



Annual Epidemiological Report

September, 2019

Early infectious syphilis in Ireland, 2018

Key Facts

- There were 484 confirmed cases of early infectious syphilis (EIS) notified in 2018
- The notification rate increased to 10.2 per 100,000 population; a 21% increase since 2017 (8.4/100,000) and continuing the increasing trend since 2013
- This upward trend has continued in 2019; provisional EIS notification data show an increase of 69% up to 31st August, 2019 compared with the number reported for the same period in 2018
- 96% of cases were among males
- The median age was 34 years (range:16-76 years)
- The highest rate in males was in 30-34 year olds (57.2 per 100,000 population) and in females was in 20-24 year olds (6.6 per 100,000 population)
- The majority (78%) of cases were reported by HSE East
- Where mode of transmission was recorded, 86% of cases were in men who have sex with men (MSM) giving a notification rate of 357/100,000 MSM aged 18-64 years
- Where HIV status was recorded, 40% of EIS cases were co-infected with HIV
- 25% of cases were consistent with syphilis reinfection. Of these, 96% of reinfections were in MSM and 68% of reinfections were among cases previously diagnosed with HIV

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Introduction

Syphilis is an infectious disease caused by the bacterium *Treponema pallidum*. Syphilis is usually transmitted by sexual contact, and can also be transmitted from mother to child *in utero*.

Syphilis infection is divided into stages (primary, secondary, early latent, late latent and tertiary infection). Primary, secondary and early latent syphilis are sexually infectious and are collectively termed early infectious syphilis (EIS). Individuals with late latent or tertiary syphilis are not sexually infectious.

If untreated, syphilis infection will progress. Symptoms of syphilis in adults vary by stage and can range from painless lesions (chancres) and eruptions on mucous membranes and skin during the primary and secondary phases (3-11 weeks following infection), to more severe symptoms in the tertiary phase and for babies born to mothers with untreated syphilis. [1] Further details on syphilis can be found in the syphilis [factsheet](https://www.sexualwellbeing.ie) at <https://www.sexualwellbeing.ie>.

The earlier an infection is diagnosed and treated, the greater the chance of preventing onward transmission, however individuals with primary and secondary syphilis do not always experience clinical symptoms, therefore may not seek treatment.

Data collection

In Ireland, EIS is notifiable under the Infectious Disease Regulations [2]. Case based data on syphilis has been collected in Ireland since 2000, with all cases reported via the Computerised Infectious Disease Reporting (CIDR) system from mid-2013 onwards.

The case definition for EIS has evolved in recent years. In January 2014, the case definition was updated so that only laboratory diagnosed EIS and re-infections of syphilis became notifiable; cases with no evidence of current infection were no longer notifiable (see Appendix 1 for case definition). Laboratory diagnosed notifications were reviewed, staged, and subsequently deactivated in the CIDR system by Public Health Departments if they did not meet the EIS case definition, as determined by clinical assessment.

A subsequent review of notifications made by HSE East during quarter one of 2014 found that 47% of laboratory diagnosed notifications had to be later deactivated, a task that was

time consuming for both STI clinics and Public Health Departments, and had a time lag of up to six months following initial notification.

In July 2016, the laboratory criteria were refined and the notification process was simplified, leading to fewer notifications of cases that did not meet the case definition, and more timely data to inform the response on the increase in EIS amongst men who have sex with men (MSM). Since July 2016, laboratories are requested to notify any new case of EIS that fits one or more of the updated laboratory criteria listed in Appendix 2, and any syphilis re-infection meeting the laboratories own internal criteria. All new cases notified are assumed to be EIS (stage of infection not otherwise specified) until the enhanced form is received. This more sensitive case definition was expected to increase the total number of cases reported from 1st July 2016 onwards. The syphilis data collection forms used from January 2014 and July 2016 onwards are shown in Appendix 3 and 4 respectively.

Syphilis enhanced forms are completed by the practice or clinic where syphilis was first identified and provided to Departments of Public Health who enter data onto CIDR. In 2018, forms were completed for 71% of cases; the proportion completed differed among HSE areas (range: 26%-96%). A summary by HSE area is provided in appendix 5.

There were 506 notifications of syphilis in Ireland during 2018. Of these, 20 were notified as possible EIS and two as probable EIS and are excluded from this analysis as they do not meet the laboratory notification criteria.

Epidemiology

Cases and notification rates

There were 484 notifications of EIS in Ireland during 2018; the notification rate (NR) increased by 21% to 10.2 per 100,000 population, when compared to 2017 (n=398; NR 8.4/100,000) (Figure 1). The increase in EIS cases notified in 2018 should be interpreted with caution, and may be partially explained by an update to the laboratory criteria and procedure for notifying EIS which increased the sensitivity of reporting from July 2016 onwards, discussed further on page 15.

The increase in EIS notification rate between 2017 and 2018 was less than that seen between 2016 (6.4/100,000) and 2017. During 2018 there was a marked increase in notifications among MSM from August onward and this increase has been sustained in 2019 (Figure 2). In the first half of 2018 there was an average of 23 EIS notifications per

month among MSM. In the second half of 2018 this rose to 28 notifications per month among MSM and the average up to the end of August, 2019, is 35 notifications per month among MSM. The case definition was further refined in January 2019 to include probable cases though the impact of this change up to August, 2019, is small with probable cases accounting for just 5% of cases notified.

Four cases of neurosyphilis were reported in 2018, the same number as reported in 2017. A summary of EIS cases diagnosed in 2014-2018 is shown in Table 1.

In 2018, the NR among males increased to 19.6 per 100,000 male population compared to 16.2 per 100,000 in 2017 and 12.5 per 100,000 in 2016. The rate among females increased slightly, to 0.9 per 100,000, compared to 0.4 and 0.7 per 100,000 in 2016 and 2017, respectively.

Figure 1: Notification rate of early infectious syphilis by sex in Ireland, 2000-2018

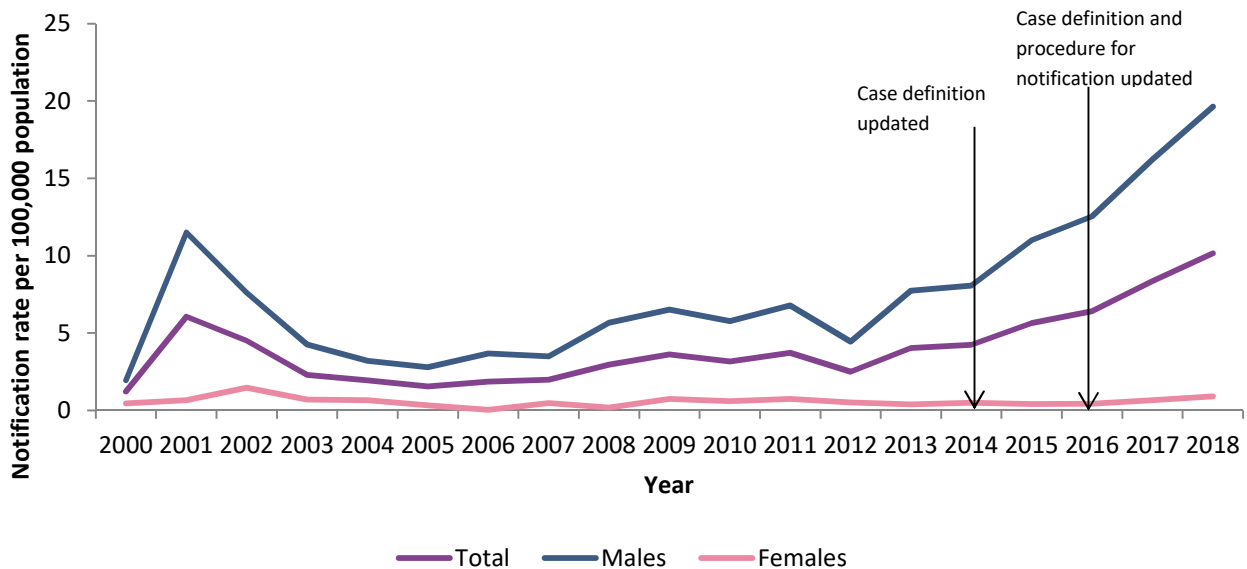
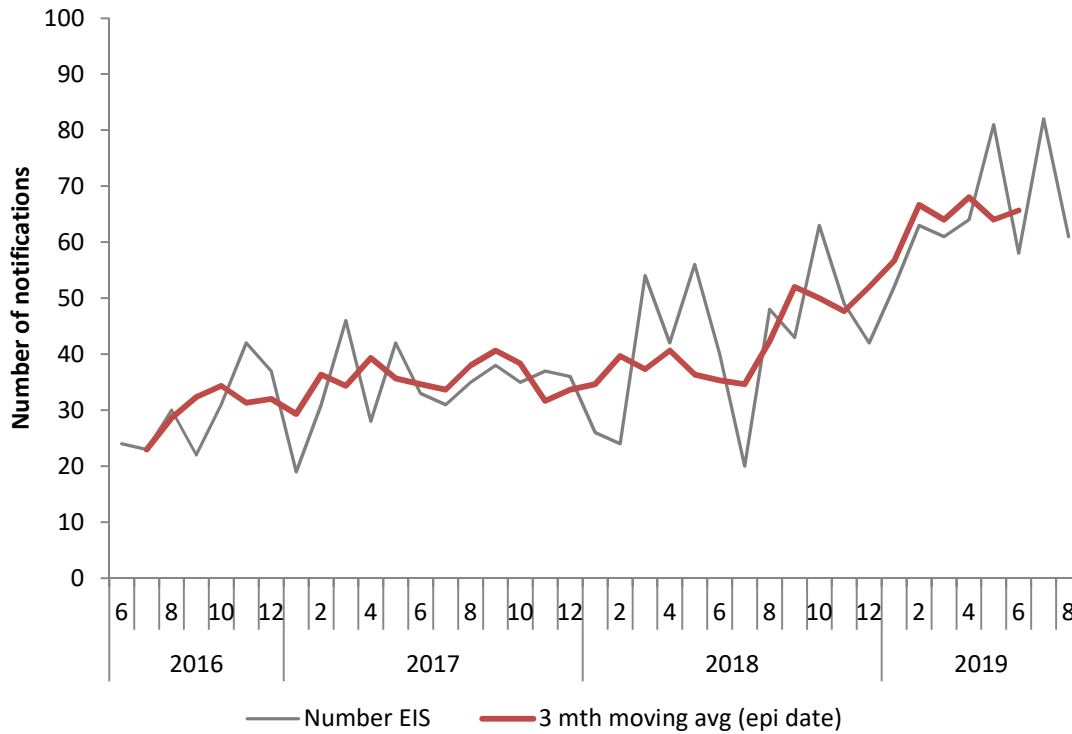


Figure 2: Number and 3 month moving average* of EIS notifications in Ireland, July 2016 – Aug. 2019

*3 month moving average is calculated using an epidemiological date which uses the date of onset of illness or the closest available date (such as specimen or diagnosis date) rather than date of notification to public health; this minimises the impact of reporting artefacts (such as late or batch notifications) on trend analysis

Table 1 Summary of trends in early infectious syphilis in Ireland, 2014-2018

		2014	2015	2016	2017	2018
		n (%)	n (%)	n (%)	n (%)	n (%)
Total number of cases		202	269	305	398	484
Rate per 100,000 population		4.4	5.9	6.4	8.4	10.2
Stage of infection	Primary syphilis	119 (58.9)	135 (50.2)	N.A.	N.A.	N.A.
	Secondary syphilis	40 (19.8)	60 (22.3)	N.A.	N.A.	N.A.
	Early latent syphilis	43 (21.3)	74 (27.5)	N.A.	N.A.	N.A.
Sex	Males	190 (94.1)	259 (96.3)	295 (96.7)	382 (96.0)	462 (95.5)
	Females	12 (5.9)	10 (3.7)	10 (3.3)	16 (4.0)	22 (4.5)
	Male to female ratio	16	26	30	24	21
Age	Median age (years)	32	33	33	34	34.5
	Age range (years)	19-70	20-65	18-73	17-71	16-76
Probable mode of transmission	Men who have sex with men (MSM)	142 (70.3)	221 (82.2)	222 (72.8)	250 (62.8)	310 (64.0)
	Heterosexuals	36 (17.8)	33 (12.3)	29 (9.5)	36 (9.0)	50 (10.3)
	Mother to child	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.3)	0 (0.0)
	Other	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (0.4)
	Unknown	42 (11.9)	15 (5.6)	54 (17.7)	111 (27.9)	122 (25.2)
Syphilis in pregnancy	Diagnosed in pregnancy	3	1	2	4	1
	Rate per 1,000 births	0.04	0.02	0.03	0.06	0.02
Region of birth	Ireland	100 (49.5)	124 (46.1)	143 (46.9)	139 (34.9)	173 (35.7)
	Abroad	75 (37.1)	118 (43.4)	99 (32.5)	130 (32.7)	177 (36.6)
	Unknown	27 (13.4)	27 (10.0)	63 (20.7)	129 (32.4)	134 (27.7)
Probable country of infection	Ireland	109 (54.0)	193 (71.8)	178 (58.4)	184 (46.2)	239 (49.4)
	Abroad	44 (21.7)	39 (14.5)	30 (9.8)	40 (10.1)	55 (11.4)
	Unknown	49 (24.3)	37 (13.4)	97 (31.8)	174 (43.7)	190 (39.3)
HIV status	Positive	50 (24.8)	78 (29.0)	104 (34.1)	106 (26.6)	138 (28.5)
	Negative	133 (65.8)	165 (61.3)	136 (44.6)	171 (43.0)	211 (43.6)
	Unknown	19 (9.4)	26 (9.7)	65 (21.3)	121 (30.4)	135 (27.9)
	% positive where known	30.0	32.1	43.3	38.3	39.5
Symptomatic	Yes	60	96	107	103	123
	% where known	33.5	37.0	46.9	41.9	38.1
	No	119	163	121	144	200
	% where known	66.5	63.0	53.1	54.5	61.9
Syphilis reinfection	Yes	14 (6.9)	10 (3.7)	22 (7.2)	25 (6.3)	121 (25.0)

N.A., data on stage of infection not collected from July 2016 onwards

HSE area

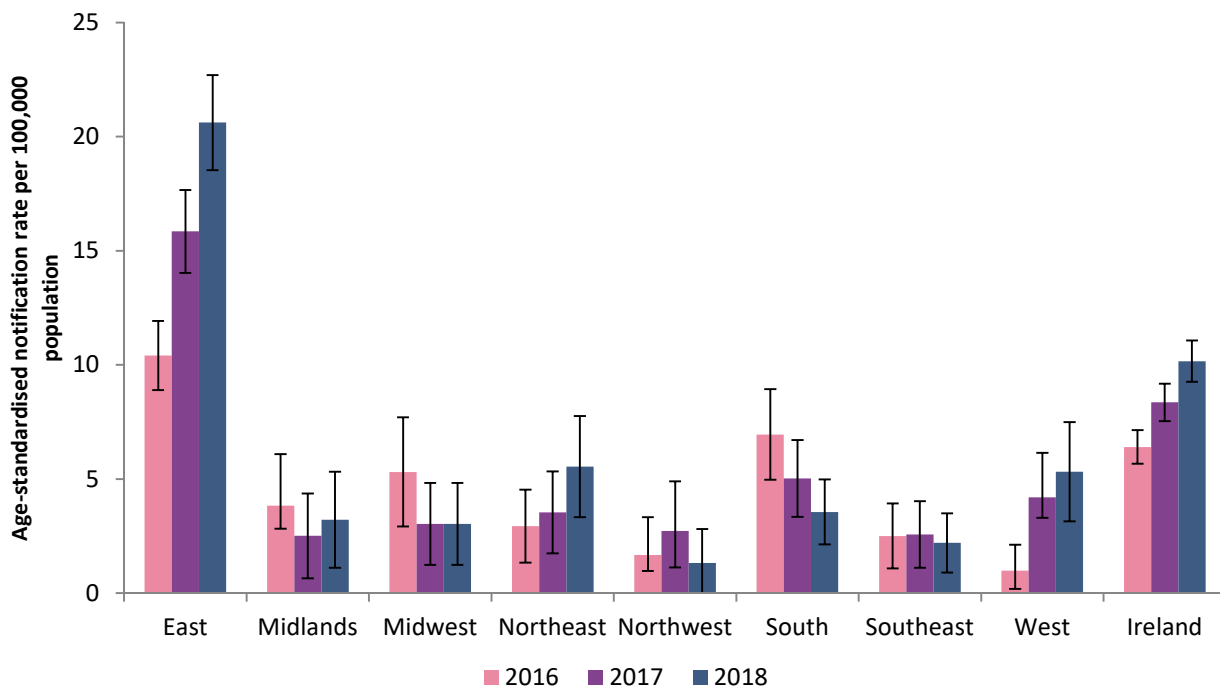
Cases were reported from all HSE areas with the majority (78%) reported in HSE East (Table 2) (see technical note 4 for details of HSE areas).

Data on HSE area should be interpreted with caution. HSE area is based on the clinic and not the patient's address for the majority of cases. Consequently, rates and numbers of cases by HSE area reflect the location of STI services as well as differences in reporting practices by clinics and clinicians from one area to another. A list of STI clinics is available at <https://www.sexualwellbeing.ie/>.

Table 2: Notifications of early infectious syphilis in Ireland by HSE area in Ireland, 2018

HSE area	Notifications	
	n	%
East	379	78.3
Midlands	9	1.9
Midwest	11	2.3
Northeast	24	5.0
Northwest	3	0.6
Southeast	11	2.3
South	24	5.0
West	23	4.8

The age-standardised notification rate (ASNR) was significantly lower than the national rate for all HSE areas except for HSE East (Figure 3). The ASNR in HSE East was 20.6/100,000 population, a 30% increase from 2017 and significantly higher than the national rate of 10.2 per 100,000 population.

Figure 3: Age-standardised notification rate of early infectious syphilis by HSE area in Ireland, 2016-2018

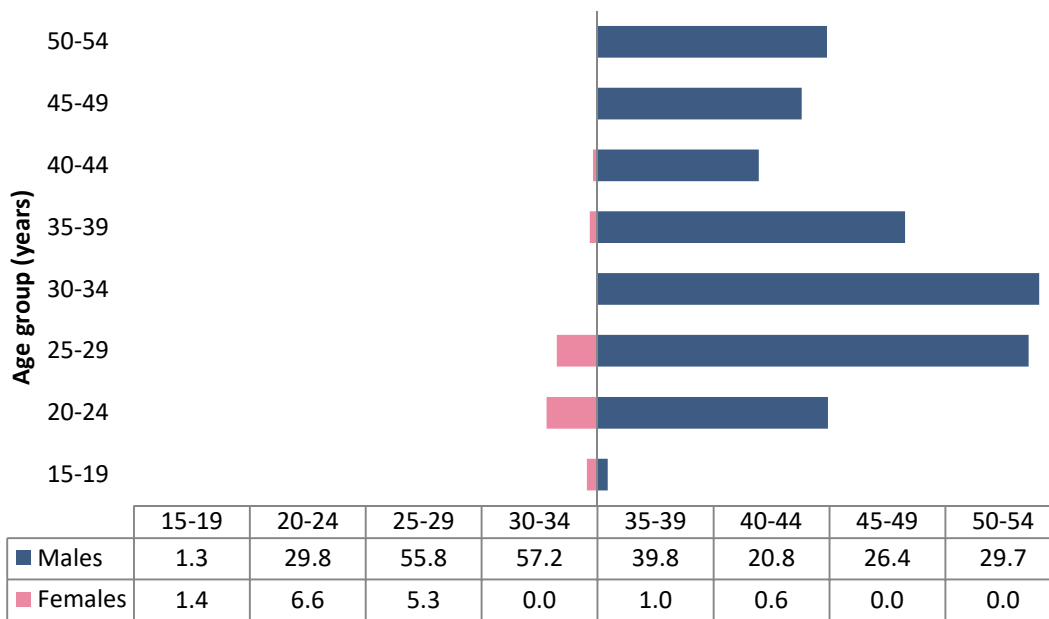
Age and sex

Ninety-six percent (n=462) of cases were among males and four percent (n=22) were among females, giving a male to female ratio of 21:1, a decrease from 24:1 in 2017.

Eleven percent of cases were reported in young people aged 15 to 24 years old, a decrease from 13% in 2017. The median age was 35 years overall (range: 16-79 years); 35 years in males (range: 19-79 years) and 25 years in females (range: 16-50 years).

The highest age-specific rate in 2018 was in 25-29 year olds (29.9 per 100,000 population). The highest rate in males was in 30-34 year olds (57.2 per 100,000 population) and in females was in 20-24 year olds (6.6 per 100,000 population) (Figure 4).

The EIS notification rate among males continued to increase in 2018 to 31.9 per 100,000 population, from 26.4/100,000 in 2017 and 20.4/100,000 in 2016.

Figure 4: Rate of early infectious syphilis by sex and age group in Ireland, 2018*

Notification rate per 100,000 population

*Excludes cases for individuals aged over the 55 years (n=39).

Antenatal syphilis

Information on the number of pregnant women screened for syphilis is not collected in Ireland, therefore it is not possible to report data as a positivity rate per 1,000 pregnancies. In total, one of 22 females diagnosed with EIS was pregnant at the time of diagnosis, giving a notification rate of 0.02 antenatal cases per 1,000 live births, a decrease on the rate of 0.06 per 1,000 live births in 2018 (see technical note 7 for source of information on births).

Congenital syphilis

There were no cases of congenital syphilis notified in 2018.

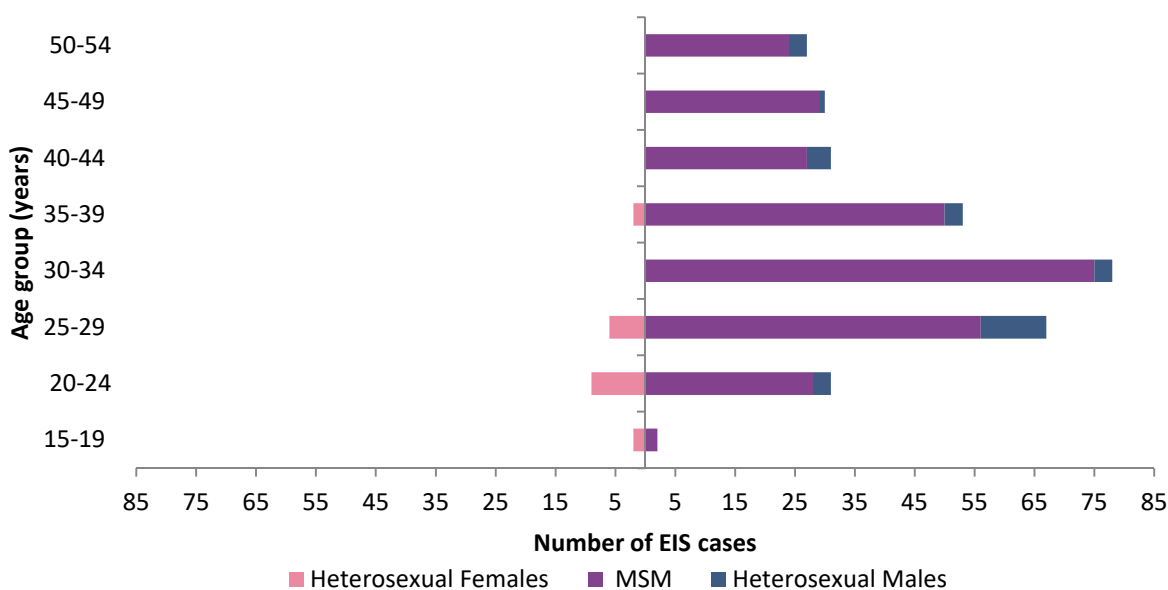
Mode of transmission

Of the 484 EIS cases in 2018, 310 (64%) were among MSM and 50 (10%) were among heterosexuals (19 female and 31 male) and mode of transmission was reported as other

for two cases. Mode of transmission was unknown for 25% (n=122) of cases, a decrease from 28% in 2017. Where mode of transmission is known, the most common age group among MSM was 30-34 years, 20-24 years among heterosexual females, and among heterosexual males was 25-29 years (see Figure 5 and Table 3 which describe EIS cases by mode of transmission).

The notification rate among MSM increased by 13% to 356.6 per 100,000 MSM (or 3.5 per 1,000 MSM) in 2018 from 287.6 per 100,000 MSM in 2017 and is a continuance of increasing trend since 2013 (Figure 6). There was a slight decrease in the percentage of male cases for whom mode of transmission was missing (26% in 2018, down from 28% in 2017), see Figure 7. Interpretation of trends by mode of transmission is difficult given the proportion of cases with missing data in 2016, 2017 and 2018.

Figure 5: Number of early infectious syphilis cases by age group, sex and mode of transmission where known (n=286) , in Ireland, 2018**



**Excludes 124 cases where mode of transmission is unknown and 39 cases for individuals over the age of 55. Also excludes two cases of other transmission.

Table 3: Characteristics of individuals diagnosed with early infectious syphilis by mode of transmission where known, in Ireland, 2018[†]

		MSM	Heterosexual Males	Heterosexual Females
		% (n)	% (n)	% (n)
Total number of cases		310	31	19
Age	Median age (years)	34	32	24
	Age range (years)	19-76	21-56	19-39
Country of birth	Born in Ireland	41.0 (127)	51.6 (16)	42.1 (8)
	Born abroad	42.3 (131)	25.8 (8)	42.1 (8)
	Unknown	16.8 (52)	22.6 (7)	15.8 (3)
Probable country of infection	Acquired in Ireland	61.6 (191)	64.5 (20)	47.4 (9)
	Acquired abroad	11.3 (35)	22.6 (7)	36.8 (7)
	Unknown	27.1 (84)	12.9 (4)	15.8 (3)
HIV status	HIV positive	34.2 (106)	19.4 (6)	5.3 (1)
	HIV negative	48.4 (150)	74.2 (23)	84.2 (16)
	Unknown	17.4 (54)	6.5 (2)	10.6 (2)
	% positive where known	41.4	20.7	5.9

[†]Excludes 122 cases where mode of transmission is unknown and two cases of other transmission.

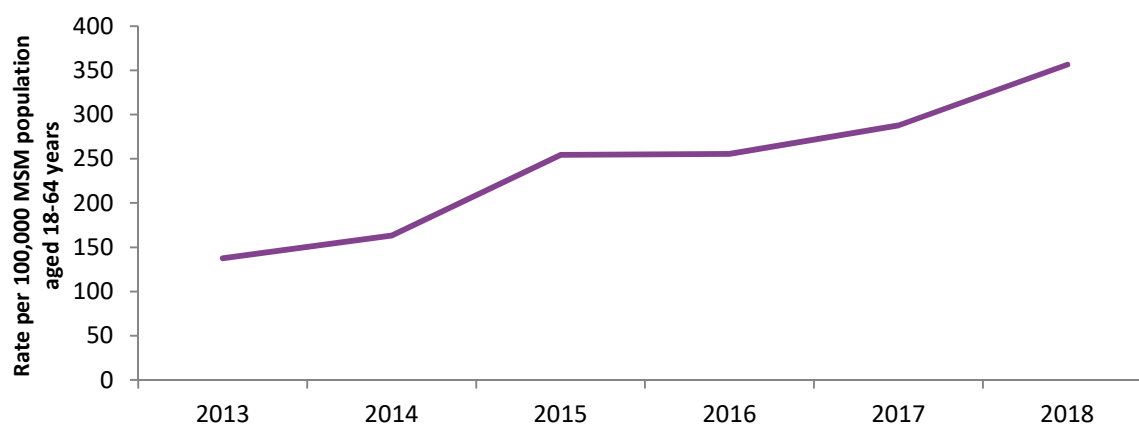
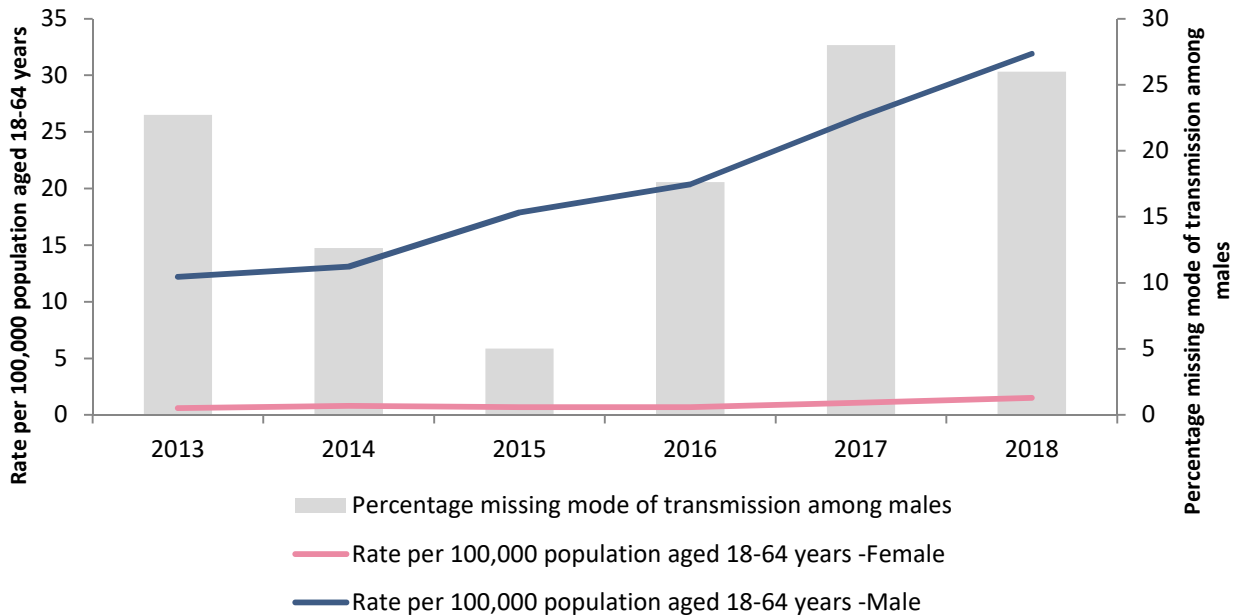
Figure 6: Rate of EIS notifications in MSM per 100,000 population aged 18-64 years in Ireland, 2013-2018

Figure 7: Rate of EIS notifications in males and females per 100,000 population aged 18-64 years in Ireland, 2013-2018



Country of birth

Country of birth was unknown for 28% (n=134) of cases, 36% (n=173) were born in Ireland and 34% (n=165) were born abroad. Of those born abroad, just under half (47%) originated from Latin America, 24% originated from Western Europe and 20% from Central or Eastern Europe.

Country of infection

Forty nine percent (n=239) of individuals with EIS acquired their infection in Ireland, a decrease compared to 56% in 2017, however the proportion of cases with unknown country of infection decreased to 39% in 2018, compared to 44% in 2017, which makes analysis of trends difficult.

HIV diagnosis

Twenty nine percent (n=138) of individuals diagnosed with EIS had previously had an HIV diagnosis at the time of their EIS diagnosis, 44% were not diagnosed with HIV and HIV status was unknown for 28% of cases. Excluding those whose HIV status was unknown,

40% of individuals diagnosed with EIS had an HIV diagnosis at the time of their EIS diagnosis.

The majority of cases with an HIV diagnosis were male (n=137). Fourteen percent (n=20) were aged 29 years or younger, 45% (n=62) were aged 30-39 years and 23% (n=32) were aged 40-49 years.

Year of HIV diagnosis was reported for 128 cases and was unknown for 10. Twenty percent (n=27) were newly diagnosed with HIV in 2018, 6% (n=8) in 2017 and 11% (n=15) in 2016. Seventy-seven percent (n=106) of cases were in MSM, 5% (n=7) were in heterosexuals and mode of transmission was unknown for 18% (n=24) of cases.

The proportion of EIS cases among MSM with an HIV diagnosis was 34% (n=106), compared to 32% in 2017 and 39% in 2016, however mode of transmission was not reported for a large proportion of cases in 2018 (25%) therefore trends in mode of transmission are difficult to interpret.

Other sexually transmitted co-infections

Case-based data on STIs (except ano-genital warts and non-specific urethritis) have been notified via CIDR by all HSE areas since 2013. As a result, individuals can be identified on CIDR as having more than one STI across different diseases.

Among patients diagnosed with EIS in 2018, there were 193 cases of STIs other than HIV diagnosed during 2018 (Table 4).

Since full patient identifiers were not provided for all cases on CIDR, the true figure is likely to be higher. In addition, the large volume of notifications in HSE East and the use of more automated processes for processing notifications in CIDR which do not allow for de-duplication of cases reported more than once, may have contributed to an under-estimation of other infections in cases of EIS in HSE East.

Table 4: Number of STI and hepatitis B/C notifications in 2018 among EIS cases diagnosed in Ireland in 2018^{††}

Disease	Number of notifications
Chlamydia trachomatis infection	82
Gonorrhoea	90
Hepatitis B (acute and chronic)	5
Hepatitis C	1
Herpes simplex (genital)	13
Lymphogranuloma venereum	2

^{††}Patients may be counted more than once in this table.

Syphilis reinfection

In 2018, the proportion of cases that were consistent with reinfection rose to 25% (n=121), higher than reported in recent years (Table 1). The increase in cases in 2018 appears to be due in part to the improved reporting of reinfections from one laboratory. Since March, 2018, an average of 23% of cases were reported as reinfections each month compared to 7% for 2017 and the first two months of 2018.

Of the 121 cases with syphilis reinfection, where known, 68% (n=60) were previously diagnosed with HIV. Where mode of transmission was known, 96% of syphilis reinfections (n=81) were among MSM.

Service where syphilis first identified

Seventy four percent (n=356) of EIS cases were identified at a dedicated STI clinic, compared to 71% in 2017, and 14% of EIS cases were identified in general practice, compared to 19% in 2017. The majority of cases among MSM and heterosexuals were identified at an STI clinic (see Table 5).

Table 5: Early infectious syphilis cases by mode of transmission and service where syphilis first identified in Ireland, 2018

Service	MSM		Heterosexual		Unknown		Other		Total	
	n	%	n	%	n	%	n	%	n	%
Antenatal	0	0.0	1	2.0	0	0.0	0	0.0	1	0.2
Dedicated STI clinic	255	82.3	28	57.1	71	58.2	2	100.0	356	73.6
General practice	34	11.0	14	28.6	19	15.6	0	0.0	67	13.8
Infectious disease clinic	12	3.9	1	2.0	21	17.2	0	0.0	34	7.0
Other	8	2.5	5	10.0	9	7.4	0	0.0	22	4.5
Unknown	1	0.3	1	2.0	2	1.6	0	0.0	4	0.8
Total	310	100.0	50	100.0	122	100.0	2	100.0	484	100.0

Discussion

The notification rate of EIS increased by 21% in 2018, to 10.2 per 100,000 population, the highest rate on record since enhanced surveillance of syphilis began in 2000.

Provisional data up to 31st August, 2019, show a further increase in EIS notifications in 2019, to 522 cases, 69% higher compared to the number reported for the same period in 2018 (n= 310) (Figure 2).

Continuing the trend from 2017, the increase in EIS notifications in 2018 was mostly in males, a 20% increase in the rate of notifications compared to 2017. There were also more cases notified in females in 2018, however these numbers are low and should be interpreted with caution.

Recent improvements to the case definition and to the notification procedure however make longer term trends difficult to analyse. The number of EIS cases in Ireland may have been underestimated prior to July 2016 due to the requirement at that time for completion of the enhanced surveillance form by clinicians before a notified case was included in national reporting as EIS. In the first half of 2016, only 52% of forms were received (compared to 61% in 2015 and 73% in 2014), therefore the true number of cases may have been higher than reported. From July 2016 onwards, this procedure changed, along with the case definition, so that all cases meeting a new, more sensitive, case definition, are reported, even if the enhanced form has not yet been received, resulting in more accurate and timely data on the number of EIS cases, but less enhanced data for individual cases.

In 2018, the proportion of cases with completed enhanced forms was 71%. Information from enhanced forms is crucial to interpreting trends in EIS transmission in Ireland and the increase in EIS notifications in 2018 highlights the need for strengthening surveillance. This is particularly important in HSE East, which is the centre of transmission among MSM and where 69% of forms were completed.

Where mode of transmission was known, the number of EIS cases among MSM remained high in 2018 (86%). Most (79%) cases among MSM were reported by HSE East, highlighting that this area continued to be the most common area of transmission among MSM in Ireland. The proportion of cases where mode of transmission was not reported decreased slightly in 2018 (25% vs. 28% in 2017) but is higher than 2016 (18%).

The proportion of EIS cases that also had an HIV diagnosis at the time of their EIS diagnosis increased slightly in 2018 (from 27% to 29%), however the proportion of cases which were missing data on HIV status in 2018 remained high (28% in 2018 and 30% in 2017) when compared to previous years (21% in 2016, 10% in 2015). The high proportion of EIS cases reported as reinfections among MSM (96% where known) and reported as having an HIV diagnosis at the time of their EIS diagnosis (68%) emphasises the importance of regular STI testing among HIV positive MSM. Individuals with multiple syphilis reinfections may play an important role in syphilis transmission [4].

The increase in syphilis in Ireland is occurring against a background of concerns about HIV, gonorrhoea and other STIs in men who have sex with men (MSM), since late 2015. In early 2016, a national outbreak response group was established to describe the epidemiology and the population(s) at risk; to identify reasons for the increases seen; and to develop a response plan to detect, interrupt onward transmission of infection and prevent further cases. The response plan was published in June 2017 [5], and in September 2018, the outbreak response group was closed, with a pathway for the outstanding actions to be overseen by an MSM Health Committee, convened by Sexual Health and Crisis Pregnancy Programme in 2019. This committee is evaluating the response plan in the context of the further increases in syphilis since August, 2018.

Similar increases have been observed in other developed countries in recent years. In 2018, Health Protection Scotland reported the highest number of EIS cases (n=455) recorded since 2002/2003, exceeding the previous highest level recorded in 2017 [6].

Between 2013 and 2018 in England, cases of syphilis increased from 3,344 to 7,541 with 75% of diagnoses among MSM. Cases among heterosexuals and cases of congenital syphilis have also increased over this time period. On 4th June, Public Health England

launched an action plan to tackle the rise in syphilis cases [7]. This has 4 pillars as follows: increase testing frequency of high-risk MSM and re-testing of syphilis cases after treatment; deliver partner notification to BASHH standards; maintain high antenatal screening coverage and vigilance for syphilis throughout antenatal care; and sustain targeted health promotion. The authors note that while a wide range of control measures already exists, the continued increase in cases point to variable application of these and that new or additional measures at national and local levels need to be considered.

Between 2013 and 2018 in the United States, there was a 73% increase in the rate of early syphilis (to 9.5 per 100,000 population) and MSM continue to account for the majority of cases in 2017 (latest available data). Cases of congenital syphilis reached a 20 year high in 2017. The rate per 100,000 live births increased by 44% in 2017 compared to 2016 (from 16.2 to 23.2) [8].

Technical notes

1. Data for this report were extracted from CIDR on 9th September 2019, and were correct at the time that data were extracted. Information from previous years is updated on an ongoing basis in CIDR, therefore data in this report may be updated in future reports.
2. While efforts are made to remove duplicate records from these data, it is not always possible to link and remove all duplicate records and some patients or disease events may be counted more than once.
3. Percentages are rounded up in the text and provided to one decimal place in tables.
4. The counties covered by each HSE area are as follows: HSE East (E): Dublin, Kildare & Wicklow; HSE Midlands (M): Laois, Longford, Offaly & Westmeath; HSE Midwest (MW): Clare, Limerick & N. Tipperary; HSE Northeast (NE): Cavan, Louth, Meath & Monaghan; HSE Northwest (NW): Donegal, Leitrim & Sligo; HSE South (S): Kerry & Cork; HSE Southeast (SE): Carlow, Kilkenny, S. Tipperary, Waterford & Wexford; HSE West (W): Galway, Mayo & Roscommon.
5. Age-standardised notification rates were calculated using the direct method in which the national population was taken as the standard population. Population data were taken from Census 2016. Data were aggregated into the following age groups for the analysis: 0-4 years, 5-9 years, 10-14 years, 15-19 years, 20-24 years, 25-34 years, 35-44 years, 45-54 years, 55-64 years and 65 years.
6. The notification rate per 100,000 MSM population was 6% of the Irish male population aged between 18 and 64 years (Census 2016), as estimated by the Healthy Ireland survey, which is a nationally representative survey. [3]
7. Rate per 1,000 births was calculated using total number of births in 2018, reported by the Central Statistics Office <https://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/saveselections.asp>. Data are provisional and subject to revision.

Further information

- Previous years' reports are available at <https://www.hpsc.ie/a-z/sexuallytransmittedinfections/syphilis/surveillancereports/> and <https://www.hpsc.ie/a-z/sexuallytransmittedinfections/publications/stireports/>
- Keep up to date with HIV and STIs in Ireland at <https://www.hpsc.ie/a-z/sexuallytransmittedinfections/publications/stireports/stiweeklyreports/>

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References

1. Centers for Disease Control and Prevention, Syphilis CDC Fact Sheet, Accessed 01.10.2018 <https://www.cdc.gov/std/syphilis/stdfact-syphilis.htm>
2. HSE Health Protection Surveillance Centre. Infectious Diseases (amendment) Regulations 2018 S.I. No. 567 of 2018. 2018 : Ireland. 2018.
3. DoH. Healthy Ireland Survey. Dublin: Department of Health; 2015.
4. Kenyon C, Lynen L, Florence E, Caluwaerts S, Vandenbrouaene M, Apers L, Soentjens P, Van Esbroeck M, Bottieau E. *Syphilis reinfections pose problems for syphilis diagnosis in Antwerp, Belgium – 1992 to 2012*. Euro Surveill. 2014;19(45).
5. Action plan: Response to the national increase in HIV and STIs in MSM: 12th June, 2017. National MSM HIV/STI increase response group interventions subgroup. Available at https://www.hpsc.ie/a-z/specificpopulations/menwhohavesexwithmenmsm/guidance/MSM%20outbreak%20response%20action%20plan_June_2017.pdf
6. Public Health England. National STI surveillance data tables 2017 - Table 2. New STI diagnoses & rates by gender, sexual risk & age group, 2013 – 2017. <https://www.gov.uk/government/statistics/sexually-transmitted-infections-stis-annual-data-tables>
7. Syphilis in Scotland 2018: update. Health Protection Scotland; 28 May, 2019. Available at https://hpspubsrepo.blob.core.windows.net/hps-website/nss/2793/documents/1_syphilis-in-scotland-2018.pdf
8. Addressing the increase in syphilis in England: PHE action plan. Public Health England, London, June 2019. Available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/806076/Addressing_the_increase_in_syphilis_in_England_Action_Plan_June_2019.pdf

9. Centres for Disease Control and Prevention. Syphilis Surveillance Supplement 2013-2017. Atlanta: U.S. Department of Health and Human Services; 2019. Available at <https://www.cdc.gov/std/stats17/default.htm>
10. Centers for Disease Control and Prevention. Sexually Transmitted Disease Surveillance 2017-Syphilis. <https://www.cdc.gov/std/stats17/syphilis.htm> Accessed 09.11.2018.

Appendices

Appendix 1: Syphilis case definition, January 2014

Syphilis

(*Treponema pallidum*)

Clinical criteria

A case may be asymptomatic or present with:

A. Primary syphilis

Any person with one or several (usually painless) chancres in the genital, perineal, anal area, or mouth, or pharyngeal mucosa, or elsewhere

B. Secondary syphilis

Any person with at least one of the following:

- Diffuse maculo-papular rash often involving palms and soles
- Generalised lymphadenopathy
- Condyloma lata
- Enanthema
- Alopecia diffusa
- Ocular manifestations of early syphilis
- Neurological manifestations of early syphilis

C. Early latent syphilis (<1 year)

- Positive syphilis serology, no symptoms or signs of early syphilis and a negative reference syphilis screening test within previous 12 months.

Laboratory criteria

At least one of the following laboratory tests:

- Demonstration of *Treponema pallidum* in appropriate lesions, exudates or tissues by dark-ground microscopic examination
- Demonstration of *Treponema pallidum* in appropriate lesions, exudates or tissues by PCR
- Detection of *Treponema pallidum* antibodies (total antibodies e.g. TPHA, TPPA, CIA, or EIA) and additionally detection of Tp-IgM antibodies (e.g. IgM ELISA or immunoblot or 19S-IgM-FTA-abs) or cardiolipin non-Tp IgM (e.g. RPR, VDRL)

Epidemiological criteria:

NA

Case classification:

Possible:

NA

Probable:

NA

Confirmed: Any person meeting the clinical criteria for early syphilis, who also meets the laboratory criteria for case confirmation

Appendix 2: Syphilis case definition, July 2016

Syphilis

(*Treponema pallidum*)

Clinical criteria

A case may be asymptomatic or present with:

A. Primary syphilis

Any person with one or several (usually painless) chancres in the genital, perineal, anal area, or mouth, or pharyngeal mucosa, or elsewhere

B. Secondary syphilis

Any person with at least one of the following:

- Diffuse maculo-papular rash often involving palms and soles
- Generalised lymphadenopathy
- Condyloma lata
- Erythema
- Alopecia diffusa
- Ocular manifestations of early syphilis
- Neurological manifestations of early syphilis

C. Early latent syphilis (<1 year)

Positive syphilis serology, no symptoms or signs of early syphilis and a negative reference syphilis screening test within previous 12 months.

Laboratory criteria

For new cases, at least one of the following:

- Demonstration of treponemes in lesions, exudates or tissues from clinically appropriate sites by dark-ground microscopy
- Demonstration of treponemes in exudates or tissues from clinically appropriate sites by PCR
- Detection of *Treponema pallidum* antibodies (total antibodies) using EIA and TPHA/ TPPA and additionally detection of Tp-IgM antibodies (e.g. IgM ELISA or immunoblot or 19S-IgM-FTA-abs)
- Detection of *Treponema pallidum* antibodies (total antibodies) using EIA and TPHA/ TPPA and additionally detection of cardiolipin non-Tp IgM with RPR titre of $\geq 1:16$

For re-infections, laboratories should use their own internal criteria.

Epidemiological criteria:

NA

Case classification:

Possible:

NA


Probable:

NA


Confirmed:

Any person meeting the clinical criteria for early syphilis, who also meets the laboratory criteria for case confirmation

Appendix 3: Syphilis enhanced surveillance form, January 2014



Public Health Ontario
Syphilis Surveillance Form v6.0
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Section A: Patient Identifiers

Patient first name: _____ Patient surname: _____
 Patient Clinic ID: _____ Clinic/Practice Name/Service: _____
 Lab specimen ID: _____ Laboratory name: _____
 Sex: M F U Date of birth: _____

Section B: Stage of infection - please choose one

Primary Syphilis:
 Secondary Syphilis:
 Early latent syphilis (<1 year):
 Late Syphilis:

Section C: Patient Information (for completion for early syphilis cases)

County of residence (aka postcode): _____ HSE Area of residence: _____
 Country of birth: _____
 Ethnicity: White (not Hispanic/Latino) Black African Chinese Unknown Black Caribbean Black other Indian Mixed ethnicity Other (please specify) _____

Section D: Clinical Details (for completion for early syphilis cases)

Country of infection: _____ Probable plausibility of acquisition: _____
 Mode of Transmission: Penetrative STD (non-penetrative) Other Unknown _____
 Date of diagnosis: _____
 HIV status: Positive Negative Unknown If HIV positive, year of diagnosis: _____
 In the patient symptomatic? Yes No Unknown
 Is the patient pregnant? Yes No Unknown If yes, date of onset: _____
 Was the patient identified via contact tracing? Yes No Unknown If yes, period of gestation: _____
 Is the patient a commercial sex worker (CSW)? Yes No Unknown
 Did the patient have contact with a CSW? Yes No Unknown

Section E: Form completed by

Completed by: _____ Date: _____
 Position: Doctor Nurse Public health Health advisor

Comments

Definitions

Primary Syphilis:
Any person with one or several (usually painless) chancres in the genital, perineal, anal area, or mouth, or pharyngeal mucosa, or elsewhere.

Secondary Syphilis:
Any person with at least one of the following:
- Diffuse maculo-papular rash often involving palms and soles
- Generalised lymphadenopathy
- Condyloma lata
- Erythema
- Alopecia diffusa
- Ocular manifestations of early syphilis
- Neurological manifestations of early syphilis

Early latent syphilis (<1 year):
Positive syphilis serology, no symptoms or signs of early syphilis and a negative reference syphilis screening test within previous 12 months.

Please return this completed form to your local Department of Public Health.
See www.health.gov.on.ca/en/about/AboutChlamydiaGonorrhoeaSyphilis.htm for names and contact details.
A separate form is available from www.health.gov.on.ca/en/about/AboutChlamydiaGonorrhoeaSyphilis.htm for congenital cases.

Appendix 5: Number and percentage of enhanced surveillance forms returned to public health by HSE area, 2018

HSE area	Total Notifications	Number of enhanced forms returned	Percentage of enhanced forms returned
East	379	261	69
Midlands	9	8	89
Midwest	11	10	91
Northeast	24	23	96
Northwest	3	3	100
Southeast	11	11	100
South	24	24	100
West	23	6	26
Total	484	346	71