# HIV SURVEILLANCE ANNUAL REPORT, 2016

NEW YORK CITY DEPARTMENT OF HEALTH AND MENTAL HYGIENE

# EXECUTIVE SUMMARY

This report presents 2016 surveillance data on the HIV epidemic in New York City (NYC). It includes graphic trends in HIV diagnoses over time for key populations, geographic distribution of HIV in NYC, and key outcomes such as linkage to care, viral suppression, and survival among people with HIV (PWH). New features include data on pre- and post-exposure prophylaxis (PrEP and PEP) use among people newly diagnosed with HIV, HIV infection staging of NYC PWH, trends in underlying cause of death among PWH, sexually transmitted infection (STI) diagnosis rates in neighborhoods with high HIV diagnosis rates, HIV testing history and HIV prevalence among people who inject drugs, substance use among NYC PWH, and the NYC HIV Care Continuum.

Focused and data-driven efforts to end the HIV epidemic in New York[1] are ongoing and progress is evident in reducing new HIV diagnoses in NYC and improving outcomes for PWH in NYC.

- The annual number of new HIV diagnoses continues to decline, from 2,493 in 2015[2] to 2,279 in 2016 (an 8.6% decrease).
- In 2016, new HIV diagnoses among men who have sex with men (MSM) reached a statistically significant low for the first time since 2001 when HIV reporting began in New York.
- 2016 had the steepest year-to-year drop in new HIV diagnoses among MSM, declining from 1,450 in 2015[2] to 1,236 in 2016 (a 14.8% decrease). White, Black and Latino/Hispanic MSM experienced declines in new HIV diagnoses from 2015 to 2016, with the largest decreases among Whites and Latinos/Hispanics.
- The all-cause mortality rate and rate of HIV-related deaths among PWH continue to decline. Nearly two-thirds of deaths among PWH in NYC are now attributed to a non-HIV-related cause.
- Overall, 76% of all estimated PWH in NYC were virally suppressed in 2016. Of those in care, 84% were virally suppressed in 2016 (up from 76% in 2012).

Despite these successes, disparities by gender, race/ethnicity and transmission risk persist. Women with HIV in NYC continue to be overwhelmingly women of color, with Black and Latina/Hispanic women comprising 90.3% of all new diagnoses among women in 2016. While HIV diagnosis rates continue to decline for Black, Latino/Hispanic, and White men, HIV diagnosis rates for women from all racial groups increased from 2015 to 2016. Nearly two-thirds (64.9%) of new HIV diagnoses among men with known transmission risk were in MSM of color, while a similar proportion (60.6%) of new diagnoses among women were in heterosexual women of color age 30 and over.

PrEP and PEP use among people newly diagnosed with HIV was generally low (2% and 1%, respectively), but use patterns reveal disparities that cut along gender, race/ethnicity, age, and transmission risk categories. Substance use remains a significant clinical and public health concern for PWH; data included in this report demonstrate poorer viral suppression among PWH who report substance use. Finally, neighborhood-level analysis of HIV and STI diagnosis rates underscores opportunities to improve access to PrEP for women and men.

[1]New York State Department of Health. *2015 Blueprint to End the AIDS Epidemic,* State of New York: Albany, NY. March 2015.
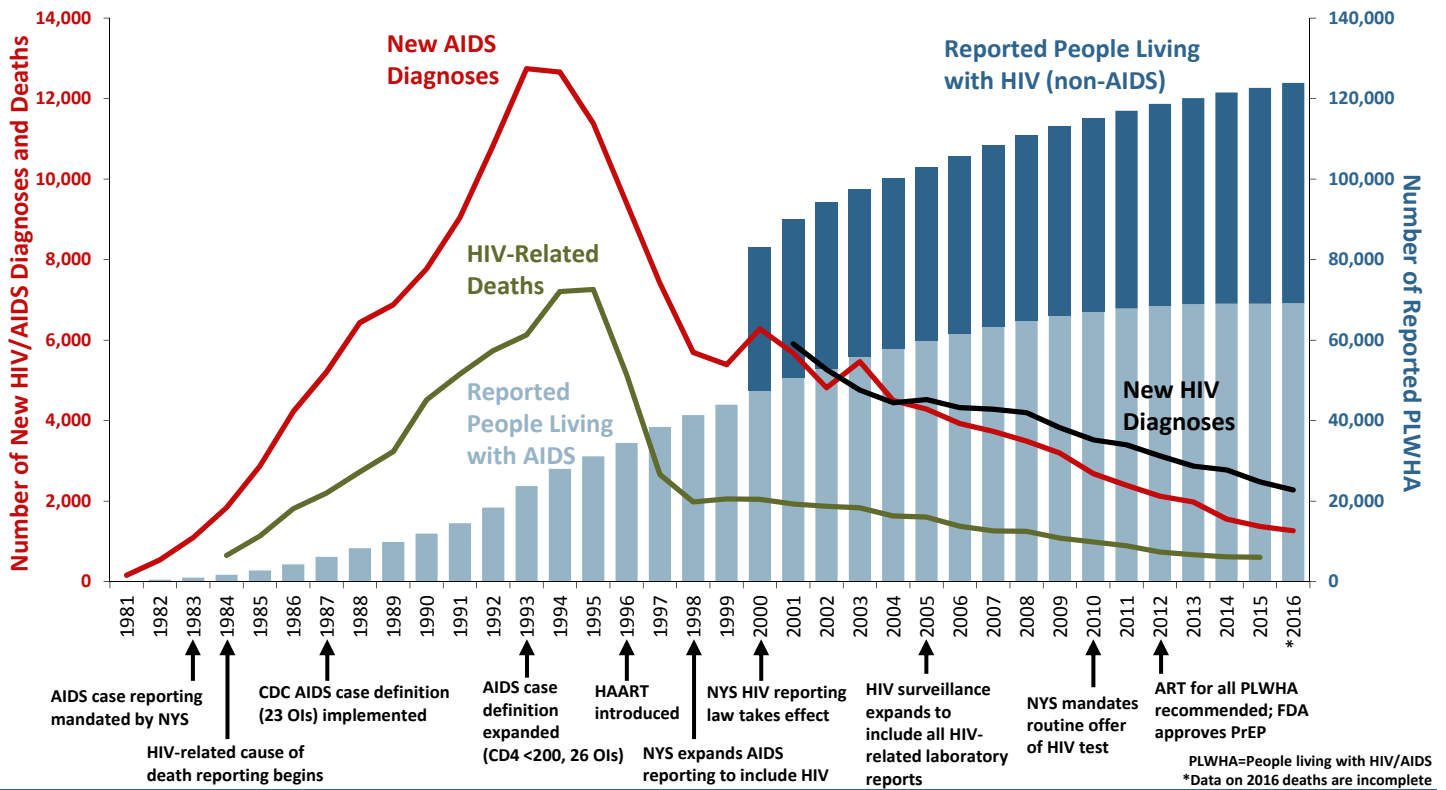[2]HIV Epidemiology and Field Services Program. *HIV Surveillance Annual Report, 2015.* New York City Department of Health and Mental Hygiene: New York, NY. December 2016.

# CONTENTS

**FIGURE 1.1**: History of the HIV epidemic, NYC 1981-2016



- **New AIDS Diagnoses**
- **HIV-Related Deaths**
- **Reported People Living with AIDS**
- **Reported People Living with HIV (non-AIDS)**
- **New HIV Diagnoses**

Number of New HIV/AIDS Diagnoses and Deaths

Number of Reported PLWHA

AIDS case reporting mandated by NYS

HIV-related cause of death reporting begins

CDC AIDS case definition (23 OIs) implemented

AIDS case definition expanded (CD4 <200, 26 OIs)

HAART introduced

NYS expands AIDS reporting to include HIV

NYS HIV reporting law takes effect

HIV surveillance expands to include all HIV-related laboratory reports

NYS mandates routine offer of HIV test

ART for all PLWHA recommended; FDA approves PrEP

PLWHA=People living with HIV/AIDS
*Data on 2016 deaths are incomplete

# HIV DIAGNOSES OVER TIME

**FIGURE 2.1**: Trends in HIV diagnoses, NYC 2001-2016

| HIV Diagnoses | 2001 | | 2016 | EAPC | P Value |
|---|---|---|---|---|---|
| **Total** | 5,906 | | 2,279 | -5.38 | <0.01 |
| **Gender** | | | | | |
| Male | 3,915 | | 1,771 | -4.12 | <0.01 |
| Female | 1,944 | | 462 | -9.31 | <0.01 |
| Transgender | 47 | | 46 | -0.11 | 0.89 |
| **Race/Ethnicity** | | | | | |
| Black | 3,096 | | 991 | -6.91 | <0.01 |
| Latino/Hispanic | 1,780 | | 768 | -4.65 | <0.01 |
| White | 899 | | 352 | -4.40 | <0.01 |
| Asian/Pacific Islander | 114 | | 144 | 1.33 | 0.01 |
| Native American | 13 | | 6 | -8.96 | <0.01 |
| **Age Group (Years)** | | | | | |
| 0-12 | 302 | | 1 | -22.6 | <0.01 |
| 13-19 | 195 | | 79 | -4.96 | <0.01 |
| 20-29 | 1,125 | | 803 | -0.87 | <0.01 |
| 30-39 | 2,098 | | 603 | -8.08 | <0.01 |
| 40-49 | 1,546 | | 408 | -8.01 | <0.01 |
| 50-59 | 635 | | 263 | -4.95 | <0.01 |
| 60+ | 221 | | 122 | -2.53 | <0.01 |

| HIV Diagnoses | 2001 | | 2016 | EAPC | P Value |
|---|---|---|---|---|---|
| **Borough of Residence** | | | | | |
| Bronx | 1,342 | | 520 | -6.61 | <0.01 |
| Brooklyn | 1,630 | | 581 | -5.61 | <0.01 |
| Manhattan | 1,528 | | 468 | -6.44 | <0.01 |
| Queens | 762 | | 415 | -3.94 | <0.01 |
| Staten Island | 103 | | 61 | -5.80 | <0.01 |
| Outside NYC | 425 | | 207 | -2.11 | <0.01 |
| **Transmission Risk** | | | | | |
| Men who have sex with men (MSM) | 1,710 | | 1,236 | -0.73 | <0.01 |
| Injection drug use history (IDU) | 858 | | 32 | -18.3 | <0.01 |
| MSM-IDU | 124 | | 28 | -6.74 | <0.01 |
| Heterosexual contact | 1,468 | | 386 | -6.90 | <0.01 |
| Transgender people with sexual contact | 37 | | 44 | 0.77 | 0.34 |
| Perinatal | 86 | | 1 | -22.1 | <0.01 |

EAPC = Estimated annual percent change

The number of new HIV diagnoses reported in New York City from 2001 to 2016 decreased overall and by gender, race/ethnicity, age at diagnosis, borough of residence, and transmission risk. This decrease is significant (*P* value <0.01) for all subgroups except transgender people, Asian/Pacific Islanders, and transgender people with sexual contact.

# DEMOGRAPHIC AND CLINICAL CHARACTERISTICS

**TABLE 3.1**: HIV/AIDS diagnoses and deaths occurring January 1, 2016, through December 31, 2016; and people diagnosed with HIV/AIDS, reported in NYC, and presumed to be living as of December 31, 2016
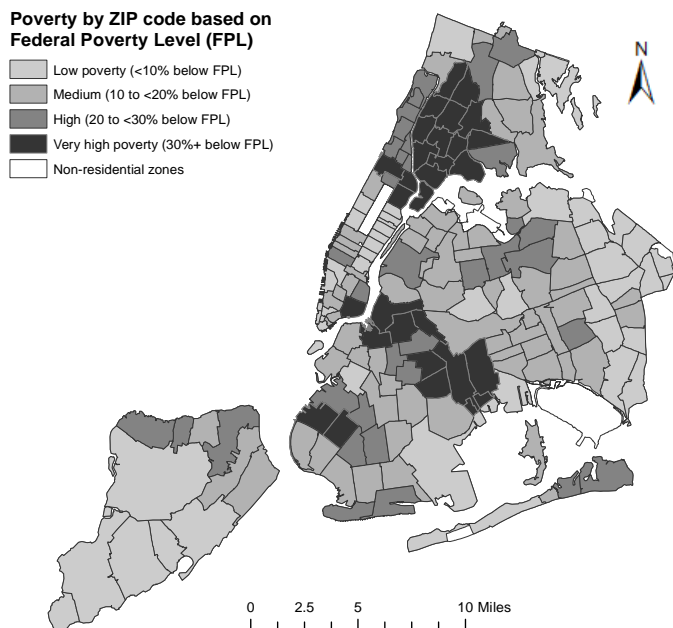
| | HIV Diagnoses[1] | | | | | | AIDS Diagnoses[3] | | PLWHA as of 12/31/2016 | | Deaths[4] | |
| | Total | | Without AIDS | | Concurrent with AIDS Diagnosis[2] | | | | | | | | |
| | N | % | N | % | N | % | Row % | N | % | N | % | N | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | 2,279 | 100.0 | 1,868 | 100.0 | 411 | 100.0 | 18.0 | 1,265 | 100.0 | 123,887 | 100.0 | 1,403 | 100.0 |
| **Gender** | | | | | | | | | | | | | |
| Male | 1,771 | 77.7 | 1,464 | 78.4 | 307 | 74.7 | 17.3 | 929 | 73.4 | 89,397 | 72.2 | 978 | 69.7 |
| Female | 462 | 20.3 | 361 | 19.3 | 101 | 24.6 | 21.9 | 323 | 25.5 | 33,253 | 26.8 | 416 | 29.7 |
| Transgender | 46 | 2.0 | 43 | 2.3 | 3 | 0.7 | 6.5 | 13 | 1.0 | 1,237 | 1.0 | 9 | 0.6 |
| **Race/Ethnicity[5]** | | | | | | | | | | | | | |
| Black | 991 | 43.5 | 794 | 42.5 | 197 | 47.9 | 19.9 | 630 | 49.8 | 54,302 | 43.8 | 675 | 48.1 |
| Latino/Hispanic | 768 | 33.7 | 645 | 34.5 | 123 | 29.9 | 16.0 | 414 | 32.7 | 40,375 | 32.6 | 512 | 36.5 |
| White | 352 | 15.4 | 299 | 16.0 | 53 | 12.9 | 15.1 | 167 | 13.2 | 25,635 | 20.7 | 190 | 13.5 |
| Asian/Pacific Islander | 144 | 6.3 | 111 | 5.9 | 33 | 8.0 | 22.9 | 45 | 3.6 | 2,669 | 2.2 | 20 | 1.4 |
| Native American | 6 | 0.3 | 4 | 0.2 | 2 | 0.5 | 33.3 | 5 | 0.4 | 277 | 0.2 | 4 | 0.3 |
| Multiracial | 18 | 0.8 | 15 | 0.8 | 3 | 0.7 | 16.7 | 4 | 0.3 | 272 | 0.2 | 2 | 0.1 |
| Unknown | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 | 0 | 0.0 | 357 | 0.3 | 0 | 0.0 |
| **Age Group (years)[6]** | | | | | | | | | | | | | |
| 0-12 | 1 | 0.0 | 1 | 0.1 | 0 | 0.0 | 0.0 | 2 | 0.2 | 97 | 0.1 | 0 | 0.0 |
| 13-19 | 79 | 3.5 | 76 | 4.1 | 3 | 0.7 | 3.8 | 15 | 1.2 | 519 | 0.4 | 1 | 0.1 |
| 20-29 | 803 | 35.2 | 723 | 38.7 | 80 | 19.5 | 10.0 | 213 | 16.8 | 9,483 | 7.7 | 31 | 2.2 |
| 30-39 | 603 | 26.5 | 496 | 26.6 | 107 | 26.0 | 17.7 | 304 | 24.0 | 18,308 | 14.8 | 87 | 6.2 |
| 40-49 | 408 | 17.9 | 286 | 15.3 | 122 | 29.7 | 29.9 | 321 | 25.4 | 27,462 | 22.2 | 185 | 13.2 |
| 50-59 | 263 | 11.5 | 204 | 10.9 | 59 | 14.4 | 22.4 | 265 | 20.9 | 40,696 | 32.8 | 530 | 37.8 |
| 60+ | 122 | 5.4 | 82 | 4.4 | 40 | 9.7 | 32.8 | 145 | 11.5 | 27,322 | 22.1 | 569 | 40.6 |
| **Borough of Residence[7]** | | | | | | | | | | | | | |
| Bronx | 520 | 22.8 | 421 | 22.5 | 99 | 24.1 | 19.0 | 326 | 25.8 | 29,803 | 24.1 | 459 | 32.7 |
| Brooklyn | 581 | 25.5 | 471 | 25.2 | 110 | 26.8 | 18.9 | 322 | 25.5 | 29,738 | 24.0 | 369 | 26.3 |
| Manhattan | 468 | 20.5 | 392 | 21.0 | 76 | 18.5 | 16.2 | 245 | 19.4 | 32,476 | 26.2 | 275 | 19.6 |
| Queens | 415 | 18.2 | 327 | 17.5 | 88 | 21.4 | 21.2 | 203 | 16.0 | 18,307 | 14.8 | 167 | 11.9 |
| Staten Island | 61 | 2.7 | 46 | 2.5 | 15 | 3.6 | 24.6 | 32 | 2.5 | 2,398 | 1.9 | 49 | 3.5 |
| Outside NYC | 207 | 9.1 | 184 | 9.9 | 23 | 5.6 | 11.1 | 125 | 9.9 | 10,979 | 8.9 | 56 | 4.0 |
| Unknown | 27 | 1.2 | 27 | 1.4 | 0 | 0.0 | 0.0 | 12 | 0.9 | 186 | 0.2 | 28 | 2.0 |
| **Area-Based Poverty Level[8]** | | | | | | | | | | | | | |
| Low poverty (<10% below FPL) | 172 | 7.5 | 137 | 7.3 | 35 | 8.5 | 20.3 | 87 | 6.9 | 12,985 | 10.5 | 112 | 8.0 |
| Medium poverty (10 to <20% below FPL) | 624 | 27.4 | 511 | 27.4 | 113 | 27.5 | 18.1 | 326 | 25.8 | 34,364 | 27.7 | 332 | 23.7 |
| High poverty (20 to <30% below FPL) | 535 | 23.5 | 427 | 22.9 | 108 | 26.3 | 20.2 | 283 | 22.4 | 25,900 | 20.9 | 277 | 19.7 |
| Very high poverty (≥30% below FPL) | 707 | 31.0 | 576 | 30.8 | 131 | 31.9 | 18.5 | 425 | 33.6 | 38,054 | 30.7 | 598 | 42.6 |
| Area-based poverty level not available | 241 | 10.6 | 217 | 11.6 | 24 | 5.8 | 10.0 | 144 | 11.4 | 12,584 | 10.2 | 84 | 6.0 |
| **Transmission risk[9]** | | | | | | | | | | | | | |
| Men who have sex with men (MSM) | 1,236 | 54.2 | 1,078 | 57.7 | 158 | 38.4 | 12.8 | 484 | 38.3 | 49,357 | 39.8 | 279 | 19.9 |
| Injection drug use history (IDU) | 32 | 1.4 | 23 | 1.2 | 9 | 2.2 | 28.1 | 91 | 7.2 | 15,594 | 12.6 | 427 | 30.4 |
| MSM-IDU | 28 | 1.2 | 23 | 1.2 | 5 | 1.2 | 17.9 | 21 | 1.7 | 2,777 | 2.2 | 47 | 3.3 |
| Heterosexual contact | 386 | 16.9 | 302 | 16.2 | 84 | 20.4 | 21.8 | 252 | 19.9 | 24,383 | 19.7 | 278 | 19.8 |
| Transgender people with sexual contact | 44 | 1.9 | 42 | 2.2 | 2 | 0.5 | 4.5 | 12 | 0.9 | 1,051 | 0.8 | 6 | 0.4 |
| Perinatal | 1 | 0.0 | 1 | 0.1 | 0 | 0.0 | 0.0 | 28 | 2.2 | 2,511 | 2.0 | 10 | 0.7 |
| Other | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 | 0 | 0.0 | 200 | 0.2 | 3 | 0.2 |
| Unknown | 572 | 24.4 | 411 | 21.4 | 161 | 37.9 | 28.1 | 377 | 29.8 | 28,014 | 22.6 | 353 | 25.2 |

PLWHA=People living with HIV/AIDS; FPL=Federal Poverty Level. All percents are column percents unless otherwise indicated. [1]Excludes people known to have been diagnosed outside of NYC. [2]HIV diagnosed concurrently with AIDS (within 31 days of HIV diagnosis). Row percent is percent of total HIV diagnoses that were concurrent with AIDS diagnoses. [3]AIDS was diagnosed in 2016 and includes concurrent HIV/AIDS diagnoses. [4]Includes deaths from any cause in people with HIV/AIDS. Death data for 2016 are incomplete. [5]For technical notes on race/ethnicity: www1.nyc.gov/assets/doh/downloads/pdf/ah/new_race_def_dec2010.pdf. [6]For HIV and AIDS diagnoses, age at diagnosis; for PLWHA, age as of December 31, 2016; and for deaths, age at death. [7]For HIV and AIDS diagnoses, residence at diagnosis. For PLWHA and deaths, residence based on most recent record available (most recent record is >5 years old for 26% of PLWHA in 2016). [8]Area-based poverty based on NYC ZIP code of residence at diagnosis or most recent residence (see footnote 7). [9] "Heterosexual contact" includes people who had heterosexual sex with a person they know to be HIV-infected, an injection drug user, or a person who has received blood products. For females only, also includes history of sex work, multiple sex partners, sexually transmitted disease, crack/cocaine use, sex with a bisexual male, probable heterosexual transmission as noted in medical chart, or sex with a male and negative history of injection drug use. "Transgender people with sexual contact" includes people identified as transgender by self-report, diagnosing provider or medical chart review with sexual contact reported and negative history of injection drug use. "Other" includes people who received treatment for hemophilia, people who received a transfusion or transplant, and children with non-perinatal transmission risk.
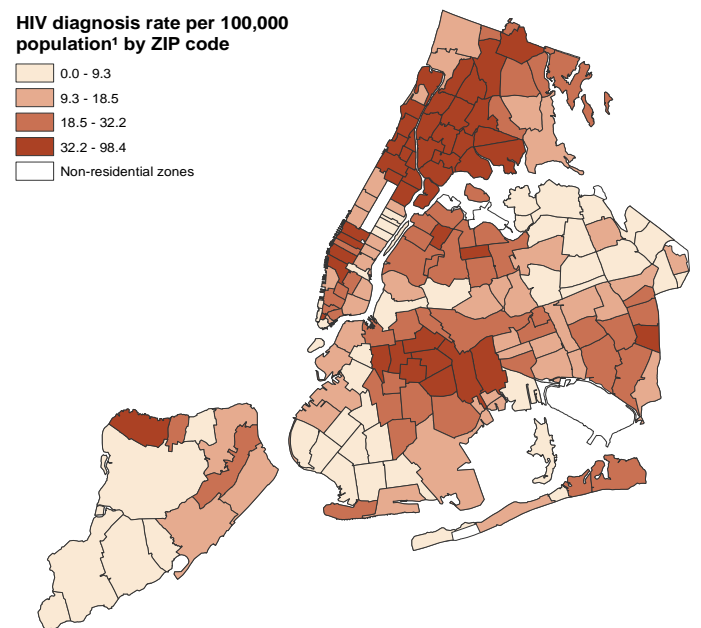
In 2016, there were 2,279 new HIV diagnoses and 1,265 new AIDS diagnoses in New York City. As of the end of 2016, 123,887 people had been diagnosed with HIV/AIDS, reported in New York City and were presumed to be living. As of March 31, 2017, there were 1,403 deaths reported among people with HIV in 2016.

# GEOGRAPHIC DISTRIBUTION OF HIV

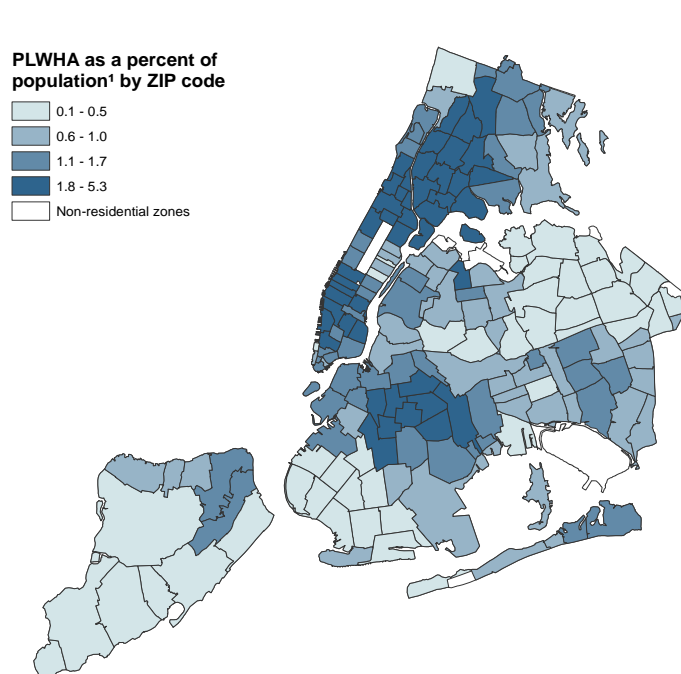**FIGURE 4.1**: Poverty level, NYC 2011-2015

**Poverty by ZIP code based on Federal Poverty Level (FPL)**
- Low poverty (<10% below FPL)
- Medium (10 to <20% below FPL)
- High (20 to <30% below FPL)
- Very high poverty (30%+ below FPL)
- Non-residential zones

N

0  2.5  5  10 Miles

**FIGURE 4.2**: HIV diagnosis rates, NYC 2016

**HIV diagnosis rate per 100,000 population[1] by ZIP code**
- 0.0 - 9.3
- 9.3 - 18.5
- 18.5 - 32.2
- 32.2 - 98.4
- Non-residential zones

ZIP codes in the Chelsea-Clinton, Central Harlem-Morningside Heights, and East Harlem neighborhoods had the highest HIV diagnosis rates in 2016 (Figure 4.2). In 2016, ZIP codes in West Queens, Chelsea-Clinton, and Central Harlem-Morningside Heights had the highest HIV prevalence (Figure 4.3). ZIP codes in the South Beach-Tottenville, Rockaway, and Stapleton-St. George neighborhoods had the highest mortality among people with HIV (Figure 4.4). Many ZIP codes with high HIV diagnosis rates were also among those with highest poverty rates (Figure 4.1), including those in Central Harlem-Morningside Heights, East Harlem, and East New York. However, ZIP codes in the Chelsea-Clinton neighborhood were the exception with the highest HIV diagnosis rates but relatively low poverty and mortality rates.

**FIGURE 4.3**: HIV prevalence, NYC 2016

**PLWHA as a percent of population[1] by ZIP code**
- 0.1 - 0.5
- 0.6 - 1.0
- 1.1 - 1.7
- 1.8 - 5.3
- Non-residential zones

**FIGURE 4.4**: Age-adjusted death rates among people with HIV/AIDS, NYC 2016

**Age-adjusted death rate[2] per 1,000 mid-year PLWHA by ZIP code**
- 0.0 - 2.0
- 2.1 - 6.3
- 6.4 - 10.5
- 10.6 - 84.0
- Non-residential zones
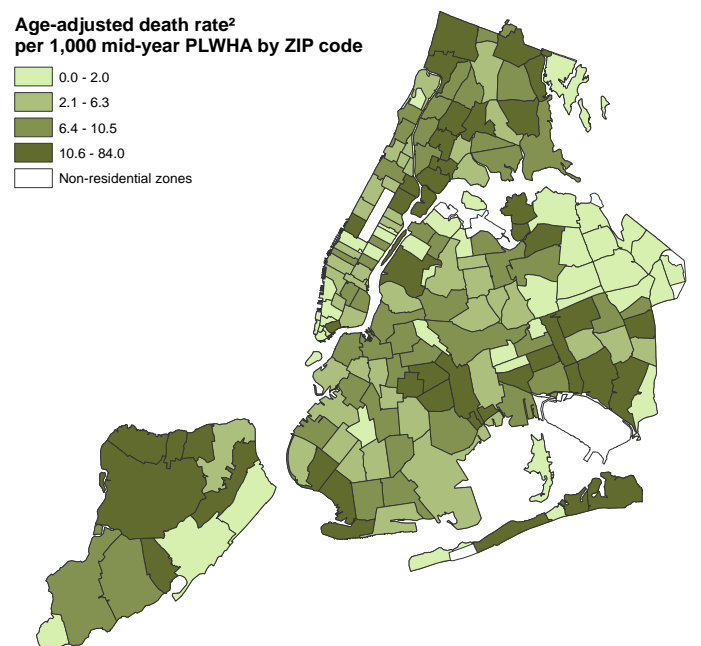
PLWHA=People living with HIV/AIDS
[1]Rates calculated using the intercensal 2015 NYC population.
[2]Age-adjusted to the NYC Census 2010 population. People newly diagnosed with HIV at death were excluded from the numerator.
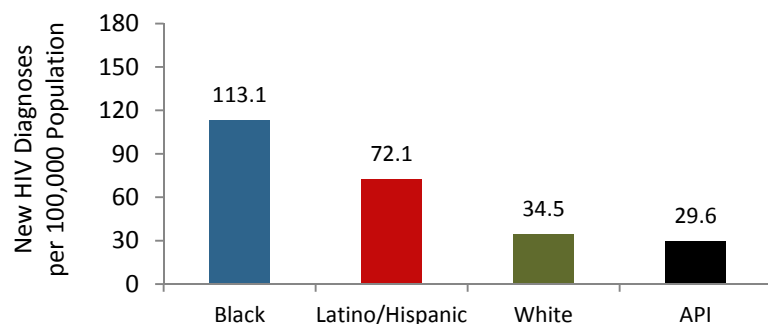
3

**TABLE 5.1**: HIV/AIDS diagnoses and deaths among males,[10] January 1, 2016, through December 31, 2016; and males diagnosed with HIV/AIDS, reported in NYC and presumed to be living as of December 31, 2016

| | HIV Diagnoses[1] | | | | | | AIDS Diagnoses[3] | | PLWHA as of 12/31/2016 | | Deaths[4] | |
| | Total | | Without AIDS | | Concurrent with AIDS Diagnosis[2] | | | | | | | | |
| | N | % | N | % | N | % | Row % | N | % | N | % | N | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | 1,771 | 100.0 | 1,464 | 100.0 | 307 | 100.0 | 17.3 | 929 | 100.0 | 89,412 | 100.0 | 978 | 100.0 |
| **Race/Ethnicity[5]** | | | | | | | | | | | | | |
| Black | 689 | 38.9 | 550 | 37.6 | 139 | 45.3 | 20.2 | 432 | 46.5 | 34,272 | 38.3 | 437 | 44.7 |
| Latino/Hispanic | 611 | 34.5 | 523 | 35.7 | 88 | 28.7 | 14.4 | 309 | 33.3 | 29,116 | 32.6 | 360 | 36.8 |
| White | 323 | 18.2 | 275 | 18.8 | 48 | 15.6 | 14.9 | 144 | 15.5 | 23,113 | 25.8 | 158 | 16.2 |
| Asian/Pacific Islander | 125 | 7.1 | 98 | 6.7 | 27 | 8.8 | 21.6 | 36 | 3.9 | 2,216 | 2.5 | 18 | 1.8 |
| Native American | 6 | 0.3 | 4 | 0.3 | 2 | 0.7 | 33.3 | 4 | 0.4 | 202 | 0.2 | 3 | 0.3 |
| Multiracial | 17 | 1.0 | 14 | 1.0 | 3 | 1.0 | 17.6 | 4 | 0.4 | 217 | 0.2 | 2 | 0.2 |
| Unknown | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 | 0 | 0.0 | 276 | 0.3 | 0 | 0.0 |
| **Age Group (years)[6]** | | | | | | | | | | | | | |
| 0-12 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 | 1 | 0.1 | 54 | 0.1 | 0 | 0.0 |
| 13-19 | 61 | 3.4 | 58 | 4.0 | 3 | 1.0 | 4.9 | 8 | 0.9 | 275 | 0.3 | 0 | 0.0 |
| 20-29 | 705 | 39.8 | 633 | 43.2 | 72 | 23.5 | 10.2 | 164 | 17.7 | 7,225 | 8.1 | 25 | 2.6 |
| 30-39 | 476 | 26.9 | 394 | 26.9 | 82 | 26.7 | 17.2 | 231 | 24.9 | 13,907 | 15.6 | 62 | 6.3 |
| 40-49 | 296 | 16.7 | 208 | 14.2 | 88 | 28.7 | 29.7 | 234 | 25.2 | 19,353 | 21.6 | 114 | 11.7 |
| 50-59 | 156 | 8.8 | 116 | 7.9 | 40 | 13.0 | 25.6 | 187 | 20.1 | 28,732 | 32.1 | 353 | 36.1 |
| 60+ | 77 | 4.3 | 55 | 3.8 | 22 | 7.2 | 28.6 | 104 | 11.2 | 19,866 | 22.2 | 424 | 43.4 |
| **Borough of Residence[7]** | | | | | | | | | | | | | |
| Bronx | 355 | 20.0 | 283 | 19.3 | 72 | 23.5 | 20.3 | 209 | 22.5 | 18,536 | 20.7 | 305 | 31.2 |
| Brooklyn | 423 | 23.9 | 346 | 23.6 | 77 | 25.1 | 18.2 | 221 | 23.8 | 19,669 | 22.0 | 245 | 25.1 |
| Manhattan | 412 | 23.3 | 348 | 23.8 | 64 | 20.8 | 15.5 | 210 | 22.6 | 27,248 | 30.5 | 197 | 20.1 |
| Queens | 345 | 19.5 | 277 | 18.9 | 68 | 22.1 | 19.7 | 159 | 17.1 | 13,406 | 15.0 | 127 | 13.0 |
| Staten Island | 43 | 2.4 | 34 | 2.3 | 9 | 2.9 | 20.9 | 22 | 2.4 | 1,562 | 1.7 | 35 | 3.6 |
| Outside NYC | 170 | 9.6 | 153 | 10.5 | 17 | 5.5 | 10.0 | 99 | 10.7 | 8,847 | 9.9 | 45 | 4.6 |
| Unknown | 23 | 1.3 | 23 | 1.6 | 0 | 0.0 | 0.0 | 9 | 1.0 | 144 | 0.2 | 24 | 2.5 |
| **Area-Based Poverty Level[8]** | | | | | | | | | | | | | |
| Low poverty (<10% below FPL) | 139 | 7.8 | 115 | 7.9 | 24 | 7.8 | 17.3 | 70 | 7.5 | 10,744 | 12.0 | 81 | 8.3 |
| Medium poverty (10 to <20% below FPL) | 487 | 27.5 | 403 | 27.5 | 84 | 27.4 | 17.2 | 239 | 25.7 | 25,658 | 28.7 | 247 | 25.3 |
| High poverty (20 to <30% below FPL) | 432 | 24.4 | 350 | 23.9 | 82 | 26.7 | 19.0 | 216 | 23.3 | 18,581 | 20.8 | 189 | 19.3 |
| Very high poverty (≥30% below FPL) | 514 | 29.0 | 415 | 28.3 | 99 | 32.2 | 19.3 | 289 | 31.1 | 24,318 | 27.2 | 392 | 40.1 |
| Area-based poverty level not available | 199 | 11.2 | 181 | 12.4 | 18 | 5.9 | 9.0 | 115 | 12.4 | 10,111 | 11.3 | 69 | 7.1 |
| **Transmission Risk[9]** | | | | | | | | | | | | | |
| Men who have sex with men (MSM) | 1,236 | 69.8 | 1,078 | 73.6 | 158 | 51.5 | 12.8 | 484 | 52.1 | 49,357 | 55.2 | 279 | 28.5 |
| Injection drug use history (IDU) | 18 | 1.0 | 10 | 0.7 | 8 | 2.6 | 44.4 | 65 | 7.0 | 10,227 | 11.4 | 288 | 29.4 |
| MSM-IDU | 28 | 1.6 | 23 | 1.6 | 5 | 1.6 | 17.9 | 21 | 2.3 | 2,777 | 3.1 | 47 | 4.8 |
| Heterosexual contact | 67 | 3.8 | 47 | 3.2 | 20 | 6.5 | 29.9 | 56 | 6.0 | 6,078 | 6.8 | 89 | 9.1 |
| Transgender people with sexual contact | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 | 0 | 0.0 | 10 | 0.0 | 0 | 0.0 |
| Perinatal | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 | 10 | 1.1 | 1,223 | 1.4 | 2 | 0.2 |
| Other | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 | 0 | 0.0 | 109 | 0.1 | 2 | 0.2 |
| Unknown | 422 | 23.8 | 306 | 20.9 | 116 | 37.8 | 27.5 | 293 | 31.5 | 19,631 | 22.0 | 271 | 27.7 |

PLWHA=People living with HIV/AIDS; FPL=Federal Poverty Level. All percents are column percents unless otherwise indicated.
[1-9]Footnotes appear at the bottom of Table 3.1.  [10]Includes transgender men.

**FIGURE 5.1**: HIV[1] diagnosis rates[2] among 13-59 year old males[3] by race/ethnicity[4], NYC 2016



In 2016, the HIV diagnosis rate among Black males was 1.6 times higher than the rate among Latino/Hispanic males and over 3 times higher than the rate among White males.

API=Asian/Pacific Islander
[1]Includes diagnoses of HIV without AIDS and HIV concurrent with AIDS.
[2]Rates calculated using the intercensal 2015 NYC population.
[3]Includes transgender men.
[4]Native American and multiracial groups not shown because of small numbers.

**TABLE 6.1**: HIV/AIDS diagnoses and deaths among females[10], January 1, 2016, through December 31, 2016; and females diagnosed with HIV/AIDS, reported in NYC, and presumed to be living as of December 31, 2016

| | HIV Diagnoses[1] | | | | | | AIDS Diagnoses[3] | | PLWHA as of 12/31/2016 | | Deaths[4] | |
| | Total | | Without AIDS | | Concurrent with AIDS Diagnosis[2] | | | | | | | | |
| | N | % | N | % | N | % | Row % | N | % | N | % | N | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | 508 | 100.0 | 404 | 100.0 | 104 | 100.0 | 20.5 | 336 | 100.0 | 34,475 | 100.0 | 425 | 100.0 |
| **Race/Ethnicity[5]** | | | | | | | | | | | | | |
| Black | 302 | 59.4 | 244 | 60.4 | 58 | 55.8 | 19.2 | 198 | 58.9 | 20,030 | 58.1 | 238 | 56.0 |
| Latina/Hispanic | 157 | 30.9 | 122 | 30.2 | 35 | 33.7 | 22.3 | 105 | 31.3 | 11,259 | 32.7 | 152 | 35.8 |
| White | 29 | 5.7 | 24 | 5.9 | 5 | 4.8 | 17.2 | 23 | 6.8 | 2,522 | 7.3 | 32 | 7.5 |
| Asian/Pacific Islander | 19 | 3.7 | 13 | 3.2 | 6 | 5.8 | 31.6 | 9 | 2.7 | 453 | 1.3 | 2 | 0.5 |
| Native American | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 | 1 | 0.3 | 75 | 0.2 | 1 | 0.2 |
| Multiracial | 1 | 0.2 | 1 | 0.2 | 0 | 0.0 | 0.0 | 0 | 0.0 | 55 | 0.2 | 0 | 0.0 |
| Unknown | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 | 0 | 0.0 | 81 | 0.2 | 0 | 0.0 |
| **Age Group (years)[6]** | | | | | | | | | | | | | |
| 0-12 | 1 | 0.2 | 1 | 0.2 | 0 | 0.0 | 0.0 | 1 | 0.3 | 43 | 0.1 | 0 | 0.0 |
| 13-19 | 18 | 3.5 | 18 | 4.5 | 0 | 0.0 | 0.0 | 7 | 2.1 | 244 | 0.7 | 1 | 0.2 |
| 20-29 | 98 | 19.3 | 90 | 22.3 | 8 | 7.7 | 8.2 | 49 | 14.6 | 2,258 | 6.5 | 6 | 1.4 |
| 30-39 | 127 | 25.0 | 102 | 25.2 | 25 | 24.0 | 19.7 | 73 | 21.7 | 4,401 | 12.8 | 25 | 5.9 |
| 40-49 | 112 | 22.0 | 78 | 19.3 | 34 | 32.7 | 30.4 | 87 | 25.9 | 8,109 | 23.5 | 71 | 16.7 |
| 50-59 | 107 | 21.1 | 88 | 21.8 | 19 | 18.3 | 17.8 | 78 | 23.2 | 11,964 | 34.7 | 177 | 41.6 |
| 60+ | 45 | 8.9 | 27 | 6.7 | 18 | 17.3 | 40.0 | 41 | 12.2 | 7,456 | 21.6 | 145 | 34.1 |
| **Borough of Residence[7]** | | | | | | | | | | | | | |
| Bronx | 165 | 32.5 | 138 | 34.2 | 27 | 26.0 | 16.4 | 117 | 34.8 | 11,267 | 32.7 | 154 | 36.2 |
| Brooklyn | 158 | 31.1 | 125 | 30.9 | 33 | 31.7 | 20.9 | 101 | 30.1 | 10,069 | 29.2 | 124 | 29.2 |
| Manhattan | 56 | 11.0 | 44 | 10.9 | 12 | 11.5 | 21.4 | 35 | 10.4 | 5,228 | 15.2 | 78 | 18.4 |
| Queens | 70 | 13.8 | 50 | 12.4 | 20 | 19.2 | 28.6 | 44 | 13.1 | 4,901 | 14.2 | 40 | 9.4 |
| Staten Island | 18 | 3.5 | 12 | 3.0 | 6 | 5.8 | 33.3 | 10 | 3.0 | 836 | 2.4 | 14 | 3.3 |
| Outside NYC | 37 | 7.3 | 31 | 7.7 | 6 | 5.8 | 16.2 | 26 | 7.7 | 2,132 | 6.2 | 11 | 2.6 |
| Unknown | 4 | 0.8 | 4 | 1.0 | 0 | 0.0 | 0.0 | 3 | 0.9 | 42 | 0.1 | 4 | 0.9 |
| **Area-Based Poverty Level[8]** | | | | | | | | | | | | | |
| Low poverty (<10% below FPL) | 33 | 6.5 | 22 | 5.4 | 11 | 10.6 | 33.3 | 17 | 5.1 | 2,241 | 6.5 | 31 | 7.3 |
| Medium poverty (10 to <20% below FPL) | 137 | 27.0 | 108 | 26.7 | 29 | 27.9 | 21.2 | 87 | 25.9 | 8,706 | 25.3 | 85 | 20.0 |
| High poverty (20 to <30% below FPL) | 103 | 20.3 | 77 | 19.1 | 26 | 25.0 | 25.2 | 67 | 19.9 | 7,319 | 21.2 | 88 | 20.7 |
| Very high poverty (≥30% below FPL) | 193 | 38.0 | 161 | 39.9 | 32 | 30.8 | 16.6 | 136 | 40.5 | 13,736 | 39.8 | 206 | 48.5 |
| Area-based poverty level not available | 42 | 8.3 | 36 | 8.9 | 6 | 5.8 | 14.3 | 29 | 8.6 | 2,473 | 7.2 | 15 | 3.5 |
| **Transmission Risk[9]** | | | | | | | | | | | | | |
| Injection drug use history (IDU) | 14 | 2.8 | 13 | 3.2 | 1 | 1.0 | 7.1 | 26 | 7.7 | 5,367 | 15.6 | 139 | 32.7 |
| Heterosexual contact | 319 | 62.8 | 255 | 63.1 | 64 | 61.5 | 20 | 196 | 58.3 | 18,305 | 53.1 | 189 | 44.5 |
| Transgender people with sexual contact | 44 | 8.7 | 42 | 10.4 | 2 | 1.9 | 4.5 | 12 | 3.6 | 1,041 | 3.0 | 6 | 1.4 |
| Perinatal | 1 | 0.2 | 1 | 0.2 | 0 | 0.0 | 0.0 | 18 | 5.4 | 1,288 | 3.7 | 8 | 1.9 |
| Other | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 | 0 | 0.0 | 91 | 0.3 | 1 | 0.2 |
| Unknown | 130 | 25.6 | 93 | 23.0 | 37 | 35.6 | 28.5 | 84 | 25.0 | 8,383 | 24.3 | 82 | 19.3 |

PLWHA=People living with HIV/AIDS; FPL=Federal Poverty Level. All percents are column percents unless otherwise indicated.
[1-9]Footnotes appear at the bottom of Table 3.1.  [10]Includes transgender women.

**FIGURE 6.1**: HIV[1] diagnosis rates[2] among 13-59 year old females[3] by race/ethnicity[4], NYC 2016
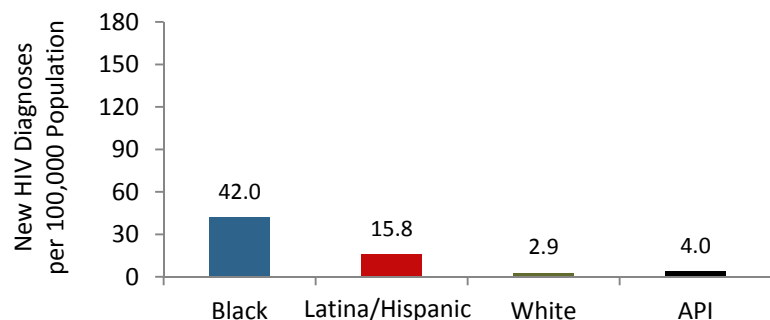


In 2016, the HIV diagnosis rate among Black females was 2.7 times higher than the rate among Latina/Hispanic females and over 14 times higher than the rate among White females.

API=Asian/Pacific Islander
[1]Includes diagnoses of HIV without AIDS and HIV concurrent with AIDS.
[2]Rates calculated using the intercensal 2015 NYC population.
[3]Includes transgender women.
[4]Native American and multiracial groups not shown because of small numbers.

# NEW HIV DIAGNOSES BY GENDER, AGE, RACE/ETHNICITY, AND RISK

**FIGURE 7.1** New HIV diagnoses among males with known transmission risk, NYC 2016 (N=1,349)
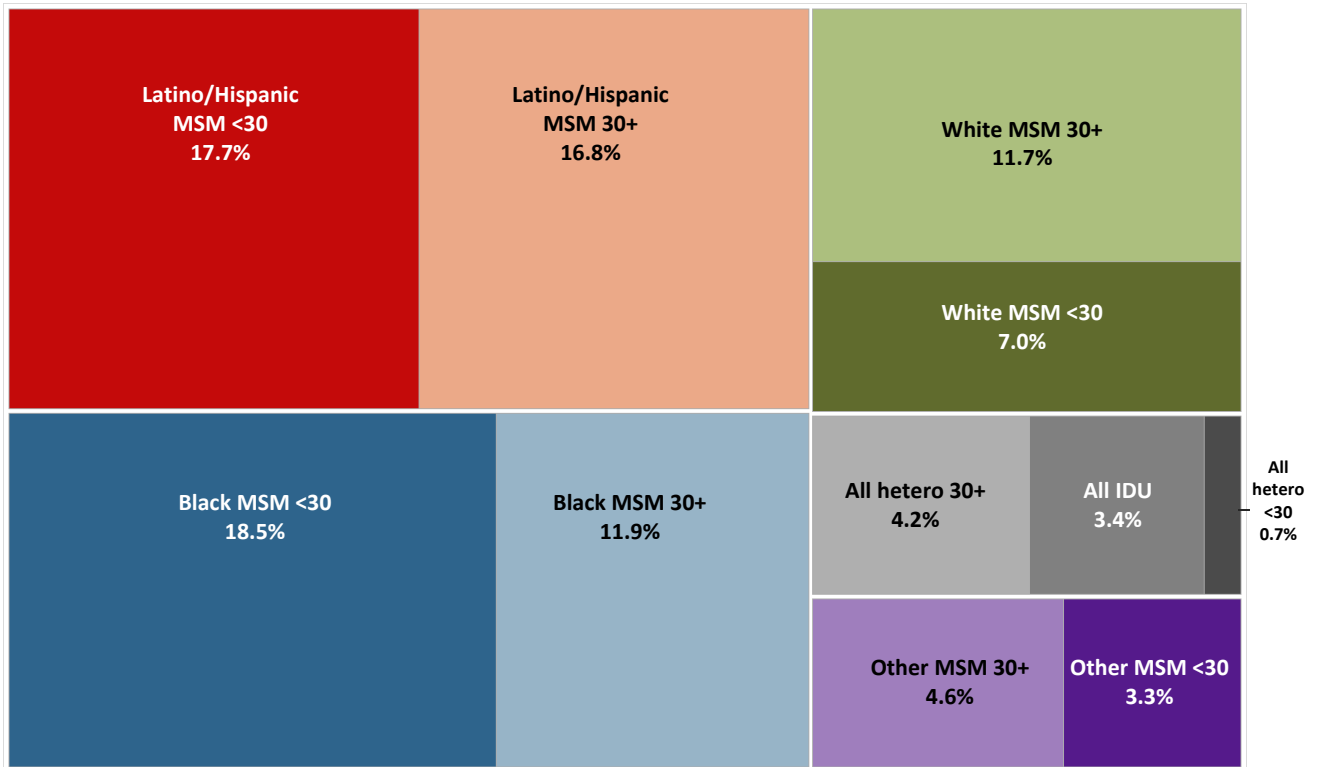


In 2016, MSM comprised 92% of new HIV diagnoses among males with known HIV transmission risk. Black or Latino/Hispanic MSM under age 30 comprised 36% of new diagnoses among males with known transmission risk (Figure 7.1). Black or Latina/Hispanic females over age 30 with heterosexual risk comprised 61% of new HIV diagnoses among females with known transmission risk (Figure 7.2).

**FIGURE 7.2** New HIV diagnoses among females with known transmission risk, NYC 2016 (N=378)
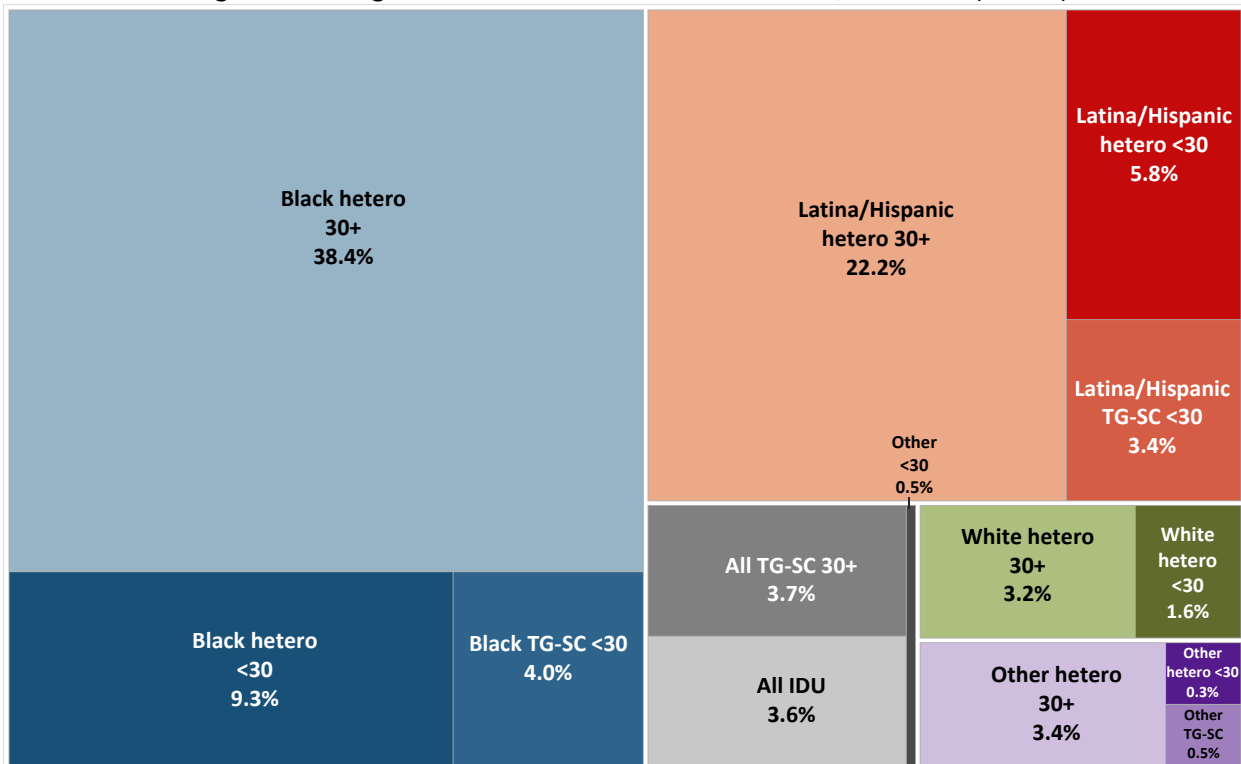


MSM=men who have sex with men; IDU=history of injection drug use (includes MSM-IDU); TG-SC=transgender people with sexual contact
Figure 7.1 includes transgender men and Figure 7.2 includes transgender women.

# HIV AMONG TRANSGENDER PEOPLE

**TABLE 8.1**: HIV/AIDS diagnoses among transgender people and transgender PLWHA, NYC 2016

| | HIV Diagnoses[1] | | AIDS Diagnoses[2] | | PLWHA as of 12/31/2016 | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| **Total[3]** | 46 | 100.0 | 13 | 100.0 | 1,237 | 100.0 |
| Transgender women | 46 | 100.0 | 13 | 100.0 | 1,222 | 98.8 |
| Transgender men | 0 | 0 | 0 | 0.0 | 15 | 1.2 |
| **Race/Ethnicity** | | | | | | |
| Black | 20 | 43.5 | 6 | 46.2 | 585 | 47.3 |
| Latino/Hispanic | 22 | 47.8 | 5 | 38.5 | 529 | 42.8 |
| White | 2 | 4.3 | 2 | 15.4 | 81 | 6.5 |
| Other/Unknown[4] | 2 | 4.3 | 0 | 0.0 | 42 | 3.4 |
| **Age Group (years)[5]** | | | | | | |
| 13-19 | 3 | 6.5 | 0 | 0.0 | 6 | 0.5 |
| 20-29 | 28 | 60.9 | 7 | 53.8 | 291 | 23.5 |
| 30-39 | 9 | 19.6 | 3 | 23.1 | 405 | 32.7 |
| 40+ | 6 | 13 | 3 | 23.1 | 535 | 43.2 |
| **Transmission Risk** | | | | | | |
| Sexual contact | 44 | 95.7 | 12 | 92.3 | 1051 | 85 |
| Injection drug use history | 1 | 2.2 | 0 | 0 | 137 | 11.1 |
| Other/Unknown | 1 | 2.4 | 1 | 7.7 | 49 | 3.9 |

PLWHA=People living with HIV/AIDS. [1]Excludes people known to have been diagnosed outside of NYC. [2]AIDS was diagnosed in 2016 and includes concurrent HIV/AIDS diagnoses. [3]Includes people identified as transgender by self-report, diagnosing provider or medical chart review. Transgender women were assigned male sex at birth and currently identify as female. Transgender men were assigned female sex at birth and currently identify as male. For more information on transgender HIV surveillance, see Technical Notes on page 15. [4]Includes Asian/Pacific Islander, Native American, and multiracial people. [5]For HIV and AIDS diagnoses, age at diagnosis. For PLWHA, age as of December 31, 2016.

**FIGURE 8.1**: HIV diagnoses among transgender people by race/ethnicity[6] and age at diagnosis, NYC 2012-2016



[6]Asian/Pacific Islander, Native American, and multiracial groups not shown because of small numbers.
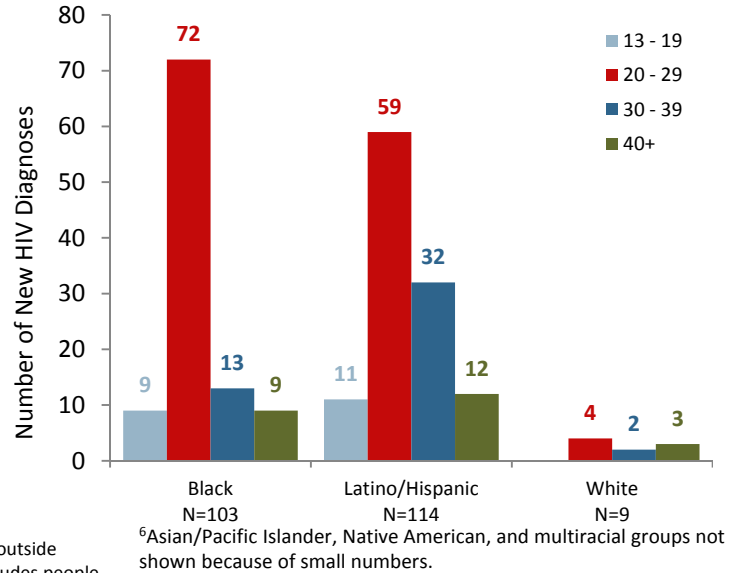
In 2016, 46 transgender people were diagnosed with HIV and 13 were diagnosed with AIDS in NYC. From 2012 to 2016, 236 transgender people were diagnosed with HIV in NYC. Over half (56%) were Black or Latino/Hispanic people ages 20 to 29 years (Figure 8.1). Compared to all NYC HIV diagnoses from 2012 to 2016 (N=13,525), transgender people with HIV were more likely to be Latino/Hispanic (48% vs. 34%) and 20 to 29 years old at diagnosis (60% vs. 36%).

# HIV AMONG CHILDREN

**FIGURE 9.1**: All HIV-exposed births in NYC and current HIV status[1] of children born to HIV-infected women at select NYC medical facilities[2], by year of birth, NYC 1988-2016[*]
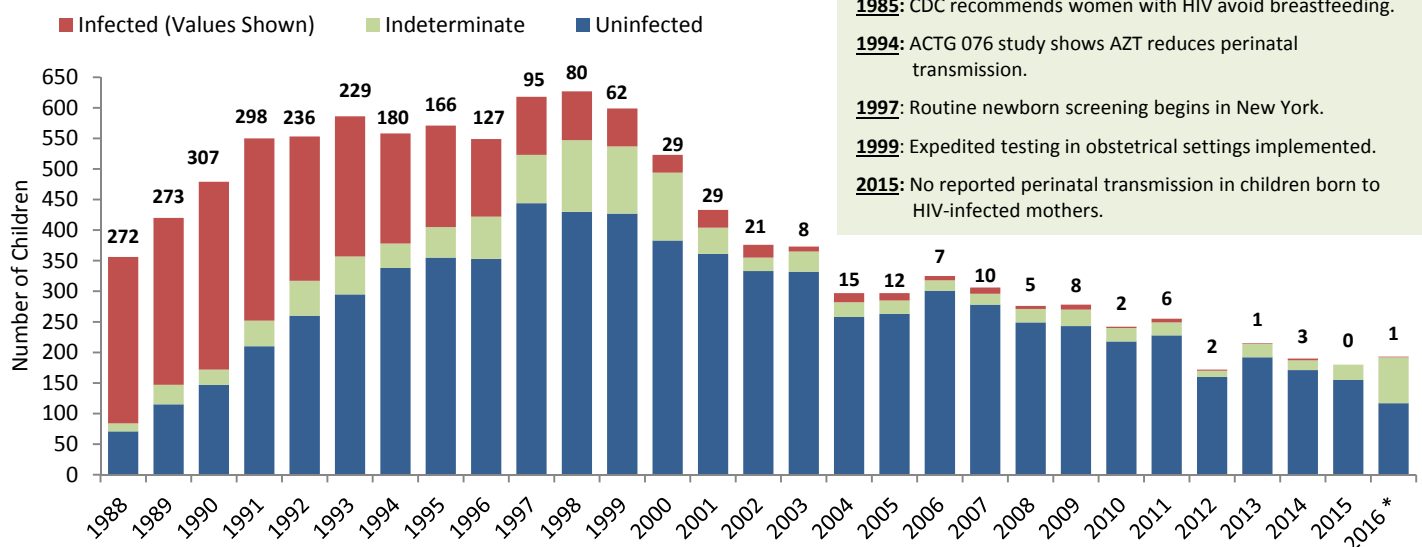


**Milestones in Reduction of Perinatal HIV Transmission**

**1985**: CDC recommends women with HIV avoid breastfeeding.

**1994**: ACTG 076 study shows AZT reduces perinatal transmission.

**1997**: Routine newborn screening begins in New York.

**1999**: Expedited testing in obstetrical settings implemented.

**2015**: No reported perinatal transmission in children born to HIV-infected mothers.

[1]Children born to HIV-infected mothers are followed for two years after birth to determine HIV status. HIV status is indeterminate if the child is lost to follow-up. [2]Includes data collected at high-volume NYC medical facilities that care for the majority of HIV-exposed and infected children. Children born outside of NYC are not included in this figure. *Data reported as of April 2017.

From 2012 to 2016, 0.7% of infants born to HIV-infected mothers in NYC were infected with HIV. The small number of HIV-infected infants recently born in NYC reflects the success of interventions for perinatal HIV prevention.

# ACUTE HIV INFECTION

**FIGURE 10.1**: Acute HIV infection by gender and transmission risk category[1], NYC 2016
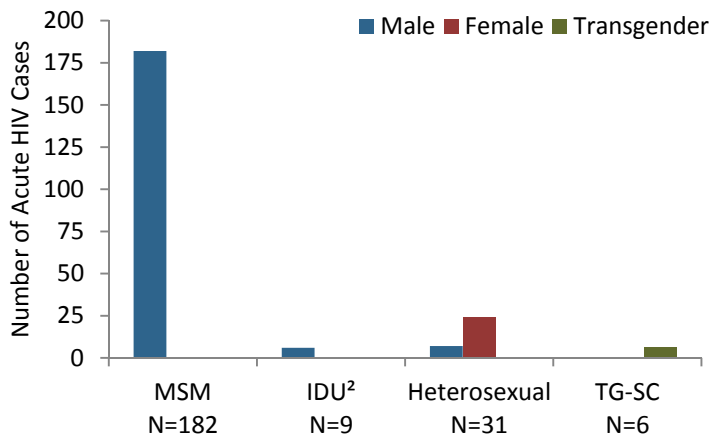


**FIGURE 10.2**: Acute HIV infection among MSM by race/ethnicity[3] and age group, NYC 2016
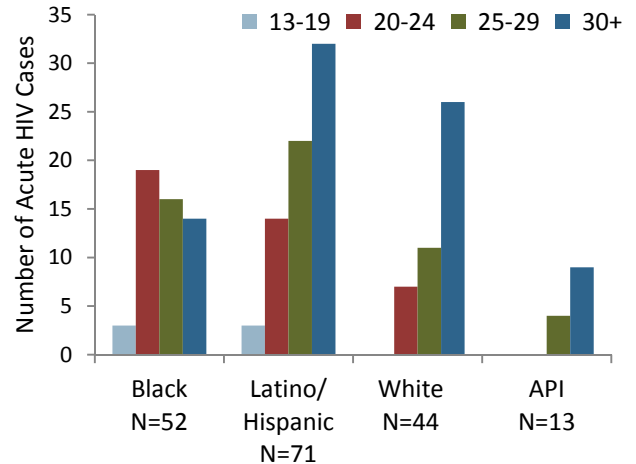


MSM=Men who have sex with men; IDU=Injection drug use history; TG-SC=Transgender people with sexual contact; API=Asian/Pacific Islander.
[1]There were N=40 2016 AHI cases that had unknown transmission risk (Figure 10.1).
[2]Includes MSM also reporting IDU (MSM-IDU).
[3]Multiracial category not shown because of small numbers (N=2). There were no Native American AHI cases in 2016.

Diagnosis of HIV in the acute phase (AHI) enables early treatment, which reduces morbidity and onward transmission to exposed partners. In 2016, 12% of new diagnoses were AHI, up from 8% of new diagnoses in 2012. MSM are overrepresented among AHI cases (Figure 10.1), in part due to higher testing frequency compared with other groups. Among MSM with AHI, a greater proportion of Black MSM were under 30 years of age compared with Latino/Hispanic, White, and API MSM with AHI (Figure 10.2).

# ESTIMATED HIV INCIDENCE

**FIGURE 11.1**: All new HIV diagnoses and estimated incident HIV infections[1], NYC 2012-2016



**FIGURE 11.2**: Estimated incident HIV infections[1] among men who have sex with men (MSM)[2] overall and by age group, NYC 2012-2016
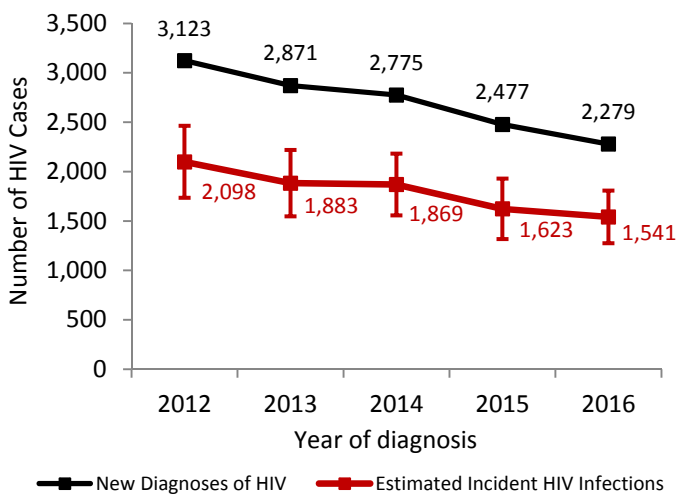


[1]Estimates generated October 2017, by the CDC Stratified Extrapolation Approach (SEA). SEA combines results from the Serologic Testing Algorithm for Recent Seroconversion (STARHS) with data on demographic characteristics, risk factor, initial diagnosis date, and testing and treatment history that are contained in the HIV surveillance registry. Unknown risk factor was imputed using the Multiple Imputation procedure in SAS v9.3. Surveillance data used in these estimates were reported through October 15, 2017.
[2]Includes MSM also reporting injection drug use history (MSM-IDU).

New HIV diagnoses citywide are declining. Estimated incident HIV infections overall (Figure 11.1) and in MSM (Figure 11.2) declined significantly between 2012 and 2016. There were periods of alternating increase and decrease among MSM by age group; the declines in estimated incidence by age group among MSM between 2012 and 2016 were not significant (Figure 11.2).

# PREP AND PEP USE AMONG PEOPLE NEWLY DIAGNOSED WITH HIV

**FIGURE 12.1**: PrEP and PEP use at any time prior to HIV diagnosis[1] among people newly diagnosed with HIV by gender, age group, race/ethnicity[2], and transmission risk category[3], Field Services Unit (FSU), NYC 2016
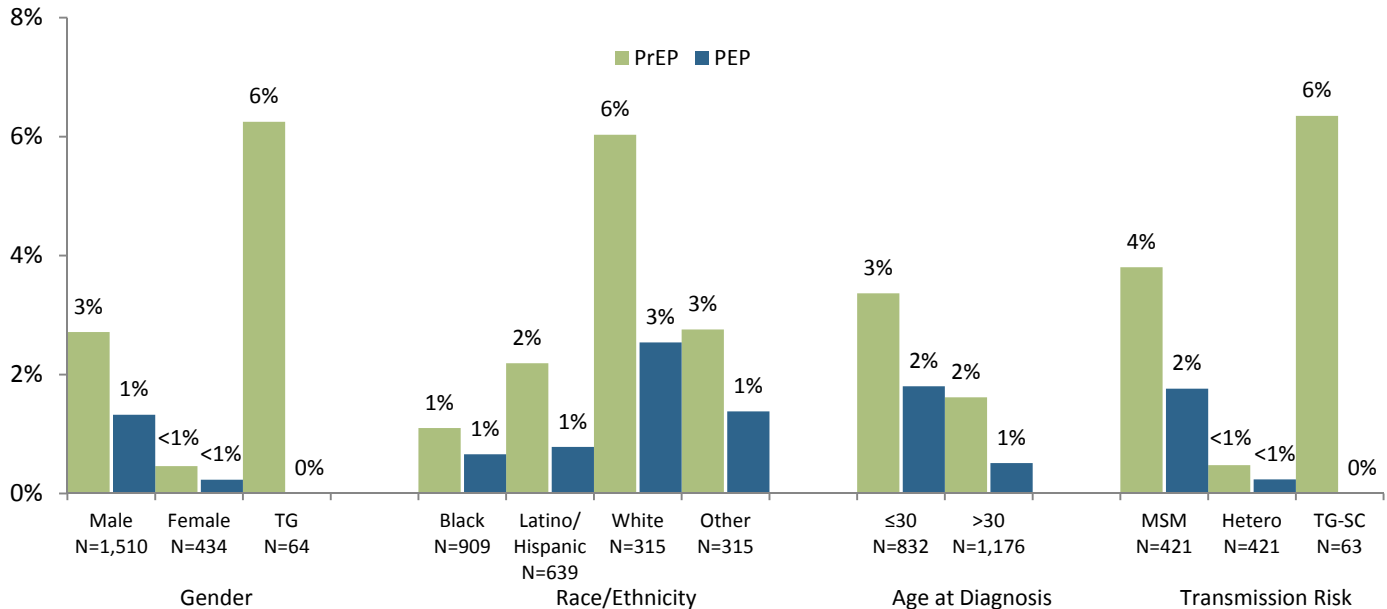


PrEP=Pre-exposure prophylaxis; PEP=Post-exposure prophylaxis. TG=Transgender; MSM=Men who have sex with men; TG-SC=Transgender people with sexual contact.
[1]Previous PrEP/PEP use before HIV diagnosis were ascertained by self-report, diagnosing provider or medical chart review.
[2]Other race/ethnicity includes Asian/Pacific Islander, Native American and multiracial categories.
[3]The MSM category includes MSM also reporting injection drug use history (IDU); IDU and unknown not shown because of small numbers.

In 2016, the New York City Health Department's Field Services Unit (FSU) interviewed and/or conducted a medical chart review for 2,008 people newly diagnosed with HIV. Among them, 2% (47) had a history of ever using PrEP, 1% (21) had a history of ever using PEP, and 0.1% (3) had a history of ever using both PrEP and PEP at any time before being diagnosed with HIV (Figure 12.1). PrEP/PEP use was more common among transgender people, men, Whites, younger people, MSM, and transgender people with sexual contact.

# TRANSMITTED DRUG RESISTANCE

**TABLE 13.1**: New HIV diagnoses with a genotype within three months of diagnosis, NYC 2012-2016

| | Total Diagnoses | Tested within three months | | Not tested within three months | |
|---|---|---|---|---|---|
| | N | N | Row % | N | Row % |
| **Year of diagnosis** | | | | | |
| 2012 | 3,123 | 1,497 | 47.9 | 1,626 | 52.1 |
| 2013 | 2,871 | 1,625 | 56.6 | 1,246 | 43.4 |
| 2014 | 2,775 | 1,556 | 56.1 | 1,219 | 43.9 |
| 2015 | 2,477 | 1,410 | 56.9 | 1,067 | 43.1 |
| 2016 | 2,279 | 1,335 | 58.6 | 944 | 41.4 |

[1]Evidence of resistance to any antiretroviral (ARV) drug in a newly diagnosed, ARV-naïve individual.

**FIGURE 13.1**: Proportion of new HIV diagnoses with transmitted drug resistance (TDR)[1], NYC 2012-2016
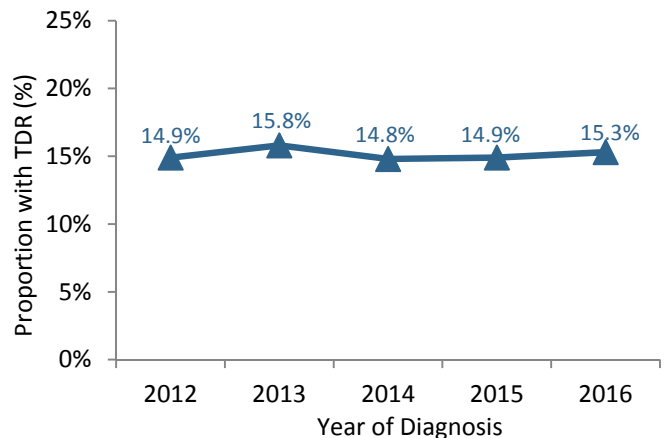


Despite federal guidelines recommending baseline genotyping, only 58.6% of newly diagnosed people in 2016 received a genotype within three months of HIV diagnosis (Table 13.1). The proportion of people with newly diagnosed HIV who had transmitted drug resistance in 2016 was 15.3% (Figure 13.1).

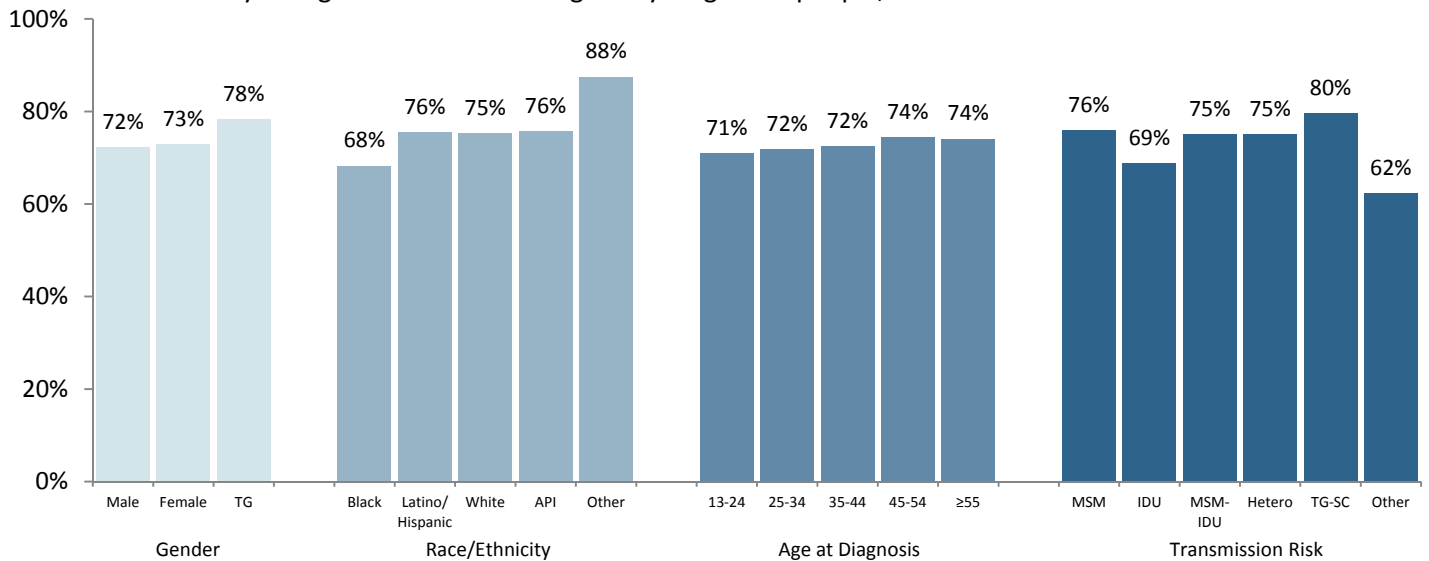**FIGURE 14.1**: Timely linkage to HIV care[1] among newly diagnosed people, NYC 2012-2016



Values by year: 2012: 67%, 2013: 68%, 2014: 70%, 2015: 71%, 2016: 72%
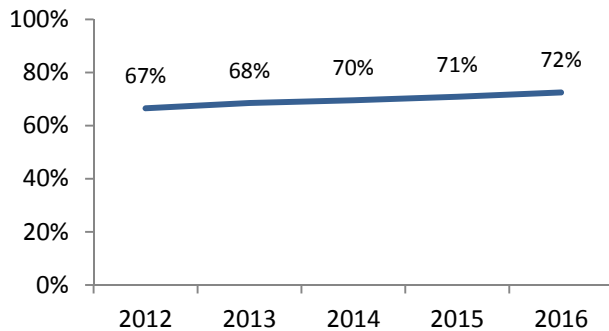
**FIGURE 14.2**: Viral suppression[2] among people in HIV medical care[3], NYC 2012-2016



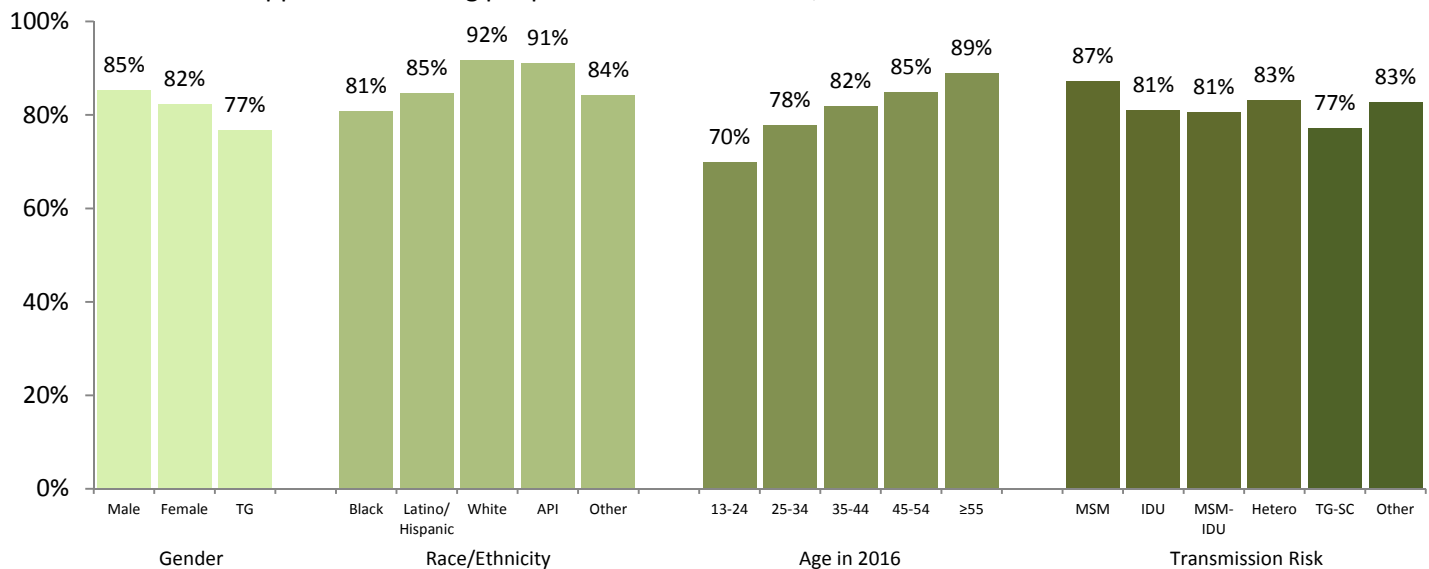Values by year: 2012: 76%, 2013: 79%, 2014: 81%, 2015: 83%, 2016: 84%
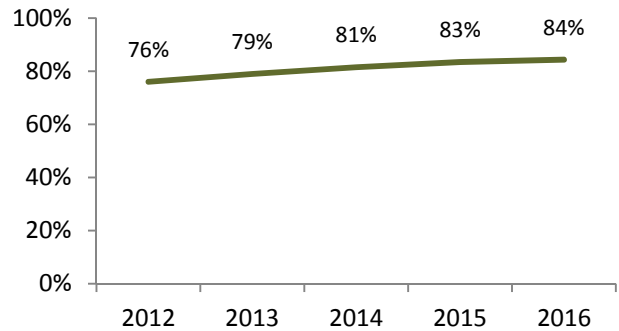
Timely linkage to HIV care among newly diagnosed people (Figures 14.1 and 14.3) and viral suppression among people in HIV medical care (Figures 14.2 and 14.4) steadily increased in New York City from 2012 to 2016.

**FIGURE 14.3**: Timely linkage to HIV care[1] among newly diagnosed people, NYC 2016



Gender — Male: 72%, Female: 73%, TG: 78%
Race/Ethnicity — Black: 68%, Latino/Hispanic: 76%, White: 75%, API: 76%, Other: 88%
Age at Diagnosis — 13-24: 71%, 25-34: 72%, 35-44: 72%, 45-54: 74%, ≥55: 74%
Transmission Risk — MSM: 76%, IDU: 69%, MSM-IDU: 75%, Hetero: 75%, TG-SC: 80%, Other: 62%

**FIGURE 14.4**: Viral suppression[2] among people in HIV medical care[3], NYC 2016



Gender — Male: 85%, Female: 82%, TG: 77%
Race/Ethnicity — Black: 81%, Latino/Hispanic: 85%, White: 92%, API: 91%, Other: 84%
Age in 2016 — 13-24: 70%, 25-34: 78%, 35-44: 82%, 45-54: 85%, ≥55: 89%
Transmission Risk — MSM: 87%, IDU: 81%, MSM-IDU: 81%, Hetero: 83%, TG-SC: 77%, Other: 83%

TG=Transgender; API=Asian/Pacific Islander; MSM=Men who have sex with men; IDU=Injection drug use history; TG-SC=Transgender people with sexual contact.
[1]HIV viral load (VL) or CD4 test drawn within 3 months (91 days) of HIV diagnosis, following a 7-day lag.
[2]Last HIV VL value in 2016 was ≤200 copies/mL.
[3]At least one HIV VL/CD4 in 2016.

# NYC HIV CARE CONTINUUM

**FIGURE 15.1**: Proportion of PLWH in NYC engaged in selected stages of the HIV care continuum, NYC 2016
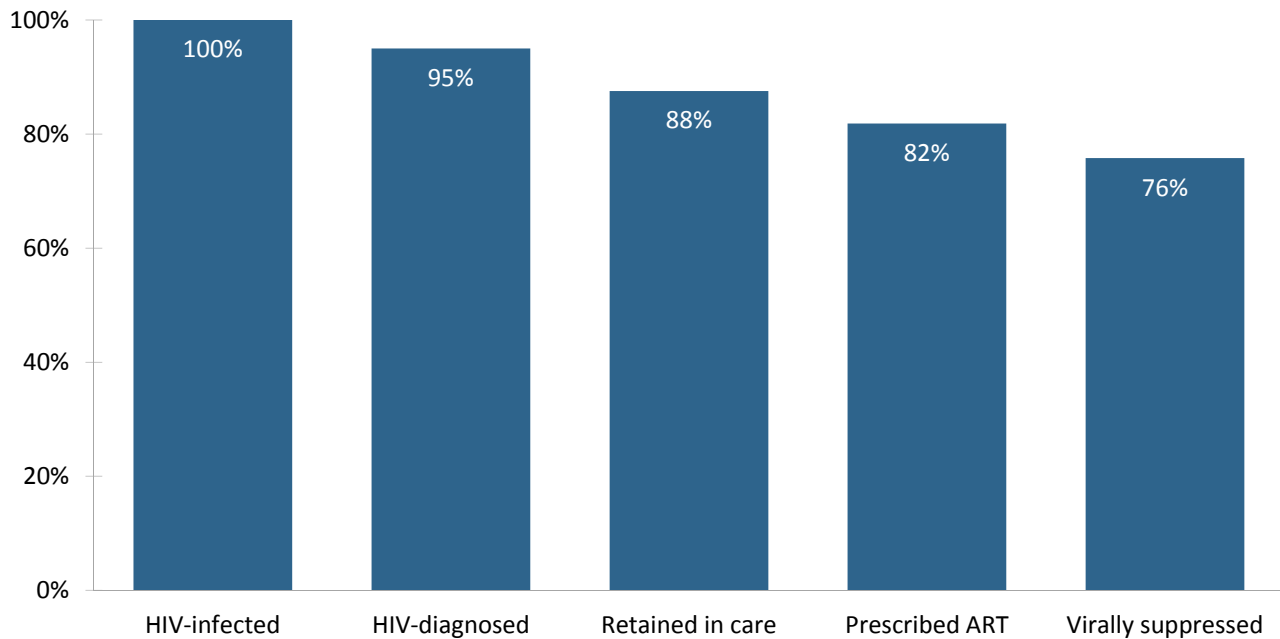


PLWH=People living with HIV
For definitions of the stages of the continuum of care, see Technical Notes on page 16.

Of approximately 87,700 HIV-infected people living in NYC in 2016, 76% had a suppressed viral load (Figure 15.1).

# HIV INFECTION STAGING CLASSIFICATION OF PEOPLE LIVING WITH HIV

**FIGURE 16.1**: Stage of HIV infection among PLWH[1], NYC 2012-2016
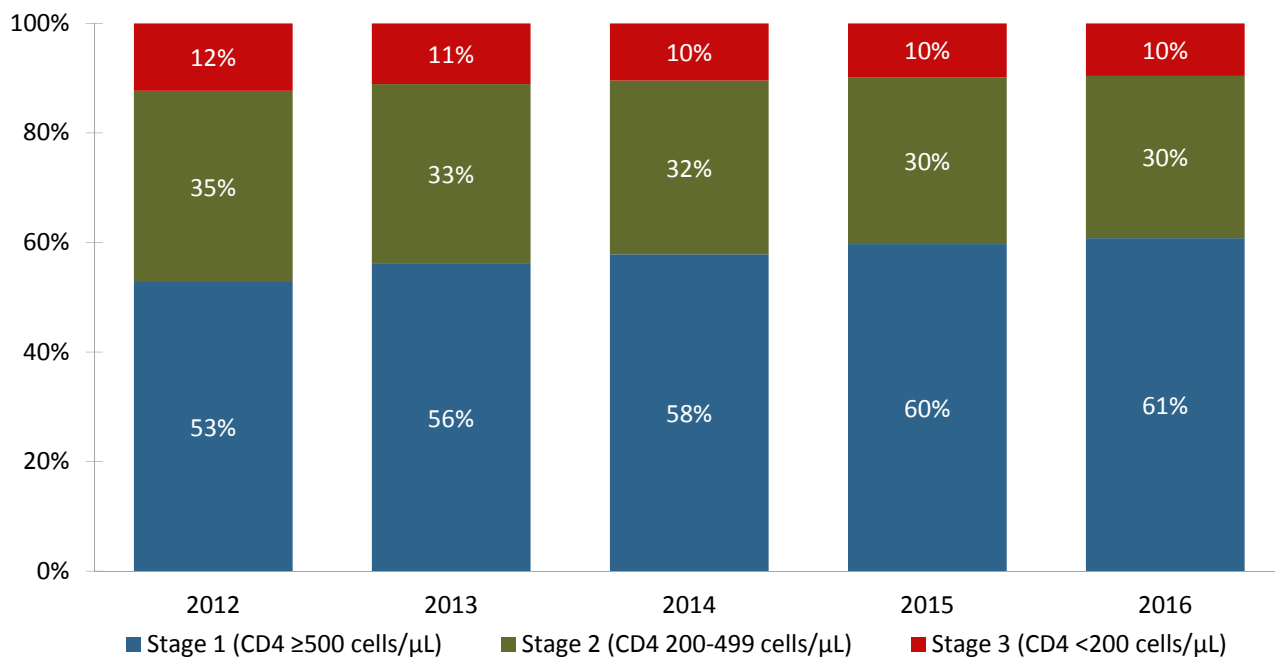


PLWH=People living with HIV. [1]Based on most recent CD4 reported as of December 31 of the year of interest (method: Qia, Q. et al. Using the Revised Centers for Disease Control and Prevention Staging System to Classify Persons Living With Human Immunodeficiency Virus in New York City, 2011–2015. Sex Transm. Dis. 2017;44(11):653-355).

The proportion of people living with Stage 1 HIV infection (CD4 ≥500 cells/µL) steadily increased in NYC from 2012 to 2016 (Figure 16.1).

# MORTALITY AMONG PEOPLE WITH HIV

**FIGURE 17.1**: Age-adjusted death rates among people with HIV/AIDS overall and by HIV-related and non-HIV-related causes of death, NYC 2001-2015
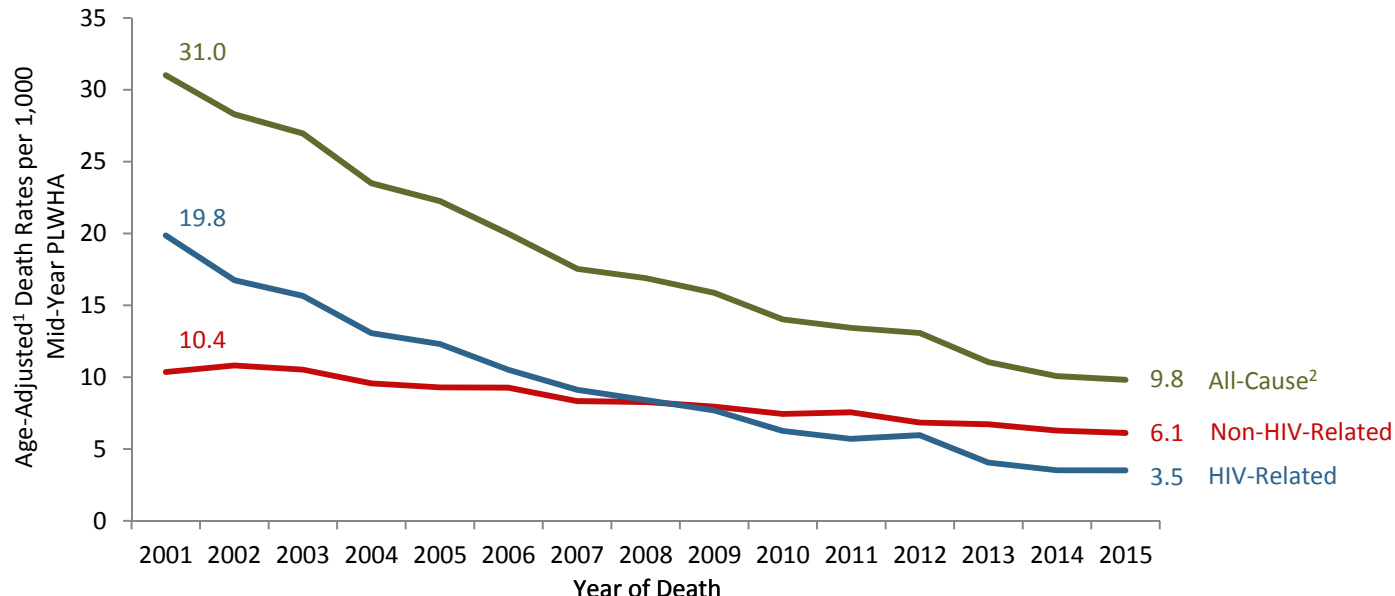


PLWHA=People living with HIV/AIDS
[1]Age-adjusted to the NYC Census 2010 population. People newly diagnosed with HIV at death were excluded from the numerator.
[2]Includes people with unknown cause of death (1.9% of all deaths).

The overall death rate among people diagnosed with HIV/AIDS decreased by 68% from 2001 to 2015. Although the rates of both HIV-related and non-HIV-related deaths decreased during this time, the overall decrease was driven by a steeper decline in the rate of HIV-related deaths (Figure 17.1).

**TABLE 17.1**: Deaths among people with HIV/AIDS by underlying cause of death, NYC 2001-2015

| | Proportion of Total Yearly Deaths (%) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **2001** | **2002** | **2003** | **2004** | **2005** | **2006** | **2007** | **2008** | **2009** | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** |
| **Cause of death**[1] | (N=2,921) | (N=2,919) | (N=2,907) | (N=2,724) | (N=2,699) | (N=2,466) | (N=2,339) | (N=2,357) | (N=2,238) | (N=2,080) | (N=2,047) | (N=1,900) | (N=1,838) | (N=1,762) | (N=1,748) |
| **HIV** | 66 | 64 | 63 | 60 | 59 | 56 | 54 | 53 | 48 | 47 | 43 | 39 | 36 | 35 | 34 |
| **Non-HIV** | 31 | 33 | 34 | 38 | 39 | 42 | 46 | 46 | 51 | 51 | 55 | 59 | 61 | 64 | 63 |
| CVD | 6 | 7 | 8 | 9 | 9 | 10 | 11 | 12 | 13 | 13 | 13 | 15 | 14 | 16 | 17 |
| Cancer | 7 | 9 | 8 | 9 | 10 | 11 | 12 | 13 | 15 | 13 | 15 | 16 | 17 | 16 | 17 |
| Infectious Diseases | 3 | 3 | 3 | 4 | 4 | 4 | 5 | 3 | 4 | 5 | 4 | 5 | 6 | 6 | 5 |
| External Causes | 8 | 8 | 9 | 9 | 9 | 10 | 10 | 9 | 9 | 11 | 10 | 11 | 10 | 12 | 12 |
| Other Causes | 7 | 6 | 6 | 7 | 7 | 7 | 8 | 9 | 10 | 9 | 13 | 12 | 14 | 14 | 12 |

**Trend within cause over time**

Lowest Proportion                                      Highest Proportion

CVD=Cardiovascular Disease
[1]For definitions of the causes of death, see Technical Notes on page 15. Deaths due to unknown causes are not shown.

In 2001, the leading underlying cause of death among people with HIV/AIDS (PWHA) was HIV, representing 66% of all PWHA deaths. At the end of 2015, although HIV was still the single leading underlying cause of death among PWHA, nearly two-thirds (63%) of deaths among PWHA were due to non-HIV-related causes. Since 2001, there have been substantial increases in the proportions of PWHA deaths due to cardiovascular disease (17% of all PWHA deaths in 2015) and cancer (17% of all PWHA deaths in 2015) (Table 17.1).

# SURVIVAL AMONG PEOPLE WITH HIV

**FIGURE 18.1**: Survival among people newly diagnosed with HIV[1] and residing in low-poverty areas[2], by race/ethnicity[3], NYC 2011-2015
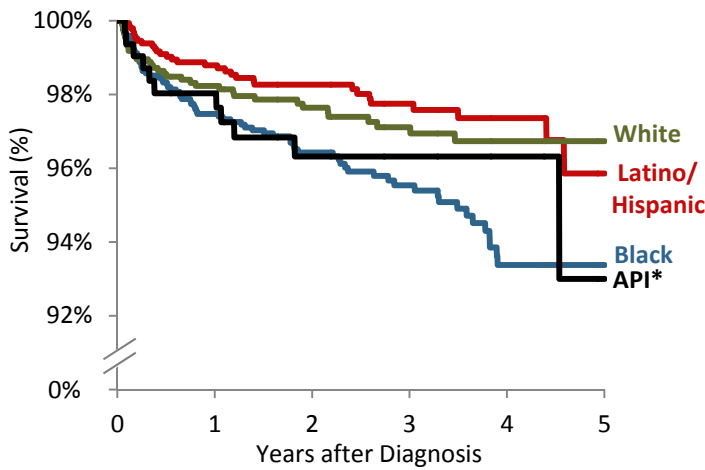


**FIGURE 18.2**: Survival among people newly diagnosed with HIV[1] and residing in high-poverty areas[2], by race/ethnicity[3], NYC 2011-2015
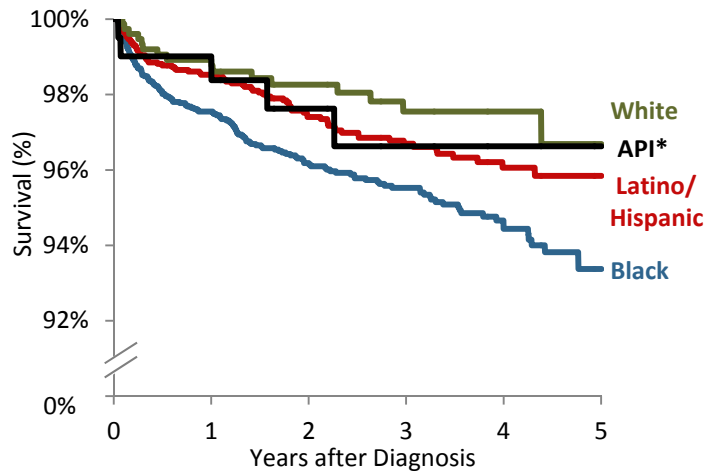


API=Asian/Pacific Islander; *Survival curves among API should be interpreted with caution due to small numbers.
[1]People newly diagnosed with HIV at death were excluded from the analysis. Curves include people diagnosed with HIV from 2011 through 2015 and followed through December 31, 2015; people not known to have died were censored on December 31, 2015. [2]Poverty level based on NYC ZIP code of residence at diagnosis (if available). Low-poverty area defined as <20% of population living below Federal Poverty Level; high-poverty area defined as ≥20% of population living below Federal Poverty Level. [3]Native American and multiracial groups not shown because of small numbers.

Disparities in survival by race/ethnicity persist in NYC, with Blacks and Asian/Pacific Islanders dying sooner after HIV diagnosis than Whites. Racial/ethnic disparities are evident in both low-poverty and high-poverty areas, but are more pronounced among those living in high-poverty areas at the time of diagnosis (p<0.05).

# HIV DIAGNOSIS RATES AND STI DIAGNOSIS RATES BY NEIGHBORHOOD

**FIGURE 19.1**: Anorectal gonorrhea (GC) and chlamydia (Ct) diagnosis rates among HIV-negative males in UHF neighborhoods with high HIV diagnosis rates among all males, NYC, 2015[1]
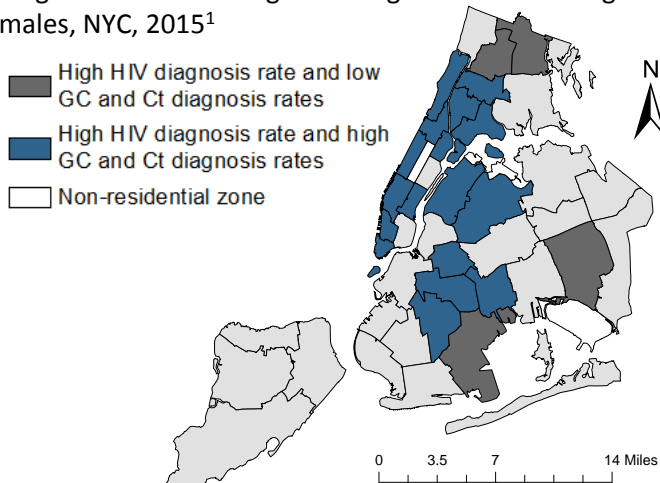


**FIGURE 19.2**: Gonorrhea (GC) diagnosis rates among HIV-negative females in UHF neighborhoods with high HIV diagnosis rates among all females, NYC, 2015[1]
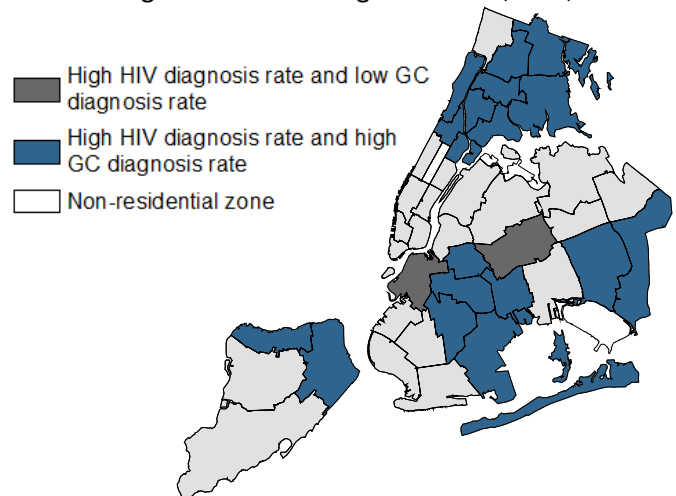


UHF=United Hospital Fund; [1]Rates are based on intercensal 2015 population estimates. HIV diagnosis rates are among the total population and STI diagnosis rates are among the total HIV-negative population. UHF neighborhoods with a high HIV diagnosis rate had a rate above the overall 2015 median HIV diagnosis rate. Classification of UHF neighborhoods by STI diagnosis rate was based on the overall 2015 median STI diagnosis rate. Light gray coloring indicates HIV diagnosis rate below the 2015 median.

Among males, neighborhoods with high HIV diagnosis rates and low rates of anorectal GC and Ct diagnoses among HIV-negative males suggest suboptimal anorectal GC and Ct screening rates. Regardless of neighborhood, HIV-negative males with anorectal GC or Ct should be offered HIV pre-exposure prophylaxis (PrEP). Among females, most neighborhoods with high HIV diagnosis rates also have high GC diagnosis rates among HIV-negative females. HIV-negative females with GC, especially in these neighborhoods, are at risk for HIV and would benefit from PrEP.
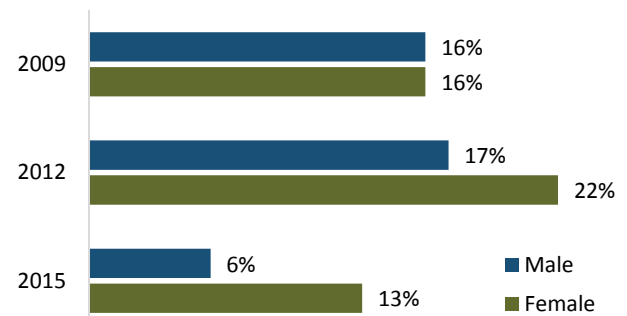
# HIV PREVALENCE AMONG PEOPLE WHO INJECT DRUGS

**FIGURE 20.1**: Self-reported HIV testing history among National HIV Behavioral Surveillance Study participants[1], Injection Drug Use Cycles 2009-2015

Legend:
- 2009 (N=514)
- 2012 (N=524)
- 2015 (N=502)

Tested in past 12 months[2]: 61%, 68%, 81%
Ever tested: 87%, 92%, 99%

**FIGURE 20.2**: HIV prevalence by gender among National HIV Behavioral Surveillance Study participants[1,3], Injection Drug Use Cycles, 2009-2015
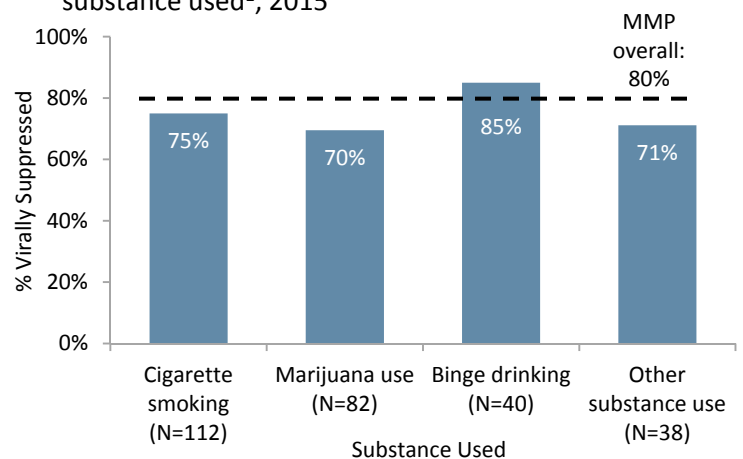
2009: Male 16%, Female 16%
2012: Male 17%, Female 22%
2015: Male 6%, Female 13%
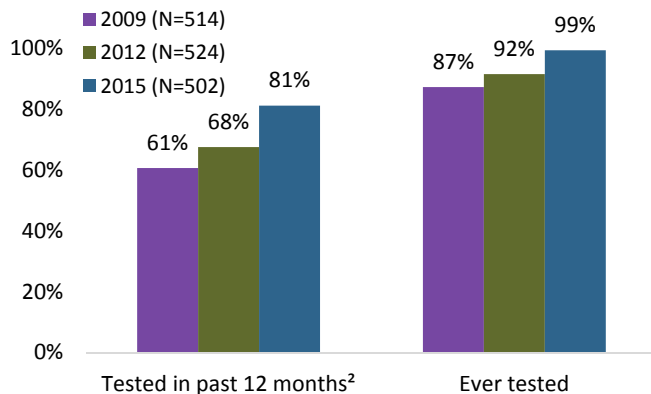
[1]Eligible participants had a history of injecting drugs not prescribed in the past 12 months, were ≥18 years old at interview and lived in the NYC metropolitan statistical area. Participants were recruited via respondent-driven sampling. Estimates are weighted using population weights which take into account differential recruitment by group and group network size. [2]Among participants who self-reported negative or unknown HIV status. [3]Participants untested for HIV excluded from prevalence analyses.

The National HIV Behavioral Surveillance (NHBS) project is a national, ongoing cyclical surveillance study of people at high risk for HIV. The 2009, 2012, and 2015 cycles were among people who inject drugs (PWID). Between 2009 and 2015, HIV testing history increased from 61% to 81% (past 12 months) and 87% to 99% (ever tested) (Figure 20.1). HIV prevalence decreased overall from 16% in the 2009 cycle to 8% in the 2015 cycle, and prevalence was higher among female PWID participants than male PWID participants in the 2012 and 2015 NHBS cycles (Figure 20.2).

# SUBSTANCE USE AMONG PEOPLE WITH HIV

**FIGURE 21.1**: Substance use[1] prevalence among Medical Monitoring Project participants (N=324), 2015

- Cigarette smoking: 35%
- Marijuana use: 25%
- Binge drinking: 12%
- Other substance use: 12%
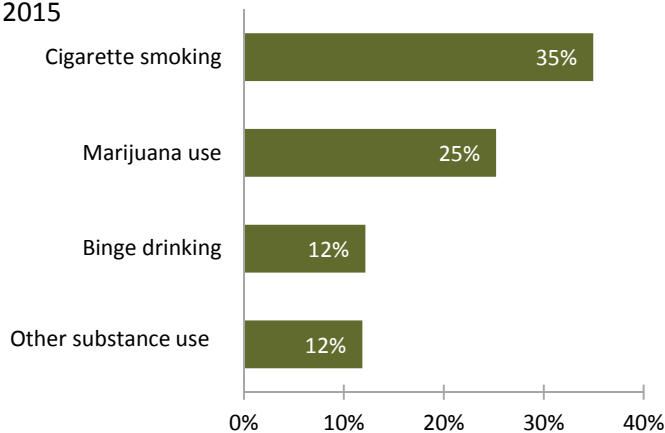
**FIGURE 21.2**: Proportion virally suppressed[2] among Medical Monitoring Project participants by substance used[1], 2015

MMP overall: 80%

- Cigarette smoking (N=112): 75%
- Marijuana use (N=82): 70%
- Binge drinking (N=40): 85%
- Other substance use (N=38): 71%

% Virally Suppressed

Substance Used

[1]Substance use categories are not mutually exclusive. "Binge drinking " is defined as five or more drinks in one sitting for males or four or more drinks in one sitting for females in the past 30 days. "Other substance use" includes crack, cocaine, methamphetamines, amphetamines, ecstasy, special K, GHB, heroin, poppers, downers, painkillers and hallucinogens. [2]Last viral load during 12 months prior to MMP interview was ≤200 copies/mL.

The Medical Monitoring Project (MMP) is a national, ongoing supplemental surveillance study of people with HIV. Among 324 MMP participants who were interviewed for the 2015 cycle, 35% reported current cigarette smoking, 25% reported using marijuana in the past 12 months, 12% reported at least one binge drinking episode in the past 30 days, and 12% reported using at least one other substance in the past 12 months (Figure 21.1). Overall, 258 (80%) MMP participants had a suppressed HIV viral load. Excluding alcohol, participants who reported using the specified substances had lower viral suppression (75%, 70% and 71%, respectively, among participants who reported cigarette smoking, marijuana use and use of other substances) (Figure 21.2).

# TECHNICAL NOTES

**ABOUT THIS REPORT:** This report provides an overview of the HIV epidemic in NYC using HIV surveillance data and presents highlights for the reporting period based on core surveillance activities. All data are based on information received by the New York City Health Department as of March 31, 2017, and are for calendar year 2016 unless otherwise noted.

**HIV SURVEILLANCE:** The NYC HIV Epidemiology and Field Services Program (HEFSP) manages the HIV surveillance registry, a population-based registry of all people diagnosed with AIDS (since 1981) or HIV infection (since 2000) and reported to the Health Department according to standard Centers for Disease Control and Prevention (CDC) case definitions.[1] The Registry contains demographic, HIV transmission risk, and clinical information on HIV-diagnosed people, as well as all diagnostic tests, viral load tests, CD4 counts, and HIV genotypes reportable under New York State law.[2] For a list of surveillance definitions and technical notes, see: www1.nyc.gov/site/doh/data/data-sets/hiv-aids-annual-surveillance-statistics.page.

**TRANSGENDER HIV SURVEILLANCE:** People whose current gender identity differs from their sex assigned at birth are considered transgender. Classifying transgender people in surveillance requires accurate collection of both sex assigned at birth and current gender identity. Sex and gender information are collected from people's self-report, their diagnosing provider, or medical chart review. This information may or may not reflect the individual's self-identification. Transgender status has been collected routinely since 2005 for newly reported cases. Reported numbers of new transgender HIV diagnoses and transgender PLWHA are likely to be underestimates. For more information, see the "HIV/AIDS among Transgender people in New York City" surveillance slide set available at: www1.nyc.gov/assets/doh/downloads/pdf/dires/hiv-in-transgender-persons.pdf.

**PERINATAL AND PEDIATRIC HIV SURVEILLANCE:** HEFSP collects data on HIV-exposed and -infected infants and children diagnosed with HIV before 13 years of age. Data are used to monitor mother-to-child HIV transmission, measure perinatal HIV transmission rates, and describe morbidity and mortality among HIV-infected children. In addition to routine HIV and AIDS case surveillance, perinatal and pediatric surveillance data are informed by a range of other activities and data sources, including longitudinal case follow-up, the New York State Department of Health's Comprehensive Newborn Screening Program, and CDC-funded special projects related to pediatric HIV.

**ACUTE HIV INFECTION SURVEILLANCE:** Since 2008, HEFSP has conducted routine surveillance and field investigation of individuals diagnosed in the acute stage of HIV infection (AHI) in NYC. For NYC's AHI case definition see: www1.nyc.gov/assets/doh/downloads/pdf/ah/definition-acute-hiv-infection.pdf.

**DEATH DATA:** Data on deaths occurring in NYC are from matches with the NYC Vital Statistics Registry, medical chart reviews, and provider reports, including HIV-positive autopsies by the Office of the Chief Medical Examiner. Data on deaths occurring outside NYC are from matches with the Social Security Death Master File and National Death Index. Death data for 2016 are incomplete.

**CAUSE OF DEATH:** Cause of death used for analyses in this report is a person's underlying cause of death. For deaths occurring between 1984 and 1986, ICD9 code 279.1 was used to denote AIDS-related deaths. For deaths occurring between 1987 and 1998, ICD9 codes 042-044 were used to denote HIV/AIDS-related deaths. For deaths occurring between 1999 and 2015, ICD10 codes B20-B24 were used to denote HIV/AIDS-related deaths. "Cancer" includes all malignant neoplasms inclusive of cancers commonly associated with HIV/AIDS. "External causes" includes overdose deaths, accidents, intentional self-harm (suicide), assault (homicide) and legal intervention. "Other" includes anemia, chronic liver disease and cirrhosis, chronic lower respiratory disease, diabetes mellitus, natural causes, and other known causes not otherwise listed. For technical notes on cause of death by the Health Department's Office of Vital Statistics, see: www1.nyc.gov/assets/doh/downloads/pdf/vs/2015sum.pdf.

**AREA-BASED POVERTY:** Area-based poverty is based on NYC ZIP code of residence and is defined as the percent of the population in a ZIP code whose household income is below the Federal Poverty Level. This measure is not available for people missing ZIP code or living outside NYC. Income data used in this report are from the 2007-2011 American Community Survey (ACS) for events (e.g., diagnoses, deaths, care indicators) occurring in 2006-2009, ACS 2008-2012 for events occurring in 2010, ACS 2009-2013 for events occurring in 2011, ACS 2010-2014 for events occurring in 2012, and ACS 2011-2015 for events occurring in 2013-2016. Cut-points for categories of area-based poverty in NYC were defined by a Health Department workgroup.[3]

**NATIONAL HIV BEHAVIORAL SURVEILLANCE:** National HIV Behavioral Surveillance (NHBS) is a national, ongoing surveillance activity sponsored by the CDC and collects data on behavioral risk factors for HIV, HIV testing behaviors, and the receipt and/or use of prevention services and strategies. NYC is one of 22 NHBS sites. Surveillance is conducted in rotating, annual cycles in three different populations at increased risk for HIV: 1) Gay, bisexual, and other men who have sex with men; 2) People who inject drugs (PWID); and 3) Heterosexuals at increased risk for HIV infection. For more information on NHBS see: www.cdc.gov/hiv/statistics/systems/nhbs/index.html.

---

[1] Centers for Disease Control and Prevention. Revised surveillance case definition for HIV infection—United States, 2014. MMWR 2014; 63:1-10.
[2] State of New York Laws. HIV Testing and Counseling. Public Health Law Section 2130 et seq. Albany, NY: State of New York.
[3] Toprani A, Hadler JL. Selecting and applying a standard area-based socioeconomic status measure for public health data: analysis for New York City. New York City Department of Health and Mental Hygiene: *Epi Res Report*. May 2013; 1-12.

## TECHNICAL NOTES (CONTINUED)

**MEDICAL MONITORING PROJECT:** The Medical Monitoring Project (MMP) is a national, ongoing supplemental surveillance study sponsored by the CDC and designed to understand more about the health behaviors, outcomes, and needs of people living with HIV/AIDS (PLWHA); NYC is one of 23 sites. A two-stage sampling design is used to obtain a probability sample of in-care and out-of-care HIV-infected adults known to the HIV surveillance registry. The project is cross-sectional and is conducted yearly. For more information on the Medical Monitoring Project see: www.cdc.gov/hiv/statistics/systems/mmp/.

**NYC HIV CARE CONTINUUM:** "HIV-infected" is calculated as the number of HIV-diagnosed divided by the estimated proportion of people living with HIV/AIDS (PLWHA) who had been diagnosed (95.0%), based on a back-calculation method (source: NYC HIV Surveillance Registry. Method: Hall HI, et al. Prevalence of Diagnosed and Undiagnosed HIV Infection — United States, 2008-2012. MMWR 2015;64(24):657-662). "HIV-diagnosed" is calculated as the number of PLWHA retained in care plus the estimated number of PLWHA who were out of care, based on a statistical weighting method. This estimated number aims to account for out-migration from NYC, and therefore is different from the total number of people diagnosed and reported with HIV/AIDS in NYC (source: NYC HIV Surveillance Registry; method: Xia Q, et al. Proportions of Patients With HIV Retained in Care and Virally Suppressed in New York City and the United States. JAIDS 2015;68(3):351-358). "Retained in care" is defined as PLWHA with ≥1 VL or CD4 count or CD4 percent drawn in 2016, and reported to NYC HIV surveillance (source: NYC HIV Surveillance Registry). "Prescribed ART" is calculated as the number of PLWHA retained in care multiplied by the estimated proportion of PLWHA prescribed ART in the previous 12 months (93.5%), based on the weighted proportion of NYC Medical Monitoring Project participants whose medical record included documentation of ART prescription (source: NYC HIV Surveillance Registry and NYC Medical Monitoring Project, 2015). "Virally suppressed" is calculated as PLWHA in care with a most recent viral load measurement in 2016 of ≤200 copies/mL, plus the estimated number of out-of-care 2016 PLWHA with a viral load ≤200 copies/mL, based on a statistical weighting method (source: NYC HIV Surveillance Registry; method: Xia Q, et al. Proportions of Patients With HIV Retained in Care and Virally Suppressed in New York City and the United States. JAIDS 2015;68(3):351-358).

**NOTES ABOUT CARE CONTINUUM-SPECIFIC ESTIMATES:** The number of total HIV-infected represents an estimate of all HIV-infected people living in NYC at the end of 2016. The number of PLWHA presented elsewhere represents people ever diagnosed with HIV, reported in NYC, and not known to have died as of December 31, 2016. Viral suppression estimates in the care continuum are among all HIV-infected New Yorkers. These differ from Figures 14.2 and 14.4 which show viral suppression among PLWHA in care in 2016.

## HIV PROVIDER REPORTING

All diagnostic and clinical providers (e.g., doctors, nurses, physician assistants, and all others diagnosing HIV or providing care to HIV-infected people) and laboratories are required by law to report specific HIV-related events.

**REPORT HIV/AIDS CASES:** Providers are required by law to report cases of HIV/AIDS to the Health Department within 14 days. Provider report forms (PRFs) must be completed for the following events: 1) new diagnosis of HIV (i.e., acute HIV infection or first report of an HIV antibody positive test result); 2) new diagnosis of AIDS (CD4<200 or opportunistic infection); or 3) patient with previously diagnosed HIV or AIDS during their first visit. PRFs can be submitted electronically (ePRF) by accessing the New York State provider portal: https://commerce.health.state.ny.us. Instructions for accessing the portal are available here: www.health.ny.gov/diseases/aids/providers/regulations/partner_services/docs/partner_services_materials.pdf. For assistance with the provider portal or to request paper copies of the PRF (DOH-4189 rev 09/2016), please call **(518) 474-4284**. To arrange for pickup of a completed paper PRF call the NYC HIV Surveillance Provider line at **(212) 442-3388**. In order to protect patient confidentiality, PRFs may not be mailed or faxed to the Health Department

**DISCUSS PARTNER SERVICES AND REPORT PARTNERS:** The Health Department's Field Services Unit was established in 2006 to assist HIV medical providers and patients diagnosed with HIV with partner services and linkage to care. Partner services, a free program offered by the Health Department to all people diagnosed with HIV, helps people with HIV determine how to best notify their sex or needle sharing partners. As required by New York State Public Health Law, providers must report all known sex or needle sharing partners to the Health Department so that partners can be notified of their potential exposure to HIV.

To report partners, call the Health Department's Contact Notification Assistance Program (CNAP) at **(212) 693-1419**, or complete the PRF whenever partner information is available (either at the time of the reportable event or at a follow-up visit). Key partner information to report includes: each partner's first/last name (alias, if applicable), date of birth/estimated age, gender and domestic violence screening result.

For more information on HIV provider reporting, see: www1.nyc.gov/site/doh/data/data-sets/hiv-aids-how-to-report-a-diagnosis.page

# ADDITIONAL RESOURCES

**NEW YORK CITY DEPARTMENT OF HEALTH AND MENTAL HYGIENE WEBSITE:** nyc.gov/health

**CARE STATUS REPORTS:** The Care Status Report (CSR) is a program designed to assist providers in identifying patients who are out of care in NYC. The CSR system is a secure, web-based application that enables facilities to electronically submit eligible out-of-care patients (>6 months) to the Health Department for a query against the HIV registry for return of limited outcome information on the patients' current HIV care status in NYC. The four care status outcomes include: Follow-up needed, No follow-up needed – In Care, No follow-up needed - Deceased, or Non-case. The outcomes are based on HIV-related laboratory test data (CD4 counts and viral load tests) reported to the NYC HIV Surveillance system and information on vital status. For more information about the CSR, visit www1.nyc.gov/site/doh/health/health-topics/aids-hiv-care-status-reports-system.page.

**CARE CONTINUUM DASHBOARDS:** The HIV Care Continuum Dashboards (HIV CCDs) use Health Department HIV surveillance data to show the performance of providers who give HIV care to the majority of New Yorkers living with HIV. The CCDs contain information on how quickly New Yorkers newly diagnosed with HIV are linked to care and how well their HIV viral load is controlled. Currently, data are available for 34 NYC HIV care providers. The goal of the CCDs is to improve HIV care and accelerate efforts to end the HIV/AIDS epidemic in NYC. For more information about the CCDs, visit www1.nyc.gov/site/doh/health/health-topics/care-continuum-dashboard.page.

**ADDITIONAL NYC DOHMH RESOURCES ON HIV IN NYC:**

NYC HIV Epidemiology and Field Services Program:
www1.nyc.gov/site/doh/data/data-sets/aids-hiv-epidemiology-and-field-services.page

Other information on HIV/AIDS, including HIV testing sites in NYC, condom distribution and Health Department Sexual Health Clinics:
www1.nyc.gov/site/doh/health/health-topics/aids-hiv.page

**ADDITIONAL HEALTH DEPARTMENT DATA RESOURCES:**

Data and Statistics: www1.nyc.gov/site/doh/data/data-sets/data-sets-and-tables.page

EpiQuery, NYC Interactive Health Data System: https://a816-healthpsi.nyc.gov/epiquery/

Geographical Information System (GIS) Center Map Gallery: www1.nyc.gov/site/doh/data/health-tools/maps.page

**OTHER HIV RESOURCES:**

National HIV surveillance, including CDC's case definitions for HIV surveillance: www.cdc.gov/hiv/statistics/

Ending the Epidemic, New York State Data Dashboard: http://etedashboardny.org/

AIDSVu, including interactive online maps illustrating the prevalence of HIV in the United States: http://aidsvu.org/

Fast-Track Cities Initiative, tracking progress against UNAIDS's 90-90-90 targets: http://www.iapac.org/cities/

# ACKNOWLEDGMENTS

**SUGGESTED CITATION:**

HIV Epidemiology and Field Services Program. *HIV Surveillance Annual Report, 2016*. New York City Department of Health and Mental Hygiene: New York, NY. December 2017.