

TO: Somerville City Council
FROM: SomerStat
DATE: October 24, 2019
SUBJECT: Mapping Opioid Overdose and Improperly Disposed Needle Locations (2014-2018)

The maps in this memo were created in response to Council Order 208693 requesting “that the Director of SomerStat provide this Council with a citywide heat map of areas where overdoses and improperly disposed needles are reported to identify a location for a safe injection facility.”

Interpreting the Maps

The maps below show a distribution of incidents across the city and do not represent statistically significant findings as sample size did not permit statistical analysis. Instead, any clusters pictured below are visual representations of incident frequency.

Data Sources and Methodology

Data on **opioid-related overdoses** were provided by the Somerville Police Department (SPD) for incidents occurring in 2014 – 2018. Data include incidents when SPD or the Somerville Fire Department (SFD) was a first responder and do not include data from Cataldo or hospital emergency departments. Incidents were categorized as opioid-related based on information available to first responders on the scene and have not been confirmed with medical reports. Therefore, these numbers should be considered an estimate.

For incidents involving **improperly disposed hypodermic needles**, both the SPD and the Inspectional Services Division (ISD) Health Department respond to calls. Whether the call is routed to SPD or ISD depends on the time of day when the call was received, and whether the call was made directly to SPD, ISD, or to the city’s 311 line. A call may be routed to both departments. This analysis attempted to remove all duplicate service requests by matching the SPD and ISD datasets using exact address and date. However, it is possible that this exact match missed some duplicates, resulting in an over count.

In the SPD dataset for hypodermic needles, 22 incidents included a street name but did not include a full address or intersection. Of those, fifteen (15) incidents occurred on short streets (~1 block) and were kept in the dataset. The location was geocoded in the middle of the block. This left seven (7) instances that occurred on long streets (e.g. Broadway) or had an unclear location (e.g. “Magoun Square”). These were dropped from the dataset.

The ISD dataset on hypodermic needles was generated by SomerStat. It queried the CitizenServe database for health complaints, 311 calls, and code violations that included the terms of “needle,” “syringe,” or “sharp.” The comparison of the ISD dataset and the SPD dataset identified 8 duplicate incidents, which were removed from the analysis. In addition, 4 incidents in the ISD dataset had an ambiguous location (e.g. “Broadway”) and were also removed from the analysis. Note: ISD started using

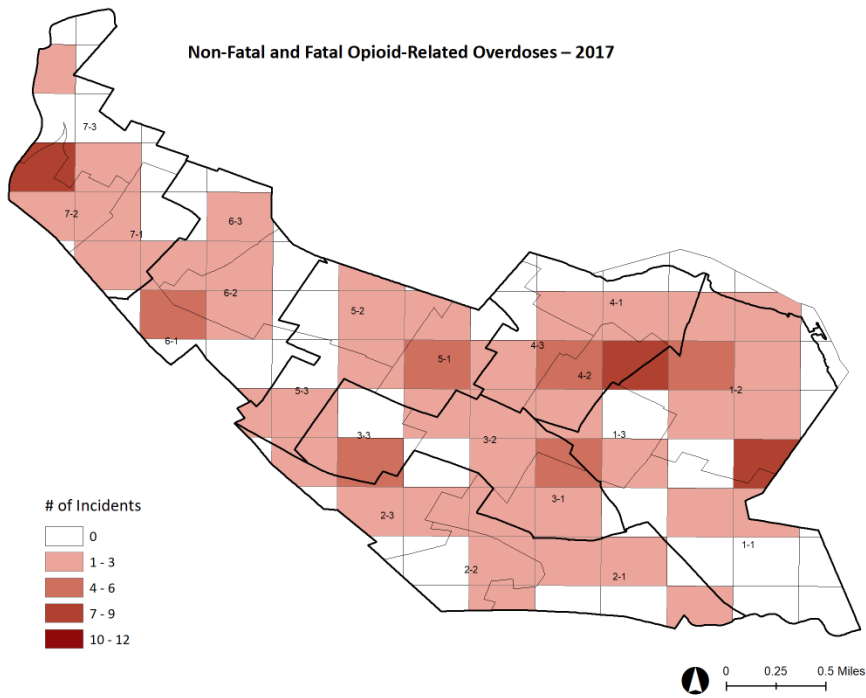
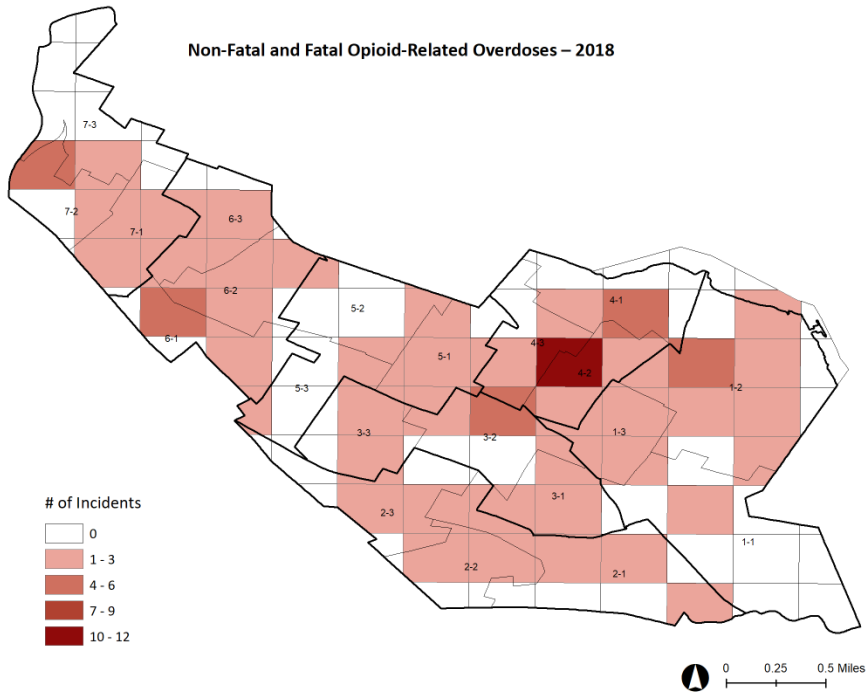
CitizenServe in May 2014, so the hypodermic needle data for that year is incomplete. This likely results in an undercount of incidents in the 2014 map.

Mapping

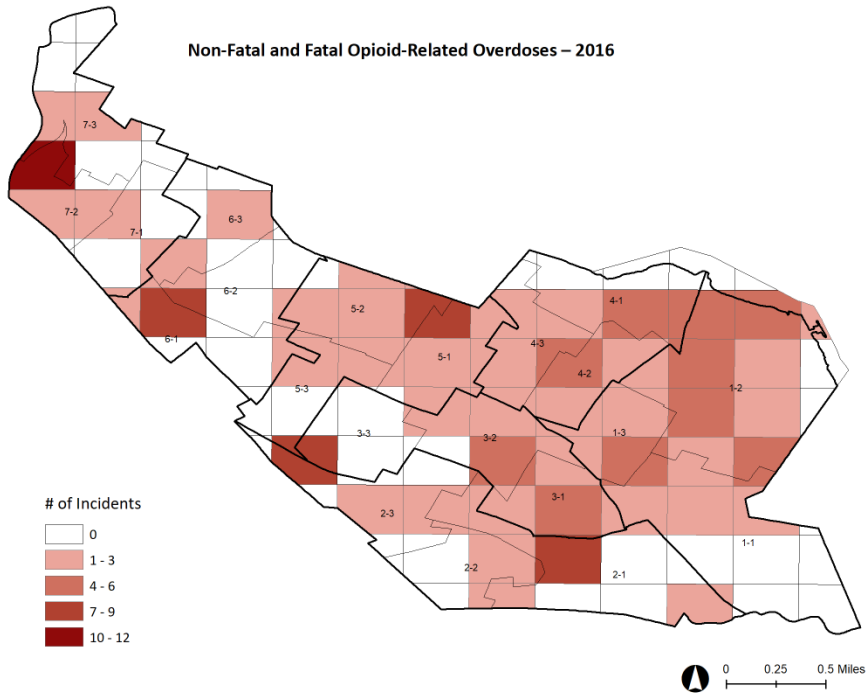
Location data was geocoded in the program R using the ggmap package¹ and mapped in ArcGIS. To protect individual privacy, the data have been aggregated at a ~400m² area (approximately a square quarter mile). The number of incidents that occurred within that area is indicated by the color.

¹ D. Kahle and H. Wickham. ggmap: Spatial Visualization with ggplot2. The R Journal, 5(1), 144-161.
URL <http://journal.r-project.org/archive/2013-1/kahle-wickham.pdf>

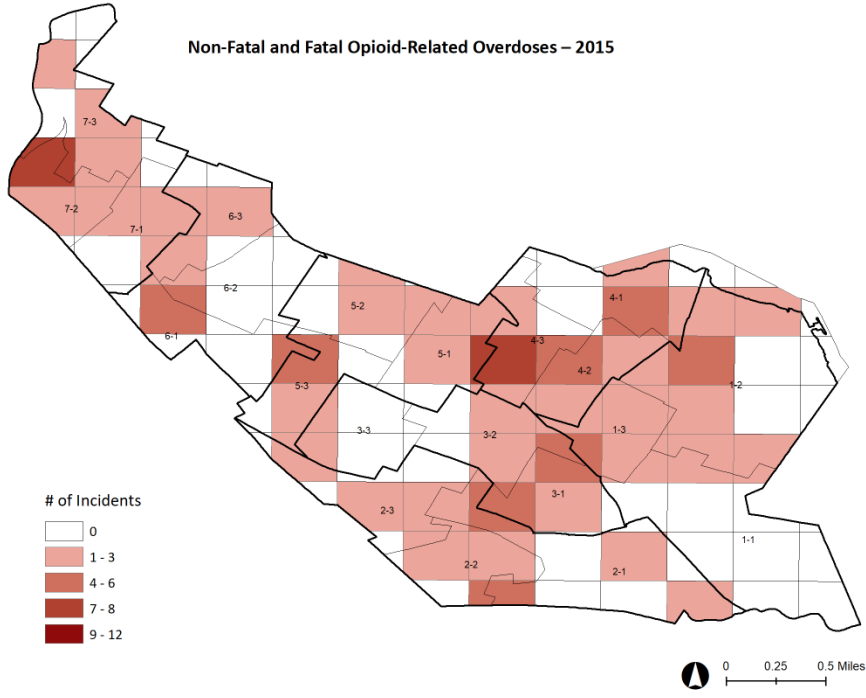
Non-Fatal and Fatal Opioid-Related Overdoses



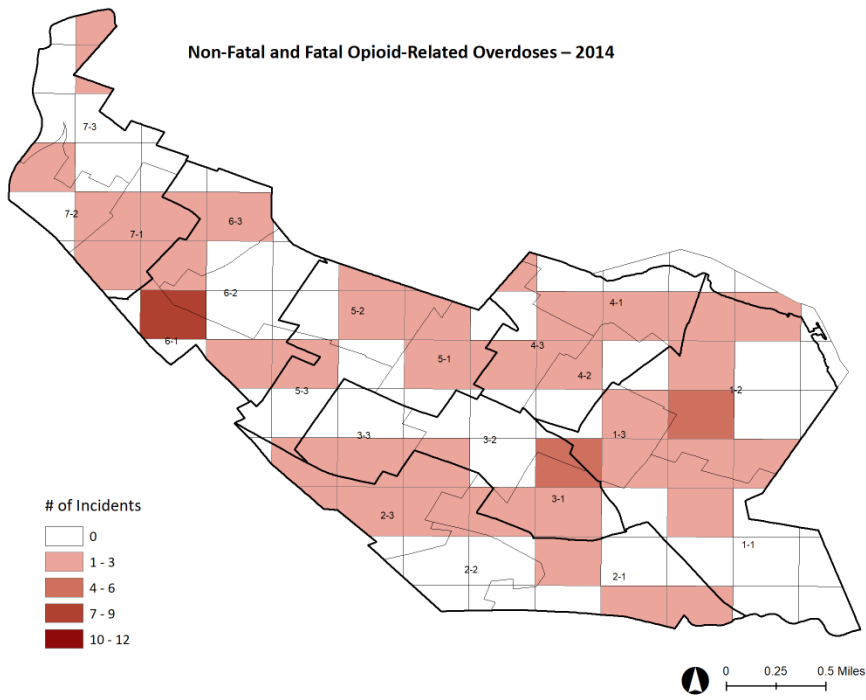
Non-Fatal and Fatal Opioid-Related Overdoses – 2016



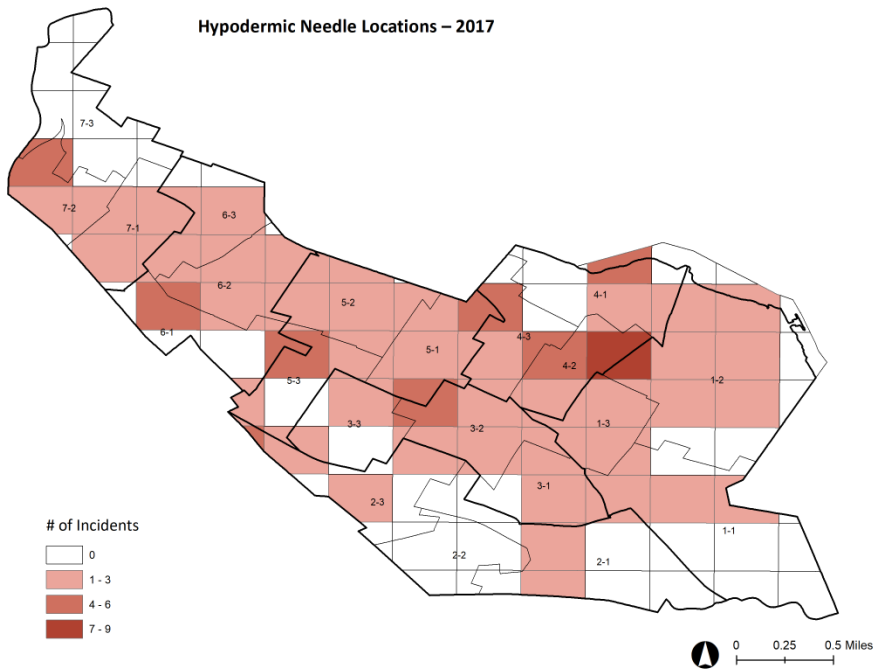
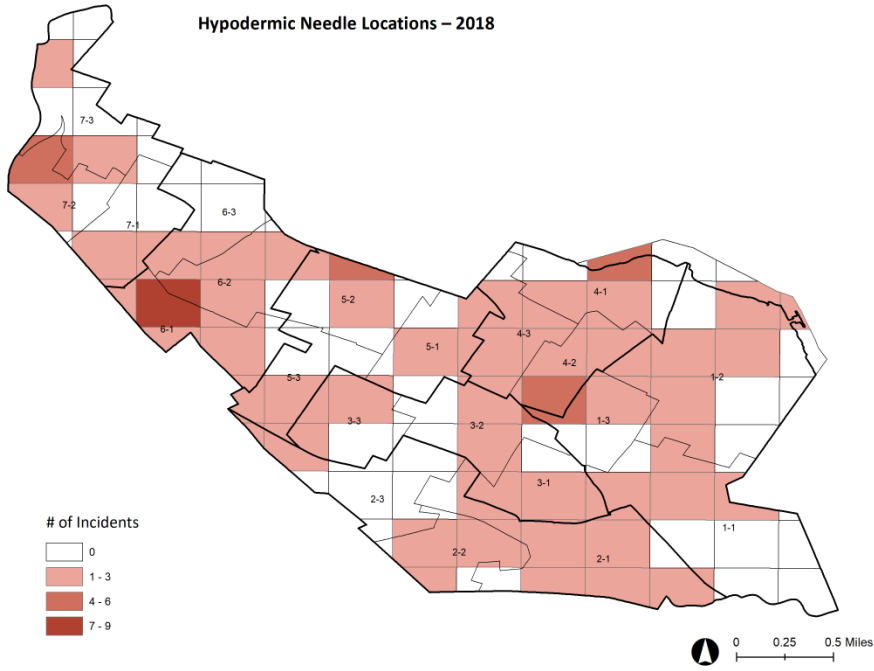
Non-Fatal and Fatal Opioid-Related Overdoses – 2015

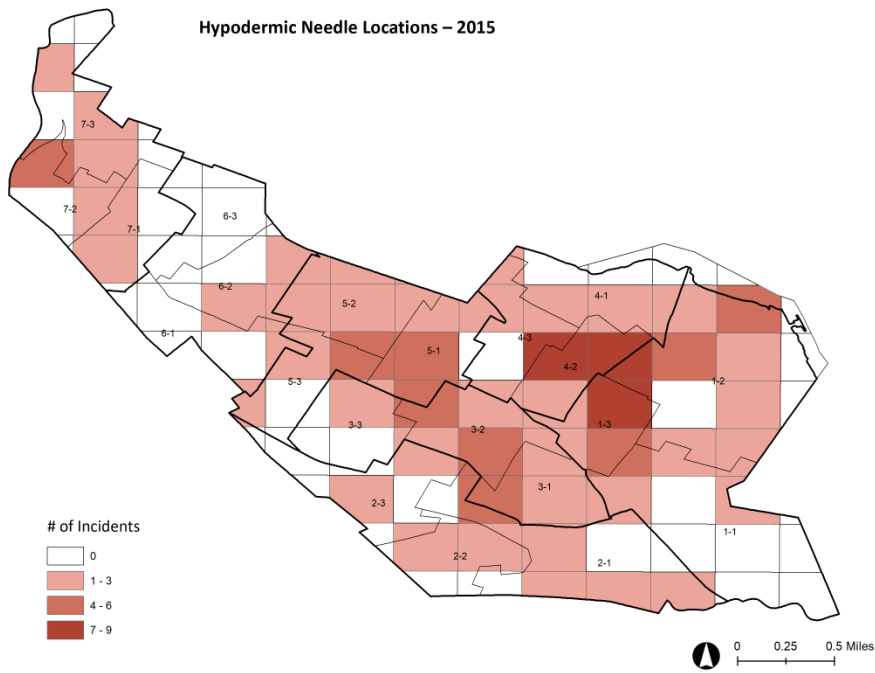
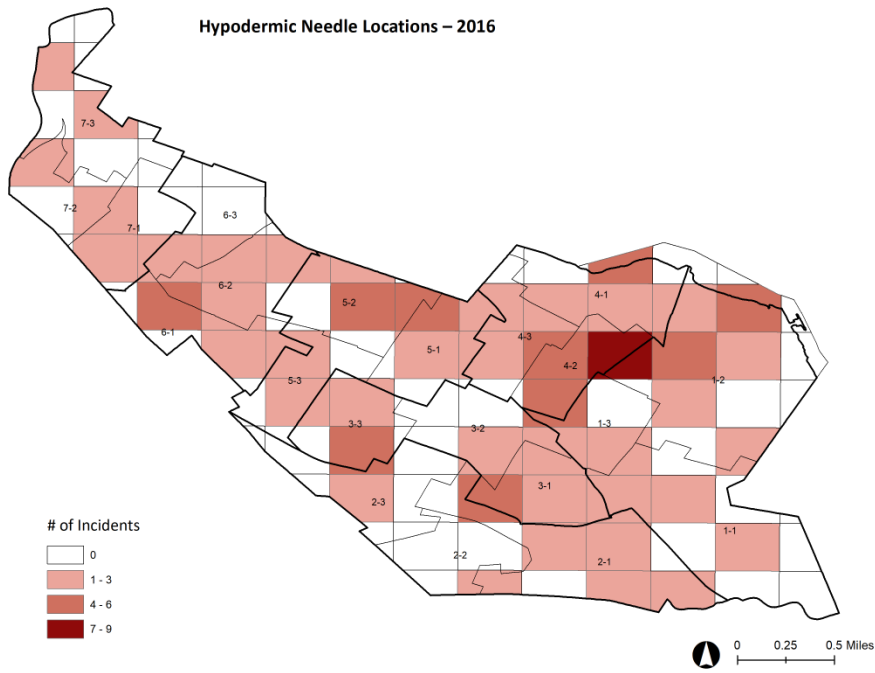


Non-Fatal and Fatal Opioid-Related Overdoses – 2014



Improperly Disposed Hypodermic Needle Locations





Hypodermic Needle Locations – 2014

