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**Hepatitis C Virus Infection Surveillance Report, 2017 – 2021**

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#### Bureau of Infectious Disease and Laboratory Sciences

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Requests for additional data

https://[www.mass.gov/infectious-disease-surveillance-reporting-and-control](http://www.mass.gov/infectious-disease-surveillance-reporting-and-control)

Acknowledgments

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#### Massachusetts Department of Public Health Bureau of Infectious Disease and Laboratory Sciences

Hepatitis C Virus (HCV) Infection Data Summary 2017-2021

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**Massachusetts Department of Public Health Bureau of Infectious Disease and Laboratory Sciences**

##### Hepatitis C Virus Infection Data Summary 2017-2021

**Introduction**

This data summary contains detailed tables and figures describing hepatitis C virus (HCV) infections in Massachusetts (MA) between the years 2017 and 2021. HCV infections continue to account for significant morbidity and mortality in the Commonwealth and nationwide.

Several notable findings in this report include:

* The highest number of confirmed and probable HCV cases reported in Massachusetts was found among those aged 29-40 years, with a majority being male (see graphs on pages 12 and 13);
* The graph on page 16 demonstrates that the 15-39 age group has a higher rate of HCV infection compared to all other age groups combined; and
* Data stratified by county and city as seen on pages 18-23 continue to show that HCV infections occur statewide, in rural, suburban, and urban communities.

New to this report is a table on page 6 of confirmed perinatal HCV infections, applying the 2018 case definition. While case counts are low, screening practices for infection among infants born to HCV-positive persons are not yet comprehensive nor uniform in their application, leading to incomplete case ascertainment. Since standardized classification of perinatal cases was not possible until 2018, figures on pages 12-14 exclude 2017 data in order to accurately represent the burden of reported HCV infection among infants.

Beginning in 2016, a revised surveillance case definition for the reporting of acute and chronic HCV infections was adopted. It contained significant differences from prior definitions, primarily focusing on improving acute case capture and specifying what is considered evidence of infection for confirmed cases. An updated definition applied in 2020 allowed for more permissive identification of acute cases, removing the requirement for specific symptoms to be associated with a case report. Please refer to the

2016 surveillance report (available at [www.mass.gov/hepc](http://www.mass.gov/hepc)) for additional detail on the changes to the case definition.

There are a few nuances to consider when reading and interpreting this report, which include the following:

* The first table of this report displays the number of confirmed acute and chronic cases as well as probable acute and chronic cases, but excludes perinatal cases (see pages 3-4 for case definitions.) For the remainder of the report, the case count combines acute, chronic, and perinatal infection.
* The graph on page 7 displays a noticeable downward trend in total HCV cases, with the most notable decrease occurring between 2018 and 2020. An increase in RNA reflex testing, including automatic HCV RNA reflexing at the State Public Health Laboratory as of July 2018, has allowed for a more resolute classification of those cases. The numbers in 2018 and 2019 are a clearer representation since RNA results verify active or resolved infections. Additionally, exploratory analysis of the data available showed that there was no single variable driving (confounding) the change; after controlling for age, gender, race, ethnicity, risk, geographic location, and examination of lab data, HCV case counts were still decreasing. This indicates that case counts are truly decreasing and suggests that prevention efforts are having a positive impact.
* It is critical to note the COVID-19 pandemic’s effect on identification of HCV cases beginning in 2020. Significant changes in access to medical services, including HCV testing, likely account for some portion of the decreases observed in HCV case counts in 2020. The 2021 case count is slightly higher, potentially evidence of individuals seeking services that were delayed due to the pandemic. Data from 2020 and 2021 should thus be interpreted with caution.
* The table on page 11 describing reported risk factors focuses only on confirmed cases, as forms requesting risk history data for

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##### Hepatitis C Virus Infection Data Summary 2017-2021

probable cases were no longer sent beginning in 2016. The graph displayed on page 14, in contrast, describes both confirmed and probable cases by age and risk factor.

* The tables describing the number of confirmed and probable HCV infections displayed by county and year (on page 18) show an increase in the number of cases with an unknown county of residence in 2017 and 2018. This issue is related to federal regulations [42 CFR Part 2] that protect the confidentiality of a patient’s substance use disorder treatment records (which include a person’s address) for any person who has sought treatment, or been diagnosed with substance use disorder, at a federally assisted program. Many of these programs had not obtained client consent to disclose information, thus resulting in missing data for those years; this issue was resolved for 2019 data onward.
* This report continues with the same methodology as the previously published report of including incarcerated individuals for reporting case count and rate data for the maps on pages 19, 21, 23, and 25-

29. A unique border is used to indicate which cities and towns include correctional facilities, to help explain why some jurisdictions may have a higher count than others.

* There are a variety of maps included in this report, each representing a different set of data: (1) The maps on pages 19 and 21 display all confirmed and probable cases; (2) the maps on pages 23 and 25 display the highest incidence population only (those aged 15-39 at the time of diagnosis), and; (3) the maps on pages 26-29 display the number and rate of individuals with recent evidence of ongoing HCV infection (i.e., those with positive RNA or genotype results between 2017 and 2021, and without subsequent negative results indicative of clearance of infection). This represents individuals who could have been diagnosed and reported prior to 2017, but who have ongoing infection as evidenced by laboratory results obtained between 2017 and 2021. On pages 28 and 29, only the 15-39 age group is shown.
* When data are displayed by city/town, please note that each case is reported by their place of residence at the time of diagnosis and does not necessarily represent the place the case acquired infection.
* New to this report is the use of denominators estimated by the University of Massachusetts Donahue Institute using a modified Hamilton-Perry model instead of the 2010 Census Bureau data that was used in previous reports. Therefore, the rates and trends calculated using previous methods cannot be compared to these.

**References**

* 1. Centers for Disease Control and Prevention. National Notifiable Diseases Surveillance System (NNDSS). Retrieved March 15, 2018, from https://wwwn.cdc.gov/nndss/conditions/hepatitis-c- acute/
  2. Centers for Disease Control and Prevention. National Notifiable Diseases Surveillance System (NNDSS). Retrieved March 15, 2018, from https://wwwn.cdc.gov/nndss/conditions/hepatitis-c- chronic/
  3. Centers for Disease Control and Prevention. National Notifiable Diseases Surveillance System (NNDSS). Retrieved November 20, 2020, from https://wwwn.cdc.gov/nndss/conditions/hepatitis-c- perinatal-infection/case-definition/2018/
  4. Massachusetts Virtual Epidemiologic Network (MAVEN), Bureau of Infectious Disease, Massachusetts Department of Public Health, 305 South Street, Jamaica Plain, MA 02130

#### Massachusetts Department of Public Health Bureau of Infectious Disease and Laboratory Sciences

##### Hepatitis C Virus Infection Data Summary 2017-2021

**Hepatitis C (2016)**

**Case Definitions**

has no report of test conversion, AND has a positive HCV NAT or HCV antigen test.

**Hepatitis C (2020)**

*Clinical criteria* – An illness with discrete onset of any sign or symptom consistent with viral hepatitis (e.g., fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, and abdominal pain) AND a) jaundice OR b) a peak elevated serum ALT level >200 IU/L during the period of acute illness.

*Laboratory criteria for diagnosis*

* A positive test for antibodies to HCV
* HCV detection test: NAT for HCV RNA positive, including qualitative, quantitative, or genotype testing)
* A positive test indicating presence of HCV antigen when and if a test for HCV antigen is approved by FDA and available

**Acute (2016)**

*Probable* – A case that meets clinical criteria AND has a positive anti-HCV antibody test, but has no reports of a positive HCV NAT OR positive HCV antigen tests AND does not have test seroconversion within 12 months OR has no report of test conversion.

*Confirmed* – A case that meets clinical criteria AND has a positive HCV NAT OR HCV antigen, OR a documented negative HCV antibody, HCV antigen OR NAT laboratory test result followed within 12 months by a positive result of any of these tests (test conversion)

**Chronic (2016)**

*Probable* – A case that does not meet clinical criteria OR has no report of clinical criteria, AND does not have test conversion within 12 months OR has no report of test conversion, AND has a positive anti-HCV antibody test, but no report of a positive HCV NAT or positive HCV antigen test.

*Confirmed* – A case that does not meet clinical criteria OR has no report of clinical criteria, AND does not have test conversion within 12 months OR

*Clinical Criteria -* All HCV cases in each classification category should be

* 36 months of age, unless known to have been exposed non-perinatally, and have one or more of the following: Jaundice, OR peak elevated total bilirubin levels ≥ 3.0 mg/dL, OR peak elevated serum ALT levels >200 IU/L, AND the absence of a more likely diagnosis (which may include evidence of acute liver disease due to other causes or advanced liver disease due to pre-existing chronic HCV infection or other causes, such as alcohol exposure, other viral hepatitis, hemochromatosis, etc.)

*Laboratory criteria for diagnosis*

* + *Confirmatory laboratory evidence* - Positive hepatitis C virus detection test: Nucleic acid test (NAT) for HCV RNA positive (including qualitative, quantitative, or genotype testing), OR a positive test indicating presence of hepatitis C viral antigen(s) (HCV antigen)
  + *Presumptive laboratory evidence -* A positive test for antibodies to hepatitis C virus (anti-HCV).

No epidemiologic linkage is required for case classification.

**Chronic (2020)**

*Probable* - A case that does not meet OR has no report of clinical criteria, AND has presumptive laboratory evidence, AND has no documentation of anti-HCV or RNA test conversion within 12 months, AND does not have an HCV RNA detection test reported.

*Confirmed -* A case that does not meet OR has no report of clinical criteria, AND as confirmatory laboratory evidence, AND has no documentation of anti-HCV or HCV RNA test conversion within 12 months.

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**Acute (2020)**

*Probable* - A case that meets clinical criteria and has presumptive laboratory evidence, AND does not have a hepatitis C virus detection test reported, AND has no documentation of anti-HCV or HCV RNA test conversion within 12 months.

*Confirmed -* A case that meets clinical criteria and has confirmatory laboratory evidence, OR a documented negative HCV antibody followed within 12 months by a positive HCV antibody test (anti-HCV test conversion) in the absence of a more likely diagnosis, OR a documented negative HCV antibody OR negative hepatitis C virus detection test (in someone without a prior diagnosis of HCV infection) followed within 12 months by a positive hepatitis C virus detection test (HCV RNA test conversion) in the absence of a more likely diagnosis.

**Hepatitis C, Perinatal (2018)**

*Laboratory criteria for diagnosis*

* + HCV RNA positive test results for infants between 2 to 36 months of age; **OR**
  + HCV genotype test results for infants between 2 to 36 months of age or greater; **OR**
  + HCV antigen test results for infants between 2 to 36 months of age or greater.

*Confirmed* – An infant who has a positive test for HCV RNA nucleic acid amplification test (NAAT), HCV antigen, or detectable HCV genotype at

≥2 months and ≤36 months of age and is not known to have been exposed to HCV via a mechanism other than perinatal.

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Number of Confirmed and Probable Acute and Chronic HCV Cases Reported by Year, Massachusetts, 2017-2021

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **2017** | **2018** | **2019** | **2020** | **2021** |
| **Confirmed** **Acute** | 169 | 183 | 174 | 180 | 160 |
| **Confirmed** **Chronic** | 4775 | 4328 | 3242 | 2044 | 2324 |
| **Probable** **Acute** | 6 | 7 | 6 | 11 | 12 |
| **Probable** **Chronic** | 2564 | 1979 | 1332 | 1301 | 1556 |
| **Total** **Cases** | 7514 | 6497 | 4754 | 3536 | 4052 |

**N=26,353**

**Data** **are** **current** **as** **of** **September** **28,** **2022** **and** **are** **subject** **to** **change**

**Perinatal** **cases** **not** **included**

**The COVID-19 pandemic has had measurable impacts on infectious disease surveillance. Data from 2020-2021 should be interpreted with caution.**

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Number of Confirmed Perinatal HCV Cases Reported by Year, Massachusetts, 2018-2021

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **2018** | **2019** | **2020** | **2021** |
| **0** **to** **<6** **months** **old** | 3 | 0 | 2 | 4 |
| **6** **to** **<12** **months** **old** | 2 | 1 | 2 | 0 |
| **12** **to** **<18** **months** **old** | 1 | 0 | 0 | 0 |
| **18** **to** **<24** **months** **old** | 8 | 4 | 2 | 5 |
| **24** **to** **<30** **months** **old** | 1 | 0 | 0 | 0 |
| **30** **to** **<=36** **months** **old** | 1 | 0 | 1 | 0 |
| **Total** **Cases** | 16 | 5 | 7 | 9 |

**N=37**

**Data** **are** **current** **as** **of** **September** **28,** **2022** **and** **are** **subject** **to** **change**

**The COVID-19 pandemic has had measurable impacts on infectious disease surveillance. Data from 2020-2021 should be interpreted with caution.**

Histogram of confirmed and probable  HCV cases in Massachusetts from 2017 to 2021, with highest case count in 2017 with a steady decline each year, reaching the lowest in 2020, and a slight elevation in cases in 2021. Total N is 26,390. Data are current as of September 2022 and are subject to change.


**The COVID-19 pandemic has had measurable impacts on infectious disease surveillance. Data from 2020-2021 should be interpreted with caution.**

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Number and Rate per 100,000 Population of Confirmed and Probable HCV Cases Reported by Year and Age Group,

**Massachusetts,** **2017-2021**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **2017 N** | **2017Rate** | **2018 N** | **2018 Rate** | **2019N** | **2019Rate** | **2020 N** | **2020Rate** | **2021N** | **2021Rate** |
| **0-9** | 41 | 5.6 | 25 | 3.4 | 16 | 2.2 | 13 | 1.8 | 20 | 2.7 |
| **10-19** | 102 | 11.8 | 53 | 6.1 | 38 | 4.4 | 20 | 2.3 | 26 | 3.0 |
| **20-29** | 1975 | 192.1 | 1537 | 149.5 | 968 | 94.1 | 631 | 61.4 | 586 | 57.0 |
| **30-39** | 1981 | 216.4 | 1917 | 209.4 | 1425 | 155.7 | 1065 | 116.3 | 1263 | 138.0 |
| **40-49** | 1008 | 119.9 | 918 | 109.2 | 767 | 91.2 | 574 | 68.3 | 785 | 93.4 |
| **50-59** | 1124 | 117.5 | 967 | 101.1 | 694 | 72.5 | 530 | 55.4 | 628 | 65.6 |
| **60-69** | 934 | 111.0 | 793 | 94.2 | 579 | 68.8 | 508 | 60.4 | 537 | 63.8 |
| **70+** | 241 | 30.4 | 221 | 27.8 | 197 | 24.8 | 180 | 22.7 | 195 | 24.6 |

**308** **cases** **with** **missing** **age** **were** **excluded** **from** **analysis.**

**BIDLS** **calculates** **rates** **per** **100,000** **population** **using** **denominators** **estimated** **by** **the** **University** **of** **Massachusetts** **Donahue** **Institute** **using** **a** **modified** **Hamilton-Perry** **model** **(UMDI** **Oct** **2016:** **Strate** **S,** **et** **al.** **Small** **Area** **Population** **Estimates** **for** **2011** **through** **2020,** **report** **published** **Oct** **2016.)** **Note** **that**

**rates** **and** **trends** **calculated** **using** **previous** **methods** **cannot** **be** **compared** **to** **these.**

**Data** **are** **current** **as** **of** **September** **28,** **2022** **and** **are** **subject** **to** **change**

**The COVID-19 pandemic has had measurable impacts on infectious disease surveillance. Data from 2020-2021 should be interpreted with caution.**

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Number and Proportion of Confirmed and Probable HCV Cases Reported by Race and Year, Massachusetts, 2017-2021

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **2017**  **N** | **2017**  **%** | **2018**  **N** | **2018**  **%** | **2019**  **N** | **2019%** | **2020**  **N** | **2020%** | **2021**  **N** | **2021**  **%** |
| **American** **Indian/Alaskan** **Native** | 10 | 0.1 | 12 | 0.2 | 6 | 0.1 | 1 | 0.0 | 9 | 0.2 |
| **Asian** | 104 | 1.4 | 100 | 1.5 | 80 | 1.7 | 65 | 1.8 | 84 | 2.1 |
| **Black** | 416 | 5.5 | 393 | 6.0 | 313 | 6.6 | 237 | 6.7 | 346 | 8.5 |
| **White** | 3803 | 50.6 | 3313 | 50.9 | 2316 | 48.7 | 1712 | 48.3 | 2052 | 50.5 |
| **Other** | 823 | 11.0 | 695 | 10.7 | 618 | 13.0 | 465 | 13.1 | 509 | 12.5 |
| **Unknown** | 2358 | 31.4 | 2000 | 30.7 | 1426 | 30.0 | 1063 | 30.0 | 1061 | 26.1 |

**Data** **are** **current** **as** **of** **September** **28,** **2022** **and** **are** **subject** **to** **change**

**'Other'** **includes** **Native** **Hawaiian/Pacific** **Islander,** **races** **marked** **as** **other,** **and** **individuals** **who** **are** **listed** **as** **more** **than** **one** **race**

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Number and Proportion of Confirmed and Probable HCV Cases Reported by Hispanic Ethnicity and Year

**Massachusetts,** **2017-2021**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **2017 N** | **2017%** | **2018 N** | **2018 %** | **2019 N** | **2019 %** | **2020 N** | **2020**  **%** | **2021**  **N** | **2021**  **%** |
| **Hispanic** | 734 | 9.8 | 684 | 10.5 | 5225 | 11.0 | 376 | 10.6 | 455 | 11.2 |
| **Not** **Hispanic** | 3666 | 48.8 | 3267 | 50.2 | 2508 | 52.7 | 1861 | 52.5 | 2229 | 54.9 |
| **Unknown** | 3114 | 41.4 | 2562 | 39.3 | 1726 | 36.3 | 1306 | 36.9 | 1377 | 33.9 |

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Number and Proportion of Confirmed HCV Cases Reported by Risk Factor and Year, Massachusetts, 2017-2021

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **2017 N** | **2017 %** | **2018 N** | **2018 %** | **2019 N** | **2019%** | **2020**  **N** | **2020%** | **2021**  **N** | **2021%** |
| **Injected** **drugs** **ever** | 1922 | 38.9 | 1680 | 37.1 | 1244 | 36.4 | 585 | 26.2 | 658 | 26.4 |
| **Other** **risk** **history,** **excluding** **IDU** | 74 | 1.5 | 40 | 0.9 | 42 | 1.2 | 18 | 0.8 | 20 | 0.8 |
| **No** **or** **unknown** **history** **reported** | 750 | 15.2 | 627 | 13.9 | 470 | 13.7 | 271 | 12.1 | 290 | 11.6 |
| **No** **response** | 2198 | 44.5 | 2180 | 48.2 | 1665 | 48.7 | 1357 | 60.8 | 1525 | 61.2 |

**Risks** **included** **in** **'Other'** **category** **include:** **receiving** **blood** **products** **prior** **to** **June** **1992,** **receiving** **an** **organ** **transplant** **prior** **to** **1992,** **receiving** **clotting** **factor** **concentrates** **produced** **prior** **to** **1987,** **ever** **being** **on** **long-term** **hemodialysis,** **ever** **being** **a** **sexual** **contact** **of** **a** **confirmed** **or** **suspected** **HCV** **case,** **ever** **being** **a** **household** **contact** **of** **a** **confirmed** **or** **suspected** **HCV** **case,** **and** **ever** **being** **employed** **in** **a** **medical** **or** **dental** **field** **involving** **direct** **contact** **with** **human** **blood.**

**Note** **that** **'No** **or** **unknown** **history** **reported'** **indicates** **that** **a** **case** **report** **form** **was** **received** **for** **the** **case,** **with** **'No'** **or** **'Unknown'** **marked** **for** **all** **relevant** **questions** **in** **the** **risk** **history.** **'No** **response'** **indicates** **that** **no** **case** **report** **form** **was** **received** **for** **the** **case.**

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Histogram of confirmed and probable  HCV cases in Massachusetts in 2018 by age and sex, with case counts in males being higher than females, and highest case count in ages 25 to 39 and another small peak between ages 55 and 62.


**N=6,395** **|** **118** **cases** **with** **missing** **age** **and/or** **sex** **were** **excluded** **from** **analysis.**

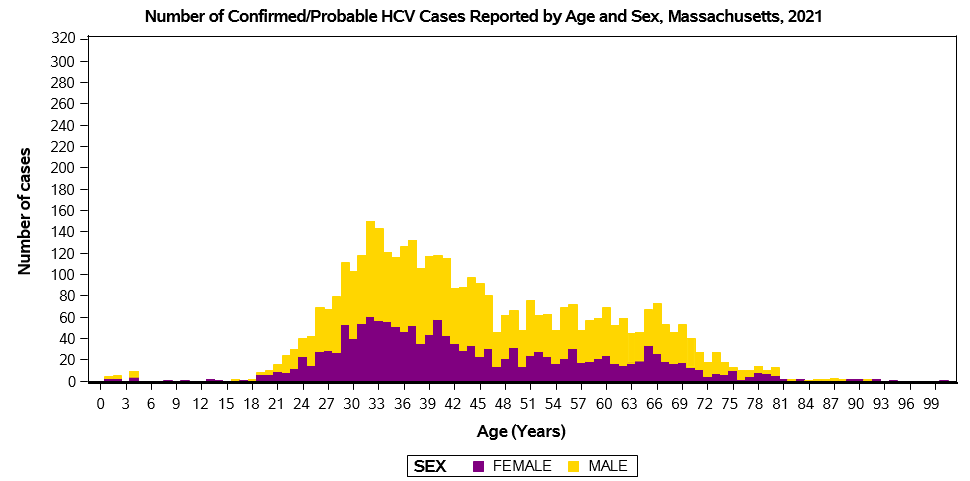
**Cases** **reported** **as** **transgender** **(N=5)** **are** **not** **depicted** **separately** **due** **to** **small** **numbers.** **Note** **the** **number** **of** **transgender** **individuals** **is** **likely** **an** **underestimate** **due** **to** **underreporting** **of** **current** **gender.**

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**N=3,997** **|** **64** **cases** **with** **missing** **age** **and/or** **sex** **were** **excluded** **from** **analysis.**

**Cases** **reported** **as** **transgender** **(N=7)** **are** **not** **depicted** **separately** **due** **to** **small** **numbers.**

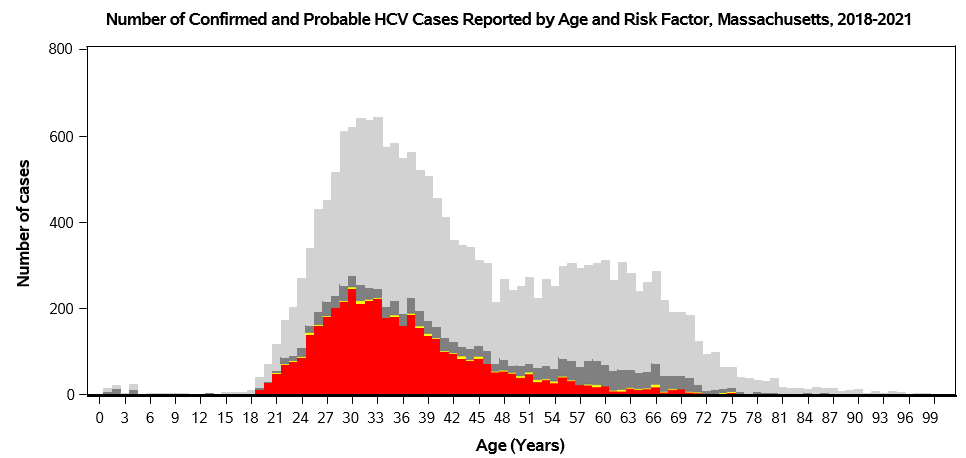
**Note** **the** **number** **of** **transgender** **individuals** **is** **likely** **an** **underestimate** **due** **to** **underreporting** **of** **current** **gender.**

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**Risk**

Injected drugs ever

No or unknown history reported

Other risk history, excluding IDU

No response

**N=18,653** **|** **223** **cases** **with** **missing** **age** **were** **excluded** **from** **analysis.**

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Number and Rate per 100,000 Population of Confirmed and Probable HCV Cases Ages 15-39 vs. All Other Age Groups

**Reported** **by** **Year,** **Massachusetts,** **2017-2021**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **2017 N** | **2017Rate** | **2018 N** | **2018 Rate** | **2019 N** | **2019 Rate** | **2020N** | **2020Rate** | **2021**  **N** | **2021Rate** |
| **15-39** **years** | 4053 | 168.4 | 3505 | 145.6 | 2428 | 100.9 | 1714 | 71.2 | 1872 | 77.8 |
| **All** **other** **age** **groups** | 3353 | 73.5 | 2926 | 64.2 | 2256 | 49.5 | 1807 | 39.6 | 2168 | 47.5 |

**308** **cases** **with** **missing** **age** **were** **excluded** **from** **analysis.**

**BIDLS** **calculates** **rates** **per** **100,000** **population** **using** **denominators** **estimated** **by** **the** **University** **of** **Massachusetts** **Donahue** **Institute** **using** **a** **modified** **Hamilton-Perry** **model** **(UMDI** **Oct** **2016:** **Strate** **S,** **et** **al.** **Small** **Area** **Population** **Estimates** **for** **2011** **through** **2020,** **report** **published** **Oct** **2016.)** **Note** **that**

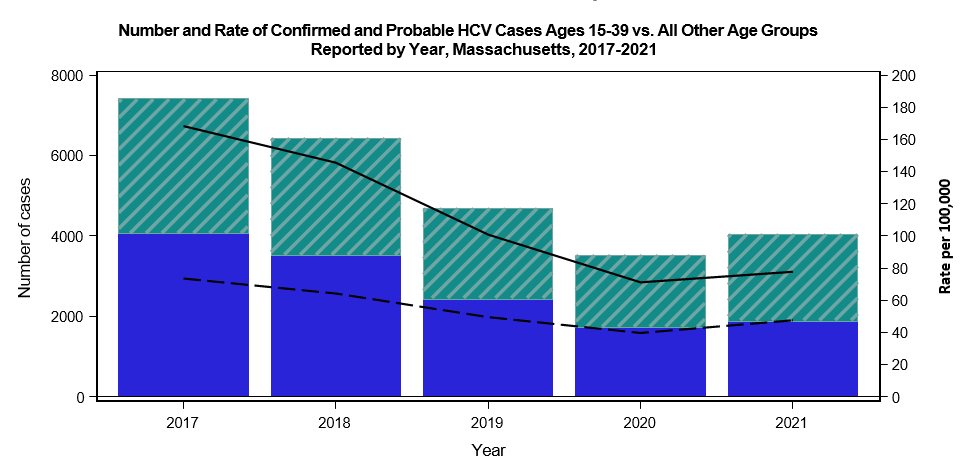
**rates** **and** **trends** **calculated** **using** **previous** **methods** **cannot** **be** **compared** **to** **these.**

**Data** **are** **current** **as** **of** **September** **28,** **2022** **and** **are** **subject** **to** **change**

**The COVID-19 pandemic has had measurable impacts on infectious disease surveillance. Data from 2020-2021 should be interpreted with caution.**

**Massachusetts** **Department** **of** **Public** **Health**

**Bureau** **of** **Infectious** **Disease** **and** **Laboratory** **Sciences**



Age Group

15-39 years

15-39 years

All other age groups

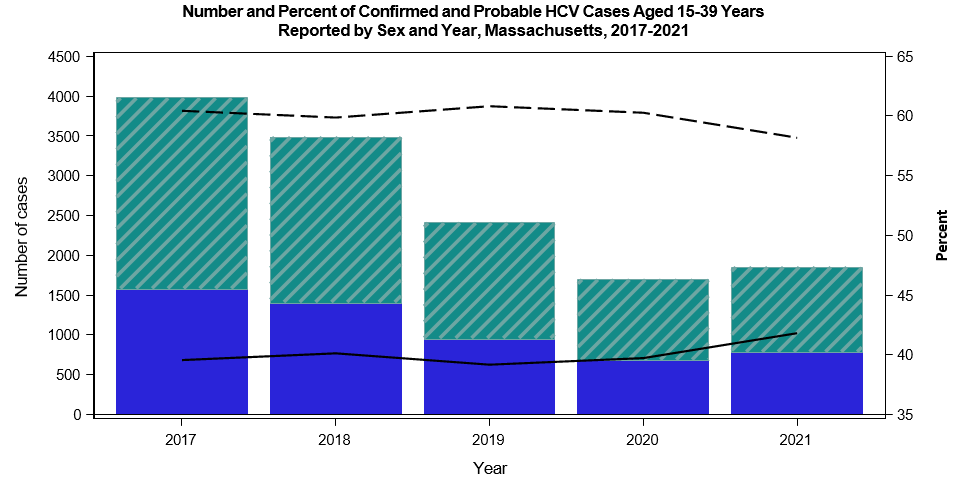
All other age groups

N=26,082 | 308 cases with missing age were excluded from analysis. Data are current as of September 28, 2022, and are subject to change

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**Massachusetts** **Department** **of** **Public** **Health**

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Legend of sex groups by number and percent. Blue bar represents number of females, green bar represents number of males. Solid line represents percent of females, dotted line represents percent of males.

N=13,412 | 160 cases are missing sex and were excluded from analysis. Data are current as of September 28, 2022, and are subject to change

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**Massachusetts** **Department** **of** **Public** **Health**

**Bureau** **of** **Infectious** **Disease** **and** **Laboratory** **Sciences**

Number of Confirmed and Probable HCV Cases Reported by County and Year, Massachusetts, 2017-2021

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **2017** | **2018** | **2019** | **2020** | **2021** |
| **BERKSHIRE** **COUNTY** | 163 | 177 | 134 | 113 | 152 |
| **BRISTOL** **COUNTY** | 823 | 688 | 426 | 313 | 351 |
| **CAPE** **AND** **ISLANDS** | 272 | 209 | 163 | 108 | 108 |
| **ESSEX** **COUNTY** | 707 | 592 | 446 | 303 | 339 |
| **FRANKLIN** **COUNTY** | 77 | 69 | 59 | 43 | 43 |
| **HAMPDEN** **COUNTY** | 585 | 600 | 482 | 385 | 345 |
| **HAMPSHIRE** **COUNTY** | 91 | 105 | 62 | 60 | 53 |
| **MIDDLESEX** **COUNTY** | 1249 | 954 | 706 | 543 | 565 |
| **NORFOLK** **COUNTY** | 550 | 446 | 331 | 230 | 289 |
| **PLYMOUTH** **COUNTY** | 495 | 442 | 333 | 230 | 256 |
| **SUFFOLK** **COUNTY** | 975 | 809 | 645 | 543 | 932 |
| **WORCESTER** **COUNTY** | 927 | 802 | 547 | 386 | 397 |
| **UNKNOWN** **COUNTY** | 600 | 620 | 425 | 286 | 231 |
| **TOTAL** | 7514 | 6513 | 4759 | 3543 | 4061 |

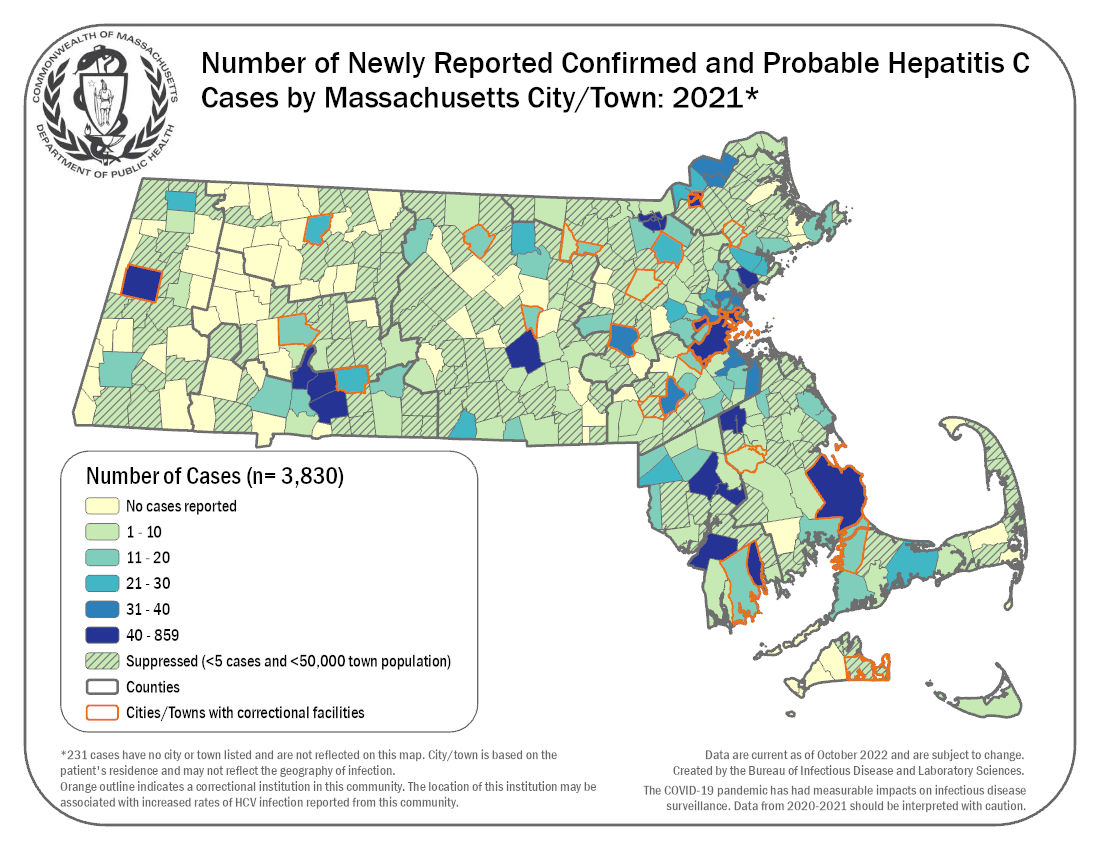
**N=26,390**

**The** **Cape** **and** **Islands** **are** **comprised** **of** **Barnstable,** **Dukes,** **and** **Nantucket** **Counties.**

**Data** **are** **current** **as** **of** **September** **28,** **2022** **and** **are** **subject** **to** **change**

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**Bureau** **of** **Infectious** **Disease** **and** **Laboratory** **Sciences**

Rate per 100,000 Population of Confirmed and Probable HCV Cases Reported by County and Year, Massachusetts, 2017-2021

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **2017** | **2018** | **2019** | **2020** | **2021** |
| **ALL** **MASSACHUSETTS** | 99.2 | 84.6 | 62.2 | 46.8 | 55.0 |
| **BERKSHIRE** **COUNTY** | 128.7 | 139.7 | 105.8 | 89.2 | 120.0 |
| **BRISTOL** **COUNTY** | 144.1 | 120.4 | 74.6 | 54.8 | 61.4 |
| **CAPE** **AND** **ISLANDS** | 110.8 | 85.2 | 66.4 | 44.0 | 44.0 |
| **ESSEX** **COUNTY** | 88.6 | 74.2 | 55.9 | 38.0 | 42.5 |
| **FRANKLIN** **COUNTY** | 108.0 | 96.8 | 82.8 | 60.3 | 60.3 |
| **HAMPDEN** **COUNTY** | 124.4 | 127.6 | 102.5 | 81.9 | 73.4 |
| **HAMPSHIRE** **COUNTY** | 55.2 | 63.7 | 37.6 | 36.4 | 32.2 |
| **MIDDLESEX** **COUNTY** | 76.8 | 58.7 | 43.4 | 33.4 | 34.7 |
| **NORFOLK** **COUNTY** | 76.9 | 62.3 | 46.3 | 32.1 | 40.4 |
| **PLYMOUTH** **COUNTY** | 93.7 | 83.7 | 63.0 | 43.5 | 48.5 |
| **SUFFOLK** **COUNTY** | 120.1 | 99.7 | 79.5 | 66.9 | 114.8 |
| **WORCESTER** **COUNTY** | 110.7 | 95.7 | 65.3 | 46.1 | 47.4 |

**BIDLS** **calculates** **rates** **per** **100,000** **population** **using** **denominators** **estimated** **by** **the** **University** **of** **Massachusetts** **Donahue** **Institute** **using** **a** **modified** **Hamilton-Perry** **model** **(UMDI** **Oct** **2016:** **Strate** **S,** **et** **al.** **Small** **Area** **Population** **Estimates** **for** **2011** **through** **2020,** **report** **published** **Oct** **2016.)** **Note** **that**

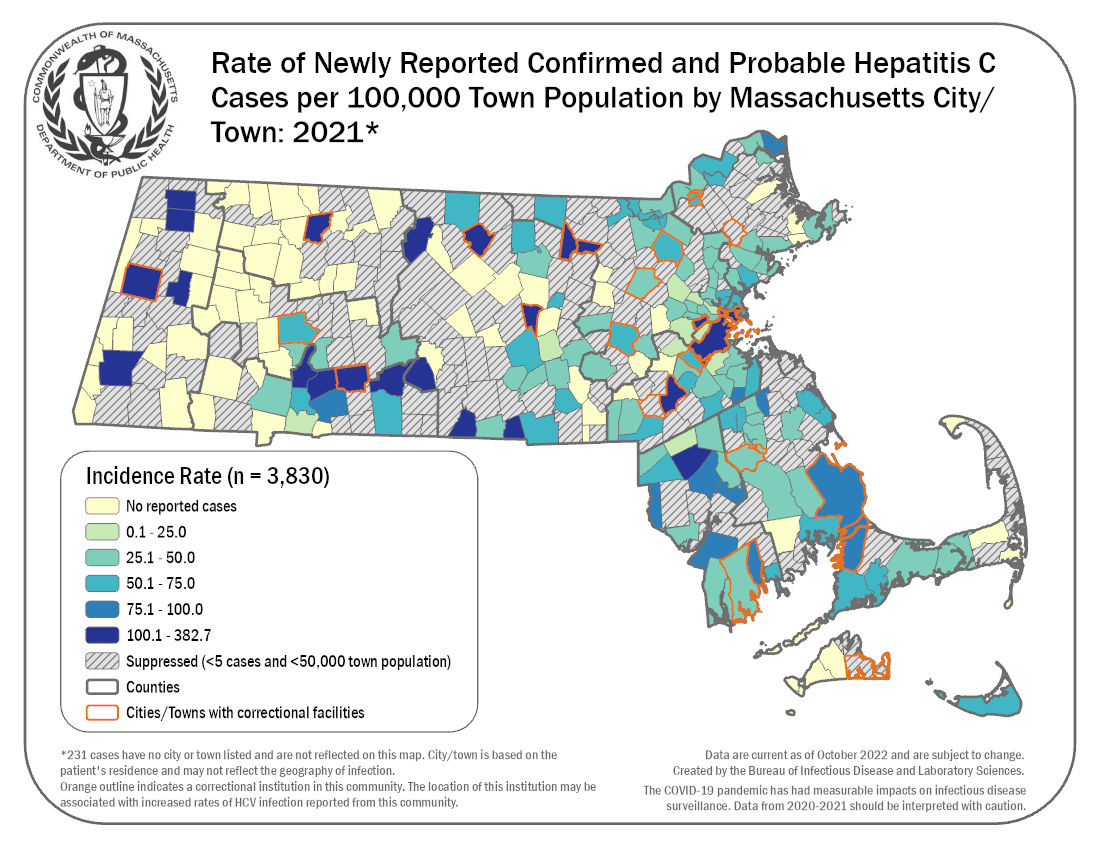
**rates** **and** **trends** **calculated** **using** **previous** **methods** **cannot** **be** **compared** **to** **these.** **The** **Cape** **and** **Islands** **are** **comprised** **of** **Barnstable,** **Dukes,** **and** **Nantucket** **Counties.**

**Does** **not** **include** **cases** **where** **county** **is** **unknown.**

**Data** **are** **current** **as** **of** **September** **28,** **2022 and** **are** **subject** **to** **change.**

**The COVID-19 pandemic has had measurable impacts on infectious disease surveillance. Data from 2020-2021 should be interpreted with caution.**

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**Bureau** **of** **Infectious** **Disease** **and** **Laboratory** **Sciences**

Number of Confirmed and Probable HCV Cases Aged 15-39 Years Reported by County and Year, Massachusetts, 2017-2021

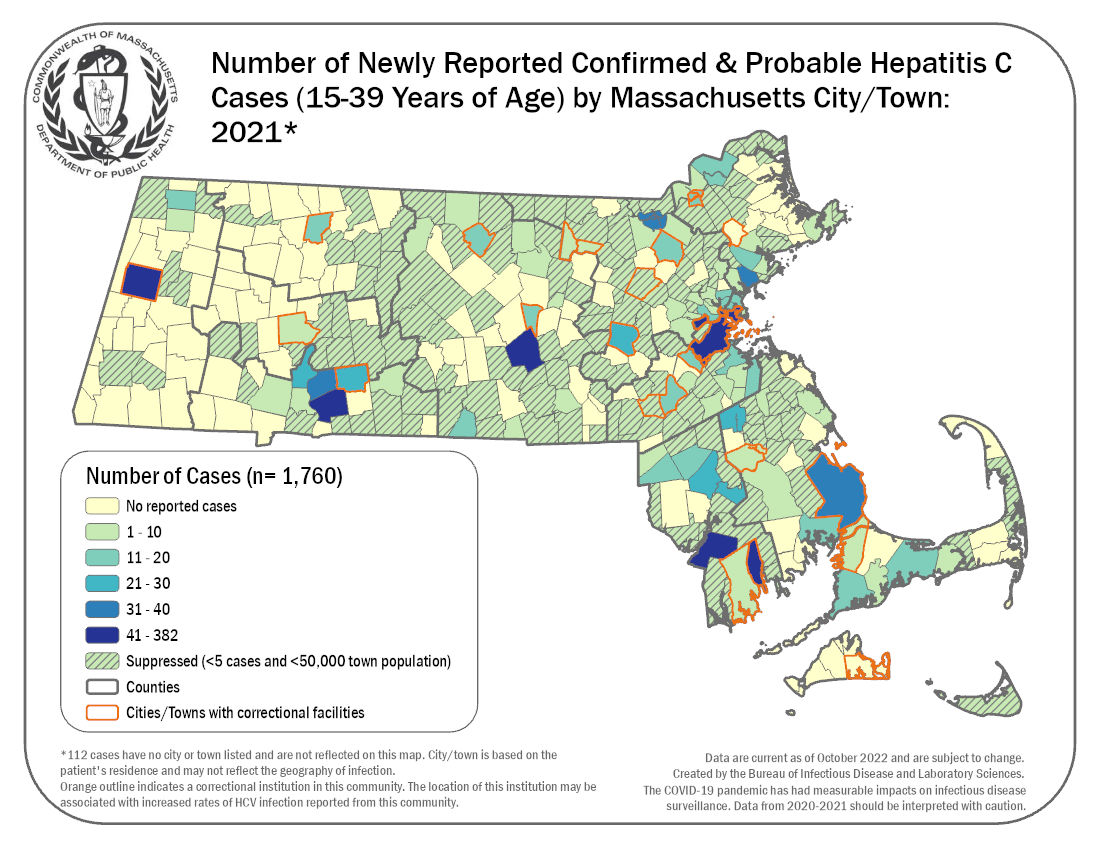
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **2017** | **2018** | **2019** | **2020** | **2021** |
| **ALL** **MASSACHUSETTS** | 4053 | 3505 | 2428 | 1714 | 1872 |
| **BERKSHIRE** **COUNTY** | 89 | 116 | 77 | 69 | 79 |
| **BRISTOL** **COUNTY** | 488 | 387 | 234 | 154 | 173 |
| **CAPE** **AND** **ISLANDS** | 139 | 110 | 81 | 63 | 57 |
| **ESSEX** **COUNTY** | 364 | 312 | 209 | 132 | 146 |
| **FRANKLIN** **COUNTY** | 43 | 42 | 37 | 20 | 25 |
| **HAMPDEN** **COUNTY** | 329 | 323 | 245 | 191 | 170 |
| **HAMPSHIRE** **COUNTY** | 47 | 57 | 42 | 27 | 23 |
| **MIDDLESEX** **COUNTY** | 624 | 476 | 353 | 253 | 242 |
| **NORFOLK** **COUNTY** | 298 | 231 | 163 | 108 | 126 |
| **PLYMOUTH** **COUNTY** | 274 | 246 | 169 | 121 | 124 |
| **SUFFOLK** **COUNTY** | 495 | 421 | 325 | 251 | 413 |
| **WORCESTER** **COUNTY** | 549 | 431 | 285 | 177 | 182 |
| **UNKNOWN** **COUNTY** | 314 | 353 | 208 | 148 | 112 |

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Massachusetts Department of Public Health 24

**Bureau** **of** **Infectious** **Disease** **and** **Laboratory** **Sciences**

Rate per 100,000 Population of Confirmed and Probable HCV Cases Aged 15-39 Years Reported by County and Year,

**Massachusetts,** **2017-2021**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **2017** | **2018** | **2019** | **2020** | **2021** |
| **ALL** **MASSACHUSETTS** | 155.3 | 131.0 | 92.2 | 65.1 | 73.1 |
| **BERKSHIRE** **COUNTY** | 237.0 | 308.9 | 205.1 | 183.7 | 210.4 |
| **BRISTOL** **COUNTY** | 267.5 | 212.1 | 128.3 | 84.4 | 94.8 |
| **CAPE** **AND** **ISLANDS** | 231.6 | 183.3 | 135.0 | 105.0 | 95.0 |
| **ESSEX** **COUNTY** | 144.3 | 123.7 | 82.8 | 52.3 | 57.9 |
| **FRANKLIN** **COUNTY** | 206.3 | 201.5 | 177.5 | 95.9 | 119.9 |
| **HAMPDEN** **COUNTY** | 208.3 | 204.5 | 155.1 | 121.0 | 107.7 |
| **HAMPSHIRE** **COUNTY** | 66.6 | 80.7 | 59.5 | 38.2 | 32.6 |
| **MIDDLESEX** **COUNTY** | 107.4 | 81.9 | 60.7 | 43.5 | 41.6 |
| **NORFOLK** **COUNTY** | 129.0 | 100.0 | 70.6 | 46.8 | 54.5 |
| **PLYMOUTH** **COUNTY** | 173.0 | 155.3 | 106.7 | 76.4 | 78.3 |
| **SUFFOLK** **COUNTY** | 131.6 | 112.0 | 86.4 | 66.8 | 109.8 |
| **WORCESTER** **COUNTY** | 197.0 | 154.7 | 102.3 | 63.5 | 65.3 |

**BIDLS** **calculates** **rates** **per** **100,000** **population** **using** **denominators** **estimated** **by** **the** **University** **of** **Massachusetts** **Donahue** **Institute** **using** **a** **modified** **Hamilton-Perry** **model** **(UMDI** **Oct** **2016:** **Strate** **S,** **et** **al.** **Small** **Area** **Population** **Estimates** **for** **2011** **through** **2020,** **report** **published** **Oct** **2016.)** **Note** **that**

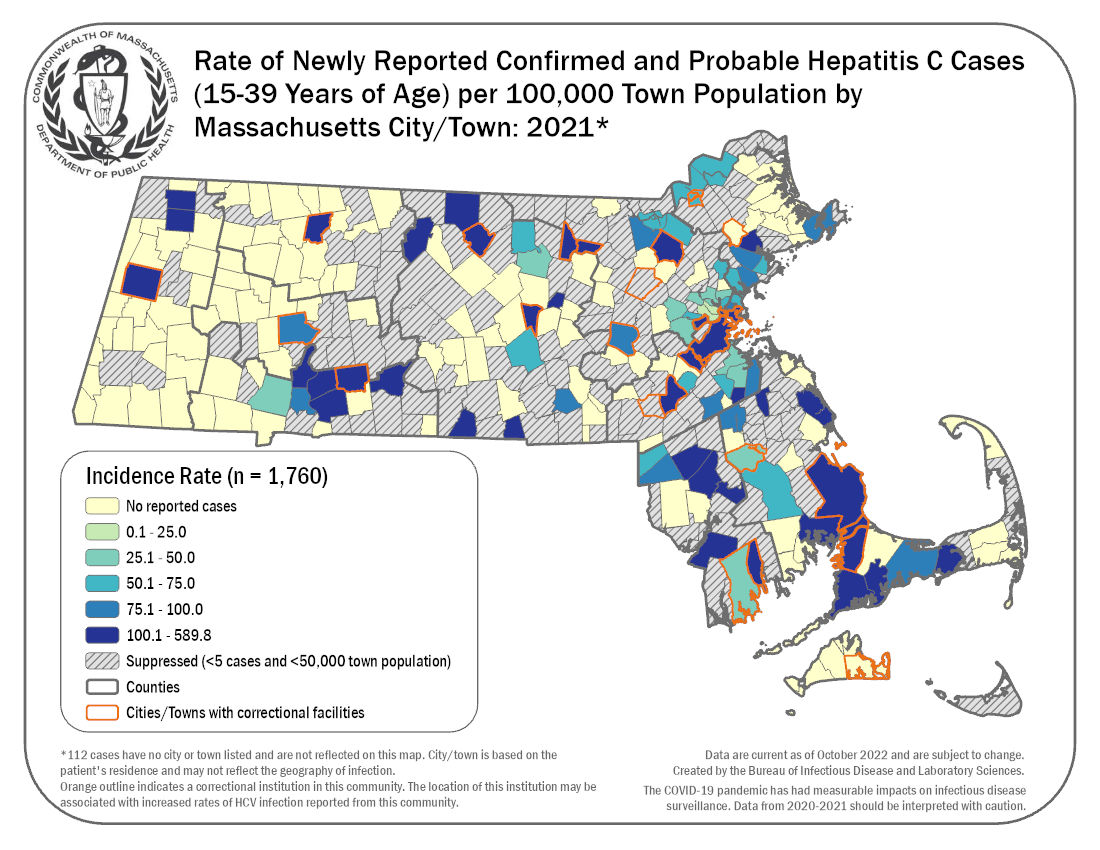
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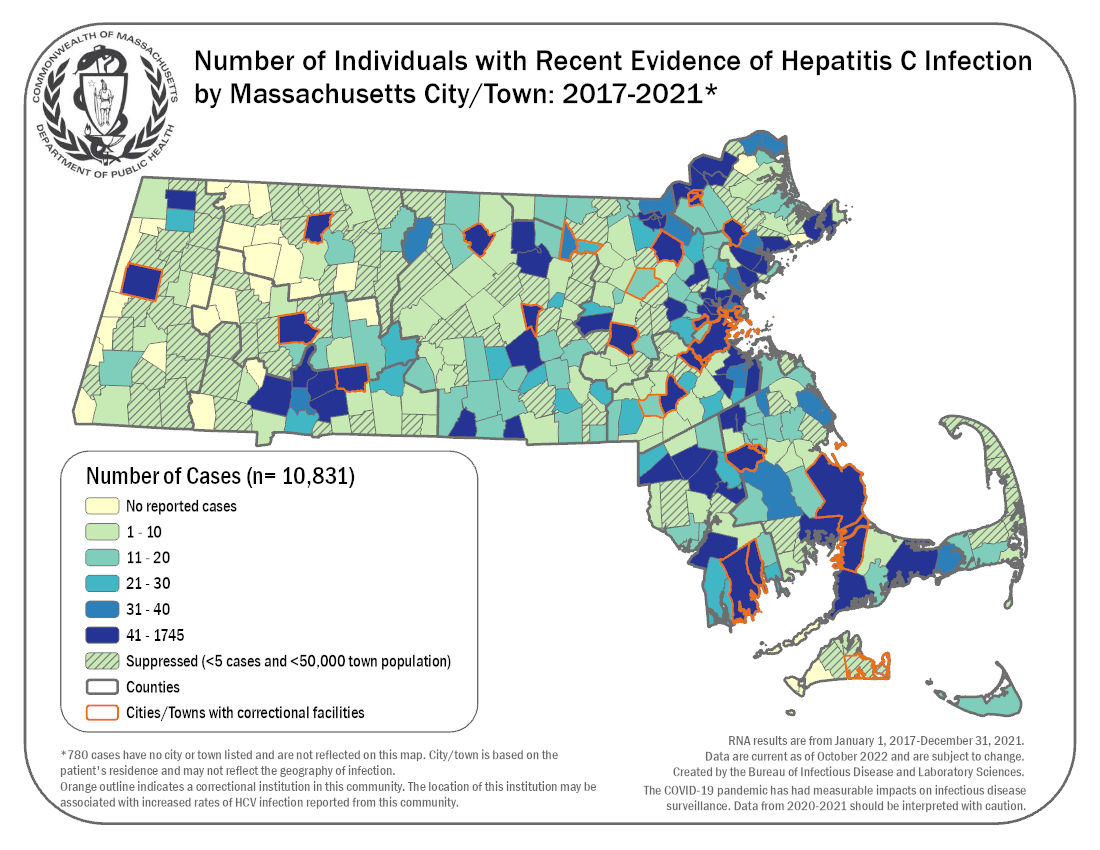
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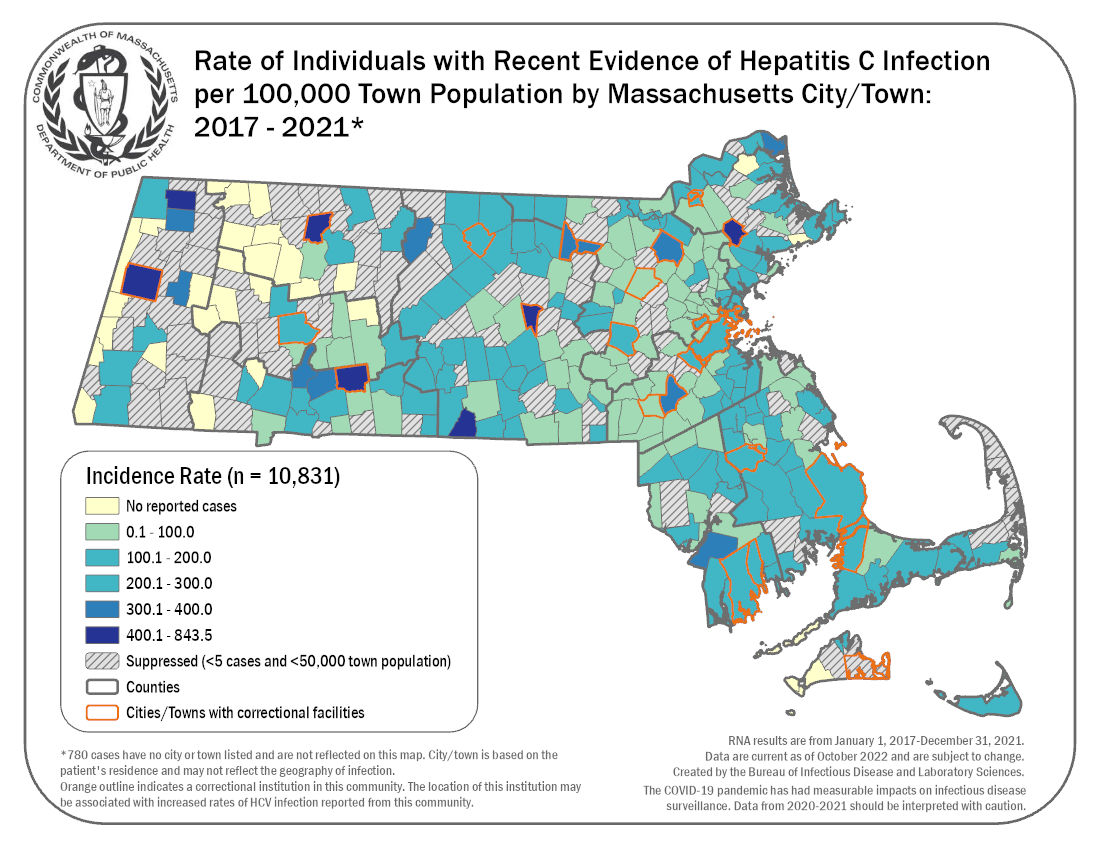
25



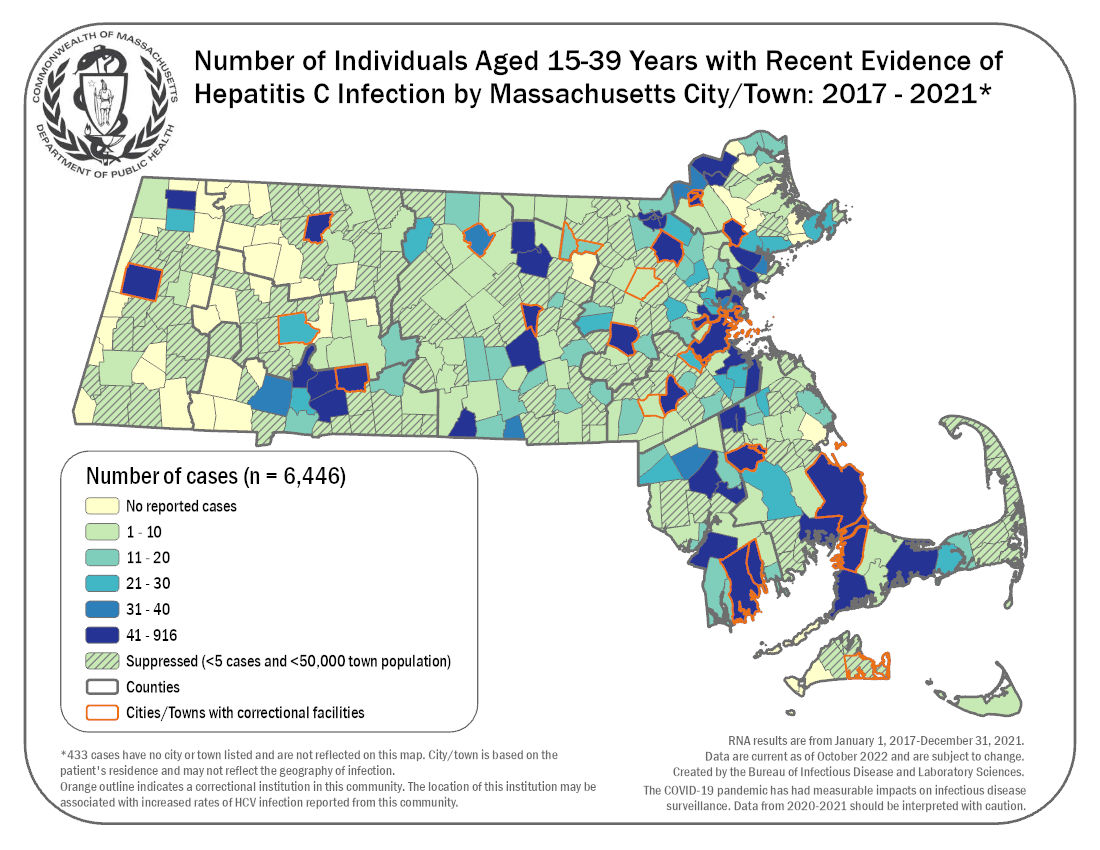
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