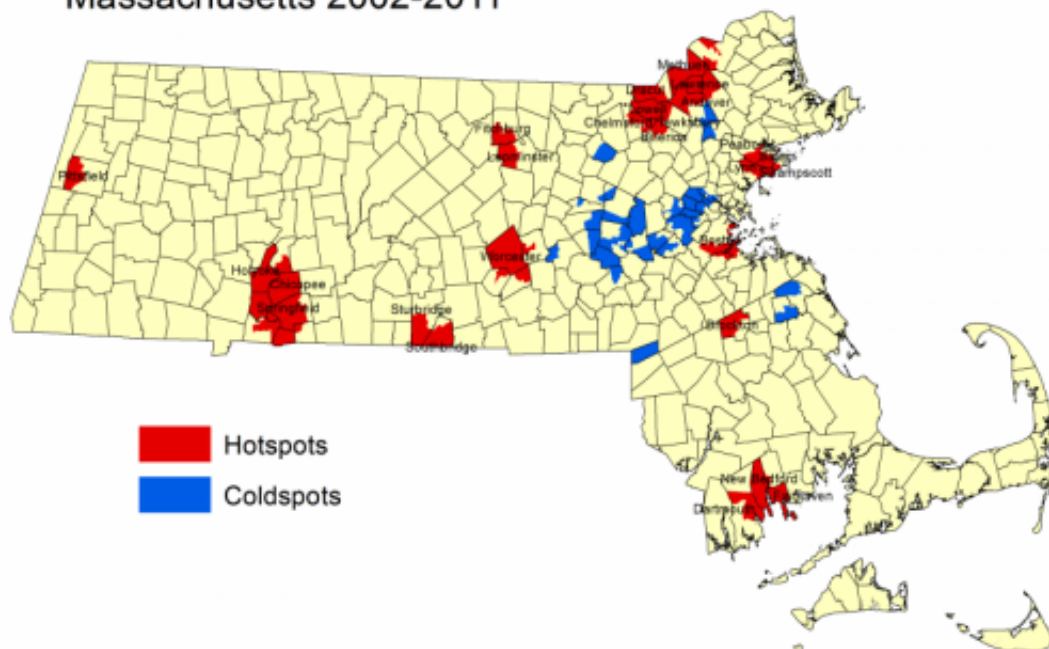


Geospatial study identifies hotspots in deaths from HIV/AIDS and Hepatitis C in Massachusetts

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Hotspots of Hepatitis C Deaths
Massachusetts 2002-2011



Meyers DJ, Hood ME, Stopka TJ (2014)
HIV and Hepatitis C Mortality in Massachusetts, 2002–2011: Spatial Cluster and Trend Analysis of HIV and HCV Using Multiple Cause of Death.
PLoS ONE 9(12): e114822. doi:10.1371/journal.pone.0114822

Geospatial study identifies hotspots in deaths from HIV/AIDS and hepatitis C in Massachusetts. Credit: Meyers DJ, Hood ME, Stopka TJ (2014)

A new study from epidemiologists at Tufts University School of Medicine helps to identify communities with the greatest public health

need in Massachusetts for resources relating to HIV/AIDS and hepatitis C. The study, published today in *PLOS ONE*, used geospatial techniques to identify hotspots for deaths related to HIV/AIDS and hepatitis C. The findings show large disparities in death rates exist across race and ethnicity in Massachusetts.

The HIV/AIDS and [hepatitis C](#) epidemics are challenging [public health](#) officials and clinicians in the United States. While HIV/AIDS mortality rates have decreased, hepatitis C infection rates have increased at a steep rate in younger populations. Co-infection is common among drug users. Public health officials are also increasingly concerned about long-standing and initially silent hepatitis C infections in baby boomers.

Studies of mortality frequently use only one cause of death, but these studies often miss the underlying cause of death. To get a fuller picture, the research team looked at the contributing or underlying causes of death, related to HIV/AIDS or hepatitis C, as documented on death certificates from 2002 to 2011 in the Commonwealth of Massachusetts.

Hispanic and black populations die at rates up to five times greater than white and Asian populations from HIV/AIDS or hepatitis C, particularly those aged 45-65. Springfield, Worcester, South Boston, the Merrimack Valley, and New Bedford had the highest rates of death from HIV/AIDS or hepatitis C and are identified as the communities in greatest need of resources for reducing disparities.

"Many neighborhoods and towns are affected by these intertwined epidemics, but some neighborhoods and municipalities have been hit particularly hard. While these specific communities are hardest hit now, hepatitis C has been increasing in young, nonurban, white, populations so preventing transmission - particularly because it often takes about 20 to 30 years for symptoms to show up - is paramount," said senior author Tom Stopka, Ph.D., assistant professor of public health and community

medicine at Tufts University School of Medicine.

"Comprehensive prevention should include health education, enhanced counseling and testing, linkage to care, and increased access to sterile syringes through syringe exchange programs and pharmacies. Expanded treatment is also essential, for both HIV and hepatitis C, to decrease transmission risks in local communities," he continued.

The research team looked at all death certificates in Massachusetts from 2002 to 2011 that had HIV/AIDS or hepatitis C as an underlying or contributing cause of death. Using population estimates, they calculated mortality rates in each census tract across the state by race and age.

The researchers conducted geospatial and temporal hotspot analyses to see what areas had clusters of higher mortality rates for HIV/AIDS and hepatitis C compared to the rest of the state and portrayed the results in maps.

Detailed findings:

- The research team found a total of 4,818 deaths associated with HIV/AIDS and 2,913 deaths associated with hepatitis C during the ten-year period.
- While HIV/AIDS deaths decreased over the ten-year period, hepatitis C deaths increased slightly.
- Age-adjusted mortality rates for hepatitis C were 2.9 per 100,000 people for white populations while they were 10 and 10.4 for black and Hispanic populations respectively.
- Age-adjusted [mortality rates](#) for HIV/AIDS were 1.6 per 100,000 people for white populations while they were 14.3 and 10.7 for black and Hispanic populations, respectively.
- The largest hotspots of HIV deaths occurred in the Greater Boston area, the Greater Worcester and Springfield areas, New

Bedford, and Provincetown.

- The largest hotspots of hepatitis C deaths occurred in South Boston/Dorchester, New Bedford, Lawrence/Merrimack Valley, Springfield, Worcester, and Salem/Lynn/Peabody.
- Significant coldspots of mortality were also found for both hepatitis C and HIV/AIDS primarily in the metrowest region of Boston but also in the southeast.

"I conducted this study to better highlight the enormous, yet preventable, disparities that exist in infectious disease mortality, especially in the case of AIDS and hepatitis C. By analyzing who is dying from these conditions, and where, we can figure out the best ways to organize a targeted response to improve health equity," said first author, David Meyers, M.P.H. Meyers conducted the study as part of his MPH degree program at Tufts University School of Medicine. He is currently an analyst at the Harvard School of Public Health.

While anyone can get hepatitis C, more than 75% of adults infected are baby boomers, perhaps as a result of receiving contaminated blood before the blood supply was screened beginning in 1992. People can live with hepatitis C for decades without symptoms. Chronic hepatitis C can lead to serious health problems including liver damage, but new, highly effective medications are available.

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More information: Meyers DJ, Hood ME, Stopka TJ (2014). HIV and Hepatitis C Mortality in Massachusetts, 2002-2011: Spatial Cluster and Trend Analysis of HIV and HCV Using Multiple Cause of Death. *PLoS ONE* 9(12): e114822. [DOI: 10.1371/journal.pone.0114822](https://doi.org/10.1371/journal.pone.0114822)
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