

# Alberta Sexually Transmitted Infections and HIV

2021

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# Foreword

Sexually transmitted infections (STIs) are an important cause of morbidity in Alberta. Surveillance of STIs in Alberta, in some instances, has been ongoing since the early 1920s and provides essential information for policy and decision-making. The requirements for reporting communicable diseases, including Sexually Transmitted and Blood-Borne Infections (STBBIs), are mandated by the *Communicable Diseases Regulation* [1] under the *Public Health Act* [2]. Notifiable diseases are reportable within 48 hours via Sexually Transmitted Infection Centralized Services (STICS) to the STI Medical Director.

The “Sexually Transmitted Infections and HIV in Alberta: Annual Report” provides a high-level overview of four notifiable STBBIs: chlamydia (including lymphogranuloma venereum (LGV)), gonorrhea, Human Immunodeficiency Virus (HIV), and infectious syphilis (please refer to the Alberta Health webpage for a complete list of notifiable diseases [3]). Focus is placed on examining case numbers and rates of STBBIs for the current year within the context of previous years and Alberta Health Services’ (AHS) Zones. As such, the report is organized into six profiles, starting with the entire province and followed by each of AHS’ five zones (South, Calgary, Central, Edmonton, and North). This is intended to provide greater insight and comparison between geographic regions. Visit the following link for more details on each health zone: <https://www.albertahealthservices.ca/zones/zones.aspx>.

For this edition, additional inserts on congenital and non-infectious syphilis have been included (please refer to the [annex](#)).

Data collected under the surveillance program is compiled, summarized, and presented on the Interactive Health Data Application (IHDA): [http://www.ahw.gov.ab.ca/IHDA\\_Retrieval/](http://www.ahw.gov.ab.ca/IHDA_Retrieval/).

## Acronyms

AHS: Alberta Health Services  
HIV: Human Immunodeficiency Virus  
IDU: Intravenous Drug Use  
IHDA: Interactive Health Data Application  
LGV: Lymphogranuloma Venereum  
MSM: Men who have Sex with Men  
PNN: Partner Notification Nurse  
PrEP: Pre-Exposure Prophylaxis  
SRH: Sexual and Reproductive Health  
STI: Sexually Transmitted Infection  
STBBI: Sexually Transmitted and Blood-Borne Infection

## Acknowledgments

This report was prepared in partnership and in collaboration with public health and laboratory experts from:

- Alberta Health
- Alberta Health Services (AHS)
- Alberta Precision Laboratory

# Considerations for Interpreting Surveillance Data

Efforts are taken to ensure surveillance and laboratory data collected by Alberta Health and AHS are accurate and complete; however, interpreting surveillance data is complex. Although observed trends may be indicative of a true increase or decrease in STI/HIV cases and rates, several influencing factors should be considered:

- Changes in surveillance and data collection methods (e.g. improved contact tracing, electronic reporting, and screening programs to detect cases).
- Changes in social behaviors, attitudes, and stigma (e.g. social media, Chemsex, and public health awareness campaigns). [4]–[6]
- New diagnostic tools and increased testing/screening (e.g. Nucleic acid amplification tests are more sensitive than previous methods). [7]
- STIs can increase HIV infectiousness and susceptibility. [8]
- Compared to women, men are more likely to experience symptoms and present for testing when infected with some STIs. [9], [10]
- In general, women of reproductive age groups are more likely to be screened for STI/HIV.
- Depending upon the site of infection, male to female transmission for some STIs is more efficient and occurs at a higher rate than female to male transmission. [11], [12]
- Compared to men, women are more biologically susceptible to certain STIs (e.g. chlamydia) due to structural characteristics of their genital epithelium. [10]
- Social determinants of health may impact select populations' ability to access care.
- Rates of infection calculated from small case numbers must be interpreted with caution.

Specific health initiatives, and/or changes to laboratory testing practices that may influence trends seen in this report include (please refer to prior annual reports for previous initiatives) [13], [14]:

- Global shortage of gonorrhea/chlamydia test swabs from Aptima.
- Effects of the SARS-CoV-2 pandemic on service capacity, testing, and general access to care:
  - Select clinics transitioned from a drop-in to an appointment-based service model.
  - Reduced capacity of ambulatory in-person care.
  - Staff deployments.
- Increased nucleic acid amplification testing on placental tissue to increase congenital syphilis detection.
- Incentive testing for hard-to-reach populations. [15]
- Reduction in immigration during the SARS-CoV-2 pandemic may have reduced the number of people immigrating from countries where HIV is endemic.

# 1. Alberta Profile

## Case Counts

A total of 22,531 STI/HIV cases were reported in 2021:

- Chlamydia: 14,070 cases, a decrease of 0.3 per cent (n = 40) compared to 2020.
- Gonorrhoea: 5,010 cases, an increase of 2.4 per cent (n = 119) compared to 2020.
- HIV: 242 cases, an increase of 25.4 per cent (n = 49) compared to 2020.
- Infectious syphilis: 3,209 cases, an increase of 27.6 per cent (n = 695) compared to 2020.

## Rate of Reported Cases

- Chlamydia: 316.7 cases per 100,000 population, a decrease of 0.8 per cent compared to 2020.
- Gonorrhoea: 112.8 cases per 100,000 population, an increase of 1.9 per cent compared to 2020.
- HIV: 5.5 cases per 100,000 population, an increase of 24.7 per cent compared to 2020.
- Infectious syphilis: 72.2 cases per 100,000 population, an increase of 27.0 per cent compared to 2020.

## Gender and Age

- Chlamydia cases: 59.1 per cent were female, of which 57.6 per cent were 15-24 years old.
- Gonorrhoea cases: 53.9 per cent were male, of which 36.0 per cent were 30-39 years old.
- HIV cases: 38.8 per cent were female, of which 46.8 per cent were 25-39 years old.
- Infectious syphilis cases: 54.8 per cent were male, of which 37.2 per cent were 30-39 years old.

## HIV Exposure Categories

In 2021, 31.8 per cent (n = 47) of male cases, were attributed to the exposure category “MSM”, whereas 45.7 per cent of female cases (n = 43) were attributed to the exposure category “Heterosexual Exposure”.

## Spatial Distribution

The highest gonorrhoea rates among AHS Zones were Edmonton Zone (157.2 cases per 100,000 population) and North Zone (145.2 cases per 100,000 population). In recent years, all AHS Zones have reported an increase in infectious syphilis rates. The highest infectious syphilis rates among AHS Zones were North Zone (143.2 cases per 100,000 population) and Edmonton Zone (94.6 cases per 100,000 population).

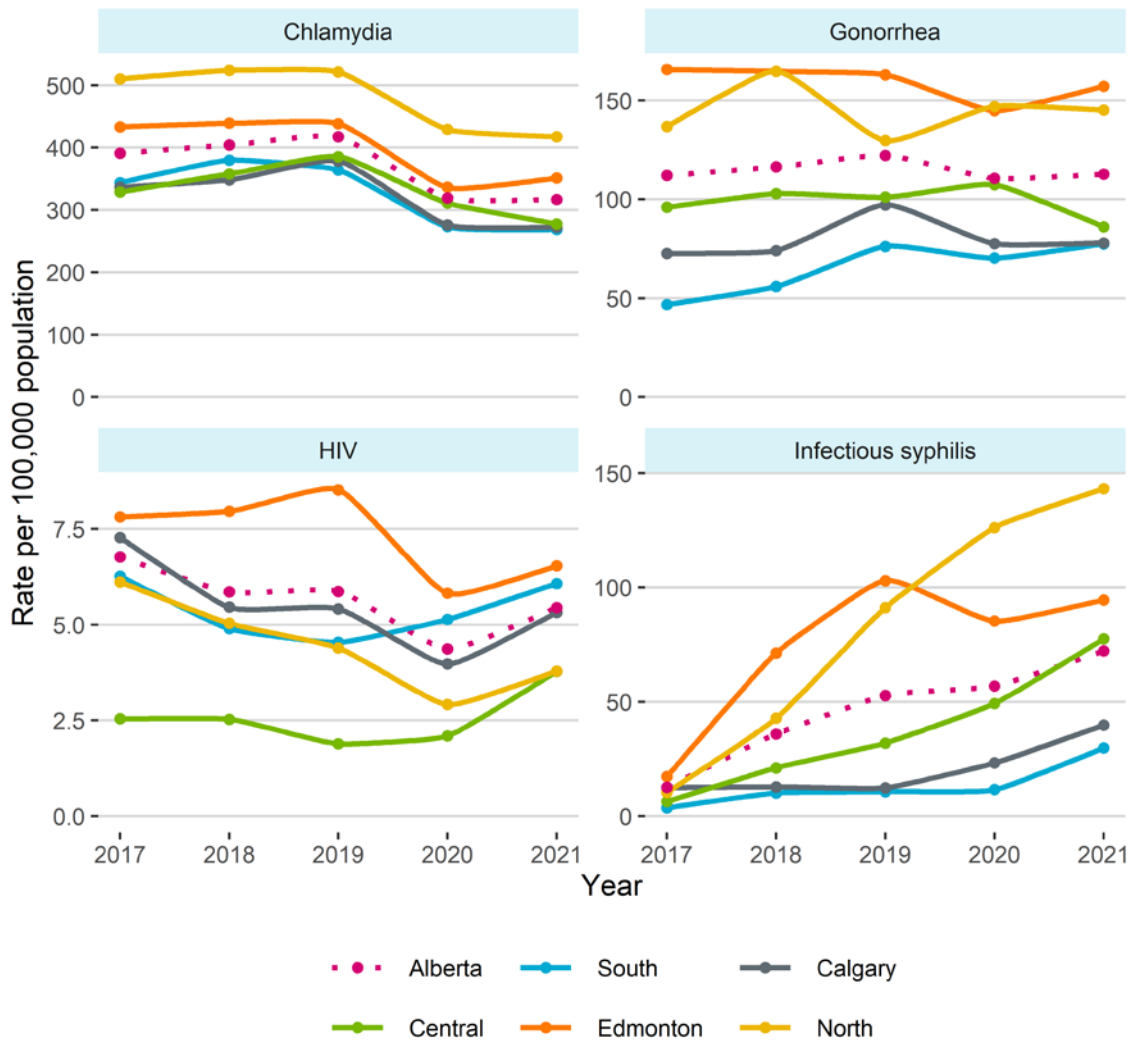
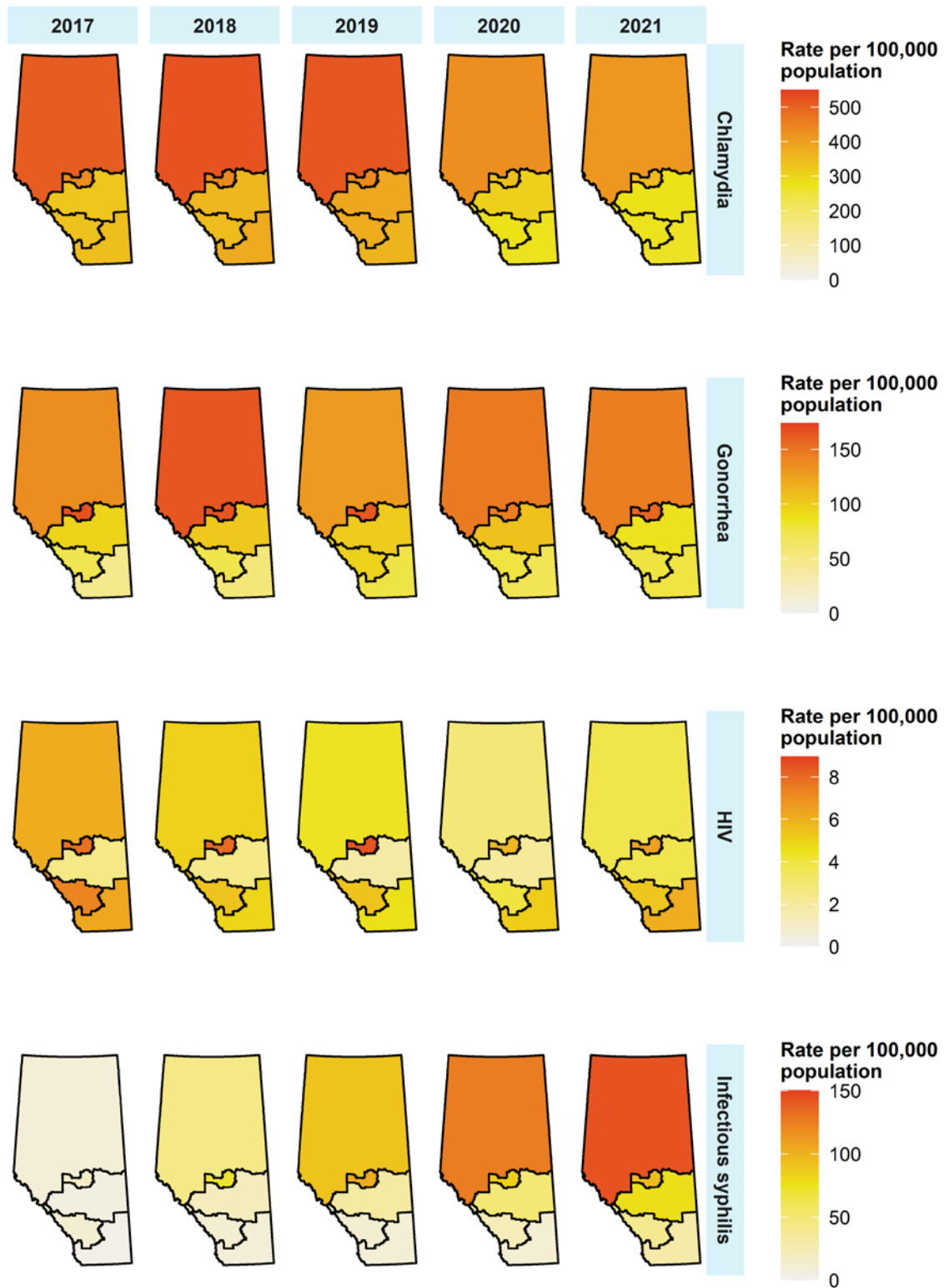


Figure 1. Rates of reported STIs/HIV for Alberta and AHS Zones, 2017 to 2021.



**Figure 2. Rates of reported STIs/HIV by AHS Zones, 2017 to 2021.** For more information on AHS Zones, please visit: <https://www.albertahealthservices.ca/zones/zones.aspx>.

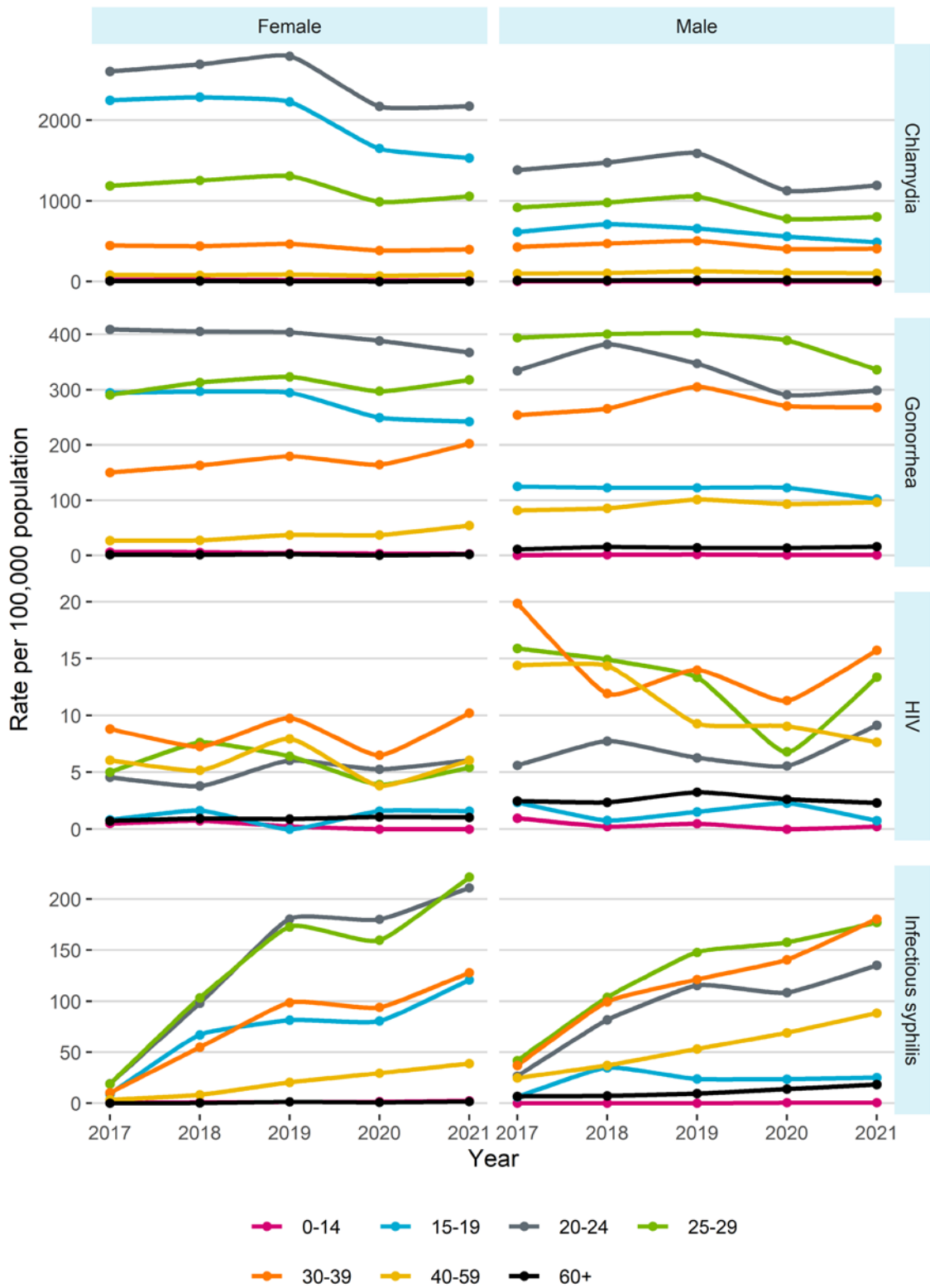


Figure 3. STI/HIV rates by age and gender in Alberta, 2017 to 2021.



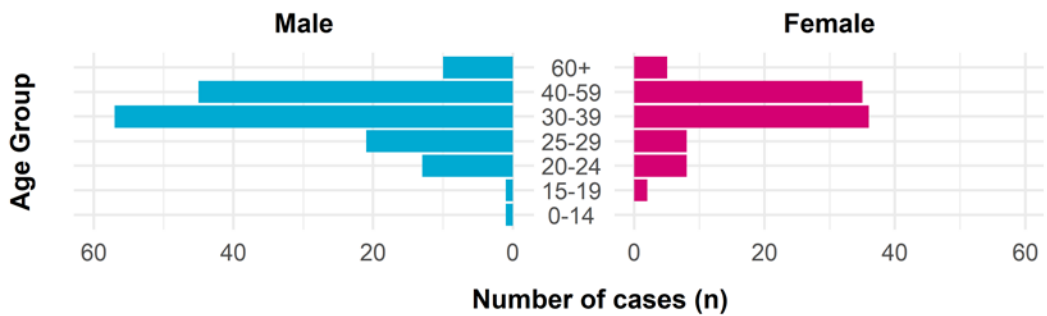
## Chlamydia



## Gonorrhoea



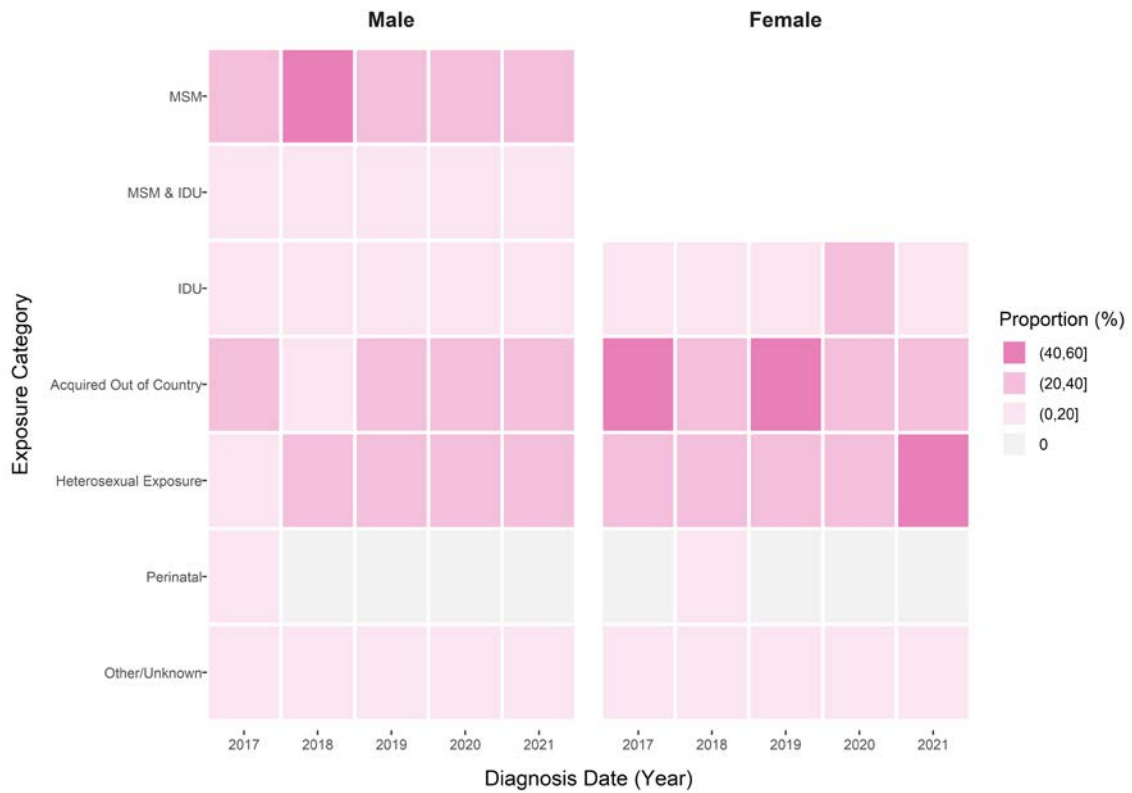
## HIV



## Infectious syphilis



Figure 4. STI/HIV cases by age and gender in Alberta, 2021.



**Figure 5. Proportion of HIV infections attributed to respective exposure categories in Alberta, 2017 to 2021.** Assignment to exposure categories is determined hierarchically by the most probable route of acquiring HIV.

## 2. South Zone Profile

### Case Counts

A total of 1,193 STI/HIV cases were reported in 2021:

- Chlamydia: 839 cases, a decrease of 1.4 per cent (n = 12) compared to 2020.
- Gonorrhoea: 242 cases, an increase of 10.5 per cent (n = 23) compared to 2020.
- HIV: 19 cases, an increase of 18.8 per cent (n = 3) compared to 2020.
- Infectious syphilis: 93 cases, an increase of 158.3 per cent (n = 57) compared to 2020.

### Rate of Reported Cases

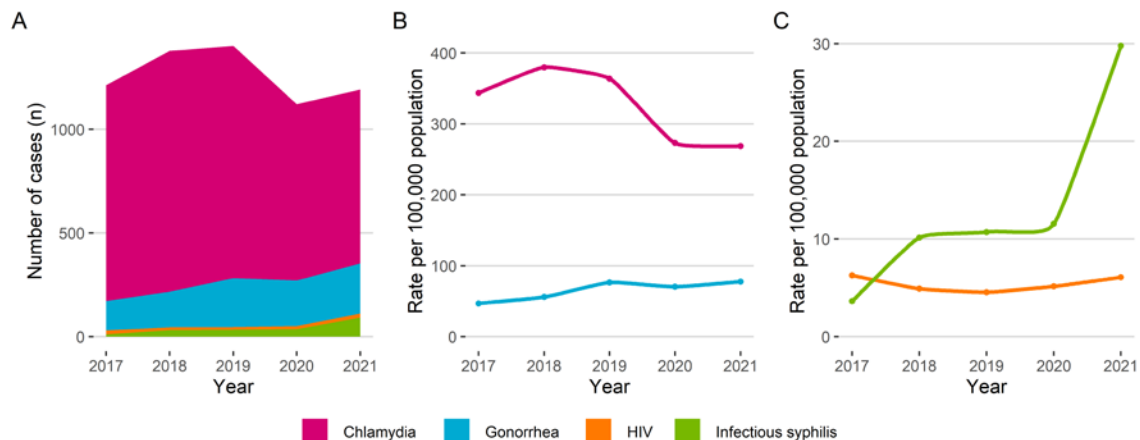
- Chlamydia: 268.7 cases per 100,000 population, a decrease of 1.7 per cent compared to 2020.
- Gonorrhoea: 77.5 cases per 100,000 population, an increase of 10.2 per cent compared to 2020.
- HIV: 6.1 cases per 100,000 population, an increase of 18.3 per cent compared to 2020.
- Infectious syphilis: 29.8 cases per 100,000 population, an increase of 157.6 per cent compared to 2020.

### Gender and Age

- Chlamydia cases: 61.1 per cent were female, of which 65.9 per cent were 15-24 years old.
- Gonorrhoea cases: 53.7 per cent were female, of which 40.0 per cent were 20-29 years old.
- HIV cases: 38.8 per cent were female, of which 46.8 per cent were 25-39 years old.
- Infectious syphilis cases: 51.6 per cent were female, of which 52.1 per cent were 20-29 years old.

### HIV Exposure Categories

In 2021, 27.3 per cent (n = 3) of male cases, were attributed to the exposure category “IDU”, whereas 37.5 per cent of female cases (n = 3) were attributed to the exposure category “Heterosexual Exposure”.



**Figure 6. Counts and rates of STIs/HIV in South Zone, 2017 to 2021.** (A) Counts per year grouped by infection type, (B) Rates per 100,000 population by year for chlamydia and gonorrhoea, and (C) Rates per 100,000 population by year for HIV and infectious syphilis.

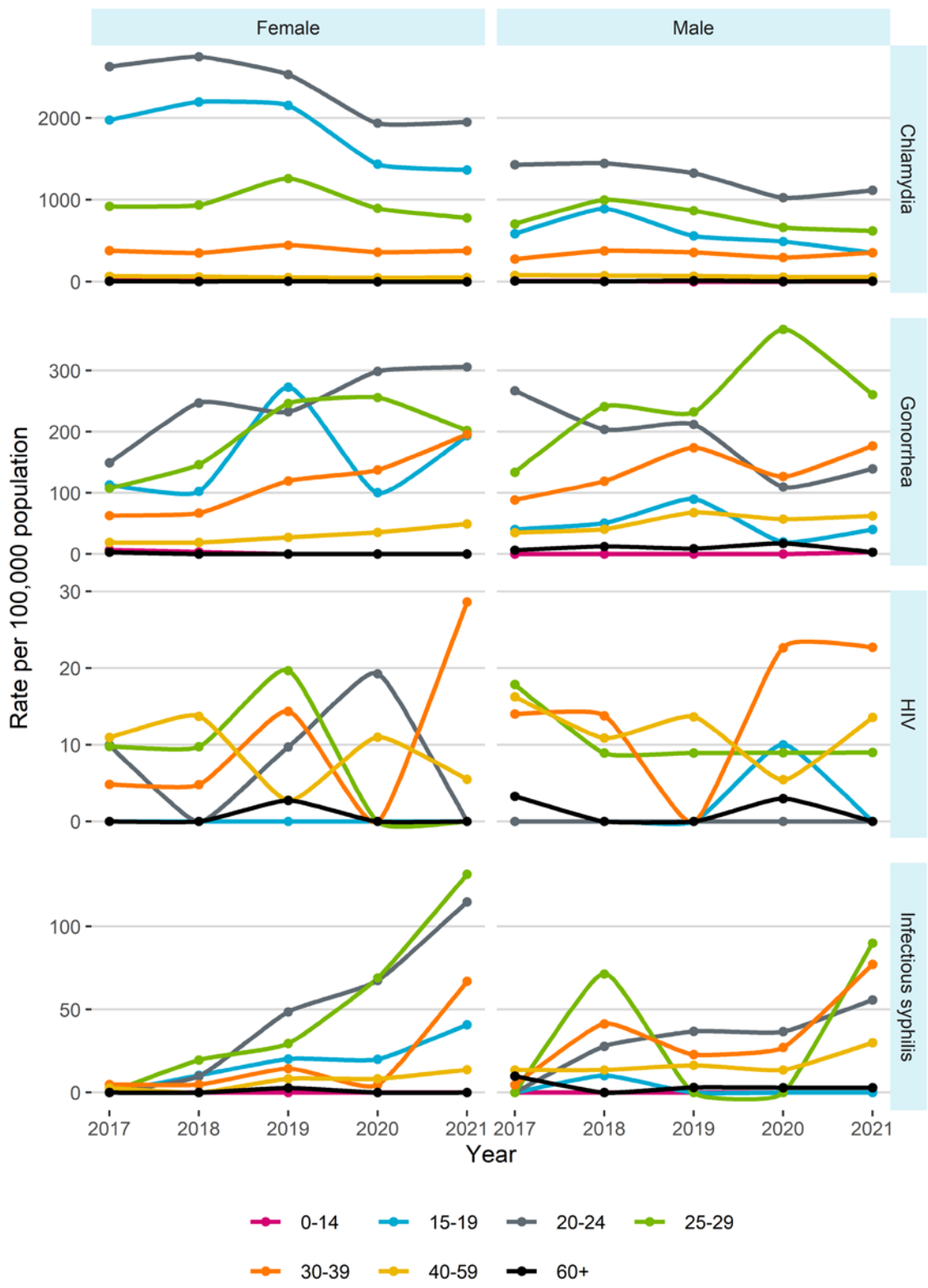
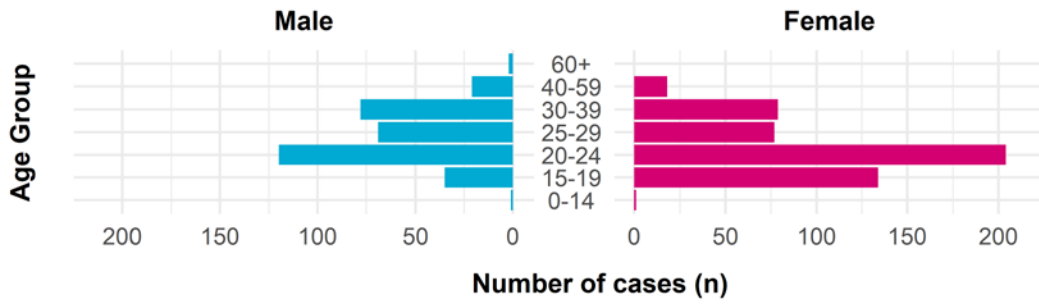
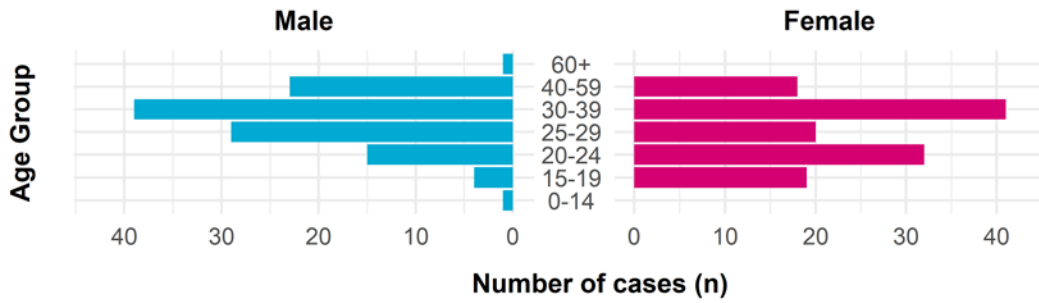


Figure 7. STI/HIV rates by age and gender in South Zone, 2017 to 2021.

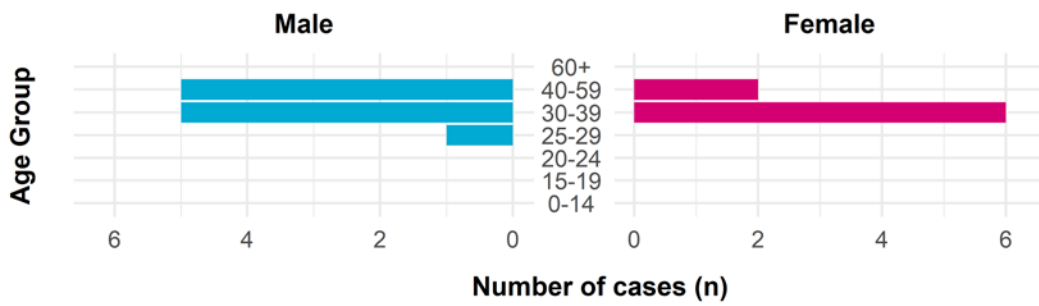
## Chlamydia



## Gonorrhoea



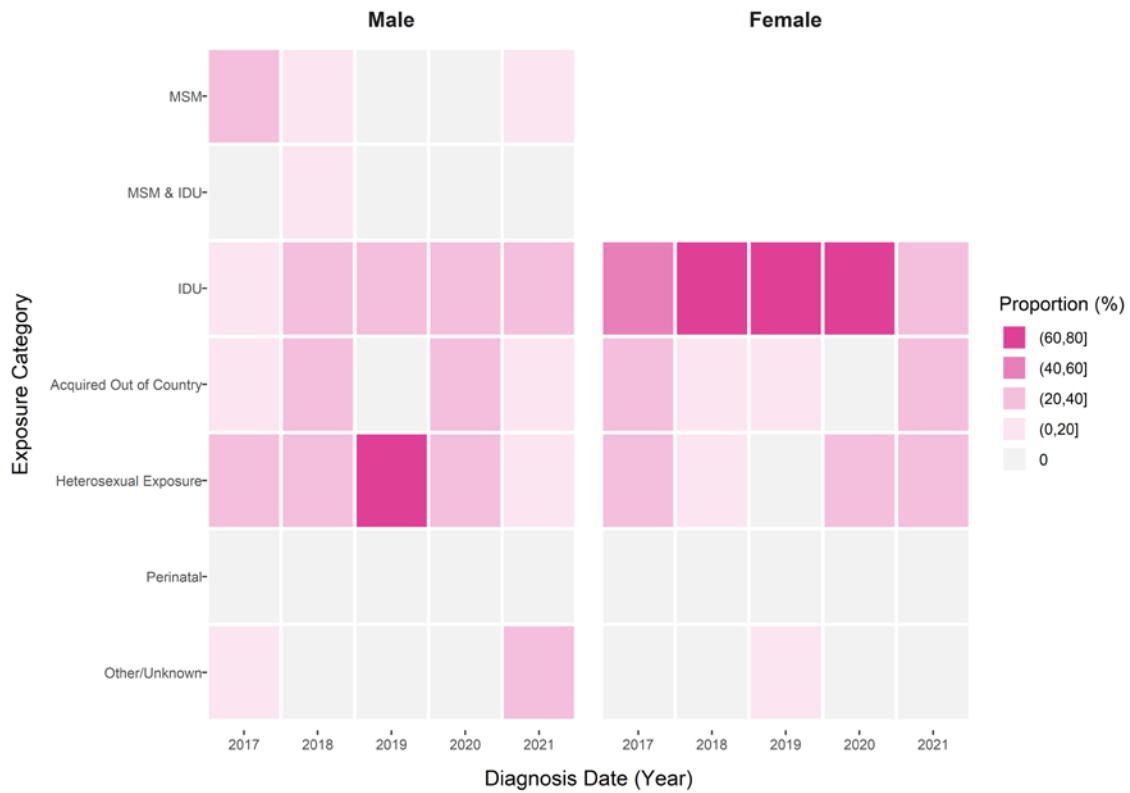
## HIV



## Infectious syphilis



Figure 8. STI/HIV cases by age and gender in South Zone, 2021.



**Figure 9. Proportion of HIV infections attributed to respective exposure categories in South Zone, 2017 to 2021.** Assignment to exposure categories is determined hierarchically by the most probable route of acquiring HIV.

# 3. Calgary Zone Profile

## Case Counts

A total of 6,831 STI/HIV cases were reported in 2021:

- Chlamydia: 4,704 cases, a decrease of 0.4 per cent (n = 17) compared to 2020.
- Gonorrhoea: 1,347 cases, an increase of 1.5 per cent (n = 20) compared to 2020.
- HIV: 92 cases, an increase of 35.3 per cent (n = 24) compared to 2020.
- Infectious syphilis: 688 cases, an increase of 73.3 per cent (n = 291) compared to 2020.

## Rate of Reported Cases

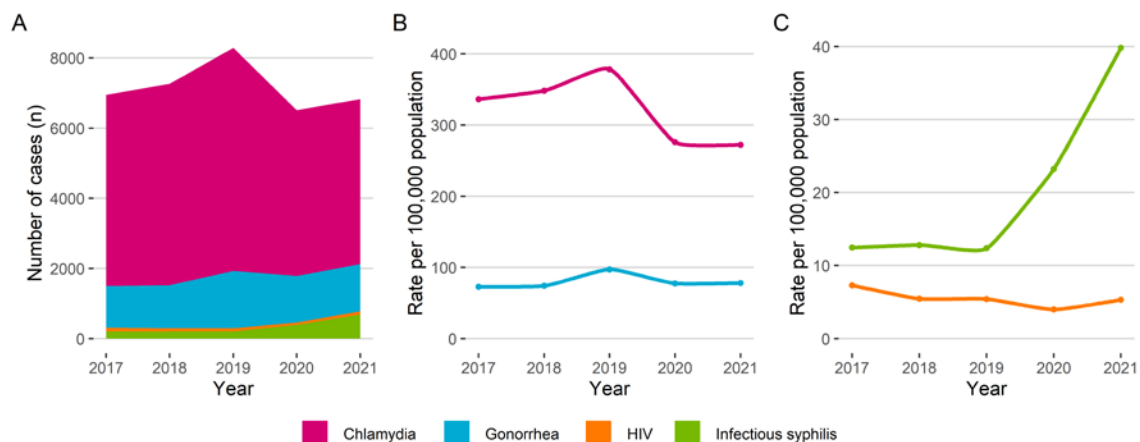
- Chlamydia: 272.3 cases per 100,000 population, a decrease of 1.4 per cent compared to 2020.
- Gonorrhoea: 78 cases per 100,000 population, an increase of 0.5 per cent compared to 2020.
- HIV: 5.3 cases per 100,000 population, an increase of 33.7 per cent compared to 2020.
- Infectious syphilis: 39.8 cases per 100,000 population, an increase of 71.5 per cent compared to 2020.

## Gender and Age

- Chlamydia cases: 56.3 per cent were female, of which 59.1 per cent were 15-24 years old.
- Gonorrhoea cases: 64.7 per cent were male, of which 38.7 per cent were 30-39 years old.
- HIV cases: 38.8 per cent were female, of which 46.8 per cent were 25-39 years old.
- Infectious syphilis cases: 61.5 per cent were male, of which 40.9 per cent were 30-39 years old.

## HIV Exposure Categories

In 2021, 39 per cent (n = 23) of male cases, were attributed to the exposure category “Acquired Out of Country”, whereas 42.4 per cent of female cases (n = 14) were attributed to the exposure category “Heterosexual Exposure”.



**Figure 10. Counts and rates of STIs/HIV in Calgary Zone, 2017 to 2021.** (A) Counts per year grouped by infection type, (B) Rates per 100,000 population by year for chlamydia and gonorrhoea, and (C) Rates per 100,000 population by year for HIV and infectious syphilis.

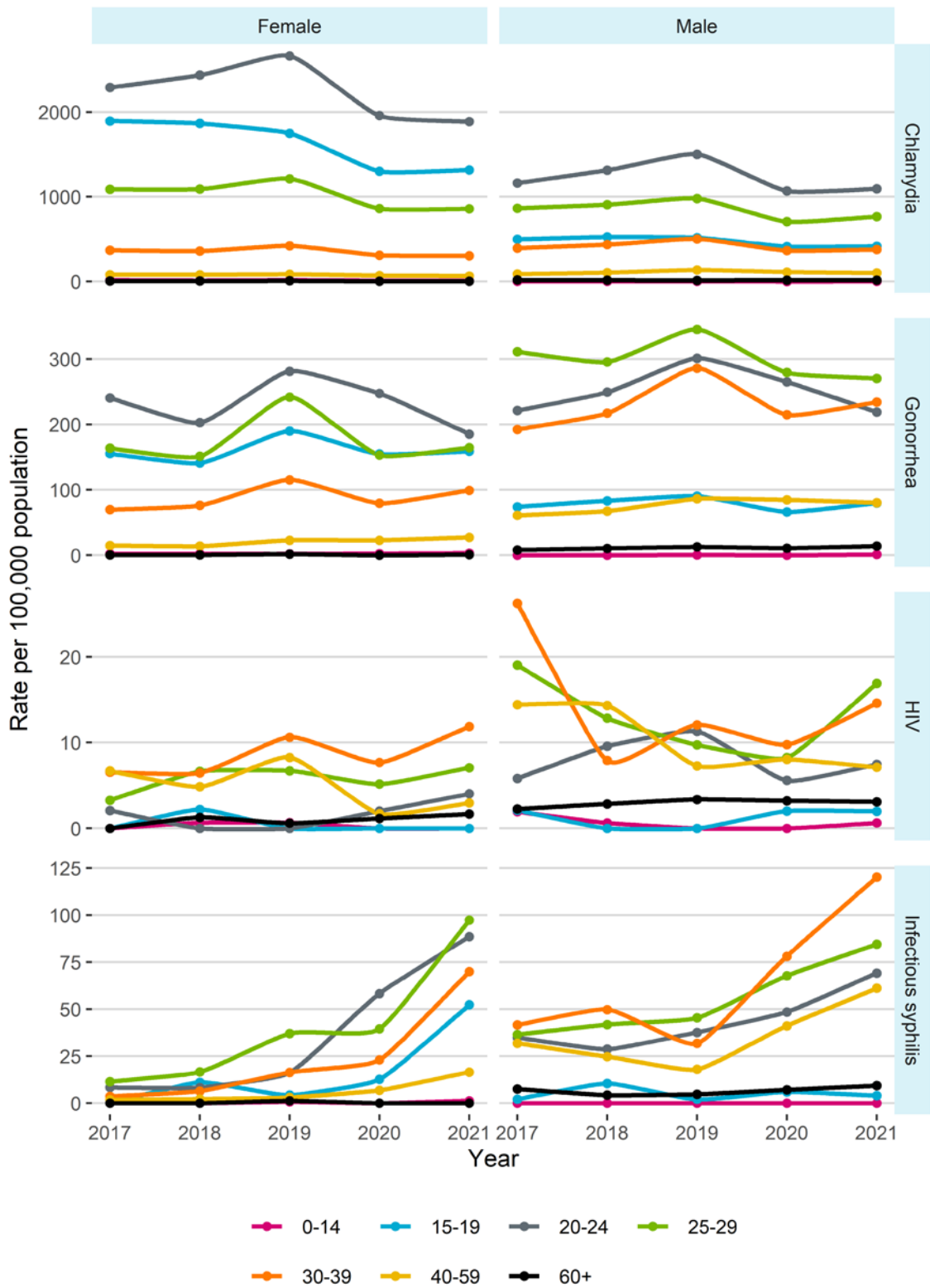
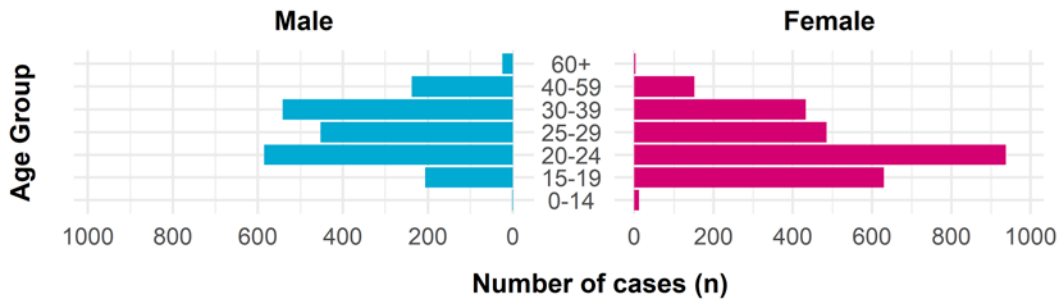


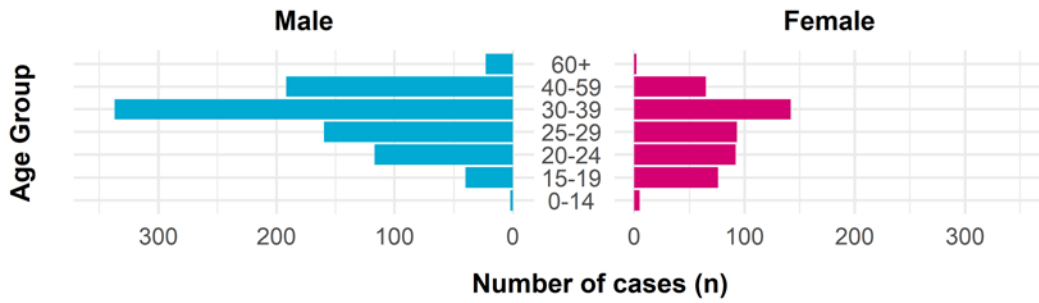
Figure 11. STI/HIV rates by age and gender in Calgary Zone, 2017 to 2021.



## Chlamydia



## Gonorrhoea



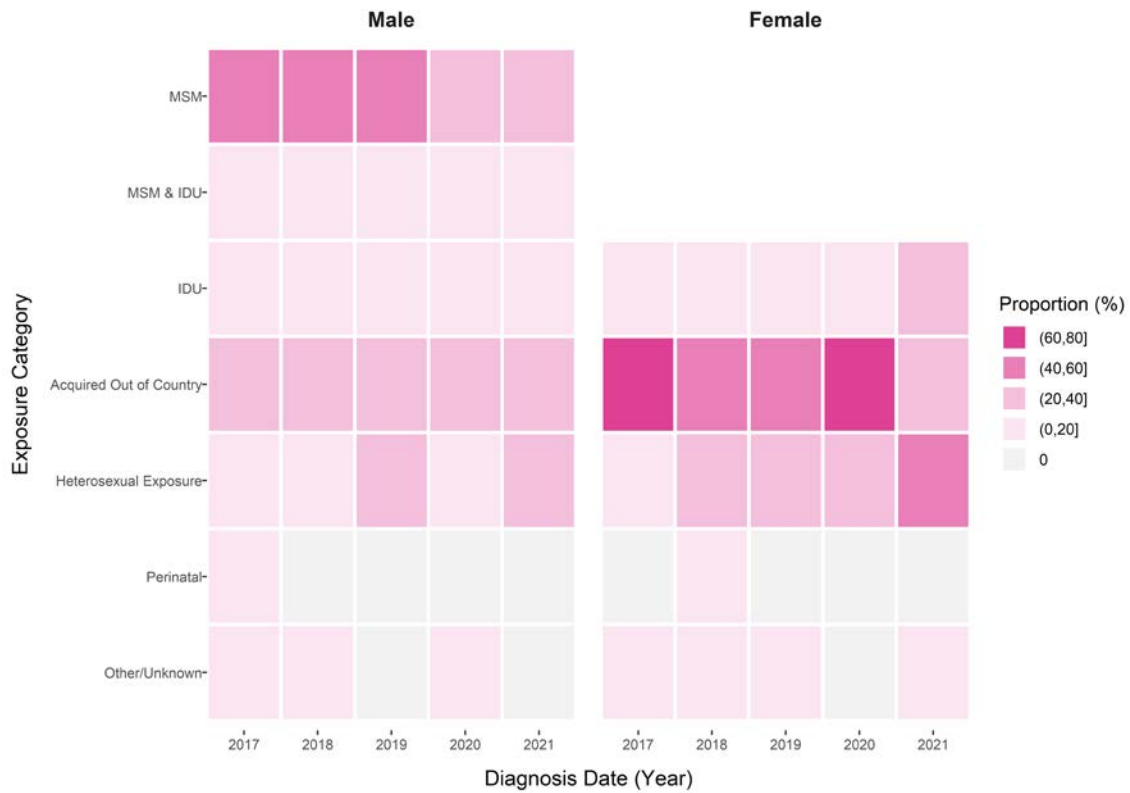
## HIV



## Infectious syphilis



Figure 12. STI/HIV cases by age and gender in Calgary Zone, 2021.



**Figure 13. Proportion of HIV infections attributed to respective exposure categories in Calgary Zone, 2017 to 2021.** Assignment to exposure categories is determined hierarchically by the most probable route of acquiring HIV.

# 4. Central Zone Profile

## Case Counts

A total of 2,119 STI/HIV cases were reported in 2021:

- Chlamydia: 1,322 cases, a decrease of 10.9 per cent (n = 162) compared to 2020.
- Gonorrhoea: 410 cases, a decrease of 19.9 per cent (n = 102) compared to 2020.
- HIV: 18 cases, an increase of 80.0 per cent (n = 8) compared to 2020.
- Infectious syphilis: 369 cases, an increase of 57.0 per cent (n = 134) compared to 2020.

## Rate of Reported Cases

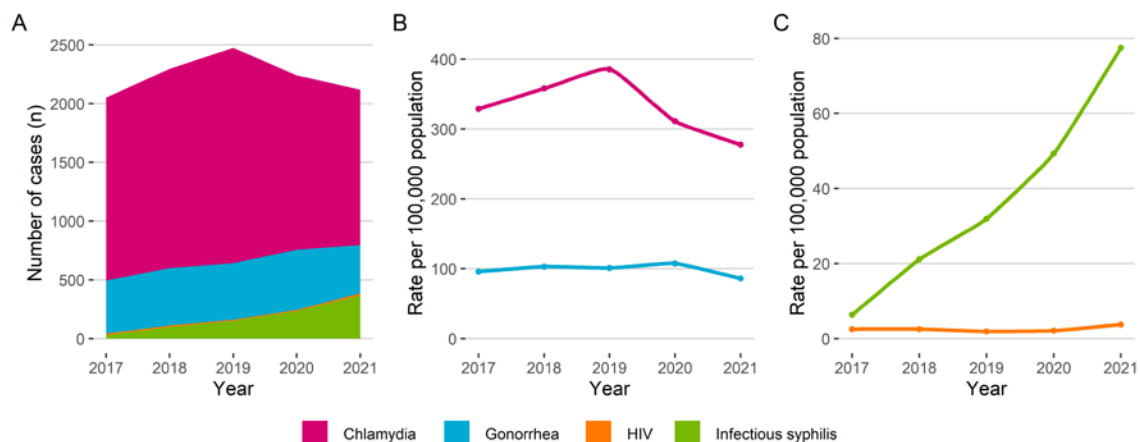
- Chlamydia: 277.7 cases per 100,000 population, a decrease of 10.8 per cent compared to 2020.
- Gonorrhoea: 86.1 cases per 100,000 population, a decrease of 19.8 per cent compared to 2020.
- HIV: 3.8 cases per 100,000 population, an increase of 80.0 per cent compared to 2020.
- Infectious syphilis: 77.5 cases per 100,000 population, an increase of 57.3 per cent compared to 2020.

## Gender and Age

- Chlamydia cases: 64.8 per cent were female, of which 61.9 per cent were 15-24 years old.
- Gonorrhoea cases: 53.2 per cent were female, of which 37.6 per cent were 20-29 years old.
- HIV cases: 38.8 per cent were female, of which 46.8 per cent were 25-39 years old.
- Infectious syphilis cases: 50.4 per cent were female, of which 42.5 per cent were 20-29 years old.

## HIV Exposure Categories

In 2021, 40 per cent (n = 4) of male cases, were attributed to the exposure category “Heterosexual Exposure”, whereas 62.5 per cent of female cases (n = 5) were attributed to the exposure category “Heterosexual Exposure”.



**Figure 14. Counts and rates of STIs/HIV in Central Zone, 2017 to 2021.** (A) Counts per year grouped by infection type, (B) Rates per 100,000 population by year for chlamydia and gonorrhoea, and (C) Rates per 100,000 population by year for HIV and infectious syphilis.

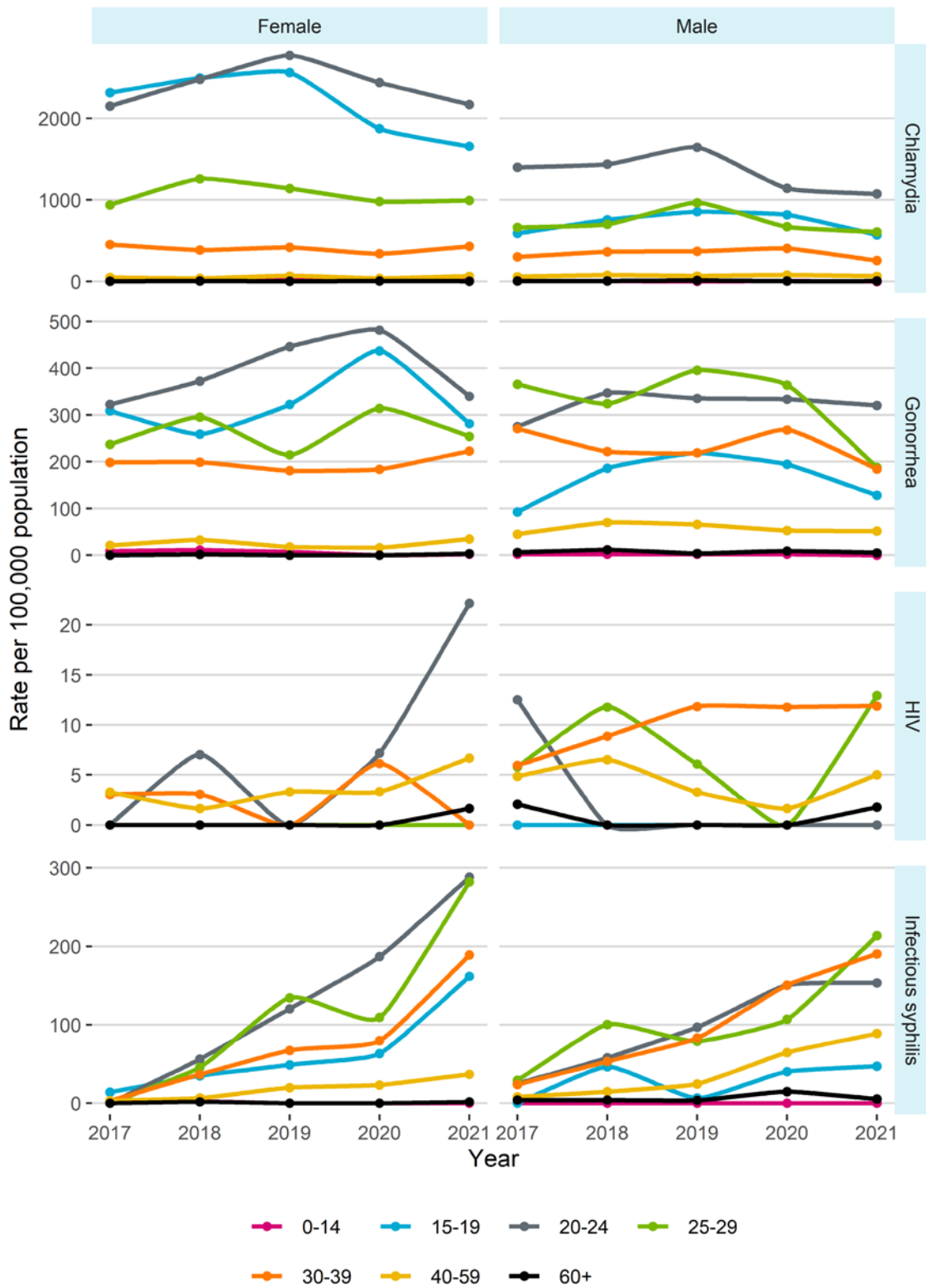
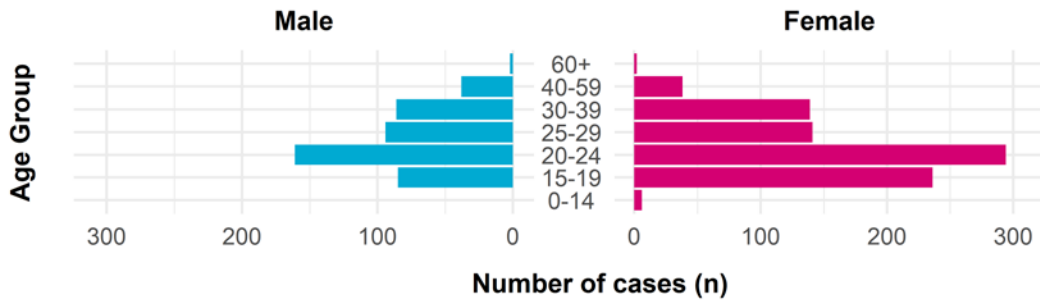
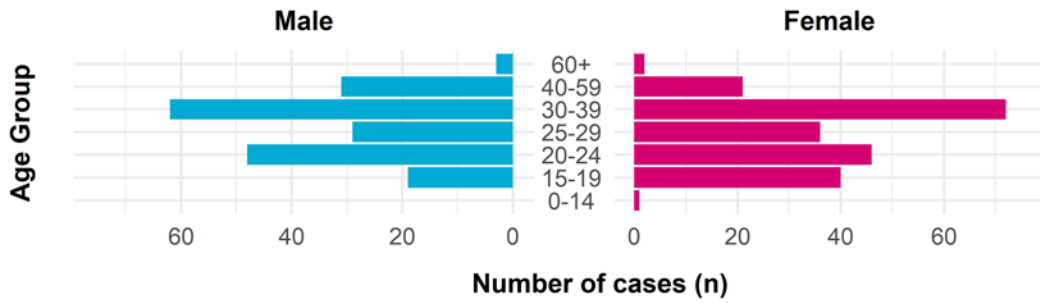


Figure 15. STI/HIV rates by age and gender in Central Zone, 2017 to 2021.

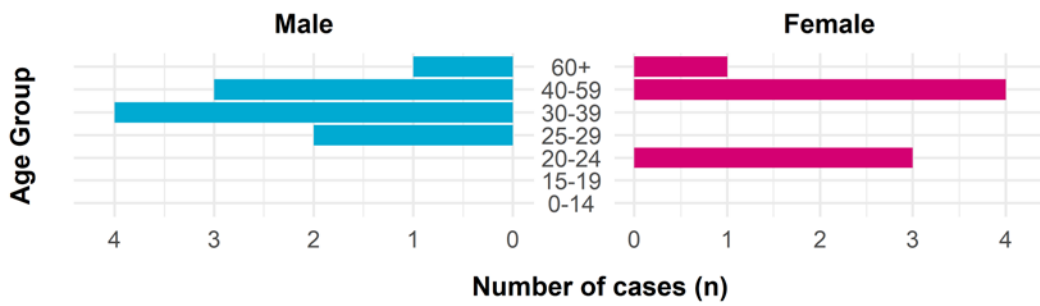
## Chlamydia



## Gonorrhoea



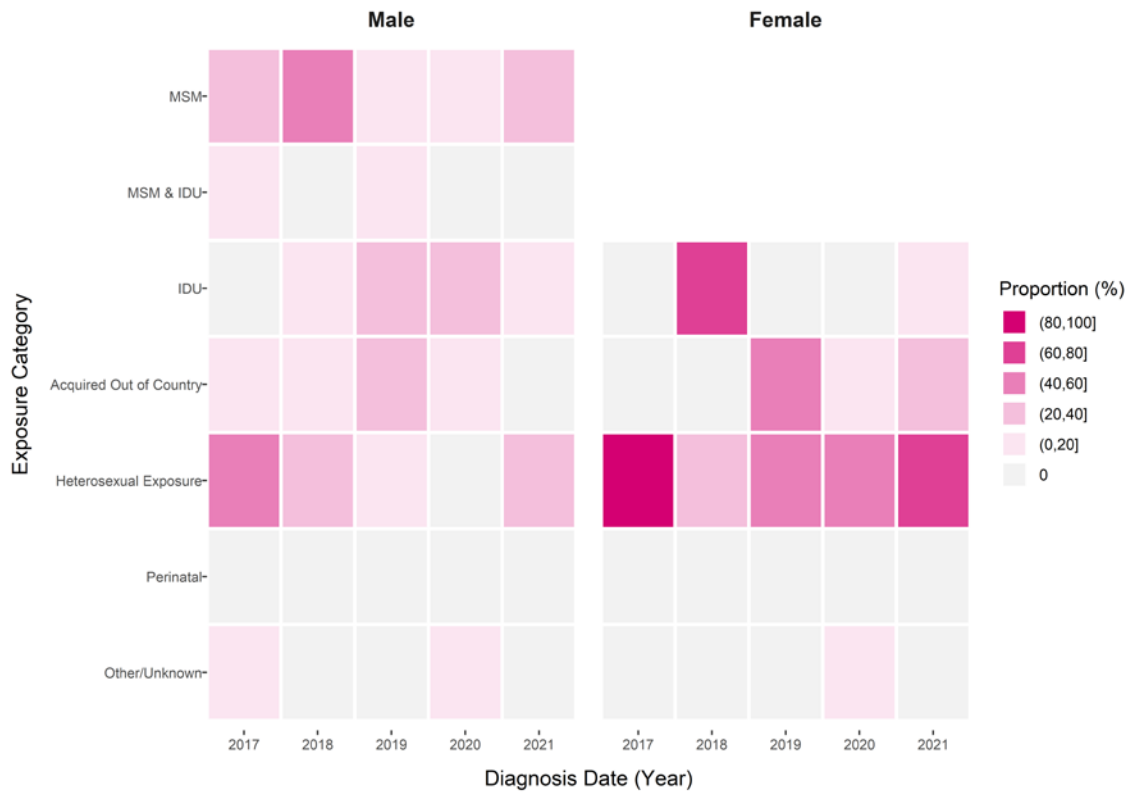
## HIV



## Infectious syphilis



Figure 16. STI/HIV cases by age and gender in Central Zone, 2021.



**Figure 17. Proportion of HIV infections attributed to respective exposure categories in Central Zone, 2017 to 2021.** Assignment to exposure categories is determined hierarchically by the most probable route of acquiring HIV.

# 5. Edmonton Zone Profile

## Case Counts

A total of 8,849 STI/HIV cases were reported in 2021:

- Chlamydia: 5,098 cases, an increase of 5.1 per cent (n = 249) compared to 2020.
- Gonorrhoea: 2,283 cases, an increase of 9.3 per cent (n = 194) compared to 2020.
- HIV: 95 cases, an increase of 13.1 per cent (n = 11) compared to 2020.
- Infectious syphilis: 1,373 cases, an increase of 11.5 per cent (n = 142) compared to 2020.

## Rate of Reported Cases

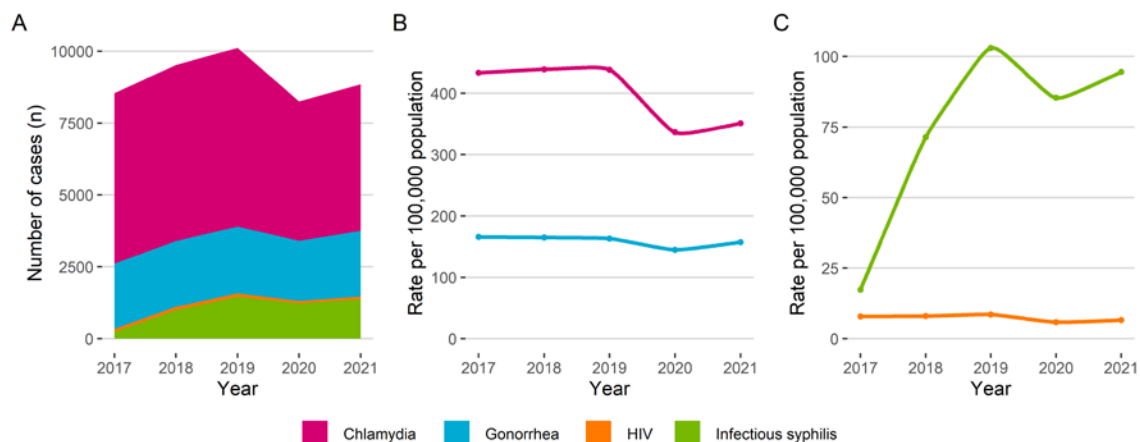
- Chlamydia: 351.1 cases per 100,000 population, an increase of 4.4 per cent compared to 2020.
- Gonorrhoea: 157.2 cases per 100,000 population, an increase of 8.5 per cent compared to 2020.
- HIV: 6.5 cases per 100,000 population, an increase of 12.2 per cent compared to 2020.
- Infectious syphilis: 94.6 cases per 100,000 population, an increase of 10.7 per cent compared to 2020.

## Gender and Age

- Chlamydia cases: 58.8 per cent were female, of which 53.7 per cent were 15-24 years old.
- Gonorrhoea cases: 50.5 per cent were male, of which 36.2 per cent were 30-39 years old.
- HIV cases: 38.8 per cent were female, of which 46.8 per cent were 25-39 years old.
- Infectious syphilis cases: 55.9 per cent were male, of which 36.6 per cent were 30-39 years old.

## HIV Exposure Categories

In 2021, 39 per cent (n = 23) of male cases, were attributed to the exposure category “MSM”, whereas 41.7 per cent of female cases (n = 15) were attributed to the exposure category “Heterosexual Exposure”.



**Figure 18. Counts and rates of STIs/HIV in Edmonton Zone, 2017 to 2021.** (A) Counts per year grouped by infection type, (B) Rates per 100,000 population by year for chlamydia and gonorrhoea, and (C) Rates per 100,000 population by year for HIV and infectious syphilis.

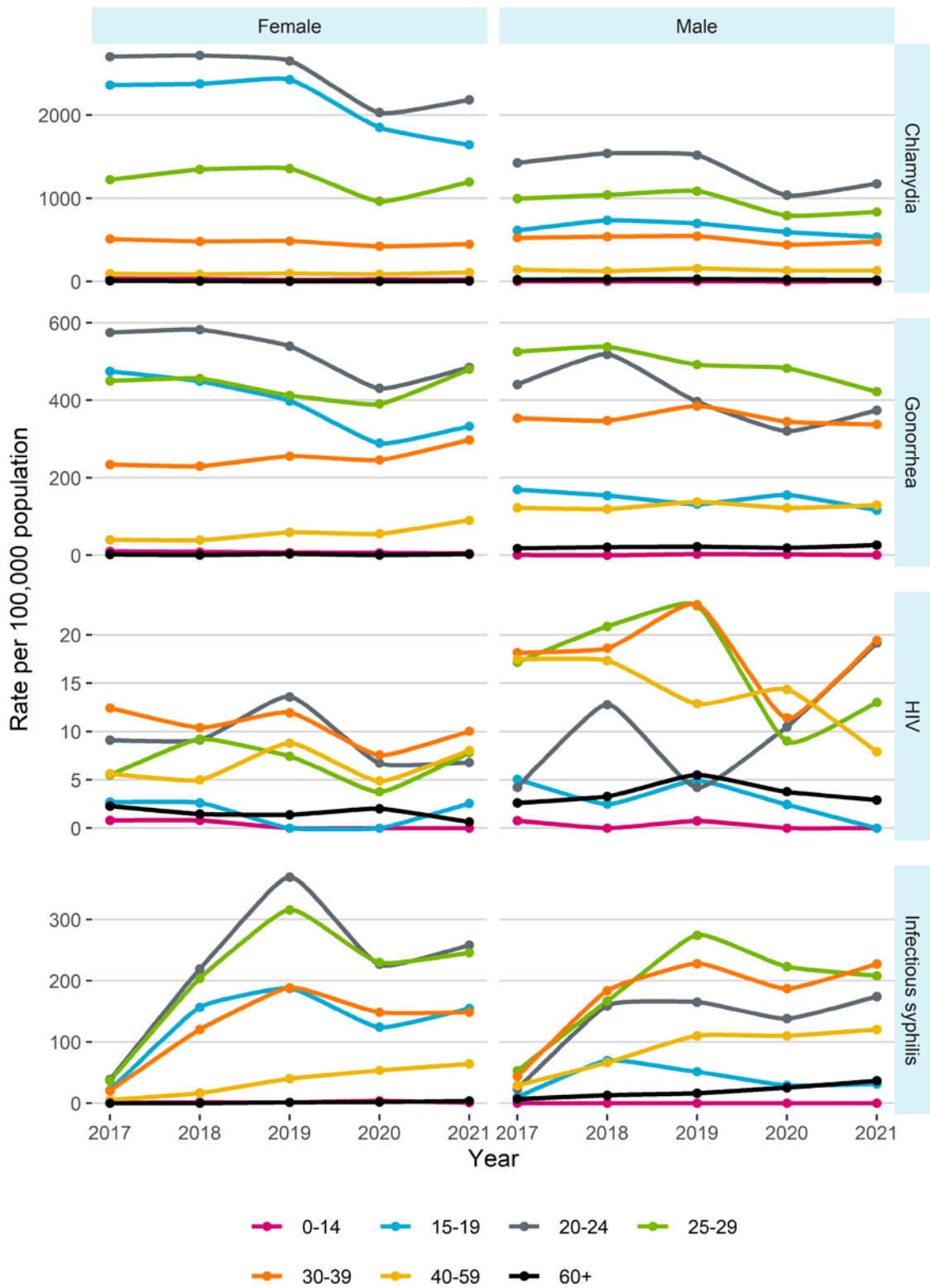
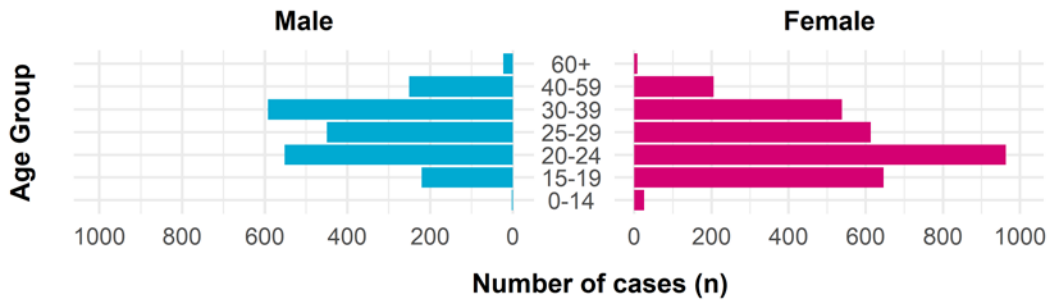


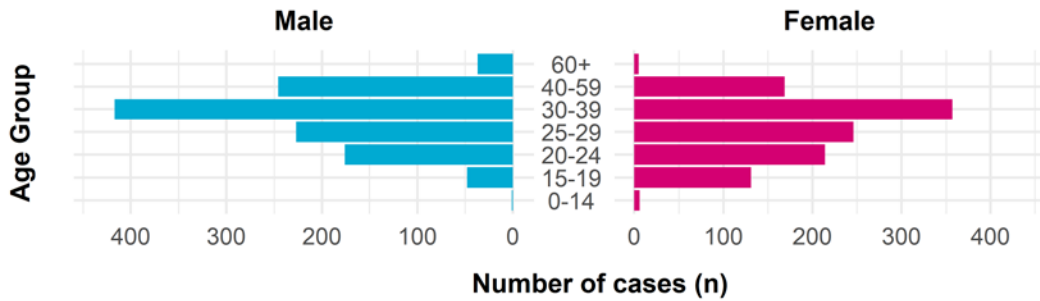
Figure 19. STI/HIV rates by age and gender in Edmonton Zone, 2017 to 2021.



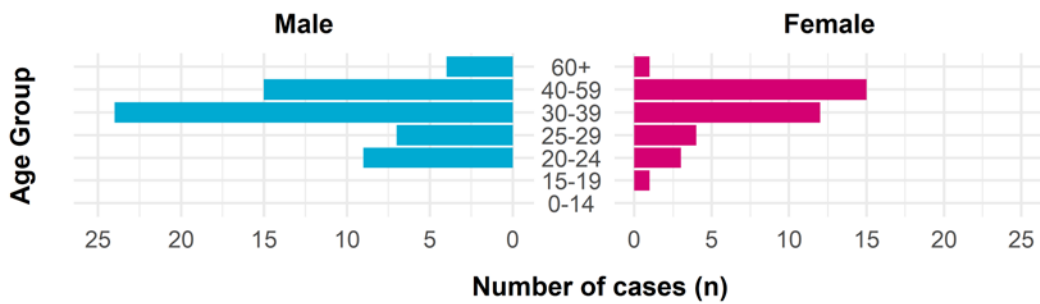
## Chlamydia



## Gonorrhoea



## HIV



## Infectious syphilis

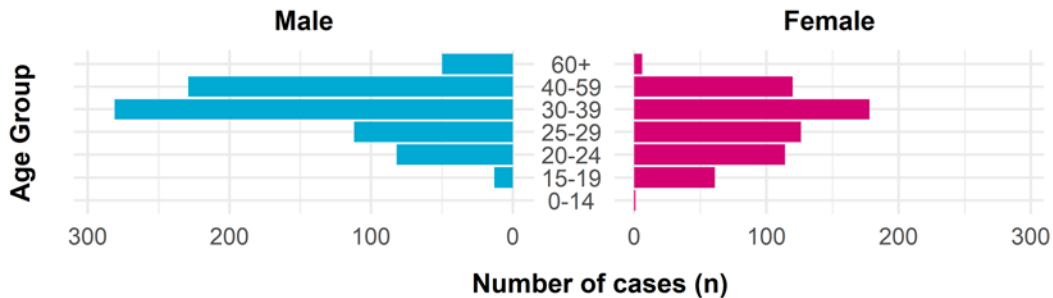
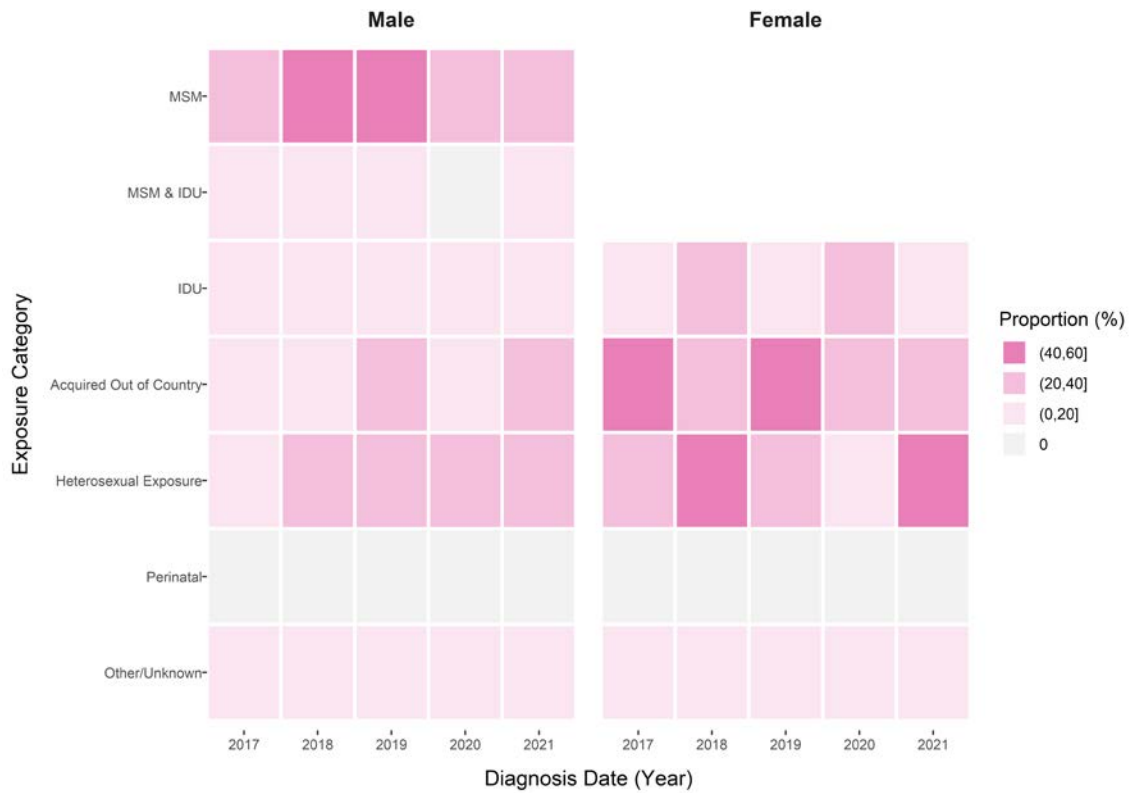


Figure 20. STI/HIV cases by age and gender in Edmonton Zone, 2021.



**Figure 21. Proportion of HIV infections attributed to respective exposure categories in Edmonton Zone, 2017 to 2021.** Assignment to exposure categories is determined hierarchically by the most probable route of acquiring HIV.

## 6. North Zone Profile

### Case Counts

A total of 3,368 STI/HIV cases were reported in 2021:

- Chlamydia: 1,981 cases, a decrease of 3.9 per cent (n = 81) compared to 2020.
- Gonorrhoea: 689 cases, a decrease of 2.4 per cent (n = 17) compared to 2020.
- HIV: 18 cases, an increase of 28.6 per cent (n = 4) compared to 2020.
- Infectious syphilis: 680 cases, an increase of 12.2 per cent (n = 74) compared to 2020.

### Rate of Reported Cases

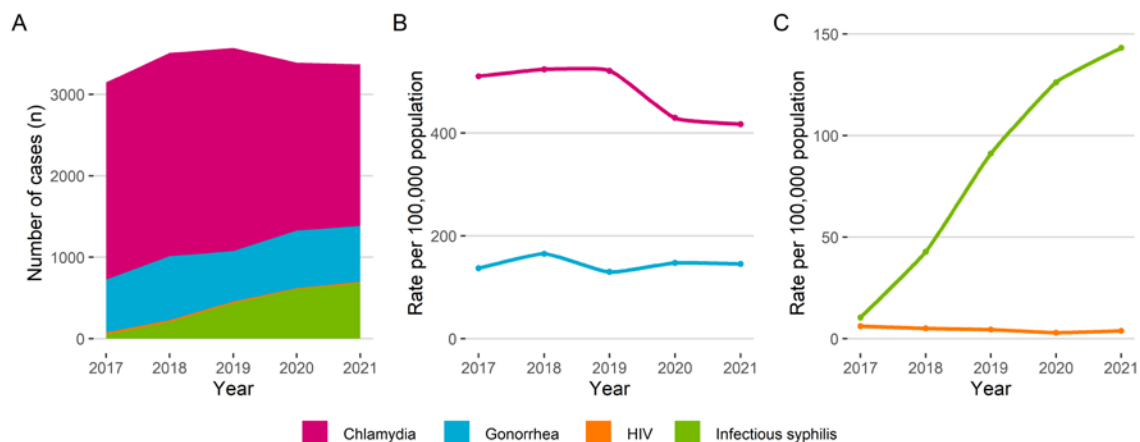
- Chlamydia: 417.3 cases per 100,000 population, a decrease of 2.8 per cent compared to 2020.
- Gonorrhoea: 145.2 cases per 100,000 population, a decrease of 1.3 per cent compared to 2020.
- HIV: 3.8 cases per 100,000 population, an increase of 29.8 per cent compared to 2020.
- Infectious syphilis: 143.2 cases per 100,000 population, an increase of 13.5 per cent compared to 2020.

### Gender and Age

- Chlamydia cases: 62.8 per cent were female, of which 57.2 per cent were 15-24 years old.
- Gonorrhoea cases: 50.5 per cent were male, of which 42.2 per cent were 20-29 years old.
- HIV cases: 38.8 per cent were female, of which 46.8 per cent were 25-39 years old.
- Infectious syphilis cases: 50.4 per cent were female, of which 47.2 per cent were 20-29 years old.

### HIV Exposure Categories

In 2021, 33.3 per cent (n = 3) of male cases, were attributed to the exposure category “Heterosexual Exposure”, whereas 66.7 per cent of female cases (n = 6) were attributed to the exposure category “Heterosexual Exposure”.



**Figure 22. Counts and rates of STIs/HIV in North Zone, 2017 to 2021.** (A) Counts per year grouped by infection type, (B) Rates per 100,000 population by year for chlamydia and gonorrhoea, and (C) Rates per 100,000 population by year for HIV and infectious syphilis.

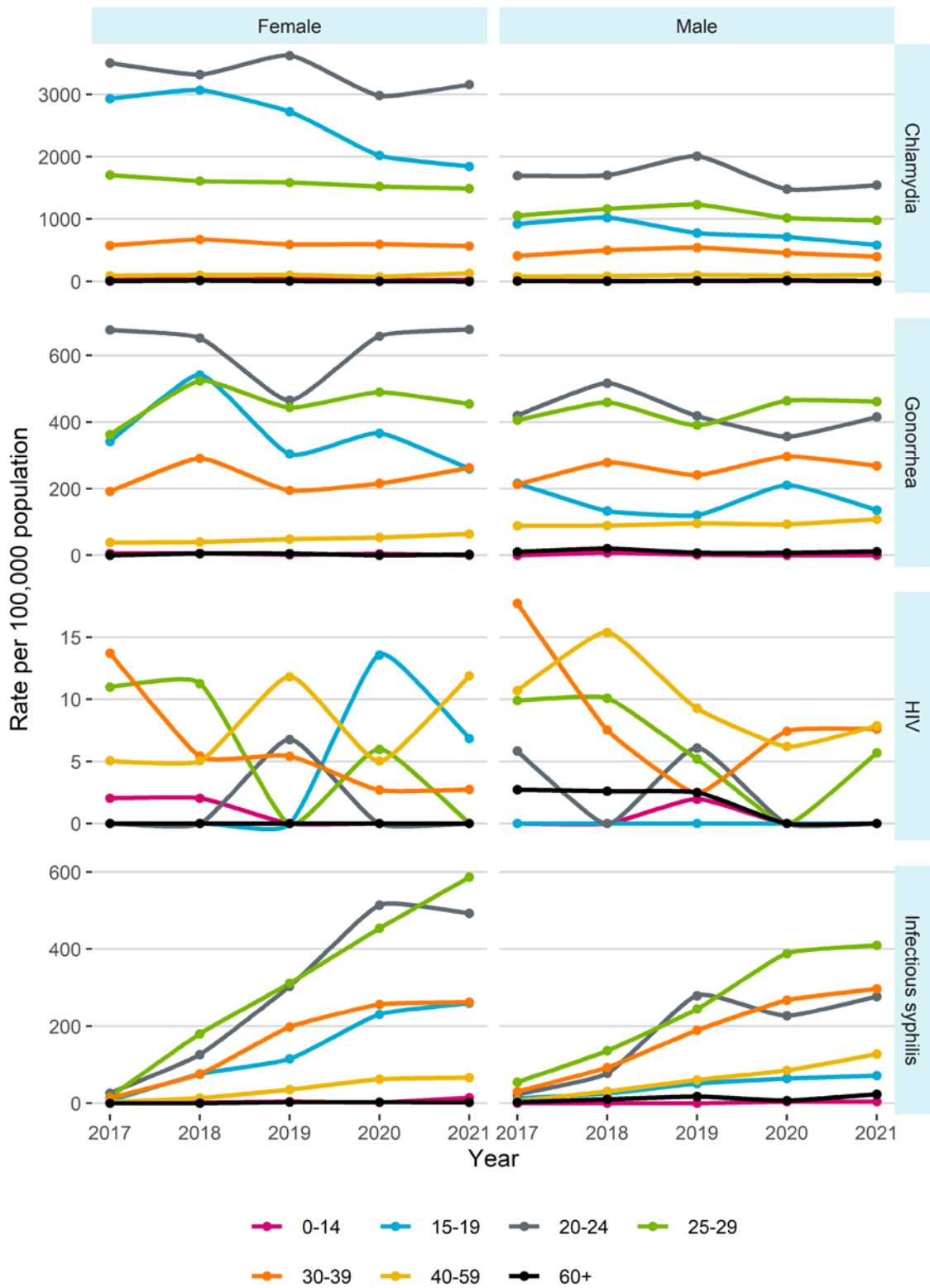
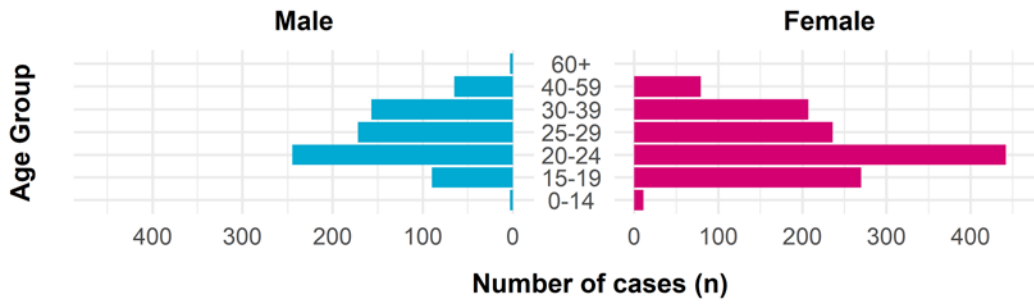
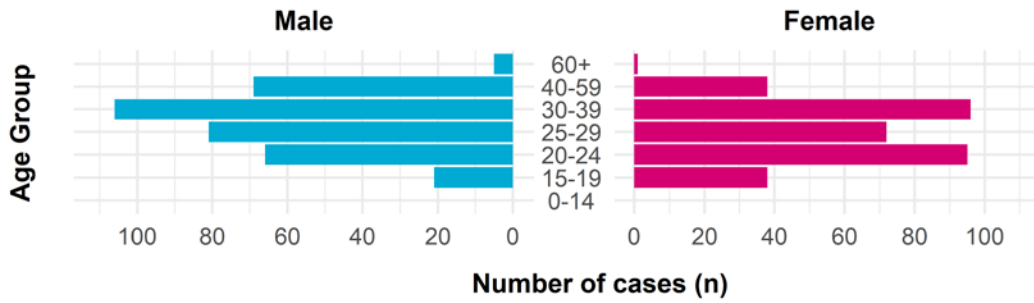


Figure 23. STI/HIV rates by age and gender in North Zone, 2017 to 2021.

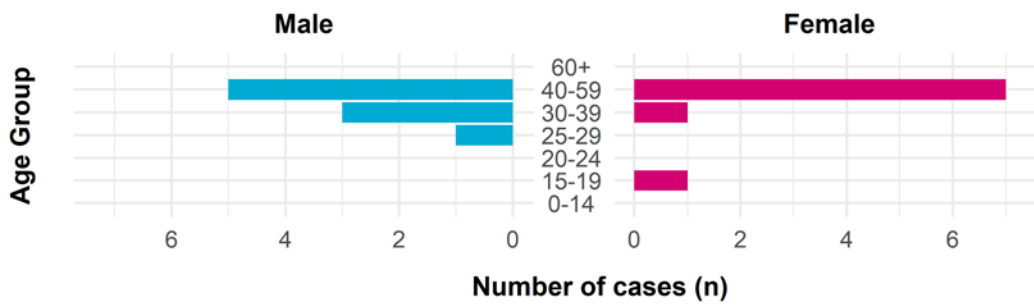
## Chlamydia



## Gonorrhoea



## HIV



## Infectious syphilis

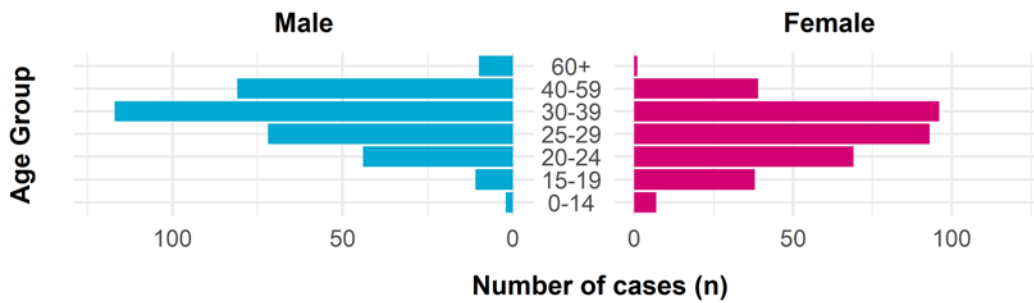
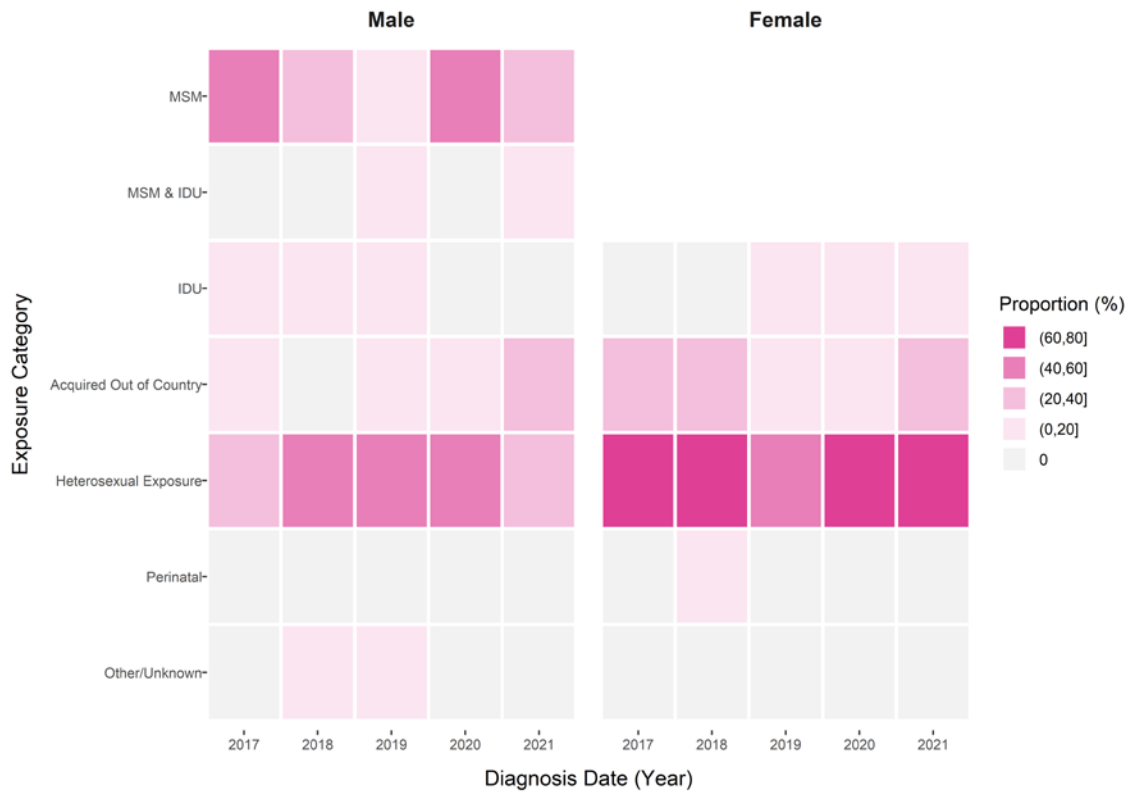


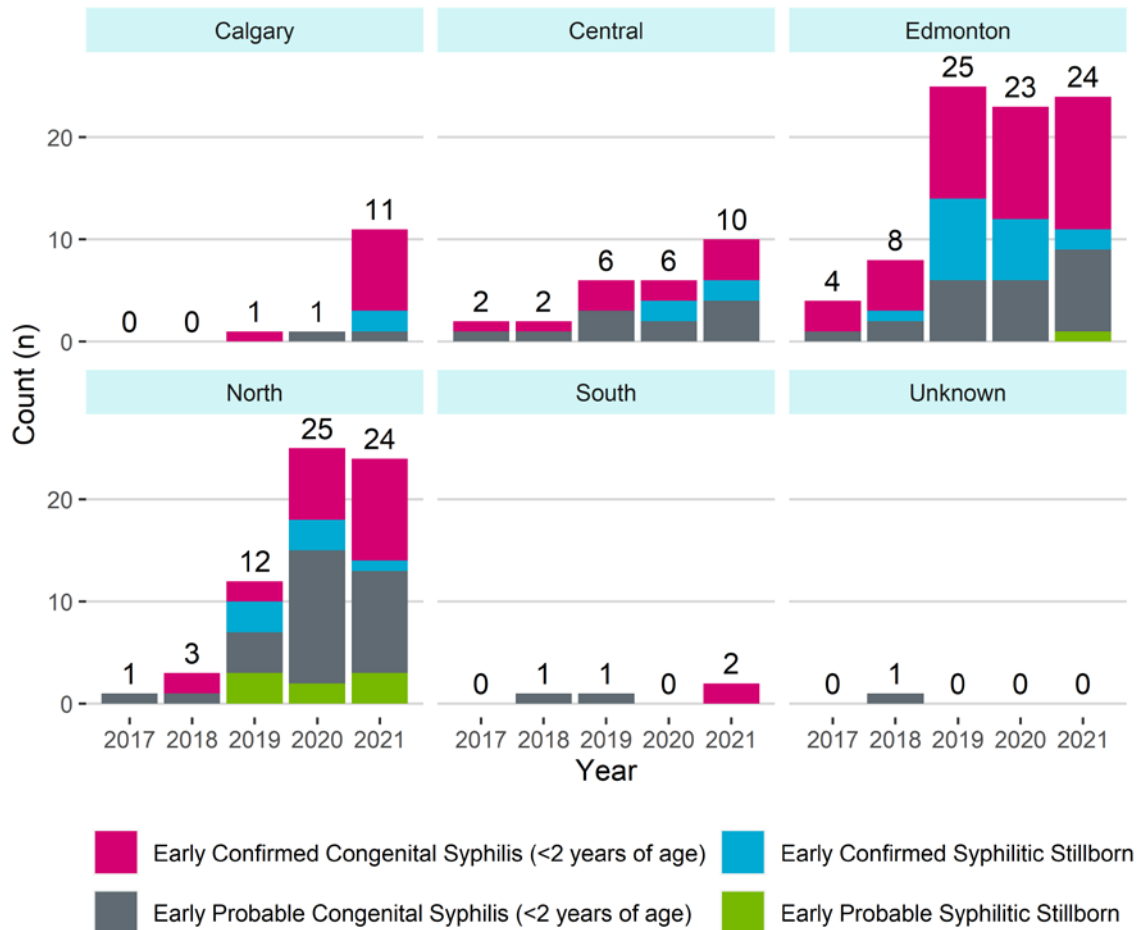
Figure 24. STI/HIV cases by age and gender in North Zone, 2021.



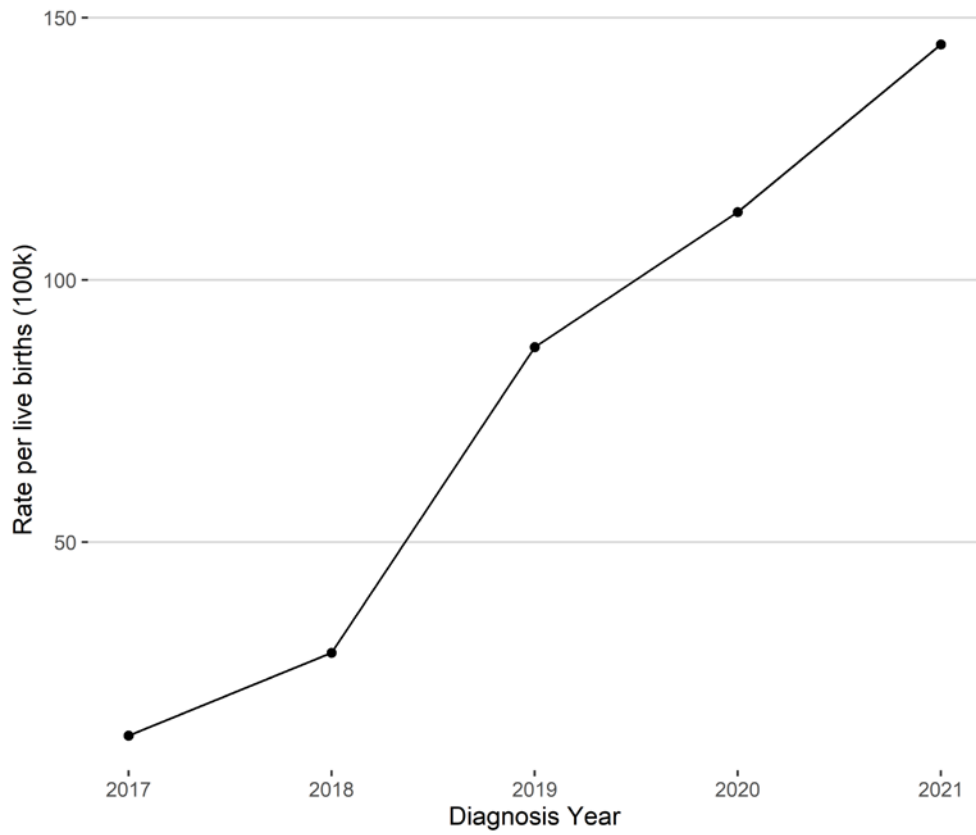
**Figure 25. Proportion of HIV infections attributed to respective exposure categories in North Zone, 2017 to 2021.** Assignment to exposure categories is determined hierarchically by the most probable route of acquiring HIV.

# Annex: Congenital Syphilis in Alberta

With rising rates of infectious syphilis in Alberta, there has been increased efforts to monitor congenital syphilis. A total of 193 congenital syphilis cases have been diagnosed between 2017 and 2021, 39 of which were stillborn. Cases were diagnosed in all 5 AHS Zones (Edmonton, North, Central, South, Calgary), with the majority (84 cases) in Edmonton Zone. Rates of congenital syphilis (live and stillborn) per 100,000 live births have increased from 13.1 to 144.9 between 2017 and 2021.



Annex Fig 1. Congenital syphilis cases from 2017 to 2021 by AHS Zone.

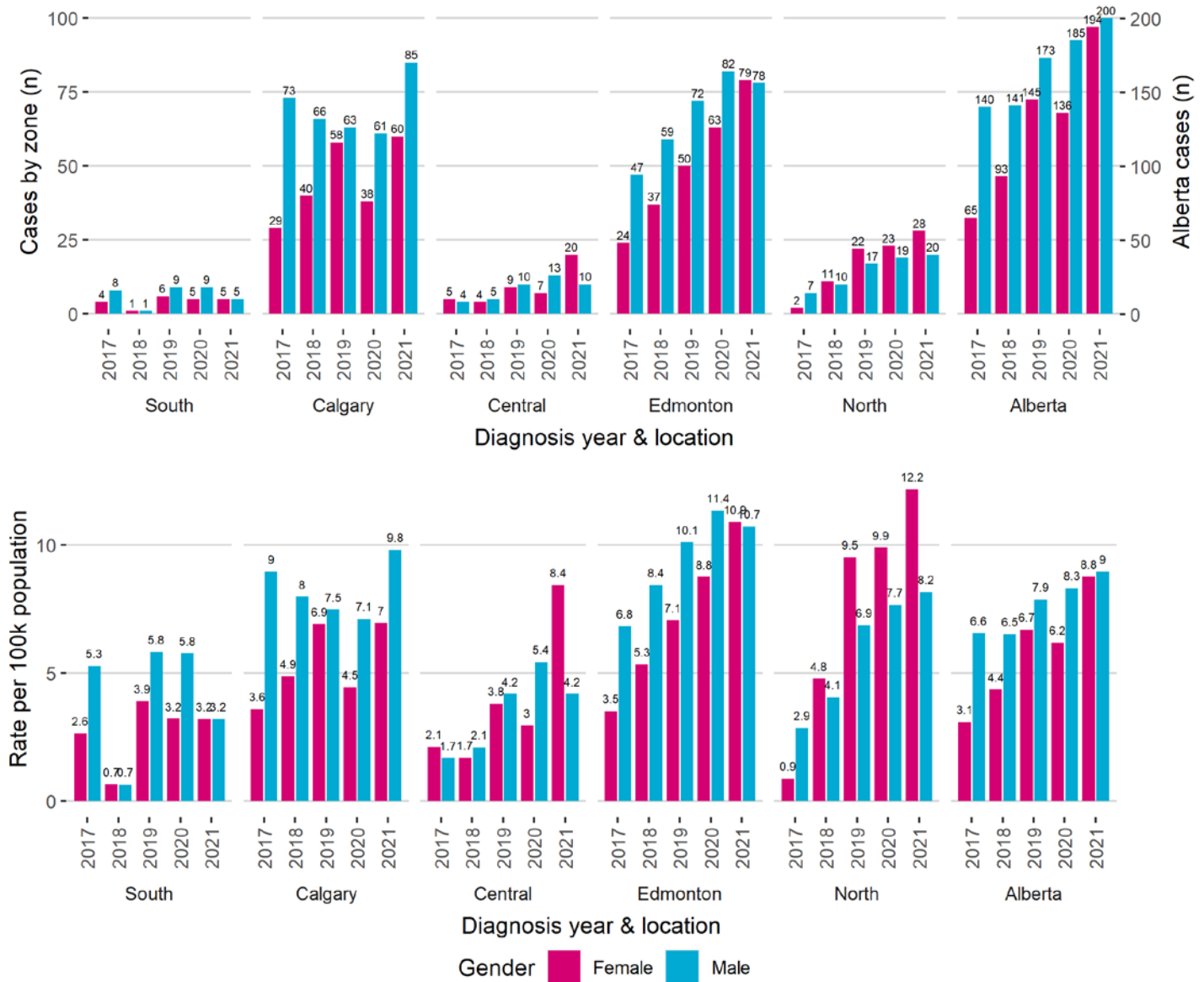


**Annex Fig 2. Congenital syphilis cases per 100k live births from 2017 to 2021.**



# Annex: Non-infectious Syphilis in Alberta

Non-infectious syphilis occurs when a case is untreated and enters late-latent or tertiary stages. Between 2017 and 2021, 1,472 non-infectious syphilis cases were reported to Alberta Health, with the highest rates in 2021 in Edmonton and North Zones (10.8 and 10.1 cases per 100k population, respectively). Similar to other types of syphilis, since 2017 non-infectious syphilis cases have been increasing (203 in 2017 to 390 in 2021), with the largest percent change among females (198.5% increase) during this period.



**Annex Fig 3. Non-infectious syphilis cases and rate per 100k population from 2017 to 2021 by location (5 AHS Zones and Alberta) and Gender. AHS Zone is unknown for 10 cases.**

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