

Chris Delcher, M.S.  
Epidemiologist  
[chris.delcher@vdh.virginia.gov](mailto:chris.delcher@vdh.virginia.gov)

## GIS in Public Health

Virginia Department of Health  
Division of Disease Prevention  
Monday September 17th, 2007

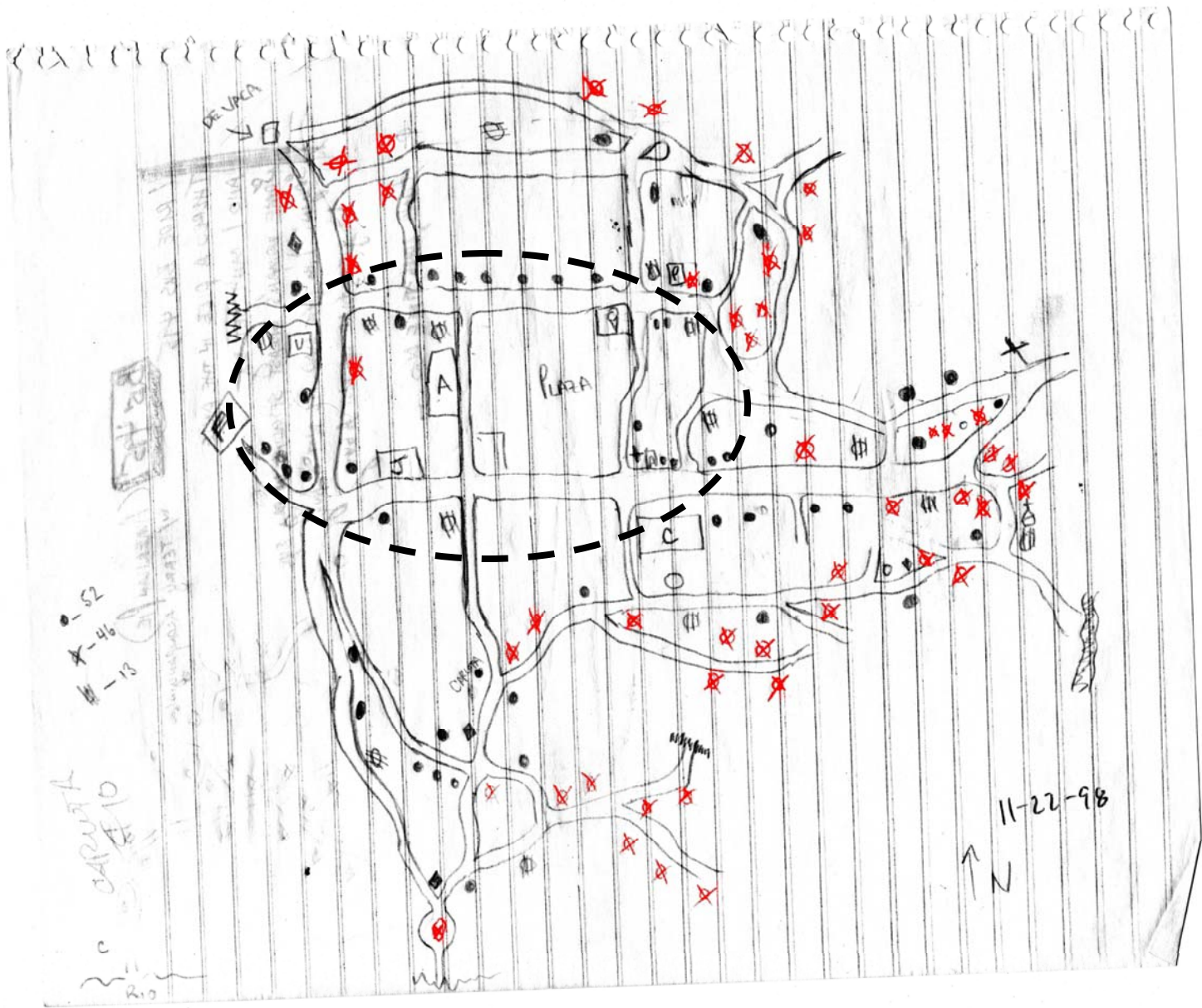
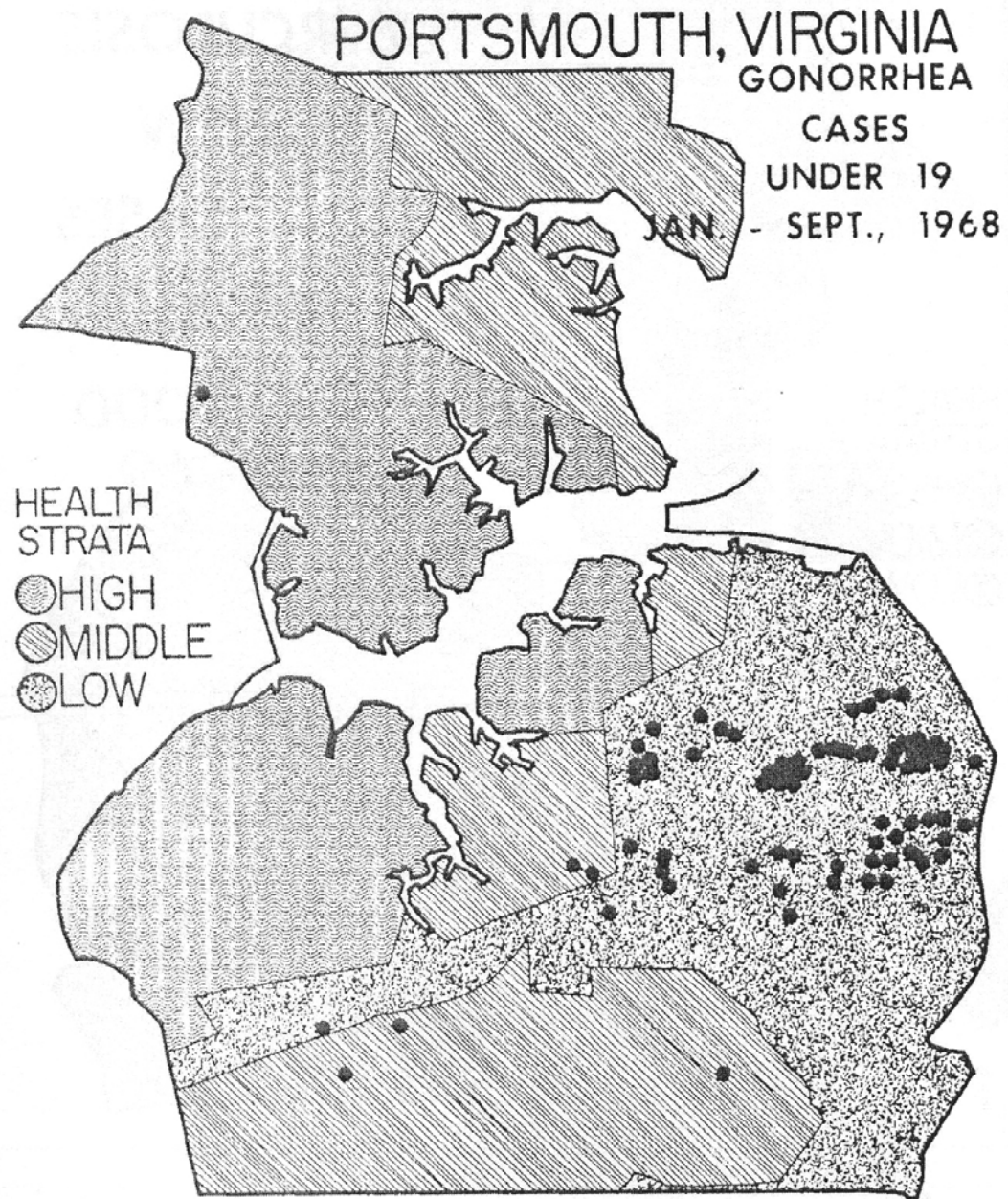


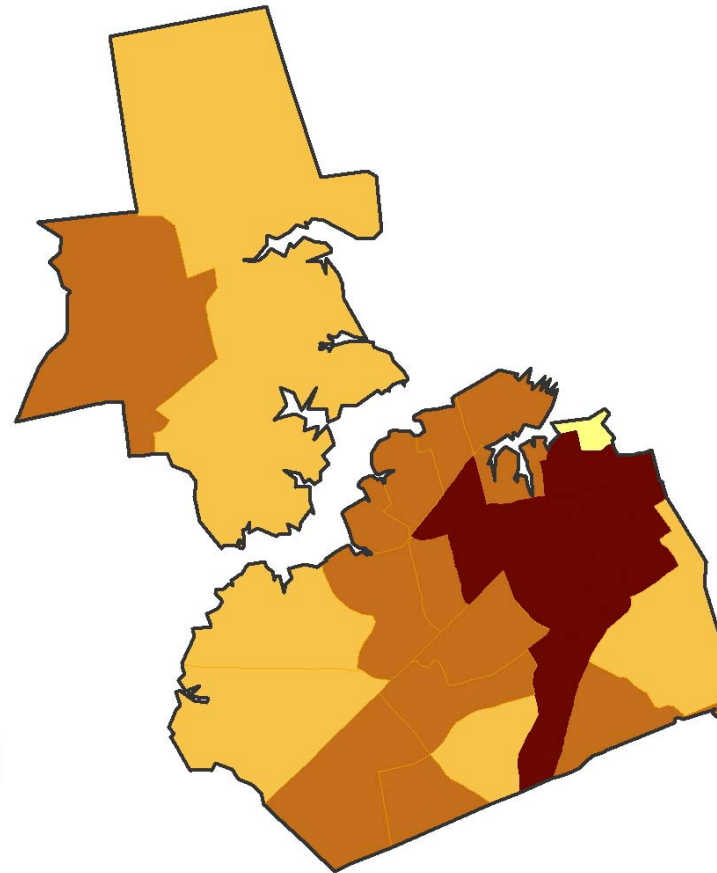
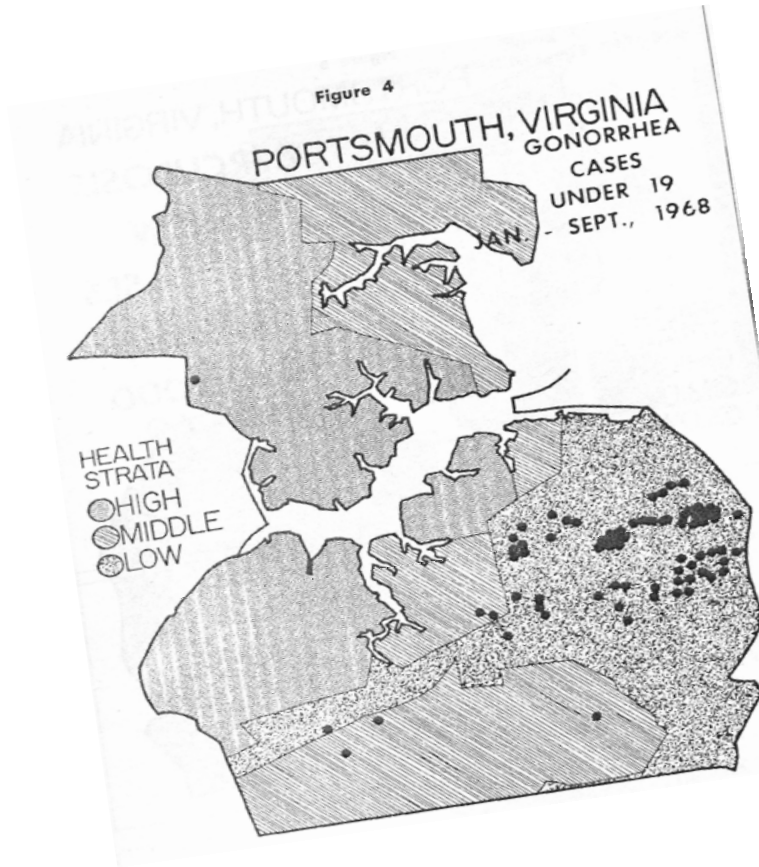
Figure 4



# Portsmouth 1970 Census Tracts

Hand drawn

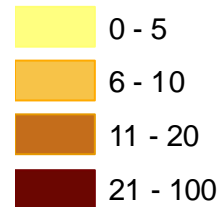
Digital



High - > \$10,000

Middle - \$6,000-\$9,999

Low - <=\$5,999



Percent households living under federal poverty line

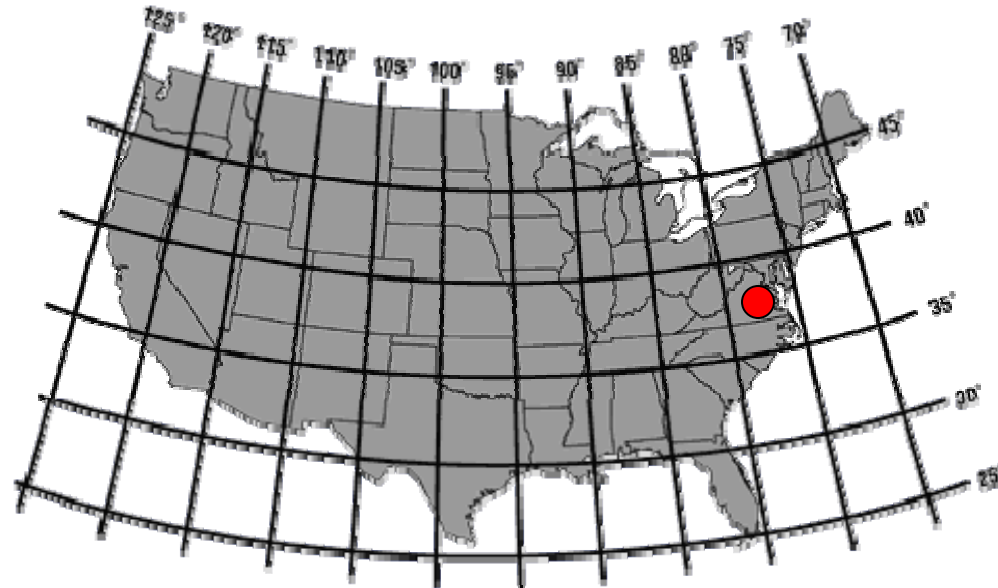
# What is Geocoding?

## Street Database

Address:  
**920 Main St.**  
**Richmond, VA 23220**

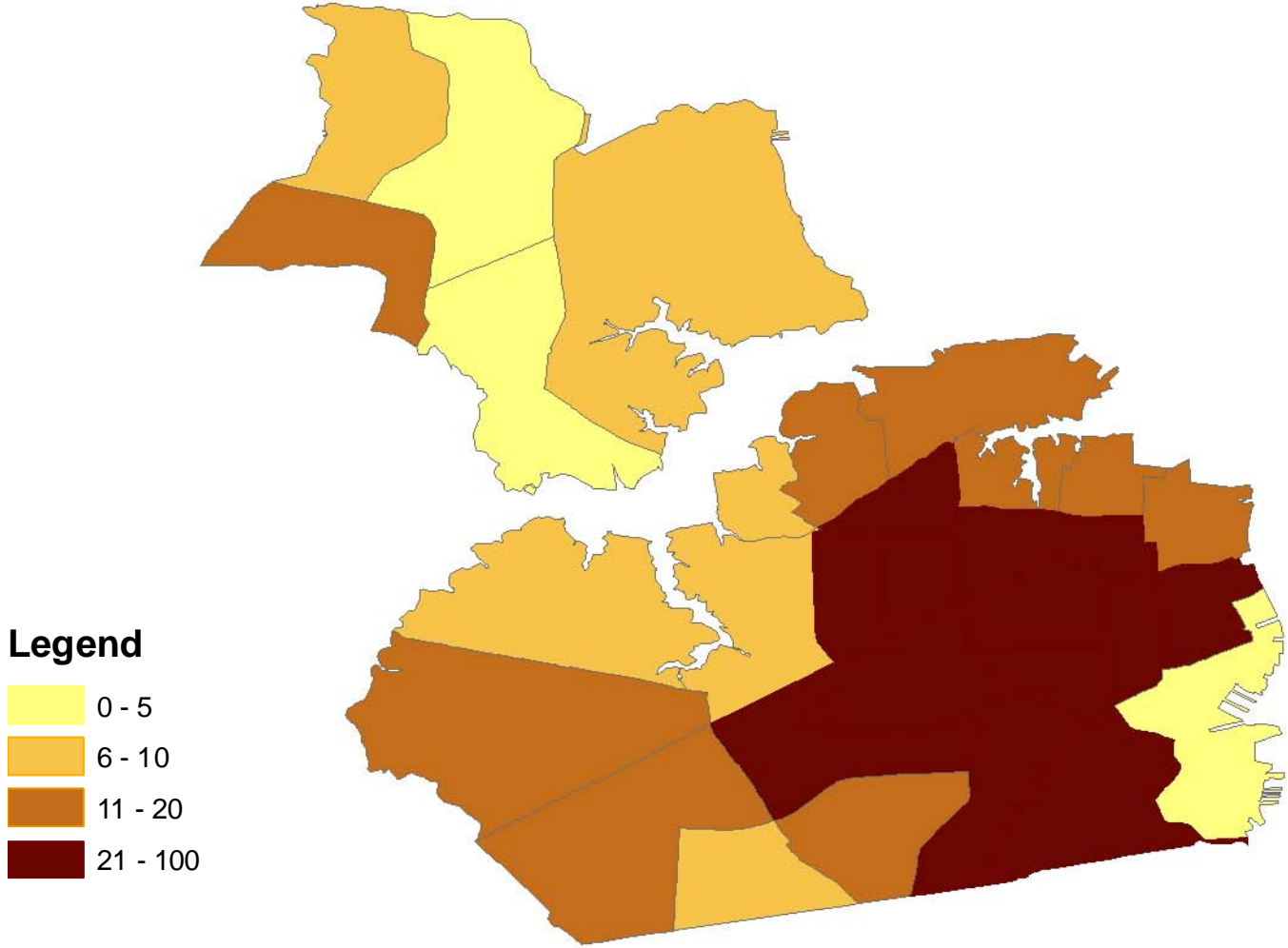
905 Main St.	X1, Y1
910 Main St.	X2, Y2
<b>920 Main St.</b>	<b>X3, Y3</b>
930 Main St.	X4, Y4
940 Main St.	X5, Y5

Longitude (X3): **-77.451723**  
Latitude (Y3): **37.550164**



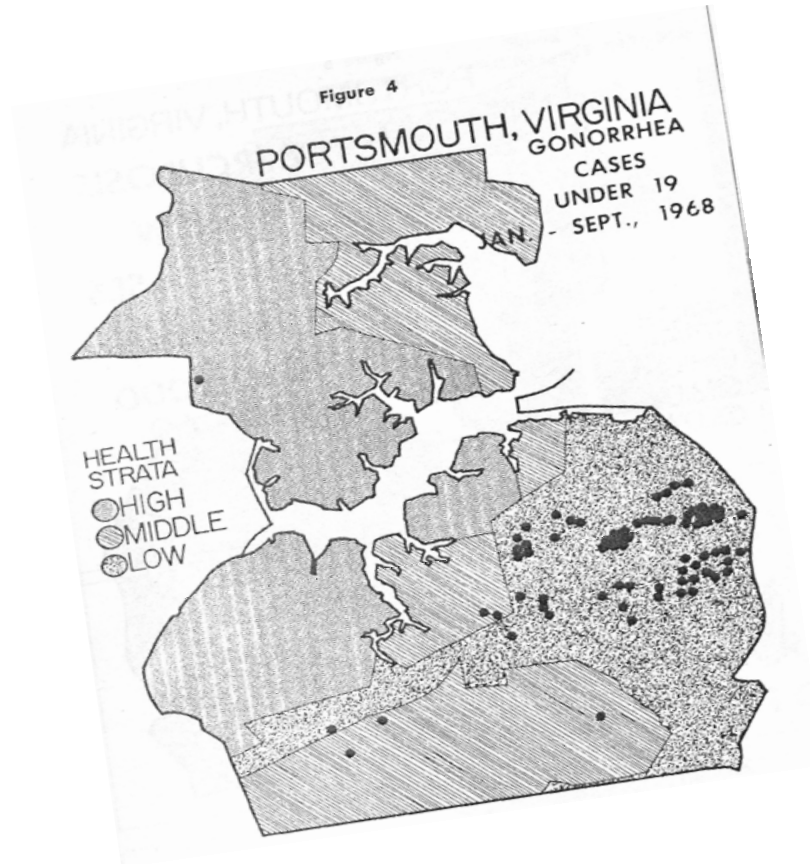
Portsmouth 1970 Census Tracts

Portsmouth 2000 Census Tracts

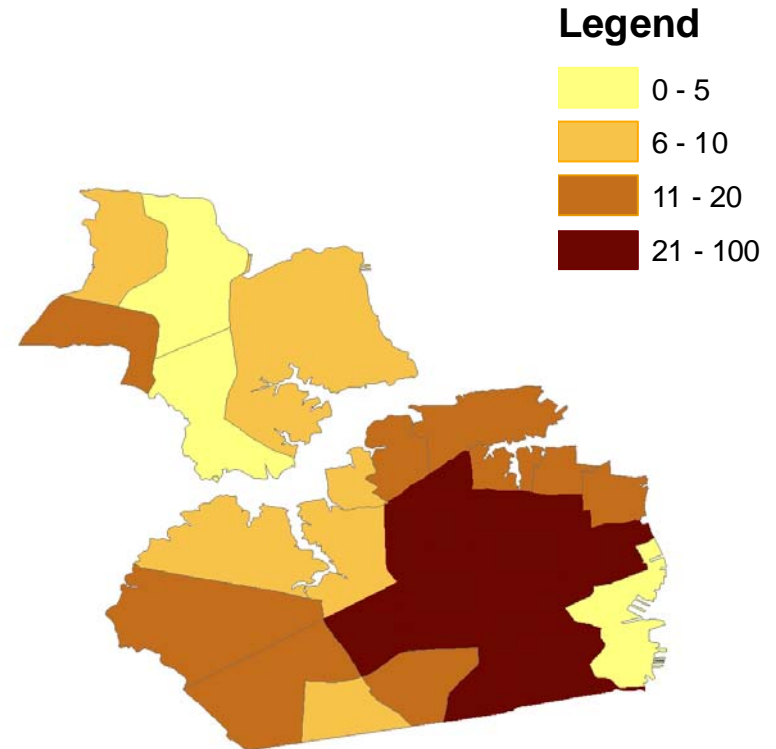


# 37 Years

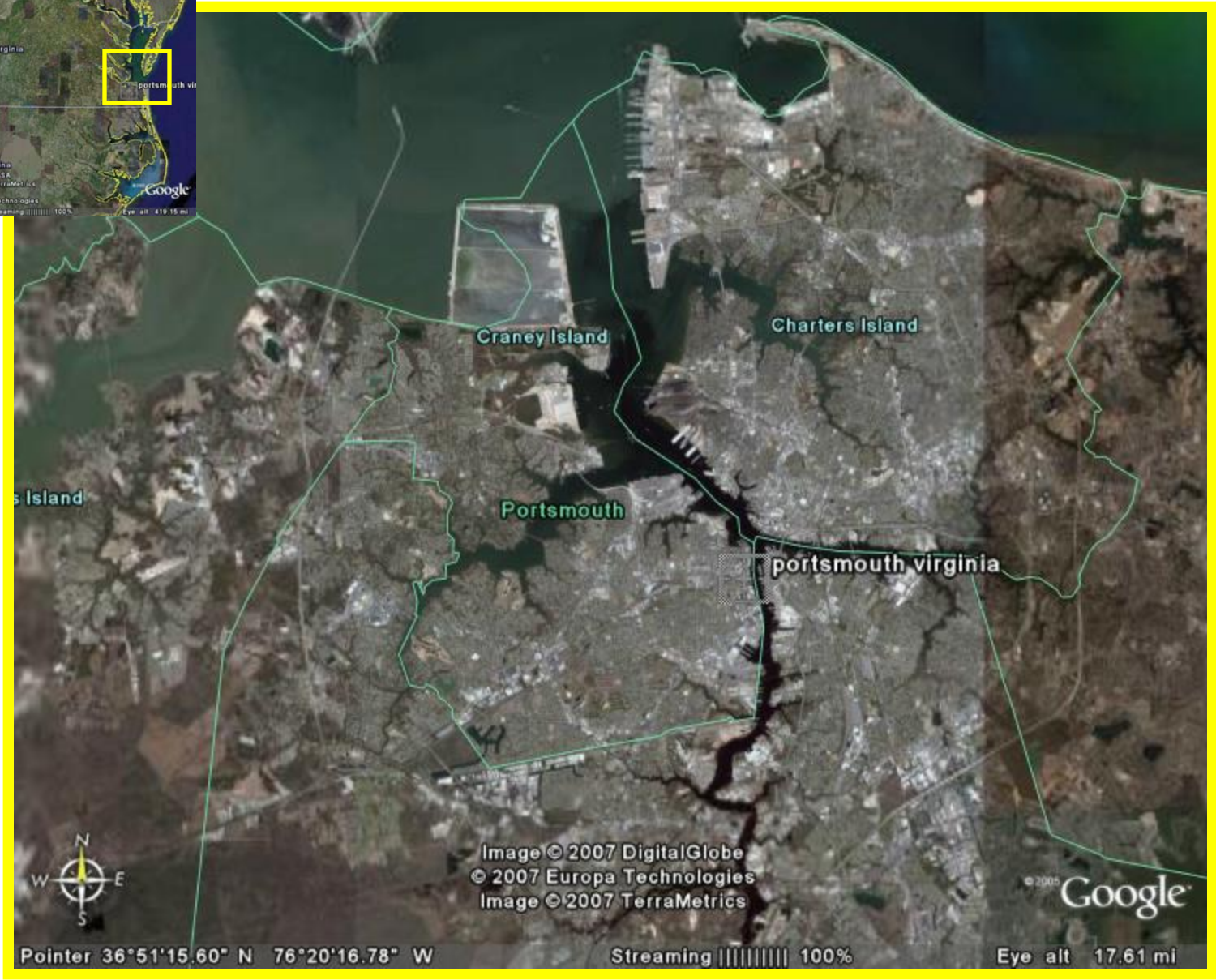
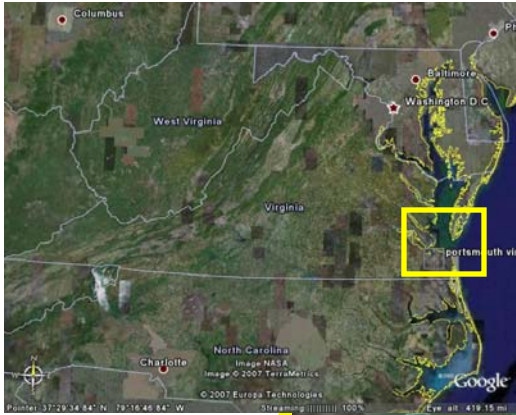
1968



2005



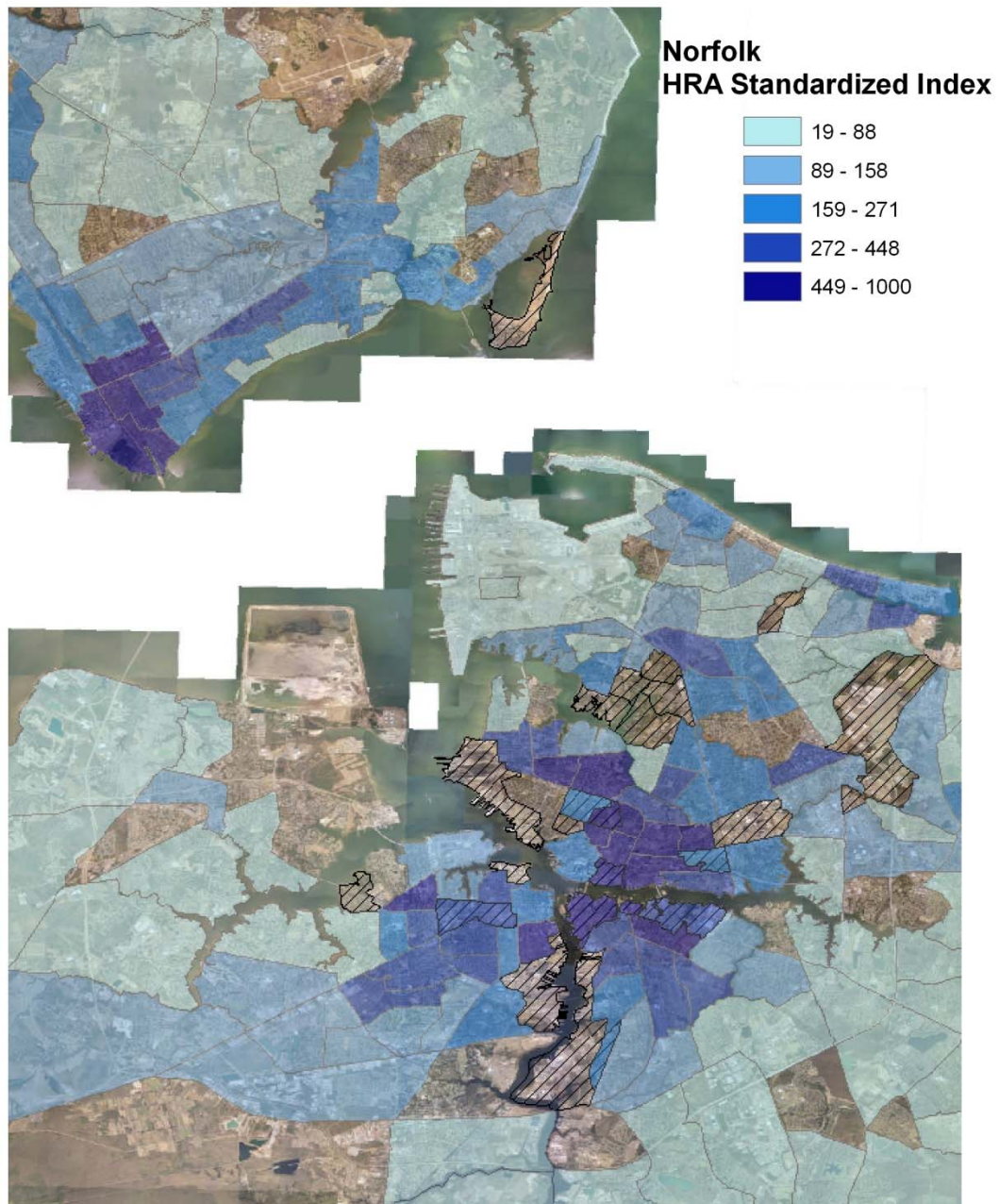
\*2005 Gonorrhea cases were removed from this slide. The spatial distribution was similar to the 1968 distribution.



Pointer 36°51'15.60" N 76°20'16.78" W

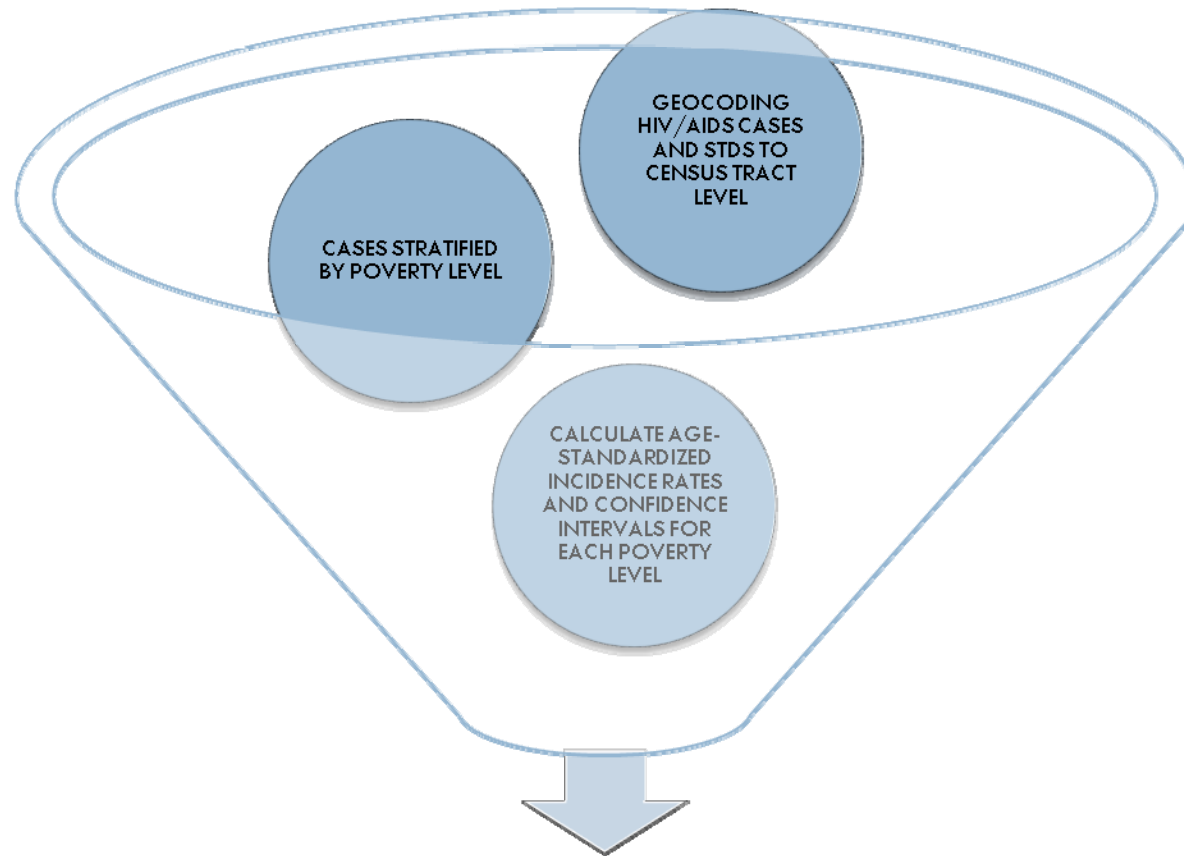
Streaming ||||| 100%

Eye alt 17.61 mi



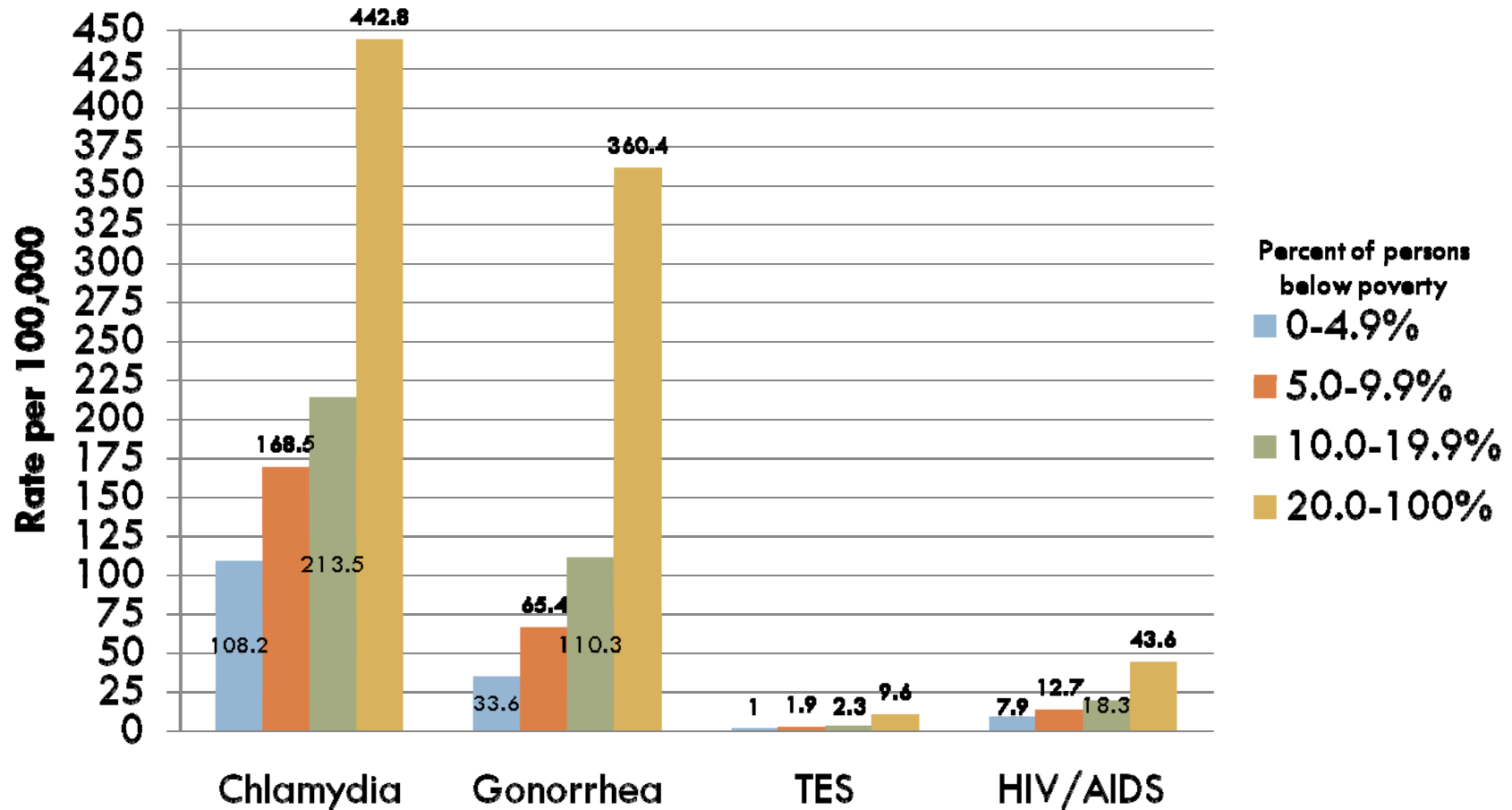
High Risk Areas (census tracts) were calculated. Hatching shows census tracts with less than 1,500 people

# METHODS *developed by Harvard Geocoding Project*

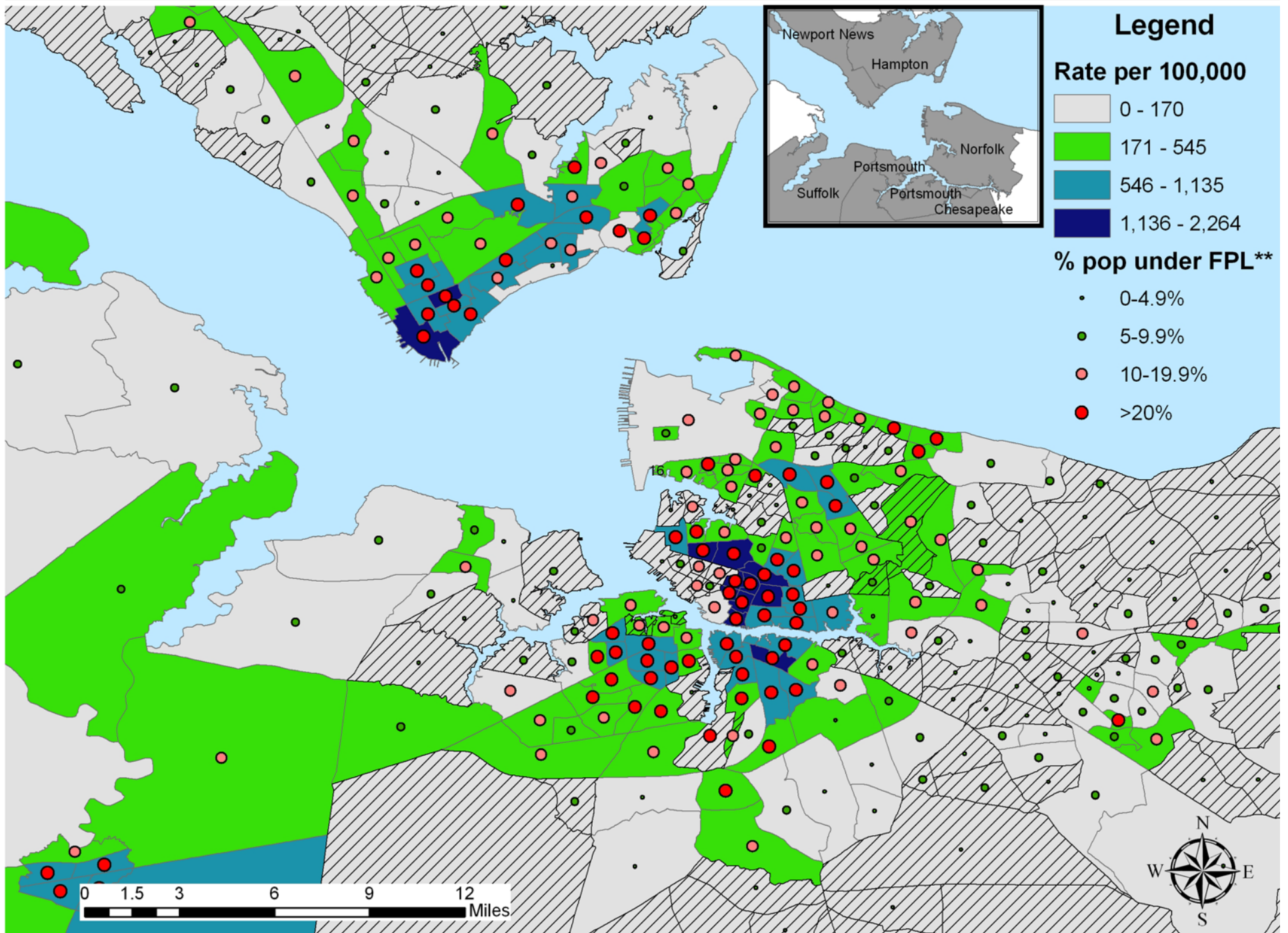


**Association between poverty and reported  
HIV/AIDS, Chlamydia, Gonorrhea and Total Early Syphilis  
Cases are quantified**

# Average annual age-standardized incidence rates for HIV/AIDS and STDs in Virginia (2000-2005), by poverty level

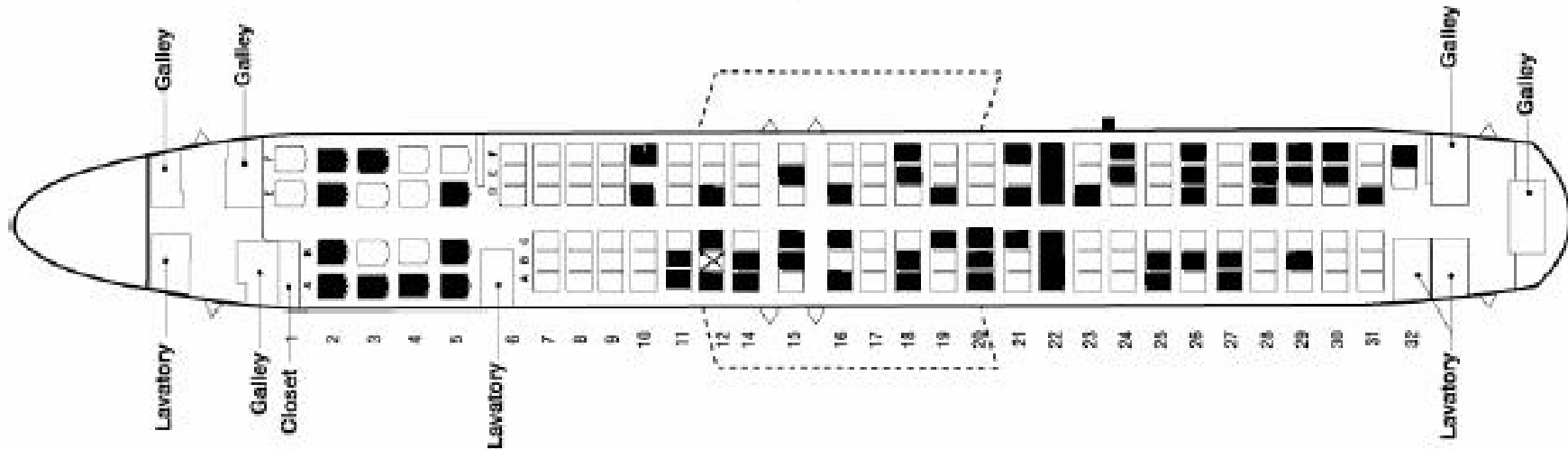


# Confirmed Incidence Rates vs Poverty Levels in Eastern Virginia by Census Tract



Passenger seats (black)

SARS case (X)



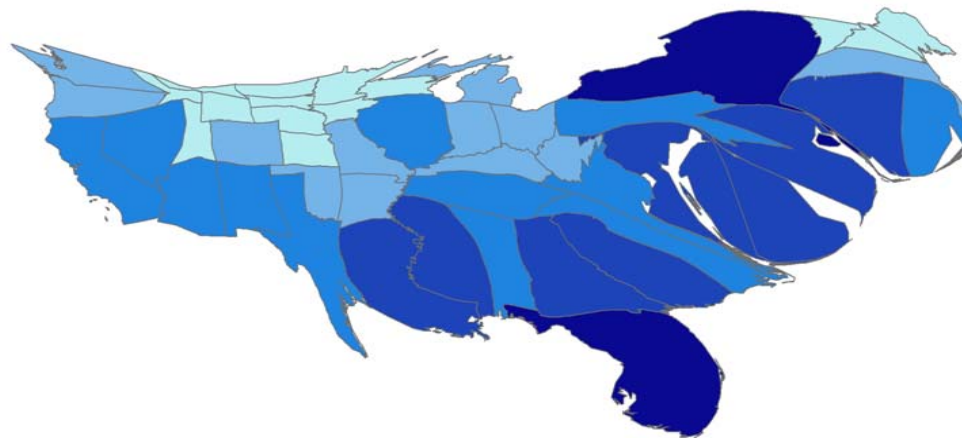
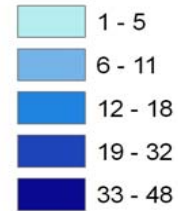
“The nearest neighbor index of passenger’s seats was 0.931 indicating that the distribution was random, not clustered.”

Source: Marta A. Guerra, Senior Staff Epidemiologist, Centers for Disease Control Prevention

# AIDS 2004



Rate per 100,000 persons



In 2004, the Centers for Disease Control and Prevention estimated 40,000 new HIV infections per year.