



Viral Hepatitis C Surveillance Report, 2023

SAN FRANCISCO, CALIFORNIA

San Francisco Department of Public Health
Viral Hepatitis Surveillance Program
Applied Research, Community Health Epidemiology and Surveillance Branch (ARCHES)
Population Health Division
25 Van Ness Avenue, Suite 500
San Francisco, CA 94102

INTRODUCTION

The Viral Hepatitis C Surveillance Report for 2023 presents data collected by the San Francisco Department of Public Health's (SFDPH) Viral Hepatitis Surveillance Program from January 1, 2021 through December 31, 2023 on persons who have chronic hepatitis C infection. SFDPH receives confidential disease reports containing basic demographic information from laboratories and providers, as mandated by state regulation. This basic information comprises core surveillance for chronic hepatitis C infection. This report provides an overview of hepatitis C infection in San Francisco based on surveillance data.

ACKNOWLEDGEMENTS

This report summarizes information collected by the Viral Hepatitis Surveillance Program, which includes Aminah Habib, MPH, Amy Nishimura, MS, MPH, Melissa Ongpin, MPH, Victoria Osasah, MPH, Melissa Sanchez, PhD, MA, and Mala Yekanath. The report was written by Amy Nishimura, MS, MPH, Melissa Ongpin, MPH, Victoria Osasah, MPH, and Melissa Sanchez, PhD, MA. The data were curated and analyzed by Melissa Ongpin, MPH and Victoria Osasah, MPH. The geographic analysis was done by Valerie Caplan, MPP and Namson Ngo-Le, MS. The match with the HIV/AIDS case registry was conducted by staff in the SFDPH HIV Epidemiology Surveillance Section. We are grateful to Rachel Grinstein, SFDPH Viral Hepatitis Coordinator, and End Hep C SF for their support. We thank the Division of Viral Hepatitis, Centers for Disease Control and Prevention (CDC) for their financial and technical support. Most of all, we thank the laboratorians, clinicians, community service providers, and persons living with chronic hepatitis C who provided the information that made this report possible.

SUGGESTED CITATION

This report is in the public domain and may be reproduced with appropriate citation.

Suggested Citation:

Viral Hepatitis Surveillance Program, Applied Research, Community Health Epidemiology and Surveillance Branch (ARCHES), Population Health Division. *Viral Hepatitis C Surveillance Report, 2023, San Francisco, California* [Internet]. San Francisco Department of Public Health; October 2024. 35 pp. Available from: <https://www.sf.gov/resource/2024/viral-hepatitis-reports>



CONTENTS

OVERVIEW OF HEPATITIS C INFECTION	1
CHRONIC HEPATITIS C CASES IN SAN FRANCISCO, 2023	2
Core Surveillance Data	2
Figure 1. Number & rate of newly reported chronic hepatitis C cases, 2021-2023.....	2
Sex and Age	3
Figure 2. Sex & age group of all & newly reported chronic hepatitis C cases, 2023	3
Figure 3. Sex & age distribution of all reported chronic hepatitis C cases, 2023.....	4
Figure 4. Sex & age distribution of newly reported chronic hepatitis C cases, 2023.....	4
Figure 5. Birthyear cohort of all & newly reported chronic hepatitis C cases, 2023.....	5
Race/Ethnicity.....	5
Figure 6. Race/ethnicity of all & newly reported chronic hepatitis C cases and the SF population, 2023..	5
Geographic Distribution	6
Figure 7. All reported chronic hepatitis C cases in San Francisco by neighborhood, 2023.....	6
Figure 8. Newly reported chronic hepatitis C cases in San Francisco by neighborhood, 2023	6
HEPATITIS C CLEARANCE CASCADE	7
Figure 9. Summary findings from the laboratory results-based hepatitis C virus clearance cascade reported by four facilities, January 1, 2021 – December 31, 2023.....	7
Figure 10. Laboratory results-based hepatitis C virus clearance cascade, January 1, 2021 – December 31, 2023, from people in San Francisco reported by four facilities.	8
Figure 11. HCV clearance cascade by age, January 1, 2021 – December 31, 2023	9
Figure 12. HCV clearance cascade by race and ethnicity, January 1, 2021 – December 31, 2023.....	10
Figure 13. HCV clearance cascade by sex (Male), January 1, 2021 – December 31, 2023	11
Figure 14. HCV clearance cascade by sex (Female), January 1, 2021 – December 31, 2023.....	11
Figure 15. Cases with active HCV infection as of December 31, 2023, in San Francisco by neighborhood from four facilities.....	12
HEPATITIS C AND HIV	13
Hepatitis C Clearance Cascade for People with HIV	13
Figure 16. Hepatitis C clearance cascade for people with HIV, 2021-2023.....	13
Insurance Status and Risk Factors for Confirmed Chronic HCV Cases with HIV Coinfection.....	14
Figure 17. Insurance status for confirmed chronic HCV cases with HIV coinfection, 2021-2023.....	14
Figure 18. Risk factors for confirmed chronic HCV cases with HIV coinfection, 2021-2023	14



DISCUSSION	15
TECHNICAL NOTES	19
Core Surveillance Data Notes	21
Laboratory Results-Based Chronic Hepatitis C Clearance Cascade Notes	21
Timeframes and Descriptions of the 2023 Laboratory-based Hepatitis C Clearance Cascade.....	21
Classification of cases in the Hepatitis C clearance cascade	22
Hepatitis C and HIV Data Notes.....	23
Classification for the Hepatitis C Clearance Cascade for People with HIV	24
DATA LIMITATIONS	25
DATA TABLES	27
Table 1: Characteristics of chronic hepatitis C cases in San Francisco, 2023	27
Table 2: Case count, case rate, and population estimate of all reported cases of chronic hepatitis C by San Francisco neighborhood, 2023	28
Table 3. Case count, case rate, and population estimate of newly reported cases of chronic hepatitis C by San Francisco neighborhood, 2023.....	29
Table 4. Conditional proportions for 2023 Laboratory-Based Hepatitis C Virus Clearance Cascade by Demographics among People in San Francisco from Four Facilities – January 1, 2021 – December 31, 2023.....	30
Table 5. Count and share of people in San Francisco in the hepatitis C virus clearance cascade with active HCV infections from four facilities by neighborhood – January 1, 2021 – December 31, 2023	31
Table 6. Characteristics of confirmed chronic HCV cases with HIV in San Francisco, 2021-2023.....	32
REFERENCES	34



OVERVIEW OF HEPATITIS C INFECTION

Hepatitis C virus (HCV) is one of the most common types of viral hepatitis and is a leading cause of chronic liver disease in the United States. HCV is primarily spread through contact with infected blood. Currently, the most common mode of HCV transmission in the United States is through the use of shared, unsterilized drug injection equipment. HCV can also be passed from a pregnant person to an infant during pregnancy or at birth. Other possible, but less frequent, sources of exposure to HCV include needlestick injuries in healthcare settings, non-sterile tattooing or piercing equipment, sexual contact, and sharing personal items contaminated with infectious blood (e.g., razors, toothbrushes).¹

Acute hepatitis C occurs within the first six months after exposure to HCV and can either resolve spontaneously or progress into a long-term chronic infection. More than half of people with acute HCV infection go on to develop a chronic HCV infection, while the remainder of those newly infected clear the virus without treatment and do not develop chronic hepatitis C. Chronic HCV infection progresses very slowly and can lead to liver damage, cirrhosis, or liver cancer over time. Most people with chronic HCV infection are asymptomatic for years and the infection is often not recognized until routine blood tests identify abnormal liver function.¹ Therefore, HCV screening and testing is crucial in identifying HCV infection and preventing hepatitis C complications and transmission. The Centers for Disease Control and Prevention (CDC) recommends universal HCV screening for all adults and for all pregnant people during each pregnancy.²

Testing for HCV infection is often a multi-step process. A test for antibody to HCV (anti-HCV) is recommended for initial screening. A positive anti-HCV test indicates exposure to HCV but is unable to distinguish a cleared or cured infection from an active infection. To identify an active HCV infection, confirmation with a subsequent nucleic acid test (NAT) is recommended to detect the amount or presence of HCV RNA. A positive or detected HCV NAT result identifies an active HCV infection, while a negative or undetectable HCV NAT result indicates a cleared or cured HCV infection. Distinguishing active from cleared/cured HCV infections through a positive HCV NAT is a critical step in identifying people for hepatitis C counseling, preventive care, and, importantly, treatment.³

There is currently no vaccine for HCV.¹ However, in 2014, several new direct-acting antiviral (DAA) medications became available in the United States. These treatments have minimal side effects and can cure over 95% of cases in 8 to 12 weeks. Additionally, simplification of the HCV treatment protocols has broadened the types of healthcare providers able to prescribe these medications beyond hepatologists and other specialists, expanding access to treatment for people with HCV.⁴ In California, anyone with Medi-Cal can qualify for life-saving treatment, with the exception of those with a life expectancy of less than 12 months who are not expected to be remediated by HCV therapy.⁵



For more information about HCV, visit: cdc.gov/hepatitis-c/



CHRONIC HEPATITIS C CASES IN SAN FRANCISCO, 2023

CORE SURVEILLANCE DATA

Every year, SFDPH tracks the number of hepatitis C lab reports and people with chronic hepatitis C. Data presented in this section represent all persons who met laboratory criteria for probable or confirmed chronic hepatitis C infection with at least one positive HCV test reported to SFDPH in 2023.

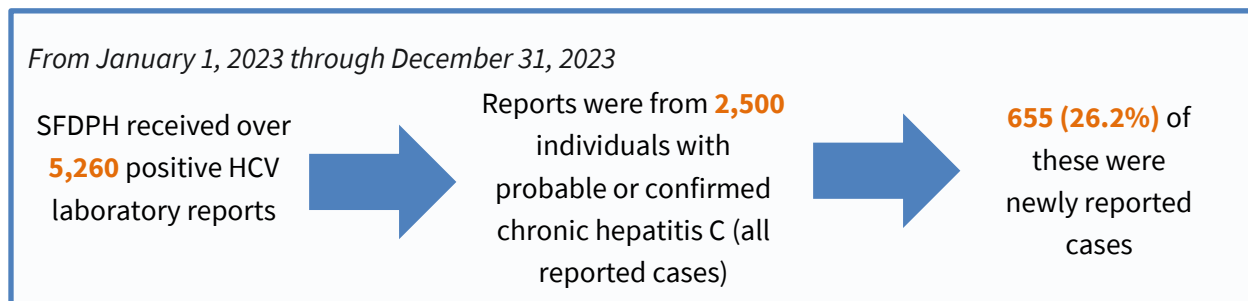


Figure 1. Number & rate of newly reported chronic hepatitis C cases, 2021-2023

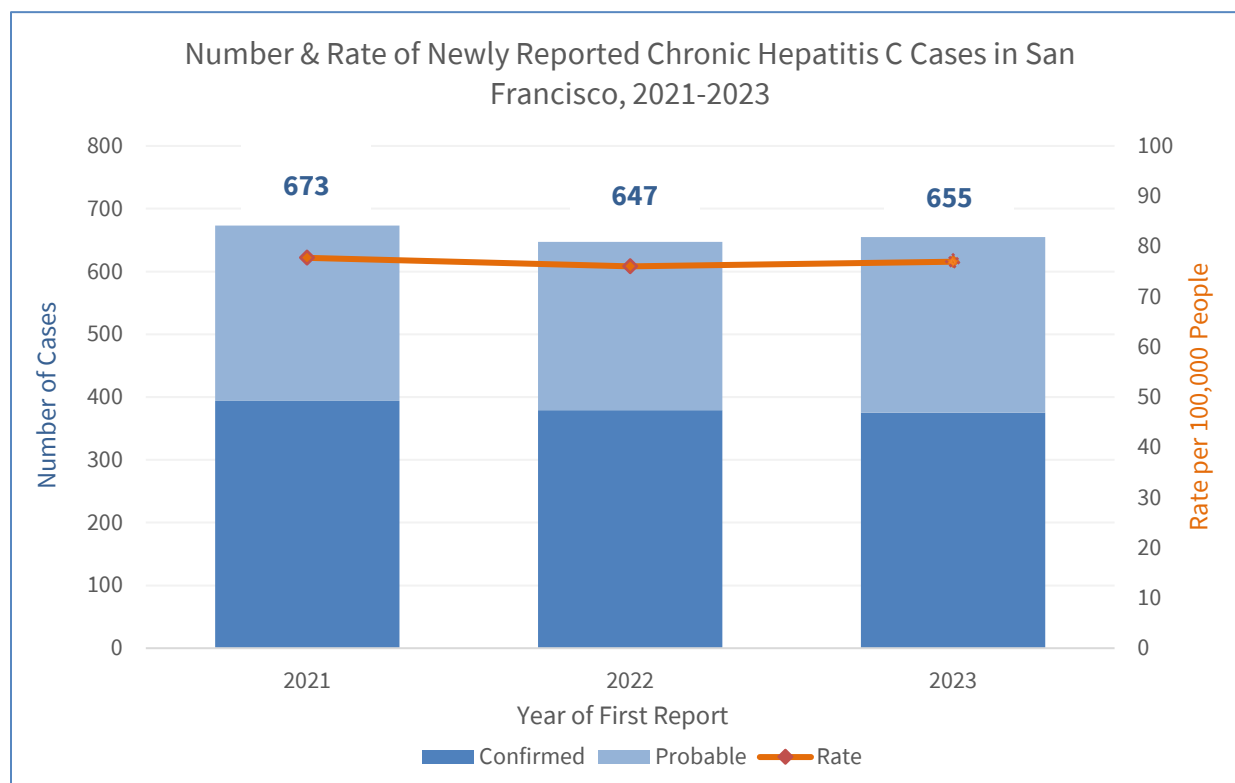
Number of newly reported chronic hepatitis C cases in San Francisco in 2023:

655

Rate of newly reported chronic hepatitis C cases in San Francisco in 2023:

77.0

per 100,000 people



Note: Newly reported cases were reported to SFDPH with chronic hepatitis C for the first time with no previously received positive HCV laboratory report; they do not represent the number of incident infections (see Data Limitations).





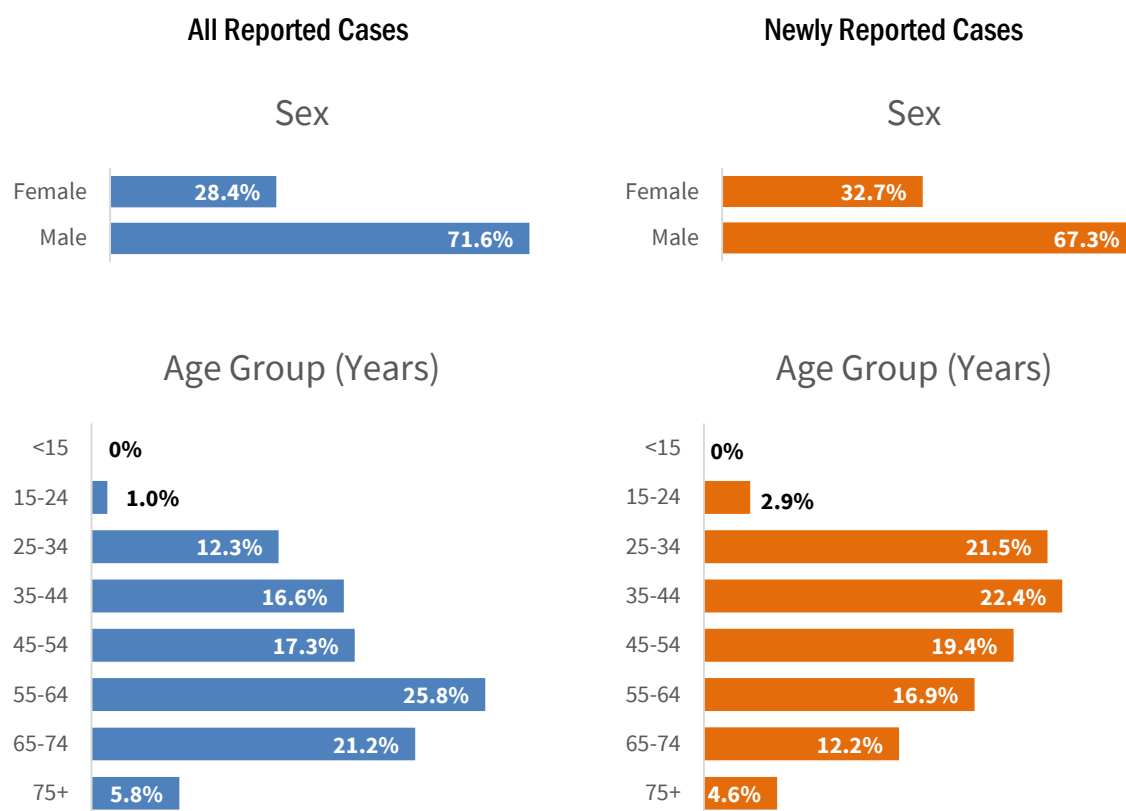
Per the CDC/Council of State and Territorial Epidemiologists (CSTE) case definition, cases reported with a positive HCV antibody test and no report of an HCV viral detection test or NAT are considered a probable chronic hepatitis C case. In 2023, there were **411 (16.4%) probable** HCV cases among all reported cases and **280 (42.7%)** among newly reported cases.



A confirmed chronic hepatitis C case has a positive HCV viral detection test or NAT, including qualitative and quantitative RNA or genotype testing. **Confirmed** chronic hepatitis C cases comprised the remaining **83.6%** and **57.3%** of all and newly reported cases in 2023, respectively.

Sex and Age

Figure 2. Sex & age group of all & newly reported chronic hepatitis C cases, 2023



Among chronic hepatitis C cases reported in 2023, **males** represented more infections for all reported cases (**71.6%**) and newly reported cases (**67.3%**).



In 2023, the age groups with the highest proportion of cases were **55-64 years (25.8%) among all reported cases** and **35-44 years (22.4%) among newly reported cases**.



Figure 3. Sex & age distribution of all reported chronic hepatitis C cases, 2023

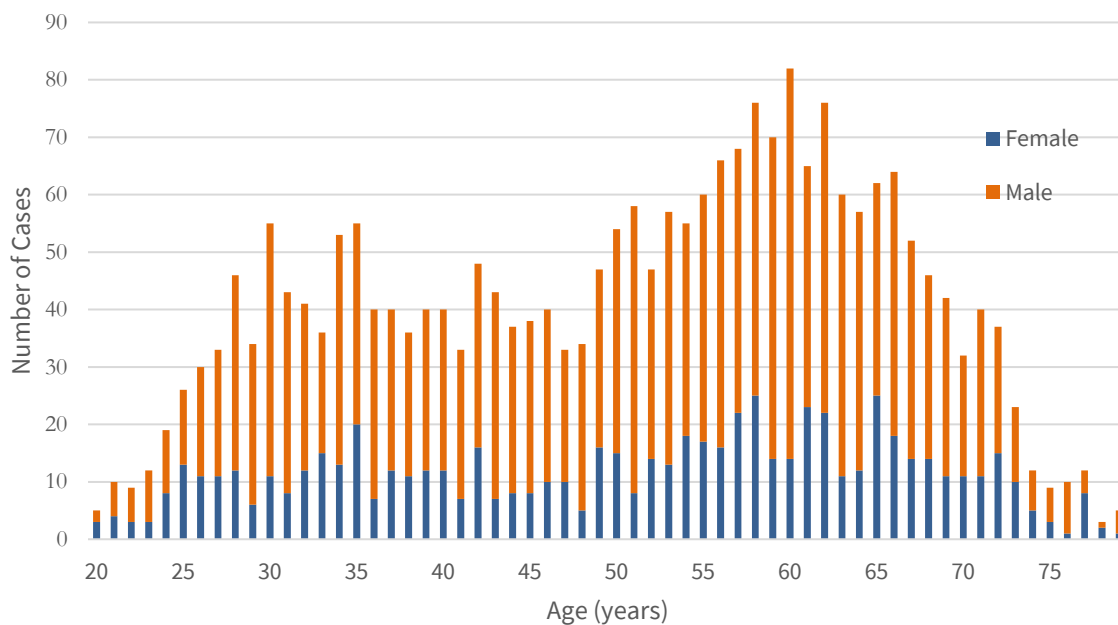
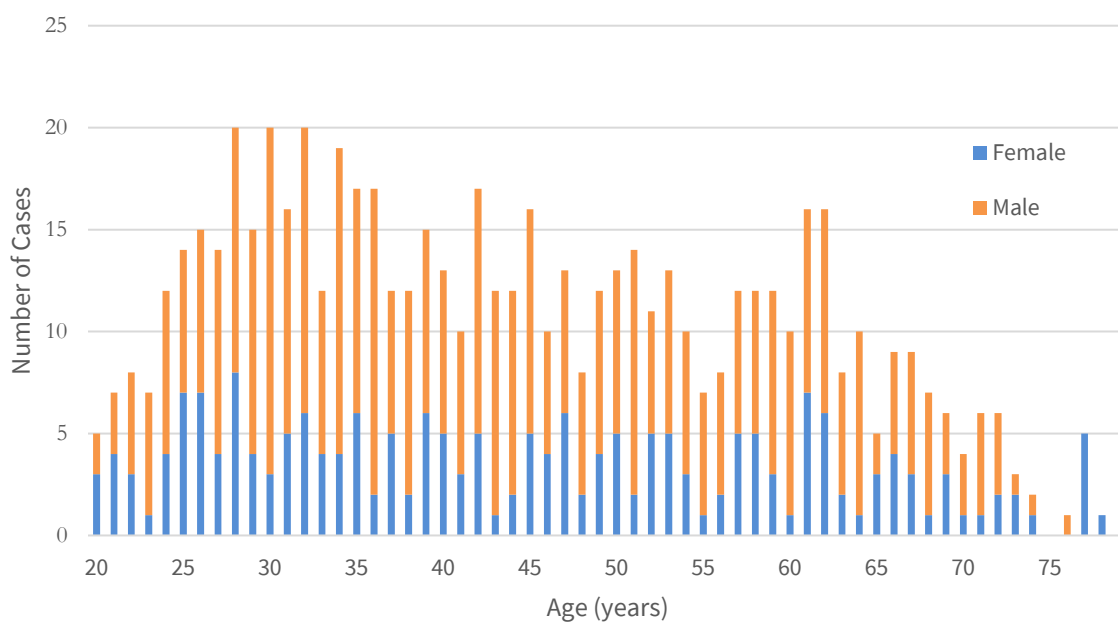


Figure 4. Sex & age distribution of newly reported chronic hepatitis C cases, 2023



Note: These figures show different y axes when showing the number of cases.

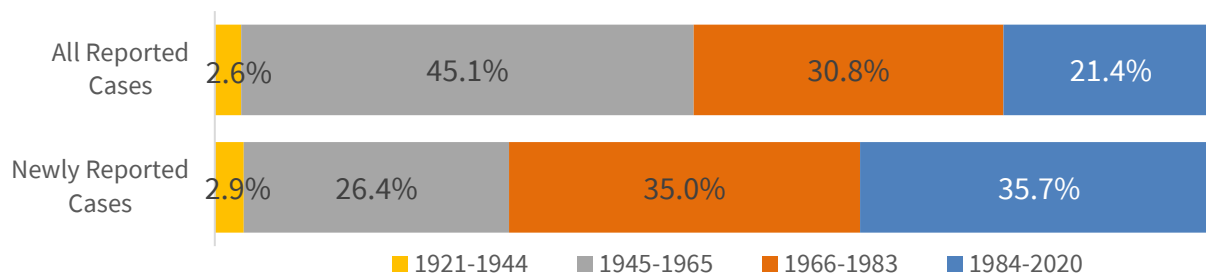


Figures 3 & 4 highlight the difference in ages in 2023 between **all reported cases** (top), which are **more likely to be older (≥ 50 years old)**, and **newly reported cases** (bottom), which are **more likely to be younger (< 45 years old)**.

>>> For more data on HCV cases in 2023, see Table 1.



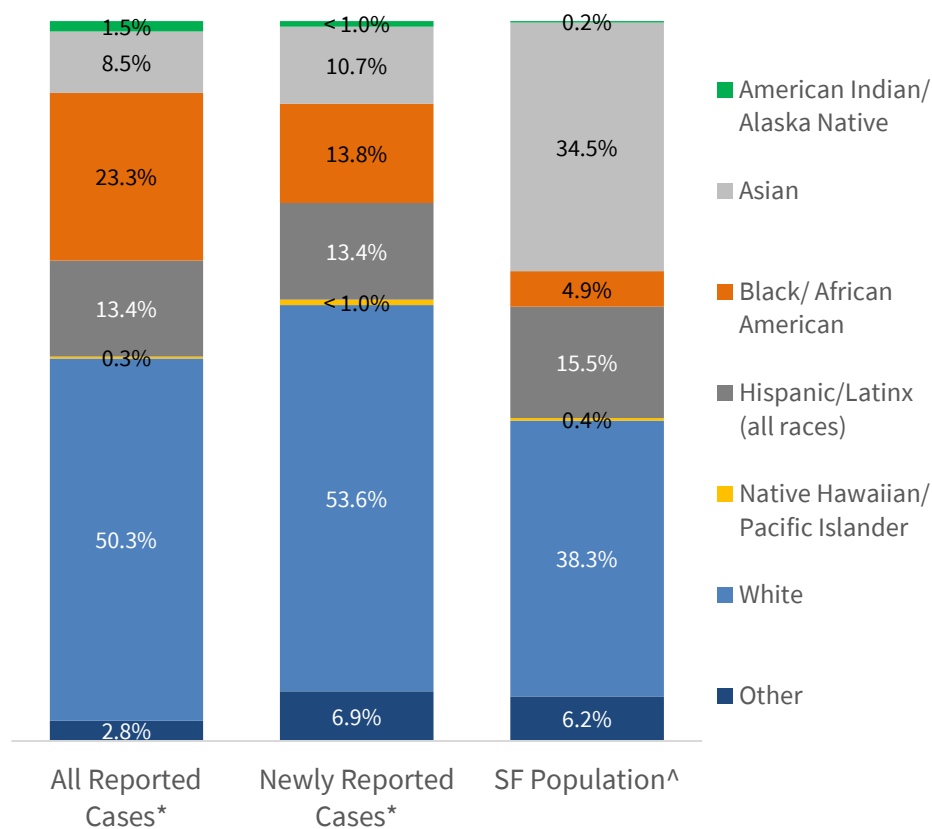
Figure 5. Birthyear cohort of all & newly reported chronic hepatitis C cases, 2023



45.1% of all 2023 cases were born between **1945 and 1965 (baby boomer cohort)**, compared to 26.4% of newly reported cases. Newly reported cases had a larger proportion of cases **born in 1984 or later** with 35.7%, compared to 21.4% of all reported cases.

Race/Ethnicity

Figure 6. Race/ethnicity of all & newly reported chronic hepatitis C cases and the SF population, 2023



In 2023, 50.3% of all reported cases and 53.6% of newly reported cases were **White**, while Whites comprised 38.3% of the SF population.

Individuals who are **Black/African American** made up 23.3% of all reported cases and 13.8% of newly reported cases, but only 4.9% of the population in San Francisco.

* Race/ethnicity data is missing for 172/2500 (6.9%) of all reported and 133/655 (20.3%) of newly reported cases in 2023.
 ^ San Francisco Population data source: American Community Survey 5-year estimate 2017-2022⁶

>>> For more data on HCV cases in 2023, see Table 1.



Geographic Distribution

To further understand trends of all reported and newly reported cases of chronic hepatitis C in 2023, the figures below map the number of cases by neighborhood, per 10,000 population. Neighborhoods with a higher case rate are darker blue while those with a lower case rate are light yellow.

Figure 7. All reported chronic hepatitis C cases in San Francisco by neighborhood, 2023*

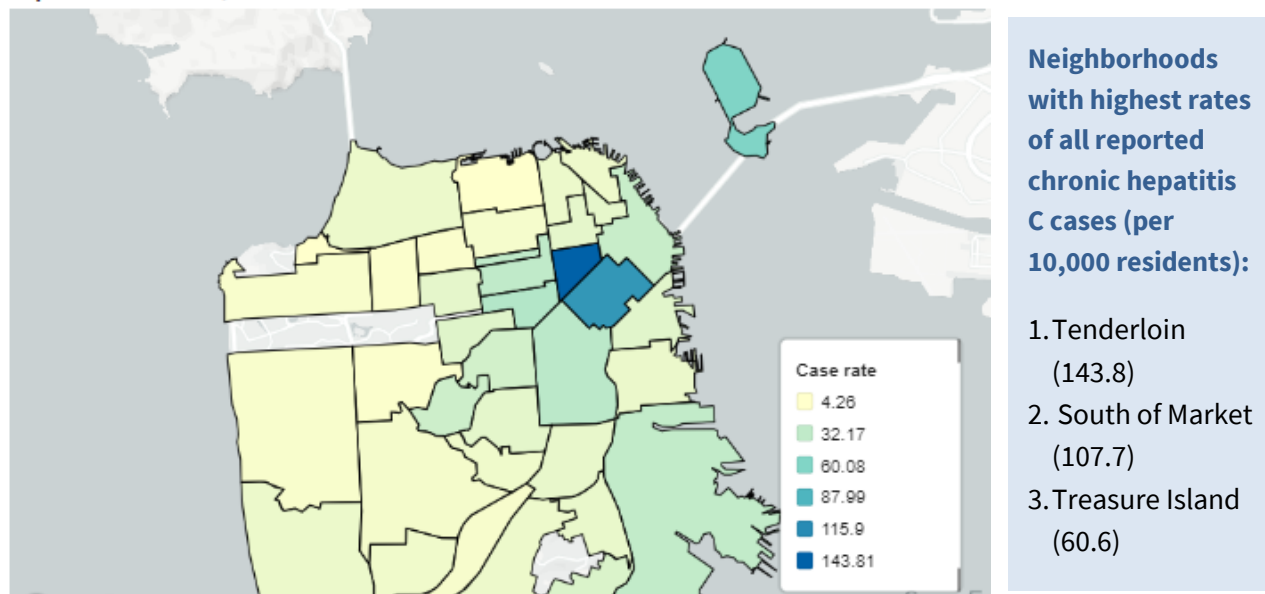
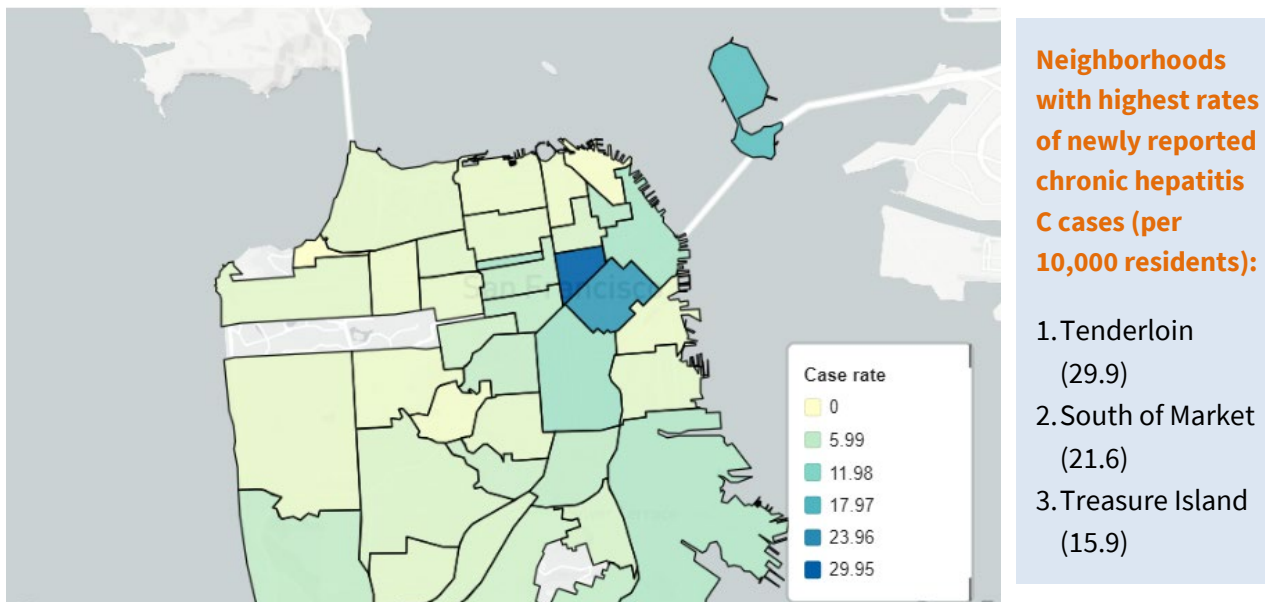


Figure 8. Newly reported chronic hepatitis C cases in San Francisco by neighborhood, 2023*



***Notes:**

- 485/2500 (19.4%) of all reported and 181/655 (27.6%) of newly reported cases could not be geocoded and are not shown.
- Case counts and rates are not shown for neighborhoods with <5 cases or with a population <1,000 people.
- San Francisco Population data source: American Community Survey 5-year estimate 2017-2022.⁶
- For all reported and newly reported case counts and rates for all neighborhoods in 2023, see Tables 2 & 3.

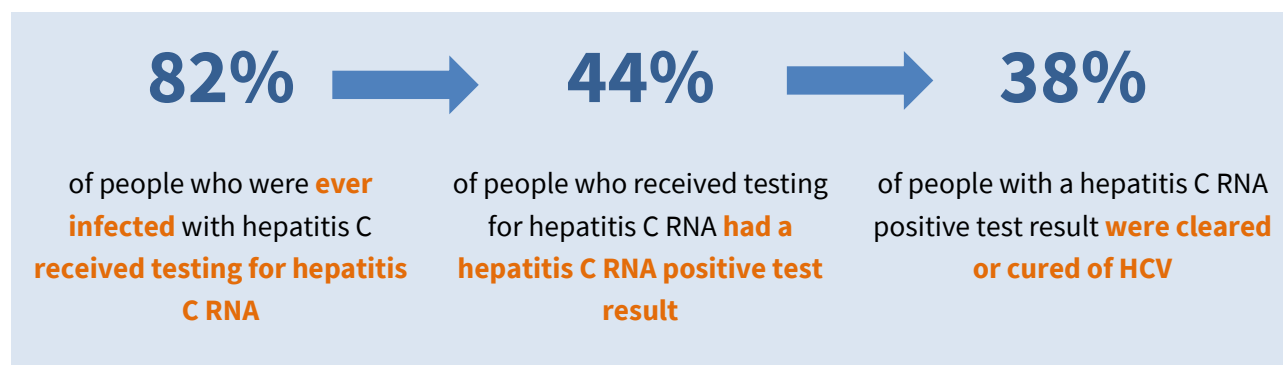


HEPATITIS C CLEARANCE CASCADE

The U.S. Department of Health and Human Services (HHS) established a set of goals and milestones to eliminate hepatitis C in the U.S.⁷ Consequently, a standardized laboratory results-based hepatitis C clearance cascade was developed by the CDC. This report follows the underlying method developed by the CDC in 2021,⁸ which estimates percentages and numbers of people tested for and cleared or cured of HCV. There are some differences in the criteria used by SFDPH for inclusion in each cascade stage when compared to the CDC's methodology. Additional information on the methodology can be found in the technical notes.

Laboratory results for people in San Francisco included in this clearance cascade were reported by four facilities, including laboratories and medical centers, that provided complete reporting to SFDPH of all positive anti-HCV, HCV RNA positive and negative or undetected test results. These results were reported between January 1, 2021, and December 31, 2023. The classification of people into the hepatitis C clearance cascade was based on test results received as of December 31, 2023.

Figure 9. Summary findings from the laboratory results-based hepatitis C virus clearance cascade reported by four facilities, January 1, 2021 – December 31, 2023



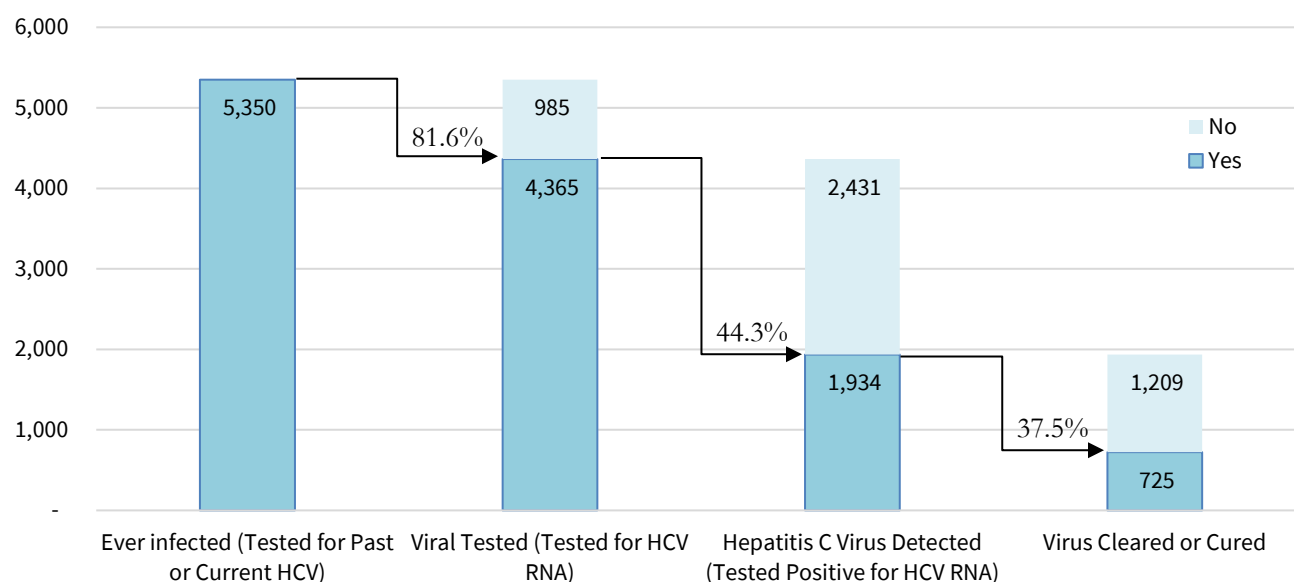


Definitions of each stage of the hepatitis C virus clearance cascade.

- **Ever infected** – People with an HCV RNA positive test result or an anti-HCV positive test result (past or active hepatitis C infection).
- **Viral tested** – People with either an HCV RNA positive or negative test result.
- **Virus detected** – People who ever had an HCV RNA positive test result
- **Virus cleared or cured** – People whose last HCV RNA test result was negative as of December 31, 2023, following at least one HCV RNA positive test result.
- **Active infection** – People whose last HCV RNA test result was positive as of December 31, 2023.

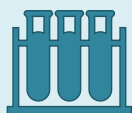
Additional information can be found in the technical notes.

Figure 10. Laboratory results-based hepatitis C virus clearance cascade, January 1, 2021 – December 31, 2023, from people in San Francisco reported by four facilities.



Notes: All percentages are based on the previous cascade stage

As of December 31, 2023:



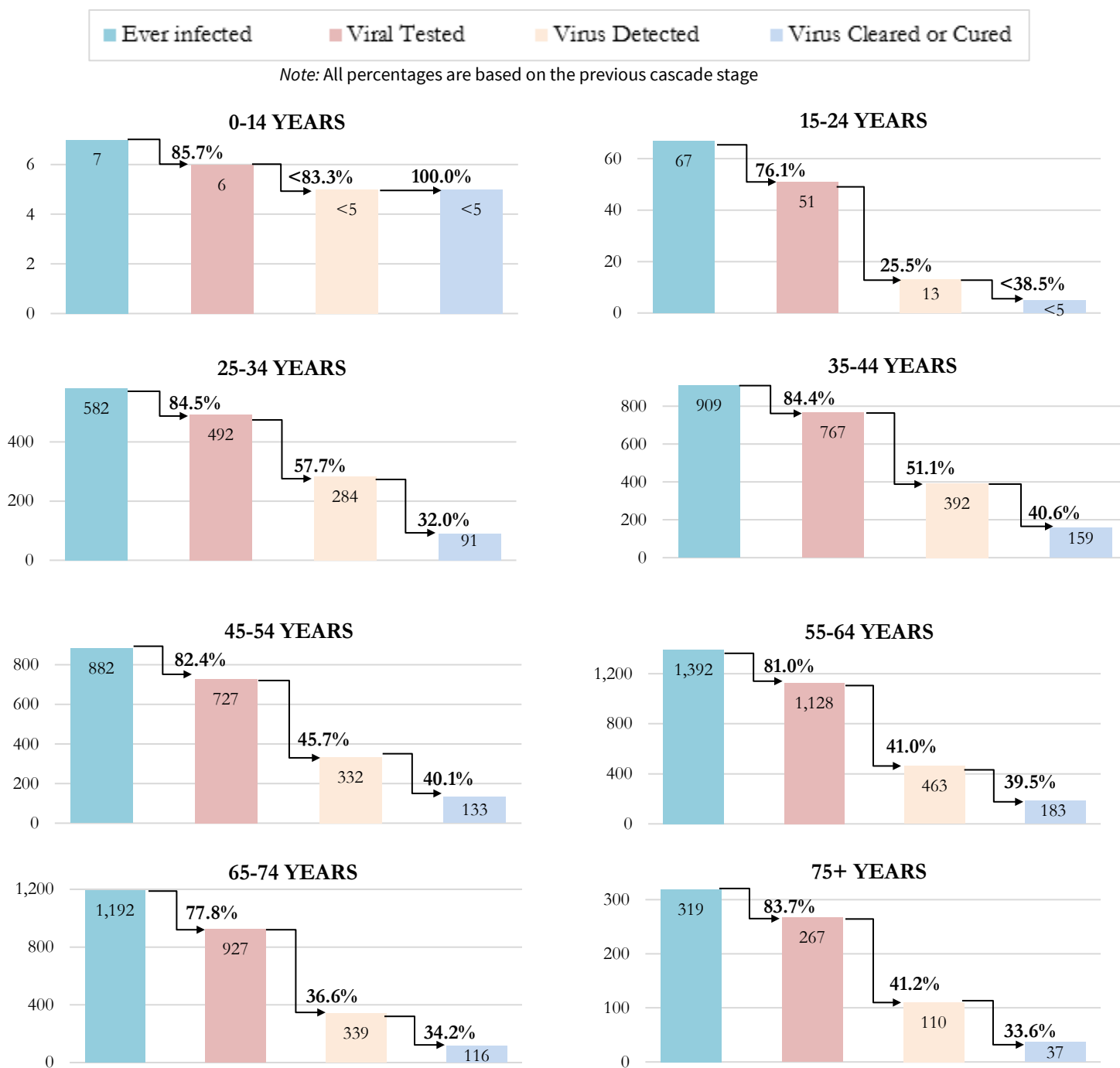
Eighteen percent (985 ever infected people) did not receive a test for HCV RNA, to determine an active hepatitis C infection.



More than 1,200 people (63%) who had a positive test for hepatitis C RNA **remained infected with HCV**



Figure 11. HCV clearance cascade by age, January 1, 2021 – December 31, 2023

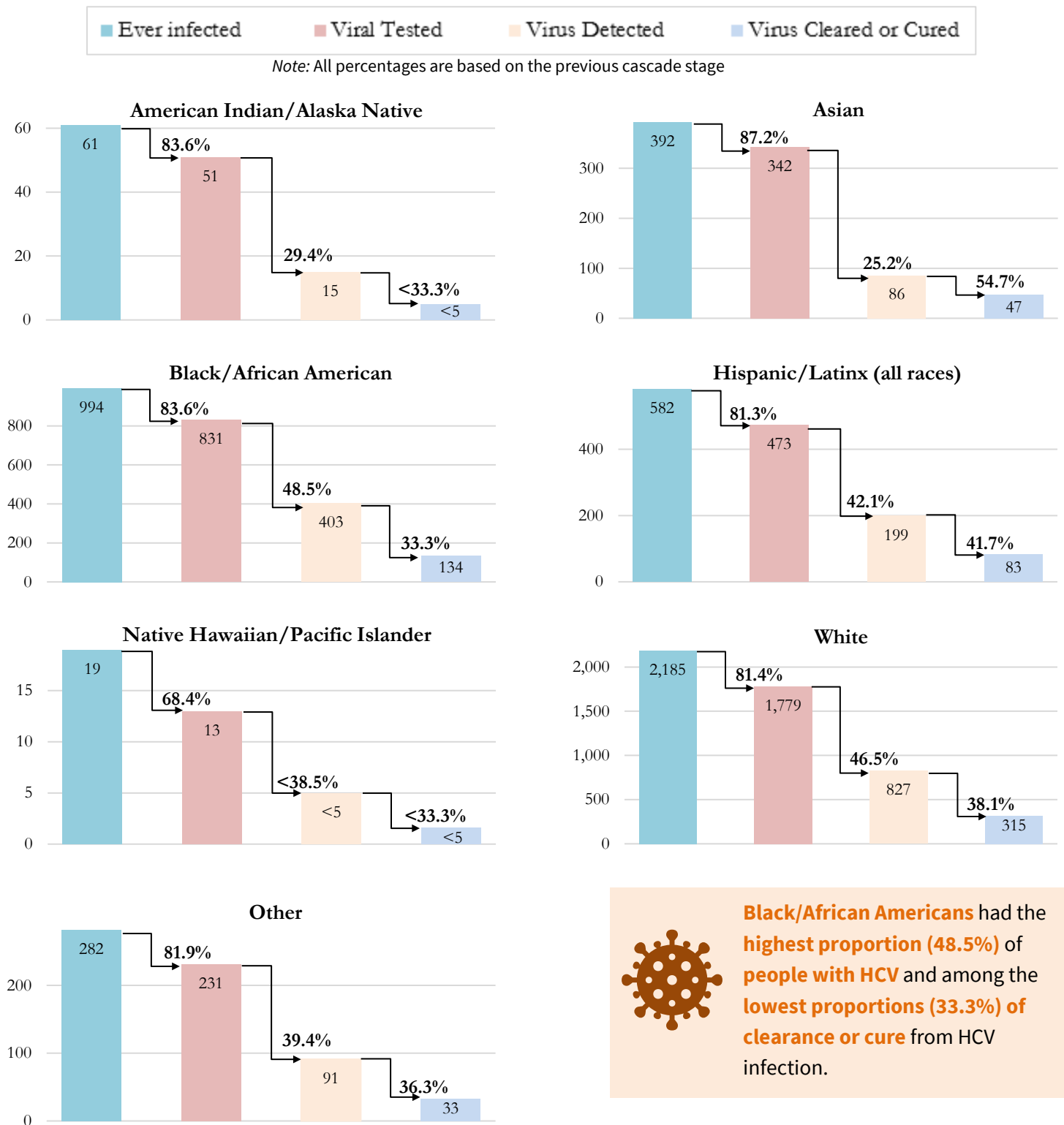


People between 25 years and 34 years old had the **lowest proportion of** (32.0%) HCV clearance/cure.

>>> For more information & data on the HCV clearance cascade, see Technical Notes & Table 4



Figure 12. HCV clearance cascade by race and ethnicity, January 1, 2021 – December 31, 2023*



*Race/ethnicity data was missing for 835/5,350 (15.6%) cases included in the HCV Clearance Cascade.

>>> For more information & data on the hepatitis C clearance cascade, see Technical Notes & Table 4



Figure 13. HCV clearance cascade by sex (Male), January 1, 2021 – December 31, 2023

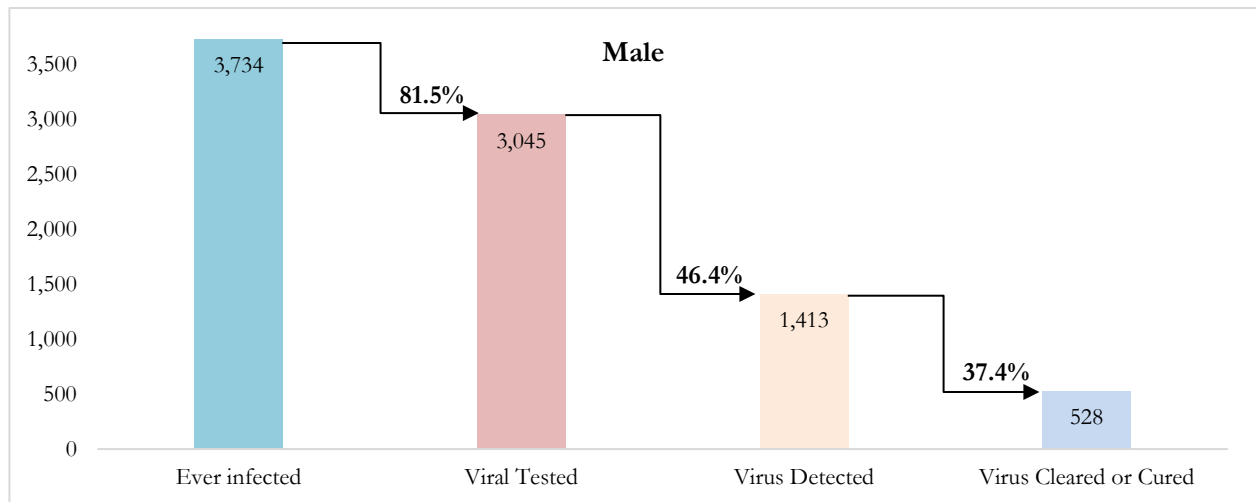
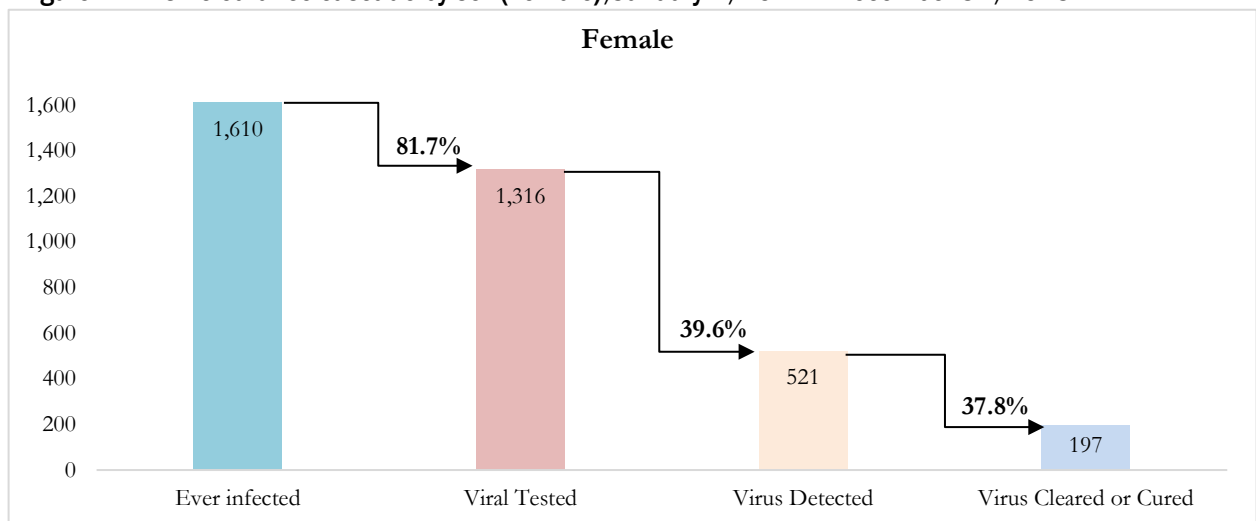


Figure 14. HCV clearance cascade by sex (Female), January 1, 2021 – December 31, 2023



Notes:

- All percentages are based on the previous stage
- The HCV Clearance Cascade included less than 5 people who identified as 'Other' sex. No person in this group had a detectable hepatitis C RNA test result.
- Information on sex was missing for 3 people



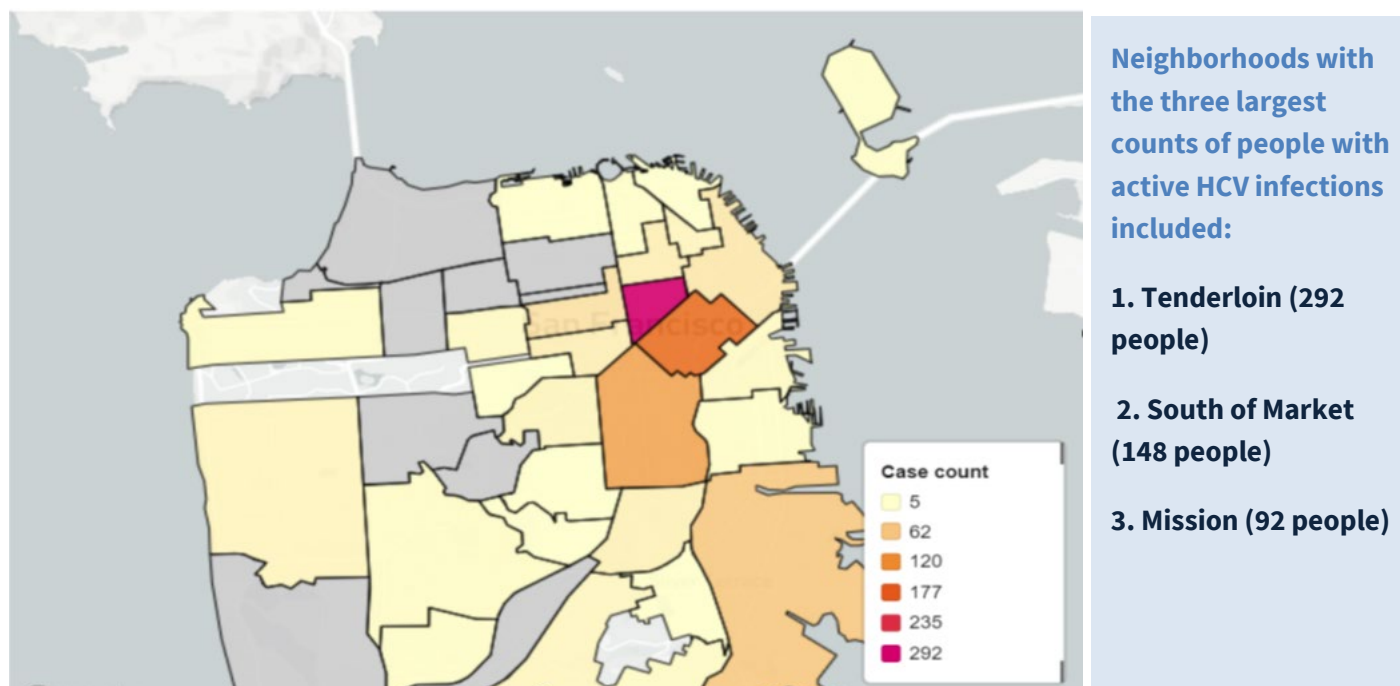
The proportions of HCV **RNA testing** and **HCV clearance or cure** were both **comparable between males and females**.

>>> For more information & data on the hepatitis C clearance cascade, see Technical Notes & Table 4



Figure 15. Cases with active HCV infection as of December 31, 2023, in San Francisco by neighborhood from four facilities*

To further understand the spatial distribution of HCV infections in San Francisco, active HCV cases as of December 31, 2023, were mapped out across neighborhoods shown below. Neighborhoods with larger numbers of HCV cases appear in darker shaded colors. For example, neighborhoods with counts exceeding 200 cases appear in magenta. Neighborhoods with a smaller number of HCV cases appear in shades of yellows. Neighborhoods shown in grey shaded colors comprised fewer than five cases of HCV.



***Notes:**

- Counts of people were used instead of rates, since the underlying population that was served by these facilities could not be estimated.
- The map does not include addresses of 290/1,209 (23.9%) people with active HCV infection as of December 31, 2023. These addresses could not be geocoded. Therefore, the map represents 919 people.
- Cases included here only represent those with test results from the four facilities used in the HCV clearance cascade.
- Case counts are not shown for neighborhoods with fewer than five cases or for neighborhoods with a population fewer than 1,000 people.

>>> For more information & data on the hepatitis C clearance cascade, see Technical Notes & Table 5.



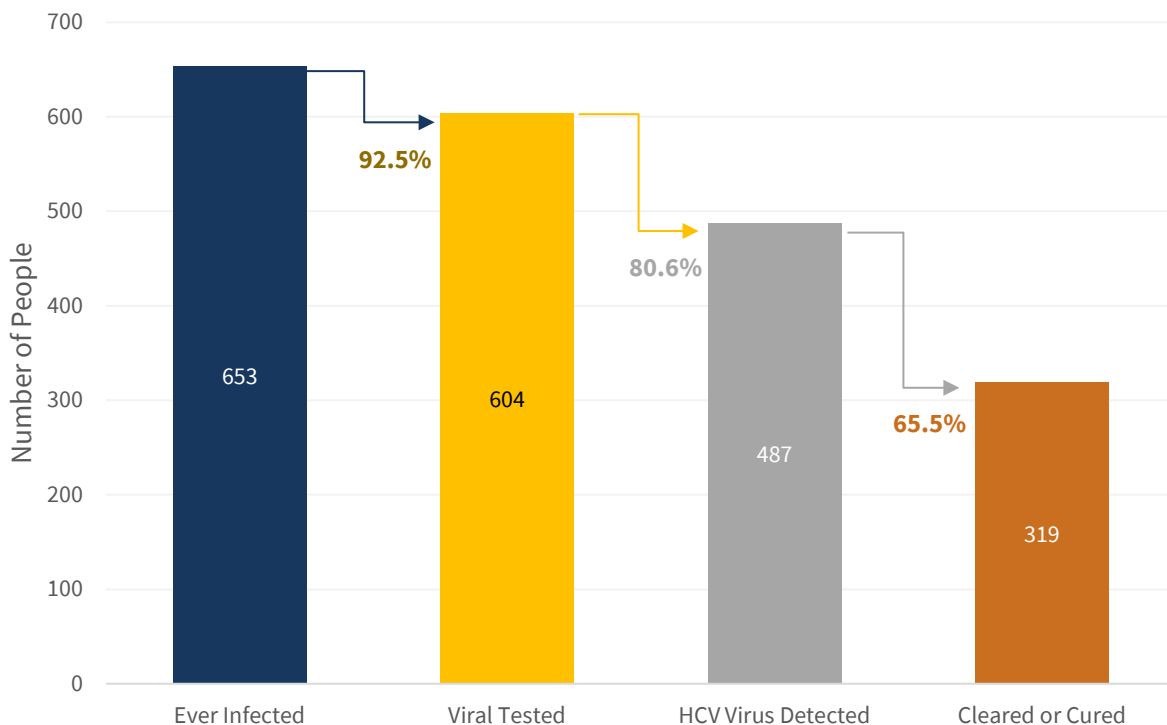
HEPATITIS C AND HIV

Hepatitis C and HIV surveillance data were matched to describe San Francisco residents with hepatitis C and HIV coinfection. Individuals with at least one positive HCV lab result reported from 2021-2023 were matched to the complete HIV/AIDS case registry. Matched data are presented in this section.

Hepatitis C Clearance Cascade for People with HIV

The hepatitis C clearance cascade estimates the number and percentage of those tested for HCV and cleared/cured of HCV among those living with HIV. It includes San Francisco residents living with HIV and ever infected with hepatitis C, with at least one positive HCV lab reported from 2021-2023.

Figure 16. Hepatitis C clearance cascade for people with HIV, 2021-2023



Notes: 2021-2023 refers to time of positive HCV lab report. Percentages are based on the previous stage of the cascade.

Ever Infected: any positive HCV test result ever reported, including anti-HCV, RNA, or genotype

HCV Virus Detected: any positive HCV viral test result ever reported, including RNA or genotype

Viral Tested: any HCV viral test result ever reported, including RNA or genotype

Cleared or Cured: evidence of clearance/cure of HCV if most recent HCV RNA as of the end of 2023 was negative, following a previous positive HCV viral test



Among HCV/HIV coinfecting cases with a positive HCV result in 2021-2023, **at least 65.5%** of cases with a positive HCV viral test were **cleared or cured of hepatitis C** by the end of 2023.

>>> For more information & data on the HCV and HIV match, see Technical Notes & Table 6.



Insurance Status and Risk Factors for Confirmed Chronic HCV Cases with HIV Coinfection

Of the 653 individuals ever infected with HCV and living with HIV identified in the San Francisco HCV and HIV surveillance registries match, 487 individuals met the CDC/CSTE case definition for a confirmed chronic hepatitis C case. Data for these cases are presented here.

Figure 17. Insurance status for confirmed chronic HCV cases with HIV coinfection, 2021-2023 (n=487)

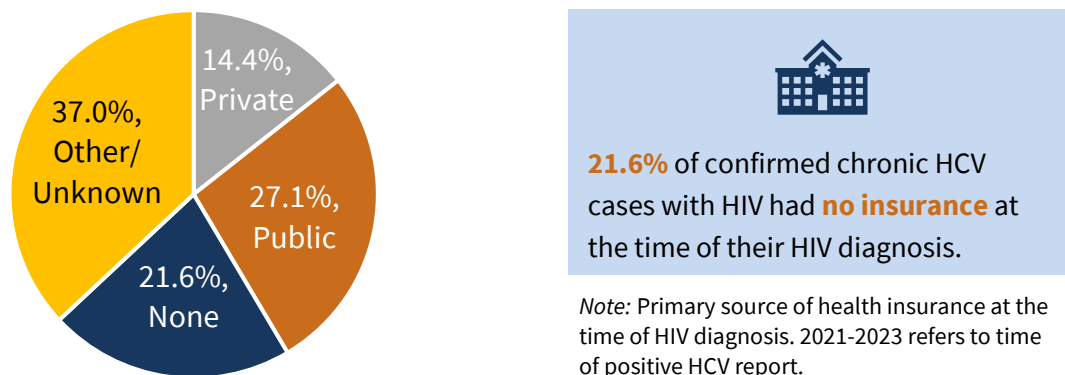
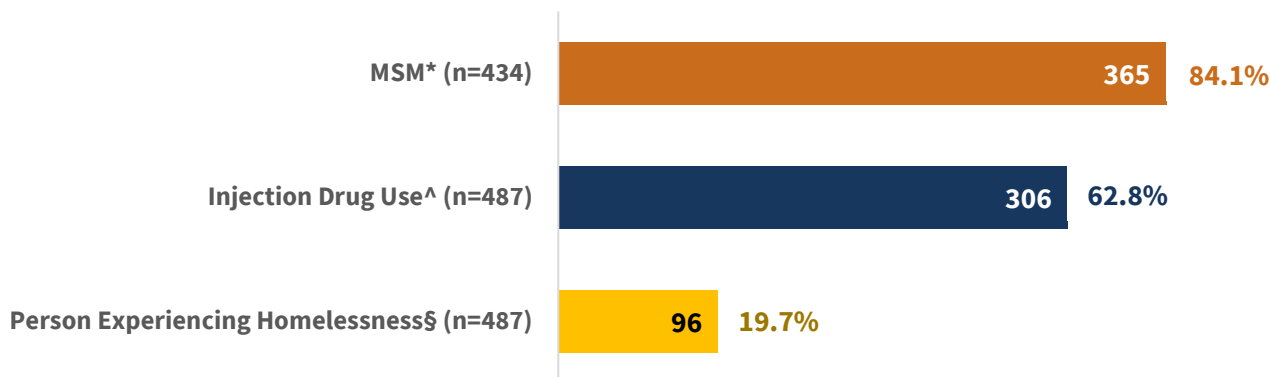


Figure 18. Risk factors for confirmed chronic HCV cases with HIV coinfection, 2021-2023



Notes: Risk factor data are from the HIV/AIDS case registry. Risk factors are not mutually exclusive. 2021-2023 refers to the time of positive HCV report.

* Men who have sex with men (MSM) defined as persons born male who had sex with men. Number & percentage excludes persons born female. MSM data is unknown for 24/434 (5.5%) of cases born male.

^ Injected drugs prior to HIV diagnosis. Injection drug use data is unknown for 24/487 (4.9%) of cases.

§ Status based on most recent reported address in HIV/AIDS case registry.

Among confirmed chronic hepatitis C cases with HIV:



84.1% of persons born male were **MSM** and **62.8%** overall had a history of **injection drug use**



At least 63.0% of MSM, **69.6%** of people with a history of injection drug use, and **71.9%** of persons experiencing homelessness were **cleared or cured of hepatitis C** by the end of 2023**.

**See page 24 Technical Note “Interpretation of Stages for the Hepatitis C Clearance Cascade for People with HIV”.

>>> For more information & data on the HCV and HIV match, see Technical Notes & Table 6.



DISCUSSION

The core surveillance data for chronic HCV cases reported to San Francisco in 2023 were comparable to the latest findings on the national level⁹: approximately two thirds were male, with newly reported cases trending younger relative to previously reported cases. Specifically, 35.7% of newly reported cases were born in or after 1984 (39 years or younger at first report), compared to 21.4% of all reported cases. Inversely, baby boomers (born between 1945 and 1965) represented 26.4% of newly reported cases, and 45.1% of all reported cases. This shift toward younger ages may partially reflect community partners' efforts to increase outreach and testing services for communities with an increased risk of HCV infection, including young adults. These increased efforts have the potential to lead to identifying cases at an earlier stage of their infection and referring them to treatment and care.

African Americans continued to be disproportionately affected in 2023. African Americans comprise 4.9% of the overall San Francisco population but represent 23.3% of all cases reported to San Francisco in 2023 and 13.8% of newly reported cases in 2023.⁶ This also corresponds with the most recent national findings, showing that African Americans have among the highest rates of newly reported acute and chronic HCV.⁹

The geographic analysis of the surveillance data also highlights another notable disparity. San Francisco neighborhoods with the lowest median household incomes are more likely to have higher rates of HCV cases. Identified priority areas include the Tenderloin, South of Market, and Treasure Island neighborhoods, with the Tenderloin and Treasure Island neighborhoods having some of the highest poverty rates in San Francisco.¹⁰

In 2024, SFPDPH began publicly reporting findings from a laboratory results-based HCV clearance cascade, using longitudinal analysis. The aim of the clearance cascade is to monitor progress towards achieving the national strategic target goal of HCV clearance or cure among at least 58% of people with HCV by 2025, and among at least 80% of people with HCV by 2030.⁷ This could be accomplished by identifying and reducing gaps in HCV care, with the goal of increasing the percentage of people who receive confirmatory HCV RNA tests and the proportion subsequently cleared or cured of HCV infection. The HCV clearance cascade comprised 5,350 ever-infected people in San Francisco with HCV, who were predominantly male and who had a positive HCV test result reported from January 1, 2021 to December 31, 2023 by at least one of the four included facilities.

Among people with a HCV RNA positive test result (1,934), approximately 37.5% (725) were cleared or cured of HCV infection, which was markedly above the national median proportion (29%: range [10%-51%]) most recently published by the CDC.¹¹ However, this proportion was well-below the national hepatitis C target goal for 2025 of at least 58% of people with clearance or cure and the 2030 target goal of at least 80% of people achieving HCV clearance or cure.⁷ Almost two-thirds (1,209 people, 62.5%) of the people that received a positive test for HCV RNA, included in this clearance cascade, remained infected with HCV as of December 31, 2023.



There were minimal variations in the percentages of people with HCV infection, who were subsequently cleared or cured of their infection, across age groups (from 32.0% to 40.6%). However, notable differences were observed between the overall proportion of clearance/cure (37.5%) and proportions in age groups 25-34 years (32.0%) and 64+ years ([65-74 years: 34.2%], [75 years and older: 33.6%]). Of note, the two smallest proportions of people who received HCV RNA tests were observed in the age groups 15-24 years old (76.1%) and 65-74 year old (77.8%) when compared to the overall proportion (81.6%) that received HCV RNA testing. This highlights the need for improved linkage to HCV care in these age groups. Conversely, people in the 35-54 year old age group had higher proportions of both HCV RNA testing ([35-44 years: 84.4%], [45-54 years: 82.4%]) and clearance or cure ([35-44 years: 40.6%], [45-54 years: 40.1%]) when compared to the overall proportions for HCV RNA testing (81.6%) and clearance/cure (37.5%). This could possibly indicate effective linkage to HCV care in these age groups.

Large variations in the proportions of clearance/cure were observed across racial and ethnic groups (from <33.3% to 54.7%), with racial disparities in the proportions of clearance/cure most notable among Black/African Americans (33.3%), American Indian/Alaska Natives (AIAN) (<33.3%), and Native Hawaiian/Pacific Islanders (NH/PI) (<33.3%). However, the AIAN and NH/PI subgroups had markedly fewer HCV infections. Therefore, the calculated percentages for the two groups are more likely to be skewed and not representative of the true proportions of each group.

Among people who remained positive for HCV, a clustering of active cases by neighborhood was observed in the Tenderloin (292 people), the South of Market (148 people), and the Mission (92 people). This closely aligns with the overall geographic distribution observed for all 2023 cases, with the Tenderloin and South of Market seeing the highest rates of both newly reported and all cases reported in 2023. Of particular note, the Tenderloin, which has the highest number of active infections, is a neighborhood with a household income level below the median in San Francisco.¹⁰

It is noteworthy to recognize that the data used in this analysis include the period January 1, 2021, through December 31, 2023, during the COVID-19 pandemic. Recent research has revealed the impact that the pandemic may have had on access to HCV treatment in the U.S.¹² It is possible that the proportions of clearance/cure in this analysis were affected by the additional challenges to accessing treatment as a result of the pandemic. Nonetheless, these findings highlight missed opportunities in the treatment of hepatitis C infection.

Another missed opportunity in HCV care was identified among people who received a positive anti-HCV test result but did not receive an HCV RNA confirmatory test as of December 31, 2023 (985 people, 18.4%). While the proportion of individuals who received a test for HCV RNA is somewhat comparable with other major cities like Philadelphia and New York City,^{13,14} it is important to highlight that many cases who are identified as reactive by an HCV antibody test may not subsequently be evaluated for the presence of HCV RNA to determine if they have an active HCV infection. Consequently, those with an active HCV infection who do not receive follow-up testing for HCV RNA will not receive crucial preventive services, medical care, and curative treatment. This can be addressed by implementing a range of



testing and laboratory strategies such as auto-reflex HCV RNA testing, providing onsite confirmatory testing at sites conducting rapid anti-HCV testing, and utilizing new diagnostic tools that reduce barriers to confirmatory testing, including point-of-care HCV RNA tests and dried blood spot tests.³

In 2024, the HCV surveillance registry was matched to SFPDPH's HIV/AIDS case registry, which is the first time such a match has been included in the HCV surveillance report. This match highlights an important population for HCV treatment prioritization, given that people living with HIV are six times more likely to have HCV than are those without HIV.¹⁵ Furthermore, people coinfecting with HCV/HIV have a faster progression of fibrosis, cirrhosis, and liver cancer, as well as other health complications.^{16,17} Among confirmed chronic HCV cases reported from 2021-2023 and coinfecting with HIV, over one-fifth (21.6%) did not have insurance at the time of their HIV diagnosis and a little over one-third (34.5%) had no evidence of HCV clearance/ cure as of December 31, 2023.

As of November 2023, SFPDPH now receives all non-positive HCV RNA test results from 98% of reporting facilities that conduct HCV testing for people in San Francisco. Each year of consistent and complete reporting of negative HCV RNA test results will provide a more comprehensive epidemiologic description of the clearance cascade and the progress towards achieving the national target goal for clearance or cure of HCV infections in San Francisco. In addition, further completeness will bring us closer to estimating HCV prevalence in San Francisco in the future. In the meantime, a recent paper by researchers within End Hep C SF's Community Research & Data Stewardship (CoRDS) workgroup estimated the overall prevalence of HCV in San Francisco, regardless of whether people had been diagnosed and reported to SFPDPH since the HCV case registry began.¹⁸ They found an estimated 22,585 people who were HCV antibody positive and an estimated 11,582 people with active HCV infection in San Francisco in 2019. This estimate indicates a much higher seroprevalence (2.6%)¹⁸ than that of the country's overall (1.7% per National Health and Nutrition Examination Survey (NHANES)).¹⁹ People who inject drugs (PWID) are the most disproportionately affected group in San Francisco, comprising an estimated 73.1% of all HCV cases but only 2.8% of the San Francisco population. Transgender women with low socio-economic status were also significantly disproportionately affected. Despite comprising only 0.1% of the San Francisco population, transgender women represent 1.4% of overall HCV cases. Also disproportionately affected were men who have sex with men (MSM), with 11.7% of cases and only 7.8% of the population in San Francisco.¹⁸

To address these trends in San Francisco, in 2016, the SFPDPH, University of California San Francisco (UCSF), and more than 30 other community partners established *End Hep C SF* (<http://www.endhepcsf.org>), a collective impact initiative with a mission to support all San Franciscans living with and at risk for HCV and to maximize their health and wellness. *End Hep C SF* achieves this through prevention, education, testing, treatment, and linkage to reduce morbidity, mortality, and stigma related to HCV. More than 200 individuals and 38 organizations have signed on to be a part of *End Hep C SF*, and the initiative's work has been featured in numerous venues throughout the Bay Area and nationally – including in a series of short videos that illustrate the *End Hep C SF* model and the important impact community members have had on the work to eliminate HCV in San Francisco:



<https://endhepcsf.org/about-us/#videos>. *End Hep C SF* continues to use multiple tools to evaluate San Francisco's progress toward HCV elimination, including a data dashboard that tracks a variety of local HCV indicators, available online here: <https://endhepcsf.org/evaluation-dashboard/>. The opportunity to easily cure HCV has energized clinical and community service providers, resulting in increased efforts to understand the local HCV epidemiology and to work collaboratively toward HCV elimination. As part of these efforts, SFDPH and ARCHES is refining and expanding its HCV surveillance report, utilizing the recently collected negative HCV RNA lab results to develop more comprehensive analyses. This allows us to better understand disparities and gaps in HCV diagnosis and treatment, and to track city-wide progress toward reducing these gaps.

Additionally, SFDPH is in the initial planning stages of establishing a SFDPH perinatal HCV program in order to better monitor the burden of perinatal HCV in San Francisco, to identify potential prevention opportunities, and to ensure that universal HCV testing guidelines for pregnant people in San Francisco are implemented.

SFDPH is also embarking on new efforts to improve completeness of demographic information and ascertain risk factor data for all cases. Starting in 2023, to improve the completeness of race and ethnicity data, an annual match with the California Department of Public Health's CalREDIE surveillance system was implemented. In addition, an HCV and HIV registry match was conducted for this report, which provided insurance and risk factor data from the HIV/AIDS case registry. ARCHES' Viral Hepatitis Surveillance Program will continue to pursue other data sources to improve the registry, including a vital records match. All of these improvements will enrich the registry, with the ultimate goal of informing clinical and community service providers for those living with HCV.



TECHNICAL NOTES

Listed below are the technical notes for the HCV surveillance data in this report.

- **Laboratory Results Reporting and Data Storage:** Laboratorians, clinicians, and other mandated reporters report positive and certain negative hepatitis C test results to the SFDPH in compliance with Title 17, California Code of Regulations (CCR), Sections 2500 and 2505.²⁰ According to the California Health and Safety Code (HSC) Section 120130, laboratories are required to submit lab results electronically to the state electronic reporting system.²¹ Laboratories and providers are required to report test results, patient identifiers (e.g., name, date of birth, gender, address, phone number, medical record number) and provider identifiers (e.g., name, facility, address).²⁰ SFDPH receives and stores the reported information in a secure electronic person-based database. Laboratory data are quality-checked and deduplicated on a routine basis.
- **CDC/CSTE Chronic Hepatitis C Case Definition:** The 2020 Centers for Disease Control and Prevention/Council of State and Territorial Epidemiologists (CDC/CSTE) laboratory criteria for diagnosis are applied to HCV test results to identify persons with probable and/or confirmed chronic hepatitis C. CDC/CSTE defines a probable case of chronic hepatitis C as a person with a positive test for antibodies to hepatitis C virus, and no report of an HCV virus detection test or NAT. A confirmed case of chronic hepatitis C is a person who has a positive HCV virus detection test or NAT, including qualitative and quantitative RNA or genotype testing. In addition to the laboratory criteria, both probable and confirmed case definitions require that cases are >36 months of age (unless exposure was known to be non-perinatal) and have no report of, or do not meet, clinical or laboratory criteria indicative of an acute infection. SFDPH does not routinely receive clinical information (e.g., jaundice, liver enzyme tests, etc.) nor, historically, negative HCV results to identify acute cases based on symptoms or test conversion (a negative HCV test result followed within 12 months by a positive HCV result). Therefore, the CDC/CSTE laboratory criteria is used for case classification.²²
- **Negative RNA and Positive Antibody:** This is the first HCV surveillance report from SFDPH to incorporate negative HCV viral detection test results, such as qualitative and quantitative RNA. Per the 2020 CDC/CSTE case definition, individuals that are anti-HCV positive with only negative RNA results are not considered a case and are not included in any core surveillance case counts but may be included in the HCV clearance cascade. In previous reports where negative RNA results were not available, these individuals would have been included as probable cases. As such, case counts in this report are not comparable to previous reports.
- **Newly Reported Cases:** Newly reported cases are persons reported to SFDPH who met laboratory criteria for probable or confirmed chronic hepatitis C for the first time and for whom no positive HCV laboratory report had previously been received.
- **Reported Sex:** Gender/sex is required to be reported with lab results. However, laboratories only report one field for sex and gender, with no way to determine which definition is being



reported. In this report, sex is the gender/sex as reported by laboratories/facilities. The number and percent of persons with missing or unknown sex is shown in table/figure footnotes.

- Race/Ethnicity:** Race/ethnicity is obtained from the laboratory report and classified as American Indian/Alaska Native, Asian, Black/African American, Hispanic/Latinx, Native Hawaiian/Pacific Islander, White, or Other. Hispanic/Latinx ethnicity includes all persons of Hispanic or Latinx ethnicity regardless of race; all other race categories do not include persons of Hispanic or Latinx ethnicity. Other includes multi-race categories or those reported with race 'Other' in lab reports. The number and percent of persons for whom race/ethnicity is missing or unknown is shown in the footnotes of tables/figures. For the hepatitis C and HIV analysis, Native Hawaiian/Pacific Islander was combined with the Asian category, and American Indian/Alaska Native, Other and Unknown categories were combined.
- Addresses and Geocoding:** Only individuals in the hepatitis registry with a recent San Francisco address or whose address is unknown/missing are included in this report. Address information was geocoded using ArcGIS Pro to identify latitude and longitude and then matched to San Francisco neighborhoods using R. Cases that could not be geocoded due to missing or unknown residential address information are excluded from the geographic distribution analysis. The number and percent of persons for whom address is unknown is shown in table/figure footnotes. Data for neighborhoods with a case count less than 5 or with a population of <1000 are not disclosed.
- Analyses:** SAS version 9.4 and Microsoft Excel were used for descriptive and statistical analyses, tables, and figures, unless otherwise noted.
- Case counts less than five:** All case counts less than five are displayed as "<5" and corresponding rates or percentages are displayed as less than the corresponding case rate or percentage for five cases.
- Rates:** Case rates for newly reported chronic hepatitis C cases from 2021-2023 (figure 1) were calculated as the number of newly reported chronic HCV cases reported to SFDPH for a given year divided by the San Francisco population multiplied by 100,000. Case rates for the geographic distribution analysis (figures 7 & 8; tables 2 & 3) were calculated as the number of chronic HCV cases reported to SFDPH in 2023 divided by the San Francisco population multiplied by 10,000. San Francisco population estimates for the case rates were from the 2017-2022 American Community Survey (ACS) 5-year estimates⁶. Case rates in this report are not prevalence rates or incidence rates (see Data Limitations).
- Total Percentages:** Percentages may not total 100 due to rounding.
- Confidentiality:** Data collected and summarized in this report is kept strictly confidential. SFDPH is authorized by law to collect information on cases of chronic hepatitis C infection for the purpose of controlling or preventing disease including: the reporting of disease, the conduct of public health surveillance, public health investigation and public health intervention.²³ SFDPH employees have a legal and ethical responsibility to protect the confidentiality of protected health information and to use that information only in the performance of their jobs.



- **Changes in Data from Previous Reports:** Changes in data in this report from previous reports may be due to delays in reporting, changes in definitions or methodology, or corrections to the data, such as the removal of duplicates.

CORE SURVEILLANCE DATA NOTES

- **Persons included in the 2023 Core Surveillance:** Core surveillance data in 2023 include all persons who met laboratory criteria for probable or confirmed chronic hepatitis C infections with at least one positive HCV test result (anti-HCV, RNA, or genotype) reported to SFDPH from January 1, 2023 – December 31, 2023.
- **Age used in the 2023 Core Surveillance:** Age is defined as the age of the person at the time their first positive HCV result was received by SFDPH in 2023.

LABORATORY RESULTS-BASED CHRONIC HEPATITIS C CLEARANCE CASCADE NOTES

Timeframes and Descriptions of the 2023 Laboratory-based Hepatitis C Clearance Cascade

- **Cascade starting point:** January 1, 2021, the date when full reporting of HCV RNA negative or not detected test results was implemented in four high volume facilities, which report HCV test results to SFDPH.
- **Evaluation time:** The interval between the cascade starting point, January 1, 2021, and the analysis point.
- **Follow-up period:** The follow-up period extended from the cascade starting point to December 31, 2023.
- **Facilities included in the HCV clearance cascade:** Mandated reporting of negative HCV RNA results was not fully implemented in SFDPH until November 2023. However, prior to the mandate, some laboratories and health facilities reported negative HCV RNA results to SFDPH upon request. Comprehensive reporting to SFDPH of negative and positive HCV RNA test results was provided by four high volume laboratories during the follow-up period, January 1, 2021 - December 31, 2023. An analysis of HCV lab results from these four facilities during the evaluation time demonstrated the following:
 - Laboratory results from these four facilities represented 68.9% (8,569/12,434) of all positive HCV test results (anti-HCV, quantitative HCV RNA, and qualitative HCV RNA results).
 - Approximately 70.9% (2,875/4,051) of all HCV RNA positive test results received during this follow-up period were reported to SFDPH by these four facilities.
 - Approximately 90.9% (9,842/10,827) of all negative HCV RNA test results reported to SFDPH were reported by these four facilities.



- **Persons included in the HCV clearance cascade:** Inclusion in the clearance cascade was determined by a positive HCV laboratory result reported to SFDPH by at least one of the four facilities (positive anti-HCV, positive HCV RNA), between January 1, 2021, and December 31, 2023.
- **Persons excluded from the HCV clearance cascade:** A person was excluded from the clearance cascade analysis if they were known to be deceased, were known to live in a jurisdiction outside of San Francisco or were missing a date of birth.
- **Age used in the analysis:** Age is defined as the person’s age at the time of the last HCV specimen collection date.
- **Comprehensiveness of the data used in the longitudinal analysis:** Since complete reporting of negative HCV RNA laboratory results was not uniformly reported by all facilities to SFDPH during the follow-up period (January 1, 2021 – December 31, 2023), the findings from this longitudinal analysis may not reflect the true proportion of cases that tested positive for hepatitis C RNA and subsequently showed evidence of clearance/cure. Therefore, the findings from the longitudinal analysis should be interpreted with caution.
- **Classification of test results for the laboratory results-based HCV clearance cascade:** Only laboratory results-based HCV tests reported to SFDPH with a known result (positive anti-HCV, positive or negative HCV RNA) were included in this analysis.
 - HCV tests indicating a ‘HCV RNA [qualitative, quantitative], or ‘HCV antibody’ or ‘anti-HCV’ were the only tests included in this analysis.
 - HCV test results with an interpretation indicating “Positive”, “Reactive”, “Detected”, “Negative”, “Not detected”, or “Non-Reactive” were included in this analysis.

Classification of cases in the Hepatitis C clearance cascade

- **Step 1 – Description of the Ever infected group:** This category includes all individuals from the four facilities with any positive/ detected/reactive HCV test (anti-HCV, HCV RNA) performed from the cascade starting point through the end of the ever-infected period (December 31, 2023).
- **Step 2 – Description of the Viral tested group:** This category includes all individuals who were ever infected (**Step 1**) This group of ever infected people was further sub-classified based on their status of either receiving an HCV RNA test or not receiving an HCV RNA test result: ‘Not viral tested’ or ‘Viral tested’.
 - **2a – Not viral tested** — All ever-infected individuals who had no HCV RNA test result by the end of the follow-up period (December 31, 2023).
 - **2b – Viral tested**—All ever-infected individuals who had an HCV RNA positive or negative test result by the end of the follow-up period (December 31, 2023).
- **Step 3 – Description of the HCV virus detected group:** This category includes all individuals in the viral tested group (**Step 2b**) and was divided into two subgroups: ‘HCV virus detected’ and ‘HCV virus not detected’.



- **3a – HCV virus detected** – All viral tested individuals who ever had a positive or detected HCV RNA test result.
- **3b – HCV virus not detected** – All viral tested individuals who only had a negative or not detected HCV RNA test result.
- **Step 4 – Description of the Virus cleared or cured group:** This category includes all individuals in the HCV viral detected group (Step 3a) and was sub-classified into two groups: ‘Cured or cleared’ and ‘Active HCV infection’.
 - **4a – Virus cured or cleared** (No laboratory evidence of active HCV infection) – All individuals who had at least one positive HCV RNA test result and whose final HCV RNA test result during the follow-up period was negative or not detected. This is not necessarily indicative of a sustained virologic response at post-treatment week 12 (SVR12), which is defined as the absence of detectable HCV RNA 12 weeks after completion of treatment and is often the standard endpoint following treatment to assess cure.
 - **4b – Active HCV infection** (not cleared or cured) – All individuals who had at least one HCV RNA test result that was positive or detected and whose final HCV RNA test result during the follow-up period was positive or detected. This may include individuals who initially cleared or cured their infection and were subsequently reinfected during the follow-up period, as well as individuals who had treatment failures during the follow-up period.

HEPATITIS C AND HIV DATA NOTES

- **Persons included in the HCV Data for the HCV and HIV Match:** The HCV data for the HCV and HIV match included 7,371 persons in the HCV registry who were > 36 months of age and ever infected with HCV, with at least one positive HCV lab result (anti-HCV, RNA, or genotype) reported from January 1, 2021 – December 31, 2023. This included individuals who do not meet the criteria for a probable or confirmed case but had a positive anti-HCV result reported during the time period.
- **Persons included in the HIV Data for the HCV and HIV Match:** The HIV data for the HCV and HIV match included 68,042 persons in the SFPDPH HIV/AIDS case registry as of April 2024, not restricted by any time period. This included all deceased and living cases, as well as all cases who were residents of San Francisco at the time of diagnosis or who were out of jurisdiction but had received care in San Francisco. Please refer to the most recent San Francisco HIV Surveillance report for more information on HIV in San Francisco.²⁴
- **Persons included in the HCV and HIV Matched Data:** The HCV and HIV matched data was restricted to 653 persons ever infected with HCV and living with HIV. Of those, 487 individuals met the CDC/CSTE case definition for a confirmed chronic HCV case.
- **Variables from the SFPDPH HIV/AIDS Case Registry:** The following data were from the SFPDPH HIV/AIDS case registry: sex at birth, race/ethnicity, country of birth, insurance at HIV diagnosis,



person experiencing homelessness, injection drug use, Men who have sex with men (MSM), and years between HCV and HIV diagnosis (see Table 6 footnotes for additional information). The reporting of a risk factor does not necessarily indicate the source of HCV infection.

- **Age at time of HCV Diagnosis:** Age at the time of HCV diagnosis is defined as the person's age at the time their first positive hepatitis C result was received by SFDPH.
- **Interpretation of Stages for the Hepatitis C Clearance Cascade for People with HIV:** Determination of stages within the laboratory-based hepatitis C clearance cascade for people with HIV was based on all available lab reports in the HCV surveillance registry as of December 31, 2023, not restricted by any time period prior to that, for individuals with at least one positive HCV result (anti-HCV, RNA, or genotype) reported from January 1, 2021 – December 31, 2023. It was not restricted to laboratories/facilities who were reporting negative HCV RNA results during this time. As such, this clearance cascade may underreport the percentage of people viral tested or cleared/cured; any differences in clearance/cure noted between subgroups in Table 6 may be biased due to differences in the underlying populations of those whose negative HCV RNA results were reported versus not. Data should be interpreted with caution.

Classification for the Hepatitis C Clearance Cascade for People with HIV

For the laboratory-based hepatitis C clearance cascade for people with HIV (figure 19), based on the HCV and HIV matched data, the definitions for the stages of the cascade are as follows:

- **Step 1 - Ever infected:** All individuals ever-infected with HCV as indicated by any positive HCV test result ever reported, including anti-HCV, RNA, or genotype.
- **Step 2 - Viral tested:** All individuals in the 'Ever infected' group with any positive or negative HCV viral test result ever reported, including RNA or genotype.
- **Step 3 - HCV virus detected:** All individuals in the 'Viral tested' group with any positive HCV viral test result ever reported, including RNA or genotype. This result may not necessarily be from the earliest viral test reported.
- **Step 4 - Cleared or cured:** All individuals in the 'HCV virus detected' group whose most recent HCV RNA result as of the end of 2023 was negative, regardless of timeframe since last positive HCV RNA result. This is not necessarily indicative of a sustained virologic response at post-treatment week 12 (SVR12), which is defined as the absence of detectable HCV RNA 12 weeks after completion of treatment and is often the standard endpoint following treatment to assess cure.



DATA LIMITATIONS

1. Surveillance data do not measure prevalence: The data presented are not an estimate of the prevalence of HCV infection in San Francisco residents. Prevalence cannot be calculated because some persons infected with HCV are not tested, and others were tested before consistent reporting to SFDPH was established. In addition, some persons who were tested anonymously may not have been reported to SFDPH. Finally, the data presented may include persons who have left San Francisco or may have died after they were reported to SFDPH.

2. Surveillance data do not measure incidence: The data presented are not an estimate of the incidence rate of chronic hepatitis C cases in 2023. The incidence rate is the number of newly infected persons occurring within a defined time in a defined geographical area. While the date of initial reporting to SFDPH is tracked, this date does not necessarily reflect the initial infection or diagnosis date. For example, a person may have been infected many years ago but was not tested until 2023 because a clinician was following recommended screening practices or because symptoms of chronic hepatitis had developed.

3. HCV Infection: The HCV infection data presented potentially overestimate the number of reported persons who have chronic HCV infection. Acute HCV infections may be misclassified as chronic cases because no single laboratory test distinguishes acute from chronic HCV infection, and acute infection is based on clinical symptoms and liver function tests that are not routinely reported to the health department. Cleared/cured HCV infections may also be included, because the classification of a cleared or cured case requires a clinician assessment and/or negative tests (e.g., HCV viral tests) that, historically, have not been reported to public health from certain laboratories/facilities. However, as of November 2023, a comprehensive reporting of negative and positive HCV RNA results has been implemented.

Nevertheless, distinguishing between acute, chronic, and cleared/cured infections would require public health follow-up with clinicians and/or patients to collect additional laboratory test results and medical care information. Due to the large volume of reports and limited resources for follow-up, SFDPH was limited to conducting HCV surveillance based on HCV test results, which are required to be reported to public health.

4. Reporting gaps: Complete identification of chronic HCV cases depends on complete reporting by laboratories and clinicians. Title 17, CCR mandates clinicians to report cases of chronic hepatitis C to SFDPH²⁰; however, the majority of cases are reported by laboratories and not by clinicians. In addition, there are likely San Francisco residents with chronic hepatitis C who did not receive laboratory testing for hepatitis C during this period and whose treating clinician did not report their condition. Information about these persons is therefore missing from this report. Although this is the first report to include negative viral detection tests, not all laboratories/facilities were reporting negatives during this time



period. Finally, people who were included in these data may not live in San Francisco, either because their address information was not provided or because they have moved.

5. Missing information: Laboratory information systems frequently do not receive or store information about patient race and ethnicity, resulting in a large proportion of cases reported with unknown race and ethnicity.

Similarly, some laboratory reports are missing a residential address. Of the chronic HCV cases reported to SFDPH in 2023, approximately 6% were missing street address, city, and ZIP code information. Additionally, some cases were reported with a home address identical to the clinic or outpatient medical facility where they received care or were reported with a post office box mailing address; these cases' residences were defined as unknown for this report. Since individuals whose county of residence was unknown are included in this report along with persons known to live in San Francisco, the core surveillance data presented may overestimate the number of San Franciscans who were reported with chronic hepatitis C during this period.

Cases with unknown residential addresses were also not included in the geographic distribution. While it is certain that this subset of cases includes people experiencing homelessness (PEH), the percentage of total PEH cases that are included in the subset is unknown, as laboratories and facilities do not report housing status data to SFDPH, and cases cannot be reliably identified as experiencing homelessness. PEH are disproportionately impacted by hepatitis C,¹⁹ and the omission of cases with unknown residences from the geographic distribution may cause underrepresentation of PEH in the geographic analysis.

6. Duplication: SFDPH follows procedures to minimize duplicate records for persons whose laboratory results may be submitted with slight variations in name spelling (e.g., use of middle initial, typographic error). However, in some instances it may not be obvious that two different names belong to the same person, so two cases will be recorded instead of one. This would lead to a slight overestimate of the number of reported chronic HCV cases in this period. Conversely, in some situations, information from a case may have been erroneously matched and joined to the information from another case, leading to potential underestimation of the number of chronic HCV cases reported in this period.



DATA TABLES

Table 1: Characteristics of chronic hepatitis C cases in San Francisco, 2023

	All Reported Cases ²		Newly Reported Cases ²	
	Number	Percentage (Column)	Number	Percentage (Column)
All	2500	100.0%	655	100.0%
HCV Case Status				
Confirmed	2089	83.6%	375	57.3%
Probable	411	16.4%	280	42.7%
Reported Sex				
Female	710	28.4%	214	32.7%
Male	1790	71.6%	441	67.3%
Age Group (Years)				
<15	0	0%	0	0%
15-24	26	1.0%	19	2.9%
25-34	307	12.3%	141	21.5%
35-44	414	16.6%	147	22.4%
45-54	432	17.3%	127	19.4%
55-64	646	25.8%	111	16.9%
65-74	531	21.2%	80	12.2%
75+	144	5.8%	30	4.6%
Birthyear Cohort				
1984-2020	536	21.4%	234	35.7%
1966-1983	771	30.8%	229	35.0%
1945-1965	1127	45.1%	173	26.4%
1921-1944	66	2.6%	19	2.9%
Race/Ethnicity¹				
American Indian/Alaska Native	34	1.5%	< 5	< 1.0%
Asian	198	8.5%	56	10.7%
Black/African American	542	23.3%	72	13.8%
Hispanic/Latinx (all races)	311	13.4%	70	13.4%
Native Hawaiian/Pacific Islander	6	0.3%	< 5	< 1.0%
White	1171	50.3%	280	53.6%
Other	66	2.8%	36	6.9%

1. Race/Ethnicity missing for 172/2500 (6.9%) of all reported cases and 133/655 (20.3%) of newly reported cases in 2023.
2. Number and percentages not shown for categories with fewer than 5 cases.



Table 2: Case count, case rate, and population estimate of all reported cases of chronic hepatitis C by San Francisco neighborhood, 2023¹

San Francisco neighborhood	Case count ²	Case rate ^{2,3}	Population estimate ⁴	San Francisco neighborhood	Case count ²	Case rate ^{2,3}	Population estimate ⁴
Tenderloin	461	143.8	32,056	Portola	22	14.0	15,741
South of Market	264	107.7	24,521	Potrero Hill	20	13.3	15,037
Treasure Island	19	60.6	3,136	Lakeshore	16	12.8	12,529
Hayes Valley	72	37.8	19,039	Russian Hill	22	12.7	17,291
Mission	193	34.5	55,999	Presidio	5	12.7	3,952
Japantown	12	32.4	3,708	Excelsior	47	12.1	38,846
Western Addition	71	32.0	22,211	North Beach	14	11.9	11,740
Bayview Hunters Point	127	31.4	40,495	Glen Park	10	11.5	8,723
Financial District/ South Beach	66	28.6	23,089	Oceanview/ Merced/Ingleside	27	11.0	24,627
Twin Peaks	21	26.4	7,956	West of Twin Peaks	35	9.3	37,480
Castro/Upper Market	55	24.3	22,623	Pacific Heights	20	8.7	22,996
Visitacion Valley	37	20.5	18,046	Outer Mission	18	8.0	22,636
Haight Ashbury	34	18.4	18,473	Outer Richmond	33	7.4	44,573
Mission Bay	28	17.4	16,080	Sunset/Parkside	58	7.4	78,826
Noe Valley	37	16.0	23,079	Presidio Heights	7	6.7	10,470
Lone Mountain/USF	26	15.8	16,504	Inner Richmond	13	6.2	20,992
Nob Hill	39	15.7	24,762	Inner Sunset	17	6.1	27,729
Chinatown	21	15.3	13,693	Marina	11	4.6	23,910
Bernal Heights	36	14.5	24,767	Seacliff	<5	<21.3	2,348

1. Not shown are 485/2500 (19.4%) of all reported cases who could not be geocoded.
2. Case counts and case rates are not shown for neighborhoods with fewer than five cases or for neighborhoods with a population fewer than 1,000 people.
3. Case rate is the number of cases by neighborhood per 10,000 population.
4. San Francisco Population data source: American Community Survey 5-year estimate 2017-2022.⁶



Table 3. Case count, case rate, and population estimate of newly reported cases of chronic hepatitis C by San Francisco neighborhood, 2023¹

San Francisco neighborhood	Case count ²	Case rate ^{2,3}	Population estimate ⁴
Tenderloin	96	29.9	32,056
South of Market	53	21.6	24,521
Treasure Island	5	15.9	3,136
Mission	48	8.6	55,999
Financial District/ South Beach	18	7.8	23,089
Bayview Hunters Point	29	7.2	40,495
Chinatown	9	6.6	13,693
Hayes Valley	11	5.8	19,039
Bernal Heights	14	5.7	24,767
Lakeshore	7	5.6	12,529
Visitation Valley	10	5.5	18,046
Western Addition	12	5.4	22,211
Castro/ Upper Market	12	5.3	22,623
Excelsior	17	4.4	38,846
Haight Ashbury	8	4.3	18,473
Portola	6	3.8	15,741
Nob Hill	9	3.6	24,762
Outer Mission	8	3.5	22,636
West of Twin Peaks	13	3.5	37,480

San Francisco neighborhood	Case count ²	Case rate ^{2,3}	Population estimate ⁴
Oceanview/ Merced/Ingleside	7	2.8	24,627
Outer Richmond	12	2.7	44,573
Pacific Heights	6	2.6	22,996
Noe Valley	6	2.6	23,079
Sunset/Parkside	17	2.2	78,826
Marina	5	2.1	23,910
Inner Sunset	5	1.8	27,729
Inner Richmond	<5	<2.4	20,992
Russian Hill	<5	<2.9	17,291
Lone Mountain/USF	<5	<3.0	16,504
Mission Bay	<5	<3.1	16,080
Potrero Hill	<5	<3.3	15,037
North Beach	<5	<4.3	11,740
Presidio Heights	<5	<4.8	10,470
Glen Park	<5	<5.7	8,723
Twin Peaks	<5	<6.3	7,956
Presidio	<5	<12.7	3,952
Japantown	<5	<13.5	3,708
Seacliff	<5	<21.3	2,348

1. Not shown are 181/655 (27.6%) of newly reported cases who could not be geocoded.
2. Case counts and case rates are not shown for neighborhoods with fewer than five cases or for neighborhoods with a population fewer than 1,000 people.
3. Case rate is the number of cases by neighborhood per 10,000 population.
4. San Francisco Population data source: American Community Survey 5-year estimate 2017-2022.⁶



Table 4. Conditional proportions for 2023 Laboratory-Based Hepatitis C Virus Clearance Cascade by Demographics among People in San Francisco from Four Facilities – January 1, 2021 – December 31, 2023

	Ever infected ³	Viral Tested ³		Virus Detected ³		Cured/Cleared ³	
	Number	Number	Percentage (row)	Number	Percentage (row)	Number	Percentage (row)
All	5,350	4,365	81.6%	1,934	44.3%	725	37.5%
Reported sex¹							
Male	3,734	3,045	81.5%	1,413	46.4%	528	37.4%
Female	1,610	1,316	81.7%	521	39.6%	197	37.8%
Other ³	<5	<5	<33.3%	0	0	0	0
Age group (Years)							
0-14	7	6	85.7%	<5	<83.3%	<5	100.0%
15-24	67	51	76.1%	13	25.5%	<5	<38.5%
25-34	582	492	84.5%	284	57.7%	91	32.0%
35-44	909	767	84.4%	392	51.1%	159	40.6%
45-54	882	727	82.4%	332	45.7%	133	40.1%
55-64	1,392	1,128	81.0%	463	41.1%	183	39.5%
65-74	1,192	927	77.8%	339	36.6%	116	34.2%
75+	319	267	83.7%	110	41.2%	37	33.6%
Reported race and ethnicity²							
American Indian/ Alaskan Native	61	51	83.6%	15	29.4%	<5	<33.3%
Asian	392	342	87.2%	86	25.2%	47	54.7%
Black/African American	994	831	83.6%	403	48.5%	134	33.3%
Hispanic/Latinx (all races)	582	473	81.3%	199	42.1%	83	41.7%
Native Hawaiian/ Pacific Islander	19	13	68.4%	<5	<38.5%	<5	<33.3%
White	2,185	1,779	81.4%	827	46.5%	315	38.1%
Other	282	231	81.9%	91	39.4%	33	36.3%

1. Sex was missing for 3 people in the ever-infected group.
2. Race/ethnicity was missing for 835/5,350 (15.6%) of the people in the ever-infected group.
3. Number and percentages not shown for categories with fewer than 5 cases.



Table 5. Count and share of people in San Francisco in the hepatitis C virus clearance cascade with active HCV infections from four facilities by neighborhood – January 1, 2021 – December 31, 2023

Neighborhood	Count of People with active infections by neighborhood^{1,2}	Share of people with active infections by neighborhood (%)²
Tenderloin	292	24.2%
South of Market	148	12.2%
Mission	92	7.6%
Bayview Hunters Point	58	4.8%
Western Addition	34	2.8%
Financial District/South Beach	28	2.3%
Hayes Valley	22	1.8%
Nob Hill	22	1.8%
Bernal Heights	19	1.6%
Castro/Upper Market	16	1.3%
Chinatown	15	1.2%
Sunset/Parkside	15	1.2%
Excelsior	14	1.2%
Lone Mountain/ USF	11	0.9%
Mission Bay	11	0.9%
Visitacion Valley	10	0.8%
Outer Richmond	9	0.7%
West of Twin Peaks	9	0.7%
Oceanview/Merced/Ingleside	8	0.7%
Potrero Hill	8	0.7%
Russian Hill	7	0.6%
Treasure Island	7	0.6%
Portola	6	0.5%
Noe Valley	6	0.5%
Marina	6	0.5%
North Beach	5	0.4%
Glen Park	5	0.4%
Haight Ashbury	5	0.4%
Inner Richmond	<5	<0.4%
Inner Sunset	<5	<0.4%
Japantown	<5	<0.4%
Lakeshore	<5	<0.4%
Outer Mission	<5	<0.4%
Pacific Heights	<5	<0.4%
Presidio	<5	<0.4%
Seacliff	<5	<0.4%
Twin Peaks	<5	<0.4%

1. A total of 290 of 1,209 (23.9%) people with laboratory evidence of viral hepatitis C had an address that could not be geocoded and were not included in the map. Therefore, the table shows the addresses of 919 people whose addresses could be geocoded.
2. Number and percentages not shown for categories with fewer than 5 people.



Table 6. Characteristics of confirmed chronic HCV cases with HIV in San Francisco¹, 2021-2023²

	Total ³		Cleared or cured of HCV by end of 2023 ^{3,4}		No evidence of clearance or cure of HCV by end of 2023 ³	
	Number	Percentage (Column)	Number	Percentage (Row)	Number	Percentage (Row)
All	487	100.0%	319	65.5%	168	34.5%
Sex at Birth ⁵						
Female	53	10.9%	37	69.8%	16	30.2%
Male	434	89.1%	282	65.0%	152	35.0%
Age Group (Years) at HCV diagnosis						
<15	0	0%	0	0%	0	0%
15-24	16	3.3%	10	62.5%	6	37.5%
25-34	104	21.4%	69	66.3%	35	33.7%
35-44	161	33.1%	111	68.9%	50	31.1%
45-54	145	29.8%	97	66.9%	48	33.1%
55-64	57	11.7%	30	52.6%	27	47.4%
65+	< 5	< 1.0%	< 5	< 50%	< 5	< 50%
Birthyear Cohort						
1984-2020	65	13.3%	39	60.0%	26	40.0%
1966-1983	189	38.8%	129	68.3%	60	31.7%
1945-1965	229	47.0%	149	65.1%	80	34.9%
1921-1944	< 5	< 1.0%	< 5	< 50%	< 5	< 50%
Race/Ethnicity ^{5,6}						
Asian/Pacific Islander	27	5.5%	20	74.1%	7	25.9%
Black/African American	104	21.4%	77	74.0%	27	26.0%
Hispanic/Latinx (all races)	103	21.1%	65	63.1%	38	36.9%
White	245	50.3%	153	62.4%	92	37.6%
Other/Unknown	8	1.6%	< 5	< 62.5%	< 5	< 62.5%
Country of Birth ⁵						
US	368	75.6%	240	65.2%	128	34.8%
Non-US	60	12.3%	38	63.3%	22	36.7%
Unknown	59	12.1%	41	69.5%	18	30.5%
Insurance at HIV Diagnosis ^{5,7}						
Private	70	14.4%	38	54.3%	32	45.7%
Public	132	27.1%	94	71.2%	38	28.8%
None	105	21.6%	67	63.8%	38	36.2%
Other/Unknown	180	37.0%	120	66.7%	60	33.3%



Table 6. Characteristics of confirmed chronic HCV cases with HIV in San Francisco¹, 2021-2023² (continued)

	Total ³		Cleared or cured of HCV by end of 2023 ^{3,4}		No evidence of clearance or cure of HCV by end of 2023 ³	
	Number	Percentage (Column)	Number	Percentage (Row)	Number	Percentage (Row)
All	487	100.0%	319	65.5%	168	34.5%
Person Experiencing Homelessness ^{5, 8}						
Yes	96	19.7%	69	71.9%	27	28.1%
No	391	80.3%	250	63.9%	141	36.1%
Unknown	0	0%	0	0%	0	0%
Injection Drug Use ^{5,9}						
Yes	306	62.8%	213	69.6%	93	30.4%
No	157	32.2%	91	58.0%	66	42.0%
Unknown	24	4.9%	15	62.5%	9	37.5%
MSM (Men Who Have Sex with Men) ^{5, 10}	(n=434)		(n=282)		(n=152)	
Yes	365	84.1%	230	63.0%	135	37.0%
No	45	10.4%	34	75.6%	11	24.4%
Unknown	24	5.5%	18	75.0%	6	25.0%
Years between HCV and HIV Diagnosis ⁵						
< 5	201	41.3%	132	65.7%	69	34.3%
5-9	105	21.6%	76	72.4%	29	27.6%
10-19	139	28.5%	85	61.2%	54	38.8%
20+	42	8.6%	26	61.9%	16	38.1%

- San Francisco confirmed chronic HCV cases living with HIV, with at least one positive HCV lab reported from 2021-2023. HCV case status is based on the 2020 CDC/CSTE case definition.
- 2021 - 2023 refers to time of positive HCV lab report.
- Number and percentages are not shown for categories with fewer than 5 cases.
- Individuals were considered to have been cleared or cured of HCV if their most recent HCV RNA result as of the end of 2023 was negative, following a previous positive HCV viral test. Since not all laboratories/facilities were reporting negative HCV RNA results during this time, differences in clearance or cure of subgroups should be interpreted with caution.
- Demographic & other characteristics from the SFDPH HIV/AIDS case registry.
- Race/ethnicity category 'Other/Unknown' includes American Indian/Alaska Native and multi-race categories.
- Primary source of health insurance at the time of HIV diagnosis. 'Other/Unknown' includes Healthy San Francisco (health access program) or reports from other jurisdictions indicating 'Other' as insurance.
- Status based on most recent reported address in the SFDPH HIV/AIDS case registry.
- Injected drugs prior to HIV diagnosis.
- Men who have sex with men (MSM) defined as persons born male who had sex with men. Number & percentage excludes persons born female.



REFERENCES

1. Centers for Disease Control and Prevention. Viral Hepatitis. Hepatitis C. Clinical Overview of Hepatitis C. <https://www.cdc.gov/hepatitis-c/hcp/clinical-overview/index.html>. Accessed June 2024.
2. Schillie S, Wester C, Osborne M, Wesolowski L, Ryerson AB. CDC Recommendations for Hepatitis C Screening Among Adults — United States, 2020. *MMWR Recomm Rep.* 2020;69(No. RR-2):1–17. DOI: <https://www.cdc.gov/mmwr/volumes/69/rr/rr6902a1.htm#print>.
3. Centers for Disease Control and Prevention. Testing for HCV Infection: An Update of Guidance for Clinicians and Laboratorians. *MMWR* 2013; 62(18);362-365.
4. AASLD-IDSA. Recommendations for testing, managing, and treating hepatitis C. <http://www.hcvguidelines.org>. Accessed June 2024.
5. California Department of Health Care Services. Treatment Policy for the Management of Chronic Hepatitis C. <https://www.dhcs.ca.gov/Pages/HepatitisC.aspx>. Accessed June 2024.
6. DataSF. Open Data. Economy & Community. San Francisco Population and Demographic Census data. <https://data.sfgov.org/Economy-and-Community/San-Francisco-Population-and-Demographic-Census-da/4qbq-hvtt>. Accessed April 2024.
7. US Department of Health and Human Services. Viral Hepatitis National Strategic Plan for the United States: a roadmap to elimination for the United States, 2021–2025. Washington, DC: US Department of Health and Human Services; 2020. <https://www.hhs.gov/sites/default/files/Viral-Hepatitis-National-Strategic-Plan-2021-2025.pdf>
8. Montgomery MP, Sizemore L, Wingate H, Thompson WW, Teshale E, Osinubi A, Doshani M, Nelson N, Gupta N, Wester C. Development of a Standardized, Laboratory Result–Based Hepatitis C Virus Clearance Cascade for Public Health Jurisdictions. *Public Health Reports.* 2024;139(2):149-153. doi:[10.1177/00333549231170044](https://doi.org/10.1177/00333549231170044)
9. Centers for Disease Control and Prevention. Viral Hepatitis Surveillance Report - United States, 2022. Available at: <https://www.cdc.gov/hepatitis/statistics/2022surveillance/index.htm>. Published April 2024. Accessed June 2024.
10. United States Census Bureau. American Community Survey 2022 5-Year Estimates, San Francisco County, California. [https://data.census.gov/table/ACSST5Y2022.S1702?q=population&g=050XX00US06075,06075\\$140000](https://data.census.gov/table/ACSST5Y2022.S1702?q=population&g=050XX00US06075,06075$140000). Accessed June 2024.
11. Tsang CA, Tonzel J, Symum H, Kaufman HW, Meyer WA, Osinubi A, Thompson WW, Wester C. State-Specific Hepatitis C Virus Clearance Cascades — United States, 2013–2022. *MMWR.* 2024;73:495–500. DOI: <http://dx.doi.org/10.15585/mmwr.mm7321a4>
12. Nguyen VH, Kam L, Yeo YH, Huang DQ, Henry L, Cheung R, Nguyen MH. Characteristics and Treatment Rate of Patients With Hepatitis C Virus Infection in the Direct-Acting Antiviral Era and



- During the COVID-19 Pandemic in the United States. *JAMA Netw Open*. 2022 Dec 1;5(12):e2245424. <https://doi.org/10.1001/jamanetworkopen.2022.45424>
13. Philadelphia Department of Public Health Division of Disease Control, Hepatitis B and Hepatitis C Surveillance Report, 2021. Philadelphia, PA: City of Philadelphia; May 2023.
 14. New York City Department of Health and Mental Hygiene. Hepatitis A, B and C in New York City: 2022 Annual Report. Long Island City, NY. 2023.
 15. End Hep C SF. (2019) Elimination of Hepatitis C Virus Among People Living with HIV in San Francisco: Research Results, Recommendations, and Micro-Elimination Implementation Plan. <https://endhepcsf.org/wp-content/uploads/2019/09/EHCSF-HIV-HCV-Micro-Elimination-Plan-VF-08-19.pdf>
 16. Spach, DH. Co-Occurring Conditions: Hepatitis C Coinfection. In: Spach DH, Wood BR, Budak JZ, Kalapala AG eds. National HIV Curriculum. 3rd Edition. University of Washington Infectious Diseases Education & Assessment (IDEA) Program. Updated 2024 Apr 6. Accessed September 27, 2024. <https://www.hiv.uw.edu/go/co-occurring-conditions/hepc-coinfection/core-concept>
 17. AASLD-IDSA. Patients with HIV/HCV Coinfection. <https://www.hcvguidelines.org/unique-populations/hiv-hcv>. Accessed June 2024.
 18. Facente SN, Grinstein R, Bruhn R, Kaidarova Z, Wilson E, Hecht J, et al. (2022) Hepatitis C prevalence and key population size estimate updates in San Francisco: 2015 to 2019. *PLoS ONE* 17(5): e0267902. <https://doi.org/10.1371/journal.pone.0267902>.
 19. Hofmeister MG, Rosenthal EM, Barker LK, Rosenberg ES, Barranco MA, Hall EW, Edlin BR, Mermin J, Ward JW, Ryerson AB. Estimating prevalence of hepatitis C virus infection in the United States, 2013–2016. *Hepatology*. 2019; 69(3):1020–1031. <https://doi.org/10.1002/hep.30297>
 20. Title 17 California Code of Regulations § 2500 and § 2505. <https://oal.ca.gov/publications/ccr/> (Search for Title 17, Section 2500 or 2505). Accessed June 2024.
 21. California Code, Health and Safety Code - HSC § 120130. <https://codes.findlaw.com/ca/health-and-safety-code/hsc-sect-120130.html>. Accessed June 2024.
 22. Centers for Disease Control and Prevention. National Notifiable Diseases Surveillance System. Hepatitis C, Chronic, 2020 Case Definition. <https://ndc.services.cdc.gov/case-definitions/hepatitis-c-chronic-2020/>. Accessed June 2024.
 23. U. S. Department of Health and Human Services. Health Information Privacy. Disclosures for Public Health Activities. 45 CFR 164.512(b). <https://www.hhs.gov/hipaa/for-professionals/privacy/guidance/disclosures-public-health-activities/index.html>. Accessed June 2024.
 24. San Francisco Department of Public Health. HIV Epidemiology Annual Report, 2023. Available at: <https://www.sf.gov/resource/2024/hiv-epidemiology-unit-reports>. Published September 2024. Accessed September 2024.

