Epi Data Brief

Neighborhood-based Rat Surveillance in the Bronx and Manhattan, New York City, 2010-2014

The Norway rat (Rattus norvegicus) is a pervasive urban rodent that brings stress to residents of infested neighborhoods, damages property, causes financial loss, and can carry a variety of pathogens transmissible to humans. In 2007 the New York City Health Department expanded its complaint-driven inspection program to incorporate a proactive "rat indexing" program. Beginning in Bronx neighborhoods with high rat activity, all properties (including residences, commercial properties, and government owned properties such as parks and schools) were inspected for active rat signs (ARS); properties with any ARS were classified as inspection failures. In 2010, rat indexing was expanded to Manhattan.

This report describes the results of the neighborhood rat indexing program by year, borough, and poverty level in four Bronx Community Districts (CDs) and six Manhattan CDs.

The indexing program led to reductions in active rat signs

- From 2010 to 2014, a cohort of 12,121 properties in the Bronx and a cohort of 19,033 properties in Manhattan were inspected at least once a year.

- Due to increased inspection failures, two rounds of indexing were scheduled in 2013 and 2014 for Bronx CDs, and in 2014 for Manhattan CD 12; other CDs had one round of inspection per year.

The Bronx cohort

- Among the Bronx CDs, the peak failure rate was 11% in 2012.

- Failure rates declined again in most areas in subsequent years.

- All Bronx CDs had lower failure rates in 2014 compared with rates in 2012.

- The lowest failure rate for the Bronx was 4% in CD 6, Belmont and East Tremont, in 2011.

- Bronx CD 4, Highbridge and Concourse, consistently had the highest failure rate with an average failure rate of 12%.

Count and rate of failed initial inspections for active rat signs (ARS) in the Bronx, by Community District, 2010-2014
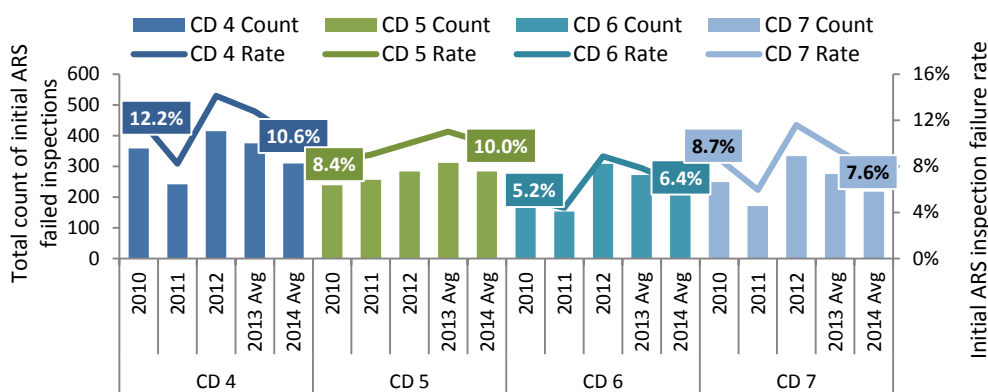
Note: In years in which two rounds of indexing were conducted, an average rate is reported.
Source: NYC DOHMH Veterinary, Rodent and Vector Surveillance System, 2010-2014

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Manhattan cohort

- Among Manhattan CDs the peak failure rate occurred in the first round of indexing in 2010 (9%); it fell by nearly 30% in 2014 to a historic low of 7%.
- The highest failure rate (15%) in Manhattan was in CD 12, Washington Heights and Inwood, in 2013.
- The lowest failure rate (4%) ever observed in Manhattan was in CD 10, Central Harlem, in 2013.

Count and rate of failed initial inspections for active rat signs (ARS) in Manhattan, by Community District, 2010-2014
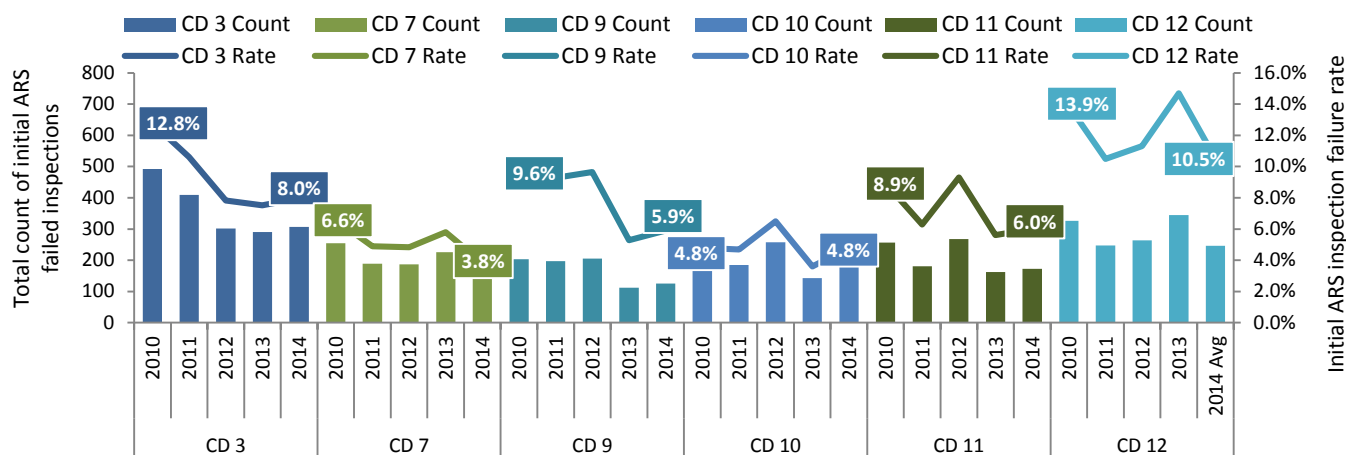

Note: In 2014 two rounds of testing were conducted in CD 12, an average is reported.
Source: NYC DOHMH Veterinary, Rodent and Vector Surveillance System, 2010-2014

Rat-related complaints to 311 do not always predict failure rates for active rat signs

- Rates of rat-related complaints to 311 were not always aligned with rates of ARS inspection failure.

- In 2014, rat-related complaints were at the highest in the study period. There were 7,182 rat-related complaints to the NYC 311 system made in the communities included in the rat indexing program. Meanwhile failure rates on initial inspection were falling throughout 2014. The increase in complaints was likely a result of the launch of a new 311 app in February of 2014 that made it easier for rat sightings to be reported.

- The average number of complaints in the 2014 study period was 35.9 per 10,000 population. The average failure rate on initial inspection was 7.4% for the same period.

- Central Harlem (Manhattan CD 10) had a higher than average rate of complaints, while the failure rate for rat activity was often among the lowest of the indexed areas. Alternatively, Washington Heights and Inwood (Manhattan CD 12) had a below average rate of complaints, and one of the highest failure rates among the indexed areas.

Percentage of failed initial inspections for active rat signs (ARS) by rate of 311 rat-related complaints in Community Districts of New York City, 2014
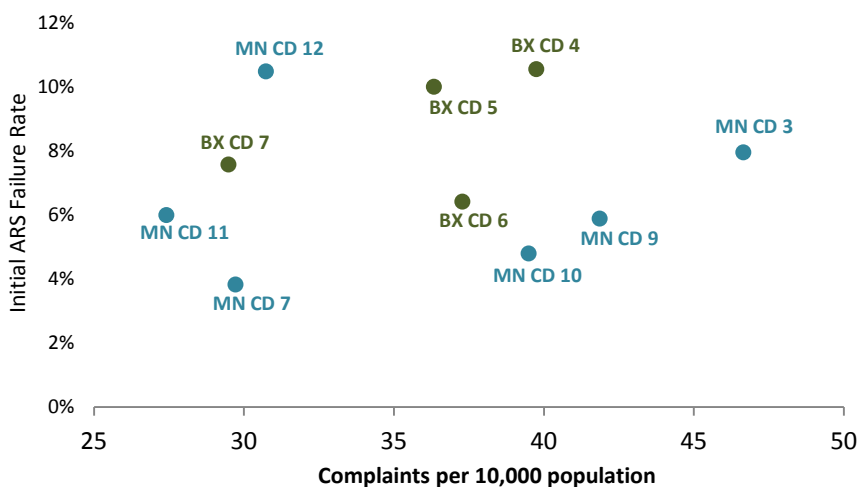

Data points are labeled with Community District, MN=Manhattan, BX=Bronx
Sources: NYC DOHMH Veterinary, Rodent and Vector Surveillance System, 2014; NYC 311 rat-related complaints, 2014; American Community Survey 2009-2013

Active rat signs were more commonly observed in higher poverty areas than lower poverty areas

- Indexing areas were selected based on history of rat activity, and are skewed towards areas of high poverty. To better understand the relationship between poverty and rat activity, we examined mean rates of ARS failure by poverty level in the Bronx and Manhattan study areas.

- In 2014, among Census tracts that had a least 10 inspections, higher poverty areas had higher ARS.

Mean active rat signs (ARS) inspection failure rate by neighborhood poverty,* New York City, 2014
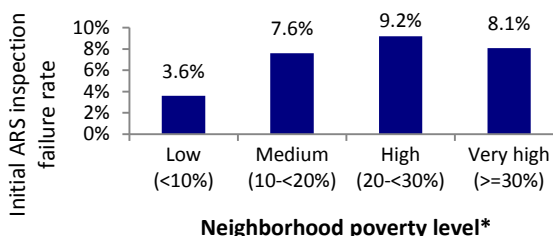
*Neighborhood poverty defined as the percent of families with incomes below 100% of the Federal Poverty Level, per ACS.
Sources: NYC DOHMH Veterinary, Rodent and Vector Surveillance System, 2014; American Community Survey (ACS) 2008-2012
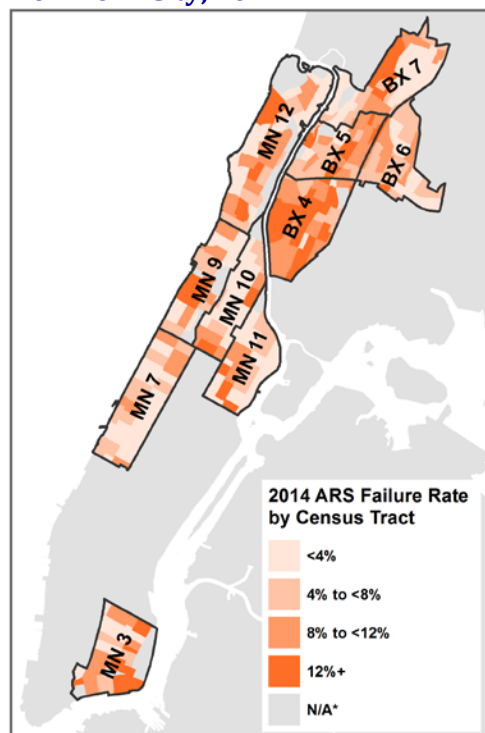
Active rat signs (ARS) inspection failure rate by Census tract, New York City, 2014

Neighborhood poverty^ by Census tract, New York City, 2014

^Neighborhood poverty defined as percent of families with incomes below 100% of the Federal Poverty Level, per ACS.
Sources: NYC DOHMH Veterinary, Rodent and Vector Surveillance System, 2014; American Community Survey (ACS) 2008-2012
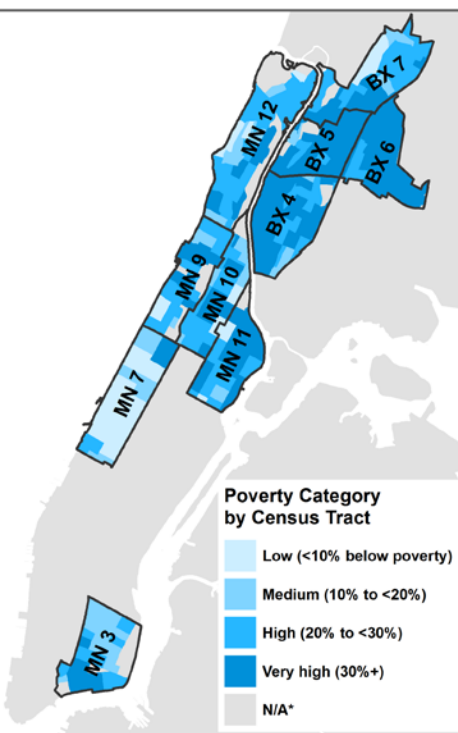
References
1. Corrigan R. A profile of the Norway rat, *Rattus norvegicus*. In: New York City: its impact on city operations and the need for collaborative interagency rat management programs. Timm RM, O'Brien JM, eds. Proceedings of the 22nd Vertebrate Pest Conference. Davis, California: University of California, Davis; 2006:131–41.
2. Evaluation of a Neighborhood Rat-Management Program — New York City, December 2007–August 2009 (MMWR): http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6137a1.htm?s_cid=mm6137a1_w.

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Health Department programs to prevent and control rats

The **Rat Reservoir Program** includes expanded staffing to focus efforts on areas of intense rat activity (reservoirs) in NYC. Along with other programs such as the **NYC Rodent Academy** and the **Rat Indexing program**, the Health Department continues to address both rats and the conditions that cause them. More information can be found here.

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