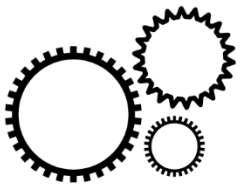

Alberta Sexually Transmitted Infections and HIV

2022

Alberta

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Foreword

Sexually transmitted infections (STIs) are an important cause of morbidity in Alberta. In some instances, surveillance of STIs in Alberta has been ongoing since the early 1920s. This has provided 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]). The report focuses 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, non-infectious syphilis, and anti-microbial resistance of *Neisseria gonorrhoeae* 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/.

Acronyms & Definitions

AHS: Alberta Health Services
APL: Alberta Precision Laboratory
Case Counts: the number of cases reported to Alberta Health as per notifiable disease guidelines
Chemsex: sexual activity while under the influence of drugs
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 (APL)

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; point-of-care tests help minimize time gaps between the test result and treatment). [7]
- STIs can increase the risk of HIV acquisition. [8]
- Compared to females, males are more likely to experience symptoms and present for testing when infected with some STIs. [9], [10]
- In general, females of reproductive age groups are more likely to be screened for STI/HIV (e.g. prenatal screening).
- Depending upon the site of infection, male to female transmission for some STIs occurs at a higher rate than female to male transmission. [11]–[13]
- Compared to males, females are more biologically susceptible to certain STIs (e.g. chlamydia) due to structural characteristics of their genital epithelium. [10], [13]
- Social determinants of health may impact select populations' ability to access care.
- Rates of infection calculated using 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 [14], [15]:

- Effects of the COVID-19 pandemic and Mpox (previously known as Monkeypox) outbreak on service capacity, testing, and general access to care:
  - Drop-in appointments increased but scheduled appointment-based service remained dominant.
  - Shift in COVID-19 response from emergency to endemic planning.
  - Staff returned from deployments.
- Increased nucleic acid amplification testing on placental tissue to increase congenital syphilis detection.
- Incentive testing for hard-to-reach populations. [16]
- Federal government funding to expand access to HIV self-test kits [17]

1. Alberta Profile

Case Counts

A total of 25,405 STI/HIV cases were reported in 2022:

- Chlamydia: 16,809 cases, an increase of 19.4 per cent (n = 2,733) compared to 2021.
- Gonorrhea: 4,984 cases, a decrease of 0.6 per cent (n = 32) compared to 2021.
- HIV: 286 cases, an increase of 17.2 per cent (n = 42) compared to 2021.
- Infectious syphilis: 3,326 cases, an increase of 2.4 per cent (n = 78) compared to 2021.

Rate of Reported Cases

- Chlamydia: 370 cases per 100,000 population, an increase of 16.8 per cent compared to 2021.
- Gonorrhea: 109.7 cases per 100,000 population, a decrease of 2.8 per cent compared to 2021.
- HIV: 6.3 cases per 100,000 population, an increase of 14.8 per cent compared to 2021.
- Infectious syphilis: 73.2 cases per 100,000 population, an increase of 0.2 per cent compared to 2021.

Gender and Age

- Chlamydia cases: 58.2 per cent were female, of which 56.4 per cent were 15-24 years old.
- Gonorrhea cases: 54.8 per cent were male, of which 37.1 per cent were 30-39 years old.
- HIV cases: 37.8 per cent were female, of which 47.2 per cent were 25-39 years old.
- Infectious syphilis cases: 53.8 per cent were male, of which 34.4 per cent were 30-39 years old.

HIV Exposure Categories

In 2022, 40.1 per cent (n = 71) of male cases, were attributed to the exposure category “Acquired Out of Country”, whereas 46.3 per cent of female cases (n = 50) were attributed to the exposure category “Acquired Out of Country”.

Spatial Distribution

The highest gonorrhea rates among AHS Zones were Edmonton Zone (147.5 cases per 100,000 population) and North Zone (127.3 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 (144.1 cases per 100,000 population) and Edmonton Zone (86.4 cases per 100,000 population).

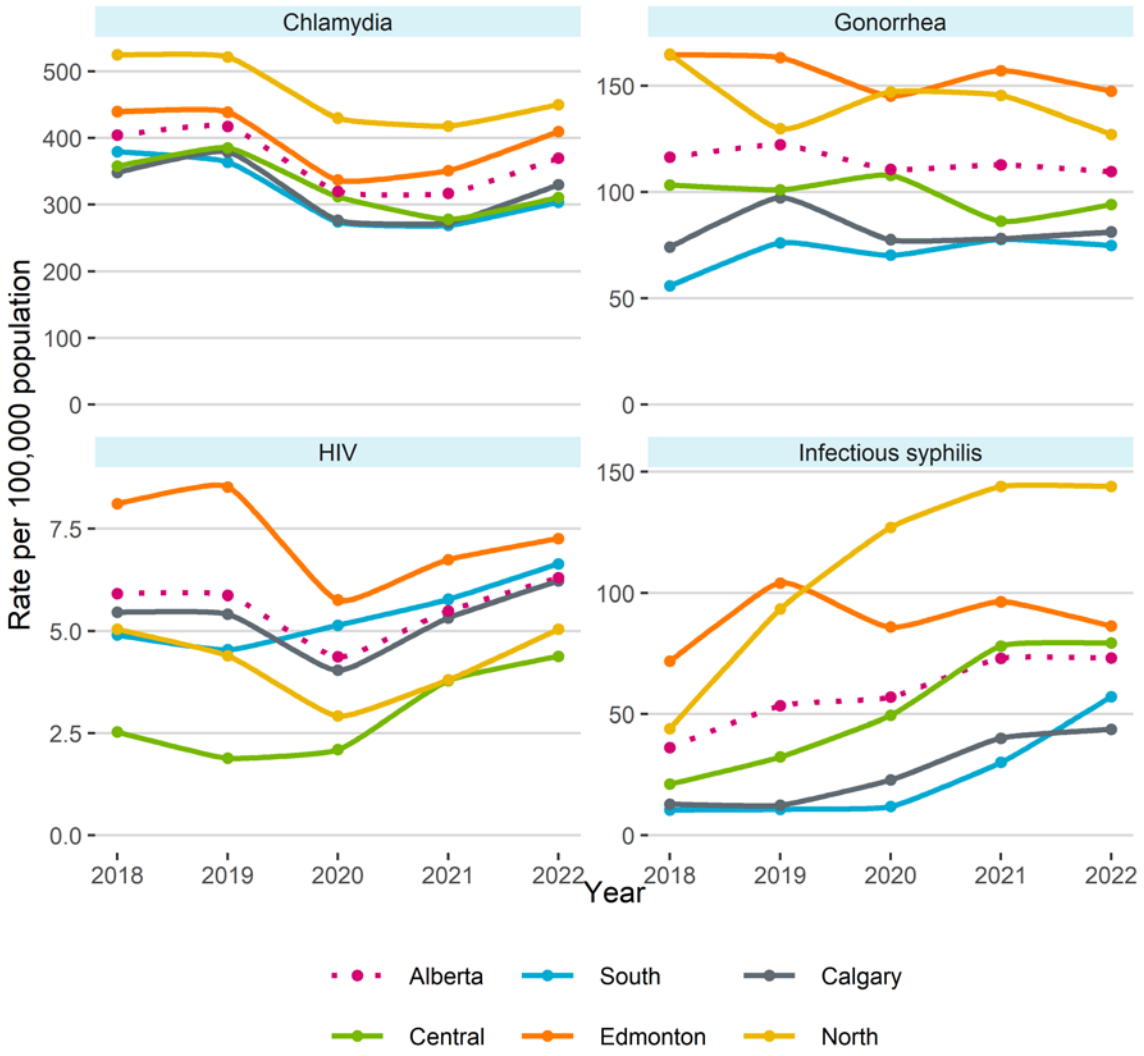


Figure 1. Rates of reported STIs/HIV for Alberta and AHS Zones, 2018 to 2022.

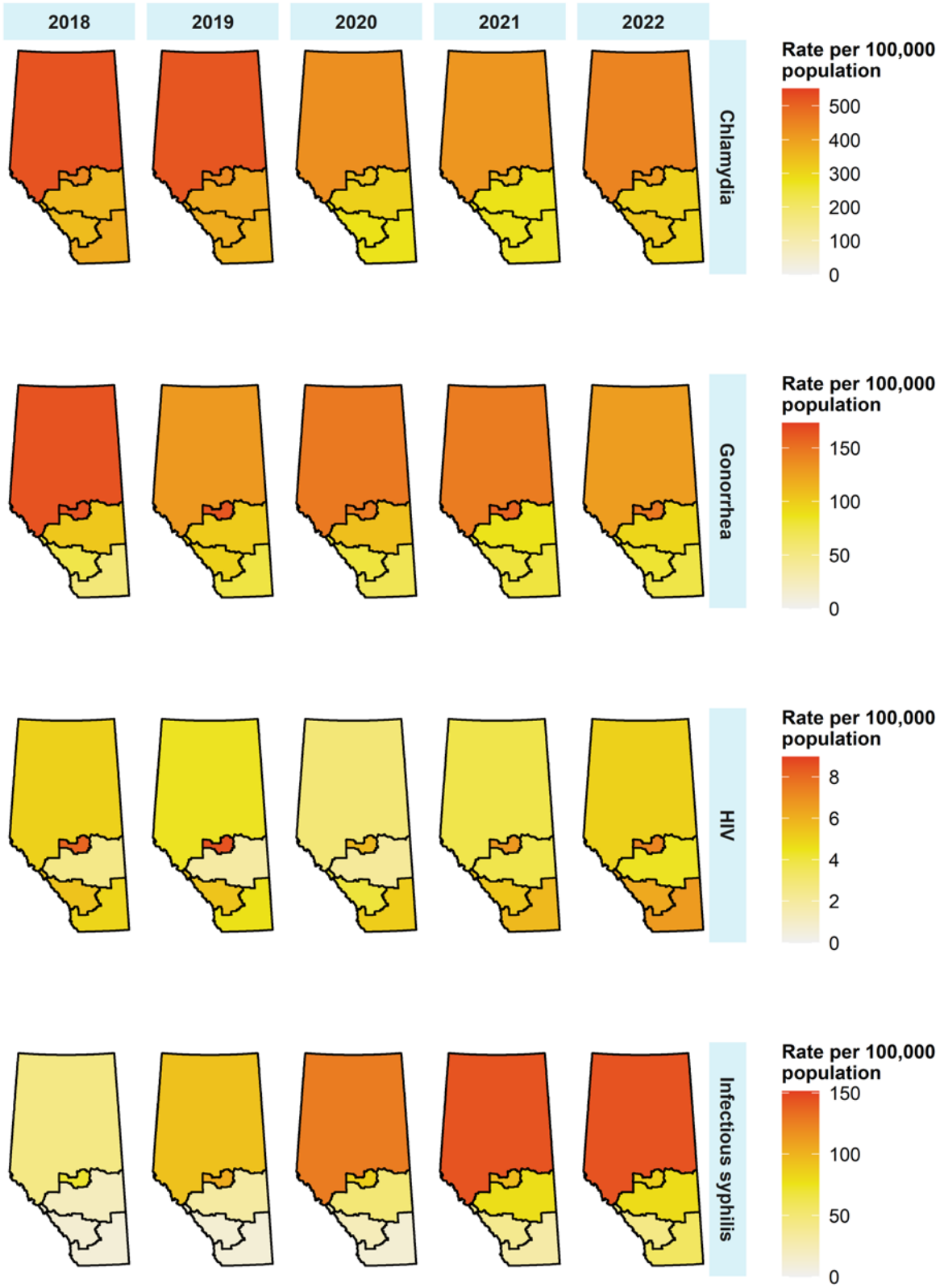


Figure 2. Rates of reported STIs/HIV by AHS Zones, 2018 to 2022. For more information on AHS Zones, please visit: https://www.albertahealthservices.ca/zones/zones.aspx.

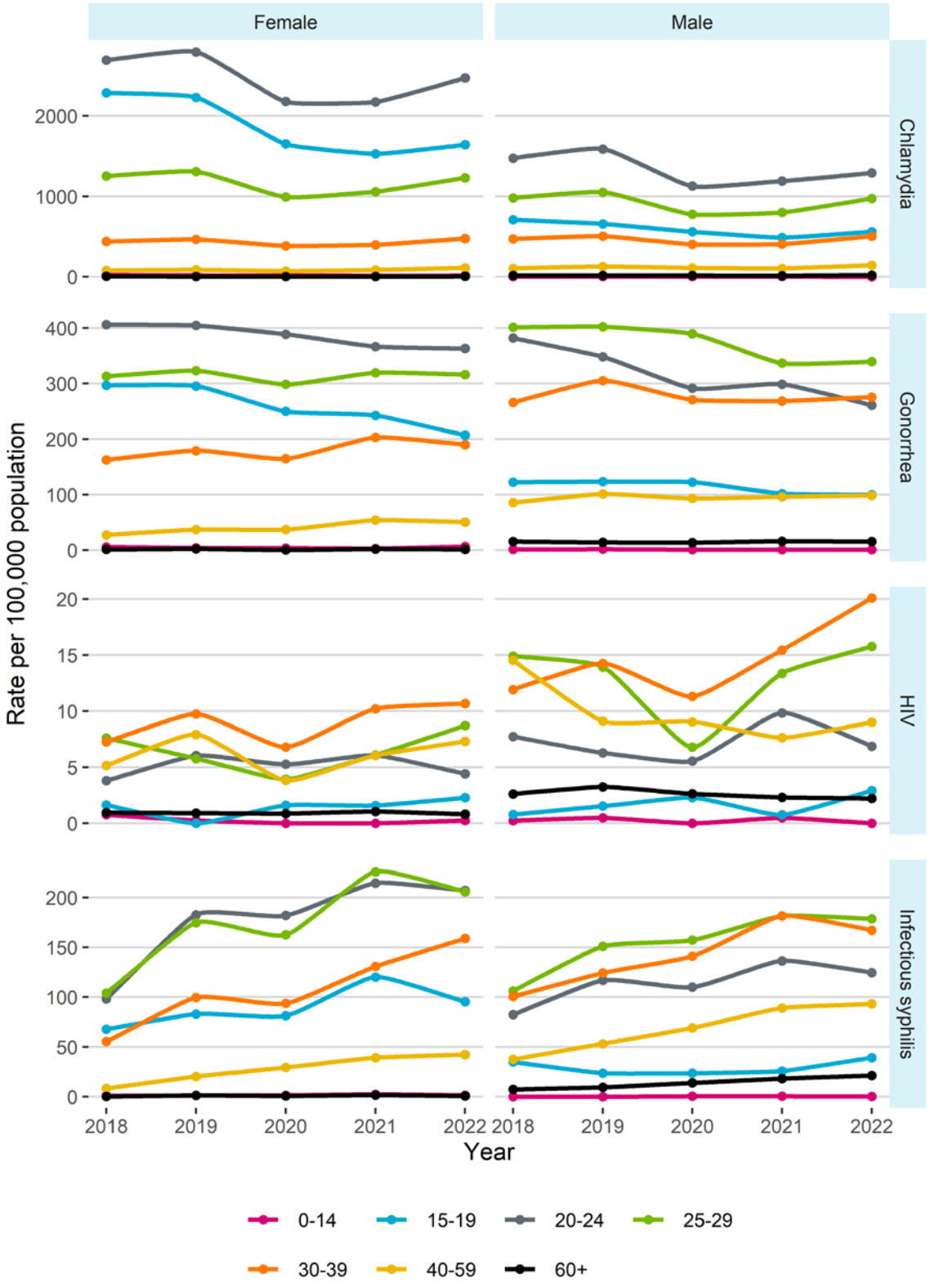


Figure 3. STI/HIV rates by age and gender in Alberta, 2018 to 2022.

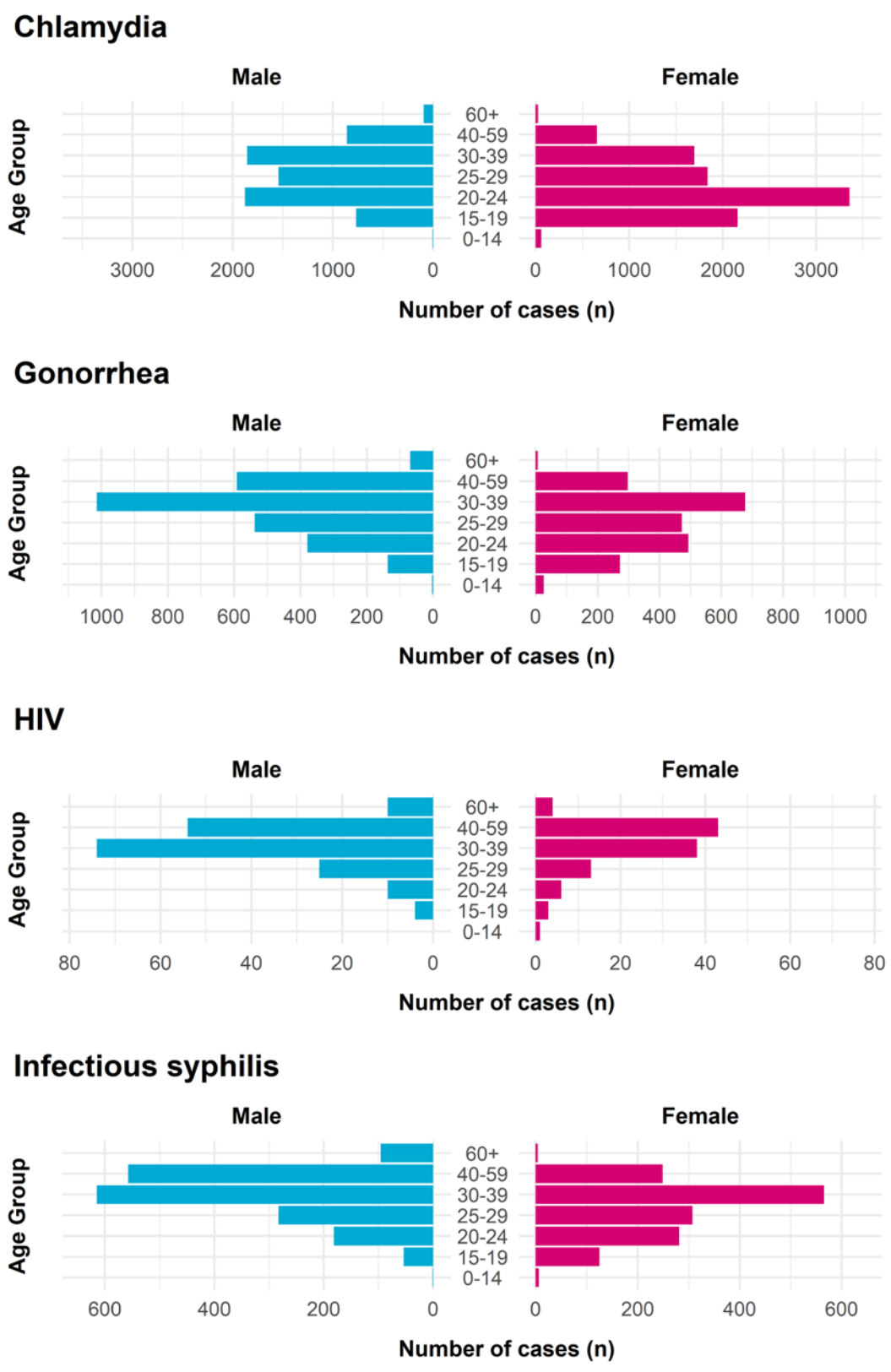


Figure 4. STI/HIV cases by age and gender in Alberta, 2022.

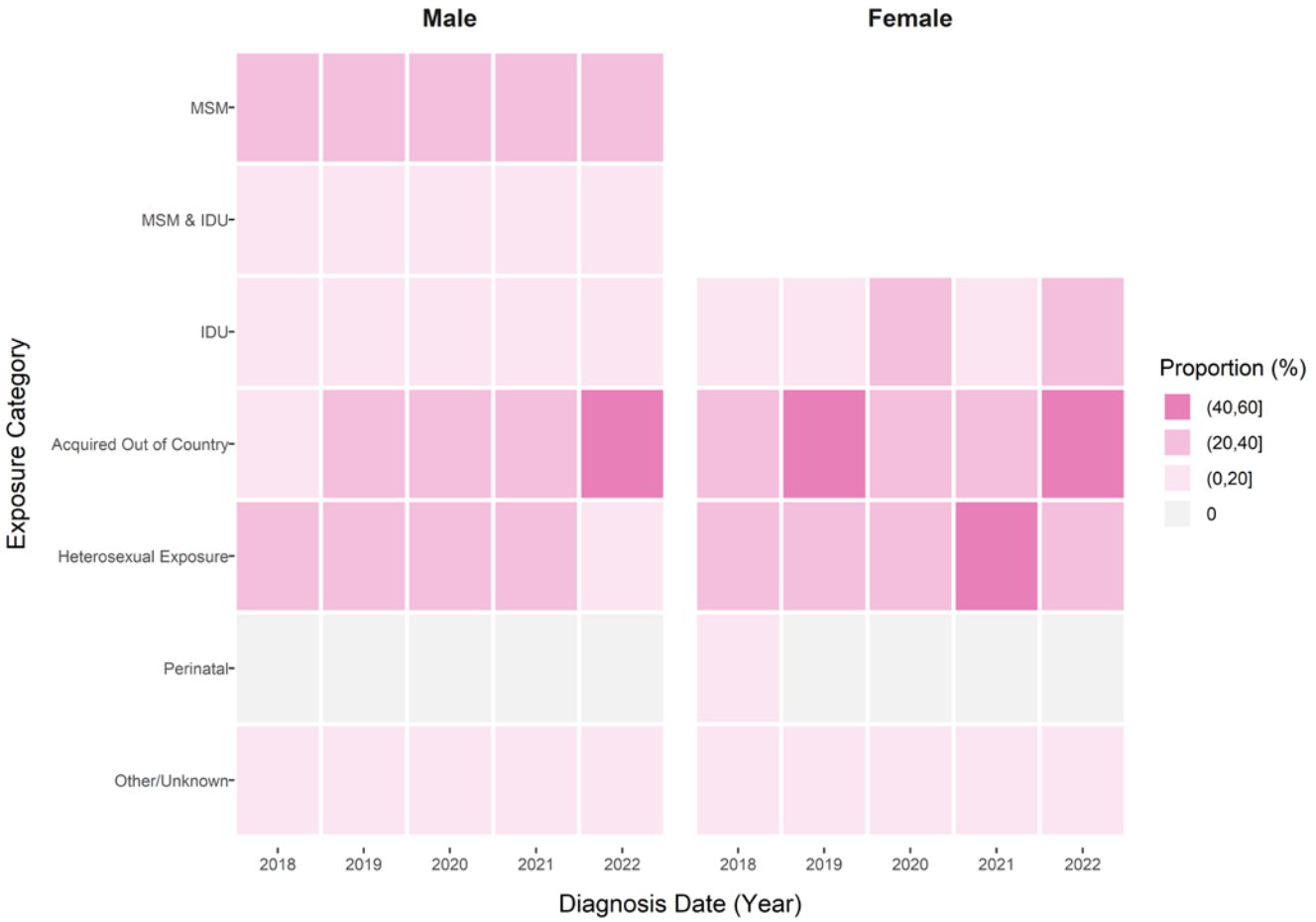


Figure 5. Proportion of HIV infections attributed to respective exposure categories in Alberta, 2018 to 2022.
Assignment to exposure categories is determined hierarchically by the most probable route of acquiring HIV.

2. South Zone Profile

Case Counts

A total of 1,399 STI/HIV cases were reported in 2022:

- Chlamydia: 960 cases, an increase of 14.4 per cent (n = 121) compared to 2021.
- Gonorrhea: 237 cases, a decrease of 2.5 per cent (n = 6) compared to 2021.
- HIV: 21 cases, an increase of 16.7 per cent (n = 3) compared to 2021.
- Infectious syphilis: 181 cases, an increase of 92.6 per cent (n = 87) compared to 2021.

Rate of Reported Cases

- Chlamydia: 303.6 cases per 100,000 population, an increase of 13.0 per cent compared to 2021.
- Gonorrhea: 75 cases per 100,000 population, a decrease of 3.7 per cent compared to 2021.
- HIV: 6.6 cases per 100,000 population, an increase of 15.1 per cent compared to 2021.
- Infectious syphilis: 57.2 cases per 100,000 population, an increase of 90.1 per cent compared to 2021.

Gender and Age

- Chlamydia cases: 60.2 per cent were female, of which 58.3 per cent were 15-24 years old.
- Gonorrhea cases: 54.0 per cent were female, of which 40.6 per cent were 20-29 years old.
- HIV cases: 37.8 per cent were female, of which 47.2 per cent were 25-39 years old.
- Infectious syphilis cases: 52.5 per cent were female, of which 41.1 per cent were 20-29 years old.

HIV Exposure Categories

In 2022, 55.6 per cent (n = 5) of male cases, were attributed to the exposure category “IDU”, whereas 75 per cent of female cases (n = 9) were attributed to the exposure category “IDU”.

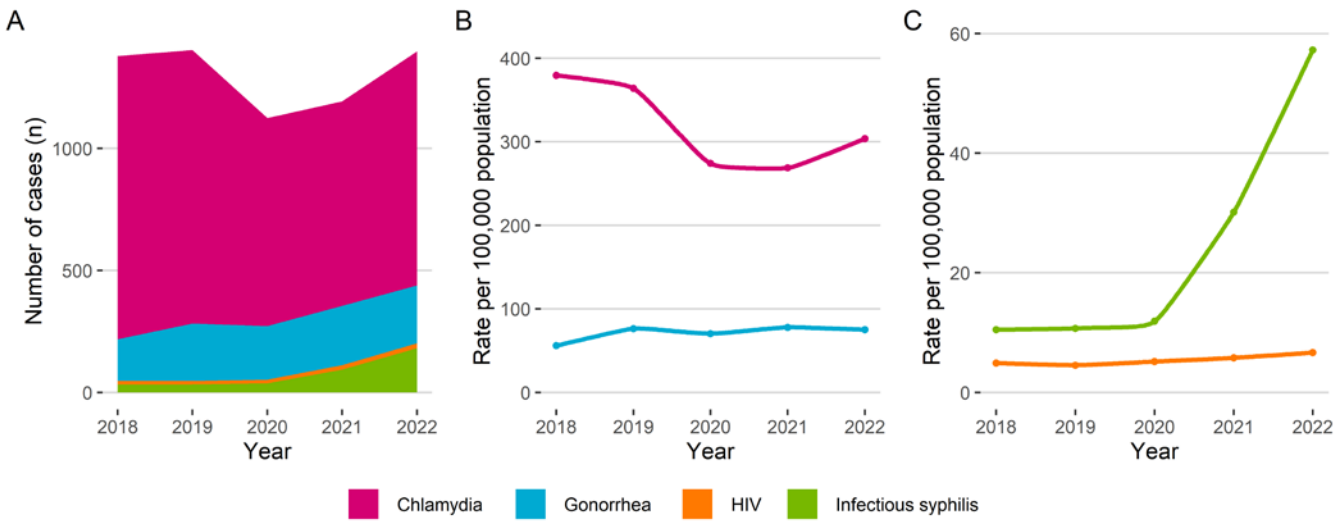


Figure 6. Counts and rates of STIs/HIV in South Zone, 2018 to 2022. (A) Counts per year grouped by infection type, (B) Rates per 100,000 population by year for chlamydia and gonorrhea, and (C) Rates per 100,000 population by year for HIV and infectious syphilis.

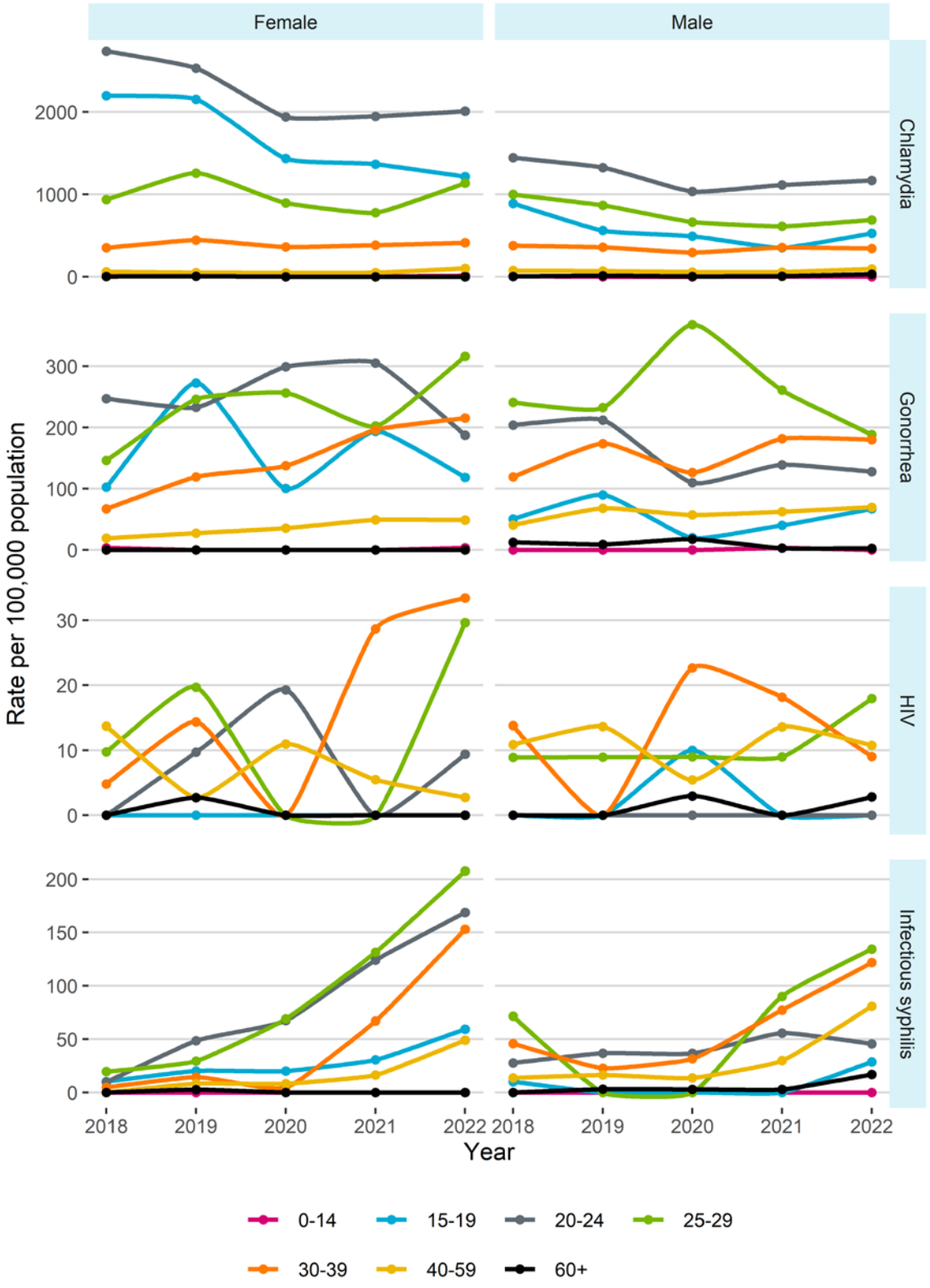


Figure 7. STI/HIV rates by age and gender in South Zone, 2018 to 2022.

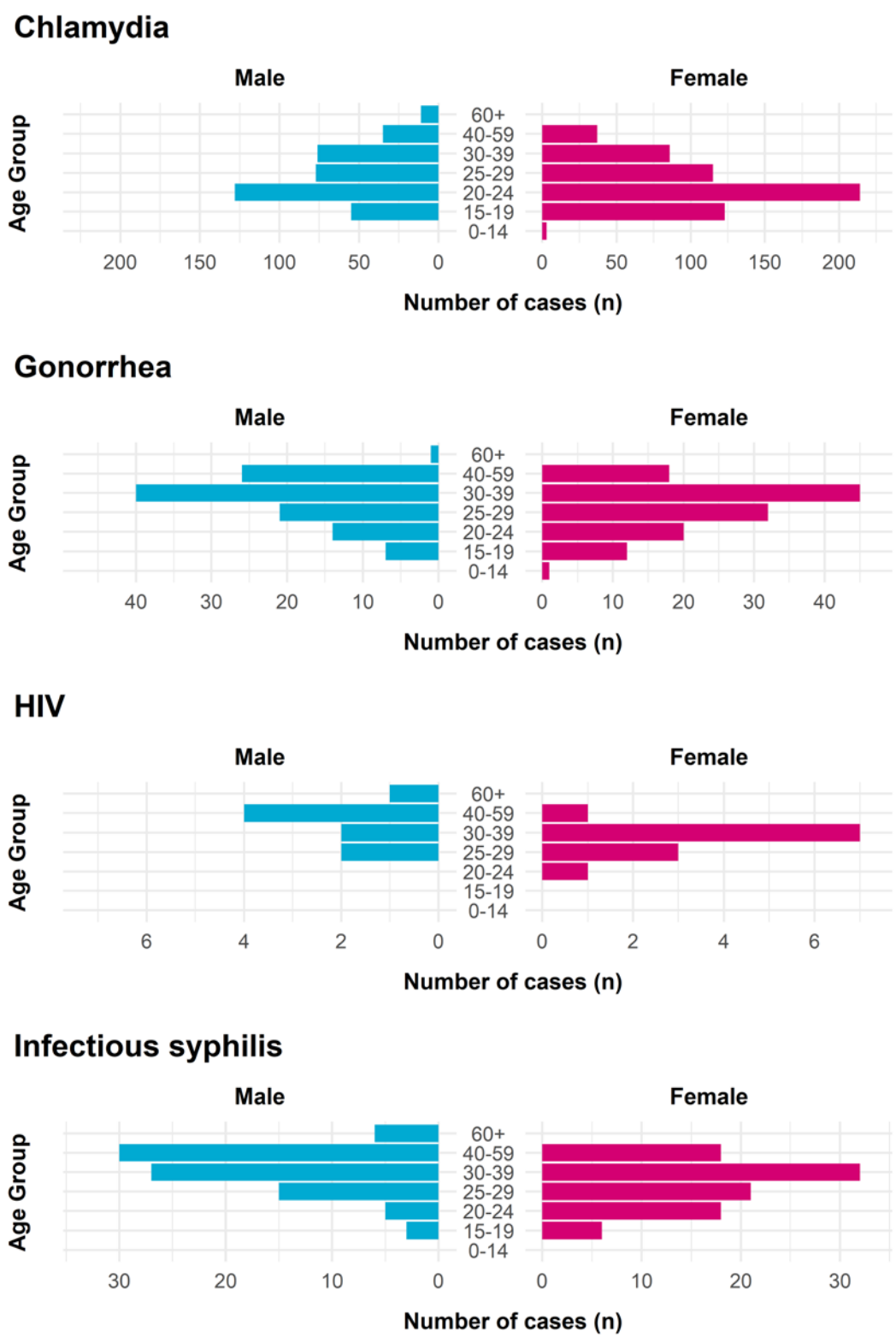


Figure 8. STI/HIV cases by age and gender in South Zone, 2022.

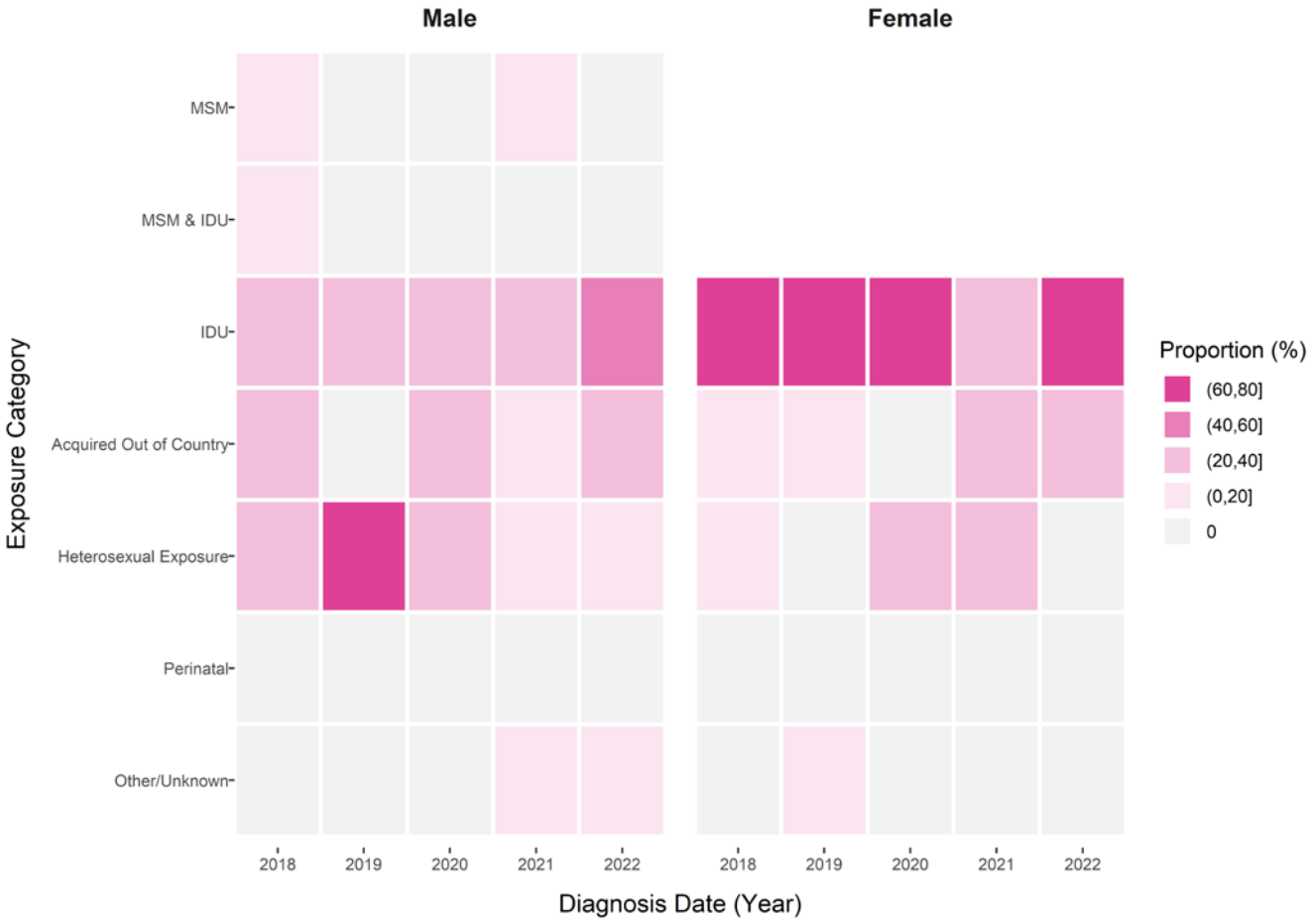


Figure 9. Proportion of HIV infections attributed to respective exposure categories in South Zone, 2018 to 2022.
Assignment to exposure categories is determined hierarchically by the most probable route of acquiring HIV.

3. Calgary Zone Profile

Case Counts

A total of 8,222 STI/HIV cases were reported in 2022:

- Chlamydia: 5,880 cases, an increase of 24.8 per cent (n = 1,168) compared to 2021.
- Gonorrhea: 1,449 cases, an increase of 7.3 per cent (n = 98) compared to 2021.
- HIV: 111 cases, an increase of 20.7 per cent (n = 19) compared to 2021.
- Infectious syphilis: 782 cases, an increase of 12.7 per cent (n = 88) compared to 2021.

Rate of Reported Cases

- Chlamydia: 329.7 cases per 100,000 population, an increase of 20.9 per cent compared to 2021.
- Gonorrhea: 81.2 cases per 100,000 population, an increase of 3.9 per cent compared to 2021.
- HIV: 6.2 cases per 100,000 population, an increase of 16.9 per cent compared to 2021.
- Infectious syphilis: 43.9 cases per 100,000 population, an increase of 9.2 per cent compared to 2021.

Gender and Age

- Chlamydia cases: 54.7 per cent were female, of which 59.7 per cent were 15-24 years old.
- Gonorrhea cases: 67.2 per cent were male, of which 36.9 per cent were 30-39 years old.
- HIV cases: 37.8 per cent were female, of which 47.2 per cent were 25-39 years old.
- Infectious syphilis cases: 62.8 per cent were male, of which 35.8 per cent were 30-39 years old.

HIV Exposure Categories

In 2022, 50.7 per cent (n = 38) of male cases, were attributed to the exposure category “Acquired Out of Country”, whereas 62.9 per cent of female cases (n = 22) were attributed to the exposure category “Acquired Out of Country”.

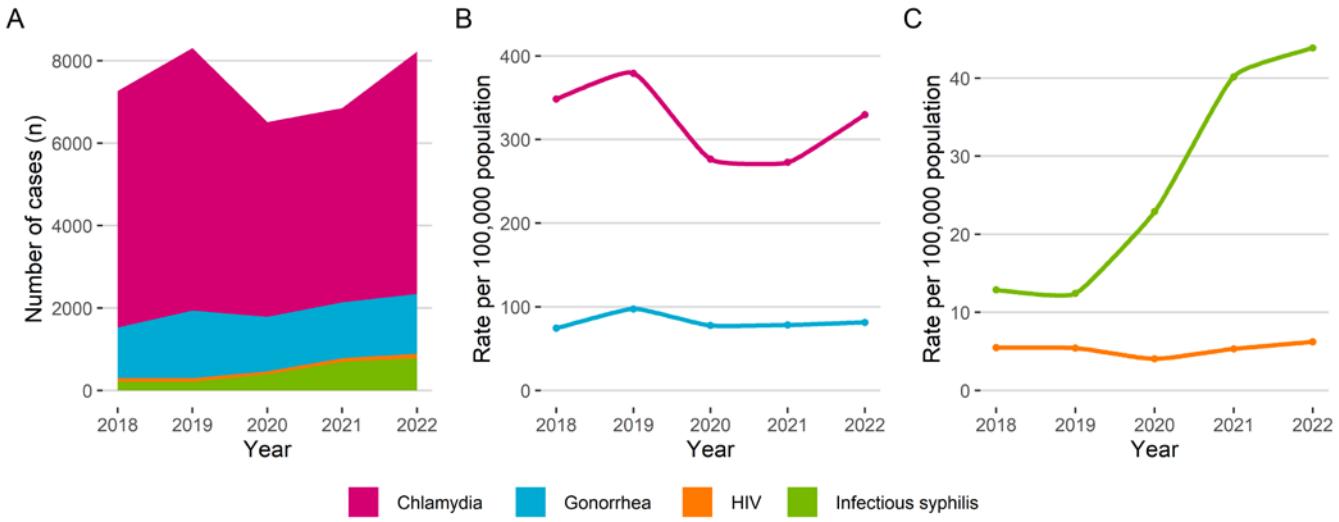


Figure 10. Counts and rates of STIs/HIV in Calgary Zone, 2018 to 2022. (A) Counts per year grouped by infection type, (B) Rates per 100,000 population by year for chlamydia and gonorrhea, and (C) Rates per 100,000 population by year for HIV and infectious syphilis.

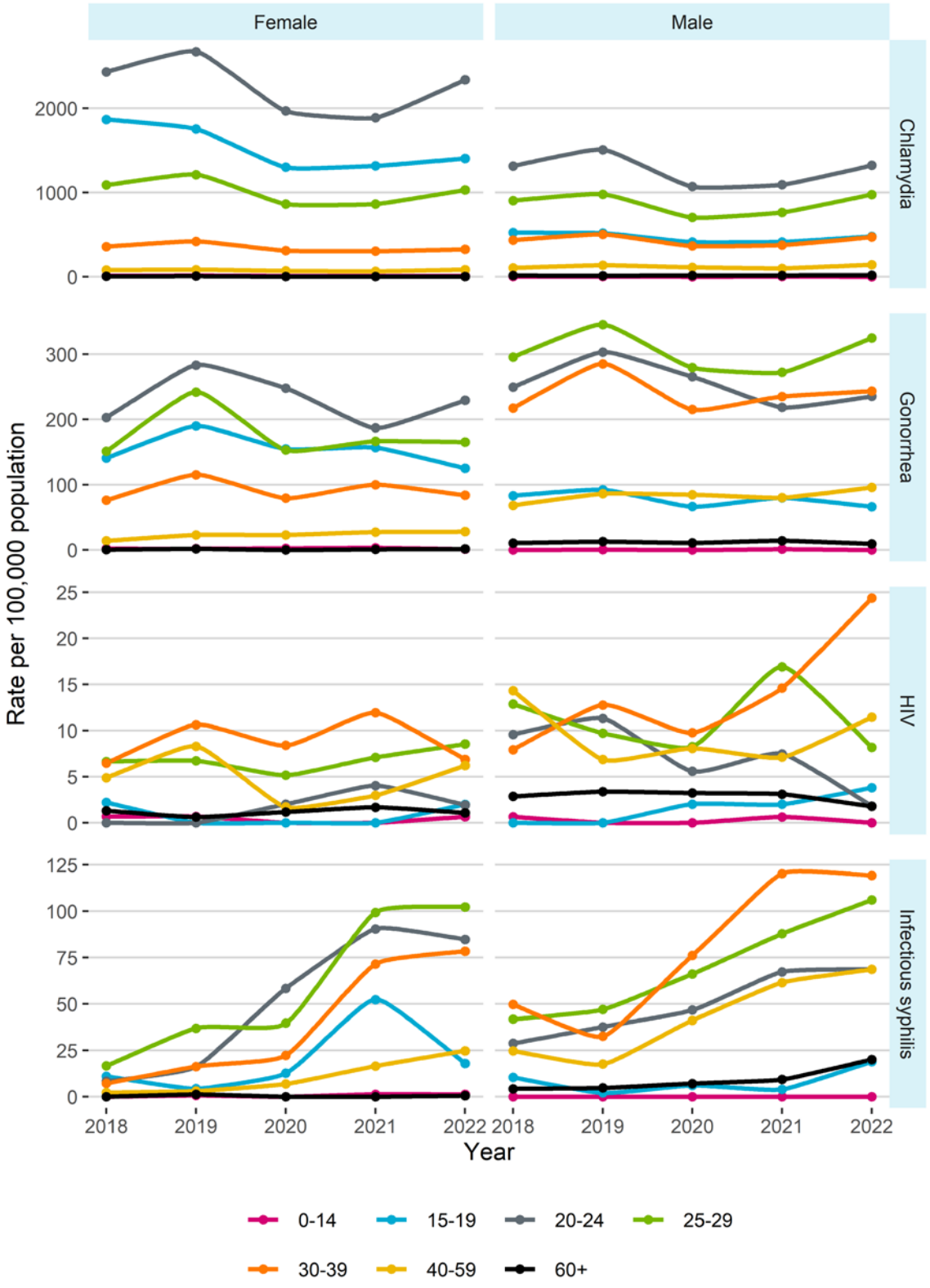


Figure 11. STI/HIV rates by age and gender in Calgary Zone, 2018 to 2022.

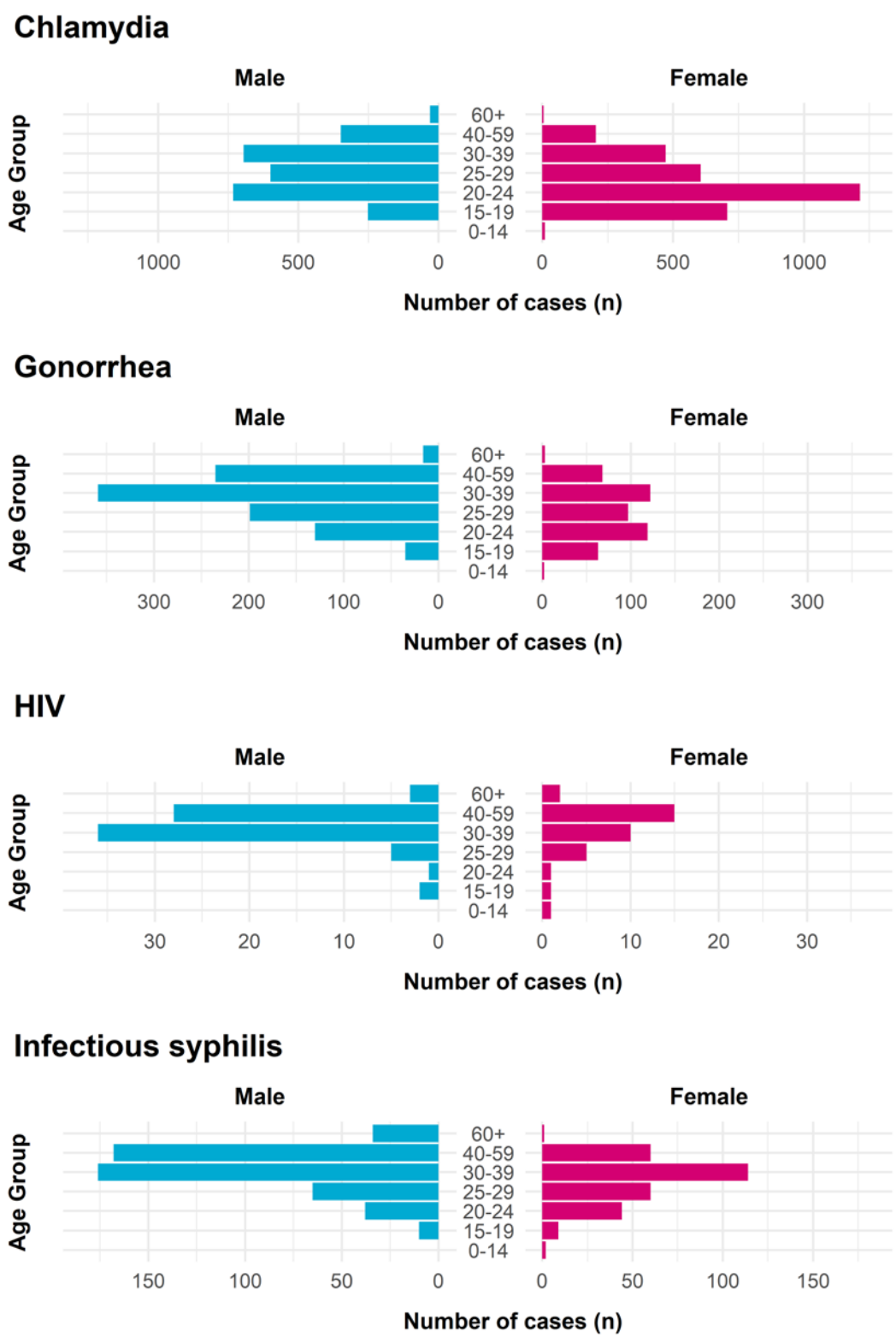


Figure 12. STI/HIV cases by age and gender in Calgary Zone, 2022.

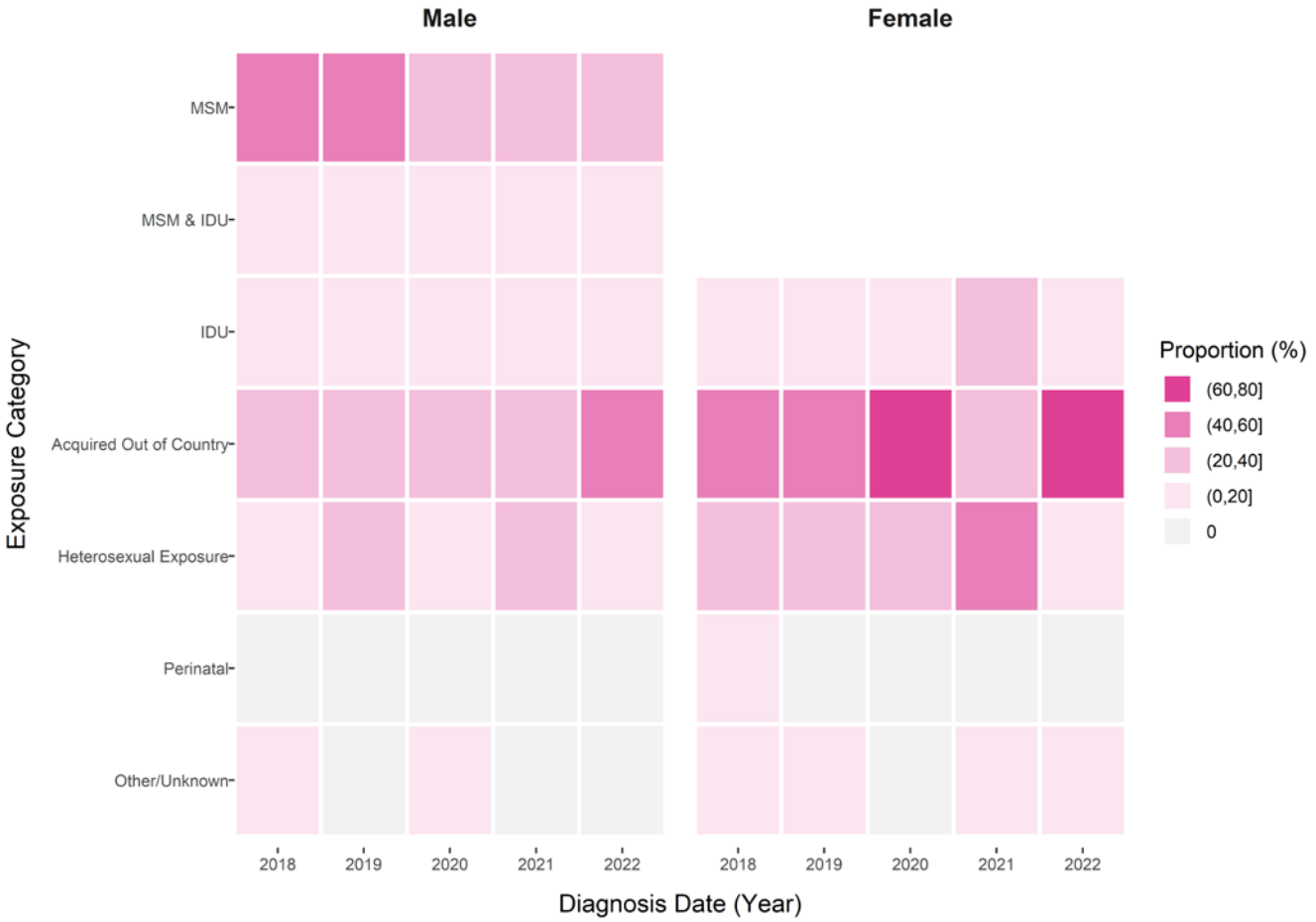


Figure 13. Proportion of HIV infections attributed to respective exposure categories in Calgary Zone, 2018 to 2022. Assignment to exposure categories is determined hierarchically by the most probable route of acquiring HIV.

4. Central Zone Profile

Case Counts

A total of 2,346 STI/HIV cases were reported in 2022:

- Chlamydia: 1,492 cases, an increase of 12.8 per cent (n = 169) compared to 2021.
- Gonorrhea: 452 cases, an increase of 10.0 per cent (n = 41) compared to 2021.
- HIV: 21 cases, an increase of 16.7 per cent (n = 3) compared to 2021.
- Infectious syphilis: 381 cases, an increase of 2.4 per cent (n = 9) compared to 2021.

Rate of Reported Cases

- Chlamydia: 310.9 cases per 100,000 population, an increase of 11.9 per cent compared to 2021.
- Gonorrhea: 94.2 cases per 100,000 population, an increase of 9.1 per cent compared to 2021.
- HIV: 4.4 cases per 100,000 population, an increase of 15.9 per cent compared to 2021.
- Infectious syphilis: 79.4 cases per 100,000 population, an increase of 1.6 per cent compared to 2021.

Gender and Age

- Chlamydia cases: 62.6 per cent were female, of which 62.1 per cent were 15-24 years old.
- Gonorrhea cases: 50.4 per cent were male, of which 36.4 per cent were 20-29 years old.
- HIV cases: 37.8 per cent were female, of which 47.2 per cent were 25-39 years old.
- Infectious syphilis cases: 51.4 per cent were female, of which 39.8 per cent were 20-29 years old.

HIV Exposure Categories

In 2022, 33.3 per cent (n = 5) of male cases, were attributed to the exposure category “Acquired Out of Country”, whereas 66.7 per cent of female cases (n = 4) were attributed to the exposure category “Heterosexual Exposure”.

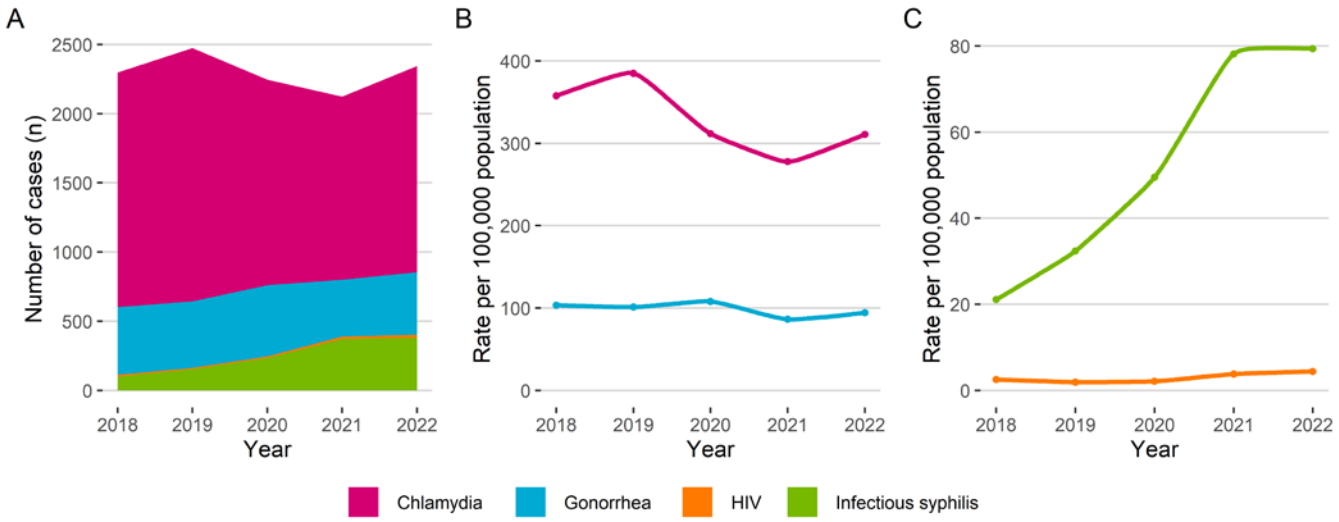


Figure 14. Counts and rates of STIs/HIV in Central Zone, 2018 to 2022. (A) Counts per year grouped by infection type, (B) Rates per 100,000 population by year for chlamydia and gonorrhea, and (C) Rates per 100,000 population by year for HIV and infectious syphilis.

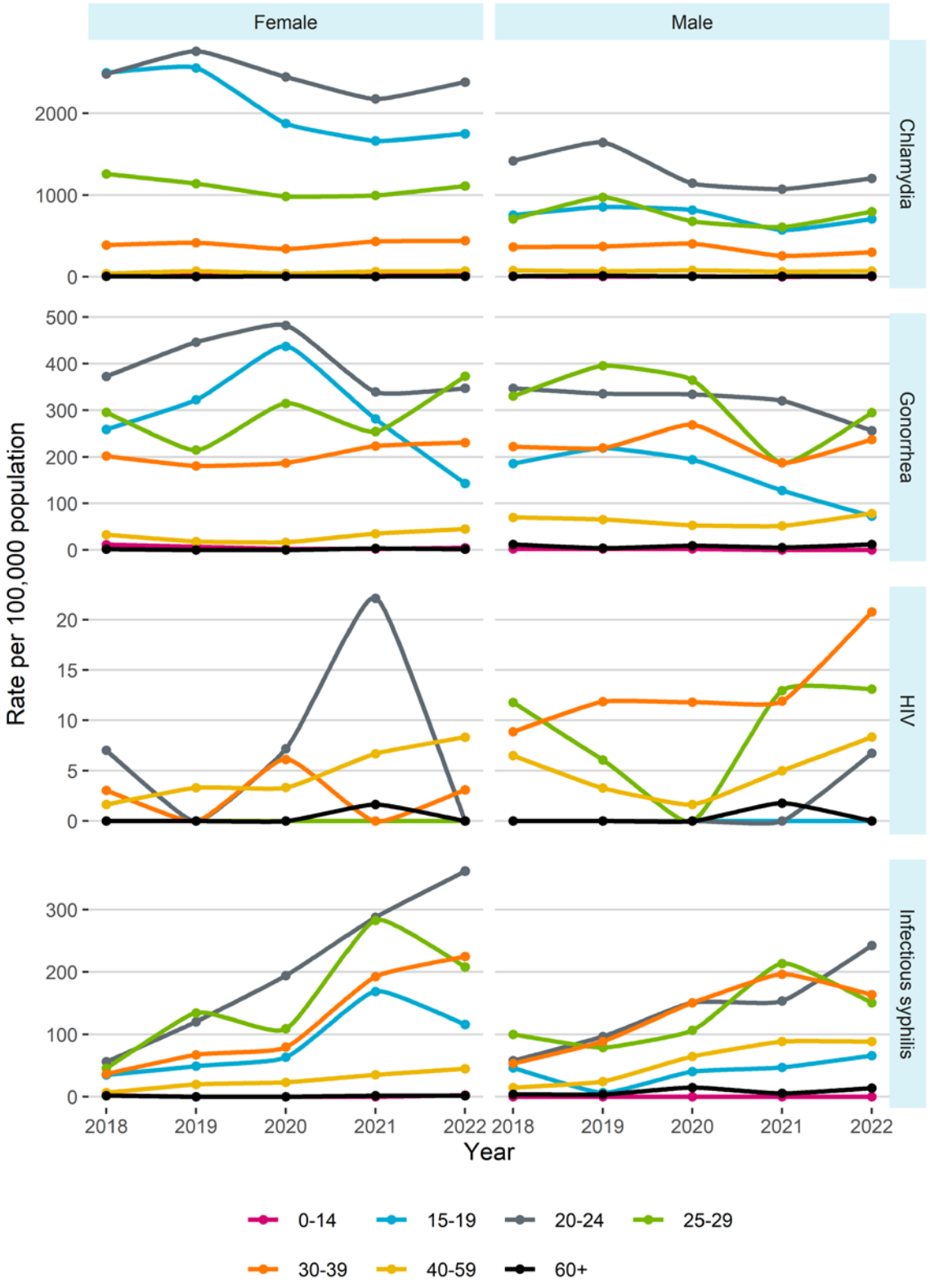


Figure 15. STI/HIV rates by age and gender in Central Zone, 2018 to 2022.

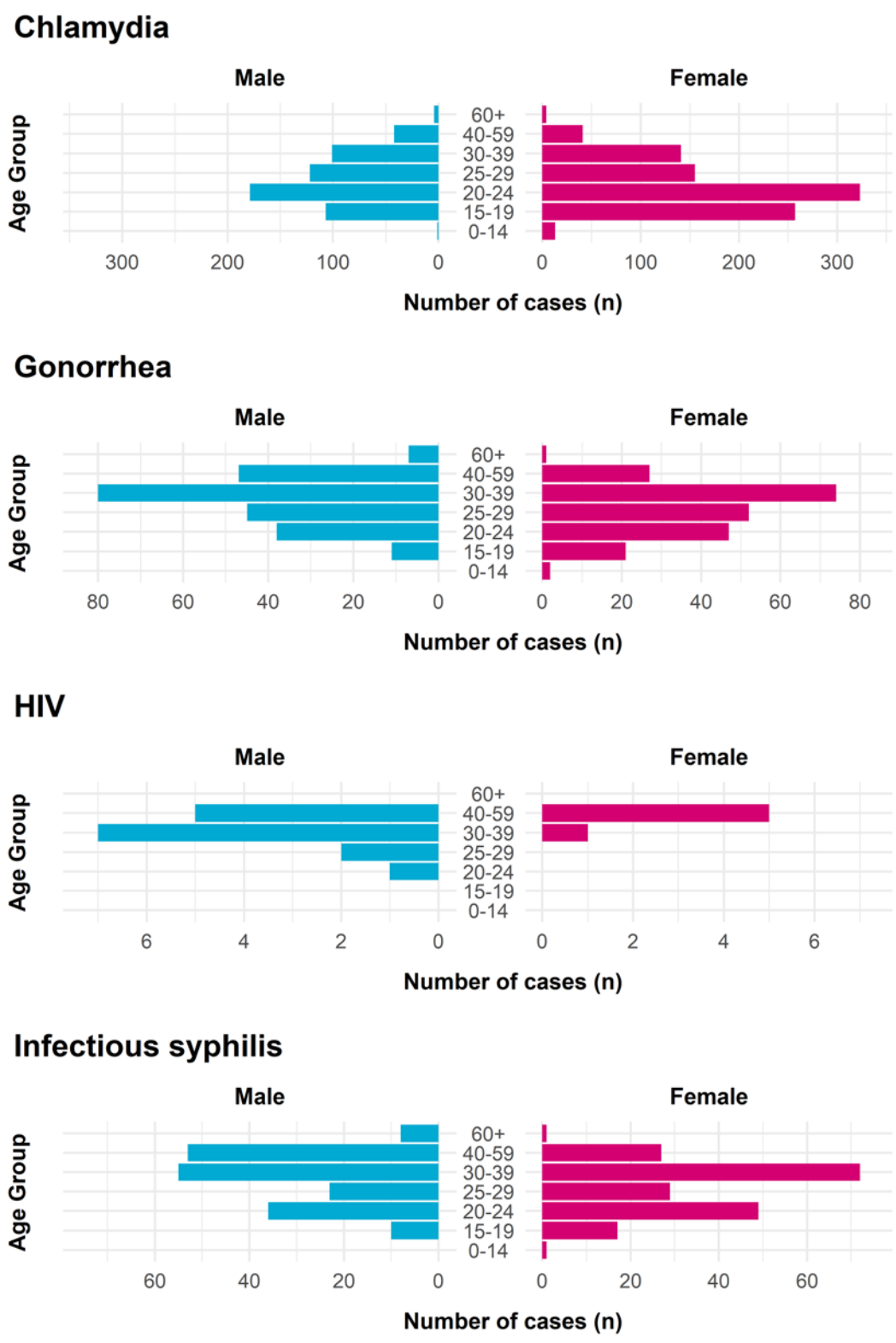


Figure 16. STI/HIV cases by age and gender in Central Zone, 2022.

Figure 17. Proportion of HIV infections attributed to respective exposure categories in Central Zone, 2018 to 2022.
Assignment to exposure categories is determined hierarchically by the most probable route of acquiring HIV.

5. Edmonton Zone Profile

Case Counts

A total of 9,680 STI/HIV cases were reported in 2022:

- Chlamydia: 6,094 cases, an increase of 19.4 per cent (n = 992) compared to 2021.
- Gonorrhea: 2,193 cases, a decrease of 4.0 per cent (n = 91) compared to 2021.
- HIV: 108 cases, an increase of 10.2 per cent (n = 10) compared to 2021.
- Infectious syphilis: 1,285 cases, a decrease of 8.3 per cent (n = 116) compared to 2021.

Rate of Reported Cases

- Chlamydia: 409.8 cases per 100,000 population, an increase of 16.7 per cent compared to 2021.
- Gonorrhea: 147.5 cases per 100,000 population, a decrease of 6.2 per cent compared to 2021.
- HIV: 7.3 cases per 100,000 population, an increase of 7.7 per cent compared to 2021.
- Infectious syphilis: 86.4 cases per 100,000 population, a decrease of 10.4 per cent compared to 2021.

Gender and Age

- Chlamydia cases: 58.7 per cent were female, of which 52.7 per cent were 15-24 years old.
- Gonorrhea cases: 49.9 per cent were female, of which 42.0 per cent were 20-29 years old.
- HIV cases: 37.8 per cent were female, of which 47.2 per cent were 25-39 years old.
- Infectious syphilis cases: 54.4 per cent were male, of which 37.3 per cent were 30-39 years old.

HIV Exposure Categories

In 2022, 36.5 per cent (n = 23) of male cases, were attributed to the exposure category “Acquired Out of Country”, whereas 46.7 per cent of female cases (n = 21) were attributed to the exposure category “Acquired Out of Country”.

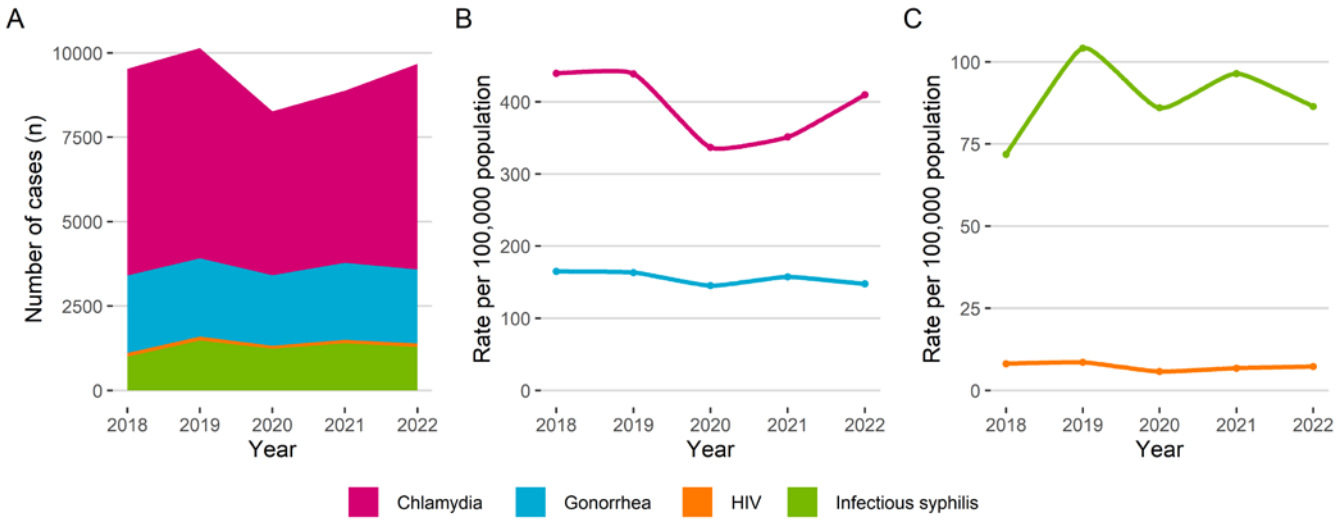


Figure 18. Counts and rates of STIs/HIV in Edmonton Zone, 2018 to 2022. (A) Counts per year grouped by infection type, (B) Rates per 100,000 population by year for chlamydia and gonorrhea, and (C) Rates per 100,000 population by year for HIV and infectious syphilis.

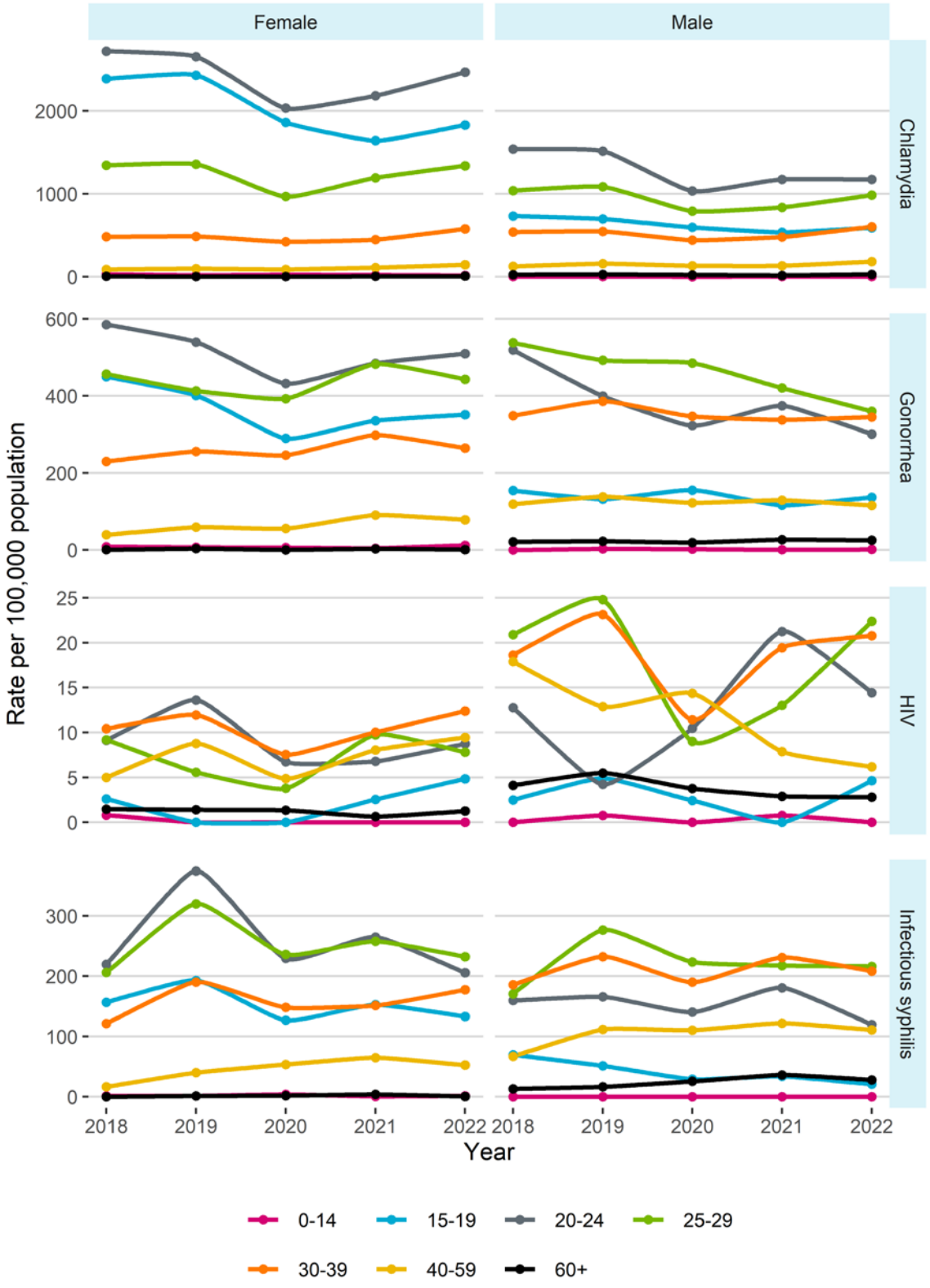


Figure 19. STI/HIV rates by age and gender in Edmonton Zone, 2018 to 2022.

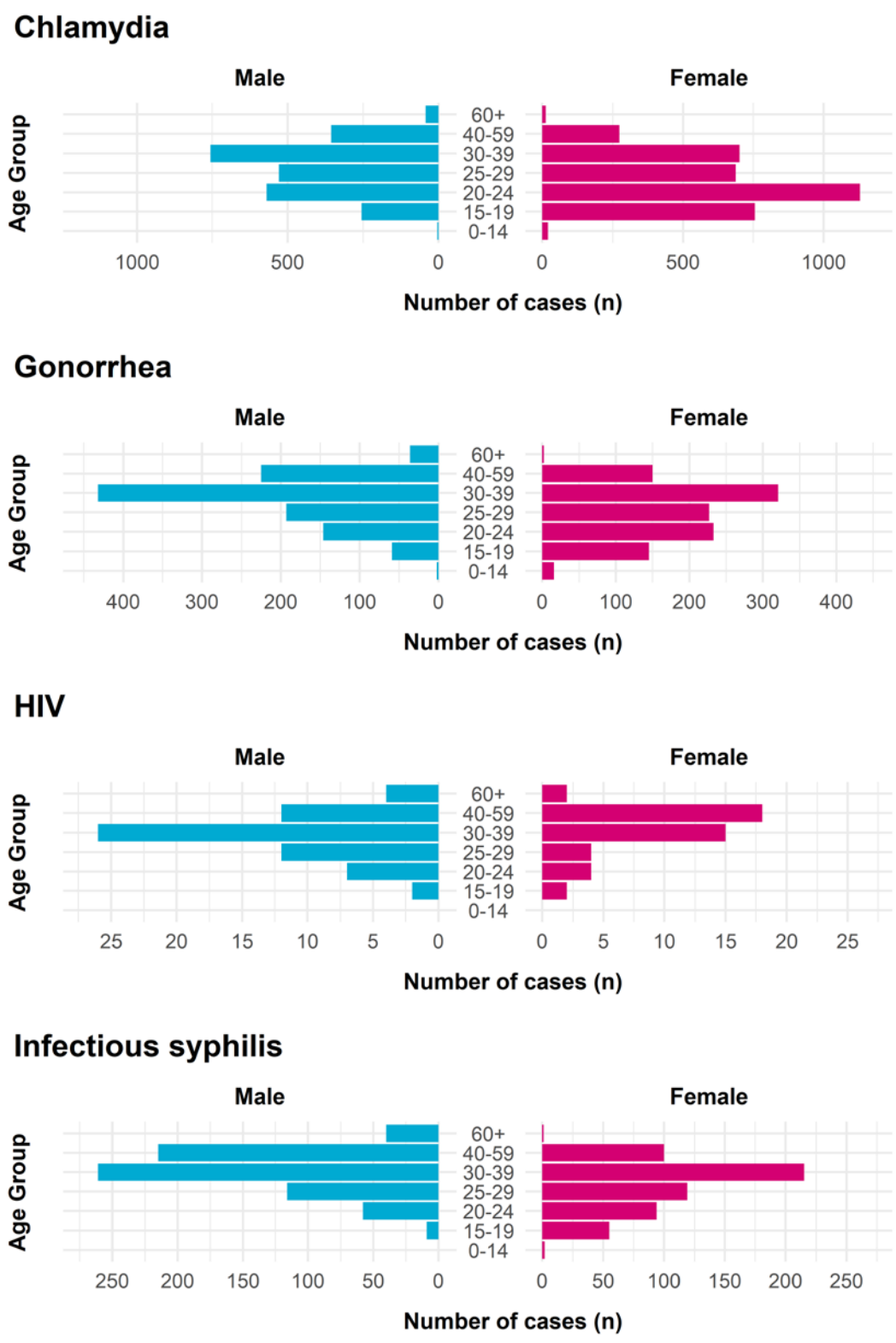


Figure 20. STI/HIV cases by age and gender in Edmonton Zone, 2022.

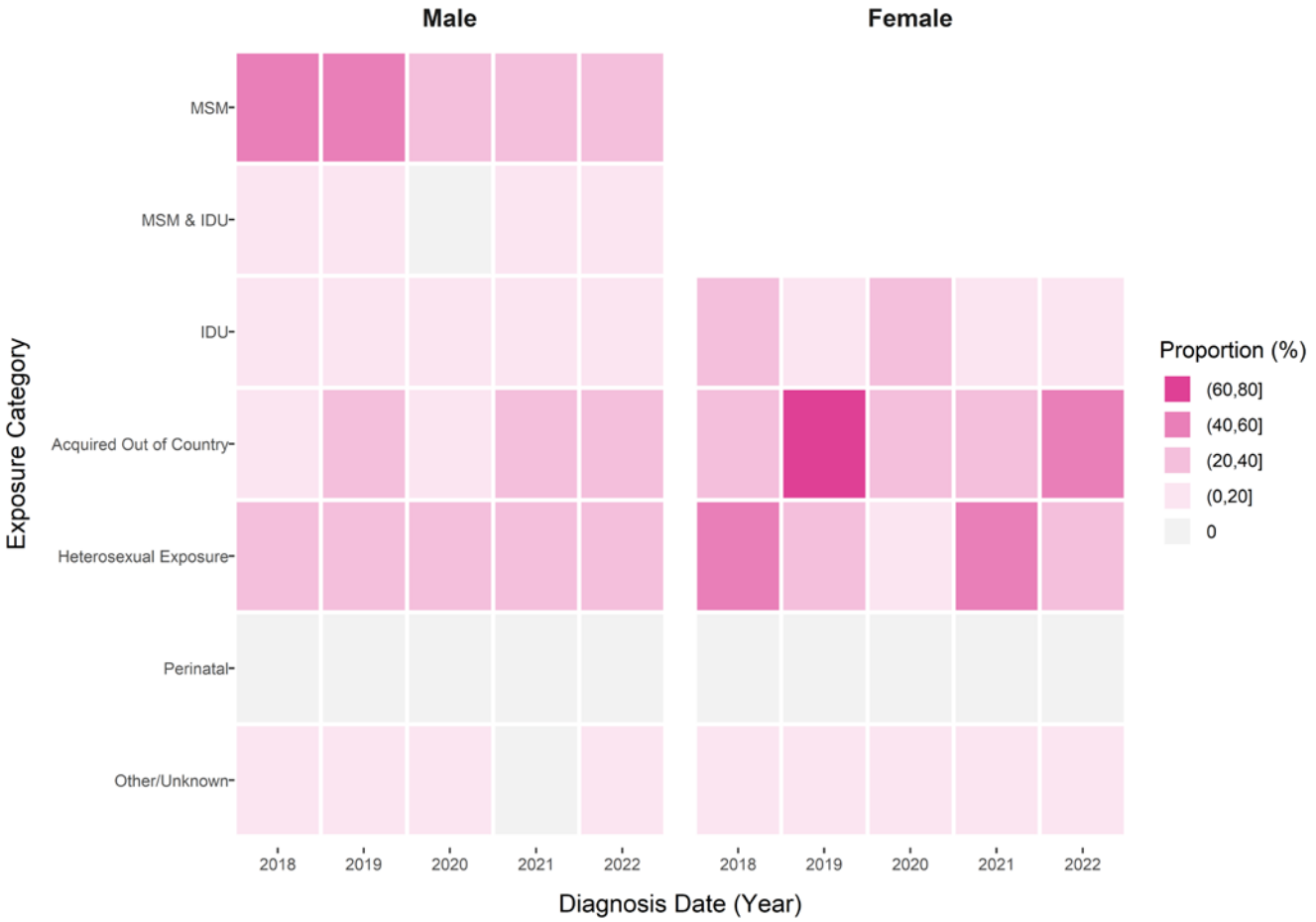


Figure 21. Proportion of HIV infections attributed to respective exposure categories in Edmonton Zone, 2018 to 2022.
Assignment to exposure categories is determined hierarchically by the most probable route of acquiring HIV.

6. North Zone Profile

Case Counts

A total of 3,458 STI/HIV cases were reported in 2022:

- Chlamydia: 2,142 cases, an increase of 8.0 per cent (n = 159) compared to 2021.
- Gonorrhea: 606 cases, a decrease of 12.2 per cent (n = 84) compared to 2021.
- HIV: 24 cases, an increase of 33.3 per cent (n = 6) compared to 2021.
- Infectious syphilis: 686 cases, an increase of 0.4 per cent (n = 3) compared to 2021.

Rate of Reported Cases

- Chlamydia: 449.9 cases per 100,000 population, an increase of 7.6 per cent compared to 2021.
- Gonorrhea: 127.3 cases per 100,000 population, a decrease of 12.5 per cent compared to 2021.
- HIV: 5 cases per 100,000 population, an increase of 32.6 per cent compared to 2021.
- Infectious syphilis: 144.1 cases per 100,000 population, an increase of 0.0 per cent compared to 2021.

Gender and Age

- Chlamydia cases: 63.4 per cent were female, of which 52.1 per cent were 15-24 years old.
- Gonorrhea cases: 50.5 per cent were female, of which 41.8 per cent were 20-29 years old.
- HIV cases: 37.8 per cent were female, of which 47.2 per cent were 25-39 years old.
- Infectious syphilis cases: 53.8 per cent were female, of which 41.5 per cent were 20-29 years old.

HIV Exposure Categories

In 2022, 40 per cent (n = 6) of male cases, were attributed to the exposure category “MSM”, whereas 66.7 per cent of female cases (n = 6) were attributed to the exposure category “Heterosexual Exposure”.

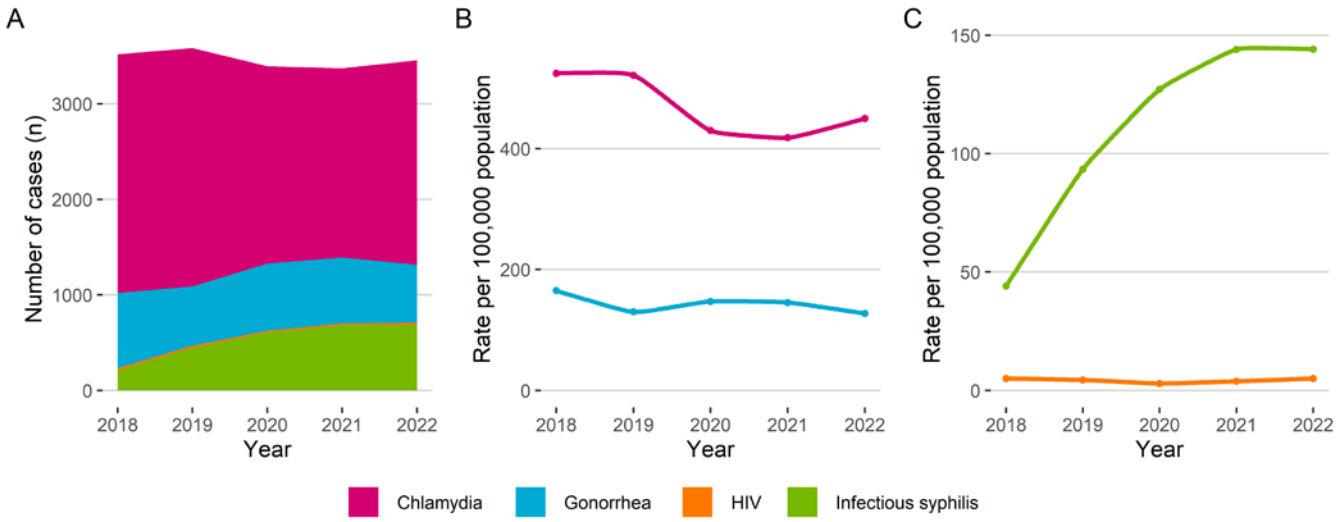


Figure 22. Counts and rates of STIs/HIV in North Zone, 2018 to 2022. (A) Counts per year grouped by infection type, (B) Rates per 100,000 population by year for chlamydia and gonorrhea, and (C) Rates per 100,000 population by year for HIV and infectious syphilis.

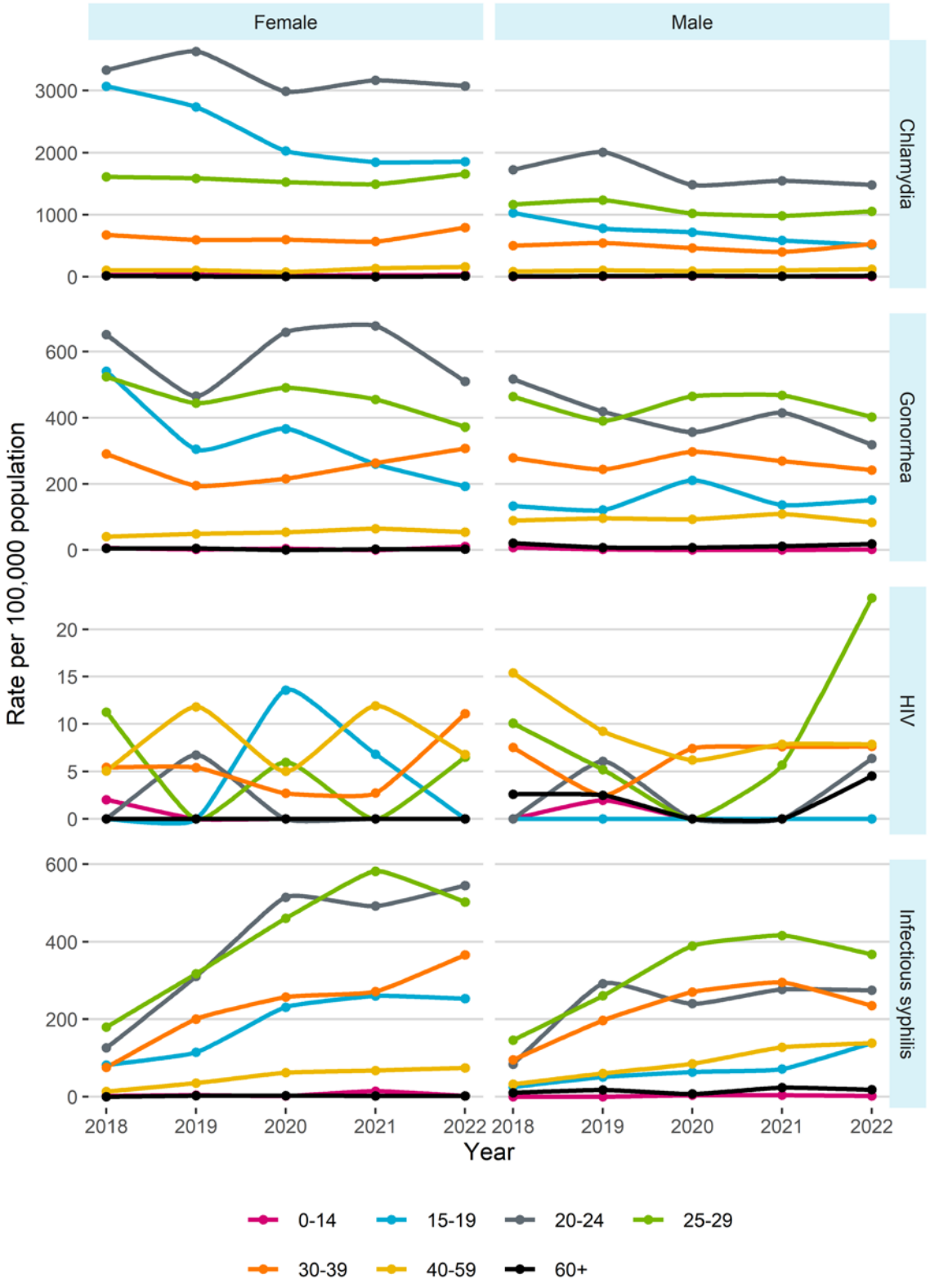


Figure 23. STI/HIV rates by age and gender in North Zone, 2018 to 2022.

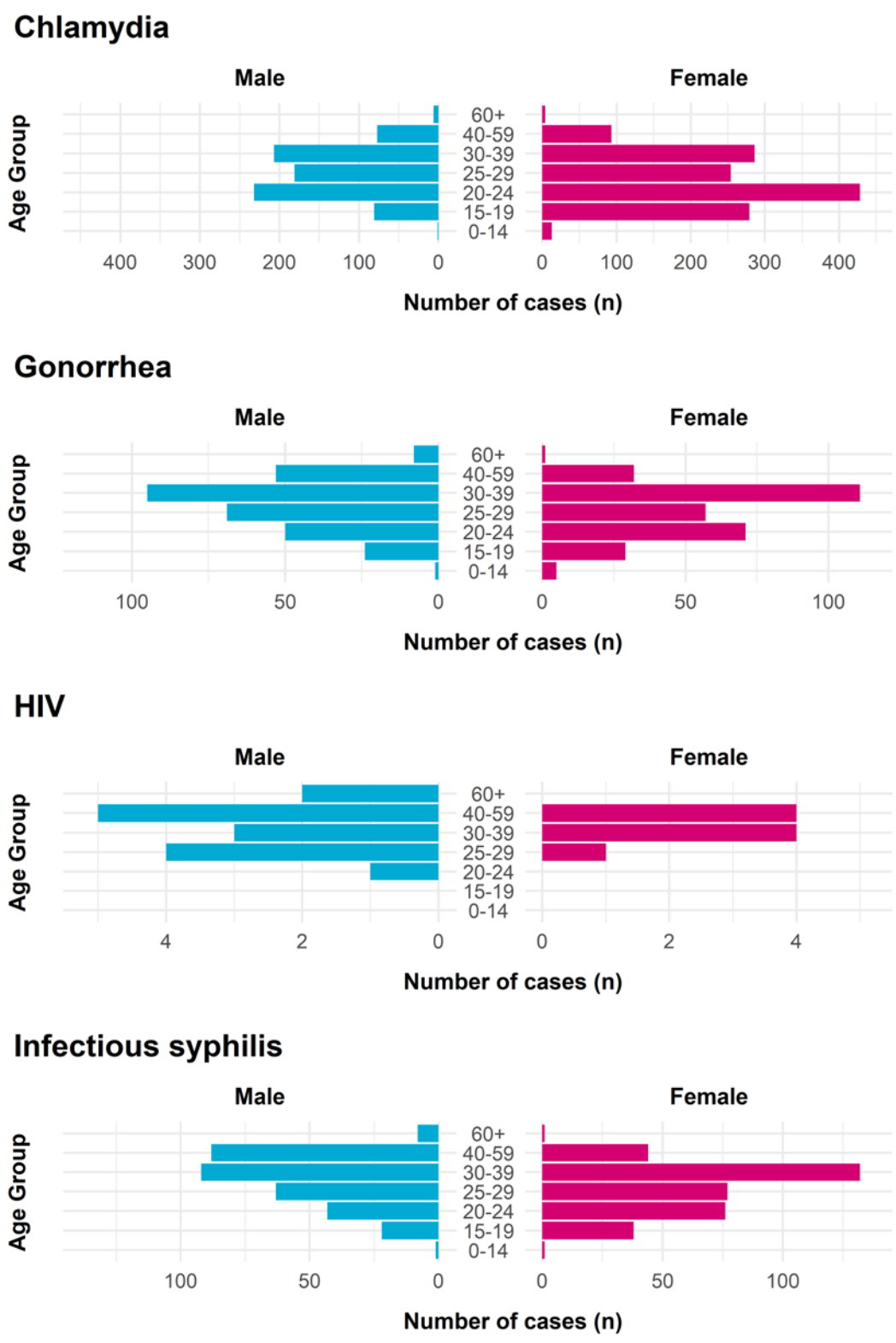


Figure 24. STI/HIV cases by age and gender in North Zone, 2022.

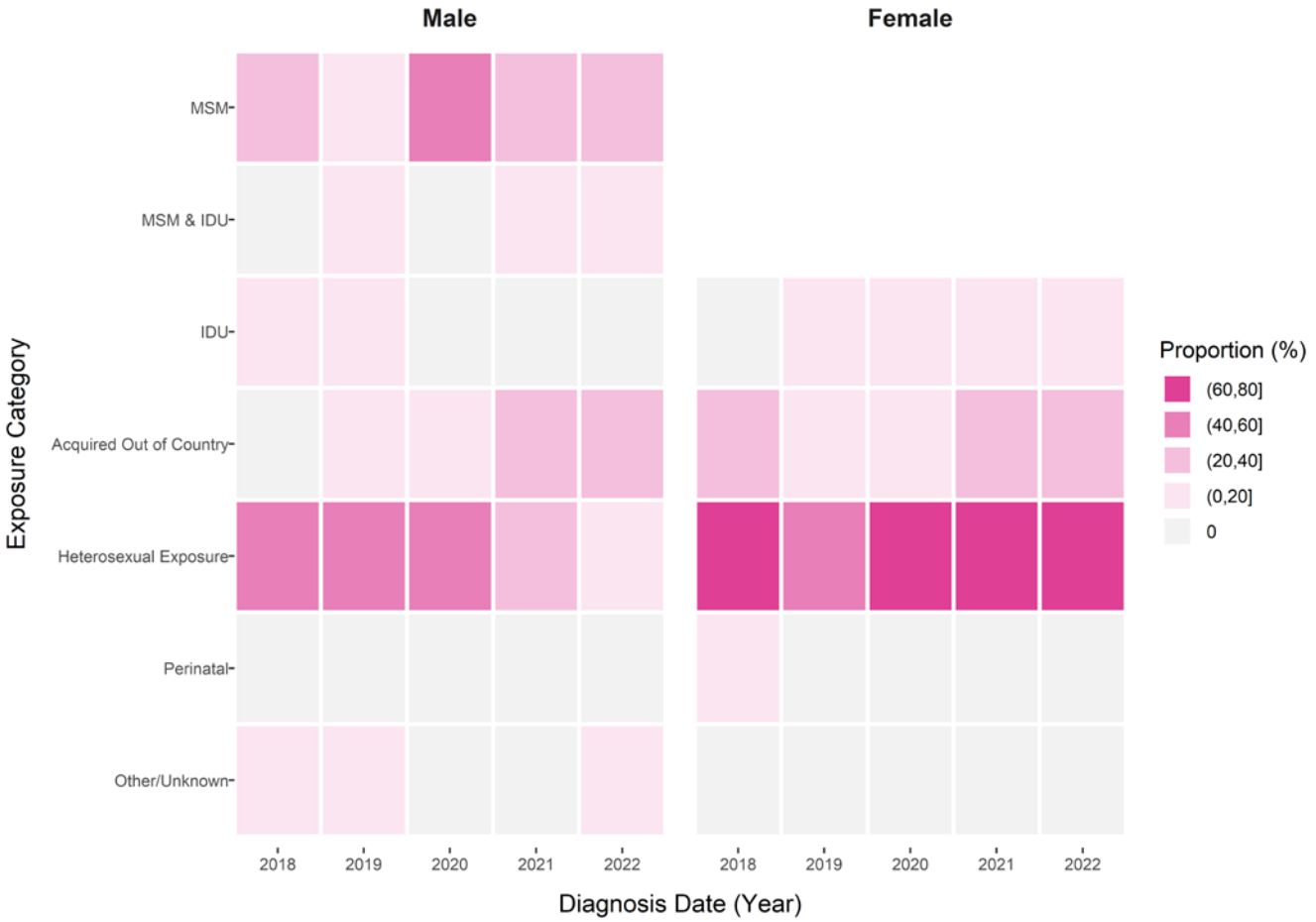
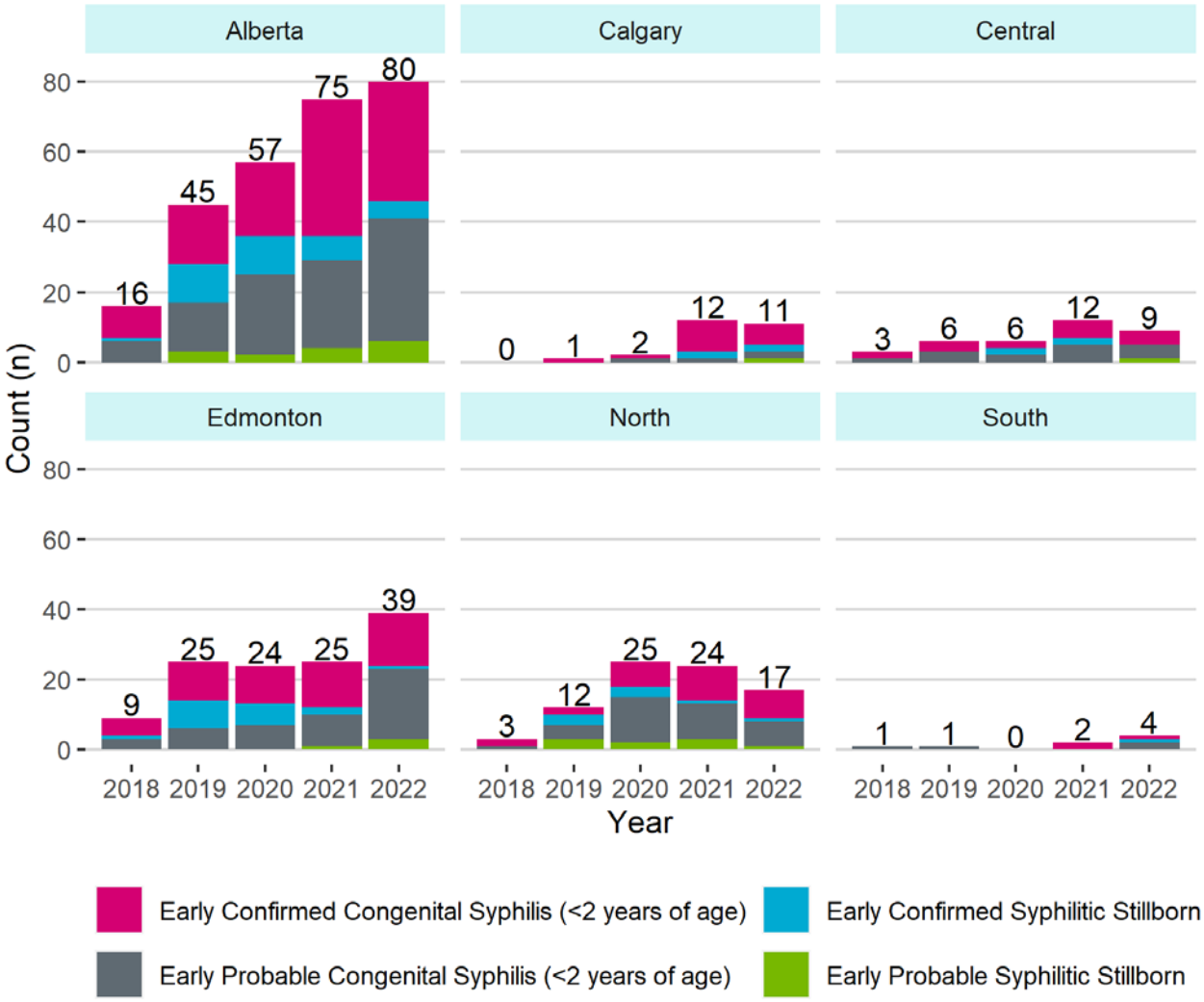


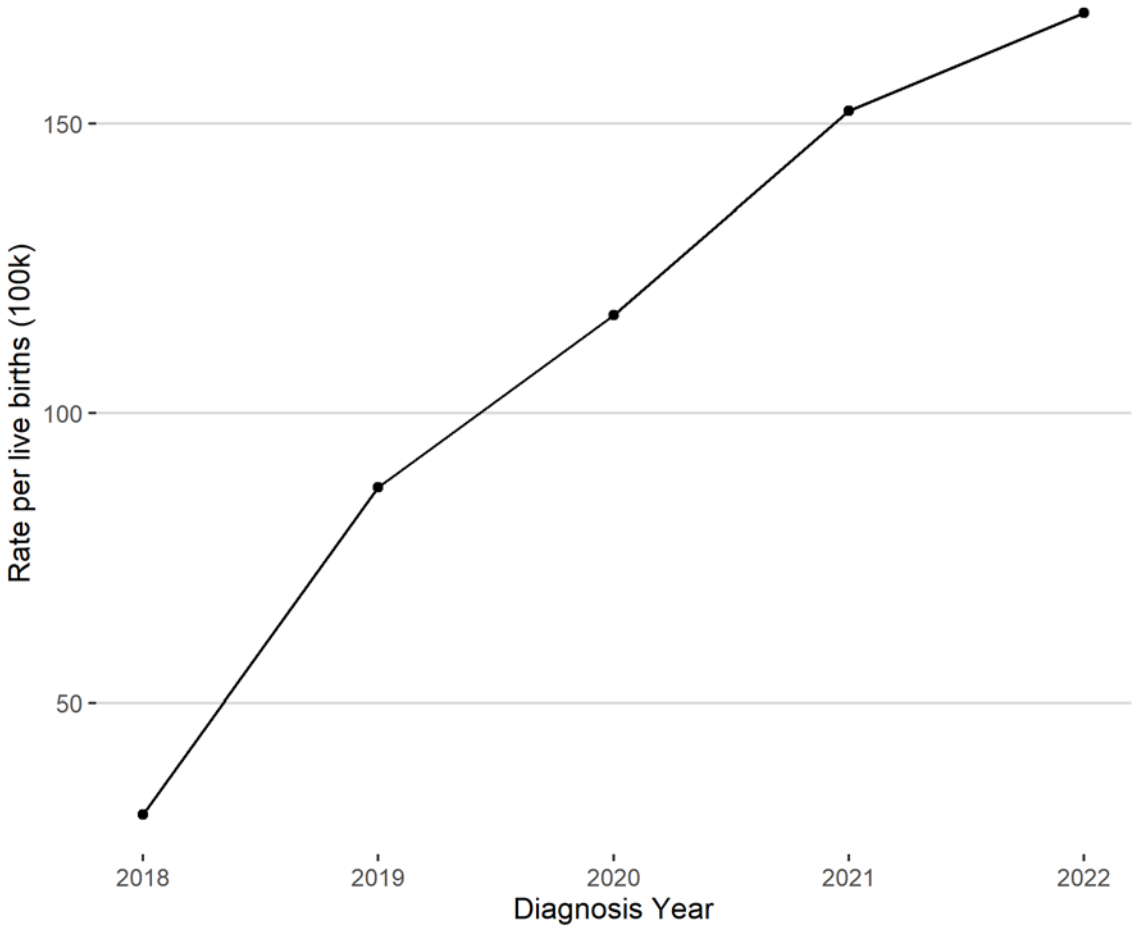
Figure 25. Proportion of HIV infections attributed to respective exposure categories in North Zone, 2018 to 2022.
Assignment to exposure categories is determined hierarchically by the most probable route of acquiring HIV.

Annex 1: Congenital Syphilis in Alberta

With rising rates of infectious syphilis in Alberta, there has been increased efforts to monitor congenital syphilis. A total of 273 congenital syphilis cases have been diagnosed between 2018 and 2022, 50 of which were stillborn. Cases were diagnosed in 5 AHS Zones (Edmonton, North, Calgary, Central, South), with the majority (122 cases) in Edmonton Zone. Rates of congenital syphilis (live and stillborn) per 100,000 live births have increased from 30.8 to 169.1 between 2018 and 2022. Pregnant women with syphilis can result in a miscarriages. Since routine surveillance does not capture this data, the reported impact of congenital syphilis in Alberta is expected to be under-estimated.



Annex Fig 1. Congenital syphilis cases from 2018 to 2022 by Alberta and AHS Zone.

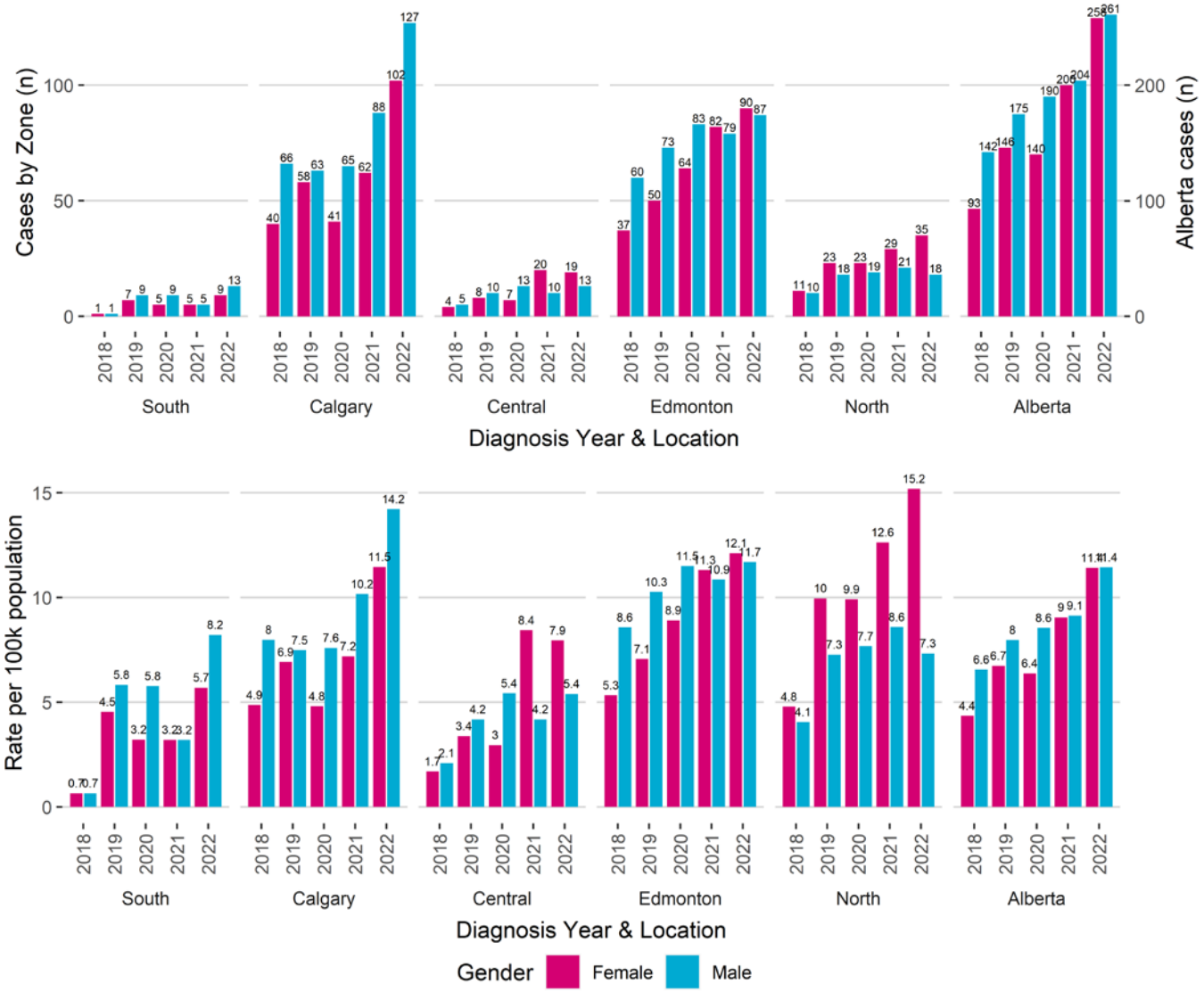


Year	2018	2019	2020	2021	2022
Rate per 100,000 (n)	30.8 (16)	87.2 (45)	116.9 (57)	152.2 (75)	169.1 (80)

Annex Fig 2. Congenital syphilis cases per 100,000 live births from 2018 to 2022.

Annex 2: Non-infectious Syphilis in Alberta

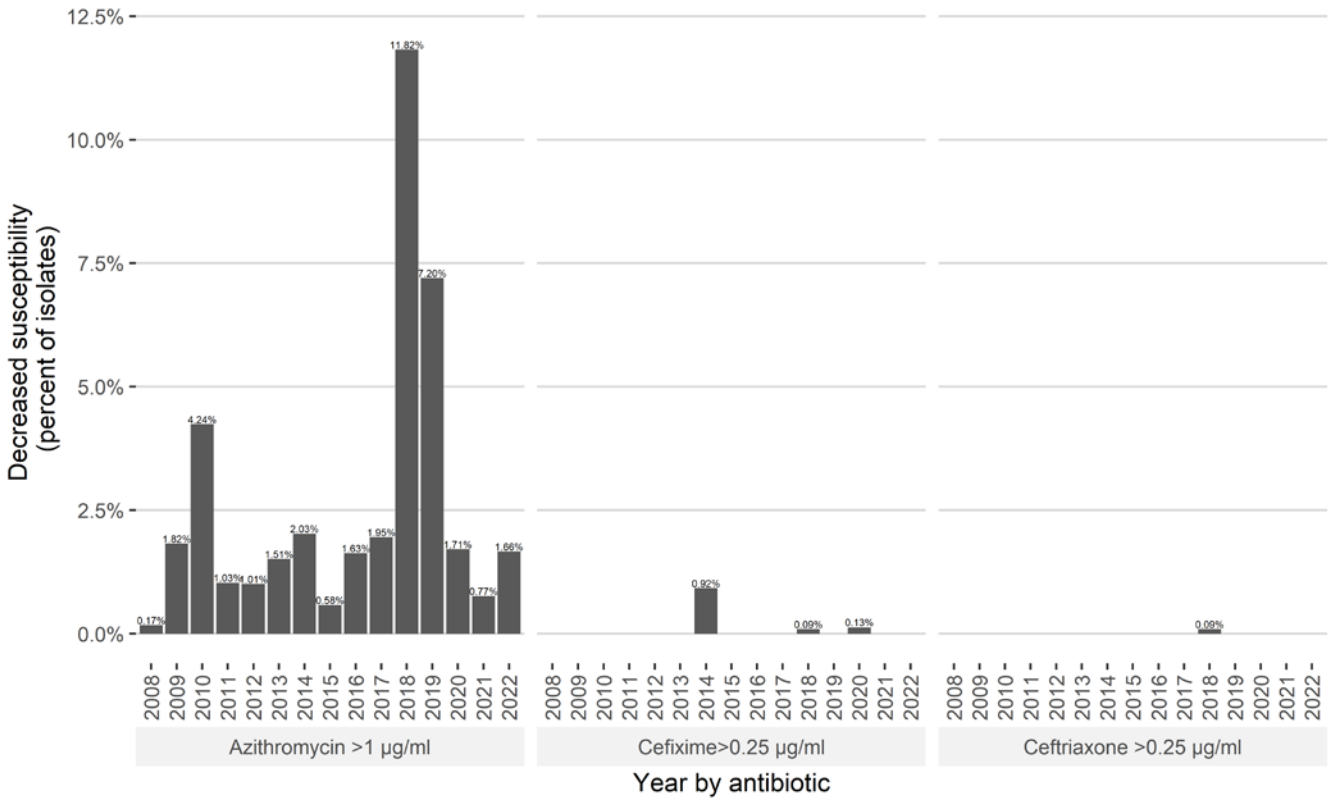
Non-infectious syphilis occurs when a case is untreated and enters late-latent or tertiary stages of infection. Between 2018 and 2022, 1,809 non-infectious syphilis cases were reported to Alberta Health, with the highest rates in 2022 in Calgary and Edmonton Zones (12.8 and 11.9 cases per 100k population, respectively). Similar to other types of syphilis, since 2018 non-infectious syphilis cases have been increasing (235 in 2018 to 513 in 2022), with the largest percent change among females (177.4% increase) during this period. Location is unknown for 10 cases.



Annex Fig 3. Non-infectious syphilis cases and rate per 100,000 population from 2018 to 2022 by geographical location (5 AHS Zones and Alberta) and gender.

Annex 3: Anti-Microbial Resistance of Gonorrhea

Alberta maintains surveillance of antimicrobial resistance (AMR) to gonorrhea to ensure effectiveness of current recommended treatment guidelines [3]. AMR is monitored through three sentinel sites in Alberta (i.e., Calgary, Edmonton, and Fort McMurray STI Clinics) where clients are routinely screened using both Nucleic Acid Amplification Test and cultures. Collection of culture is recommended for all patients with sexual contact outside Canada, presumed treatment failure, sexual assault/abuse, and symptomatic men with same sex partners. All culture specimens are sent to the Alberta Precision Laboratories (APL) for testing, and all positive isolates are tested using E-test (gradient diffusion). Decreased susceptibility of isolates are based on Clinical and Laboratory Standards Institute (CLSI) guidelines: azithromycin (≥2 µg/ml), cefixime (>0.25 µg/ml), and ceftriaxone (>0.25 µg/ml). From 2008 to 2022, 10,808 culture specimens have been collected and submitted to APL. In 2022, no isolates have been identified that have decreased susceptibility to cefixime and ceftriaxone and very few isolates (n=15) were identified with decreased susceptibility to azithromycin.



Annex Fig 4. Percent of *Neisseria gonorrhoeae* isolates with anti-microbial resistance to azithromycin or decreased susceptibility to cefixime or ceftriaxone from 2008 to 2022.

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