 15: Percentage early uptake of MMR1 vaccination for 2021-2023

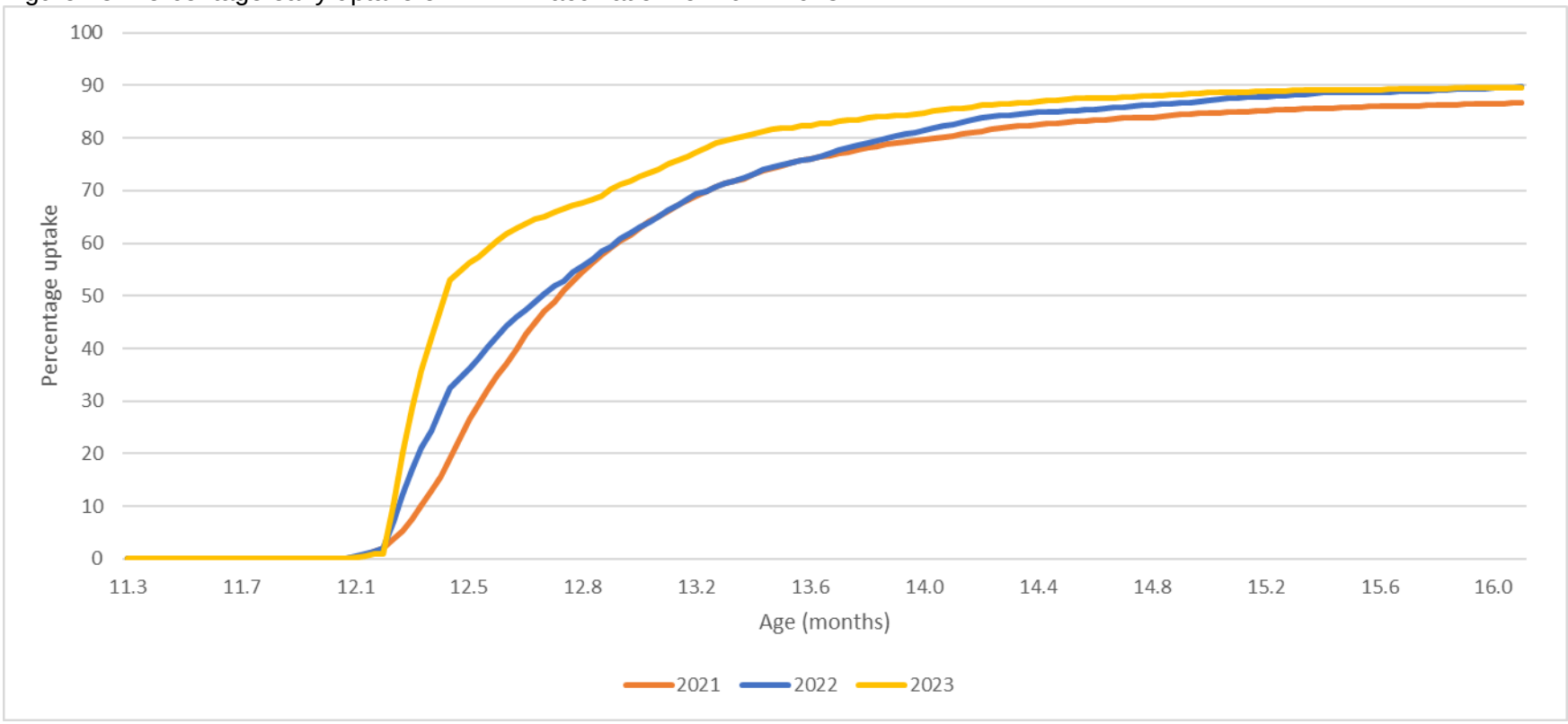
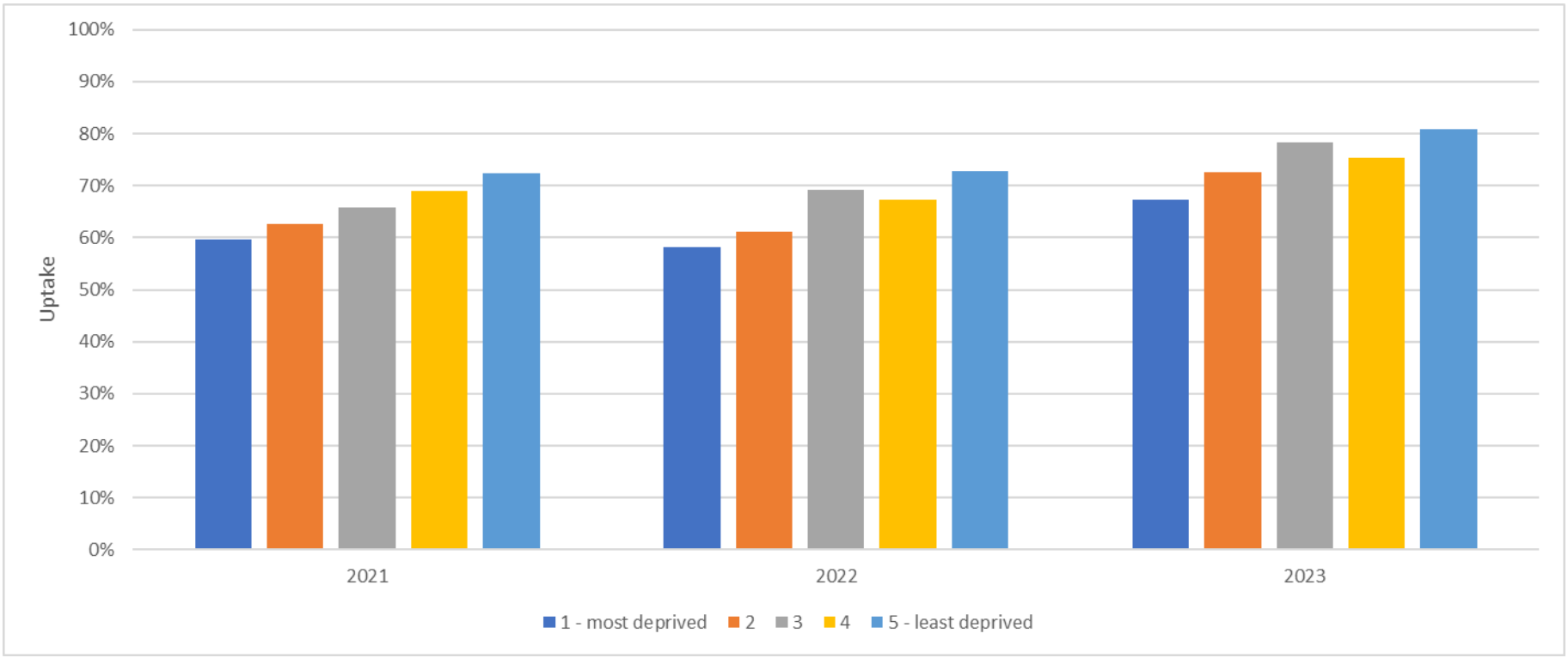


Figure 16: Percentage early uptake of MMR 1 at 12-13 months by SIMD quintile, 2021-2023



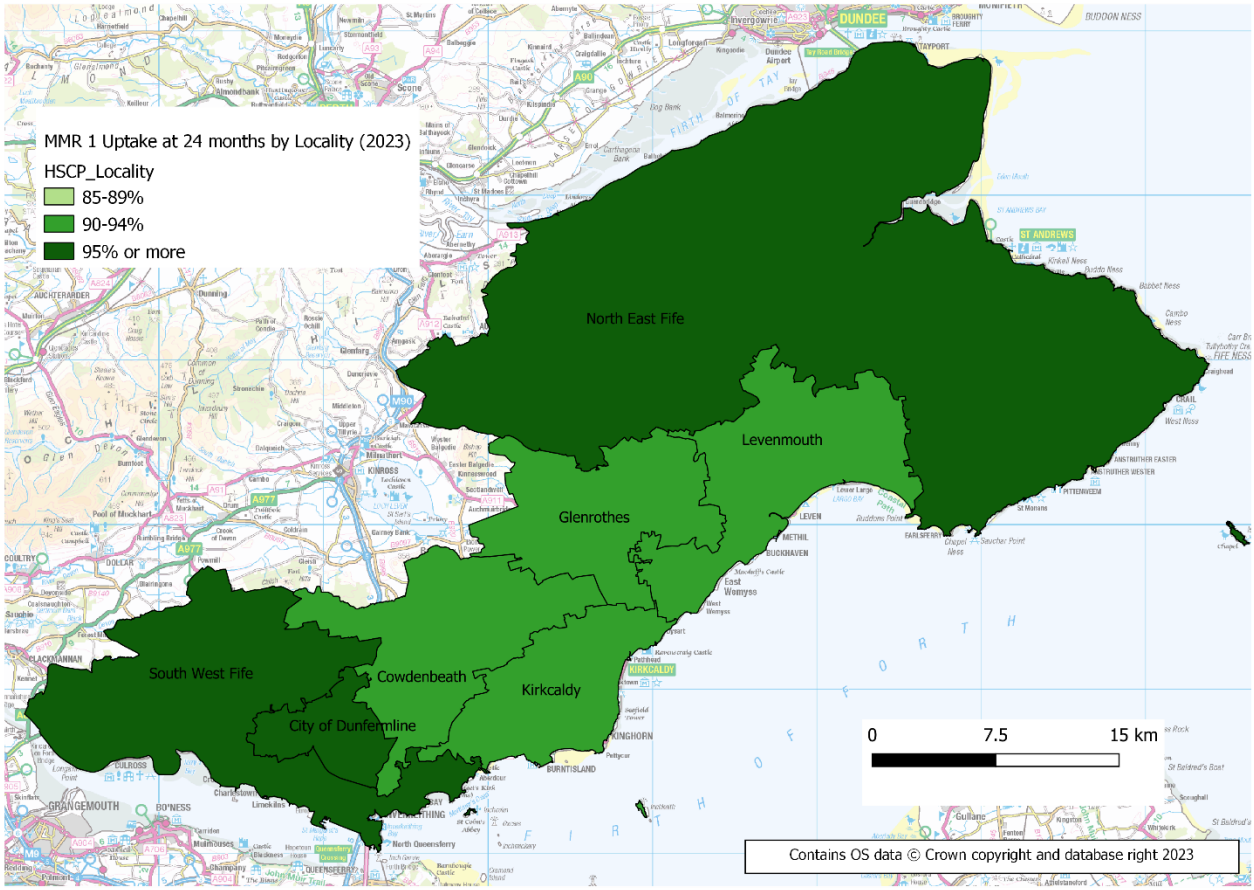
Locality uptake

4.12. Vaccination uptake by locality area shows that Levenmouth and Glenrothes have lower uptake rates compared to other areas in Fife. The City of Dunfermline and South West Fife tend to have higher uptake, achieving 95% for the 6-in-1 vaccine at 12 months and MMR 1 at 24 months.

Table 5: Percentage uptake by locality area, 2023

Locality	6-in-1 uptake 12 m	MMR 1 uptake 24m	MMR2 uptake 5yrs
City of Dunfermline	95.0	95.4	91.8
Cowdenbeath	94.4	91.5	89.0
Glenrothes	93.6	90.8	81.7
Kirkcaldy	89.3	92.3	84.6
Levenmouth	92.9	91.4	86.8
North East Fife	96.0	94.6	90.7
South West Fife	96.2	95.0	92.1

Figure 17: MMR1 at 24 months by locality within Fife, 2023



Teenage immunisations

Teenage Booster

4.13. A combined booster immunisation is delivered for tetanus, diphtheria and polio (Td/IPV, given around 14 years of age) along with an immunisation protecting against four strains of meningococcal bacteria (MenACWY). Fife uptake of these boosters in both S3 and S4 has seen a decline in school year 2022/23 compared to 2021/22, a decline in uptake was also seen in the rest of Scotland in S3 but not in S4. Due to the pandemic, delivery of the teenage programme was disrupted to varying degrees across health boards in Scotland depending on where they were in their delivery plans at the time of lockdown. This should be considered when comparing the Fife data to the Scottish average (figure 18) where it is clear that the 2020-21 school year delivery was disrupted to a far greater extent in the rest of Scotland than in Fife.

4.14. The teenage booster programme in Fife demonstrates clear socioeconomic gradient in vaccination uptake that is similar to that seen in the rest of Scotland (figure 19). Mop-up activity means that by the end of S4 the uptake rates are slightly higher.

Table 6: Td/IPV and MenACWY uptake rates by end of S3 and end of S4, Fife & Scotland, 2022-23

	S3		S4	
	Fife	Scotland	Fife	Scotland
Td/IPV	59.0	68.6	72.2	77.3
MenACWY	59.0	68.7	72.4	77.4

Figure 18: Immunisation rate for MenACWY uptake at S3 & S4, NHS Fife (solid lines) & Scotland (dashed lines); school year 2018/19 to 2022/23

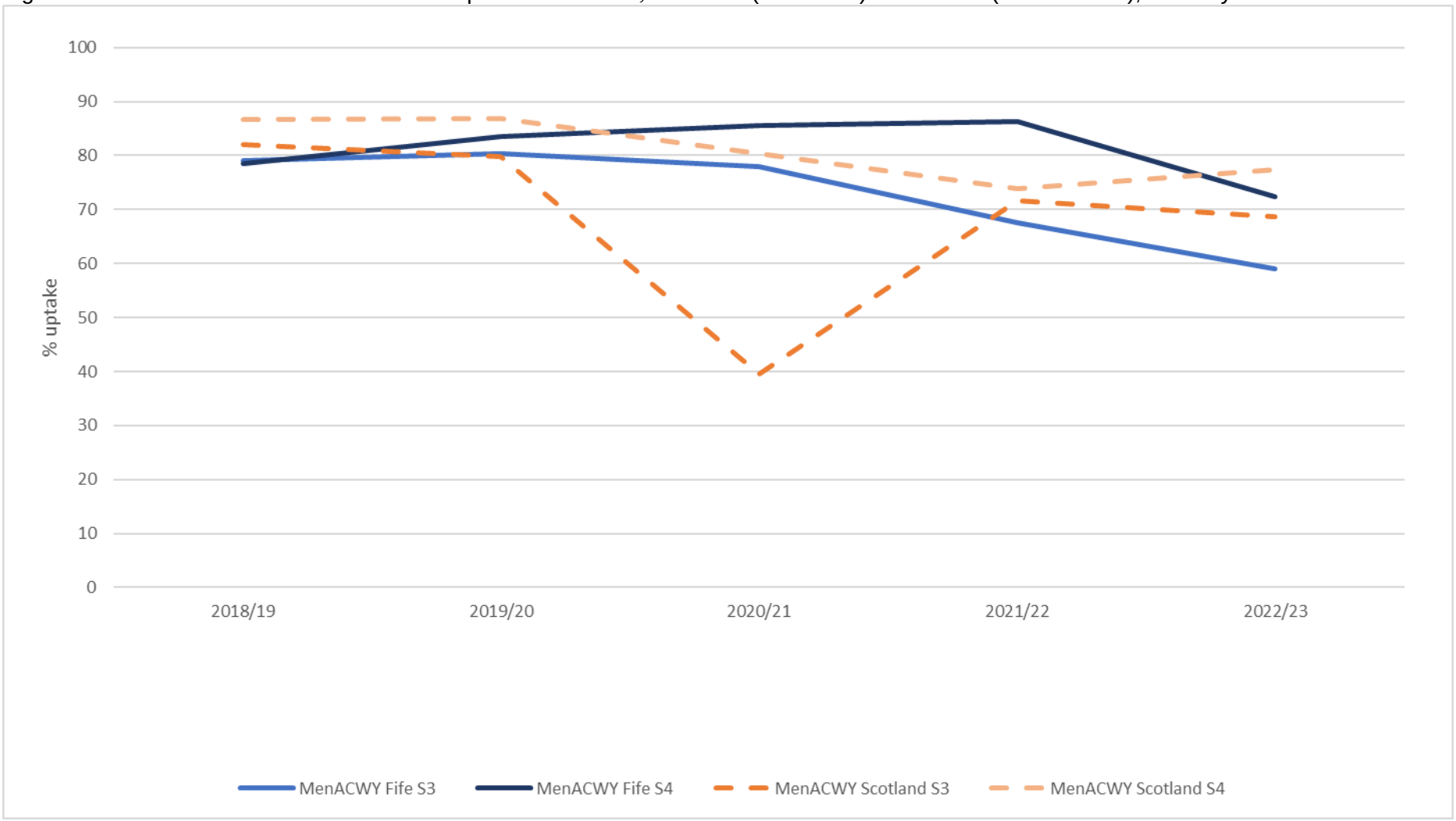
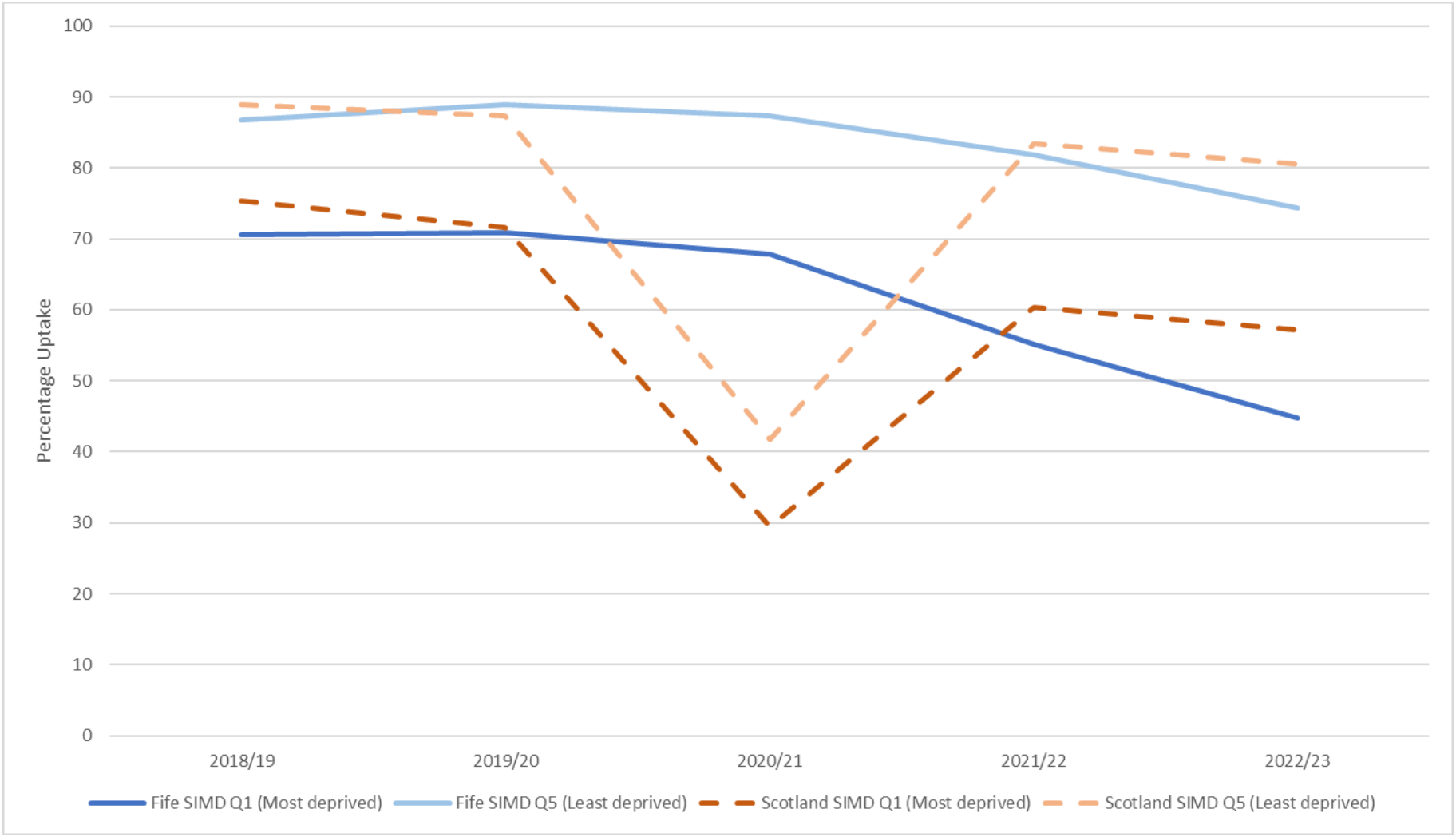


Figure 19: Immunisation rate for Td/IPV uptake at S3 by SIMD, NHS Fife (solid lines) & Scotland (dashed lines); school year 2018/19 to 2022/23



Human Papilloma Virus (HPV)

4.15. The Scottish HPV immunisation programme started in 2008, with inclusion of secondary school boys from 2020. Until January 2023 two doses of HPV vaccine were offered to all children (males & females) in Fife in S1 and S2, usually within the Spring term. Follow up opportunities are offered at S3 for those that miss their HPV vaccination at S1 or S2. Although the two-dose schedule was still being implemented during the 2021-22 school year, this report focuses on dose 1 uptake only given that a single dose programme has now been implemented based on JCVI advice.

4.16. HPV vaccination uptake in Fife at S1 and S2 for males and females is shown in table 6, figures 18 and 19. In general, uptake among males is slightly lower than females. Uptake of dose 1 at both S1 and S2 is lower in Fife than elsewhere in Scotland. There is a substantial socioeconomic gradient between the least and most deprived quintiles at S3 (figure 21). Uptake of the HPV vaccine has fallen across all SIMD quintiles in the school year 2022/23, with the gap in uptake between the least and most deprived widening. This is true for both uptake in girls and boys, with the uptake between the least and most deprived boys being the widest. This trend is also seen across the rest of Scotland.

Table 7: HPV uptake at S1 and S2 by sex, NHS Fife & Scotland, 2022-23

	Dose 1 S1		Dose 1 S2	
	Female	Male	Female	Male
Fife	70.4	59.9	75.3	65.2
Scotland	76.3	69.7	82.9	76.2

Summary of vaccine uptake inequalities in childhood and teenage programmes

4.17. Appendix 2 provides a summary of inequalities in vaccination uptake using four different measures of inequalities. Data from previous years are shown for comparison. The first two measures are straightforward calculations of the absolute range (difference between rates in the most and least deprived quintiles) and the relative range (the ratio of the uptake in the most deprived group compared to uptake in the least deprived group). These two measures overlook the changes in the intermediate groups and do not take into account the sizes of the groups being compared. As such, two alternative measures of absolute and relative inequality - the Slope Index of Inequality (SII) and Relative Index of Inequality (RII) are also calculated. The SII can be interpreted as the absolute effect on uptake of moving from the most deprived to the least deprived grouping. The RII is a measure of the relative inequality of uptake rates and compares ratios rather than absolute differences. Both the SII and RII suggest that inequalities increase in older childhood age groups and are greatest in the teenage booster programme.

Figure 19: 1st dose HPV immunisation uptake rates for girls by the end of the school year 2018/19 to 2022/23, at S1 and S4, NHS Fife (solid lines) and Scotland (dashed lines)

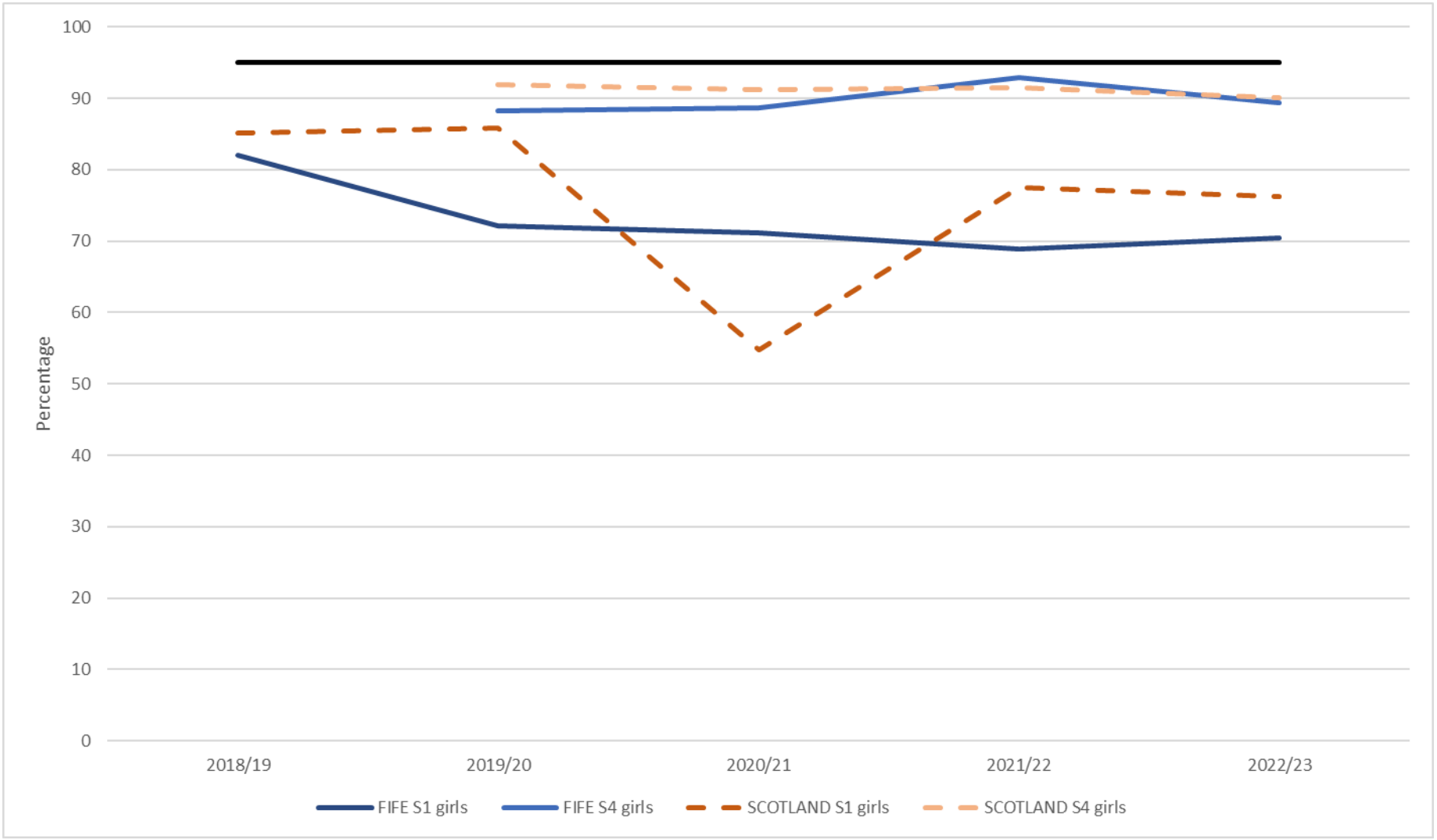


Figure 20: 1st dose HPV immunisation uptake rates for boys by the end of the school year 2019/20 to 2022/23, at S1 and S2, NHS Fife (solid lines) and Scotland (dashed lines)

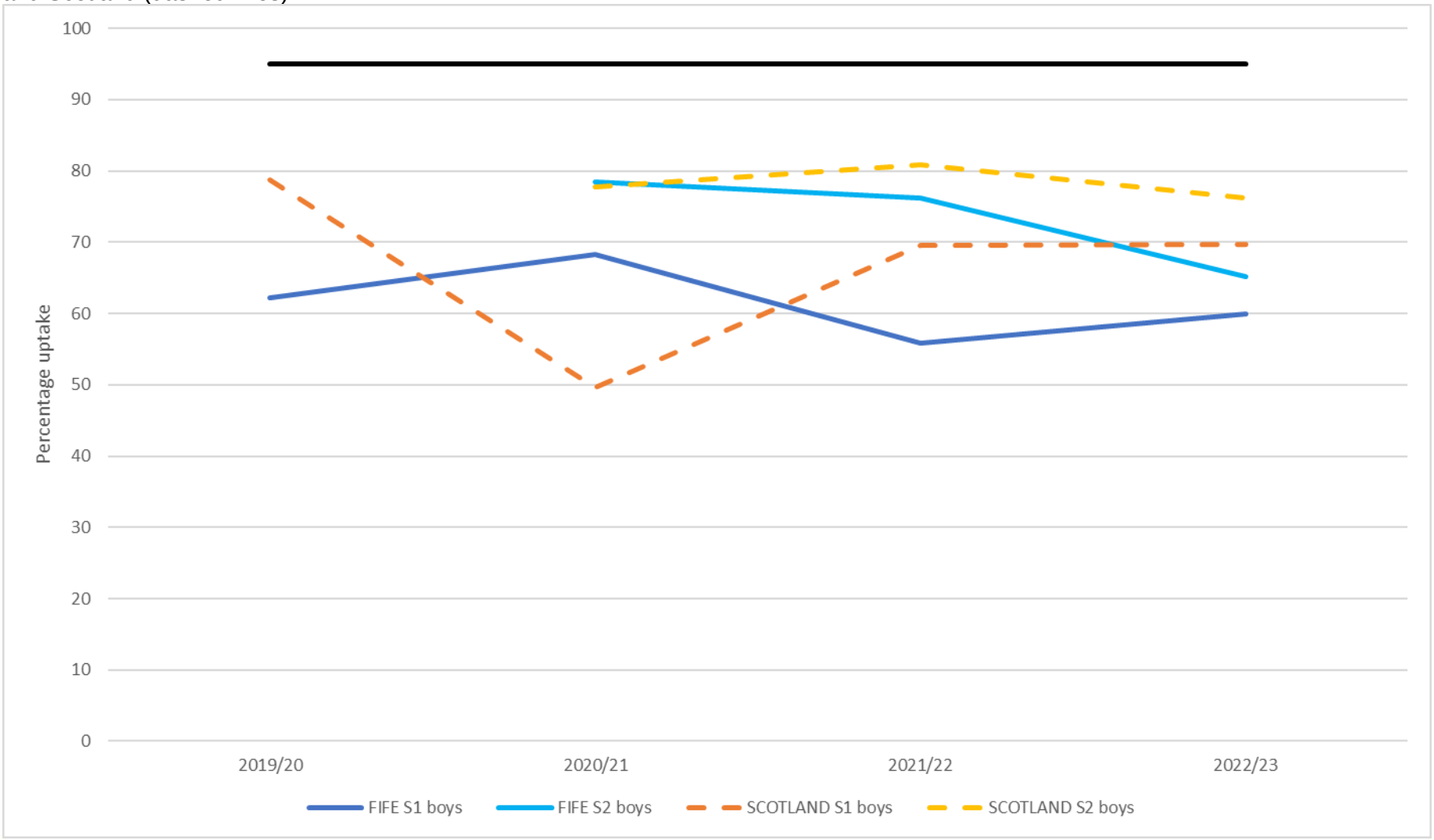
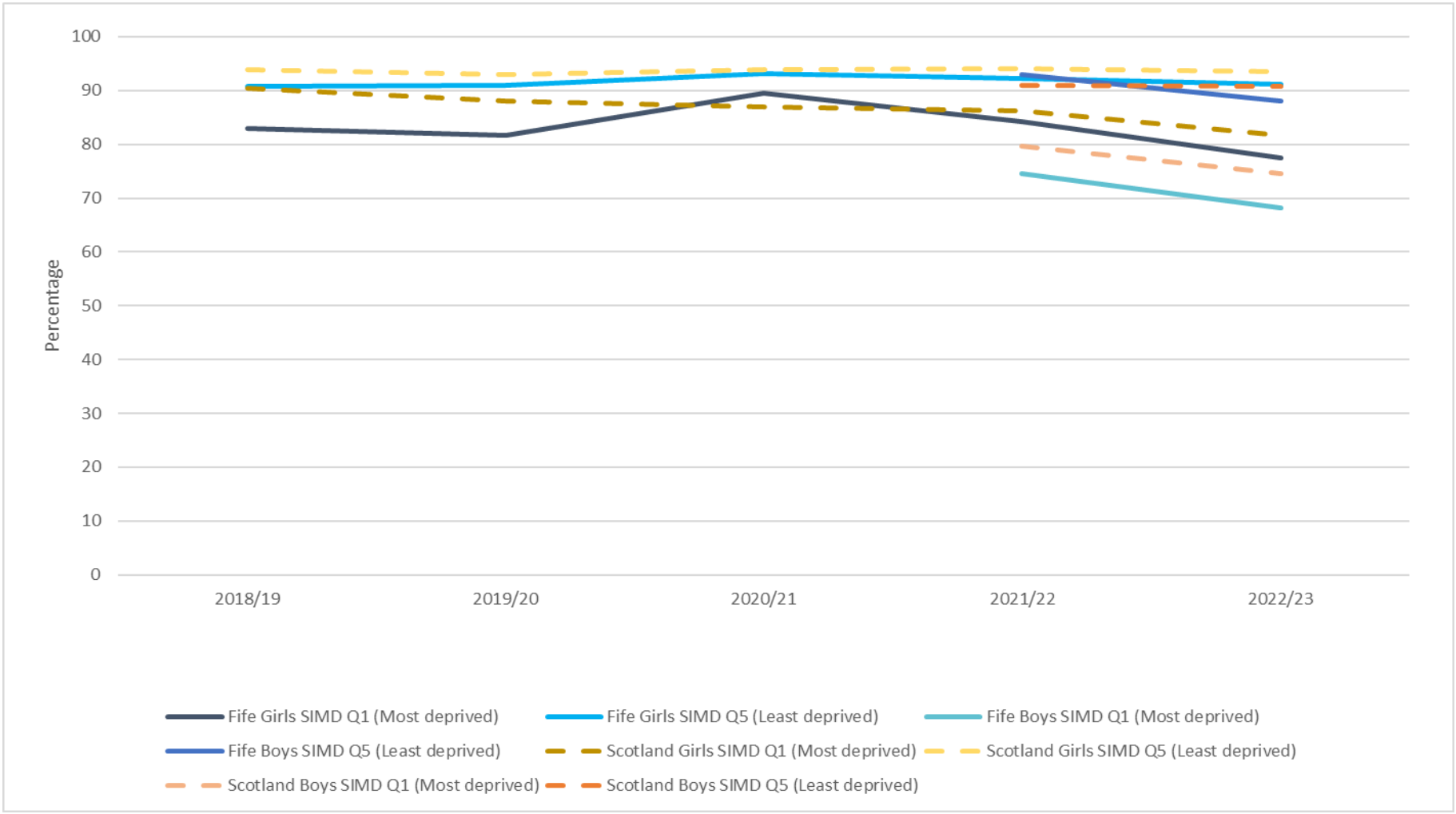


Figure 21: 1st dose HPV immunisation uptake at S3 by SIMD for girls and boy, NHS Fife (solid lines) and Scotland (dashed lines); school year 2018/19 to 2022/23



Adult and selective immunisation programmes

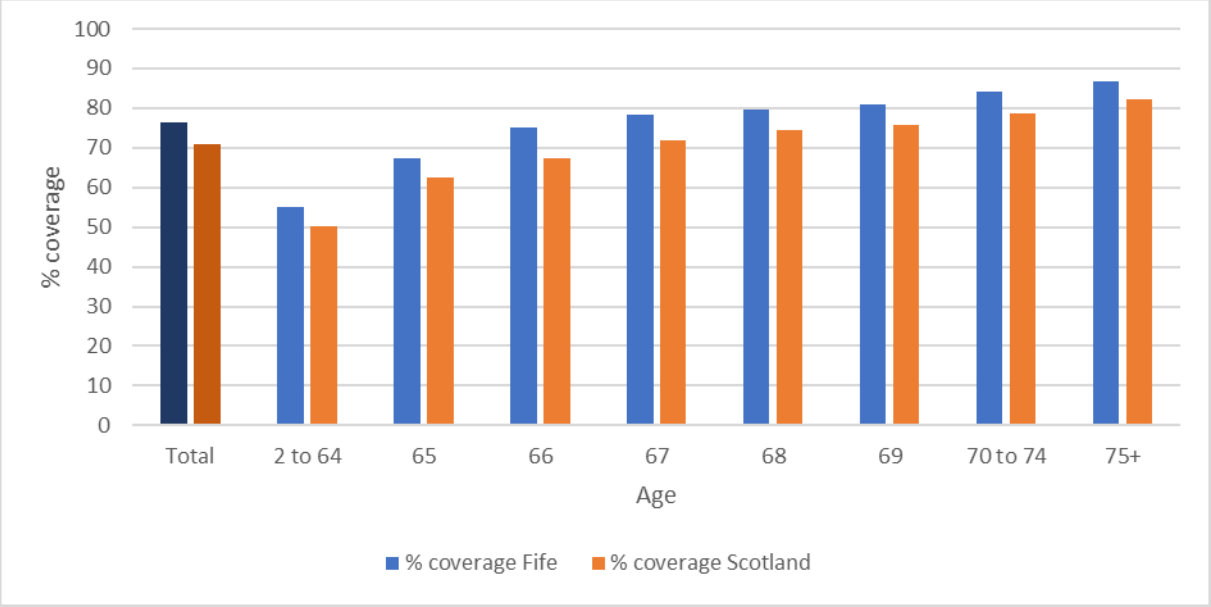
Pneumococcal (PPV23)

4.18. PPV23 is one-off vaccine for those aged 65 years and over and those under 65 with underlying conditions, that protects against 23 serotypes of pneumococcal disease. A small cohort require repeat vaccination every 5 years. Vaccination coverage data was published in December 2023 which provided vaccination coverage to the 30th of September 2023. Coverage data is based on the proportion of eligible individuals currently vaccinated. Vaccination uptake in Fife is higher than that of the rest of Scotland (Table 8, figure 23).

Table 8: Percentage coverage of the PPV23 vaccine by age groups for NHS Fife and Scotland, 2023

	Percentage coverage	
Age (yrs)	Fife	Scotland
All ages	76.4	70.8
2 to 64	55	50.2
65	67.5	62.5
66	75.1	67.3
67	78.5	71.9
68	79.7	74.4
69	81	75.6
70 to 74	84	78.6
75+	86.8	82.3

Figure 22: Percentage coverage of the PPV23 vaccination in eligible individuals, NHS Fife (blue bars) & Scotland (orange bars); 2023



Shingles

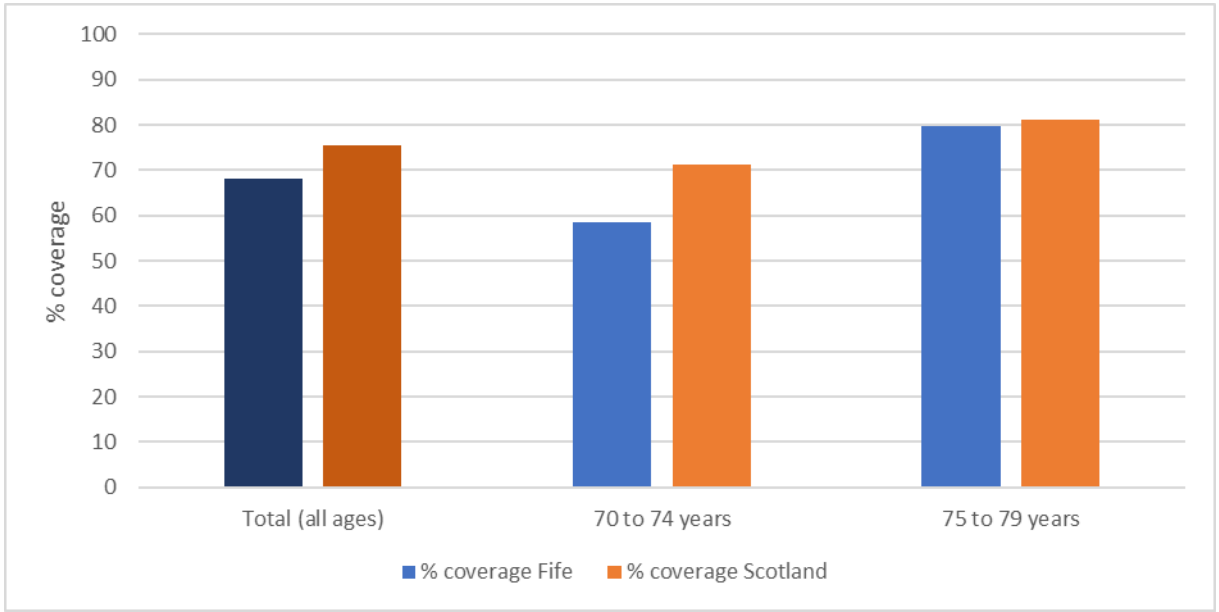
4.19. Shingles vaccine is offered routinely to those aged 70 years, and individuals aged between 71 and 79 who have not previously been vaccinated remain eligible for the one-off vaccine. The programme was first introduced in 2013 using Zostavax, however, as this was a live vaccine it could not be given to those who were severely immunosuppressed. From December 2021 a non-live vaccine, Shingrix, was introduced following recommendation from the JCVI, and from 1st September 2022 to 31st August 2023 could be given to those for whom Zostavax is contraindicated. From 1st September 2023 the 2-dose non-live Shingrix vaccine has been used for all those eligible and the eligibility criteria also expanded. However, these changes were introduced after the 2022/23 reporting period within this report.

4.20. Shingles vaccination data is reported annually by PHS starting in September each year. In December 2023 data for the period 1st September 2022 to 31st August 2023 was published. This release introduced new age ranges for published data, these are the total eligible individuals, individuals aged 70 to 74 years old and individuals aged 75 to 79 years old. In Fife the total uptake of the shingles vaccine is lower than the uptake in the rest of Scotland (Table 9, Figure 23).

Table 9: Percentage coverage of the shingles vaccine by age groups for NHS Fife and Scotland, 2023

	Percentage coverage	
	Fife	Scotland
Total (all ages)	68	75.6
70 to 74 years	58.5	71.2
75 to 79 years	79.7	81.1
70 to 79	68	75.6

Figure 23: Immunisation rate for shingles uptake in eligible individuals, NHS Fife (blue bars) & Scotland (orange bars); 2023



Influenza

4.21. For the 2023/24 flu season adults aged 50 and over, health and social care workers and individuals at risk aged 18 years or over were eligible to receive the flu vaccine between 4th September 2022 and 31st March 2023. Vaccination activity also took place in community pharmacies who offered a flu 'mop-up' offer to eligible groups.

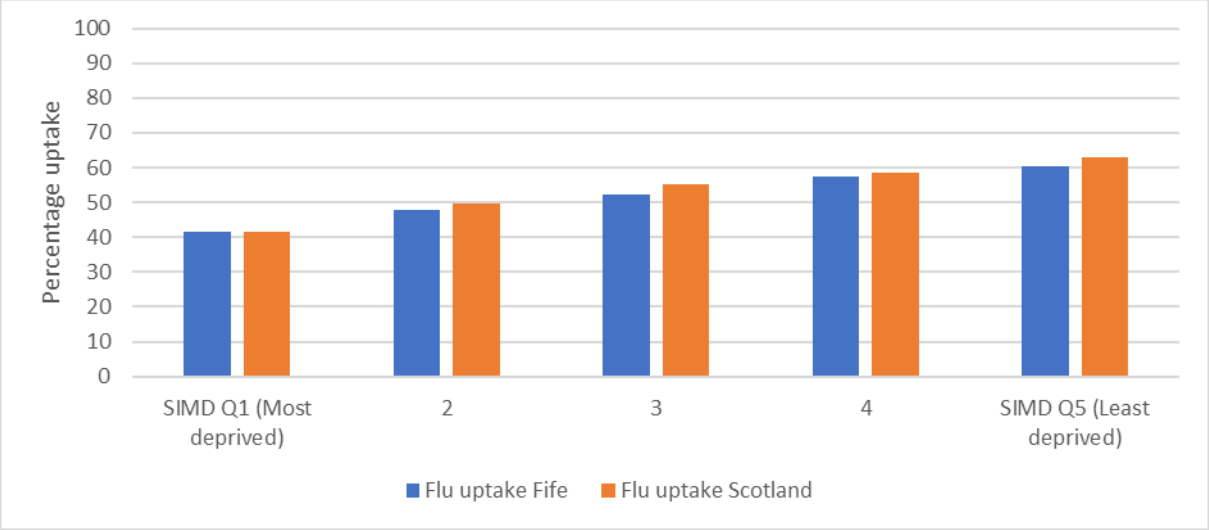
4.22. During the 2023/24 season, 108,127 adult flu vaccinations were administered, which is a 51.8% uptake in the total eligible population. This is similar to that reported for Scotland of 53.7% uptake in the total eligible population at the end of the programme. Vaccination uptake was highest amongst older adults (table 9). Uptake of the seasonal flu vaccine is highest in areas which are the least deprived in Fife (figure 24).

Table 10, Uptake Seasonal Flu Vaccine Adults 2023/24

	18-64 at risk	50-64	65 - 74	75+
Fife	39.4%	37.6%	75.9%	85.0%
Scotland	42.2%	42.7%	75.7%	84.7%

(*Source: PHS Vaccination Surveillance dashboard)*

Figure 24: Uptake of seasonal flu vaccination by SIMD decile for eligible groups 2023/24 programme.



(*Source: PHS Discovery*)

COVID-19

4.23. As with the seasonal flu vaccine the COVID-19 winter booster programme ran from 4th September 2022 to 31st March 2023. Eligible groups for the 2022/23 COVID-19 winter booster programme included adults aged 65 years or over, residents of a care home for older adults, frontline health and social care workers, and at-risk individuals aged 5 years and over.

4.24. A total of 88,617 vaccines were administered during the programme, 56.6% uptake among the total eligible cohort, which is the same uptake reported for the rest of Scotland. During the 2023/24 season the uptake rates in Fife were similar to those seen elsewhere

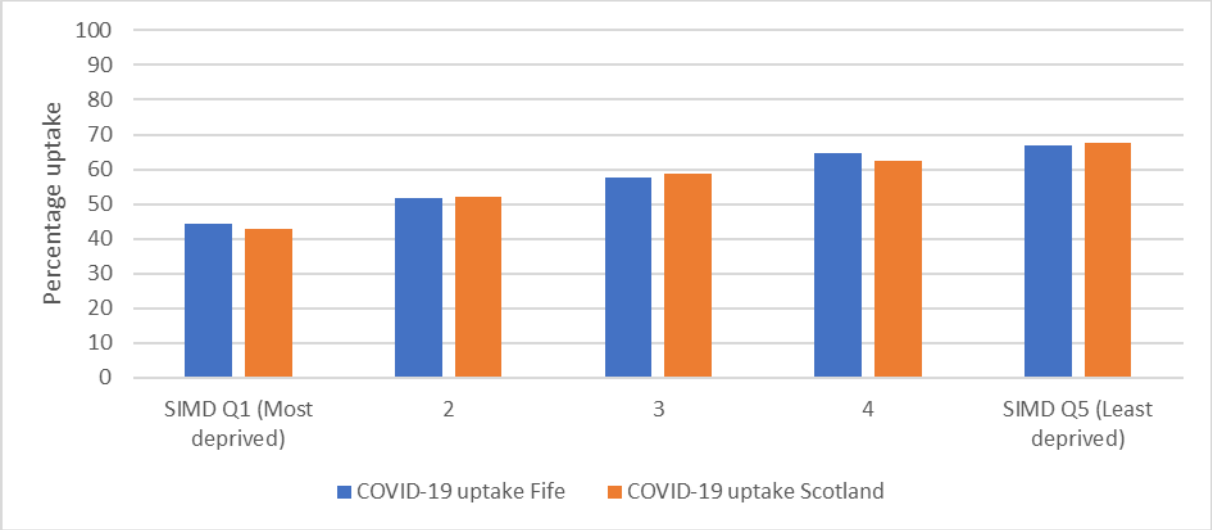
in Scotland for adults aged 65 years and older (table 11). Uptake amongst the at-risk cohort was comparable in Fife with elsewhere in Scotland. Uptake is lower in areas which are most deprived (figure 25).

Table 11: Uptake COVID-19 Winter Booster Vaccine 2023/24

	12-64 at risk	65 - 74	75+
Fife	34.8%	75.0%	84.8%
Scotland	36.8%	74.7%	84.1%

(Source: PHS Vaccination Surveillance dashboard)

Figure 25: Uptake of COVID-19 winter booster vaccine by SIMD decile for eligible groups 2023/24 programme.



(*Source: PHS Discovery*)

Ethnicity and uptake of COVID-19 and flu vaccines

4.25. In Fife the highest uptake of both the COVID-19 and flu vaccines are seen within the white ethnic group, and lowest uptake is seen within the African communities. When broken down further into ethnicities uptake is lower in some of the ethnic minority groups, specifically the Polish, African and Gypsy/Traveller communities. This is the case for both vaccines and is similar to the findings for the rest of Scotland.

Other selective vaccination programmes

Pertussis in pregnant women

4.26. Uptake of pertussis was 86% among pregnant women who registered a birth between 1/4/23 to 31/3/24 (badgernet data). Due to different approaches to recording data across Scotland it is difficult to make a direct comparison with the rest of Scotland. Uptake of seasonal vaccinations among this cohort are challenging, however uptake of COVID vaccination among this cohort is indicated to be significantly lower. Plans are in place for Winter 24 to transfer delivery of COVID vaccination for pregnant women to the maternity service.

Babies born to mothers with Hepatitis B

4.27. The risk of developing chronic hepatitis B infection depends on the age at which infection is acquired. Chronic infection occurs in 90% of those infected perinatally but is less frequent in those infected as children (e.g. 20 to 50% in children between one and five years of age)[12]. Post-exposure immunisation is provided to infants born to hepatitis B infected mothers, identified through antenatal screening, to prevent mother to child transmission at or around the time of birth. Immunisation of the infant should start as soon as possible after birth, and no later than 24 hours, and be followed by a dose four and eight weeks later and a further dose at one year of age. From August 2017, as hepatitis B is included in the routine childhood immunisation programme, the dose at eight weeks in the selective neonatal programme is provided in DTaP/IPV/Hib/HepB as part of the routine programme, as well as additional doses given at 12 and 16 weeks.

4.28. Over the 5-year period 2019 to 2023 inclusive, a total of 15 babies turned 12 months who were born to mothers infected with hepatitis B resident in Fife, and all newborns received the first dose of vaccine within 1 day of their DOB (100% dose 1 delivered on schedule). There were no babies in this cohort within 2023.

BCG for newborn at risk

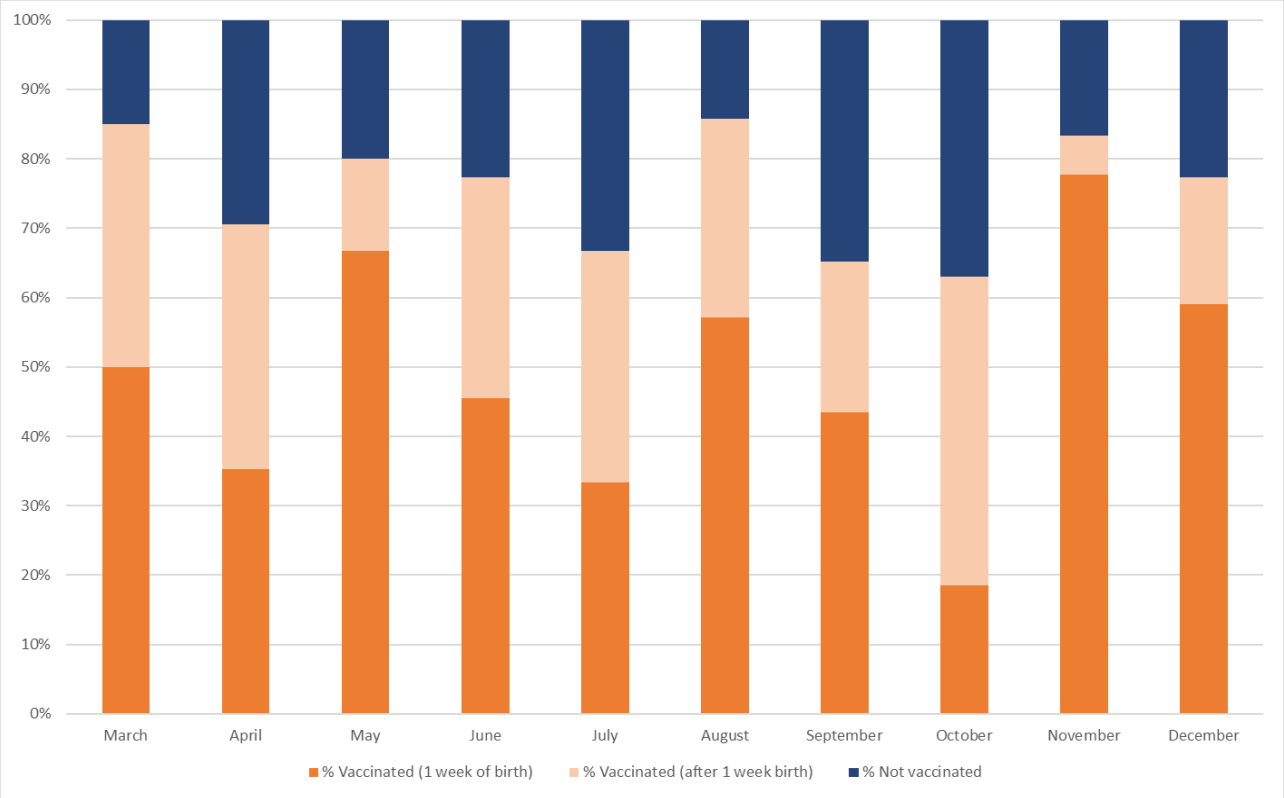
4.29. The existing pathway for delivery of BCG vaccination for at risk children below 1 year was disrupted in 2021 and 2022; this is reflected in the lower uptake rates in 2021. Mop-up clinics have been running to ensure catch-up for this group and a new pathway was implemented in February 2023. Whilst the dates and cohorts are not directly comparable to previous years in table below, uptake from 1st March 2023 to 31st December 2023 was 75% for at risk babies born in Fife (figure 26).

Table 12: BCG uptake for at risk children turning 12 months, 2017 - 2023

	2017	2018	2019	2020	2021	2022	2023
Fife	70.3	72.3	70.6	75.0	48.3	63.3	62.9
Scotland	76.0	78.6	80.6	78.9	73.5	75.3	77.6

[12] https://www.gov.uk/government/publications/hepatitis-b-the-green-book-chapter-18

Figure 26: BCG uptake for at risk babies 01/03/23 – 31/12/23



Vaccination of men who have sex with men (MSM)

4.30. Over a 6-year reporting period July 2017 (when the programme was introduced) to June 2023 in total 45% of eligible individual's attending Fife sexual health services over the five year period have either completed HPV course (as previous policy) or are in progress; across Scotland this figure is 65%. The percentage uptake is based on number of physical attendances made by males, identified as men who have sex with men, aged up to and including 45 years old. Denominator data are based on an individual's most recent treatment location within the reported 6-year period (July 2017 to June 2023), rather than board of residence.

4.31. In 2023 there were 478 MSM patients aged <=45 who had an appointment with Sexual Health in Fife, of which 206 of these patients already had the HPV vaccine prescribed. In 2023 72 MSM attendees at Sexual Health received Hepatitis A & B Vaccine. As with HPV vaccine it is likely that some eligible MSM will have received the Hep A and Hep B vaccine elsewhere. Further work is required to understand hepatitis A & B coverage among this cohort locally as currently it is unclear if the low rates reflect low uptake or incomplete recording of their vaccination status. No comparison with data at Scotland level is available.

4.32. In response to the emerging public concerns about mpox in 2022 an assessment of Fife patients within the MSM cohort in NASH was carried out against risk factors outlined in the guidance issued by Public Health Scotland guidance. This identified a priority cohort for mpox pre-exposure vaccination of 209 individuals. A series of vaccination clinics were set up from July 2022. Those not on the priority list can request an assessment and those

identified at high risk during sexual health appointments or contact tracing can be offered an appointment.

5. Conclusions

5.1. This report has highlighted the findings from surveillance data on vaccine preventable disease in Fife, as well as vaccine uptake rates across childhood, teenage and adult immunisation programmes. Surveillance data demonstrate ongoing low incidence rates of most vaccine preventable diseases during 2023 in Scotland and in Fife. Whilst Scotland continues to perform strongly for vaccination uptake rates of the childhood programme compared to the rest of the UK, there are growing concerns regarding the declining trend in the infant, pre-school and teenage programmes across Scotland in 2023, and also seen in Fife. In Fife, uptake is below the Scottish average. However, early uptake data has demonstrated improvements in 2023 across all deprivation quintiles in 2023 compared with previous years.

5.2. Actions progressed against the priorities and measures set out in the Fife Strategic Framework 2021 – 2024 have provided the platform for ongoing close monitoring of uptake rates and established governance structures to support for the improvement work required to ensure our immunisation services are as accessible and flexible as possible, and that inequalities are addressed.

5.3. Review of the Strategic Framework priorities is underway, with a strengthened focus on improving delivery in the context of the findings of this report and a strategic review of the delivery of childhood vaccination programme in Fife carried out in 2023. The refreshed Fife Immunisation Strategic Framework 2024 – 2027 is anticipated to be published alongside this report.

6. Acknowledgements

The provision of immunisation programmes in Fife is dependent on the ongoing support of the individuals and families within Fife and the combined continued efforts of all the staff involved in promoting and supporting the vaccine programmes, including:

- Fife Community Immunisation Service
- Child Health Department, Children's Services
- Pharmacy, Community Services
- Public Health Department, NHS Fife
- Maternity services, NHS Fife
- Sexual Health services, NHS Fife
- Digital & Information, NHS Fife
- East Region Health Protection Team
- Immunisation and Vaccine Preventable Diseases Team at Public Health Scotland
- Population Health Analytics and Intelligence, NHS National Services Scotland
- Scottish Vaccination & Immunisation Programme (SVIP)

7. Vaccine Abbreviations

DTP/Pol/Hib = the 5-in-1 vaccine which protects against diphtheria, tetanus, pertussis, polio and Haemophilus influenzae type b (Hib) [replaced by 6-in-1 as below]

DTP/Pol/Hib/Hep B = the 6-in-1 vaccine which protects against diphtheria, tetanus, pertussis, polio, Haemophilus influenzae type b (Hib) and Hepatitis B.

MenC = Meningococcal serogroup C conjugate vaccine

PCV13 = Pneumococcal conjugate vaccine (protects against 13 serotypes of pneumococcal)

PCVB = Pneumococcal conjugate vaccine booster

MenB = Meningococcal Group B

MenB (Booster) = Meningococcal Group B booster

MMR1 = Measles, mumps, and rubella vaccine (1st dose)

MMR2 = Measles, mumps, and rubella vaccine (2nd dose)

Hib/MenC = Hib/MenC booster vaccine

DTP/Pol = 4-in-1 booster vaccine which protects against diphtheria, tetanus, pertussis and polio

Td/IPV = Protects against Tetanus, Diptheria and polio (teenage booster)

HPV = Human Papilloma Virus – protects against cancers and genital warts caused by HPV, including cervical cancer

MenACWY = Protects against Meningococaal Group A, C, W & Y

LAIV = Live Attenuated Influenza Vaccine

BCG = bacilli Calmette-Guerin vaccine which protects against tuberculosis (TB)

PPV23 = Pneumococcal polysaccharide Vaccine (protects against 23 serotypes of pneumococcal)

8. Appendices

Appendix 1: Routine childhood & adult immunisation schedule

The complete routine immunisation schedule — From September 2023

Age due	Diseases protected against	Vaccine given and trade name		Usual site[1]
Eight weeks old	Diphtheria, tetanus, pertussis (whooping cough), polio, *Haemophilus influenzae* type b (Hib) and hepatitis B	DTaP/IPV/Hib/HepB	Infanrix hexa or Vaxelis	Thigh
	Meningococcal group B (MenB)	MenB	Bexsero	Left thigh
	Rotavirus gastroenteritis	Rotavirus[2]	Rotarix[2]	By mouth
Twelve weeks old	Diphtheria, tetanus, pertussis, polio, Hib and hepatitis B	DTaP/IPV/Hib/HepB	Infanrix hexa or Vaxelis	Thigh
	Pneumococcal (13 serotypes)	Pneumococcal conjugate vaccine (PCV)	Prevenar 13	Thigh
	Rotavirus	Rotavirus[2]	Rotarix[2]	By mouth
Sixteen weeks old	Diphtheria, tetanus, pertussis, polio, Hib and hepatitis B	DTaP/IPV/Hib/HepB	Infanrix hexa or Vaxelis	Thigh
	MenB	MenB	Bexsero	Left thigh
One year old (on or after the child's first birthday)	Hib and MenC	Hib/MenC	Menitorix	Upper arm/thigh
	Pneumococcal	PCV booster	Prevenar 13	Upper arm/thigh
	Measles, mumps and rubella (German measles)	MMR	MMRvaxPro[3] or Priorix	Upper arm/thigh
	MenB	MenB booster	Bexsero	Left thigh
Eligible paediatric age groups[4]	Influenza (each year from September)	Live attenuated influenza vaccine LAIV[5,6]	Fluenz Tetra[3,6]	Both nostrils
Three years four months old or soon after	Diphtheria, tetanus, pertussis and polio	dTaP/IPV	Boostrix-IPV	Upper arm
	Measles, mumps and rubella	MMR (check first dose given)	MMRvaxPro[3] or Priorix	Upper arm
Boys and girls aged twelve to thirteen years	Cancers and genital warts caused by specific human papillomavirus (HPV) types	HPV[6]	Gardasil 9	Upper arm
Fourteen years old (school Year 9)	Tetanus, diphtheria and polio	Td/IPV (check MMR status)	Revaxis	Upper arm
	Meningococcal groups A, C, W and Y	MenACWY	Nimenrix	Upper arm
65 years old	Pneumococcal (23 serotypes)	Pneumococcal Polysaccharide Vaccine (PPV23)	Pneumovax 23	Upper arm
65 years of age and older	Influenza (each year from September)	Inactivated influenza vaccine	Multiple	Upper arm
65 from September 2023[7]	Shingles	Shingles vaccine	Shingrix	Upper arm
70 to 79 years of age (plus eligible age groups and severely immunosuppressed)[7]	Shingles	Shingles vaccine	Zostavax[3,7] (or Shingrix if Zostavax contraindicated)	Upper arm

Source: https://www.gov.uk/government/publications/the-complete-routine-immunisation-schedule

Appendix 2: Childhood and teenage vaccine uptake inequalities – Slope Index & Relative Index measures 2017, 2018, 2021, 2022, 2023

Vaccination	Age	Absolute range					Relative range					Slope Index of Inequality					Relative Index of Inequality				
		2017	2018	2021	2022	2023	2017	2018	2021	2022	2023	2017	2018	2021	2022	2023	2017	2018	2021	2022	2023
6-in-1*	12 months	4.15	4.67	5.66	6.4	5.3	0.96	0.95	0.94	0.9	0.9	5.2	6.0	5.7	9.1	6.6	0.05	0.06	0.06	0.10	0.07
MenB	12 months	3.96	4.11	4.95	5.81	4.82	0.96	0.96	0.95	0.94	0.95	4.7	4.9	5.1	7.9	6.3	0.05	0.05	0.05	0.08	0.07
PCV	12 months	4.58	3.99	3.86	3.06	3.14	0.95	0.96	0.96	0.97	0.97	5.6	5.1	3.9	4.8	3.7	0.06	0.05	0.04	0.05	0.04
Rotavirus	12 months	3.93	4.70	6.04	6.35	5.20	0.96	0.95	0.94	0.93	0.94	4.9	5.8	5.9	10.0	7.2	0.05	0.06	0.06	0.11	0.08
MMR1	24 months	6.35	8.34	7.34	6.44	7.53	0.93	0.91	0.92	0.93	0.92	8.3	10.8	10.8	7.5	10.7	0.09	0.12	0.12	0.08	0.11
Hib/MenC	24 months	6.19	7.30	7.16	7.27	7.21	0.94	0.92	0.93	0.93	0.92	8.3	9.3	10.4	8.6	11.0	0.09	0.10	0.11	0.09	0.12
PCV booster	24 months	6.68	6.88	6.05	6.03	6.89	0.93	0.93	0.94	0.94	0.93	8.6	8.9	8.9	7.2	10.4	0.09	0.10	0.10	0.08	0.11
Men B Booster	24 months		7.85	7.40	7.44	8.06		0.92	0.92	0.92	0.92		9.8	10.9	8.5	11.8		0.11	0.12	0.09	0.13
4-in-1	5 years				8.72	10.91				0.91	0.88				10.1	15.5				0.11	0.18
MMR2	5 years				9.21	10.57				0.90	0.89				10.9	14.7				0.12	0.17
HPV Dose1**	Teenage (S3)	8.26	0.43	3.68	13.25	16.97	0.91	1.00	0.96	0.86	0.81	10.3	2.6	4.0	16.5	22.4	0.11	0.03	0.04	0.19	0.27
Td/IPV booster	Teenage (S4)	10.59	19.07	15.49	12.80	26.29	0.88	0.78	0.83	0.86	0.70	15.8	24.2	18.2	16.1	32.4	0.19	0.31	0.21	0.19	0.45
MenACWY	Teenage (S4)	10.84	19.09	15.05	13.33	27.02	0.88	0.78	0.84	0.85	0.69	16.1	24.0	17.6	16.7	33.3	0.19	0.31	0.21	0.19	0.46

**DTP/Pol/Hib (5-in-1) only in 2017*

*** Girls only 2017-2022; all 2022*

Appendix 3: Summary of childhood immunisation uptake

Immunisation	Year ending 2022 (%)	Year ending 2023 (%)	Change from previous year
Uptake by 12m			
5-in-1/6-in-1	94.6	93.8	↓ -0.8
PCV	95.9	95.7	↓ -0.2
Rotavirus	92.1	91.4	↓ -0.7
MenB	94.2	93.4	↓ -0.8
Uptake by 24m			
5-in-1/ 6-in-1	95.8	95.5	↓ -0.3
MMR1	92.9	93.2	↑ 0.3
Hib/MenC	92.6	93.0	↑ 0.4
PCVB	92.8	92.9	↑ 0.1
MenB Booster	92.1	92.7	↑ 0.6
Uptake by 5yr			
6-in-1	96.6	96.3	↓ -0.3
MMR1	95.4	95.7	↑ 0.3
Hib/MenC	95.2	95.3	↑ 0.1
4-in-1	88.3	87.8	↓ -0.5
MMR2	88.0	88.0	_ 0.0

Appendix 4: Summary of teenage immunisation uptake

Immunisation		Uptake at end of school year 2021/22 (%)	Uptake at end of school year 2022/23 (%)	Percentage point change from previous
HPV				
S1	Girls	68.9	70.4	↑ 1.5
	Boys	55.8	59.9	↑ 4.1
S2	Girls	83.6	75.3	↓ -8.3
	Boys	76.2	65.2	↓ -11.0
S3	Girls	88.9	84.5	↓ -4.4
	Boys	83.1	79.0	↓ -4.1
S4	Girls	92.9	89.4	↓ -3.5
	Boys		84.4	NA
Td/IPV booster				
S3		67.3	59.0	↓ -8.3
S4		86.7	72.2	↓ -14.5
MenACWY				
S3		67.5	59.0	↓ -8.5
S4		86.3	72.4	↓ -13.9