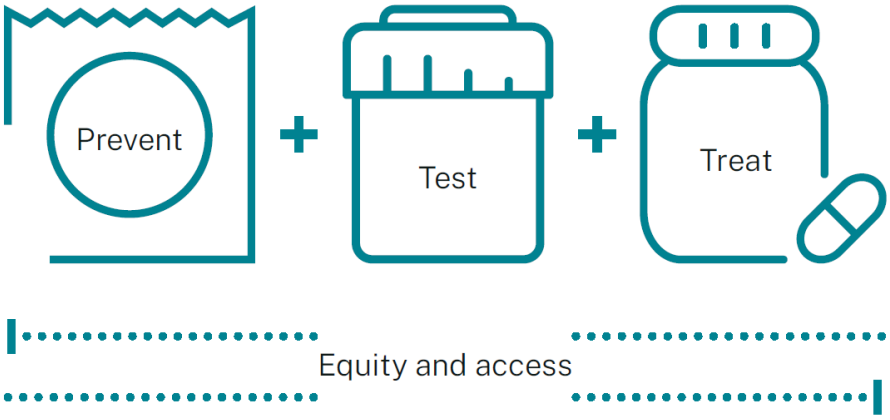
NSW SEXUALLY TRANSMISSIBLE INFECTIONS STRATEGY 2022–2026

January to December 2021 Data Report



Key Data

Notifications rates per 100,000 population

Sexually Transmissible Infection	2021	2020	% Difference
Chlamydia	**305.7**	**329.7**	**-7%**
Gonorrhoea	**91.0**	**118.2**	**-23%**
Infectious Syphilis	**21.2**	**20.8**	**+2%**
Lymphogranuloma venereum (LGV)	**0.79**	**0.96**	**-18%**

Number of tests

Sexually Transmissible Infection	2021	2020	% Difference
Chlamydia	**528,223**	**568,259**	**-8%**
Gonorrhoea (NAAT and culture)	**776,103**	**834,201**	**-7%**

Executive Summary

In 2021, New South Wales witnessed the lowest notification rates of chlamydia, gonorrhoea and lymphogranuloma venereum (LGV) in five years, however the notification rate of infectious syphilis increased. Reductions in chlamydia, gonorrhoea and LGV are likely to be driven by changes in sexual behaviours, service provision and access, including disruptions to screening programs and health-seeking behaviours as a result of COVID-19 restrictions. Additionally, the shift towards event driven or on-demand Pre-Exposure Prophylaxis (PrEP) among men who have sex with men (MSM) may impact notification rates in this group if testing frequency is reduced from the quarterly testing required for daily PrEP.

The notification rate of **infectious syphilis** increased by 2% between 2020 and 2021, with 21.2 notifications per 100,000 population. There has been a concerning increase in infectious syphilis rates in both metropolitan Sydney and regional and remote areas, in particular among females in regional areas. Females represent 7% of infectious syphilis notifications in 2021, and of those notified of reproductive age, 16.4% were pregnant. Additional work is being done to improve syphilis screening during pregnancy, with the target of eliminating congenital syphilis.

Unlike chlamydia and gonorrhoea, which can be more acute infections and therefore more likely to be diagnosed early, syphilis may take up to two years to present since last negative test, so a similar trend of reduction may not be evident until future reporting periods.

For **gonorrhoea**, the notification rate fell by 23% from 2020 to 2021; with 91 notifications per 100,000 population in 2021. LHDs reporting the highest gonorrhoea notification rates among males continued to be those in metropolitan Sydney, in particular South Eastern Sydney and Sydney LHDs, reflecting large concentrations of MSM residing in these areas. These populations also have a high uptake of PrEP, and are more regularly tested for STIs.

Among females, Illawarra Shoalhaven LHD had the highest gonorrhoea rate, followed by South Eastern Sydney and Sydney LHDs. The female gonorrhoea rate in the Illawarra Shoalhaven LHD has more than doubled since 2017, while female rates in Sydney and South Eastern Sydney decreased by 20% over this same period.

While there were no cases of antimicrobial resistant (AMR) gonorrhoea in 2021, an emerging risk in NSW, and nationally, is gonococcal strains with decreased susceptibility to ceftriaxone, and resistance to azithromycin (data not reported). As Australia's border opens to the rest of the world following the ease of COVID-19 border restrictions, there will be greater risk of AMR gonorrhoea. Future events with an increase in visitors from overseas, including World Pride 2023 in Sydney, will require close attention, alongside necessary improvements to surveillance of AMR gonococcal strains.

For **chlamydia**, both the annual number of chlamydia notifications and notification rate are the lowest recorded in the past five years. Since 2019, prior to the COVID-19 pandemic, the chlamydia notification rate has decreased 23% and is currently 16.5% lower than the 2017 rate. In 2021, 144 women notified with chlamydia were admitted to hospital with pelvic inflammatory disease, representing a 23% decrease in admissions since 2017.

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Glossary of Terms

ABS	Australian Bureau of Statistics
ART	Antiretroviral therapy
CDR	Communicable Diseases Register
GBM	Gay and bisexual men
GU	Genitourinary tract
HIV	Human immunodeficiency virus
LHD	Local Health District
MHCL	Medium to high caseload
MSM	Men who have sex with men
NAAT	Nucleic acid amplification testing
NAT	Nucleic acid testing
NCIMS	Notifiable Conditions Information Management System
NSW	New South Wales
PFSHSs	Publicly funded sexual health services
PID	Pelvic inflammatory disease
SAPHaRI	Secure Analytics for Population Health Research and Intelligence

1 Reduce gonorrhoea infections

Prevention, testing, and appropriate treatment and management with partner notification are the cornerstones of gonorrhoea control and are embedded in the current STI strategy. Gonorrhoea notification data does not reflect the true incidence of gonorrhoea infection as it only represents a proportion of infections in the population which have been tested and diagnosed, however it is useful for monitoring notification trends over time. It is estimated that between 23–27% of gay and bisexual males with new infections are diagnosed nationally 2018 – 2020.[1] Gonorrhoea notification data are heavily influenced by testing practices, and hence, may not be representative of the NSW population.

Gonorrhoea is a notifiable disease under the *NSW Public Health Act 2010*. A confirmed case requires isolation of *Neisseria gonorrhoeae* from culture or detection by nucleic acid amplification testing (NAAT). Only confirmed cases of gonorrhoea are counted when reporting gonorrhoea notification data. Patient care and contact tracing are the responsibility of the treating doctor. Information on risks (e.g. sexual exposure) is not routinely collected.

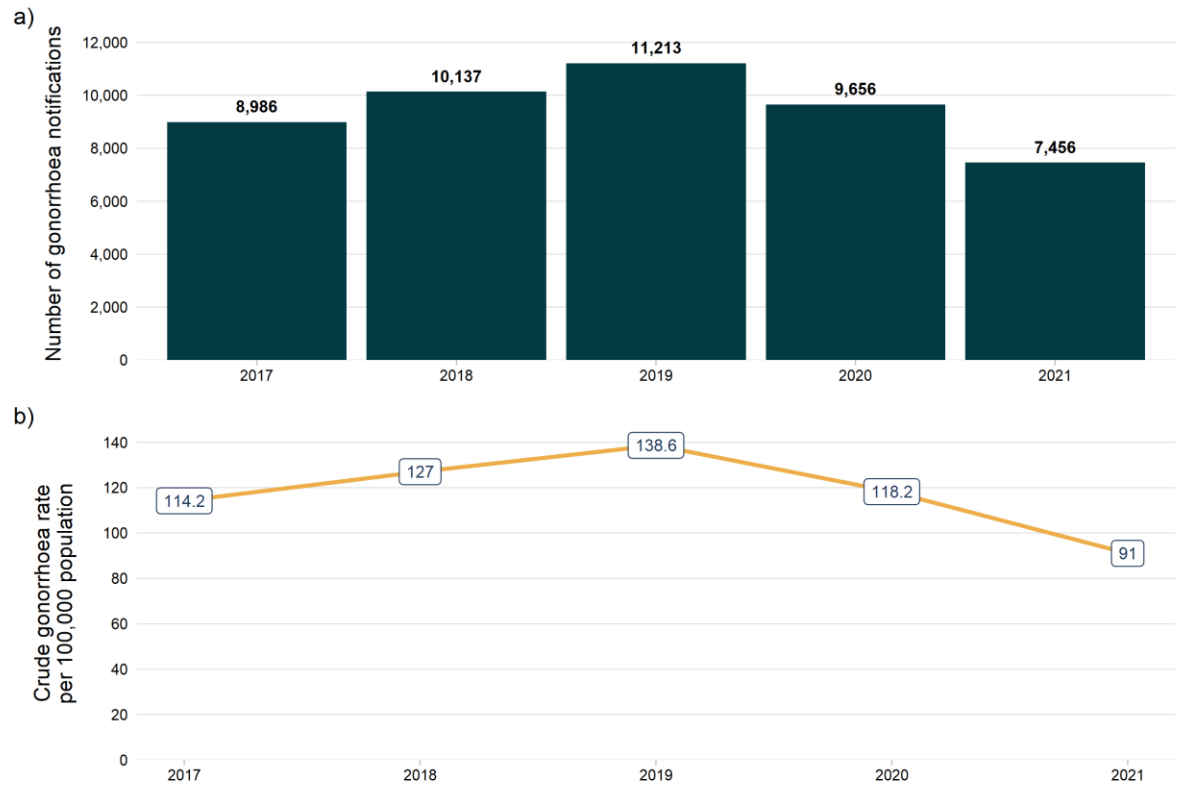
It is important to note that there may be multiple specimens collected for each individual tested for gonorrhoea. Hence the number of gonorrhoea tests done is greater than the number of individuals tested. However, an individual with multiple specimens that are positive for gonorrhoea will generate only one notification.

[1] Kirby Institute. HIV, viral hepatitis and sexually transmissible infections in Australia: annual surveillance report 2021. Sydney: Kirby Institute, UNSW Sydney; 2021.

1.1 Gonorrhoea notifications

In 2021 there were 7,456 notifications of gonorrhoea in recorded NSW residents, which is the lowest annual total recorded in the past five years. The 2021 gonorrhoea notification rate was 91 notifications per 100,000 population (Figure 1). The notification rate continued to decline from its peak at 139 notifications per 100,00 population in 2019. The 2021 notification rate was 23% lower compared to 2020 and 34% lower than 2019. This decline is at least partially explained by changes in social mixing and sexual behaviours caused by COVID-19 restrictions and altered health seeking behaviours, service provision and access, as well as disruptions to screening programs.

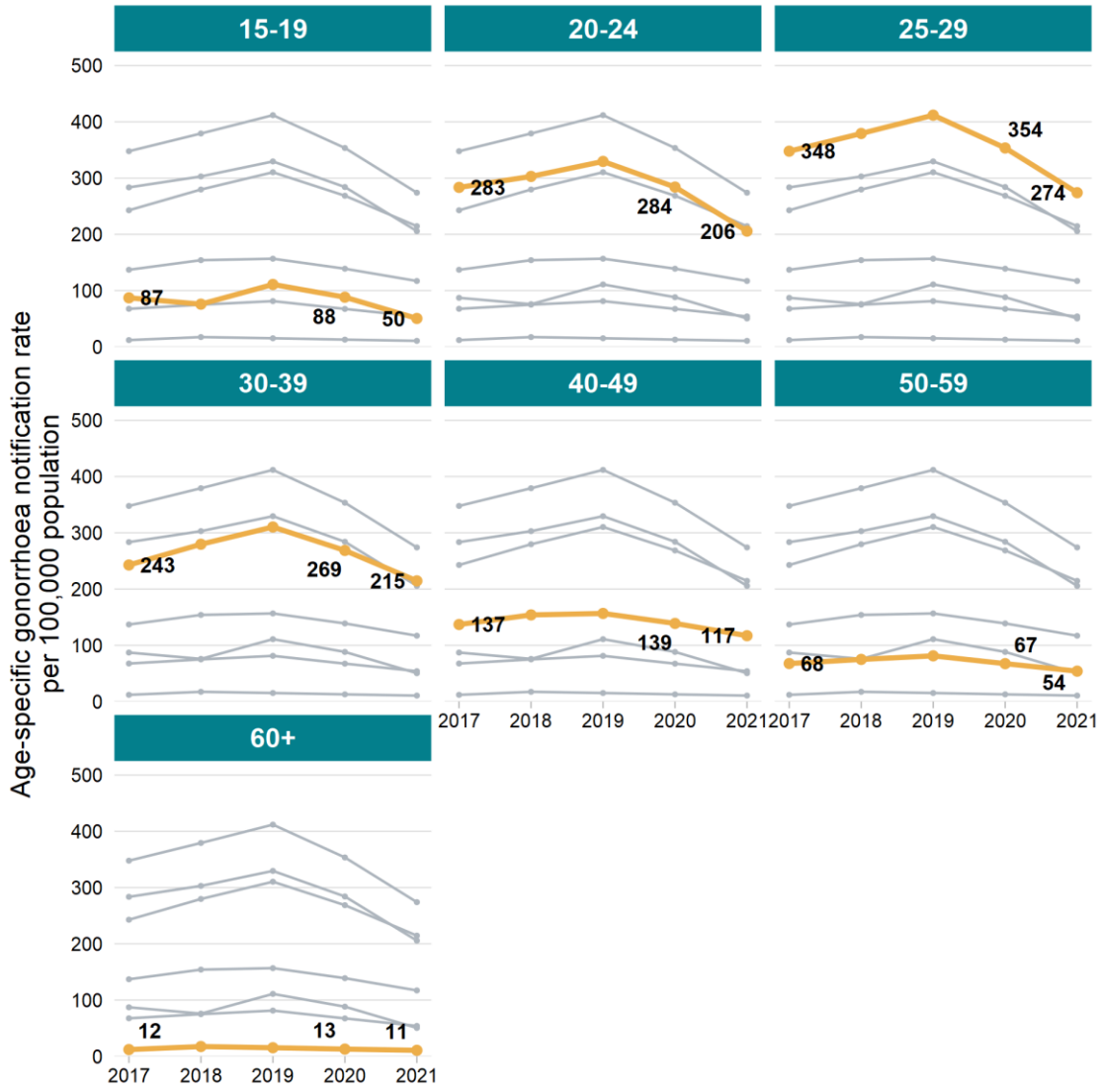
Figure 1: Number and crude rate of gonorrhoea notifications, NSW, January 2017– December 2021



Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health. Data extracted 16 June 2022. Note: Excludes non-NSW residents. Year of onset is based on calculated onset date.

Consistent with previous years, age-specific gonorrhoea rates in 2021 were highest among people aged between 20 and 39 years, with the highest rate in people aged 25–29 years. Decreases in the gonorrhoea notification rate occurred across all age groups (Figure 2). The largest decreases between 2020 and 2021 were recorded in people aged less than 25 years (43% and 28% decrease in the 15–19-years and 20 – 24-year age groups, respectively). Over the last five years the largest declines occurred in within the same age groups with decreases of 42% and 27.5% since 2017.

Figure 2: Age specific gonorrhoea notification rates in people aged 15 years and over, NSW, January 2017–December 2021

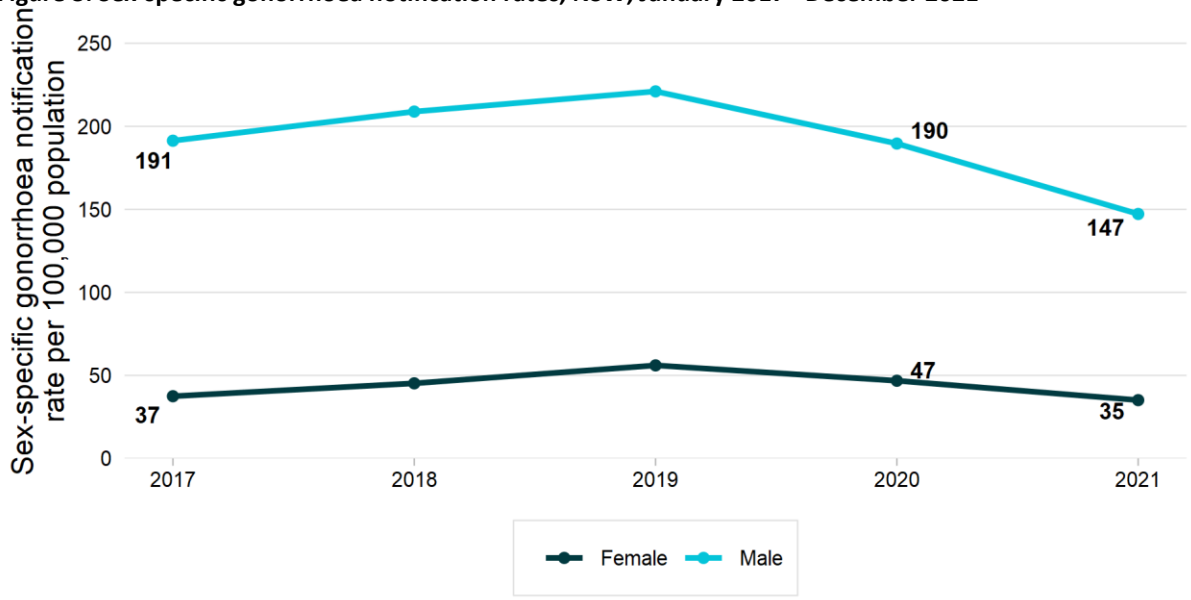


Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health. Data extracted 16 June 2022. Note: Excludes non-NSW residents. Year of onset is based on calculated onset date.

In 2021 the male notification rate was 147 notifications per 100,000 males, representing a 22% decrease from 2020 (

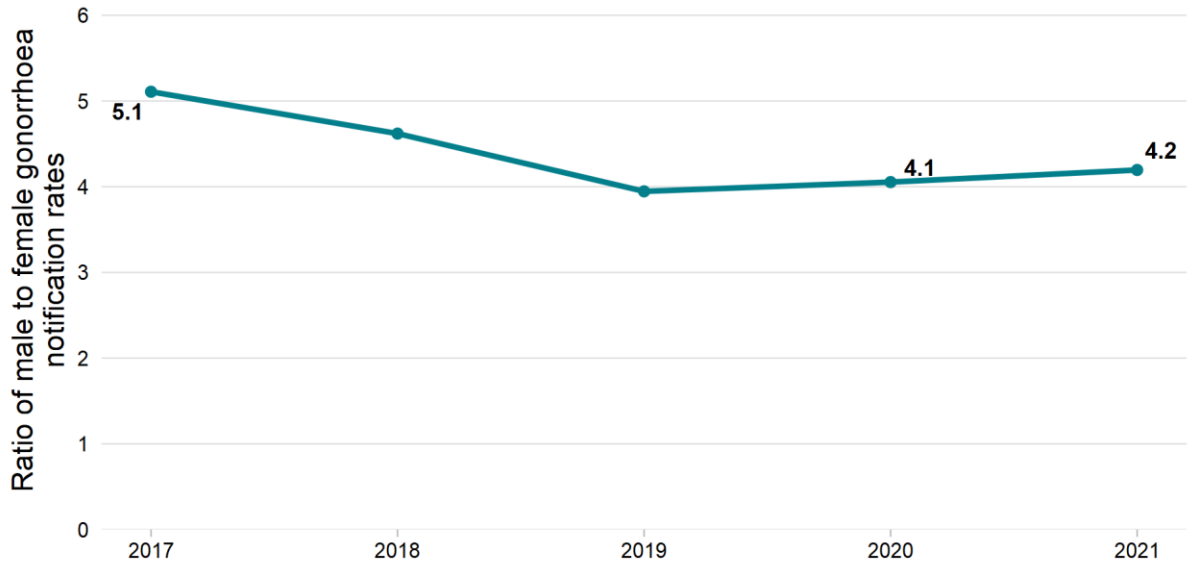
Figure 3). Similarly, the female rate decreased 25%, at 35 per 100,000 females. Consistent to prior years, the male gonorrhoea notification rate was substantially higher than the female rate. In 2021 the male rate was 4.2-fold higher than females (Figure 4). Over the past five years there has been a larger reduction in the male gonorrhoea rate (23% reduction from 191 to 147 notifications per 100,000 males) as compared to females (6% reduction from 37.5 to 35 notifications per 100,000 females).

Figure 3: Sex-specific gonorrhoea notification rates, NSW, January 2017– December 2021



Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health. Data extracted 16 June 2022. Note: Excludes non-NSW residents, persons reported as transgender (due to small numbers), and persons whose sex was not reported. Year of onset is based on calculated onset date.

Figure 4: Ratio of male to female gonorrhoea notification rates, NSW, January 2017– December 2021

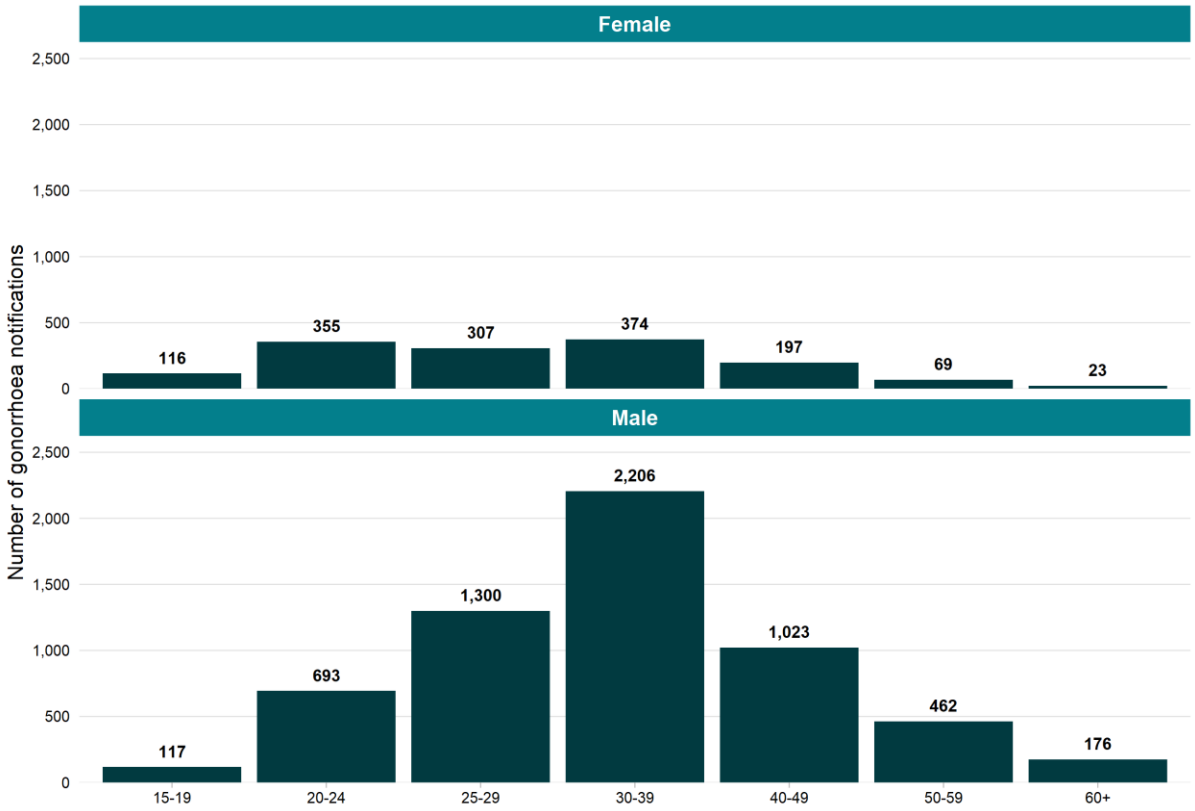


Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health. Data extracted 16 June 2022. Note: Excludes non-NSW residents, persons reported as transgender (due to small numbers), and persons whose sex was not reported. Year of onset is based on calculated onset date.

Consistent with previous reporting years, gonorrhoea notifications in 2021 were predominantly in males (80%, 5,981/7,456). Nineteen percent of gonorrhoea notifications in 2021 were in females (1,448/7,456), 0.1% in transgender people (8/7,456), and 0.25% did not report sex (19/7,456).

The median age of females diagnosed with gonorrhoea in 2021 was 28 years, which is consistent with the previous five years (range 27–29 years), and slightly lower than the median age of males (33 years, range 32–33 years). Among both males and females in 2021, most notifications were in the people 20–39 years, with the distribution of female notifications skewed slightly more towards the younger age groups (Figure 5).

Figure 5: Number of gonorrhoea notifications by age group and sex in people aged 15 years and over, NSW, January–December 2021



Data source: NCIMS (via SAPHaRI), NSW Health. Data extracted 16 June 2022. Note: Excludes non-NSW residents, persons reported as transgender (due to small numbers), and persons whose sex was not reported. Year of onset is based on calculated onset date.

Gonorrhoea notification rates continued to decrease across many Local Health Districts (LHD) in 2021 (Figure 6). An increase in notification rate between 2020 and 2021 was only recorded in the Western NSW LHD (26% increase). Over the past five years the largest increases in gonorrhoea notification rates occurred in Illawarra Shoalhaven (75% increase) and Murrumbidgee (54% increase) LHDs.

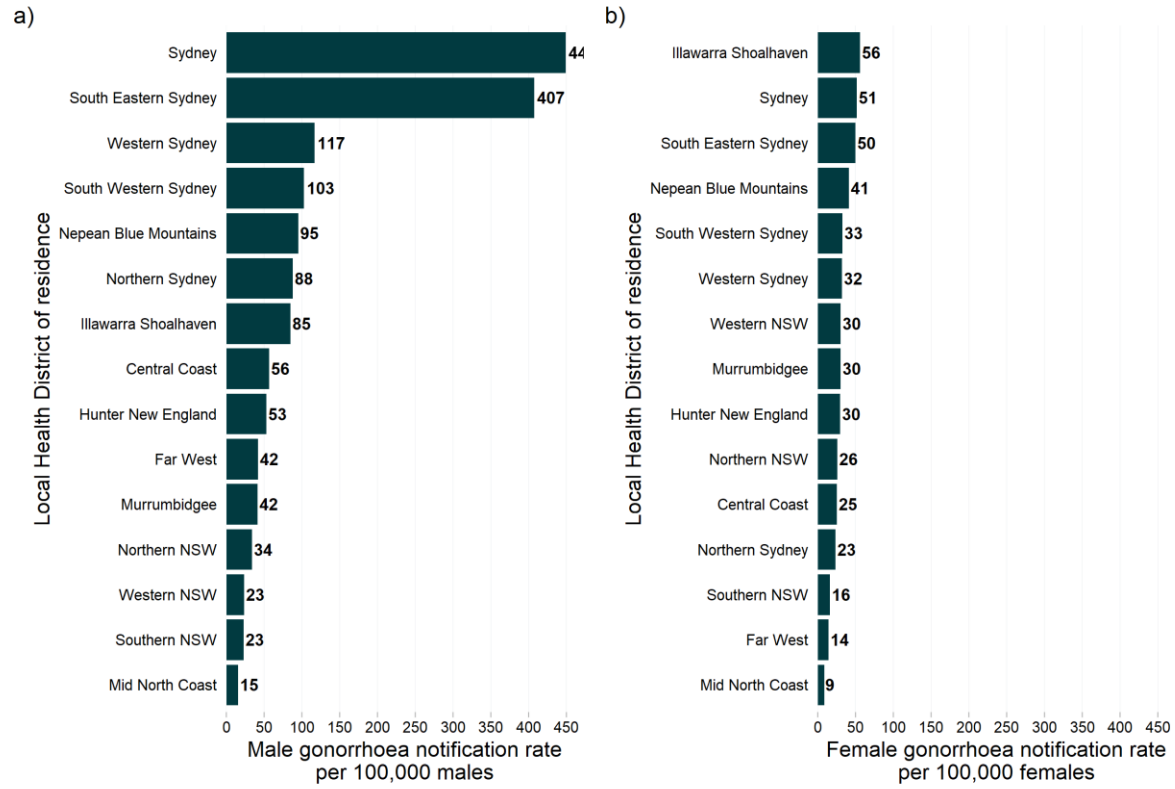
Figure 6: Gonorrhoea notification rates by Local Health District of residence, NSW, January 2017–December 2021

Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health. Data extracted 16 June 2022. Note: Excludes non-NSW residents and notifications from Justice Health. For Justice Health notifications, see Table in Appendix D: Notification data. Year of onset is based on calculated onset date.

For males, the LHDs reporting the highest gonorrhoea notification rates in 2021 continued to be those in metropolitan Sydney, in particular South Eastern Sydney and Sydney LHDs (Figure 7). It should be noted that MSM, who are at increased risked of acquiring STIs, are unequally distributed among local health districts. Continuing high notification rates among males in the Sydney and South Eastern Sydney Local Health Districts reflect large concentrations of MSM in these areas. These populations also have a high uptake of pre-exposure prophylaxis (PrEP) for HIV.[2] Persons on PrEP are regularly tested for STIs.

In 2021 Illawarra Shoalhaven LHD had the highest female gonorrhoea rate, followed by South Eastern Sydney and Sydney LHDs. Since 2017, South Eastern Sydney and Sydney LHDs have recorded the highest female rate. The female gonorrhoea rate in the Illawarra Shoalhaven LHD has more than doubled since 2017, while female rates in Sydney and South Eastern Sydney decreased by 20% over this same period.

Figure 7: Gonorrhoea notification rates by sex and Local Health District of residence, NSW, January–December 2021



Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health. Data extracted 16 June 2022. Note: Excludes non-NSW residents, persons reported as transgender (due to small numbers), persons whose sex was not reported and notifications from Justice Health. For Justice Health notifications, see Table in Appendix D: Notification data. Year of onset is based on calculated onset date.

[2] Grulich AE, Guy R, Amin J, Jin F, Selvey C, Holden J, Schmidt HM, Zablotska I, Price K, Whittaker B, Chant K. Population-level effectiveness of rapid, targeted, high-coverage roll-out of HIV pre-exposure prophylaxis in men who have sex with men: the EPIC-NSW prospective cohort study. The Lancet HIV. 2018;5(11):e629-37.

Trends in male genitourinary gonorrhoea may be used as a broad indicator of gonorrhoea transmission, as these infections are usually symptomatic and therefore most likely to be diagnosed as a result of symptomatic testing. Trends in throat or rectal infections are usually asymptomatic and more likely to be identified by screening. Trends for these infections can reflect screening trends, as well as disease transmission.

Table 1: Number of gonorrhoea notifications by site of infection and sex, NSW, January 2017– December 2021

Site of infection	Number of infections		
	Male	Female	Total
Genitourinary tract (GU) only	2,190	1,095	3,293
Throat only	1,383	155	1,547
Rectum only	1,160	22	1,187
Rectum and throat	585	12	598
GU and rectum	157	13	170
GU and throat	127	78	205
GU, rectum and throat	183	8	192
Other (joints/conjunctiva/nasopharynx) only	33	9	43
Other (joints/conjunctiva/nasopharynx) and either of GU/throat/rectum	11	1	12

Data source: NCIMS (via SAPHaRI), NSW Health. Note: Excludes non-NSW residents and 'other 'site of infection or missing/unknown site of infection. The number of infections may exceed number of notifications. Total includes transgender people and people whose gender was not stated/ inadequately described.

Among male gonorrhoea infections where the site of infection was recorded, genitourinary infections continued to be the most common. Whilst the number of infections reported in 2021 decreased compared to both 2017 and 2020 for all sites of infection, the largest decrease was reported in genitourinary infections (22% and 31% decreases respectively). The ratio of genitourinary infections to rectal and throat infections in males in 2021 were the lowest recorded in the past five years. The ratio of genitourinary to throat infections was 1.17 (previous range 1.29–1.50) and ratio of genitourinary to rectal infections was 1.27 (previous range 1.40–1.51). This comparative decrease in genitourinary infections, as compared to rectal or throat infections suggests reductions in male gonorrhoea transmission in 2021.

Gonorrhoea infections among women most likely reflect screening trends, as well as disease transmission. Between 2017 and 2020, the largest relative increase for females was observed for rectal infections (8% increase). However, the absolute number of rectal infections remains small compared to genitourinary infections, which decreased by 2%. The ratio of genitourinary infections to throat or rectal infections was lower than 2020 (4.72 for genitourinary: throat infections, 21.7 for genitourinary : rectal infections) but within the ranges for the prior five years.

Figure 8: Number of gonorrhoea notifications by site of infection and sex, NSW, January 2017– December 2021

Data source: NCIMS (via SAPHaRI), NSW Health. Data extracted 16 June 2022. Note: Excludes non-NSW residents and 'other 'site of infection or missing/unknown site of infection. The number of infections may exceed number of notifications. Year is based on calculated onset date.

1.2 Gonorrhoea notifications among Aboriginal people

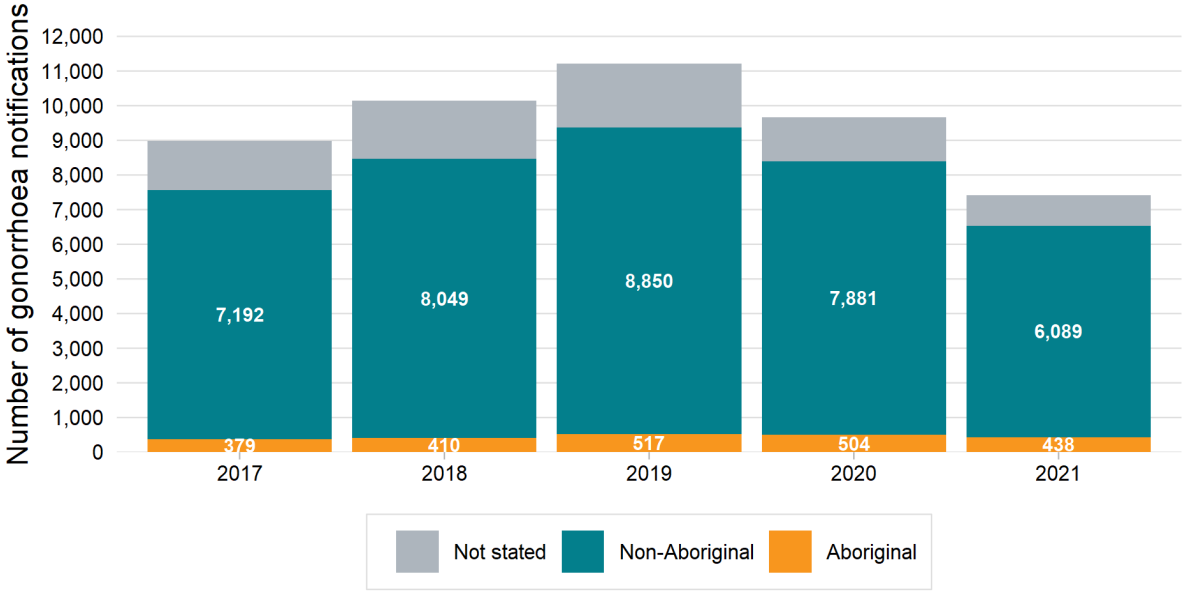
In 2021 a total of 7,416 notifications of gonorrhoea were recorded in the Communicable Diseases Register (CDR) (

Figure 9). Aboriginality not stated for 889 (12%) notifications, slightly lower than the prior four years (13% to 17% of people each year).

Of those whose Aboriginal status was not stated in 2021, 98% resided in a major city, which is consistent with previous years. Among those for whom Aboriginality was stated, 438 (7%) notifications were among Aboriginal people, and 6,089 (93%) were among non-Aboriginal people. Aboriginal status data completeness has continued to improve over the past five years.

Note: Trends in the Aboriginal population are difficult to interpret due to variation in the yearly number of people for whom Aboriginal status was not stated, and the relatively high proportion of incomplete data compared to the proportion who are Aboriginal people. Differences in the CDR compared to previous reports are due to continued improvements in record linkage and inclusion of NCIMS records that were unable to be matched to any of the other contributing data sources.

Figure 9: Number of gonorrhoea notifications by Aboriginal status, NSW, 2017–2021



Data source: Communicable Diseases Register, NSW Ministry of Health (via SAPHaRI); data extracted 28 July 2022. Note: Excludes non-NSW residents. Year is based on calculated onset date.

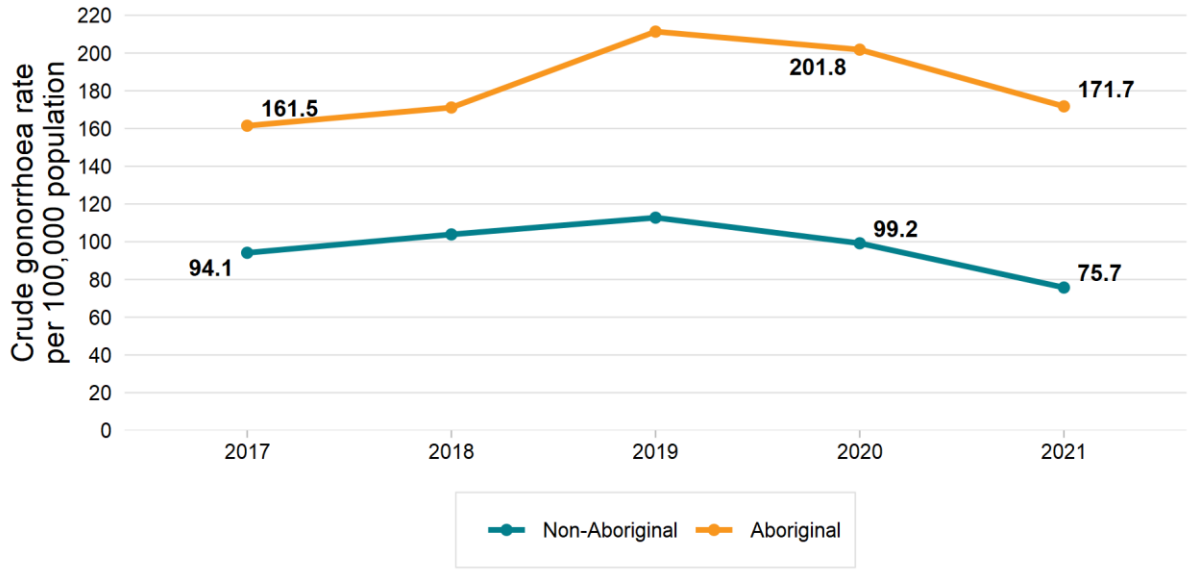
Note: As the number of notifications among Aboriginal people is relatively small, yearly fluctuations in the rate should be interpreted with caution. Changes in notification rates may be due to variation in incidence of disease, screening rates and/or the number of people for whom Aboriginal status was not stated (see Figure 9).

In 2021 notification rates of gonorrhoea decreased in both Aboriginal and non-Aboriginal people (Figure 12). Among non-Aboriginal people the notification rate decreased 24% from 99 notifications per 100,000 population in 2020 to 76 notifications per 100,000 population in 2021. Among Aboriginal people the notification rate decreased 15% from 202 notifications per 100,000 population in 2020 to 172 notifications per 100,000 population. Over the last five years, the gonorrhoea notification rate for Aboriginal people increased 6% from 161.5 notification per 100,000 population in 2017.

Among those whose Aboriginal status was stated, the gonorrhoea notification rate in 2021 was 2.27 times higher among Aboriginal people when compared with non-Aboriginal people (171.5 notifications per 100,000 versus 76 notifications per 100,00 population). In previous reporting years the relative difference in gonorrhoea notification rates been Aboriginal people and non-Aboriginal people was slightly smaller.

In previous annual reports rates were directly age-standardised to account for the differences in age structures between Aboriginal and non-Aboriginal populations. However, due to small numbers within multiple age groups age-standardisation is not advised. Additional age distribution and age-specific rate analyses have been provided (See Figure 11Figure 12) as important contextual information on age group differences.

Figure 10: Gonorrhoea notification rates by Aboriginal status, NSW, 2017–2021

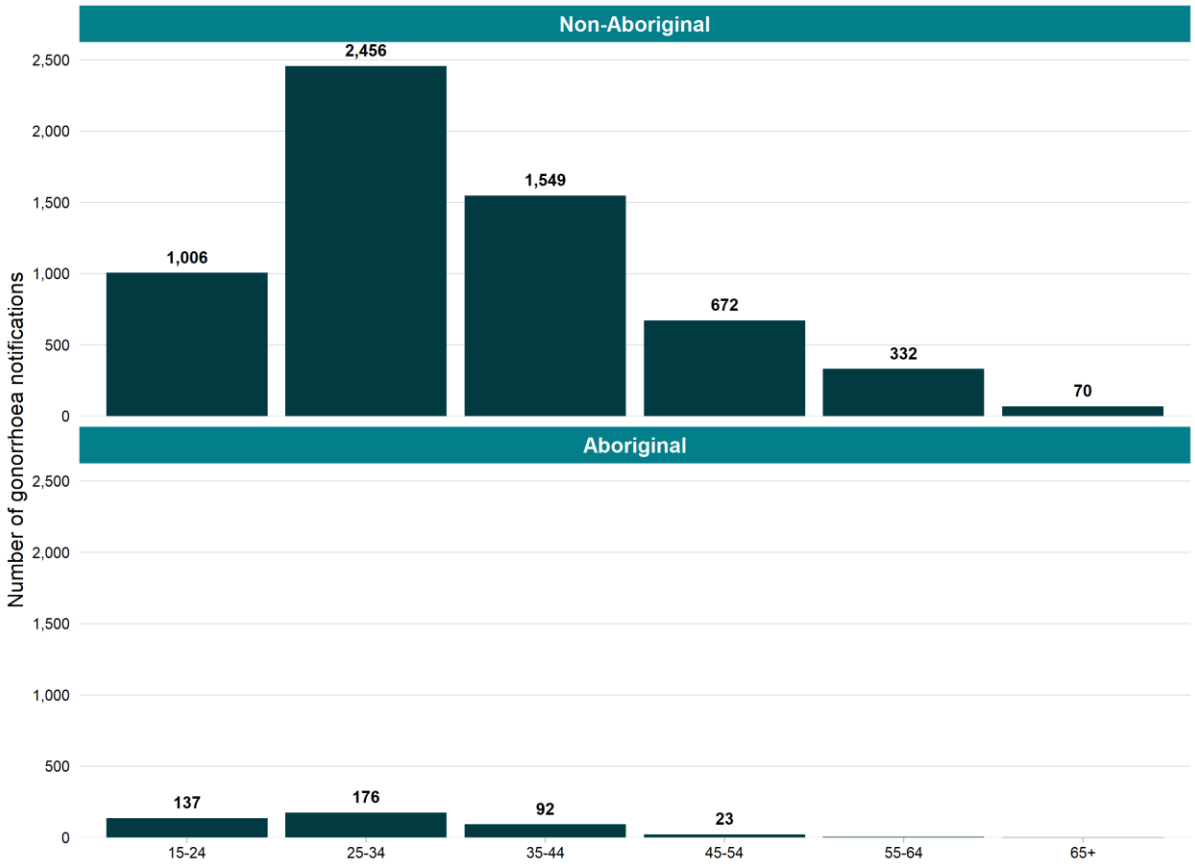


Data source: Communicable Diseases Register, NSW Ministry of Health and ABS population estimates (via SAPHaRI); data extracted 28 July 2022. Note: Excludes non-NSW residents, records where Aboriginal status was not stated (see Figure 9). Year is based on calculated onset date. Rates were not age standardised due to small numbers within multiple age groups. As the number of gonorrhoea notifications among Aboriginal people is relatively small, yearly fluctuations in the rate should be interpreted with caution. These notification rates are influenced by variations in the number of people for whom Aboriginal status was not known and are likely to be an underestimation.

The distribution of gonorrhoea notifications by age group is relatively similar between Aboriginal and non-Aboriginal people, with slight variations reflective of population age structure differences (Figure 11). In 2021, approximately 40% of notifications for both Aboriginal and non-Aboriginal people occurred within the 25–34-year age group.

For Aboriginal people, notifications were relatively uncommon in people aged over 45 years, accounting for less than 7% of total notifications in 2021, and are more skewed towards the younger age groups, with 31.5% of notifications in people 15–25 years. This largely mirrors the Aboriginal population's younger age structure which has larger proportions of young people and smaller proportions of older people as compared to the non-Aboriginal population.[3] In non-Aboriginal people, the 35–44-year age group was the second most commonly notified in 2021 (25.5% of total notification) and 18% of notifications occurred in people aged over 45 years.

Figure 11: Number of gonorrhoea notifications by age group and Aboriginality, NSW, January - December 2021



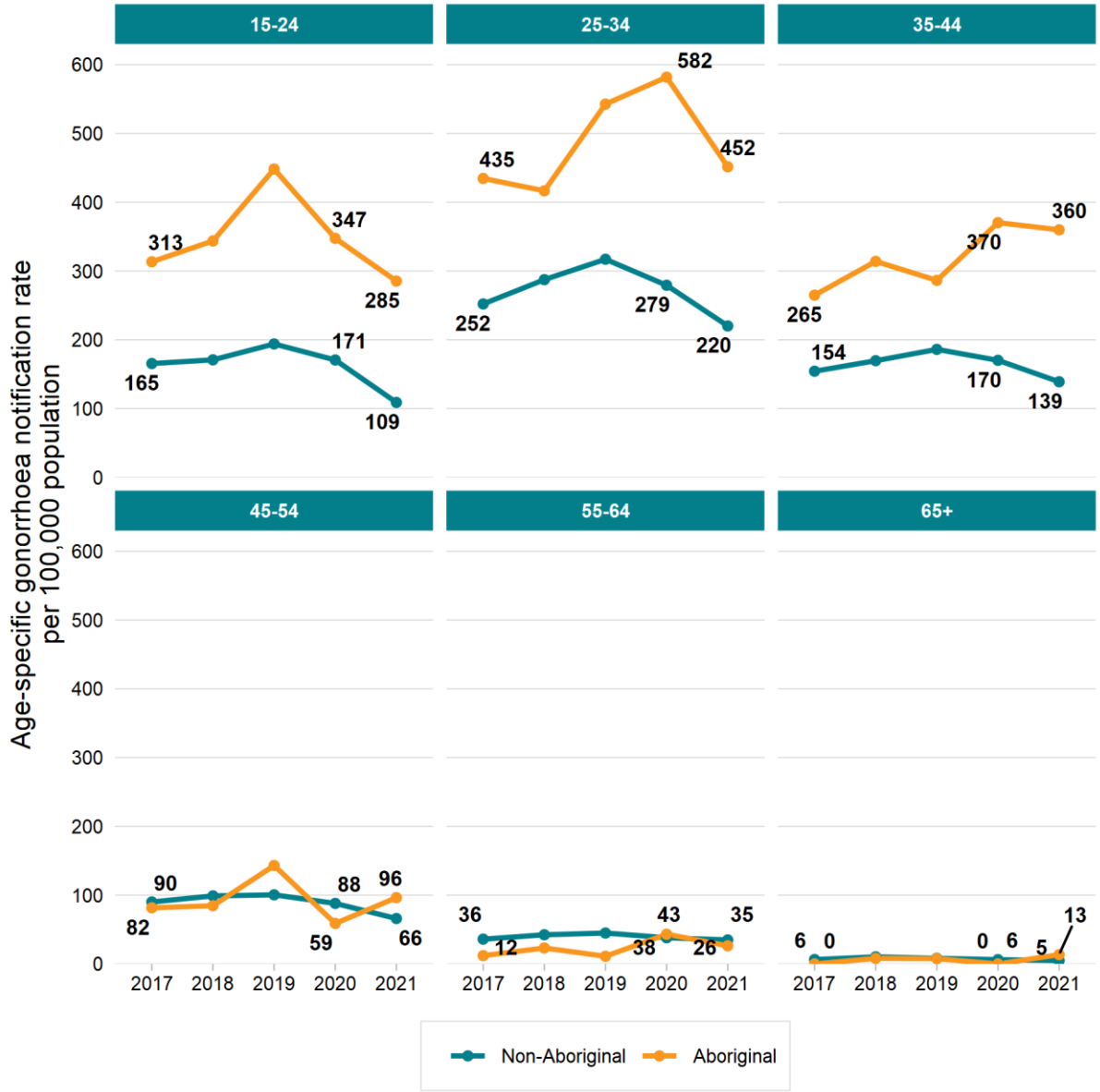
Data source: Communicable Diseases Register, NSW Ministry of Health (via SAPHaRI); data extracted 28 July 2022. Note: Excludes non-NSW residents, records where Aboriginal status was not stated, and persons whose age was not reported (see Figure 9). Year is based on calculated onset date.

[3] Australian Bureau of Statistics. Estimates of Aboriginal and Torres Strait Islander Australians [Internet]. Canberra; 2016. Available from: https://www.abs.gov.au/statistics/people/aboriginal-and-torres-strait-islander-peoples/estimates-aboriginal-and-torres-strait-islander-australians/latest-release

In 2021 notification rates of gonorrhoea decreased across almost all age groups for both Aboriginal and non-Aboriginal people compared to 2020 rates (Figure 12). The highest rates for both Aboriginal and non-Aboriginal people are the 25–34-year age group, followed by the 35–44 and 15–24-year age groups. Over the past 5 years the gonorrhoea rate decreased for all age groups in non-Aboriginal people but increased in most age groups of Aboriginal people.

Only Aboriginal people aged 15–24 years saw a decrease, where the rate fell 9% from 313 notifications per 100,000 population in 2017 to 285 notifications per 100,000 population in 2021. Since 2017, the largest increase among Aboriginal people was in the 35–44-year age group, which increased by 36%.

Figure 12: Age specific gonorrhoea notification rates by Aboriginal status, NSW, 2017–2021

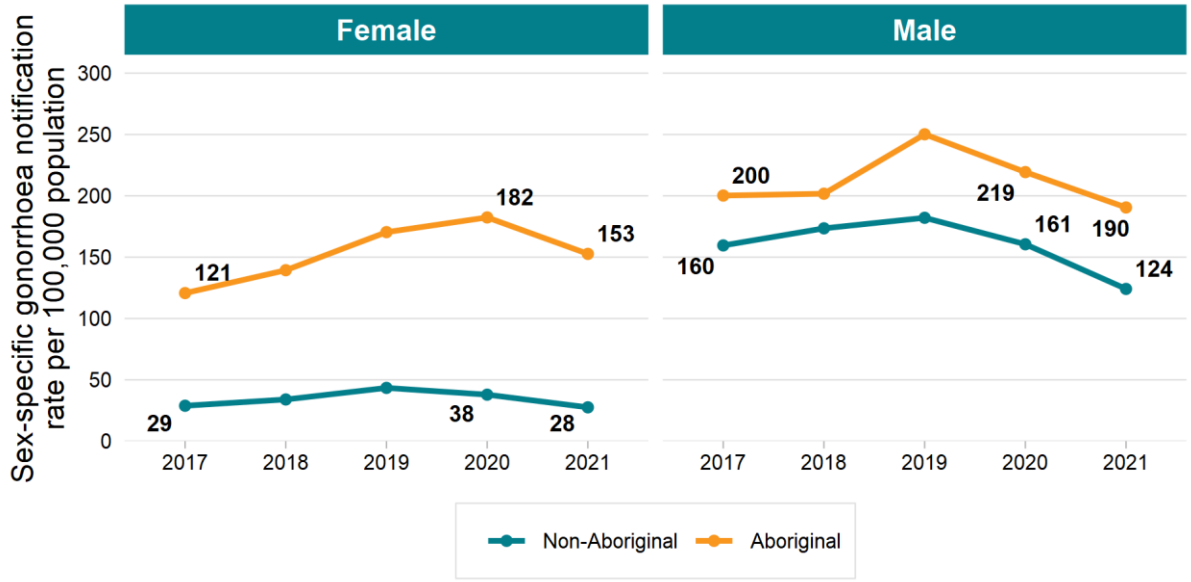


Data source: Communicable Diseases Register, NSW Ministry of Health and ABS population estimates (via SAPHaRI); data extracted 28 July 2022. Note: Excludes non-NSW residents, records where Aboriginal status was not stated, and persons whose age was not reported (see Figure 9). Year is based on calculated onset date.

Among females in NSW, Aboriginal women continue to have a substantially higher gonorrhoea notification rate, as compared to non-Aboriginal women (Figure 13). In 2021, the rate in Aboriginal women at 153 notifications per 100,000 females was 5.54 times higher than the rate in non-Aboriginal women at 28 notifications per 100,000 females. Since 2017, the rate for Aboriginal women has increased by 26.5%, whilst for non-Aboriginal women the rate has decreased by 4.5%.

In 2021, Aboriginal males had a rate of 190 notifications per 100,000 males which was 1.54 times higher than the rate in non-Aboriginal males of 124 notifications per 100,000 males. Over the past 5 years, rates have decreased for both Aboriginal and non-Aboriginal males. In Aboriginal males the rate decreased 5% between 2017 and 2021. In non-Aboriginal males, the rate decreased 22%.

Figure 13: Sex-specific gonorrhoea notification rate by Aboriginal status, NSW, 2017–2021



Data source: Communicable Diseases Register, NSW Ministry of Health and ABS population estimates (via SAPHaRI); data extracted 28 July 2022. Note: Excludes non-NSW residents, records where Aboriginal status was not stated, and persons whose sex was not reported (see Figure 9). Year is based on calculated onset date.

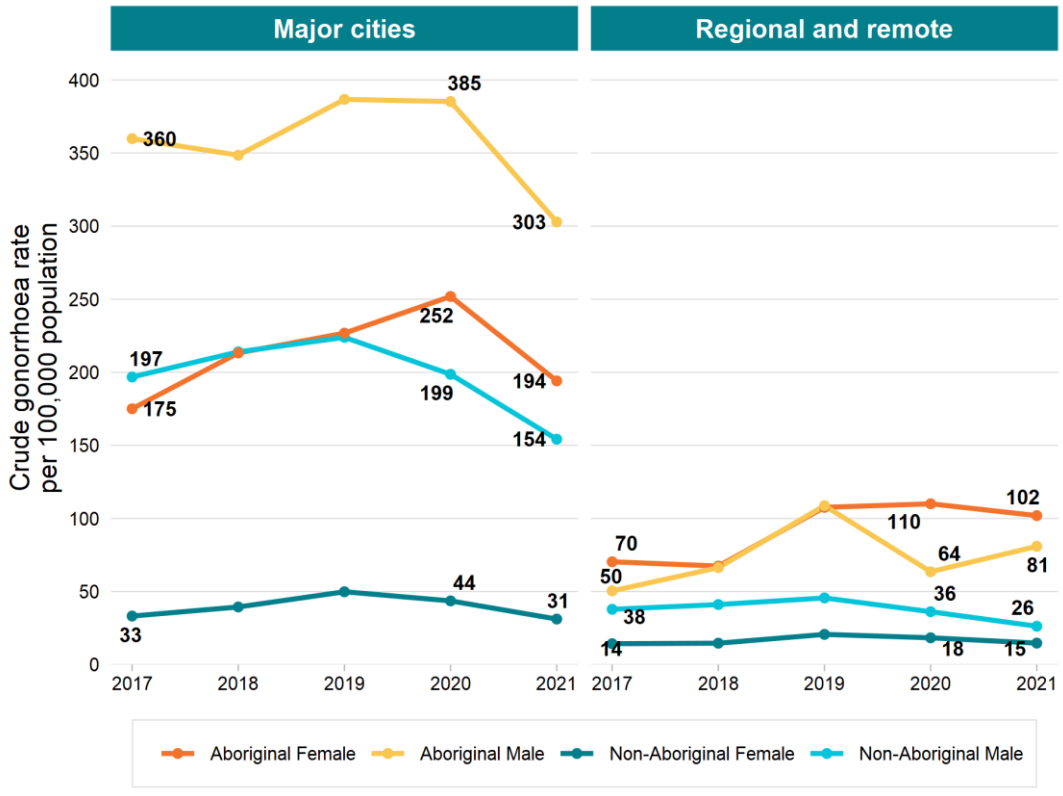
In 2021, the highest gonorrhoea notification rates were in Aboriginal males living in major city areas of NSW, followed by Aboriginal females also living in major cities. Between 2017 and 2021 the gonorrhoea rate for Aboriginal males living in major cities decreased by 16%, whilst for Aboriginal females in major cities the rate increased 11% over the same time period. Although the gonorrhoea rate for non-Aboriginal males living in major cities continues to be high, a decrease of 21% was recorded over the past five years.

Among people living in regional and remote areas, Aboriginal males had the highest gonorrhoea rates in 2021. Since 2017, the gonorrhoea rate for Aboriginal males living in regional and remote areas increased by 60%.

Among females, Aboriginal women living in major cities had the highest rate in 2021, followed by Aboriginal females living in regional and remote areas of NSW. Between 2017 and 2021 the gonorrhoea rate for Aboriginal females in regional and remote areas increased by 45%. The gonorrhoea rate in non-Aboriginal females decreased following an increase in 2019.

Note: As the number of notifications in the Aboriginal population is relatively small, especially among residents of remote areas, trends should be interpreted with caution. To avoid excessive rate fluctuations based on small numbers of notifications arising from small populations, rates for regional and remote areas are presented together.

Figure 14: Crude gonorrhoea notification rates by Aboriginal status, gender and remoteness area, NSW, 2017–2021

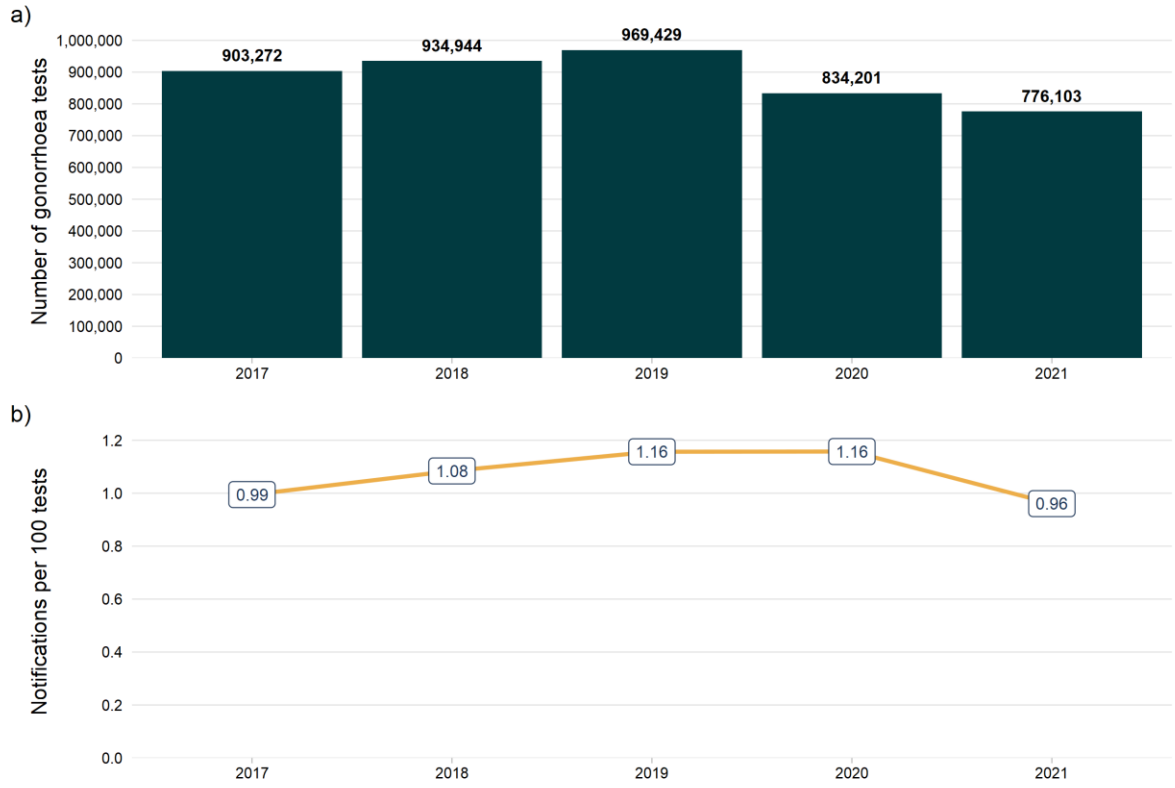


Data source: Communicable Diseases Register, NSW Ministry of Health and ABS population estimates (via SAPHaRI); data extracted 28 July 2022. Note: Excludes non-NSW residents, records where Aboriginal status was not stated (see Figure 9), records where sex was not stated, and records where postcode was not stated. Population estimates by geographic remoteness area apply the proportion of residents by Aboriginal status and remoteness area at 30 June 2016 (ABS 3238.0.55.001 – Estimates of Aboriginal and Torres Strait Islander Australians, June 2016) which were the most recent estimates available at the time of publication.

1.3 Gonorrhoea testing

In 2021 there were 776,103 gonorrhoea tests (NAAT and culture) performed in NSW, indicating a continued decrease in testing numbers since 2019. Compared to 2020 the gonorrhoea testing level decreased 7% and compared to 2017, decreased 14%. The notification to test ratio at 0.96 notifications per 100 gonorrhoea tests was a 17% decrease compared to 2020. Decreases in testing are likely related to the impact of COVID-19 on visits to primary health care providers and disruptions to screening programs. A decrease in the notification to test ratio is suggestive of disruptions to screening programs targeted at people at higher risk for infection, as well as reductions in gonorrhoea transmission. A reduction in transmission in 2021 would be supported by the comparative decrease in male genitourinary infections, a proxy indicator for symptomatic testing and transmission.

Figure 15: Number of gonorrhoea tests and notifications per 100 test ratio, NSW, January 2017– December 2021



Data source: NCIMS (via SAPHaRI) and NSW Denominator Data Project, NSW Health. Data extracted 16 June 2022.

2 Reduce infectious syphilis infections

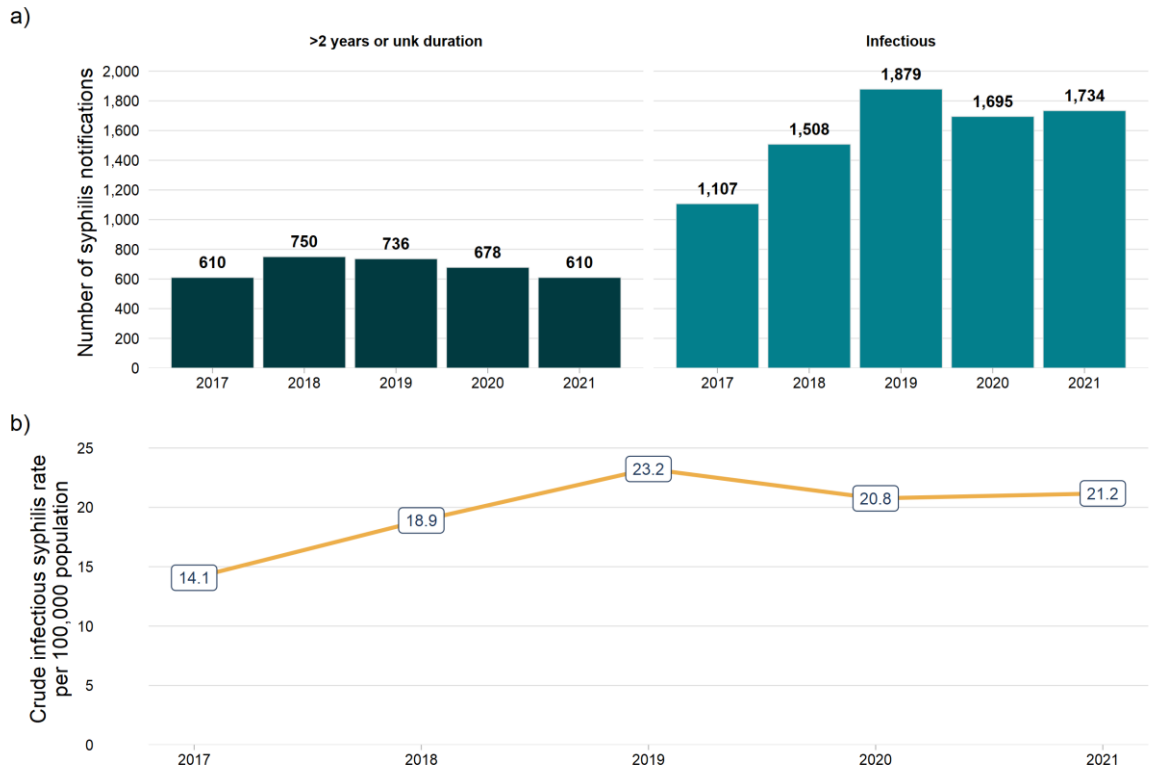
Prevention, testing and appropriate treatment and management including partner notification are the cornerstones of syphilis control and are embedded in the current STI strategy. Syphilis notification data does not reflect the true incidence of syphilis infection as it only represents a proportion of infections in the population which have been tested and diagnosed, however it is useful for monitoring notification trends over time. Syphilis, if untreated, is a chronic and often asymptomatic infection, and may not be notified if specific serological tests are not requested. Syphilis notification data are heavily influenced by testing practices, availability of enhanced surveillance information and classification of syphilis cases as 'infectious' or 'greater than 2 years or unknown duration'. Therefore, syphilis data may not be representative of the NSW population.

Syphilis is a notifiable disease under the NSW Public Health Act 2010. A confirmed or probable infectious syphilis case requires laboratory evidence or a combination of laboratory, clinical and epidemiological evidence (see **Appendix B**: Case definitions for full details). Only probable or confirmed cases of infectious syphilis and confirmed cases of syphilis >2 years or unknown duration are included when reporting syphilis notification data. Enhanced surveillance information is routinely collected for people notified with syphilis which includes demographic, testing, treatment and risk exposure information.

2.1 Infectious syphilis notifications

In 2021 there were 1,734 infectious syphilis notifications and an infectious syphilis notification rate of 21.2 notifications per 100,000 population (Figure 16). This represents a 2% increase in the infectious syphilis notification rate from 2020 and a 50.5% increase since 2017.

Figure 16: Number and crude rate of infectious syphilis notifications, NSW, January 2017– December 2021

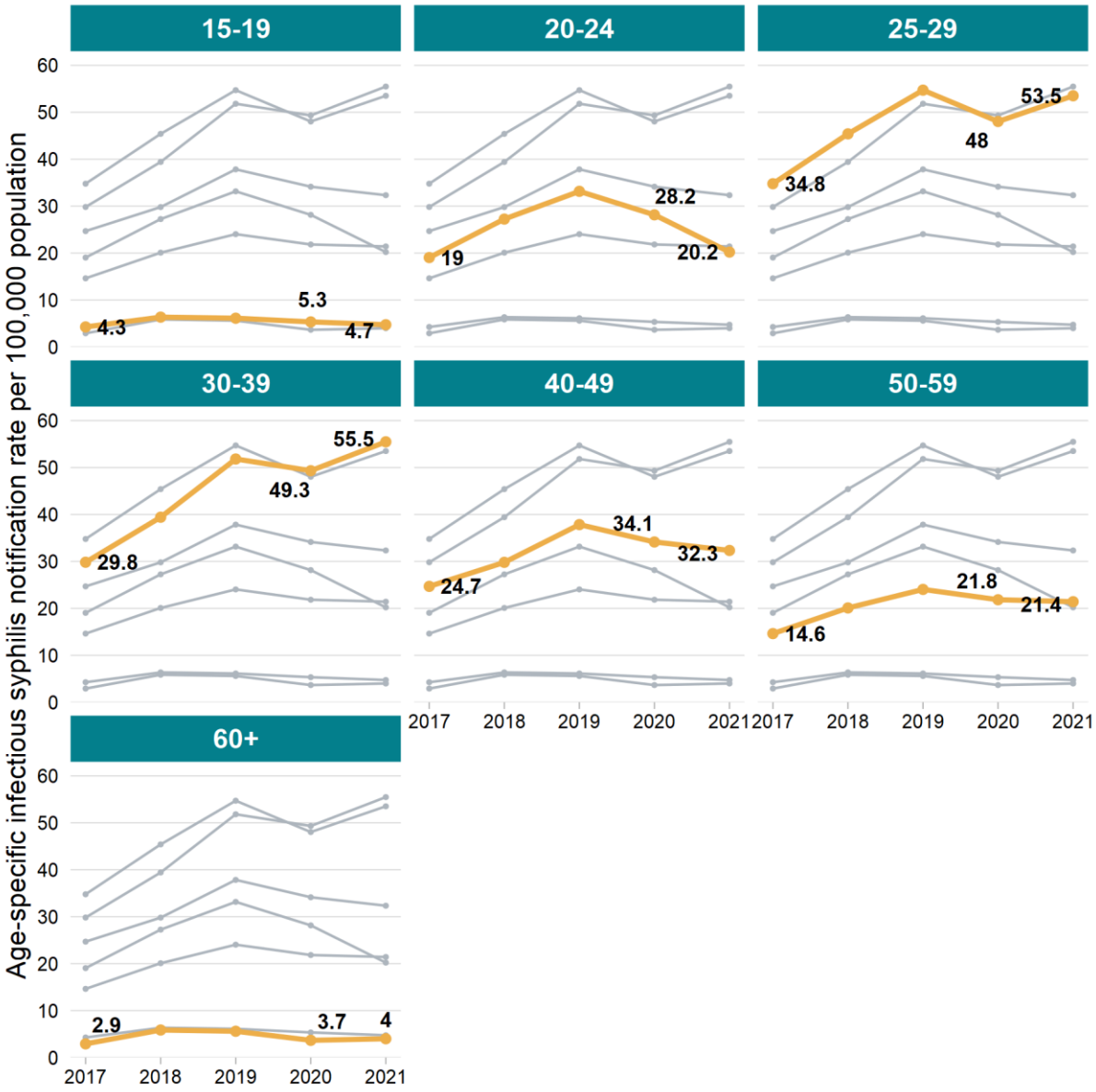


Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health; data extracted 03 August 2022. Note: Excluded non-NSW residents. Year is based on calculated onset date.

Infectious syphilis rates continued to be highest among people aged 25–29 and 30–39 -years. After a decrease in 2020, likely the result of the impact of COVID-19 on social mixing, rates in these two age groups continued to increase. Since 2017 the rate in the 25–29-year age group increased by 54% to 53.5 notifications per 100,000 population and the rate in the 30 – 39-year age group increased by 86% to 55.5 notifications per 100,000 population.

Rates in 2021 are higher than 2017 rates for all age groups. However, the rate increase has been comparably smaller in younger age groups, with further decreases in 2021 rates for people aged 15–19-years (11% decrease) and 20–24-years (28%) compared to 2020.

Figure 17: Age specific infectious syphilis notification rates in people aged 15 years and over, NSW, January 2017– December 2021

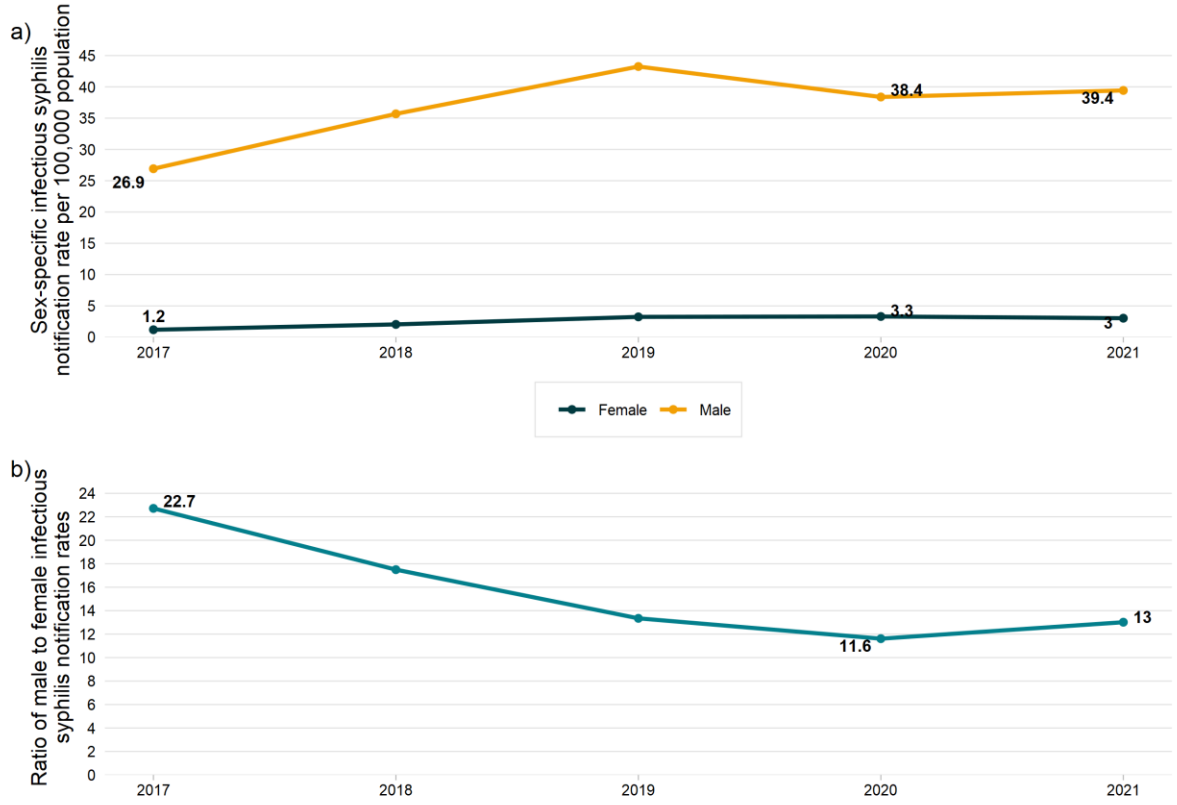


Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health; data extracted 03 August 2022. Note: Excludes non-NSW residents and people whose age was not reported. Year is based on calculated onset date.

The male infectious syphilis rate in 2021 was 39.4 notifications per 100,000, representing a 2.7% increase compared with 2020, and a 46.5% increase compared to 2017 (Figure 18). The female infectious syphilis rate decreased to 3.0 notifications per 100,000 population. Despite this decrease compared to 2020, the 2021 rate more than doubles the 2017 rate.

The male infectious syphilis rate in 2021 was 13 times higher the female rate. Whilst the number of notifications in females remains relatively small, representing 7% of 2021 infectious syphilis notifications, the ratio of male to female notifications has substantially decreased from 22.7 in 2017 to 13 in 2021, highlighting the shifting burden of infectious syphilis into the female population in NSW.

Figure 18: Sex specific infectious syphilis notification rates and ratio of male to female infectious syphilis notification rates, NSW, January 2017– December 2021

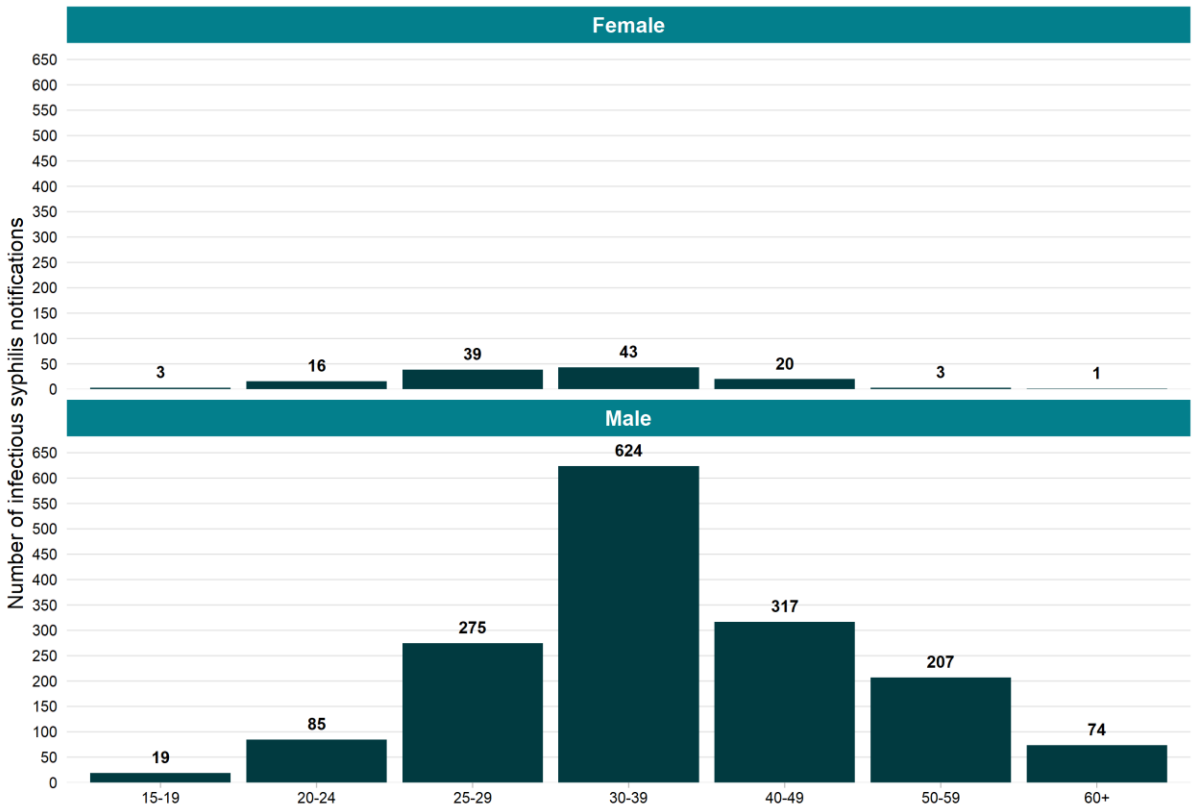


Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health; data extracted 03 August 2022. Note: Excludes non-NSW residents, persons reported as transgender (due to small numbers), and persons whose sex was not reported. Year of onset is based on calculated onset date.

Among the 1,734 infectious syphilis notifications in 2021, the majority were reported in males (1,601, 92%). Females accounted for 7% of infectious syphilis notifications, transgender people accounted for less than 1% of notifications and sex was also not reported for less than 1% of notifications.

The 30 – 39-year age group was the most commonly notified in 2021, representing 34% of female infectious syphilis notifications and 39% of male notifications. However, female infectious syphilis cases skew slightly towards the younger age groups as compared to males. The median age of males has remained steady at 36 years. The median age of female infectious syphilis cases was 31 years in 2021 and has ranged between 30.5–32 years since 2017.

Figure 19: Infectious syphilis notifications by age and sex in people aged 15 years and over, NSW, January – December 2021



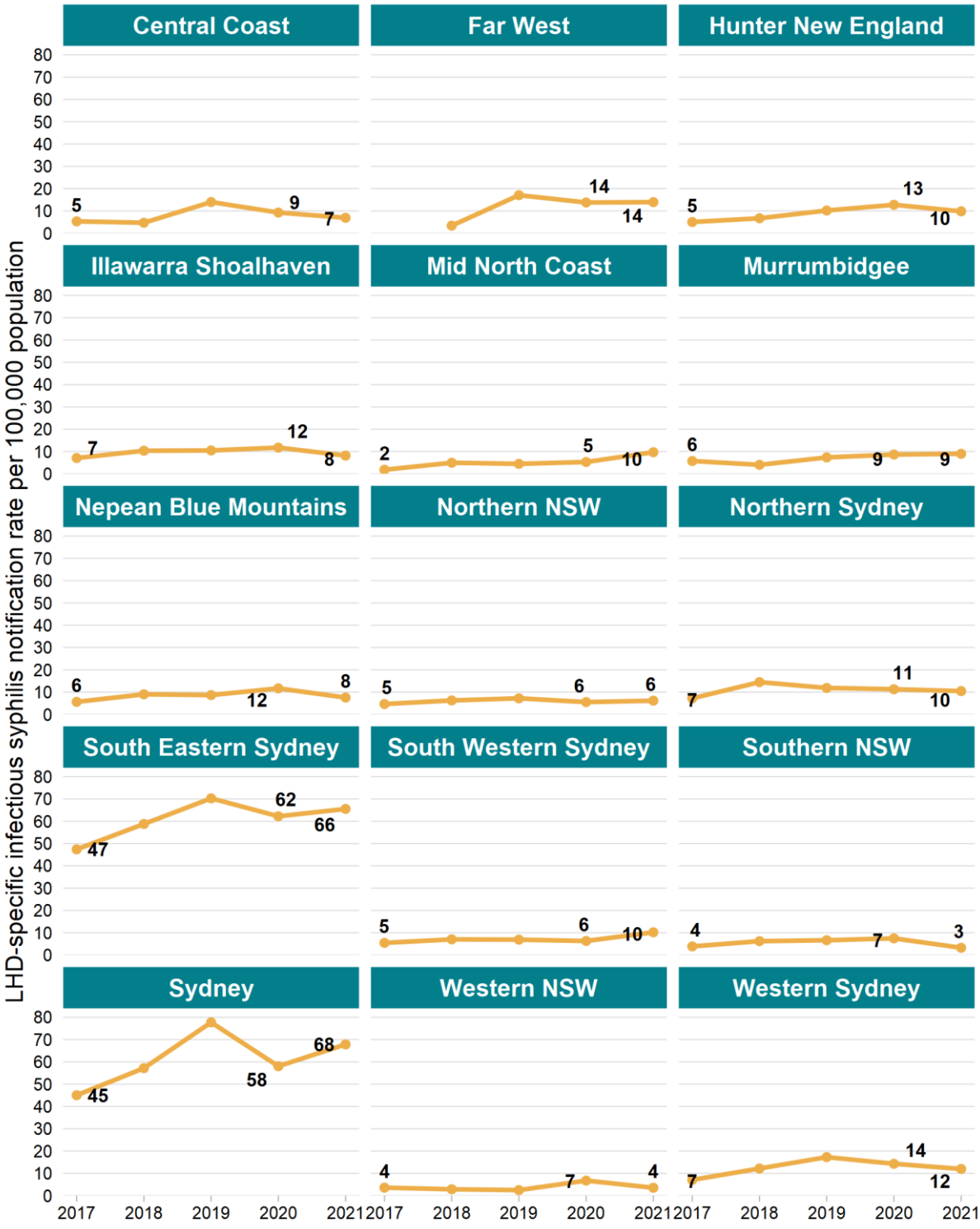
Data source: NCIMS (via SAPHaRI), NSW Health; data extracted 03 August 2022. Note: Excludes non-NSW residents, persons reported as transgender (due to small numbers), and persons whose sex was not reported. Year of onset is based on calculated onset date.

In 2021 the highest infectious syphilis notification rates continued be to in Sydney and South Eastern Sydney LHDs (68 and 65.5 notifications per 100,000 population, respectively). Similar to other STIs, it should be noted that MSM, who are at increased risked of acquiring STIs generally and infectious syphilis in particular, are unequally distributed among local health districts. Continuing high notification rates among males in the Sydney and South Eastern Sydney Local Health Districts in particular reflect large concentrations of MSM in these areas.

The largest increase in the infectious syphilis notification rates compared with 2020 occurred in the Mid North Coast (83% increase) and South Western Sydney (62% increase). Since 2017 the infectious syphilis rate in Mid North Coast residents increased more than five-fold. Over this five-year period rates have almost doubled in Hunter New England, South Western Sydney, and Western Sydney LHDs. A substantial increase has also been recorded in the Far West LHD from 3.4 notifications per 100,00 population in 2018 to 14.0 notifications per 100,000 population in 2021.

See **Appendix D Table 9** for a full overview of notification rates by year for each local health district. Note that rates in areas with small annual numbers of notifications fluctuate and should be interpreted with caution.

Figure 20: Infectious syphilis notification rate by Local Health District of residence, NSW, January 2017–December 2021

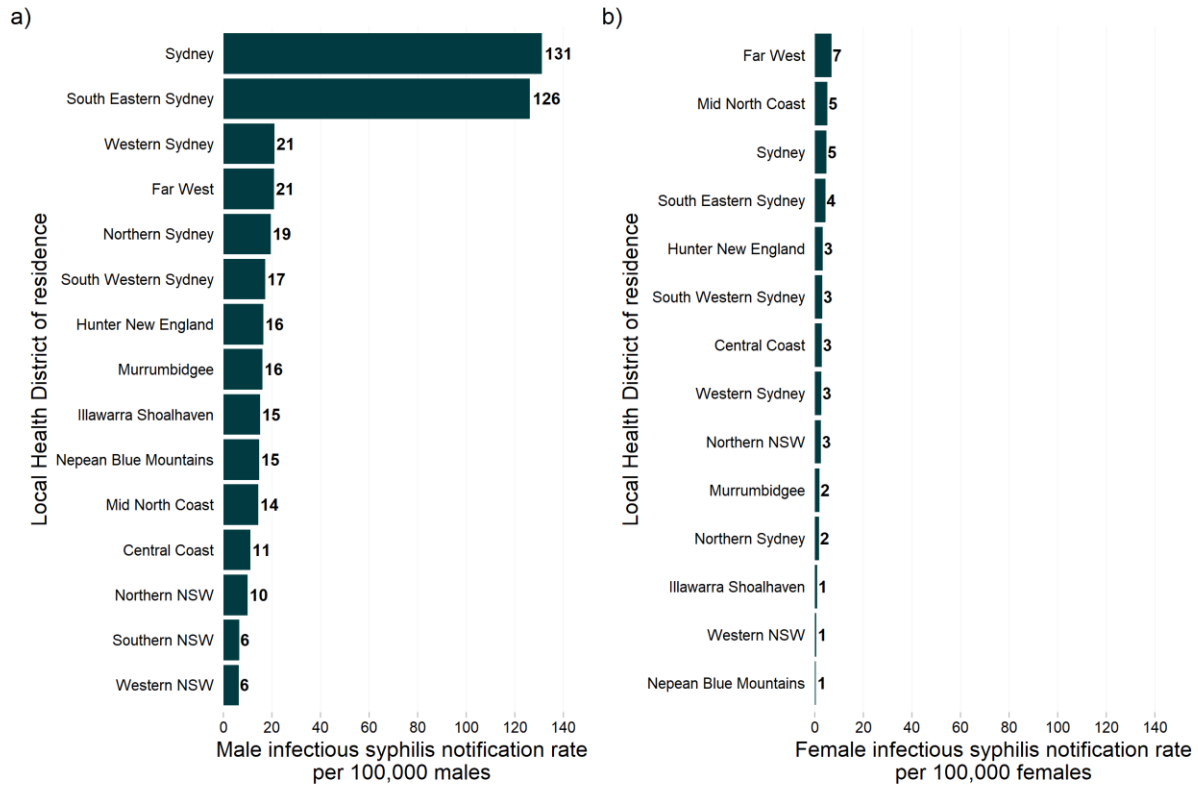


Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health; data extracted 03 August 2022. Note: Excludes non-NSW residents and notifications from Justice Health. Year is based on calculated onset date.

In males, the highest infectious syphilis rates are in the Sydney and South Eastern Sydney LHDs. Since 2017 rates in male residents of these two LHDs have increased 50% and 38% respectively. Western Sydney and Far West LHDs have the next highest infectious syphilis rates for males, which have increased substantially over this reporting period (from 12 to 22 notifications per 100,000 population between 2017 and 2021 for Western Sydney, and from 7 to 21 notifications per 100,000 population between 2018 and 2021). Large relative increases were also reported in male residents of the Mid North Coast, Hunter New England, and South Western Sydney.

The highest infectious syphilis rates in females in 2021 were Far West (7.0 notifications per 100,000 population), Mid North Coast (5.2 notifications per 100,000 population) and Sydney (4.9 notifications per 100,000 populations) LHDs. The rate in Mid North Coast increased almost 6 times between 2020 and 2021 (from 0.9 to 5.2 notifications per 100,000 population. Since 2017 substantial relative increases were reported in both metropolitan Sydney LHDS (Northern Sydney, South Western Sydney) and regional LHDs (Northern NSW, Hunter New England).

Figure 21: Infectious syphilis notification rates by sex and Local Health District, NSW, January – December 2021

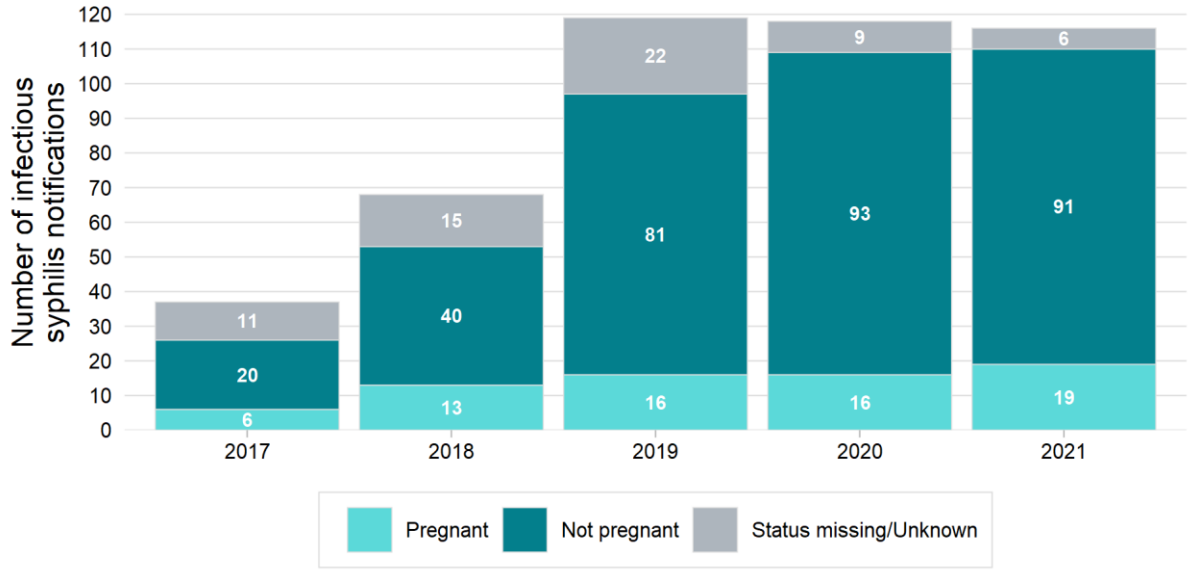


Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health; data extracted 03 August 2022. Note: Excludes non-NSW residents, persons reported as transgender (due to small numbers), persons whose sex was not reported and notifications from Justice Health. Year is based on calculated onset date.

Although the relative number of infectious syphilis numbers are low, there has been a continued increase in the number of infectious syphilis notifications in women of reproductive age (15–45 years) (Figure 22). In 2021 there were 19 women diagnosed with infectious syphilis who were pregnant, which represents 16.4% of women of reproductive age notified with infectious syphilis. This is an increase from 13.6% of women of reproductive age with infectious syphilis in 2020. However, as the number of infectious syphilis notifications are small, trends should be interpreted with caution.

Note: Data from before 2020 should be interpreted with caution due to the higher proportion of women with unknown pregnancy status.

Figure 22: Number of infectious syphilis notifications in women of reproductive age by pregnancy status at the time of diagnosis, NSW, January 2017– December 2021

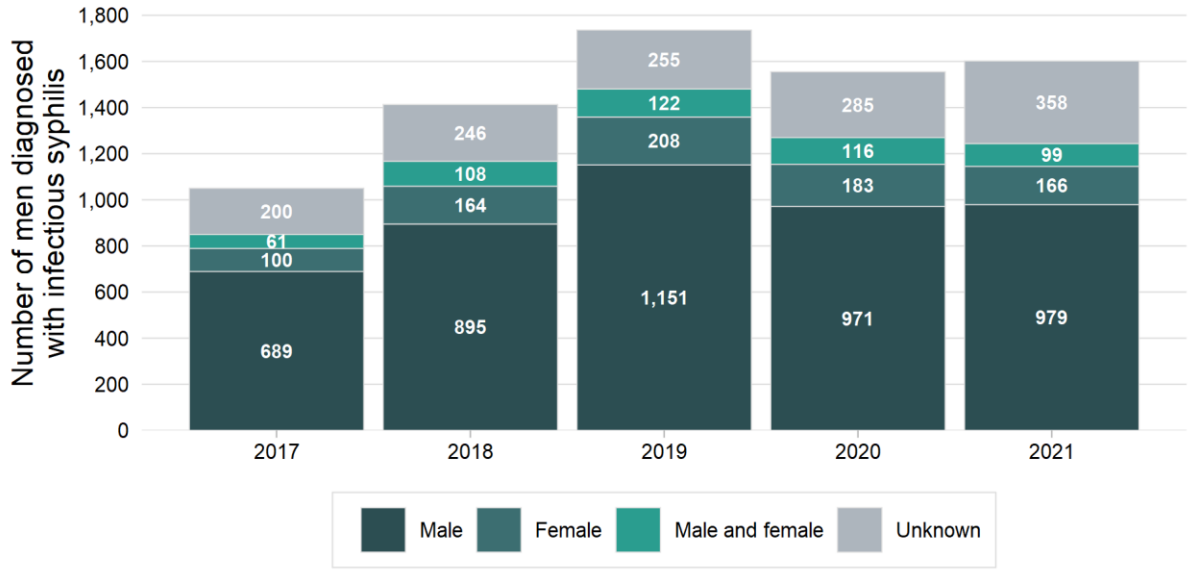


Data source: NCIMS (via SAPHaRI), NSW Health; data extracted 03 August 2022. Reproductive age is defined as 15–45 years. Excludes non-NSW residents. Year is based on calculated onset date.

In 2021 sexual exposure was known for 1,244 (23%) males diagnosed with infectious syphilis (Figure 23). Among these men, the reported sexual exposure continued to be predominantly male-to-male sex (78.7%). Since 2017, the proportion reporting male-to-male sex has ranged between 81.1% to 76.7%.

Female only sexual exposure was reported by 13.3% of males with infectious syphilis, which is slightly lower than 2018–2020 where more than 14% of men reported female only sexual exposure. Male and female exposure was reported by 99 men, representing 8% of male infectious syphilis cases in 2021. This represents a slight decrease compared to 2020, where 116 males reported female and male sexual exposures (9.1% of male cases).

Figure 23: Reported sexual exposure of men diagnosed with infectious syphilis, NSW, January 2017–December 2021



Data source: NCIMS (via SAPHaRI), NSW Health; data extracted 03 August 2022. Note: Excludes non-NSW residents. Year is based on calculated onset date.

2.2 Infectious syphilis among Aboriginal people

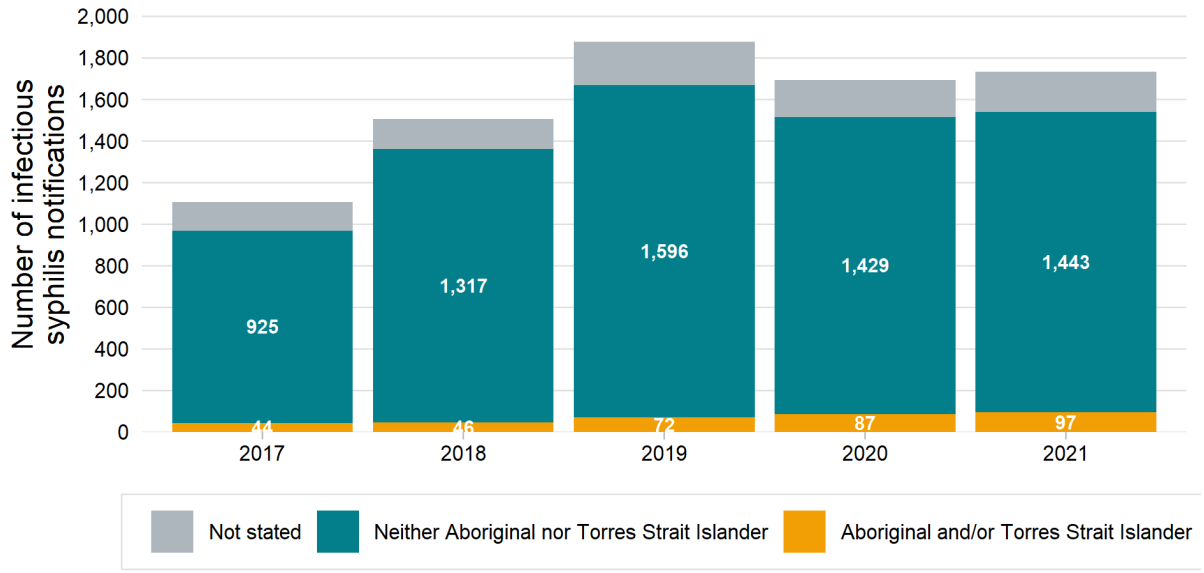
Of 1,734 infectious syphilis notifications in 2021, Aboriginal status was known for 1,540 people, representing 88.8% of infectious syphilis notifications (Figure 24). Among notified cases whose Aboriginal status was known in 2021, 6.3% were Aboriginal and/or Torres Strait islander people, which is a slight increase on previous years where the proportion of Aboriginal and/or Torres Strait Islander people ranged between 3.4% to 5.7%.

Amongst those whose Aboriginal status was known, the infectious syphilis notification rate among Aboriginal people was 38.0 per 100,000 population in 2021, 1.5 times higher than the rate among non-Aboriginal people (17.9 per 100,000) (Figure 25). Since 2017, infectious syphilis rates have increased in both Aboriginal and non-Aboriginal people, by 48% for non-Aboriginal people and by 103% for Aboriginal and Torres Strait Islander people.

In previous annual reports rates were directly age-standardised to account for the differences in age structures between Aboriginal and non-Aboriginal populations. However, due to small numbers within multiple age groups age-standardisation is not advised. Additional age distribution and age-specific rate analyses have been provided (See Figure 24–25) as important contextual information on age group differences.

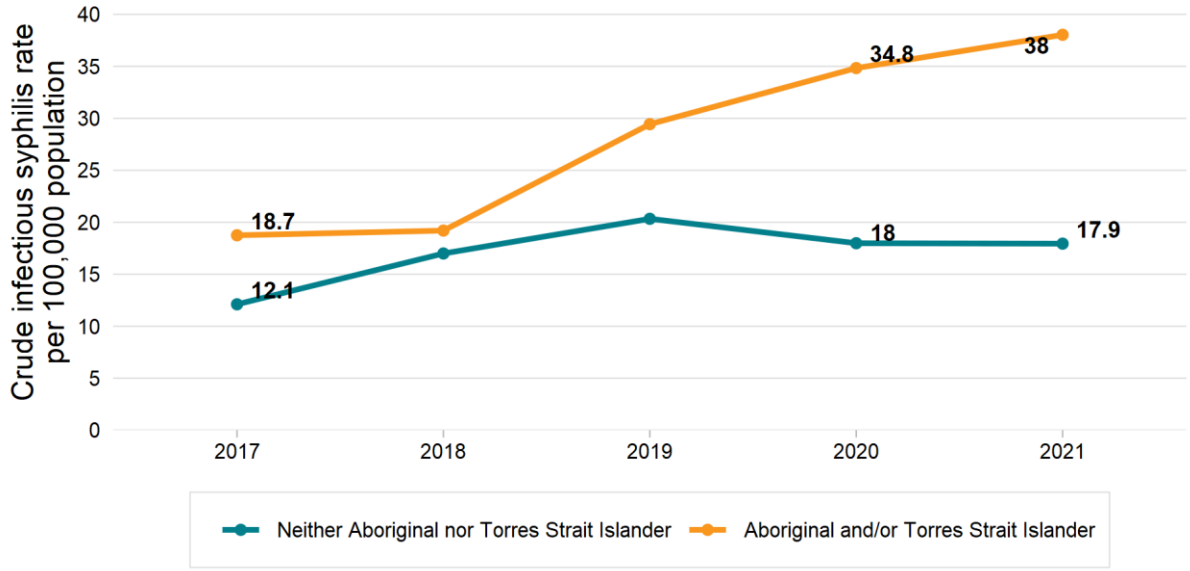
Note: As the number of infectious syphilis notifications in the Aboriginal population is small, trends should be interpreted with caution.

Figure 24: Number of infectious syphilis notifications by Aboriginal status, NSW, January 2017– December 2021



Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health; data extracted 03 August 2022. Note: Excludes non-NSW residents. Year is based on calculated onset date.

Figure 25: Infectious syphilis notification rates by Aboriginal status, NSW, January 2017– December 2021

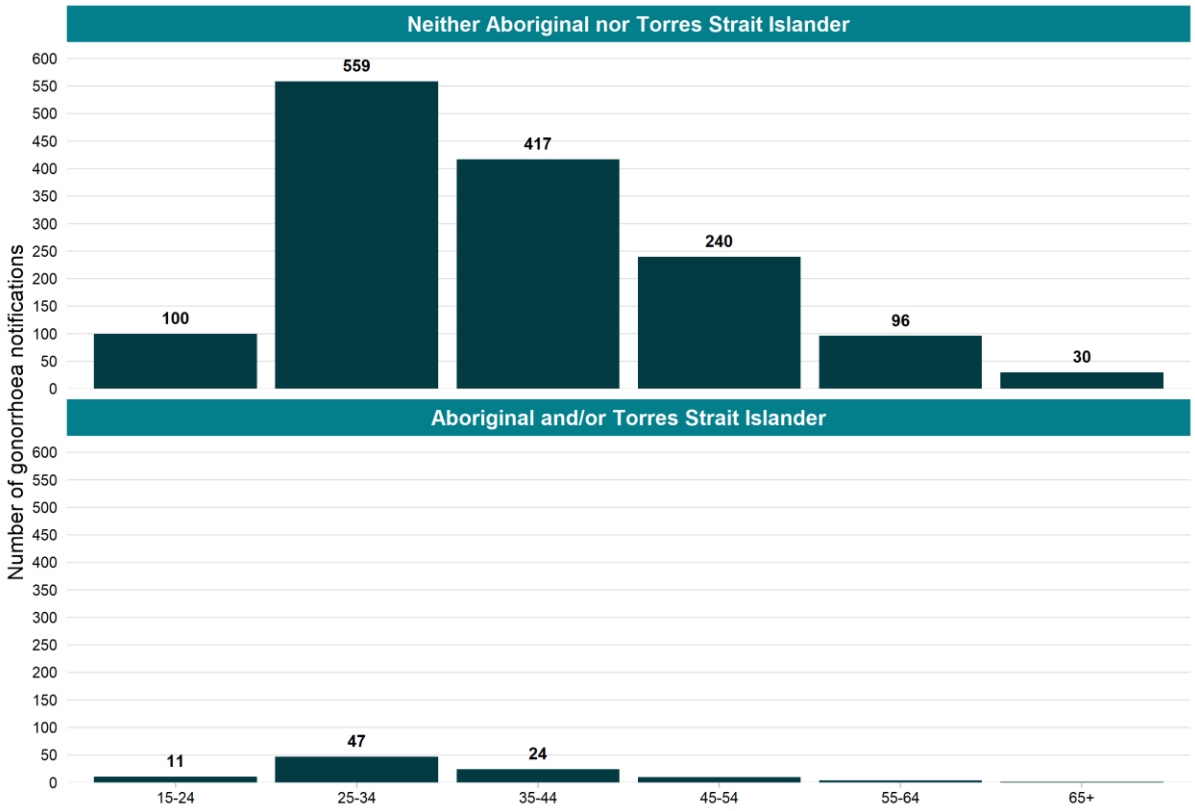


Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health; data extracted 03 August 2022. Note: Excludes non-NSW residents and records where Aboriginal status was not stated. Year is based on calculated onset date.

The distribution of syphilis notifications by age group is relatively similar between Aboriginal and non-Aboriginal people, with slight variations reflective of population age structure differences (Figure 26). In 2021, the 25–34 -year age group was the most common for both Aboriginal and non-Aboriginal people, followed by the 35–44-year age groups.

For Aboriginal people, notifications were slightly more concentrated within the 25–34 years age group. In notified cases in Aboriginal people, 48% of notifications in 2021 were in this age group, as compared to 39% in non-Aboriginal notified cases. This distribution largely mirrors the Aboriginal population's younger age structure which has larger proportions of young people and smaller proportions of older people as compared to the non-Aboriginal population.[4]

Figure 26: Number of infectious syphilis notifications by age group and Aboriginality, NSW, January - December 2021



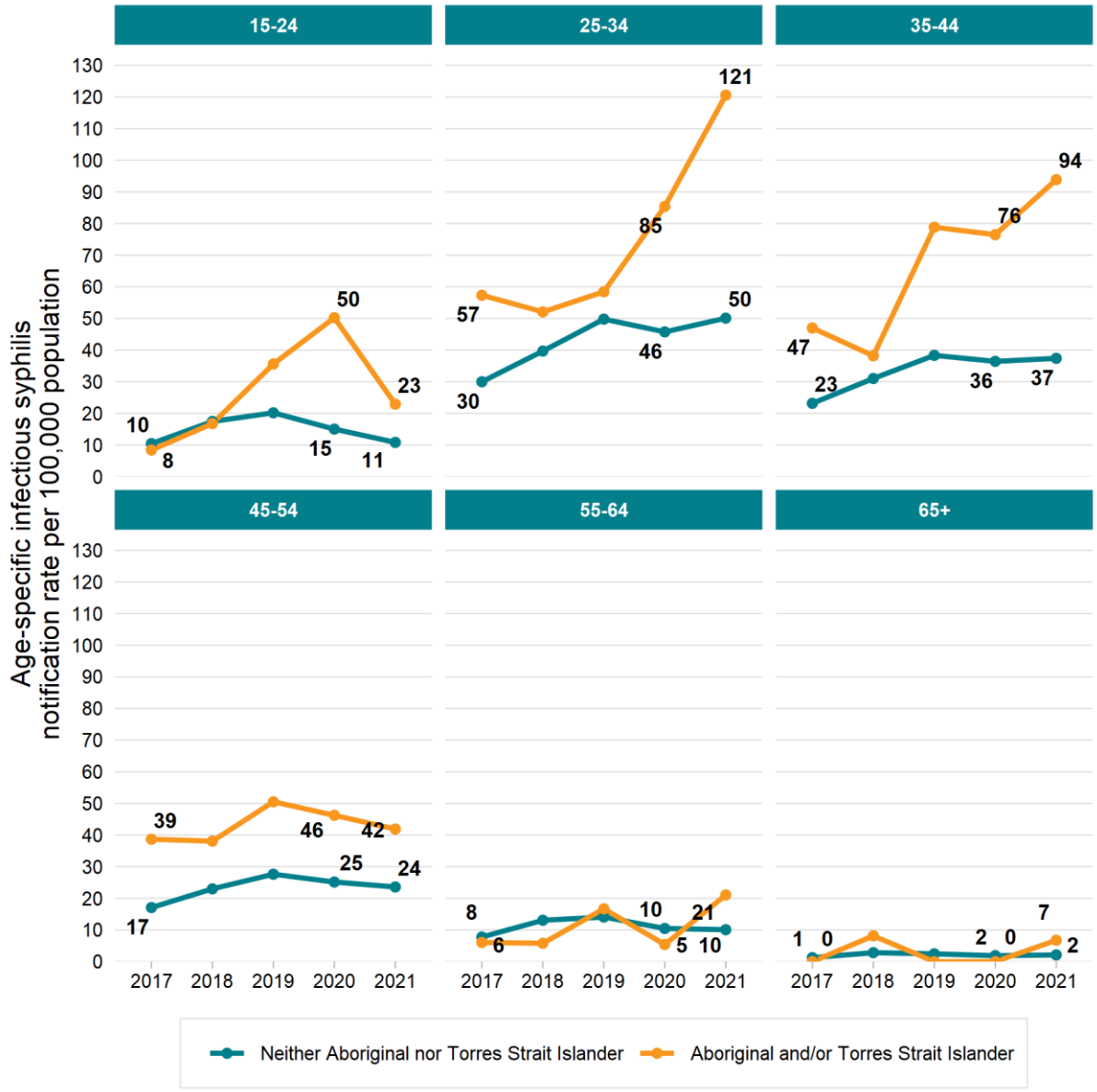
Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health; data extracted 03 August 2022. Note: Excludes non-NSW residents, records where Aboriginal status was not stated, and persons whose age was not reported (see Figure 26). Year is based on calculated onset date.

[4] Australian Bureau of Statistics. Estimates of Aboriginal and Torres Strait Islander Australians [Internet]. Canberra; 2016. Available from: https://www.abs.gov.au/statistics/people/aboriginal-and-torres-strait-islander-peoples/estimates-aboriginal-and-torres-strait-islander-australians/latest-release

In 2021 infectious syphilis rates were highest among Aboriginal people aged 25 to 44 years, where the rates in Aboriginal people are approximately 2.5 times higher than non-Aboriginal people. Despite a substantial decrease in the rate between 2020 and 2021, Aboriginal people aged 15–24-years had the largest relative increase in the infectious syphilis rate since 2017, increasing 2.7 times over this time period.

Note: As the number of infectious syphilis notifications in the Aboriginal population is small, rates are prone to variation and trends should be interpreted with caution.

Figure 27: Age specific infectious syphilis notification rates by Aboriginal status, NSW, January 2017–December 2021



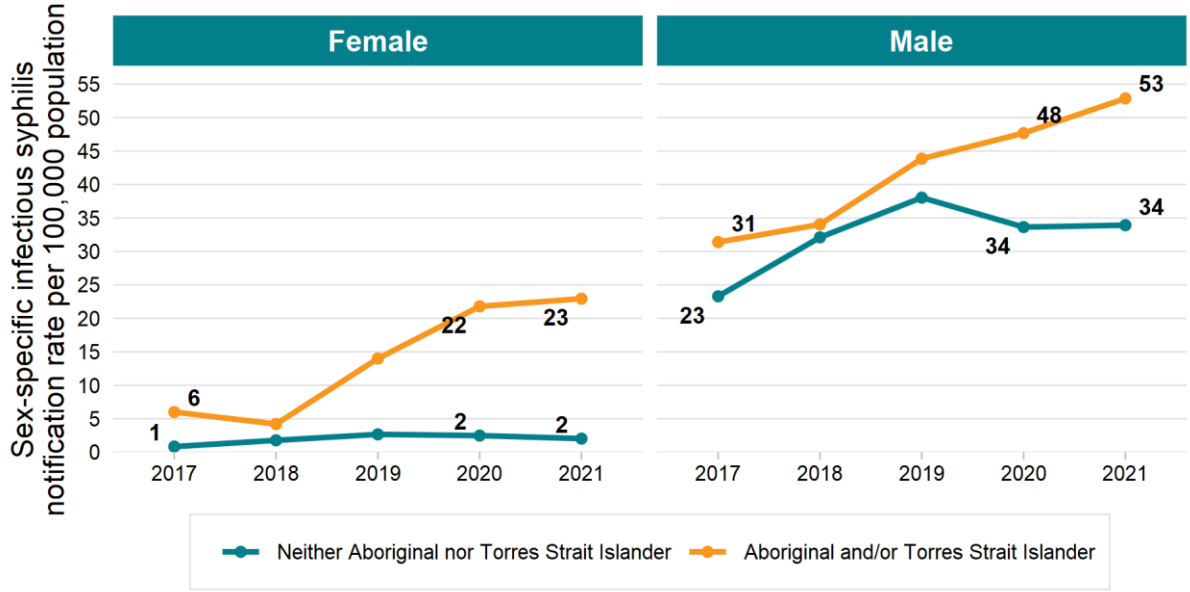
Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health; data extracted 03 August 2022.
Note: Excludes non-NSW residents, records where Aboriginal status was not stated, and persons whose age was not reported (see Figure 26). Year is based on calculated onset date.

Of the 97 infectious syphilis notifications among Aboriginal and/or Torres Strait islander people in 2021, 68 (70%) were male and 29 (30%) were female.

Among females in NSW, Aboriginal women continue to have a higher infectious syphilis notification rate compared to non-Aboriginal women (Figure 28). In 2021, the rate in Aboriginal women at 23 notifications per 100,000 females was 11.3 times higher than the rate in non-Aboriginal women at 2 notifications per 100,000 females. Since 2017, the rate for both Aboriginal women and non-Aboriginal women has substantially increased, for Aboriginal women the rate has increased 283% and for non-Aboriginal women it has increased 143%.

In 2021, Aboriginal males had a rate of 53 notifications per 100,000 males which was 1.6 times higher than the rate in non-Aboriginal males of 34 notifications per 100,000 males. Over the past 5 years, rates have increased for both Aboriginal and non-Aboriginal males. In Aboriginal males the rate increased 68% between 2017 and 2021. In non-Aboriginal males, the rate increased 46%.

Figure 28: Sex-specific infectious syphilis notification rate by Aboriginal status, NSW, January 2017–December 2021

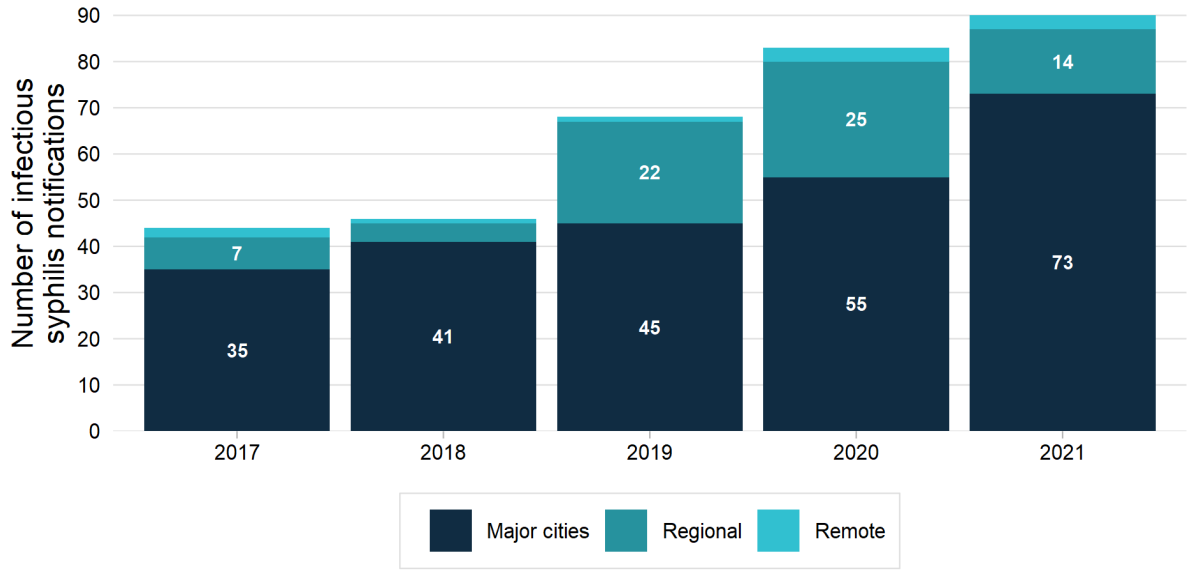


Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health; data extracted 03 August 2022. Note: Excludes non-NSW residents, records where Aboriginal status was not stated, and persons whose sex was not reported (see Figure 26). Year is based on calculated onset date.

In 2021 of the 90 infectious syphilis notifications among Aboriginal people with remoteness area known, 73 (81%) were residing in major cities, 14 (16%) were residing in regional areas, and three were residing in remote areas. Since 2017 the largest increase in the number of infectious syphilis cases in Aboriginal people was major cities (2.9-fold increase), followed by regional areas (2-fold increase).

As the number of infectious syphilis notifications in the Aboriginal population is small, particularly in regional and remote areas, fluctuations are to be expected and trends should be interpreted with caution.

Figure 29: Number of Infectious syphilis notifications in the Aboriginal population, by remoteness area, NSW, January 2017– December 2021



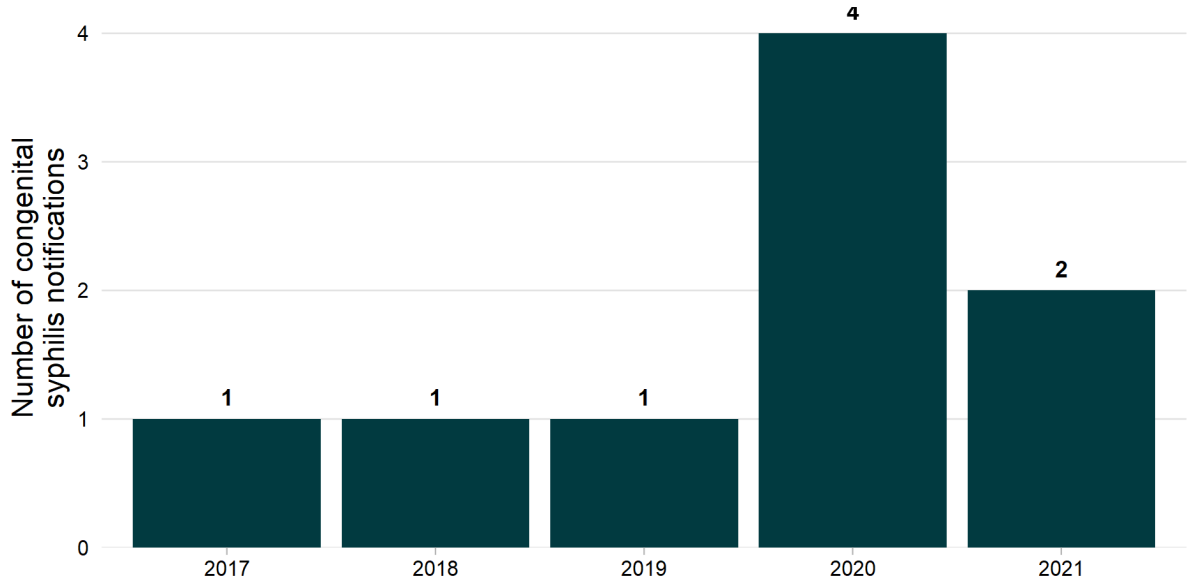
Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health data extracted 03 August 2022. Note: Excludes non-NSW residents, records where Aboriginal status was not stated and persons whose remoteness areas was not known.

2.3 Congenital syphilis notifications

Congenital syphilis is an entirely preventable disease and represents a failure of the health system. Its occurrence reflects a failure of delivery systems for antenatal care and for syphilis control programs. In NSW, all cases of congenital syphilis are investigated to identify and remedy gaps in service delivery.

In the last five years there have been nine cases of congenital syphilis among NSW residents. Two cases (22%) occurred in 2021. Among the nine cases since 2017, eight occurred in metropolitan Sydney (80%). Two congenital syphilis cases were in the Aboriginal population in NSW from 2017 to 2021.

Figure 30: Number of congenital syphilis notifications, NSW, January 2017– December 2021



Data source: NCIMS (via SAPHaRI), NSW Health; data extracted 28 July 2022. Note: Excludes non-NSW residents. Year is based on calculated onset date.

3 Reduce pelvic inflammatory disease associated with chlamydia

Chlamydia infection is usually a self-limiting disease, however in women it is associated with an increased risk of pelvic inflammatory disease (PID), ectopic pregnancy, and infertility. The risk of these outcomes increases with the number of chlamydia infections that a woman contracts. For this reason, the burden of pelvic inflammatory disease may be a better measure of chlamydia morbidity than chlamydia notification data.

Chlamydia associated PID hospitalisation data are used in this report as an indicator of the burden of pelvic inflammatory disease. Emergency department presentations (without a subsequent hospital admission) have not been included as the diagnoses of PID in the admitted patient data collections are likely to be more reliably and consistently applied than in the emergency department data. As only the most severe cases of PID are likely to be hospitalised, chlamydia associated PID hospitalisations do not reflect the true incidence or full burden of PID but are used to monitor trends over time. PID hospitalisation data are influenced by changes in coding practices and changes in PID management over time.

Prevention, testing and appropriate treatment and management are the cornerstones of chlamydia control and are embedded in the current STI strategy. Chlamydia notification data does not reflect the true incidence of chlamydia infection as it only represents a proportion of infections in the population, however it is also useful for monitoring trends over time. Chlamydia notification data are heavily influenced by testing practices. It is estimated that 28-29% of new chlamydia infections in people aged 15–29 years were diagnosed nationally between 2018 and 2020.[5]

Chlamydia is a notifiable disease under the *NSW Public Health Act 2010*. A confirmed case requires isolation of *Chlamydia trachomatis* from culture or detection by nucleic acid testing (NAAT) or antigen. Only confirmed cases of chlamydia are counted when reporting chlamydia notification data. Patient care and contact tracing are the responsibility of the treating doctor. Information on risks (e.g. sexual exposure) is not routinely collected.

It is important to note that there may be multiple specimens collected for each individual tested for chlamydia. Hence the number of chlamydia tests done is greater than the number of individuals tested. However, an individual with multiple specimens that are positive for *Chlamydia trachomatis* will generate only one notification.

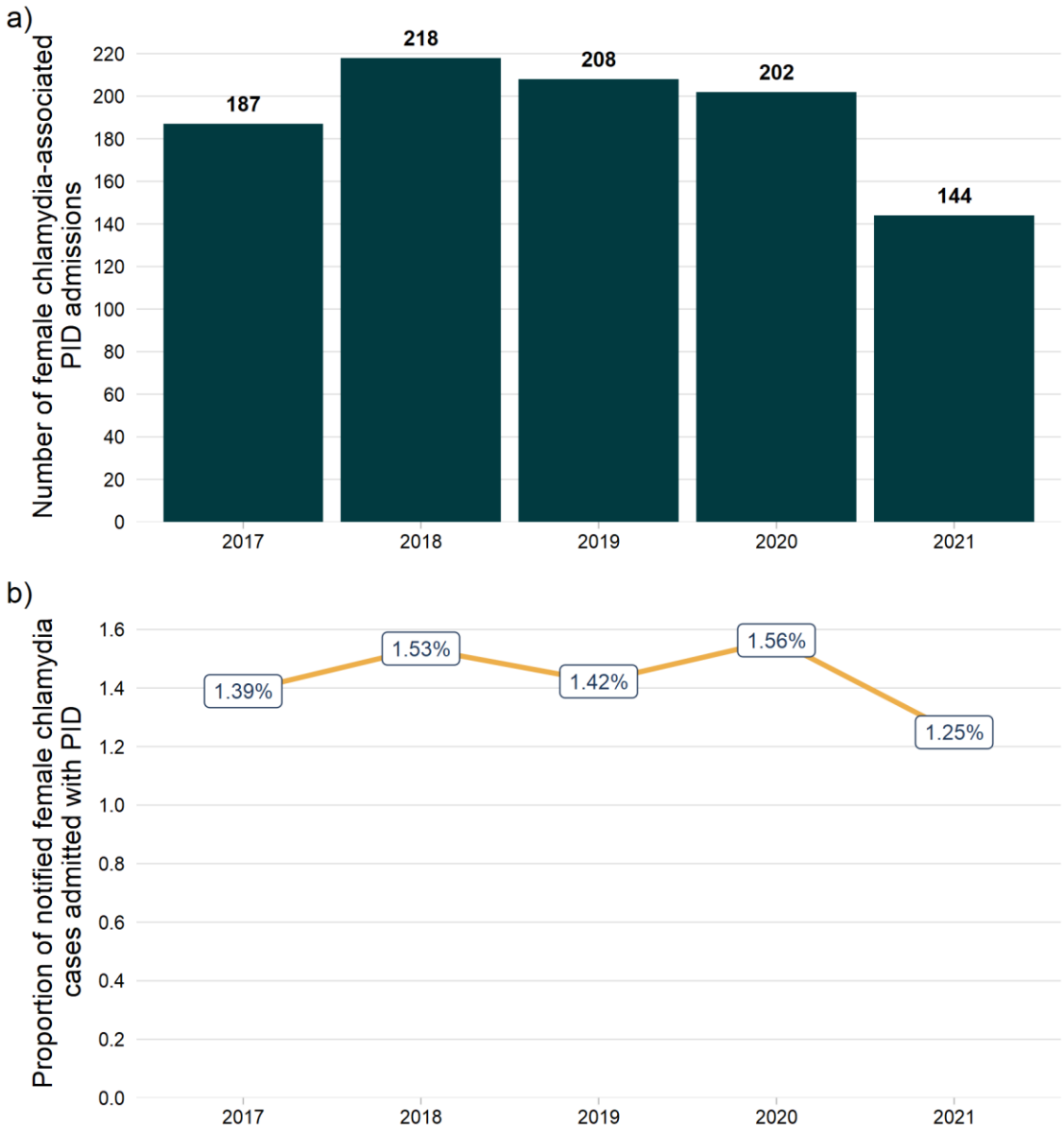
[5] Kirby Institute. HIV, viral hepatitis and sexually transmissible infections in Australia: annual surveillance report 2021. Sydney: Kirby Institute, UNSW Sydney; 2021.

3.1 Chlamydia-associated hospitalisations for pelvic inflammatory disease

In 2021, 144 women notified with chlamydia were admitted to hospital with PID within 12 months of diagnosis (Figure 31). This is the lowest annual number over the past five years and represents a 23% decrease in admissions since 2017.

Whilst the number of women admitted to hospital with PID has been declining since 2018, the proportion of notified chlamydia cases admitted with PID has remained relatively steady between 1.25% and 1.56% between 2017 and 2021.

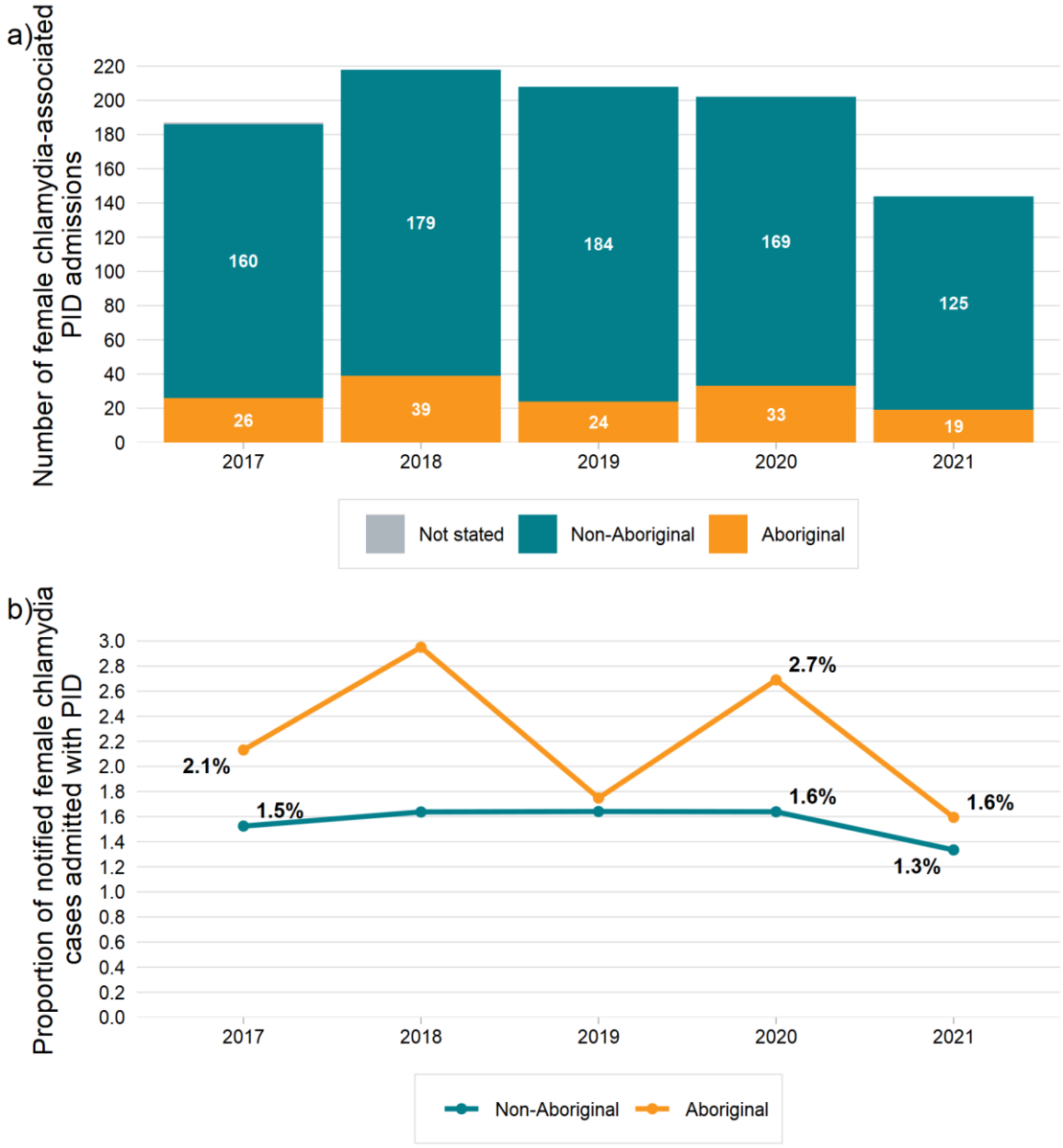
Figure 31: Number and proportion of women notified with chlamydia who are admitted with PID within 12 months of diagnosis, NSW, January 2017– December 2021



Data source: Communicable Diseases Register, NSW Ministry of Health (via SAPHaRI); data extracted 02 August 2022.
Note: Excludes non-NSW residents. Excludes re-notifications within 12 months.

The number of Aboriginal women notified with chlamydia who were admitted to hospital with PID within 12 months of diagnosis was the lowest since 2017, representing a 27% decrease over this five-year period (Figure 32). The decrease in admission in non-Aboriginal women since 2017 was slightly smaller at 22%. In 2021 the proportion of Aboriginal women notified with chlamydia who were admitted to hospital was similarly at its lowest level at 1.6%. Since 2017 the proportion of Aboriginal women admitted has varied, likely related to small numbers. Yet there appears to be a declining trend in admissions among Aboriginal women. Despite this, the proportion of women admitted remains higher in Aboriginal women than for non-Aboriginal women. For non-Aboriginal women, the proportion admitted has remained stable between 1.3% and 1.6% since 2017.

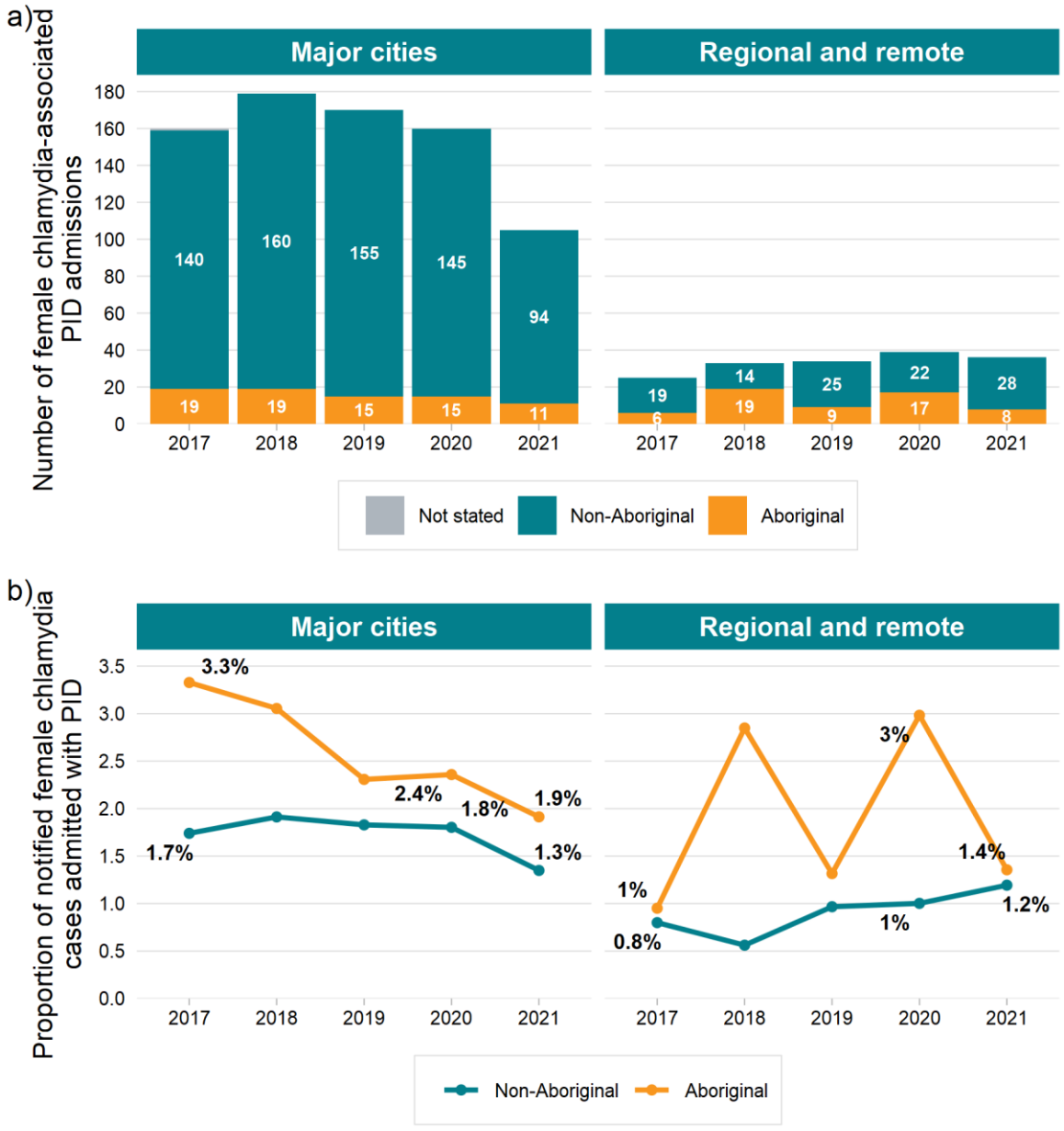
Figure 32: Number and proportion of women notified with chlamydia who are admitted with PID within 12 months of diagnosis, by Aboriginal status, NSW, January 2017– December 2021



Data source: Communicable Diseases Register, NSW Ministry of Health (via SAPHaRI); data extracted 02 August 2022.
Note: Excludes non-NSW residents. Excludes re-notifications within 12 months. As the number of PID admissions among Aboriginal women notified with chlamydia is small, yearly variation should be interpreted with caution.

In major cities admissions have declined since 2018, including the number of Aboriginal women admitted annually (Figure 33). This declining trend is also apparent in the proportions admitted for both Aboriginal and non-Aboriginal women in major cities. Differences between proportions admitted in Aboriginal and non-Aboriginal women have decreased since 2017 when the proportion in Aboriginal women was almost 2 times higher. In 2021 the proportion admitted in Aboriginal women was 1.4 times higher than non-Aboriginal women. In regional and remote areas, annual admissions remain low but unlike major cities there does not appear to be a declining trend. Since 2017 there have been between 6 and 19 Aboriginal women admitted in regional and remote areas, representing 1%–3% of women notified. These proportions are between 1.14 to 5.1 times higher than non-Aboriginal women.

Figure 33: Number and proportion of women notified with chlamydia who are admitted with PID within 12 months of diagnosis, by Aboriginal status and remoteness area, NSW, January 2017– December 2021

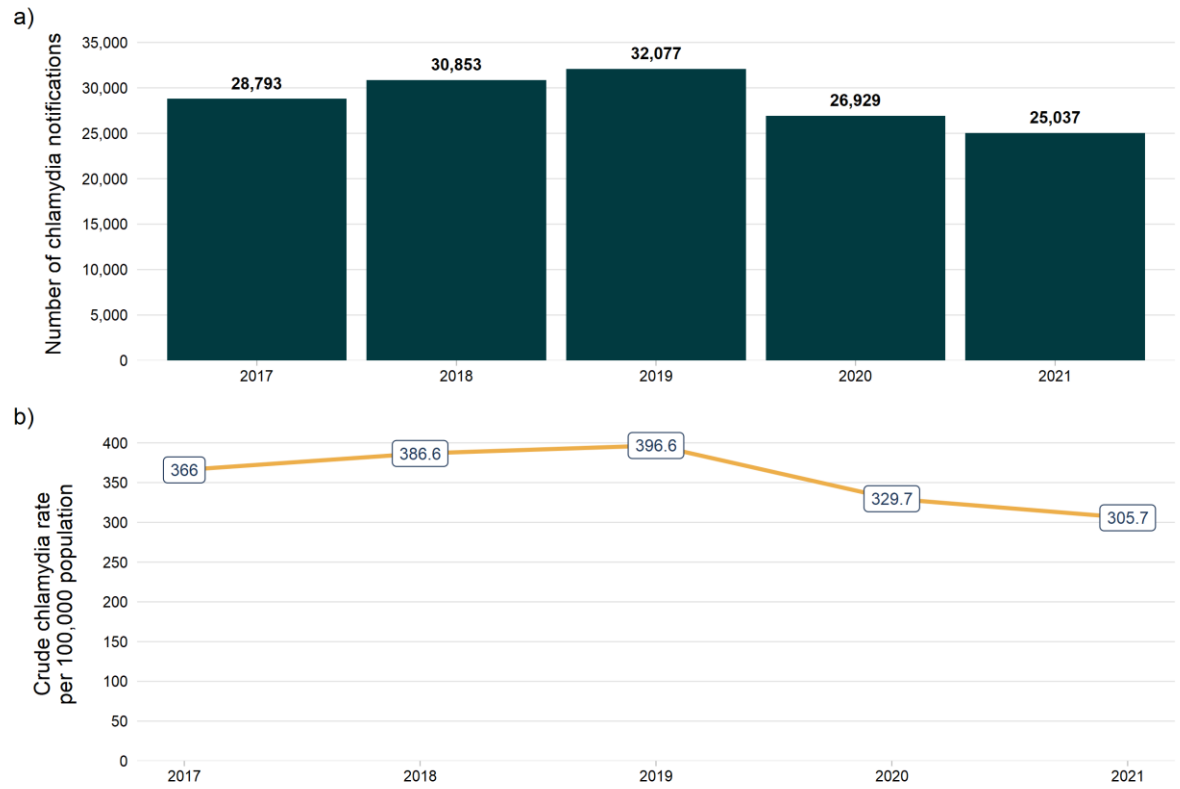


Data source: Communicable Diseases Register, NSW Ministry of Health (via SAPHaRI); data extracted 02 August 2022.
Note: Excludes non-NSW residents. Excludes re-notifications within 12 months. As the number of PID admissions among Aboriginal women notified with chlamydia is small, yearly variation should be interpreted with caution.

3.2 Chlamydia notifications

In 2021 there were 25,037 notifications of chlamydia recorded in NSW residents. At 305.7 notifications per 100,000 population, the 2021 chlamydia notification rate decreased a further 7% since 2020 (Figure 34). Both the annual number of chlamydia notifications and notification rate are the lowest recorded in the past five years. Since 2019, prior to the COVID-19 pandemic, the chlamydia notification rate has decreased 23% and is currently 16.5% lower than the 2017 rate. This rate decline is at least partially explained by changes in social mixing and sexual behaviours caused by COVID-19 restrictions and altered health seeking behaviours, service provision and access, as well as disruptions to screening programs.

Figure 34: Number and crude rate of chlamydia notifications, NSW, January 2017– December 2021

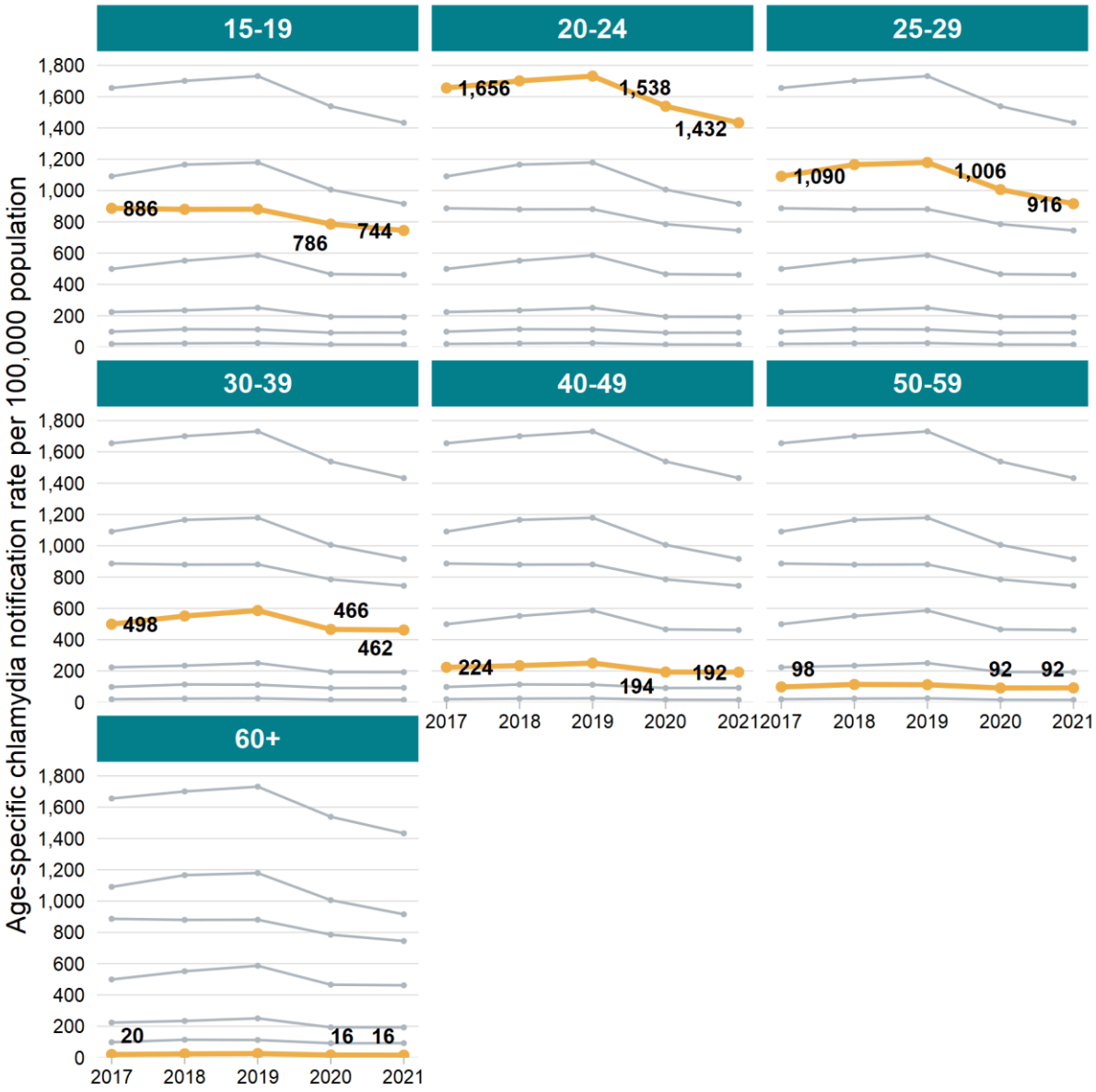


Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health. Data extracted 30 June 2022. Note: Excludes non-NSW residents.

Decreases in the chlamydia notification rate in 2021 occurred in almost all age groups (Figure 35). The largest declines between 2020 and 2021 were recorded in people aged between 20 and 29 years (9% and 7% decrease in the 25–29-year and 20–24-year age groups, respectively). These are the age groups with the highest chlamydia notification rates in NSW. Rates remained relatively steady in people aged 30 years and older.

Notification rates in 2021 were lower than 2017 for all age groups. Among the age groups with the highest notification rates, people aged between 20 and 29 years of age, rates decreased by approximately 15% over this 5-year period.

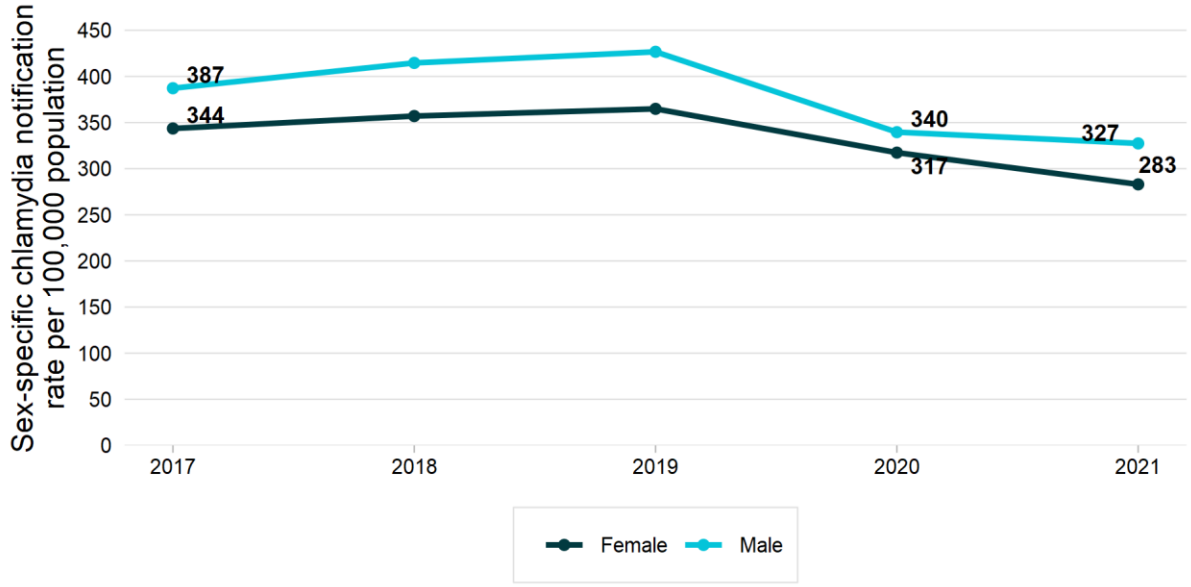
Figure 35: Age specific chlamydia notification rates in people aged 15 years and over, NSW, January 2017–December 2021



Data source: NCRES and ABS population estimates (via SAPHaRI). Data extracted 30 June 2022. Note: Excludes non-NSW residents. Year of onset is based on calculated onset date.

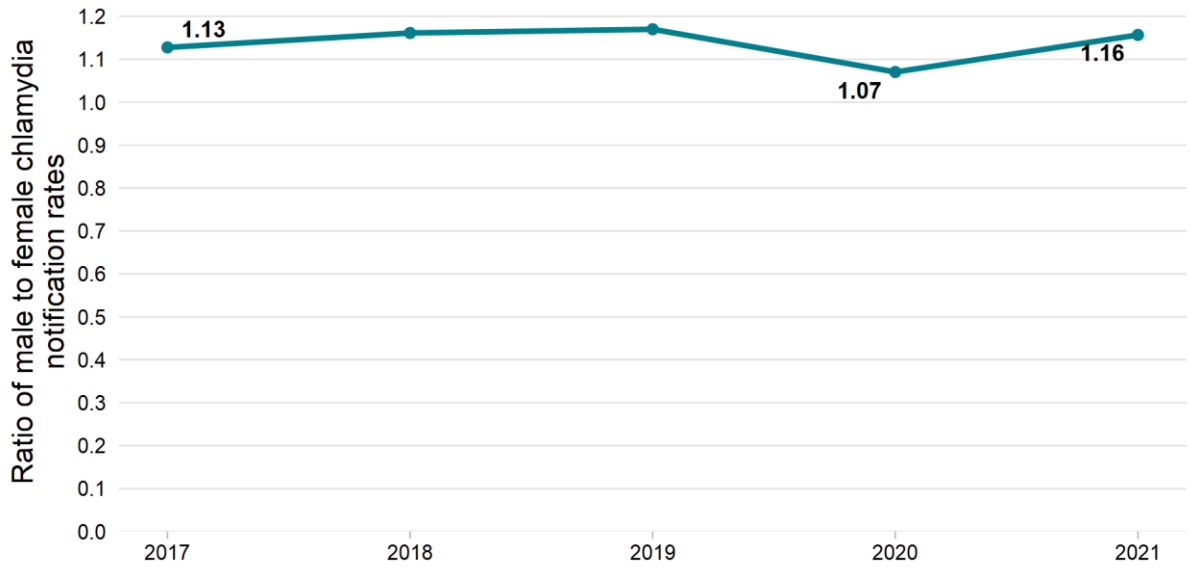
In 2021 the male chlamydia notification rate of 327 per 100,00 males was 1.2-fold higher than females at 283 per 100,000 females 2020 (Figure 36, Figure 37). The notification rate in 2021 decreased for both males and females as compared to 2020. This decrease was larger for females (11% decrease) than males (4% decrease). Reductions in the chlamydia notification rate over the past 5 years are relatively consistent for both males and females, decreasing 16% and 18% respectively.

Figure 36: Sex specific chlamydia notification rates, NSW, January 2017– December 2021



Data source: NCRES (via SAPHaRI). Data extracted 30 June 2022. Note: Excludes non-NSW residents, persons reported as transgender (due to small numbers), and persons whose sex was not reported. Year of onset is based on calculated onset date.

Figure 37: Ratio of male to female chlamydia notification rates, NSW, January 2017– December 2021

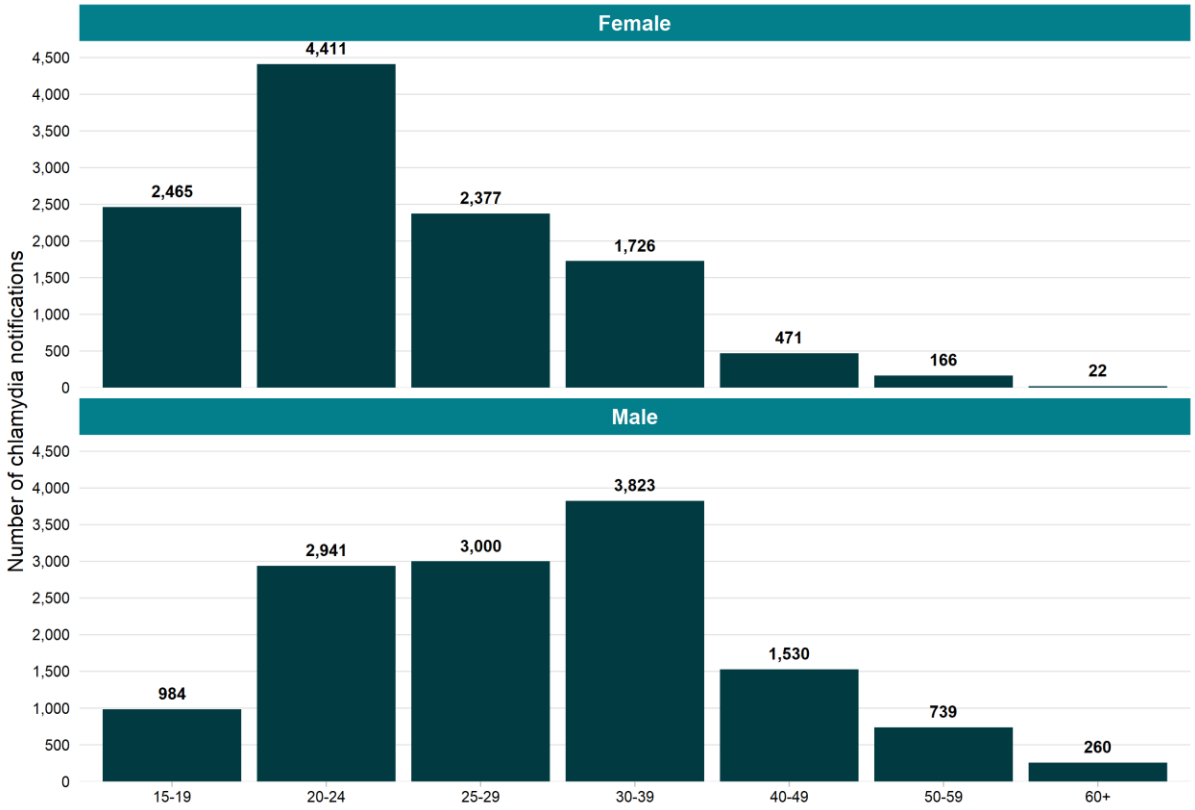


Data source: NCRES (via SAPHaRI). Data extracted 30 June 2022. Note: Excludes non-NSW residents, persons reported as transgender (due to small numbers), and persons whose sex was not reported. Year of onset is based on calculated onset date.

Among total chlamydia notifications in 2021, 53.1% were reported in males and 46.6% in females. Nine notifications were reported in transgender individuals and 48 notifications had gender note reported. Among females over the age of 15 years in 2021, the greatest proportion of notifications was reported in the 20–24 age group (38% of female notifications) (Figure 38). Whilst for males, the greatest proportion of notifications was in people aged 30–39 years (29% of male notifications).

The median age of females a time of notification was 23 years, which has remained consistent since 2017. The median age of males with 29 years, which was an increase from 28 years in 2020, but remains within the range for the prior 5 years.

Figure 38: Chlamydia notifications by age and sex in people aged 15 years and over, NSW January – December 2021



Data source: NCIMS (via SAPHaRI), NSW Health. Data extracted 30 June 2022. Note: Excludes non-NSW residents, persons reported as transgender (due to small numbers), and persons whose sex was not reported. Year of onset is based on calculated onset date.

In 2021 South Eastern Sydney and Sydney LHDs continued to report the highest chlamydia rates. Decreases in the chlamydia notification rates in 2021 were reported in all metropolitan LHDs, as well as some regional LHDs in the northern areas of the state (Figure 39).

An increase in notification rate between 2020 and 2021 was reported in Murrumbidgee (7% increase), Hunter New England (12% increase), Western NSW (18% increase), Southern NSW (19% increase) and Far West (50% increase). However, all LHDs have lower chlamydia notification rates than in 2017.

Figure 39: Chlamydia notification rates by Local Health District of residence, NSW, January 2017 - December 2021

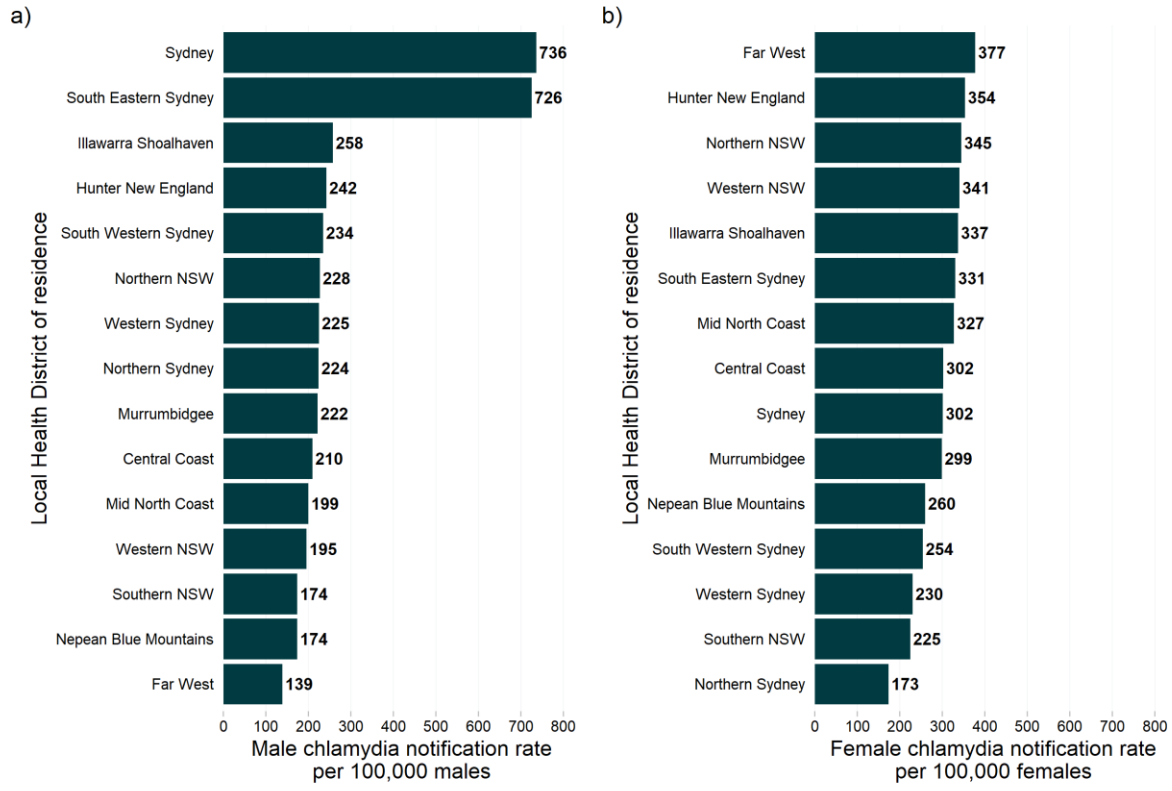
Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health. Data extracted 30 June 2022. Note: Excludes non-NSW residents and notifications from Justice Health. For Justice Health notifications, see Table in Appendix D: Notification data. Year of onset is based on calculated onset date

For males, the LHDs reporting the highest chlamydia notification rates in 2021 continued to be those in metropolitan Sydney, in particular South Eastern Sydney and Sydney LHDs (Figure 40). All LHDs reported a decrease in the male chlamydia rate as compared to 2017. The largest decrease over this five-year period was recorded in Nepean Blue Mountains LHD (32% decrease).

It should be noted that MSM, who are at increased risked of acquiring STIs, are unequally distributed among local health districts. Continuing high notification rates among males in the Sydney and South Eastern Sydney Local Health Districts reflect large concentrations of MSM in these areas. These populations also have a high uptake of pre-exposure prophylaxis (PrEP) for HIV.[6] Persons on PrEP are regularly tested for STIs.

In 2021, the highest female chlamydia rates were reported in the Far West, Hunter New England, Northern NSW and Western NSW LHDs. In prior years, the highest female chlamydia rates were reported in Southern Eastern Sydney and Sydney LHDs. The female chlamydia rate in the Far West LHD increased 60% between 2020 and 2021 and has the largest increase since 2017 at 5%.

Figure 40: Chlamydia notification rates by sex and Local Health District of residence, NSW, January – December 2021



Data source: NCRES and ABS population estimates (via SAPHaRI). Data extracted 30 June 2022. Note: Excludes non-NSW residents, persons reported as transgender (due to small numbers), persons whose sex was not reported and notifications from Justice Health. For Justice Health notifications, see Table in Appendix D: Notification data. Year of onset is based on calculated onset date.

[6] Grulich AE, Guy R, Amin J, Jin F, Selvey C, Holden J, Schmidt HM, Zablotska I, Price K, Whittaker B, Chant K. Population-level effectiveness of rapid, targeted, high-coverage roll-out of HIV pre-exposure prophylaxis in men who have sex with men: the EPIC-NSW prospective cohort study. The Lancet HIV. 2018;5(11):e629-37.

Among both males and females, the genitourinary tract is the main site of infection notified to NSW Health; representing 65% in males, 98% in females (

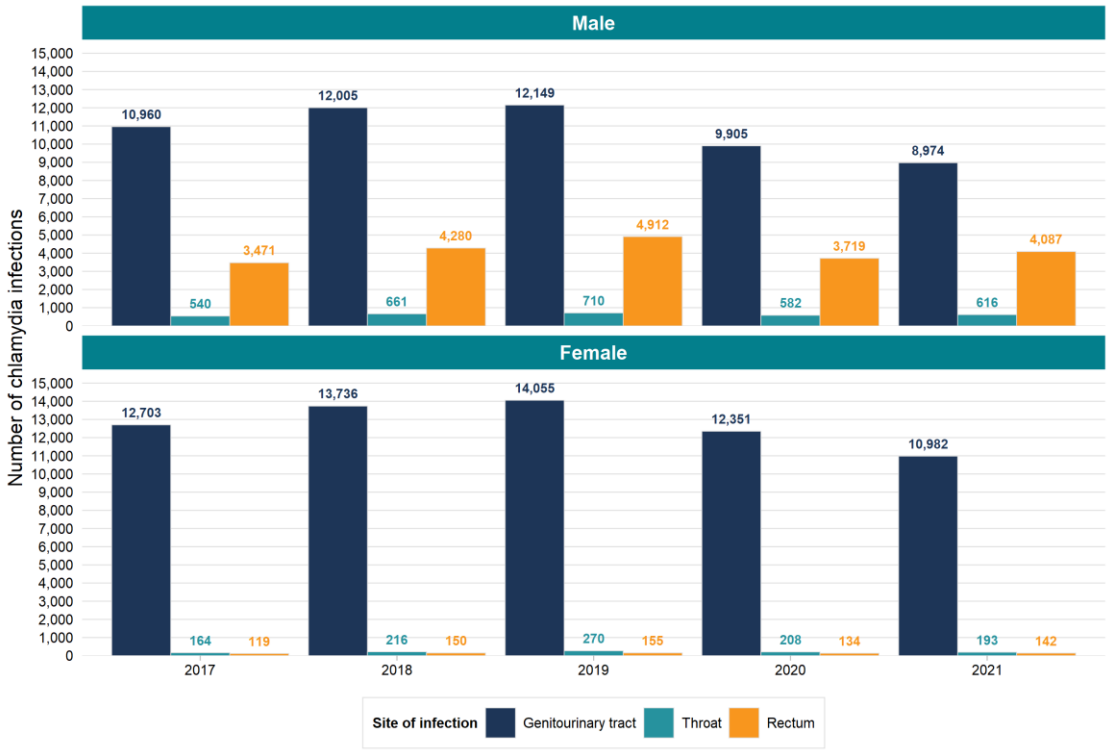
Table 2) For males, rectal infection is the second most commonly reported site of infection (30%). Whilst throat infections are the second most commonly reported for females (1.7%). Since 2017 the largest increases occurred in throat infections for both males (8% increase) and females (27% increase).

Table 2: Number of chlamydia notifications by site of infection, NSW, January – December 2021

Site of infection	Number of infections		
	Male	Female	Total
Genitourinary tract (GU) only	8,542	10,840	19,418
Throat only	291	116	407
Rectum only	3,474	65	3,554
Rectum and throat	226	7	235
GU and rectum	322	60	385
GU and throat	35	60	95
GU, rectum and throat	64	10	74
Other (joints/conjunctiva/nasopharynx) only	60	29	89
Other (joints/conjunctiva/nasopharynx) and either of GU/throat/rectum	12	12	24

Data source: NCIMS (via SAPHaRI), NSW Health. Data extracted 30 June 2022. Note: Excludes non-NSW residents and 'other 'site of infection or missing/unknown site of infection. The number of infections may exceed number of notifications.

Figure 41: Number of chlamydia notifications by site of infection and sex, NSW, January 2017–December 2021



Data source: NCIMS (via SAPHaRI), NSW Health. Data extracted 16 June 2022. Note: Excludes non-NSW residents, persons reported as transgender (due to small numbers), persons whose sex was not reported and 'other 'site of infection or missing/unknown site of infection. The number of infections may exceed number of notifications.

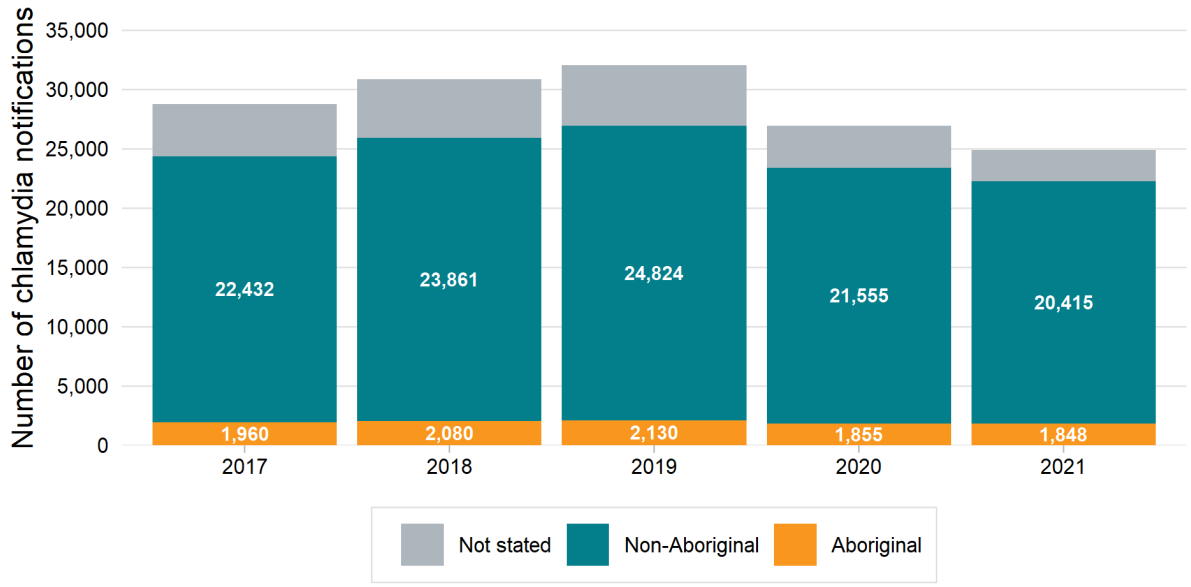
3.3 Chlamydia notifications among Aboriginal people

In 2021 a total of 24,885 notifications of chlamydia were recorded in the Communicable Diseases Register (CDR) (Figure 42). Aboriginality was not stated for 2,622 (10.5%) notifications. Of those whose Aboriginal status was not stated in 2021, 90% resided in a major city. This is consistent with previous years. Aboriginal status data completeness has continued to improve over the past five years. Between 2017 and 2020 Aboriginality was not stated for between 13% and 16% of people each year.

Among those for whom Aboriginality was stated, 1,848 (8%) notifications were among Aboriginal people, and 20,415 (92%) were among non-Aboriginal people.

Note: Trends in the Aboriginal population are difficult to interpret due to variation in the yearly number of people for whom Aboriginal status was not stated, and the relatively high proportion of incomplete data compared to the proportion who are Aboriginal people. Differences in the CDR compared to previous reports are due to continued improvements in record linkage and inclusion of NCIMS records that were unable to be matched to any of the other contributing data sources.

Figure 42: Number of chlamydia notifications by Aboriginal status, NSW, January 2017– December 2021



Data source: Communicable Diseases Register, NSW Ministry of Health (via SAPHaRI); data extracted 28 July 2022. Note: Excludes non-NSW residents

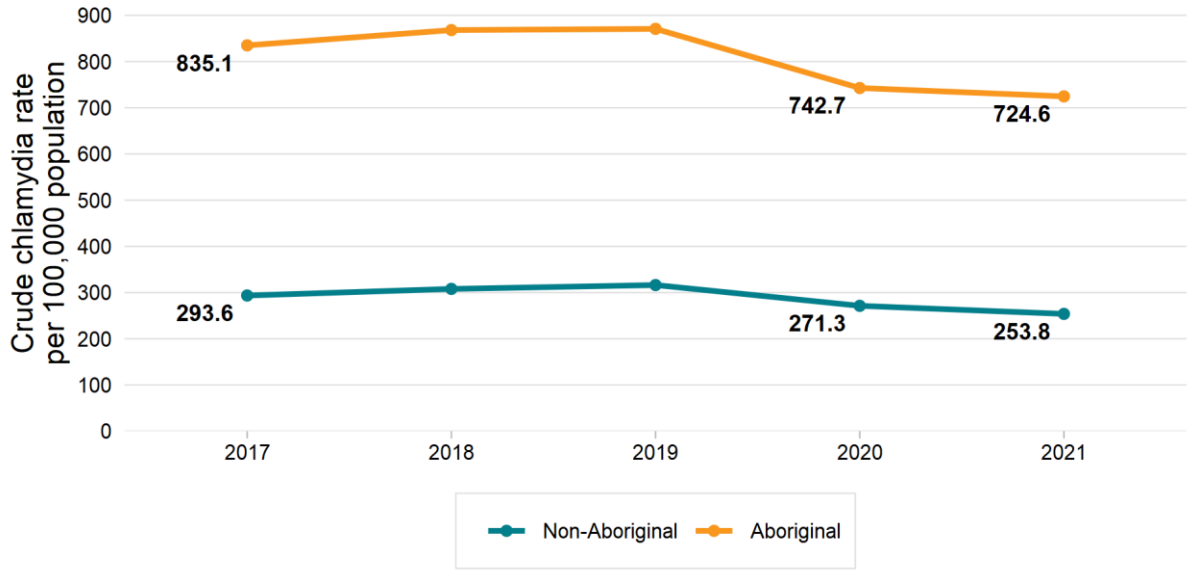
In 2021 notification rates of chlamydia decreased in both Aboriginal and non-Aboriginal people (Figure 43). Among non-Aboriginal people the notification rate decreased 7% from 271 notifications per 100,000 population in 2020 to 254 notifications per 100,000 population in 2021. Among Aboriginal people the notification rate decreased 6% from 743 notifications per 100,000 population in 2020 to 724 notifications per 100,000 population.

Over the last five years, the chlamydia notification rates for both Aboriginal and non-Aboriginal people decreased by approximately 13%. Among those whose Aboriginal status was stated, the chlamydia notification rate in 2021 was 2.85 times as high among Aboriginal people as among non-Aboriginal people (725 notifications per 100,000 versus 254 notifications per 100,00 population). This relative difference between the rates for Aboriginal people and non-Aboriginal people remained stable over the five-year reporting period.

Note: As the number of notifications among Aboriginal people is relatively small, yearly fluctuations in the rate should be interpreted with caution. Changes in notification rates may be due to variation in incidence of disease, screening rates and/or the number of people for whom Aboriginal status was not stated (see Figure 9).

In previous annual reports rates were directly age-standardised to account for the differences in age structures between Aboriginal and non-Aboriginal populations. However, due to small numbers within multiple age groups age-standardisation is not advised. Additional age distribution and age-specific rate analyses have been provided (See Figure 44–45) as important contextual information on age group differences.

Figure 43: Chlamydia notification rates by Aboriginal status, NSW, January 2017– December 2021

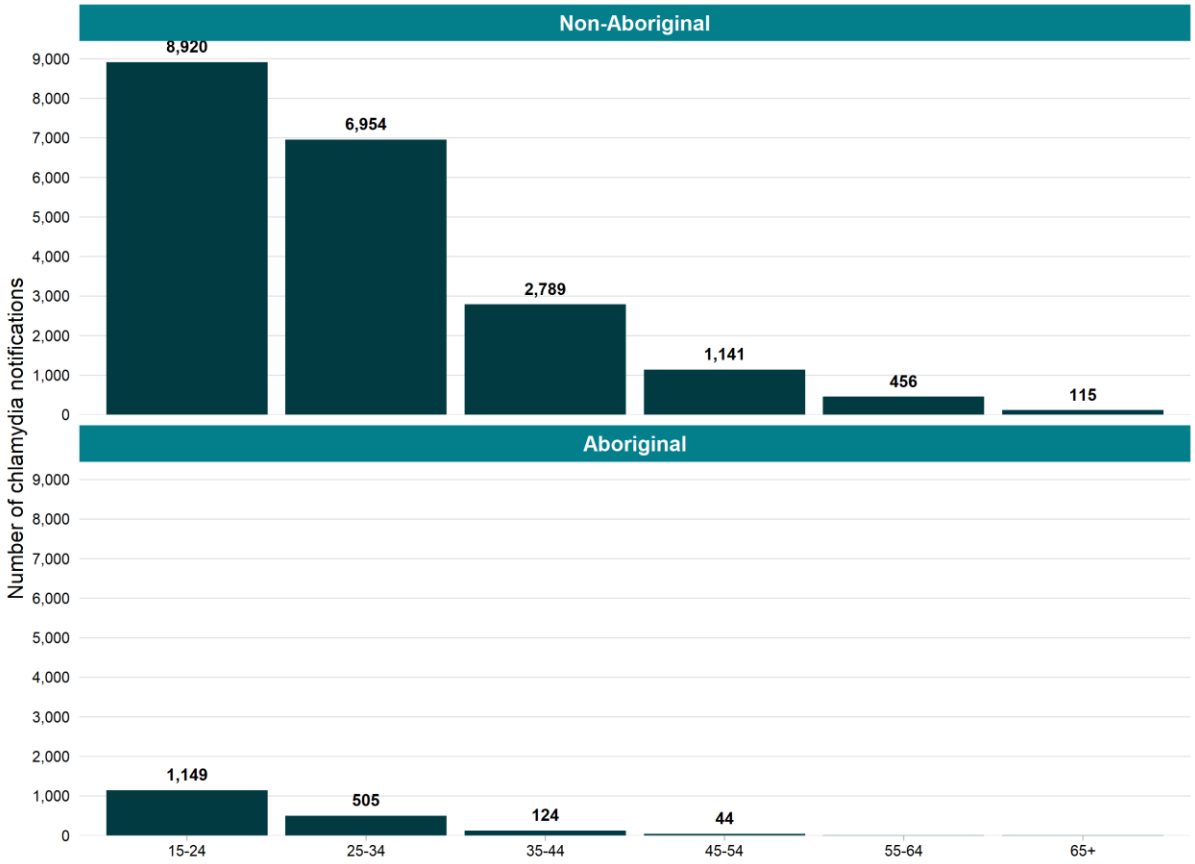


Data source: Communicable Diseases Register, NSW Ministry of Health and ABS population estimates (via SAPHaRI); data extracted 28 July 2022. Note: Excludes non-NSW residents, records where Aboriginal status was not stated (see Figure 42). Year is based on calculated onset date. Rates were not age standardised due to small numbers within multiple age groups. As the number of gonorrhoea notifications among Aboriginal people is relatively small, yearly fluctuations in the rate should be interpreted with caution. These notification rates are influenced by variations in the number of people for whom Aboriginal status was not known and are likely to be an underestimation.

Chlamydia notifications for both Aboriginal and non-Aboriginal people are largely distributed within younger age groups (Figure 44). For non-Aboriginal people in 2021, most notifications were recorded in the 15–25-year (44% of notifications) and 25–34-year (34% of notifications) age groups, followed by 14% of notifications in people aged 35–44 years.

In Aboriginal people, notifications were more concentrated in the 15–25-year (63% of notifications) and 25–34-year (28% of notifications) age groups. This is likely related to the Aboriginal population's younger age structure which has larger proportions of young people and smaller proportions of older people as compared to the non-Aboriginal population.[7]

Figure 44: Number of chlamydia notifications by age group and Aboriginal status, NSW, January - December 2021



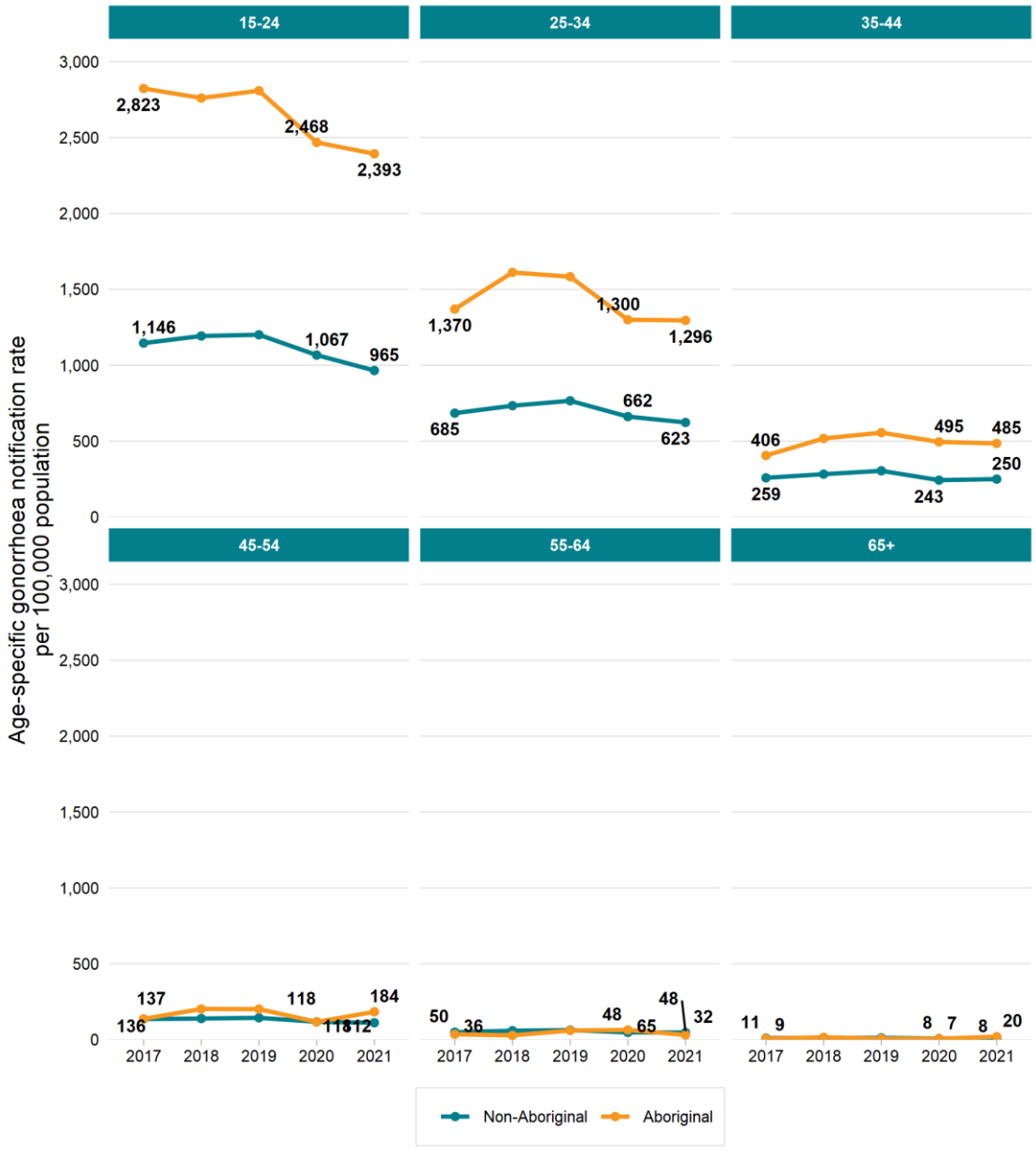
Data source: Communicable Diseases Register, NSW Ministry of Health (via SAPHaRI); data extracted 28 July 2022. Note: Excludes non-NSW residents, records where Aboriginal status was not stated, and persons whose age was not reported (see Figure 42). Year is based on calculated onset date.

[7] Australian Bureau of Statistics. Estimates of Aboriginal and Torres Strait Islander Australians [Internet]. Canberra; 2016. Available from: https://www.abs.gov.au/statistics/people/aboriginal-and-torres-strait-islander-peoples/estimates-aboriginal-and-torres-strait-islander-australians/latest-release

In 2021 the highest chlamydia rates for both Aboriginal and non-Aboriginal people are the 15–24-year age group, followed by the 25–34- and 35–44-year age groups (Figure 45). Although chlamydia rates decreased in most age groups for both Aboriginal and non-Aboriginal people, a rate increase of 3% was recorded for non-Aboriginal people aged 35–44 years.

Since 2017 the chlamydia rate decreased for all age groups among non-Aboriginal people and most Aboriginal age groups. Rate increases over this five-year period were recorded in Aboriginal people aged 35–44 (19.5% increase from 406 notifications per 100,000 population in 2017 to 485 per 100,000 in 2021) and 45–54 years (34% increase from 137 notifications per 100,000 population in 2017 to 184 per 100,000 in 2021).

Figure 45: Age specific chlamydia notification rates by Aboriginal status, NSW, January 2017– December 2021

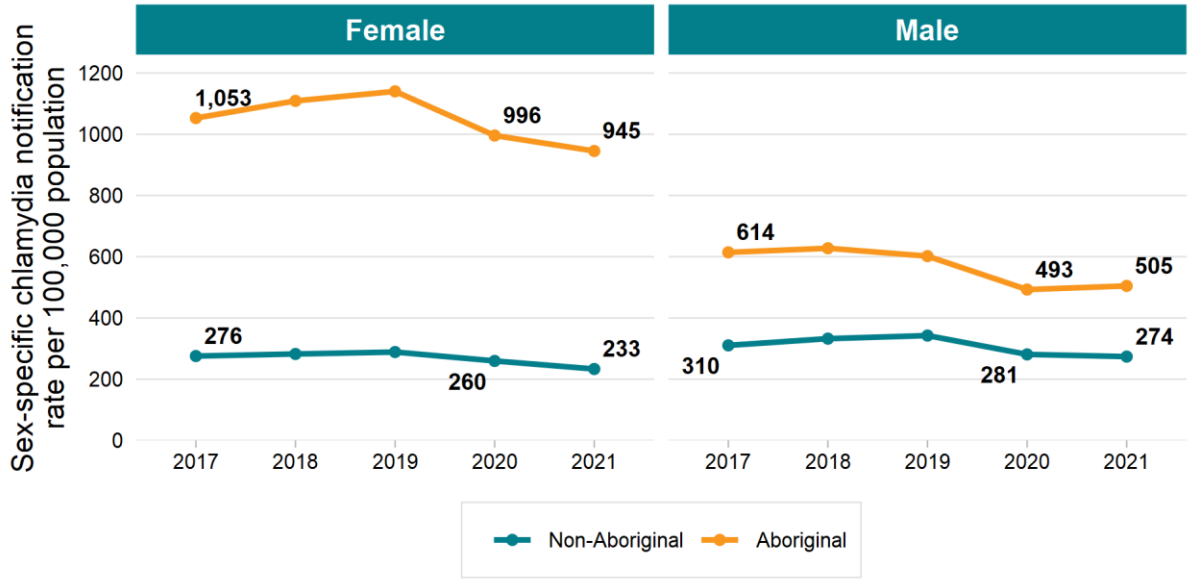


Data source: Communicable Diseases Register, NSW Ministry of Health and ABS population estimates (via SAPHaRI); data extracted 28 July 2022. Note: Excludes non-NSW residents, records where Aboriginal status was not stated (see Figure 42). Year is based on calculated onset date.

Among females in NSW, Aboriginal women continue to have a substantially higher chlamydia notification rate compared to non-Aboriginal women (Figure 46). In 2021, the rate in Aboriginal women at 945 notifications per 100,000 females was approximately 4 times higher than the rate in non-Aboriginal women at 233 notifications per 100,000 females. Since 2017, rates decreased for both Aboriginal and non-Aboriginal women; the rate for Aboriginal women decreased 10% between 2017 and 2021, and the rate decreased by 15% for non-Aboriginal women.

In 2021, Aboriginal males had a rate of 505 notifications per 100,000 males which was 1.84 times higher than the rate in non-Aboriginal males of 274 notifications per 100,000 males. Over the past 5 years, rates have decreased for both Aboriginal and non-Aboriginal males. The rate decrease between 2017 and 2021 was slightly larger in non-Aboriginal males (18%) as compared to Aboriginal males (12%).

Figure 46: Sex-specific chlamydia notification rate by Aboriginal status, NSW, January 2017– December 2021



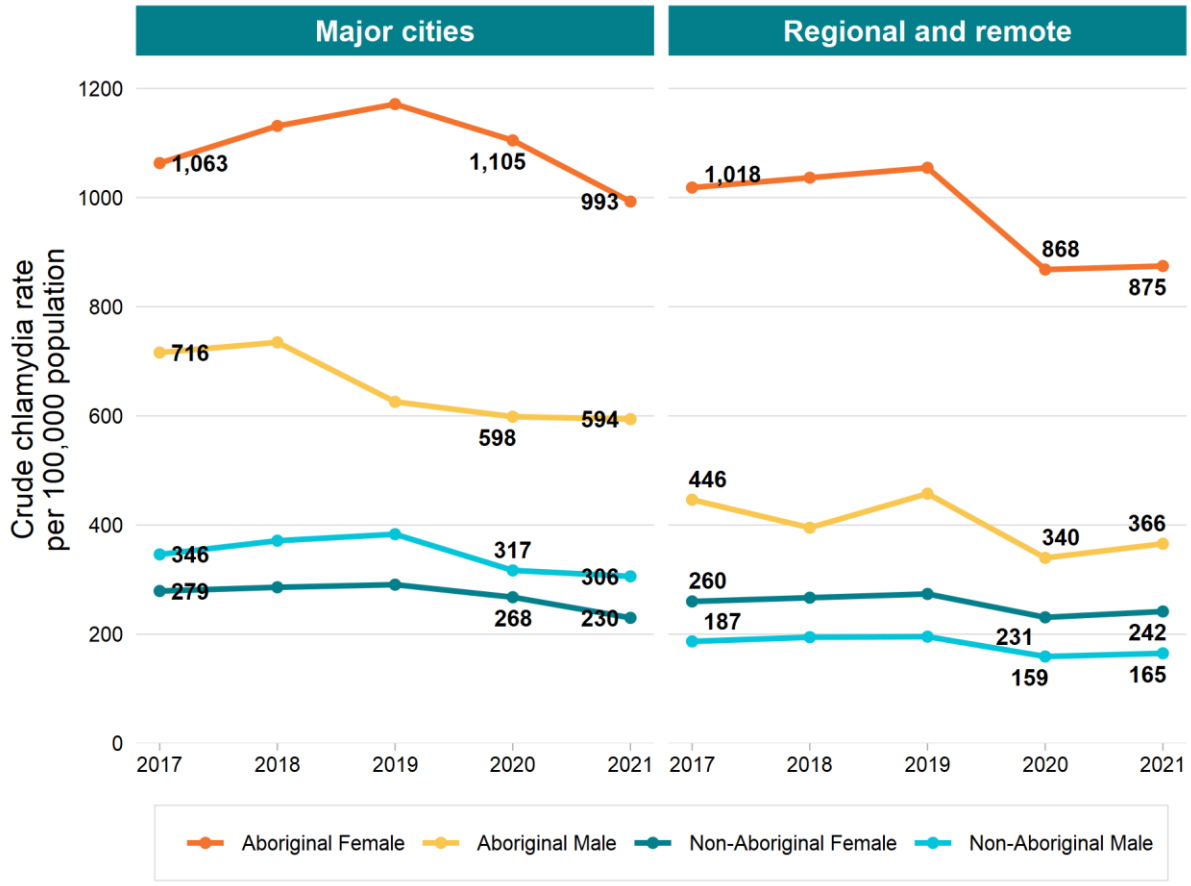
Data source: Communicable Diseases Register, NSW Ministry of Health and ABS population estimates (via SAPHaRI); data extracted 28 July 2022. Note: Excludes non-NSW residents, records where Aboriginal status was not stated, and persons whose sex was not reported. Year is based on calculated onset date.

In 2021, the highest chlamydia notification rates were among Aboriginal females living in major city areas of NSW, followed by Aboriginal females living in regional and remote areas (Figure 47). In 2021 the rate in Aboriginal women compared to non-Aboriginal women is 4.3 times higher in major cities and 3.6 times higher in regional and remote areas. Although rates in Aboriginal women are disproportionately affected, particularly in major cities, between 2017 and 2021 the chlamydia rate for Aboriginal women living in major cities decreased by 7% and the rate for Aboriginal females living in regional and remote areas decreased by 14%.

Among males, Aboriginal males in both major cities and regional and remote areas have the highest rates of chlamydia. Since 2017 chlamydia rates in Aboriginal males have decreased, by 17% for Aboriginal males living in major cities and 18% for Aboriginal males living in regional and remote areas.

Note: As the number of notifications in the Aboriginal population is relatively small, especially among residents of remote areas, trends should be interpreted with caution. To avoid excessive rate fluctuations based on small numbers of notifications arising from small populations, rates for regional and remote areas are presented together.

Figure 47: Crude chlamydia notification rates among Aboriginal people, by gender and remoteness area, NSW, January 2017– December 2021



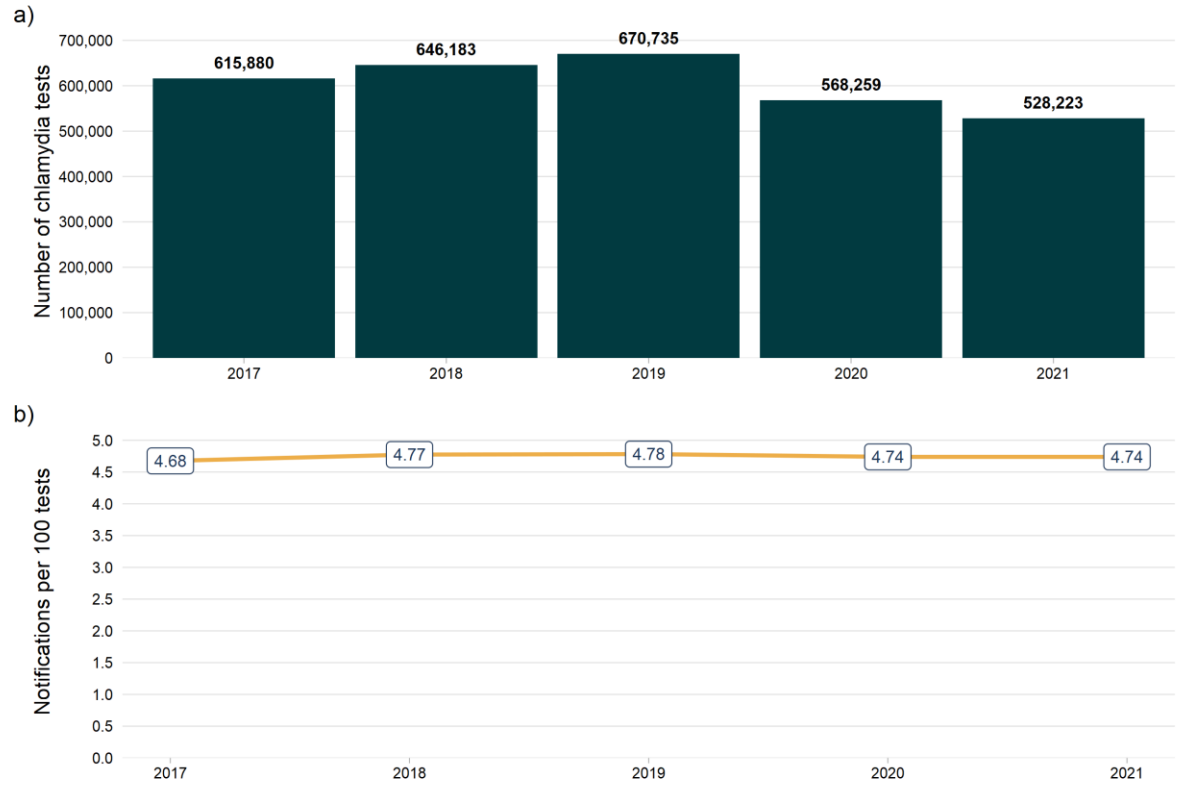
Data source: Communicable Diseases Register, NSW Ministry of Health (via SAPHaRI); data extracted 28 July 2022. Note: Excludes non-NSW residents, records where Aboriginal status was not stated, records where sex was not stated, and records where postcode was not stated. Population estimates by geographic remoteness area apply the proportion of residents by Aboriginal status and remoteness area at 30 June 2016 (ABS 3238.0.55.001 – Estimates of Aboriginal and Torres Strait Islander Australians, June 2016) which were the most recent estimates available at the time of publication.

3.4 Chlamydia testing

In 2021 there were 528,223 chlamydia tests (NAAT) performed in NSW, indicating a continued decrease in testing numbers since 2019. Compared to 2020 the chlamydia testing level decreased 21% and compared to 2017, decreased 14%.

Although testing numbers decreased, the notification to test ratio remained steady at 4.74 notifications per 100 chlamydia tests. This suggests that screening programs remained targeted at people at higher risk for infection in 2021. Although this metric has decreased from 4.78 in 2019, it currently remains higher than 2017.

Figure 48: Number of chlamydia tests and notifications per 100 test ratio, NSW, January 2017– December 2021

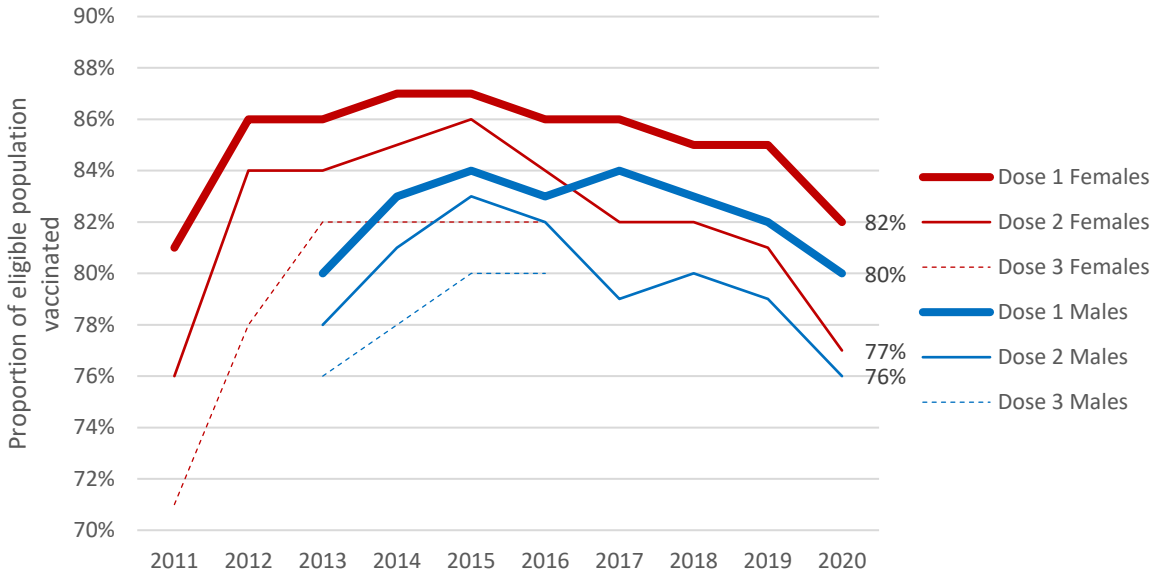


Data source: NCIMS (via SAPHaRI) and NSW Denominator Data Project, NSW Health. Data extracted 16 June 2022.

4 Maintain high coverage of HPV vaccination for Year 7 school students

Infection with human papillomavirus (HPV) is very common in both men and women, with initial infection with any one of many types of HPV occurring close to the time of sexual debut. The National HPV vaccination Program began in 2007 for females and was extended to include males in 2013.

Figure 49: Year 7 HPV vaccination by dose and gender



Data source: Local Health Districts, NSW Health

The NSW School Vaccination Program was significantly impacted by COVID-19 school closures in 2020 and 2021. Data for 2020 does not include catch-up vaccination being offered in 2022 as part of enhanced catch-up arrangements. Data for 2021 are not provided as they are incomplete (they do not include significant catch-up vaccination being offered in 2022)

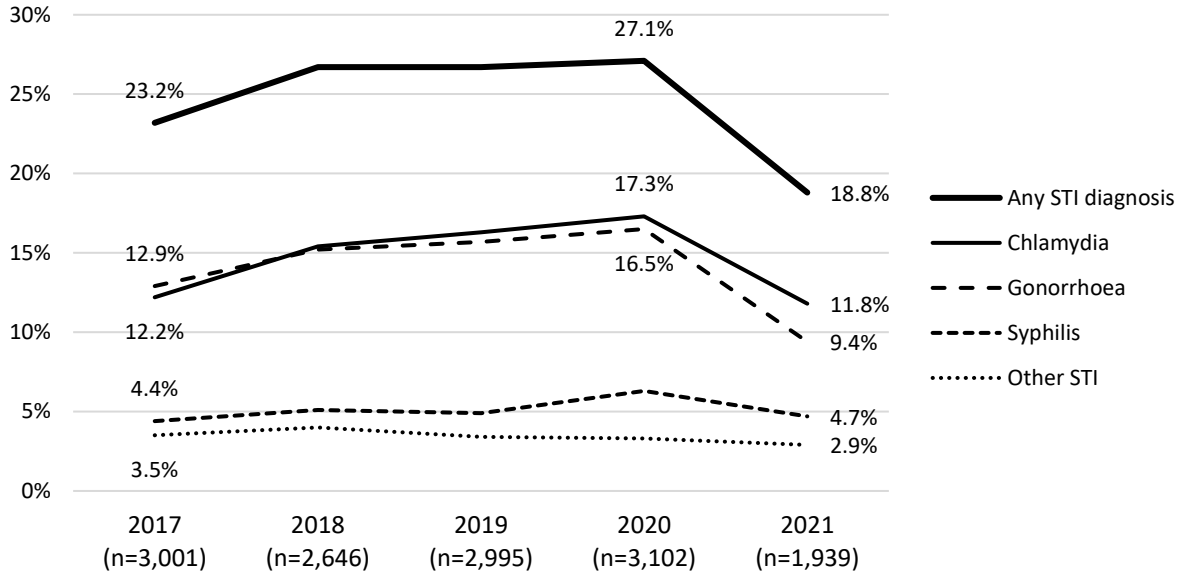
Note: See **Appendix E** for full data for the HPV vaccination rate by gender

5 Increase comprehensive STI testing in priority populations in accordance with risk

5.1 STI diagnoses among gay and bisexual men

Participants in the Sydney Gay Community Periodic Survey (SGCPS) were asked if they had received any STI diagnoses within the 12 months prior to completing the survey.

Figure 50: Proportion of gay and bisexual men who reported any STI diagnosis in the previous 12 months



Data source: Sydney Gay Community Periodic Survey, Centre for Social Research in Health, UNSW Sydney

The proportion of participants who reported an STI in the 12 months prior to the survey had been increasing over time but decreased from 28.1% in 2020 to 18.8% in 2021. This is likely due to decreased rates of STI testing and reduced sexual activity as a result of COVID-19.

Chlamydia remained the most frequently diagnosed STI in 2021.

The proportions reporting a diagnosis of chlamydia, gonorrhoea, or syphilis all significantly decreased between 2020 and 2021.

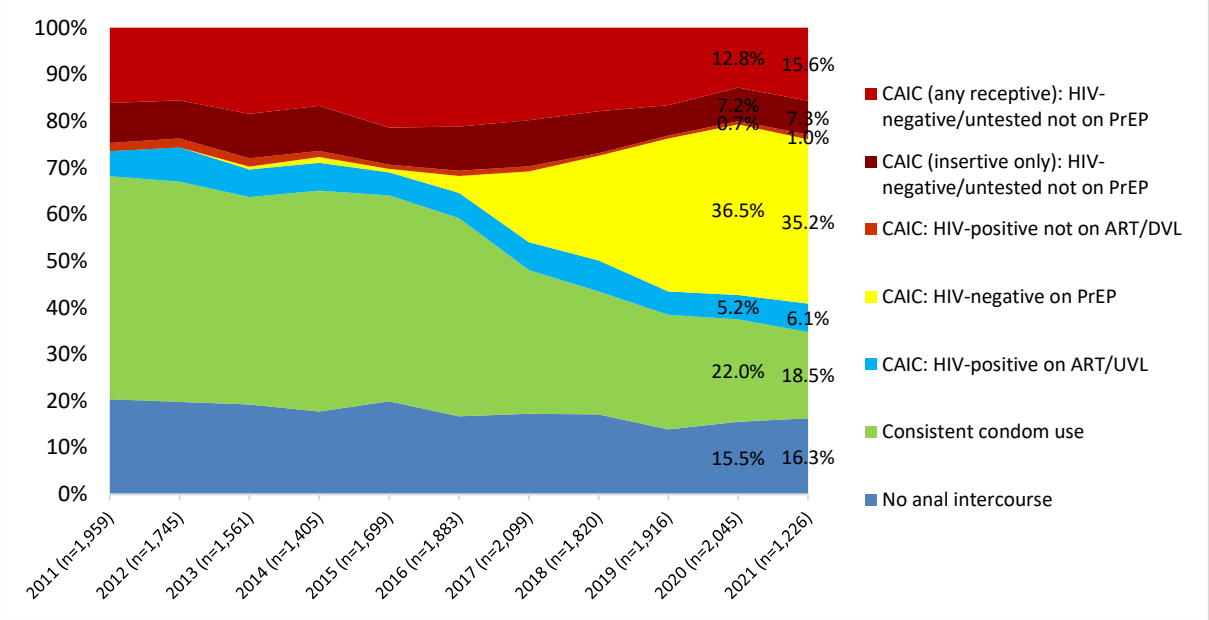
Gay Asian Men Community Survey

In the 2021 round of the NSW-wide Gay Asian Men Community Survey (N=760), of the 353 participants who had any STI testing within the previous 12 months, 30.4% (n=103) reported being diagnosed with an STI. Similar to the above pattern shown in the SGCPS, of the 353 men with a recent STI testing history, Chlamydia was the most commonly reported (n=68, 19.3%), followed by gonorrhoea (n=49, 13.9%) and syphilis (n=20, 5.7%).

5.2 Condom use among gay and bisexual men

Condoms and other HIV risk reduction strategies used by gay and bisexual men with their casual male partners are measured through the SGCPS.

Figure 51: Proportion of gay and bisexual men with casual male partners reporting consistent condom use and any condomless anal intercourse in the previous six months



Data source: Sydney Gay Community Periodic Survey, Centre for Social Research in Health, UNSW Sydney

Note: Consistent condom use includes men who report condom use for anal sex with casual male partners in the 6 months prior to survey and no condomless anal intercourse with those partners.

CAIC = condomless anal intercourse with casual male partners.

ART = antiretroviral treatment.

UVL = undetectable viral load.

Consistent condom use with casual partners has been steadily declining, particular since 2016 (coinciding with the introduction of PrEP), reducing from 42.4% of participants with casual partners in 2016 to 18.5% in 2021. The proportion who reported no anal intercourse with their casual partners has remained relatively stable over time (16.3% in 2021).

HIV-negative men on PrEP who reported CAIC increased from 15.2% of participants with casual partners in 2017 to 35.2% in 2021. PrEP is now the most commonly used HIV prevention strategy by GBM with casual partners. The proportion of HIV-negative men not on PrEP who reported any CAIC (insertive or receptive) had been decreasing over time, but increased slightly between 2020 and 2021 (to 22.9%).

Gay Asian Men Community Survey

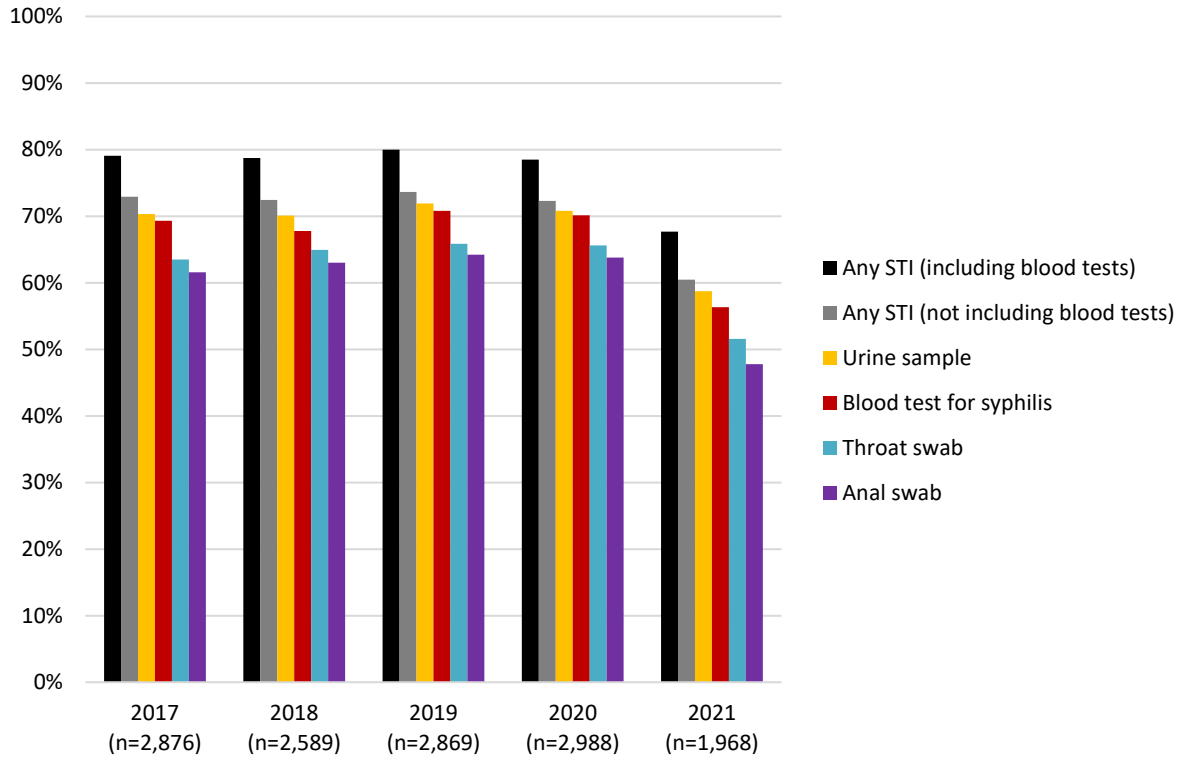
In the 2021 round of the NSW-wide Gay Asian Men Community Survey (N=760), 306 men reported any casual male partners in the previous six months. Of these 306 men, 6.5% had no anal sex; 27.8% consistently used condoms during anal intercourse; 5.2% reported any CAIC where the HIV-positive participants were on ART or of UVL; 33.7% reported any CAIC where the HIV-negative participants were on PrEP; 0.3% had any CAIC where the HIV-positive participants were not on ART or of UVL; 5.2% reported any insertive-only CAIC where either the HIV-negative participants were not on PrEP or their HIV-status were unknown; and the remaining 21.2% had any receptive CAIC where either the HIV-negative participants were not on PrEP or their HIV-status were unknown.

In summary, among those with casual partners in the previous six months, the proportion of non-HIV-positive gay Asian participants (either HIV-negative not on PrEP or HIV-status unknown) who reported any HIV risky CAIC (insertive or receptive) was altogether 26.4%.

5.3 Comprehensive STI testing among high risk MSM

The SGCPS measures the frequency of STI testing among MSM and the anatomical site of collection.

Figure 52: Different types of STI testing among MSM within the previous 12 months



Data source: Sydney Gay Community Periodic Survey, Centre for Social Research in Health, UNSW Sydney

The proportion of participants reporting any STI test within the 12 months prior to the survey had been stable at nearly 80% during 2017-20 but decreased to 67.7% in 2021. This is likely due to COVID-19.

The proportions reporting each type of STI test (anal swab, throat swab, blood tests, urine samples) all decreased between 2020 and 2021.

Similar to previous years, in 2021 a higher proportion of HIV-positive participants reported having had any sexual health test (including blood tests) in the 12 months prior to the survey (78.3%), compared with HIV-negative participants (66.4%; data not shown).

Gay Asian Men Community Survey

In the 2021 round of the NSW-wide Gay Asian Men Community Survey (N=760), the proportion who had any STI testing including blood tests within the previous 12 months was 46.4%; and those excluding blood tests was 42.2%. Regarding each type of STI testing in the previous 12 months, 40.2% had urine sample collected, 38.4% had any blood test for syphilis, 37.9% had throat swabs, 38.8% had anal swabs. Further, similar to the above pattern shown in the SGCPS, HIV-positive participants were more likely to report any recent STI testing (blood tests included) than HIV-negative participants (58.3% vs 40.6%).

6 Increase the proportion of people diagnosed with chlamydia and gonorrhoea who get re-tested within 1–4 months after diagnosis

Chlamydia and gonorrhoea re-notification patterns are strongly influenced by initial screening practices and by clinical management once diagnosed, including partner notification and re-testing. Changes in STI screening patterns with the introduction of pre-exposure prophylaxis for HIV (PrEP) are likely to have contributed to the marked increase in both absolute numbers of re-notifications in males and the proportion of males that were re-notified at least once.

Chlamydia guidelines recommend follow-up at three months as a test of reinfection (TOR). Gonorrhoea recommendations based on baseline results (e.g. anti-microbial resistance) and anatomical site of infection and can be done after two to four weeks. A window of one to four months was used for this analysis as most PCR tests are thought to clear DNA within two weeks of treatment; any test within 29 days of the diagnosis was excluded.

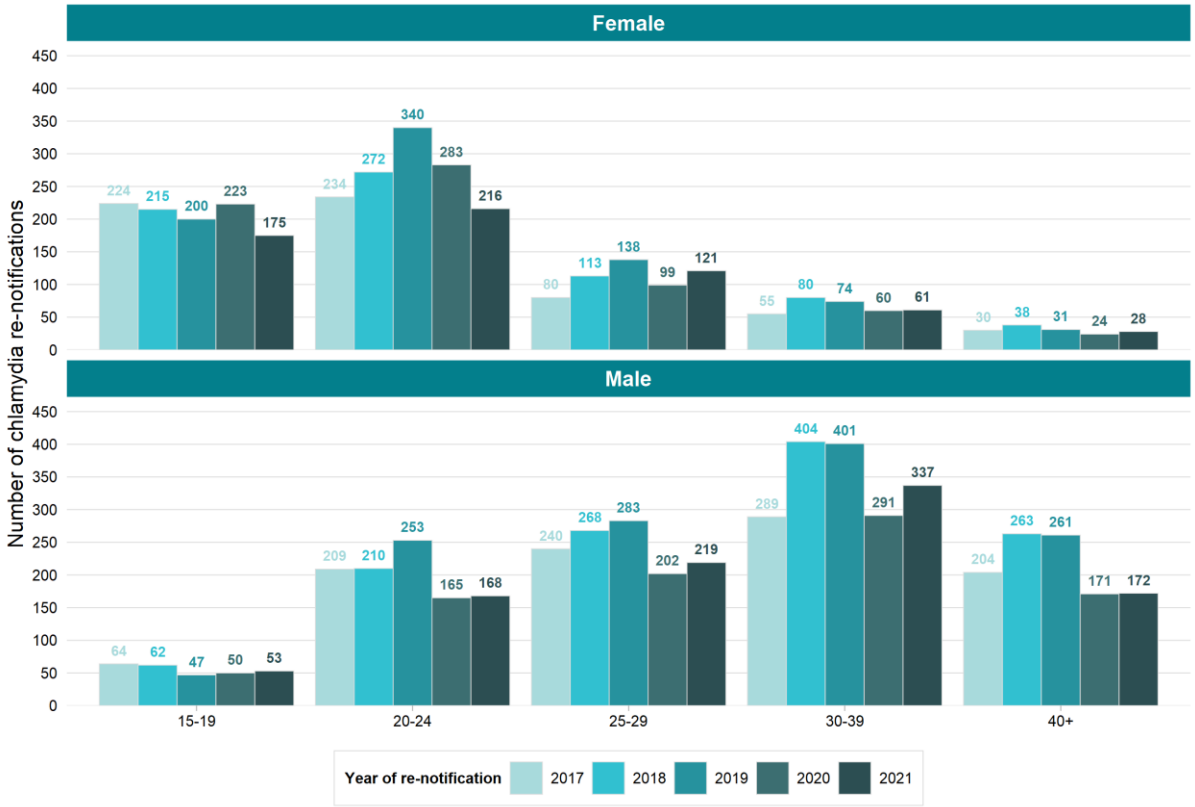
6.1 Re-notifications of chlamydia

In 2021, there were 1,550 chlamydia notifications that occurred one to four months after the time of first diagnosis, a decrease of 1% and 5% compared to 2020 and 2017, respectively. Among chlamydia re-notifications in 2021, 61% (n = 949) occurred in men and most occurred in people aged 20 to 39 years. Between 2017 and 2021, the number decreased for people under 25 years of age but increased in all other age groups. Since 2017, the largest increase in the number of re-notifications has occurred in people 30 – 39-years of age (16%), followed by people aged 25–29-years of age (6%).

In women, the highest number of re-notifications in 2021 occurred in 20–24-year-old females. The largest increases in female chlamydia re-notifications have occurred among people aged 25–29 years, with a 22% increase between 2020 and 2021 and a 50% increase since 2017.

Among males, the highest number of re-notifications in 2021 occurred in 30–39-year-old males. Compared to 2020, the number of re-infections increased in all male age groups. The largest increase was reported in the 30–39-year age group with a 16% increase between 2020 and 2021. Although male re-notifications were higher than 2020, they remained lower than 2017 in all male age groups, apart from the 30–39-year age group (17% increase).

Figure 53: Number of chlamydia re-notifications within 1 to 4 months following initial notification, persons aged 15 years and over, by gender and year of onset of first notified infection, NSW, January 2017–December 2021



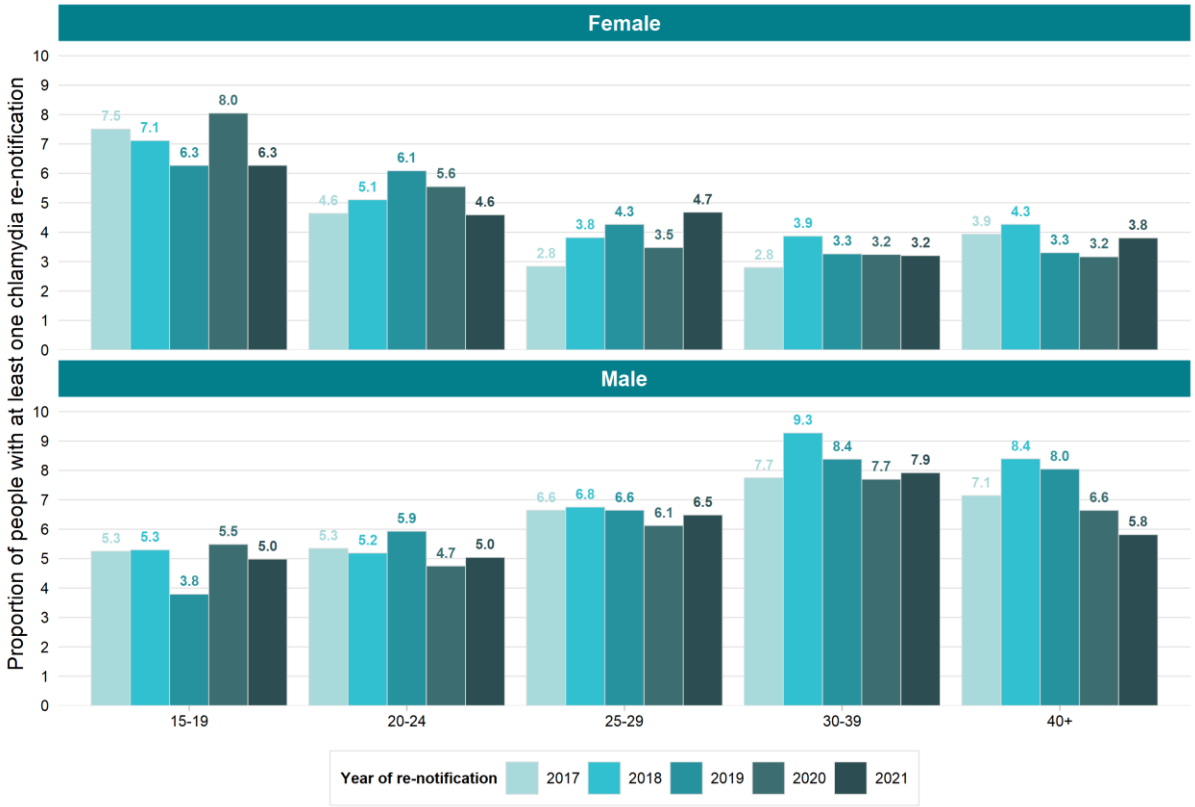
Data source: NCIMS (via SAPHaRI), NSW Health. Data extracted 12 July 2022. Note: Excludes non-NSW residents, persons reported as transgender (due to small numbers), and persons whose sex was not reported. Year of onset is based on calculated onset date. Excludes first notifications with an onset date 1 October-31 December to allow for re-notifications to occur within the 2021 reporting year. 2021 numbers are annualised based on quarters 1–3.

In females, 15–19-year-olds continued to have the highest proportion with at least one chlamydia notification in a calendar year at 6.3%. However, the proportion re-notified in 2021 was lower compared to prior years. Whilst the proportion re-notified among females aged 20 to 24 has continued to decrease since 2019, the proportion re-notified among females aged 25–29-years has continued to increase. Since 2017 the proportion re-notified increased by 40% from only 2.8% to 4.7% in 2021, making this age group the second highest proportion among all females.

Among males aged 30–39 years who were notified with chlamydia at least once in 2021, 7.9% were renotified at least once. This proportion remained relatively steady as compared to 2020. In 2021 proportions of males re-notified with chlamydia are relatively similar to those recorded in 2017 in all age groups, except for males aged over 40 years. Among this age group, the proportion re-notified with chlamydia has decreased 23% from 7.5% in 2017 to 5.8% in 2021.

Chlamydia re-notification patterns are strongly influenced by initial screening practices and by clinical management once diagnosed, including partner notification and re-testing. Changes in STI screening patterns with the introduction of pre-exposure prophylaxis for HIV (PrEP) are likely to have contributed to the marked increase in both absolute numbers of re-notifications in males and the percentage of males that were re-notified at least once.

Figure 54: Proportion of people notified with chlamydia who had at least one re-notification within 1 to 4 months following initial notification, persons aged 15 years and over, by gender and year of onset of first notified infection, NSW, January 2017– December 2021



Data source: NCIMS (via SAPHaRI), NSW Health. Data extracted 12 July 2022. Note: Excludes non-NSW residents, persons reported as transgender (due to small numbers), and persons whose sex was not reported. Year of onset is based on calculated onset date. Excludes first notifications with an onset date 1 October-31 December to allow for re-notifications to occur within the 2021 reporting year. 2021 numbers are annualised based on quarters 1–3.

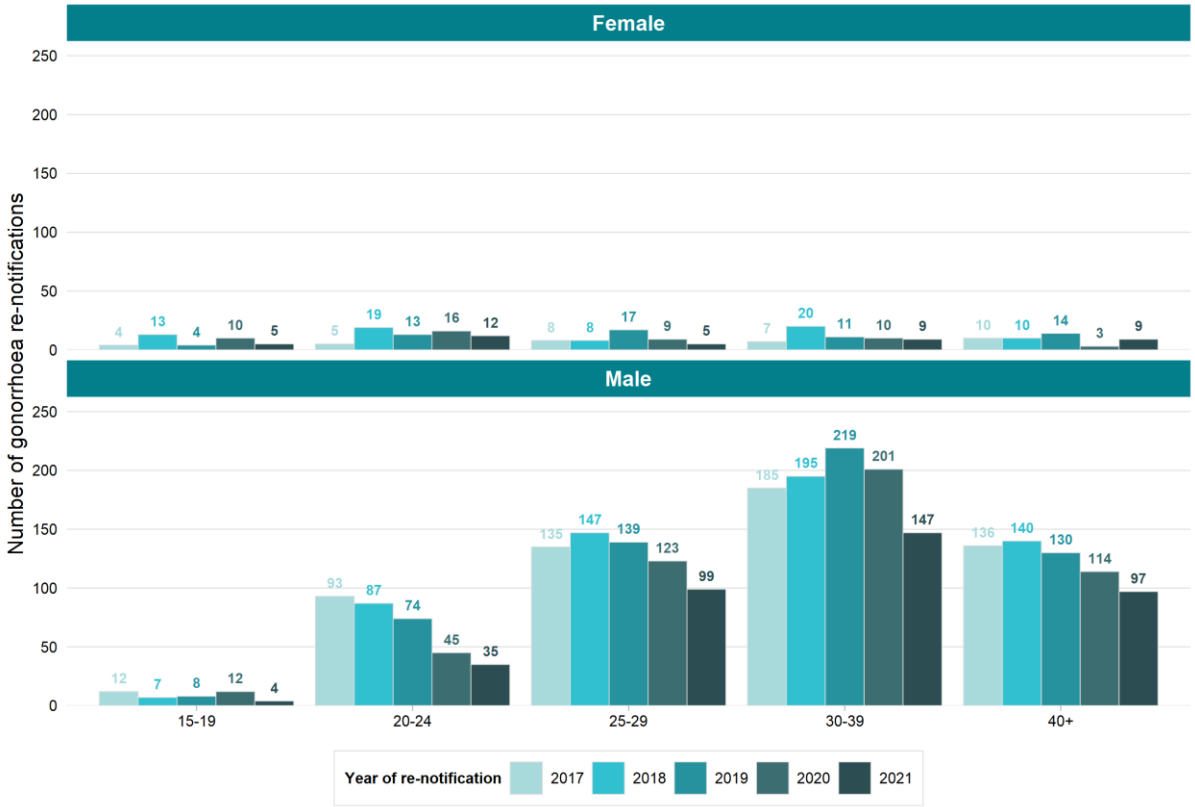
6.2 Re-notifications of gonorrhoea

In 2021, there were 422 gonorrhoea notifications that occurred one to four months after the time of first diagnosis, 22% lower than re-notifications in 2020 and 29% lower than in 2017. Consistent to prior years, the highest number of re-notifications in 2021 were in males (90.5% of total re-notifications), particularly those aged over 30 years. The number of re-notifications decreased compared to 2020 in all age groups for both males and females, apart from females aged over 40 years.

In 2021, the number of re-notifications in males continued to be highest for males aged 30–39-years. Re-notifications in this age group have substantially decreased with a 27% decrease since 2020 and 20.5% decrease since 2017. Compared the 2017 levels, 2021 re-notifications were lower in all male age groups. This trend is largely consistent to the substantial decreases observed in the male gonorrhoea notifications in 2021.

Although the number of re-notifications is lower in females, the annual number over the past five years has increased by 18%. Among women, the highest number of re-notifications in 2021 occurred in 20–24-year-old females. Since 2017, the number of re-notifications in this age group has more than doubled. Consistent to the overall trend, the number of re-notifications in 2021 was lower in all female age groups as compared to 2020.

Figure 55: Number of gonorrhoea re-notifications within 1 to 4 months following initial notification, persons aged 15 years and over, by gender and year of onset of first notified infection, NSW, January 2017–December 2021

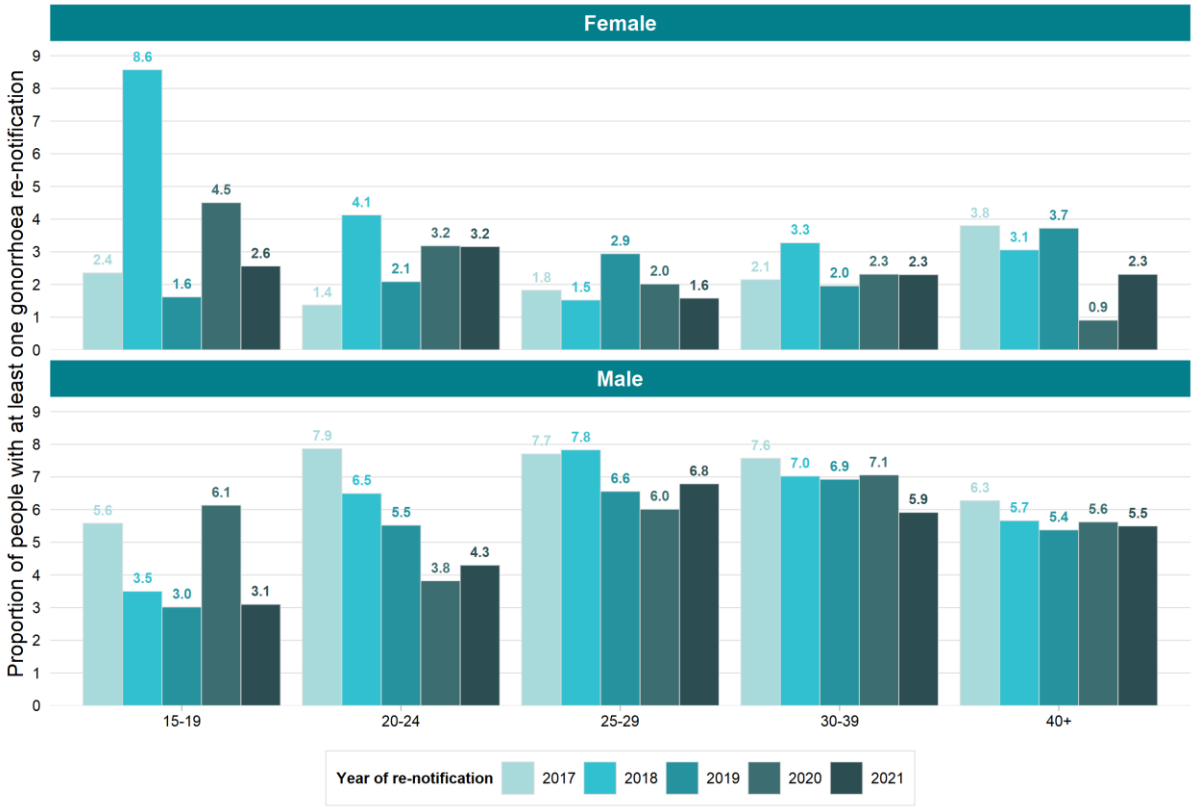


Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health; Data extracted 01 August 2022. Note: Excludes non-NSW residents, persons reported as transgender (due to small numbers), and persons whose sex was not reported. Year of onset is based on calculated onset date. Excludes first notifications with an onset date 1 October-31 December to allow for re-notifications to occur within the 2021 reporting year. 2021 numbers are annualised based on quarters 1–3.

Although there was a largely decreasing trend in gonorrhoea re-notification numbers over the last five years, the trends in the proportion of persons with at least one gonorrhoea notification in a calendar year who were re-notified have varied.

For males, the proportions re-notified with gonorrhoea decreased in all age groups compared to 2017. The largest decreases for males have occurred in younger age groups, with males aged between 15 and 24 years almost halving the proportion notified over the past five years. Female proportions re-notified have generally remained low, with between year variation likely related to smaller numbers notified. Over the past five years, the proportion of females aged 20–24 years with at least one re-notification has increased more than 2.3-fold from 1.4% to 3.2%. Increases have also occurred in females the 15–19-year (9% increase) and 30–39-year (7% increase) age groups. Decreased over the past five-year period were observed in females aged over 40 years (40% decrease) and between 25 to 29 years (13% decrease).

Figure 56: Proportion of people notified with gonorrhoea who had at least one re-notification within 1 to 4 months following initial notification, persons aged 15 years and over, by gender and year of onset of first notified infection, NSW, January 2017– December 2021



Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health; Data extracted 01 August 2022. Note: Excludes non-NSW residents, persons reported as transgender (due to small numbers), and persons whose sex was not reported. Year of onset is based on calculated onset date. Excludes first notifications with an onset date 1 October-31 December to allow for re-notifications to occur within the 2021 reporting year. 2021 numbers are annualised based on quarters 1–3.

7 Increase the proportion of people diagnosed with syphilis who get re-tested within 1–6 months after diagnosis

7.1 Re-notifications of infectious syphilis

In 2021 there were 10 re-notifications of infectious syphilis within 1 to 6 months from the time of initial diagnosis, 47% lower than the number of re-notifications in 2021. Only two re-notifications occurred in females in the period 2017–2021. The percentage of males with at least one re-notification following an initial diagnosis of infectious syphilis has increased from 0.7% in 2016 to 4.2% in 2021. However, due to small numbers, re-notifications for infectious syphilis should be interpreted with caution.

As for chlamydia and gonorrhoea, syphilis re-notification patterns can be influenced by initial screening practices and by clinical management once diagnosed. However, re-notifications of syphilis are also dependent on the correct classification as re-infections rather than as part of an ongoing episode of infection with continued clinical monitoring.

8 Monitor the epidemiology of lymphogranuloma venereum (LGV)

Lymphogranuloma venereum (LGV) is a sexually transmissible infection that is caused by serovars L1, L2 and L3 of *Chlamydia trachomatis*. LGV is a comparatively rare STI in developed countries, including in Australia. However, increases primarily in men who have sex with men have been observed across Europe, the UK, and North America since a first cluster of rectal infections was reported in the Netherlands in 2003.[8] In NSW, an increase in cases prompted the release of clinician alerts in 2010 and 2017, advising LGV-specific testing for MSM presenting with symptoms of proctitis.

LGV is not included in the NSW Sexually Transmissible Infections Strategy 2016–2020. Therefore, disease control indicators have not yet been established and reporting is still under development. In NSW, LGV is a notifiable disease under the NSW Public Health Act 2010. A confirmed case requires demonstration of Chlamydia trachomatis serovars L1 to L3 by immunofluorescence assays, enzyme immunoassays, molecular assays, culture, or serology. Only confirmed cases of LGV are counted when reporting LGV notification data. Patient care and contact tracing are the responsibility of the treating doctor. Information on demographics (e.g., Aboriginal and Torres Strait Islander status) and risk exposures (e.g., sexual exposure, place of acquisition) is not routinely collected.

Although LGV is generally assumed to be symptomatic, asymptomatic rectal infections have been reported in more than a quarter of cases studied in the Netherlands and the UK.[9][10] In Australia, routine screening of asymptomatic patients is not recommended. Samples that are positive for any Chlamydia trachomatis serovar are not automatically tested for LGV if LGV-specific tests are not ordered. As a result, changes in notification data over time may partially reflect changes in testing practices. In addition, the small number of notifications per year leads to considerable fluctuations in rates and percentages. Most characteristics of LGV notifications are therefore aggregated over the entire five-year reporting period.

[8] Nieuwenhuis RF, Ossewaarde JM, Götz HM, Dees J, Thio HB, Thomeer MG, den Hollander JC, Neumann MH, van der Meijden WI. Resurgence of lymphogranuloma venereum in Western Europe: an outbreak of Chlamydia trachomatis serovar l2 proctitis in The Netherlands among men who have sex with men. Clinical infectious diseases. 2004;39(7):996-1003.

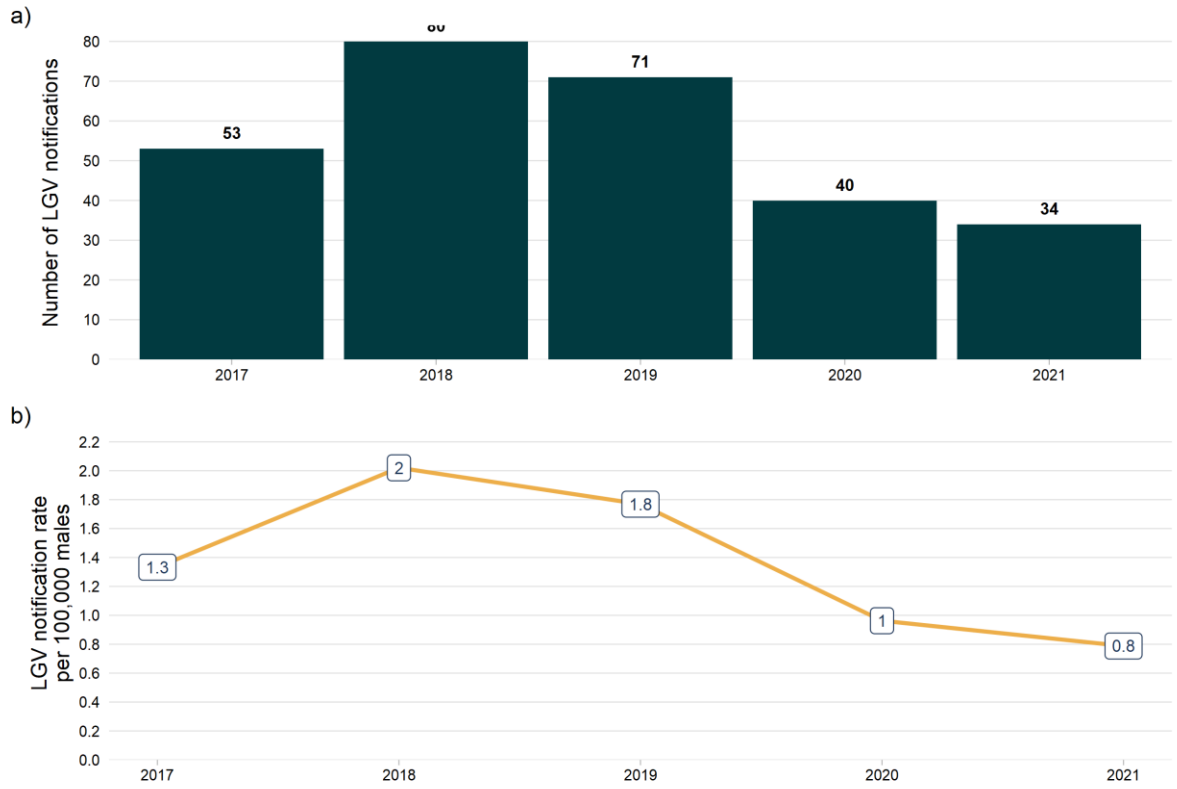
[9] Saxon C, Hughes G, Ison C; UK LGV Case-Finding Group. Asymptomatic Lymphogranuloma Venereum in Men who Have Sex with Men, United Kingdom. Emerging Infectious Diseases. 2016;22(1):112–116.

[10] de Vrieze NHN, van Rooijen M, Schim van der Loeff MF, et al Anorectal and inguinal lymphogranuloma venereum among men who have sex with men in Amsterdam, the Netherlands: trends over time, symptomatology and concurrent infections Sexually Transmitted Infections 2013;89:548-552.

In 2021 there were 34 cases of LGV notified to NSW Health (Figure 57). This represents a further decrease in case numbers since 2018. Among the cases notified in 2021, 94% were diagnosed in males. The notification rate has continued to decrease from the peak of 2.0 cases per 100,000 males in 2018 and in 2021 was at the lowest rate within the past five-years at 0.8 cases per 100,000 males. Four female cases of LGV were notified in NSW in the past 5 years. Female LGV cases are infrequently reported globally. Female cases have been excluded from all rate calculations.

Note: As supplementary testing is required for LGV, testing for this condition was disproportionately affected by necessary redistribution of laboratory resources during the COVID pandemic.

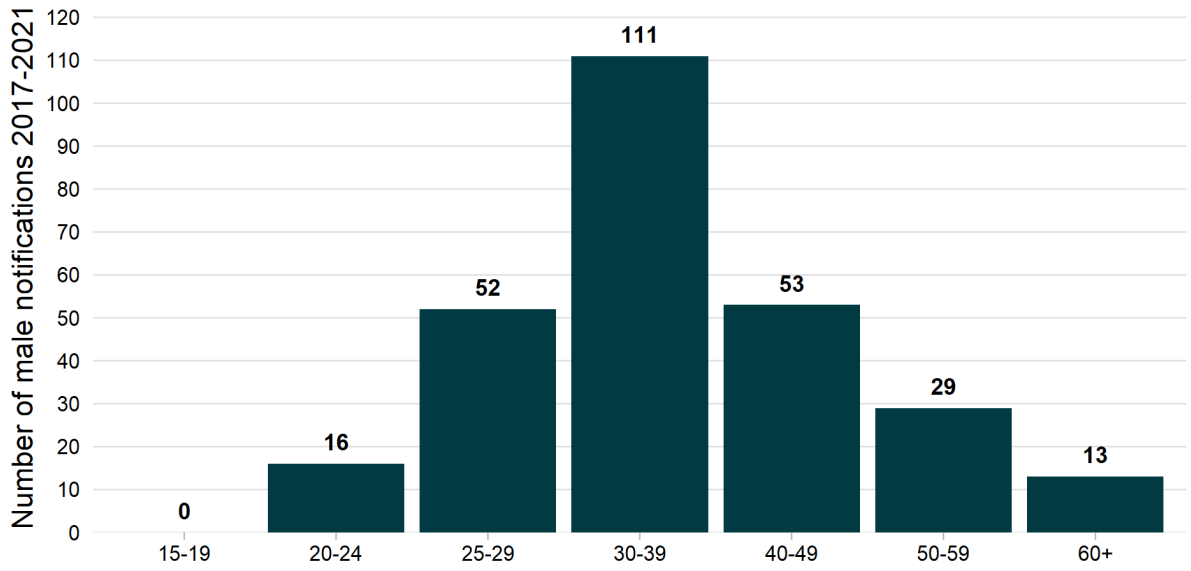
Figure 57: Number and male notification rate of LGV notifications, by year of onset



Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health. Data extracted 27 June 2022.
Note: Excludes non-NSW residents. Year of onset is based on calculated onset date.

Over the past five years, the largest number of male LGV notifications occurred in the 30–39 years age group (40.5% of total notifications), followed by the 40–49 years age group (19% of total notifications) (Figure 58). The median age at onset ranged between 34 and 37 years and has been stable at approximately 34 years since 2019.

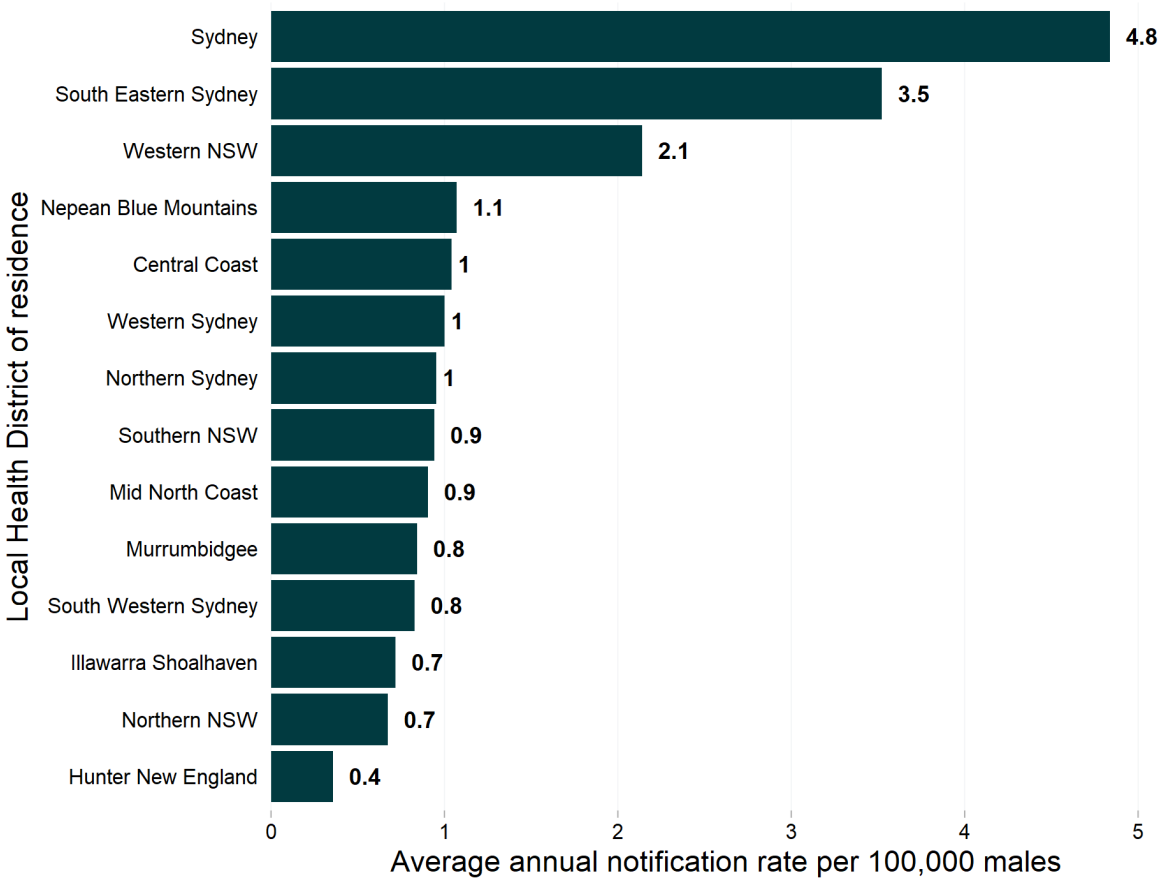
Figure 58: Number of LGV notifications in males by age group



Data source: NCIMS (via SAPHaRI), NSW Health. Data extracted 27 June 2022. Note: Excludes non-NSW residents.

Over the past five years, the majority of notifications occurred in the Sydney and South Eastern Sydney Local Health Districts, which also have the highest average annual rates at 5.8 and 3.5 per 100,000 males, respectively (Figure 59). Similar to other STIs, it should be noted that MSM, who are at increased risked of acquiring STIs generally and LGV in particular, are unequally distributed among local health districts. Continuing high notification rates among males in the Sydney and South Eastern Sydney Local Health Districts in particular reflect large concentrations of MSM in these areas.
A number of regional local health districts reported either none or very low numbers of LGV notifications over the five-year reporting period. Rates in these areas should be interpreted with caution as small fluctuations in notification numbers cause considerable changes in rates. Also see **Appendix D Table 11** for a detailed overview of total notification numbers and rates in males by local health district.

Figure 59: Average annual LGV notification rates in males by Local Health District



Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health. Data extracted 27 June 2022.
Note: Excludes non-NSW residents.

Appendix A: Data sources

Table 3: Details on data sources included in this report

Name	Custodian	Description
NSW Notifiable Conditions Information Management System (NCIMS)	Health Protection NSW, NSW Health	The NSW Notifiable Conditions Information Management System (NCIMS) contains records of all people notified to NSW Health with a notifiable condition under the NSW *Public Health Act*. Notification data may not reflect the true incidence of notifiable sexually transmitted diseases as they only represent a proportion of notifiable diseases in the population, however they are useful for monitoring trends over time. Re-infection periods: A person is only re-notified with chlamydia, gonorrhoea or infectious syphilis if the infection is acquired outside of the re-infection period as follows: Chlamydia - 29 days Gonorrhoea - 29 days Infectious syphilis - 89 days Multiple sites: A person who is notified with more than one site of infection simultaneously is counted as one notification.
NSW Health denominator data project	Health Protection NSW, NSW Health	Monthly aggregated testing data for selected notifiable conditions from 15 NSW public and private laboratories. These laboratories account for more than 90% of the total notifications for the selected conditions in NSW. Information from laboratories does not provide any indication on whether there are repeat tests or multiple site tests for the same individual. The notification to test ratio has been calculated by dividing the overall positive results notified to NSW Health by all laboratories by the total number of tests performed as reported from the participating laboratories and multiplying by 100. Notifications are for individual people with gonorrhoea/chlamydia reported from all laboratories. However, the testing data are for individual tests reported from participating laboratories and may include multiple specimens per individual. As such, the notification to test ratio may be an underestimate of the per cent of people tested that were positive in NSW for the condition
Communicable Diseases Register (CDR)	Health Protection NSW, NSW Health	The Communicable Diseases Register (CDR) contains deidentified records from the NSW Notifiable Conditions Information Management System (NCIMS), linked to emergency department, hospitalisation and deaths data, and includes the Enhanced Reporting of Aboriginality (ERA)

Name	Custodian	Description
		variable. Record linkage was carried out by the Centre for Health Record Linkage (www.cherel.org.au), NSW Ministry of Health.
Sydney Gay Periodic Survey	Centre for Social Research in Health	Data on sexual, drug use and testing practices related to the transmission of HIV and other STIs among GBM in Sydney (self-reported).

Appendix B: Case definitions

The STI notifications in this report meet the case definitions in the relevant Control Guideline for Public Health Units as listed below:

Gonorrhoea

http://www.health.nsw.gov.au/Infectious/controlguideline/Pages/gonorrhoea.aspx

Infectious syphilis – less than two years duration

http://www.health.nsw.gov.au/Infectious/controlguideline/Pages/syphilis.aspx

Syphilis - more than 2 years or unknown duration

http://www.health.nsw.gov.au/Infectious/controlguideline/Pages/syphilis.aspx

Chlamydia

http://www.health.nsw.gov.au/Infectious/controlguideline/Pages/chlamydia.aspx

LGV

https://www.health.nsw.gov.au/Infectious/controlguideline/Pages/lymphogranuloma.aspx

Appendix D: Notification data tables

Table 4: Number of infectious syphilis, gonorrhoea, chlamydia, and LGV notifications by sex, age group and Local Health District of residence

	Infectious syphilis					Gonorrhoea					Chlamydia					LGV				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Female	47	82	132	136	125	1,486	1,823	2,283	1,925	1,447	13,629	14,355	14,862	13,061	11,678	1	0	0	1	2
Male	1,050	1,413	1,736	1,555	1,602	7,466	8,272	8,873	7,684	5,983	15,106	16,419	17,128	13,759	13,301	52	80	71	39	32
Transgender	5	9	8	2	6	11	20	13	13	8	10	16	12	15	9	0	0	0	0	0
Not stated/Unknown	5	4	3	2	1	23	22	44	34	18	48	63	75	94	49	0	0	0	0	0
00-04	0	0	0	0	0	5	4	6	2	3	24	14	21	23	22	0	0	0	0	0
05-09	0	0	0	0	0	2	2	0	2	0	2	0	0	2	1	0	0	0	0	0
10-14	0	0	0	0	0	4	3	9	8	5	69	64	56	52	33	0	0	0	0	0
15-19	20	30	29	25	22	408	359	525	413	234	4,152	4,153	4,169	3,676	3,458	0	0	0	0	0
20-24	103	150	184	152	104	1,533	1,668	1,829	1,534	1,058	8,952	9,362	9,606	8,307	7,370	3	4	4	1	5
25-29	206	274	335	292	315	2,060	2,288	2,522	2,149	1,613	6,460	7,033	7,219	6,113	5,390	10	12	16	10	5
30-34	190	241	327	306	366	1,556	1,885	2,140	1,829	1,481	3,613	4,041	4,345	3,490	3,448	11	19	16	10	7
35-39	143	210	280	283	303	1,155	1,315	1,496	1,379	1,106	1,957	2,267	2,524	2,069	2,118	11	12	13	9	5
40-44	144	160	197	192	192	799	887	921	831	741	1,297	1,402	1,532	1,175	1,221	6	8	8	1	6
45-49	109	147	194	163	145	605	700	697	613	479	991	1,007	1,054	832	784	4	11	4	5	0
50-54	90	117	135	138	134	415	444	485	402	300	591	676	674	548	543	5	4	8	3	3
55-59	52	78	99	76	77	241	283	307	258	232	357	427	416	344	362	1	2	2	0	1
60-64	29	59	61	37	40	116	156	153	143	120	155	214	258	172	153	1	3	0	0	1
65-69	8	23	15	15	15	47	81	68	55	41	114	119	115	65	83	0	2	0	1	1
70-74	9	12	15	9	6	26	42	31	23	24	45	53	48	36	35	1	2	0	0	0
75-79	1	5	5	4	11	10	11	9	9	11	11	8	15	12	9	0	1	0	0	0
80-84	0	1	0	1	3	2	7	5	3	0	1	6	7	7	2	0	0	0	0	0
85+	2	1	3	1	0	0	2	3	1	3	1	0	2	0	1	0	0	0	0	0
Unknown	1	0	0	1	1	2	0	7	2	5	1	7	16	6	4	0	0	0	0	0
Central Coast	18	16	48	32	24	211	206	227	203	142	1,032	1,046	1,152	955	895	2	1	2	0	2
Far West	0	1	5	4	4	10	6	10	11	8	80	115	94	50	74	0	0	0	0	0
Hunter New England	46	62	95	120	93	393	551	609	500	391	2,933	3,198	3,109	2,520	2,839	0	1	0	3	1
Illawarra Shoalhaven	29	43	44	50	35	166	268	310	371	303	1,312	1,381	1,394	1,339	1,279	0	2	2	1	1
Justice Health	1	4	5	21	27	25	36	60	53	50	161	269	334	149	136	0	0	0	0	0
Mid North Coast	4	11	10	12	22	59	74	74	65	27	663	636	730	661	602	0	0	0	2	1
Murrumbidgee	17	12	22	26	27	69	72	120	130	108	831	919	979	737	792	1	2	1	1	0
Nepean Blue Mountains	21	34	33	45	29	229	321	324	297	262	1,032	1,081	1,142	979	839	3	3	1	0	3
Northern NSW	14	19	22	17	19	158	147	175	166	92	969	936	922	886	887	0	1	0	0	0
Northern Sydney	67	136	113	108	100	665	804	910	717	529	2,564	2,760	2,735	2,282	1,895	3	6	6	3	4
South Eastern Sydney	441	554	670	598	621	2,800	3,001	3,219	2,777	2,167	6,105	6,584	6,891	5,564	5,006	18	26	26	10	3
South Western Sydney	54	71	71	66	107	800	957	1,074	1,033	712	2,716	3,000	2,865	2,981	2,573	4	7	2	3	5
Southern NSW	8	13	14	16	7	60	73	73	43	42	503	497	501	359	433	0	1	0	0	1
Sydney	303	392	542	408	473	2,274	2,330	2,656	2,064	1,748	4,300	4,555	4,980	4,072	3,625	20	26	20	13	4
Unknown	5	10	1	4	11	35	39	35	13	13	67	51	59	27	24	0	0	0	0	0
Western NSW	10	8	7	19	10	57	66	90	60	76	777	818	939	642	757	0	0	3	0	0
Western Sydney	69	122	177	149	125	975	1,186	1,247	1,153	786	2,748	3,007	3,251	2,726	2,381	2	4	8	4	9
Total	**1,107**	**1,508**	**1,879**	**1,695**	**1,734**	**8,986**	**10,137**	**11,213**	**9,656**	**7,456**	**28,793**	**30,853**	**32,077**	**26,929**	**25,037**	**53**	**80**	**71**	**40**	**34**

Data source: NCIMS (via SAPHaRI), NSW Health; data extracted 03 August 2022. Excludes non-NSW residents. Data are provisional and subject to change. Transgender is recorded according to information provided on the notification, and overall numbers reported as transgender may be an underestimation.

Table 5: Gonorrhoea notification rate by LHD of residence and sex, January 2017–December 2021

Local Health District	Sex	Year					% change 20/21
		2017	2018	2019	2020	2021	
Central Coast	Female	47.8	32.6	48.4	44.7	25.4	-43.2%
	Male	77.2	89.2	83.8	73.3	56.4	-23.1%
	Total	62.2	60.3	66.0	58.7	40.9	-30.3%
Far West	Female	27.0	20.3	27.3	34.5	14.0	-59.4%
	Male	40.1	20.2	40.8	41.1	41.7	+1.5%
	Total	33.6	20.3	34.1	37.8	27.9	-26.2%
Hunter New England	Female	22.2	31.8	48.7	44.6	29.8	-33.2%
	Male	63.5	87.4	81.9	61.5	52.8	-14.1%
	Total	42.8	59.5	65.2	53.1	41.2	-22.4%
Illawarra Shoalhaven	Female	23.7	39.1	52.4	64.0	56.0	-12.5%
	Male	57.7	90.4	95.5	110.9	85.1	-23.3%
	Total	40.5	64.5	73.8	87.2	70.7	-18.9%
Mid North Coast	Female	24.0	29.9	20.0	29.3	8.6	-70.6%
	Male	29.9	37.0	46.6	28.1	15.3	-45.6%
	Total	26.9	33.4	33.0	28.7	11.9	-58.5%
Murrumbidgee	Female	14.1	15.3	27.2	27.7	30.2	+9.0%
	Male	31.9	33.1	53.2	58.4	41.6	-28.8%
	Total	23.3	24.2	40.1	43.2	35.8	-17.1%
Nepean Blue Mountains	Female	29.8	50.6	58.3	53.1	41.3	-22.2%
	Male	93.7	120.4	111.8	101.2	95.4	-5.7%
	Total	61.5	85.2	85.1	77.2	68.2	-11.7%
Northern NSW	Female	38.4	27.1	47.6	38.8	26.0	-33.0%
	Male	67.3	70.2	67.7	69.1	33.8	-51.1%
	Total	52.5	48.5	57.4	54.0	29.8	-44.8%
Northern Sydney	Female	23.4	31.9	37.2	31.7	23.3	-26.5%
	Male	122.1	141.6	155.9	119.9	87.9	-26.7%
	Total	71.7	85.6	95.6	75.0	55.3	-26.3%
South Eastern Sydney	Female	64.0	77.0	88.4	66.7	50.0	-25.0%
	Male	536.0	555.6	584.3	508.9	407.3	-20.0%
	Total	300.9	318.4	337.6	289.0	228.7	-20.9%
South Western Sydney	Female	36.5	42.1	49.3	43.8	32.9	-24.9%
	Male	125.6	147.1	157.2	153.0	102.9	-32.7%
	Total	80.9	94.7	104.2	98.7	67.8	-31.3%
Southern NSW	Female	16.5	12.5	16.2	12.2	15.8	+29.5%
	Male	41.4	57.4	52.9	28.0	23.2	-17.1%
	Total	29.0	35.0	34.6	20.1	19.5	-3.0%
Sydney	Female	66.3	81.4	99.6	65.5	51.4	-21.5%
	Male	609.2	597.2	660.3	520.0	449.4	-13.6%
	Total	338.0	339.8	380.8	293.6	250.7	-14.6%
Western NSW	Female	11.5	12.1	24.8	15.6	30.4	+94.9%
	Male	29.5	35.0	38.5	26.4	23.4	-11.4%
	Total	20.5	23.6	32.0	21.3	26.9	+26.3%
Western Sydney	Female	45.7	53.2	60.7	49.5	32.3	-34.7%
	Male	151.9	181.4	179.9	168.9	116.9	-30.8%
	Total	99.8	118.5	121.7	110.6	75.3	-31.9%

Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health. Data extracted 16 June 2022. Note: Excludes non-NSW residents and notifications from Justice Health. Year of onset is based on calculated onset.

Table 6: Infectious syphilis notification rates by Local Health District of residence, January 2017–December 2021

Local Health District	Year					% change 20/21
	2017	2018	2019	2020	2021	
Central Coast	5.3	4.7	14.0	9.3	6.9	-25.8%
Far West		3.4	17.0	13.8	13.9	+0.7%
Hunter New England	5.0	6.7	10.2	12.7	9.8	-22.8%
Illawarra Shoalhaven	7.1	10.4	10.5	11.8	8.2	-30.5%
Mid North Coast	1.8	5.0	4.5	5.3	9.7	+83.0%
Murrumbidgee	5.7	4.0	7.3	8.6	9.0	+4.7%
Nepean Blue Mountains	5.6	9.0	8.7	11.7	7.5	-35.9%
Northern NSW	4.7	6.3	7.2	5.5	6.2	+12.7%
Northern Sydney	7.2	14.5	11.9	11.3	10.5	-7.1%
South Eastern Sydney	47.4	58.8	70.3	62.2	65.5	+5.3%
South Western Sydney	5.5	7.0	6.9	6.3	10.2	+61.9%
Southern NSW	3.9	6.2	6.6	7.5	3.3	-56.0%
Sydney	45.0	57.2	77.7	58.0	67.8	+16.9%
Western NSW	3.6	2.9	2.5	6.8	3.5	-48.5%
Western Sydney	7.1	12.2	17.3	14.3	12.0	-16.1%

Data source: NCIMS (via SAPHaRI), NSW Health; data extracted 03 August 2022.

Table 7: Chlamydia notification rates by LHD of residence and sex, January 2017–December 2021

Local Health District	Sex	Year					% change 20/21
		2017	2018	2019	2020	2021	
Central Coast	Female	351.4	314.7	369.9	308.6	301.7	-2.2%
	Male	253.2	295.8	296.6	241.0	209.8	-12.9%
	Total	304.0	306.1	334.9	276.1	257.3	-6.8%
Far West	Female	358.3	454.2	354.9	234.8	377.1	+60.6%
	Male	180.3	322.9	285.9	109.7	138.9	+26.6%
	Total	268.7	388.3	320.4	172.0	257.7	+49.8%
Hunter New England	Female	366.2	402.5	385.1	317.1	353.7	+11.5%
	Male	270.6	284.1	277.9	215.0	242.0	+12.6%
	Total	319.4	345.3	332.9	267.4	299.3	+11.9%
Illawarra Shoalhaven	Female	355.0	382.7	379.3	375.4	337.2	-10.2%
	Male	281.4	280.5	281.7	251.1	257.7	+2.6%
	Total	320.0	332.6	331.6	314.9	298.2	-5.3%
Mid North Coast	Female	369.4	331.7	379.6	341.3	327.0	-4.2%
	Male	232.0	239.6	268.9	238.2	199.4	-16.3%
	Total	302.4	286.8	325.6	291.9	264.8	-9.3%
Murrumbidgee	Female	331.4	379.9	397.2	292.5	299.1	+2.3%
	Male	227.6	235.9	253.7	192.6	221.8	+15.2%
	Total	280.5	308.4	327.0	245.0	261.9	+6.9%
Nepean Blue Mountains	Female	296.6	312.3	329.5	287.8	259.9	-9.7%
	Male	256.8	261.2	267.1	213.3	173.6	-18.6%
	Total	277.1	286.9	299.9	254.5	218.4	-14.2%
Northern NSW	Female	346.1	335.4	340.6	338.0	344.8	+2.0%
	Male	297.2	280.7	261.4	233.9	227.6	-2.7%
	Total	322.2	309.0	302.5	288.1	287.5	-0.2%
Northern Sydney	Female	248.6	260.3	264.8	227.8	173.2	-24.0%
	Male	305.1	326.3	310.8	248.6	224.0	-9.9%
	Total	276.4	293.8	287.5	238.6	198.2	-16.9%
South Eastern Sydney	Female	459.2	481.4	494.3	424.3	330.6	-22.1%
	Male	850.4	912.0	947.3	731.0	725.7	-0.7%
	Total	656.1	698.7	722.8	579.0	528.3	-8.8%
South Western Sydney	Female	285.8	292.9	277.3	292.6	254.1	-13.2%
	Male	263.5	299.8	275.6	272.5	234.3	-14.0%
	Total	275.0	296.9	277.9	284.7	245.1	-13.9%
Southern NSW	Female	289.2	267.9	264.4	199.7	225.3	+12.8%
	Male	196.6	207.5	207.9	134.2	174.1	+29.7%
	Total	243.2	238.1	237.5	167.8	200.1	+19.2%
Sydney	Female	458.9	466.8	471.4	400.0	301.5	-24.6%
	Male	818.1	859.7	955.3	754.9	736.3	-2.5%
	Total	639.1	664.4	714.0	579.5	519.8	-10.3%
Western NSW	Female	351.5	375.5	432.9	302.0	340.8	+12.8%
	Male	203.9	208.1	233.1	152.4	195.4	+28.2%
	Total	279.0	292.0	333.9	228.1	268.3	+17.6%
Western Sydney	Female	283.9	301.3	312.8	277.5	230.1	-17.1%
	Male	276.5	298.5	318.8	244.5	225.2	-7.9%
	Total	281.2	300.4	317.2	261.4	228.1	-12.7%

Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health. Data extracted 27 June 2022. Note: Excludes non-NSW residents and notifications from Justice Health. Year of onset is based on calculated onset.

Table 8: Total notifications (males and females) and average annual LGV notification rates in males by LHD of residence

Local Health District	2017-2021	
	Total number of notifications (males and females)	Average annual notification rate per 100,000 males
Central Coast	7	1.04
Hunter New England	5	0.36
Illawarra Shoalhaven	6	0.72
Mid North Coast	3	0.90
Murrumbidgee	5	0.84
Nepean Blue Mountains	10	1.07
Northern NSW	1	0.67
Northern Sydney	22	0.95
South Eastern Sydney	83	3.52
South Western Sydney	21	0.83
Southern NSW	2	0.94
Sydney	83	4.84
Western NSW	3	2.14
Western Sydney	27	1.00

Data source: NCIMS and ABS population estimates (via SAPHaRI), NSW Health. Data extracted 27 June 2022. Note: Excludes non-NSW residents and notifications from Justice Health. Year of onset is based on calculated onset.

Appendix E: Data table for the HPV vaccination rate by gender

Table 9: Year 7 HPV vaccination rate by Local Health District and gender

NSW	Gender	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Dose 1	Females	81%	86%	86%	87%	87%	86%	86%	85%	85%	82%
	Males			80%	83%	84%	83%	84%	83%	82%	80%
Dose 2	Females	76%	84%	84%	85%	86%	84%	82%	82%	81%	77%
	Males			78%	81%	83%	82%	79%	80%	79%	76%
Dose 3	Females	71%	78%	82%	82%	82%	82%	na	na	na	na
	Males			76%	78%	80%	80%	na	na	na	na

Data source: Local Health Districts, NSW Health

Appendix F: List of Figures