Geographic analysis of PCSI diseases:
Using maps to identify NYC neighborhoods with high rates of co-occurring HIV, TB, STDs and viral hepatitis

PCSI, Division of Disease Control, NYC DOHMH, February 2012
Why map disease data?

• Maps are a way to easily:
  – Observe geographic patterns
  – Communicate data effectively to a wide range of audiences

• Both co-occurrence and co-infection provide information about disease ‘hotspots’ and provide information to target service integration activities
  – Co-occurrence = >1 disease in the same population
  – Co-infection = >1 disease in the same individual
Units of Geographic Analysis

• The unit of analysis depends on the data, the audience and question of interest

Smaller
- Zip Code
- United Hospital Fund Neighborhood

Larger
- Census Tract
- Community District

Surveillance data and most other DOHMH data are collected and reported this way

Census data are collected and reported this way
Why Zip Codes?

• Most DOHMH data are presented by United Hospital Fund (UHF) neighborhood
  – Group of several zip codes
  – Named neighborhoods are easy for the public to recognize
  – Zip codes are smaller, more accurate representation
  – UHF can obscure a health issue that impacts some zip codes and not others
Types of Maps Created

• **Single disease** maps for 7 diseases
  – More information about a specific disease: i.e. where high rates of THAT disease greatest
  – More difficult to see the relationship to other diseases

• **Quintile map** – all 7 disease in one map
  – Easier to see where there is overlap in high morbidity
  – Easier to observe patterns in disease combinations

• All maps show 2009 rates/100,000 of newly reported cases
2009 chlamydia cases/100,000

Source: NYC DOHMH Bureau of STD 2009 surveillance data
NYC DOHMH PCSI Initiative
2009 gonorrhea cases/100,000

- **0 - 175.8**
- **175.9 - 351.6**
- **351.7 - 527.5**

Source: NYC DOHMH Bureau of STD 2009 surveillance data

NYC DOHMH PCSI Initiative
2009 P&S syphilis cases/100,000

- 0 - 12.0
- 12.1 - 57.2
- 57.3 - 158.5

Source: NYC DOHMH Bureau of STD 2009 surveillance data

NYC DOHMH PCSI Initiative
2009 TB cases/100,000

- 0 - 9.5
- 9.6- 29.3
- 29.4 - 114.9

Source: NYC DOHMH Bureau of TB 2009 surveillance data

NYC DOHMH PCSI Initiative
2009 Hepatitis B cases/100,000

- 0 - 140.7
- 140.8 - 695.5
- 695.6 - 1418.7

Source: NYC DOHMH Bureau of Communicable Disease 2009 surveillance data

NYC DOHMH PCSI Initiative
2009 Hepatitis C cases/100,000

Source: NYC DOHMH Bureau of Communicable Disease 2009 surveillance data
NYC DOHMH PCSI Initiative
2009 HIV cases/100,000

- **0 - 41.7**
- **41.8 - 112.6**
- **112.7 - 258.2**

Source: NYC DOHMH HIV/AIDS 2009 surveillance data

NYC DOHMH PCSI Initiative
Methodology:
Quintile Map of PCSI Diseases

• 2009 surveillance data – rates/100,000 for 7 PCSI diseases
• Ranked highest to lowest rate by zip code
• Top quintile (20%) for each disease identified
• Zip codes in the top quintile for >1 disease identified
• Map created of zip codes with >1 disease (2-7)
• Maps created of specific disease combinations
# of Diseases in the Top Quintile by Zip Code, 2009

Source: 2009 NYC DOHMH surveillance data
NYC Zip Codes with HIV and TB in the Top Quintile

Legend
- Top 20% for HIV and TB

NYC DOHMH PCSI Initiative
NYC Zip Codes with Hepatitis B and C in the Top Quintile

Legend

- Yellow: Top 20% for Hep B and Hep C

NYC DOHMH PCSI Initiative
NYC Zip Codes with Hepatitis C and HIV in the Top Quintile

Legend

- Top 20% for HIV and Hep C
NYC Zip Codes with Chlamydia, Gonorrhea and HIV in the Top Quintile

Legend

- Top 20% for HIV, CT and GC

NYC DOHMH PCSI Initiative
NYC Zip Codes with P&S Syphilis and HIV in the Top Quintile

Legend
- Top 20% for HIV and Syphilis
2005-09 Unintentional Drug Poisoning Death Rate by Neighborhood

Rate Range (Rate per 100,000 population)

- 0.9 - 5.6
- 5.7 - 13.0
- 13.1 - 22.4
- Top Neighborhoods
- Borough Boundaries

Source: OVS/OCME; analysis by DOHMH

NYC DOHMH PCSI Initiative

Bureau of Drug and Alcohol Prevention, Care and Treatment
Percentage of Residents below Federal Poverty, 2000

Legend
- <5%
- 5 to <10%
- 10 to <20%
- 20 to <30%
- 30 to <40%
- 40% or more

Source: 2000 American Community Survey compiled by zip code by DOHMH Bureau of Epidemiology Services

NYC DOHMH PCSI Initiative
Source: Mapping the Innovation in Correctional Health Care Service Delivery in NYC 2008
Data from the Department of Corrections, 2005
Using Maps to Target Services

Thousands of service providers in NYC

1. Which are the areas of greatest morbidity?
2. Are those in the right areas providing integrated services?
3. Do people that live in high-morbidity neighborhoods get services where they live?
The Bronx: Zip codes with >1 disease in the top quintile and location and catchment of the DOHMH District Public Health Office

2009 DOHMH Surveillance Data: Bureaus of STD, TB, HIV and Communicable Disease

NYC DOHMH PCSI Initiative
The Bronx:
Zip codes with >1 disease in the top quintile and Federally Qualified Health Centers in zip codes with 4 or more diseases in the top quintile

Diseases in the top quintile by zip code

- 2
- 3
- 4
- 5
- 6
- 7

2009 DOHMH Surveillance Data: Bureaus of STD, TB, HIV and Communicable Disease; 2011 HRSA funded FQHCs

NYC Health
Brooklyn:
Zip codes with >1 disease in the top quintile and location and catchment of the DOHMH District Public Health Office

2009 DOHMH Surveillance Data:
Bureaus of STD, TB, HIV and Communicable Disease
Brooklyn:
Zip codes with >1 disease in the top quintile and Federally Qualified Health Centers in zip codes with 4 or more diseases in the top quintile
Manhattan:
Zip codes with >1 disease in the top quintile and location and catchment of the DOHMH District Public Health Office

Diseases in the top quintile by zip code

2009 DOHMH Surveillance Data: Bureaus of STD, TB, HIV and Communicable Disease
Manhattan:
Zip codes with >1 disease in the top quintile and Federally Qualified Health Centers in zip codes with 4 or more diseases in the top quintile

2009 DOHMH Surveillance Data: Bureaus of STD, TB, HIV and Communicable Disease; 2011 HRSA funded FQHCs
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