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Urban Water Management in Asia

Infectious Risk Assessment with Exposure of Pathogens in the Flood Water –Assessment of Vulnerability of Urban Area to Climate Change (Case Study of Manila)

Urban water management in Asia

- Rapid urbanization
 - Shortage of water
 - Excess of wastewater
 - Degradation of urban water environment
 - Risk for people
 - Decrease of QOL
 - Increase of storm water
 - Urban inundation

Rates of infrastructure and human resource development are slow.

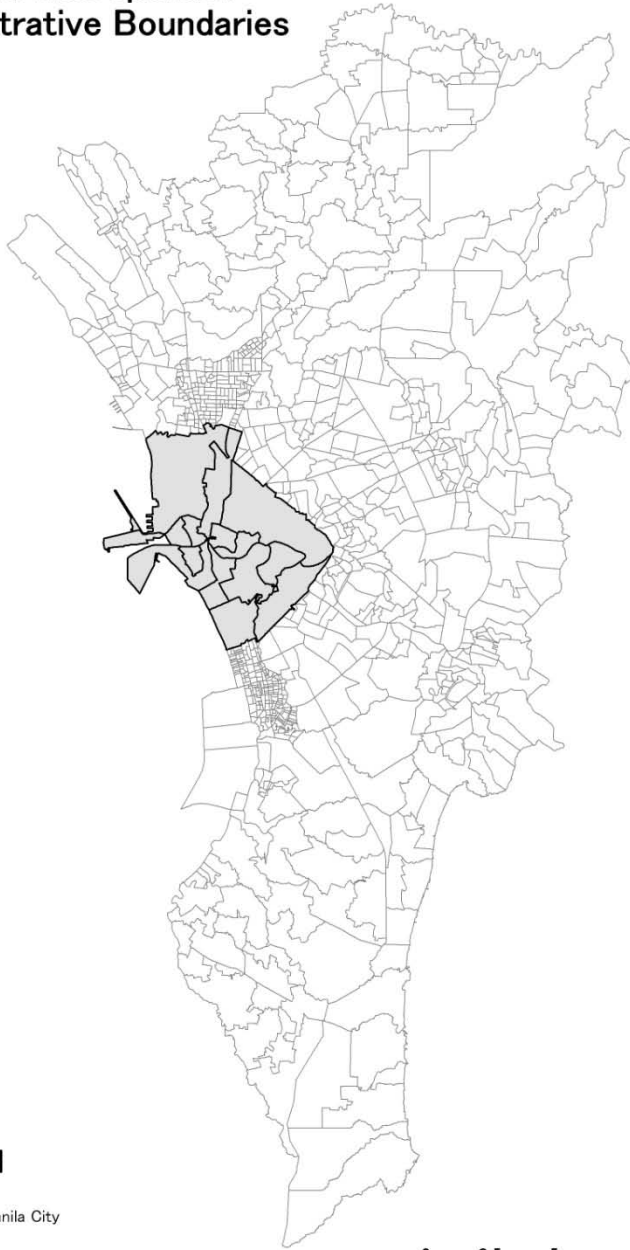
New problems

- Climate change
- Globalization
- Migration of people
- New technologies
- Information from internet/satellite TV etc.~
lifestyle
- Democracy
- Etc.

Effect of climate change

- Flood and inundation
 - Pathogen and other pollutants in wastewater are spread around the urban area
 - Poor people are exposed to high risk
- Risk assessment model development
 - Regulation of urban environment water
 - Infrastructure development strategy
 - Education

Manila Metropolitan Administrative Boundaries



Legend

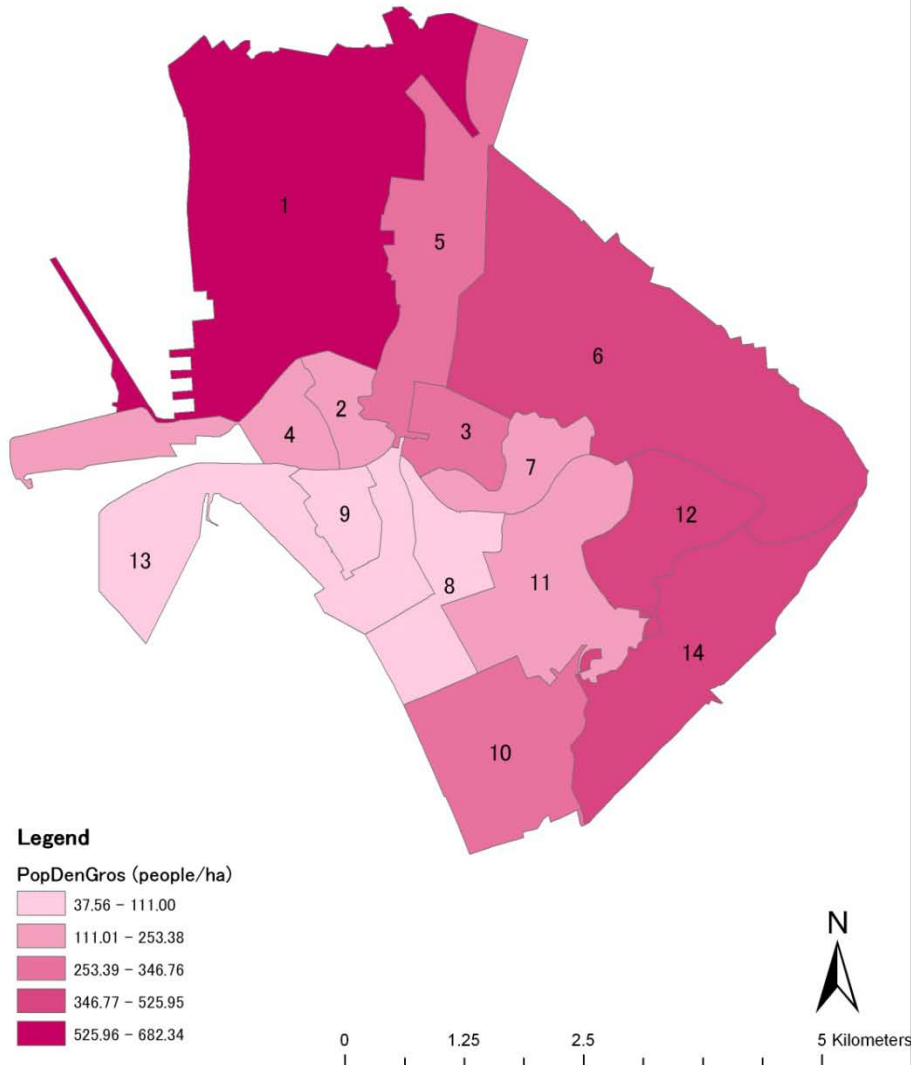


0 2.5 5 10 Kilometers

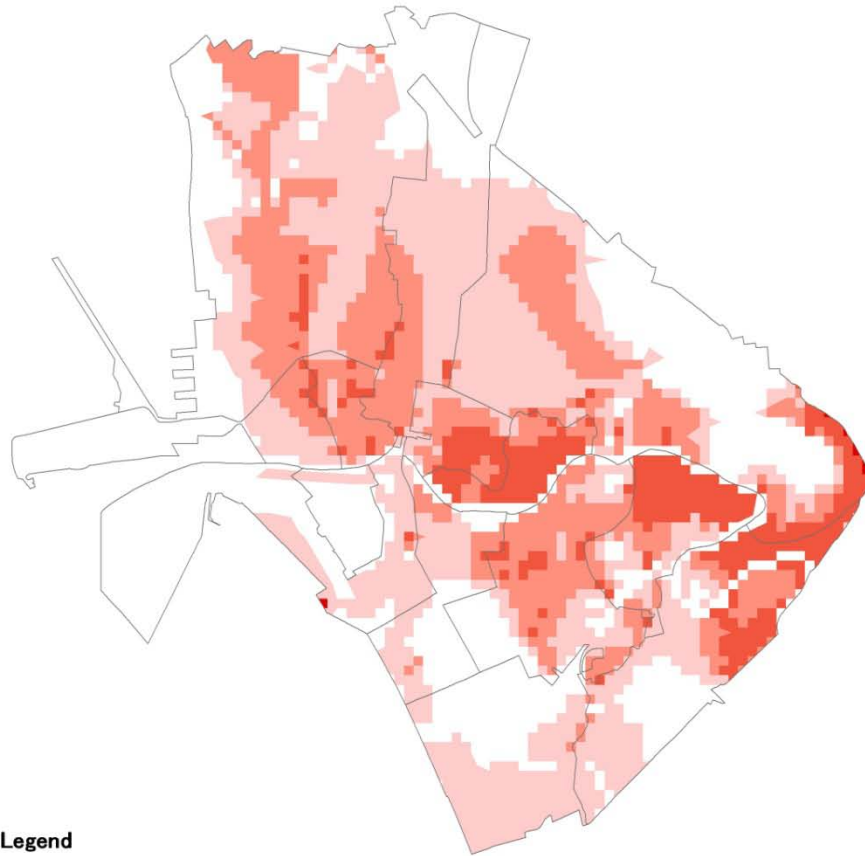
Study area



Population density



Inundation depth



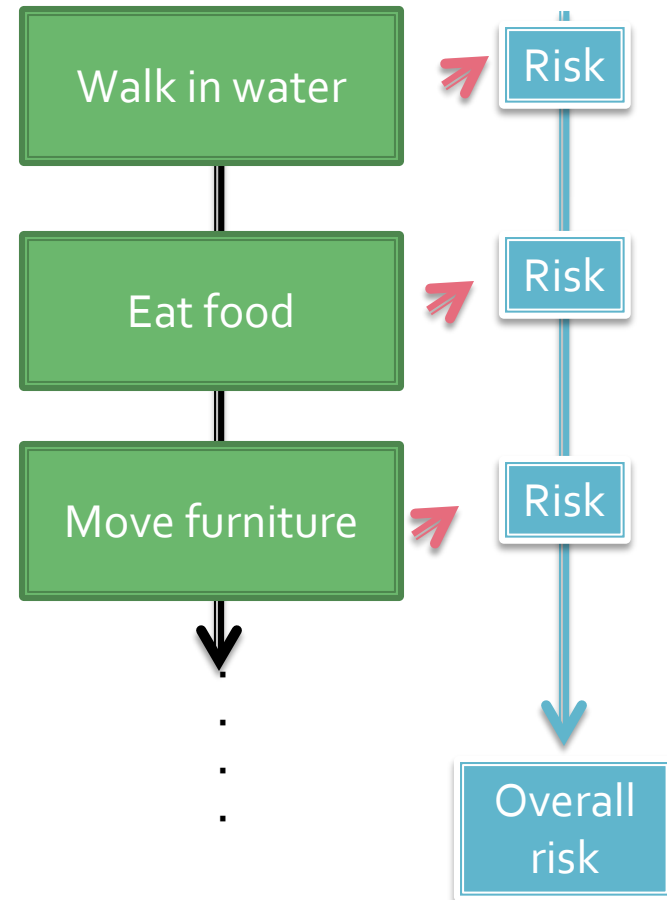
Legend

Administrative Boundaries

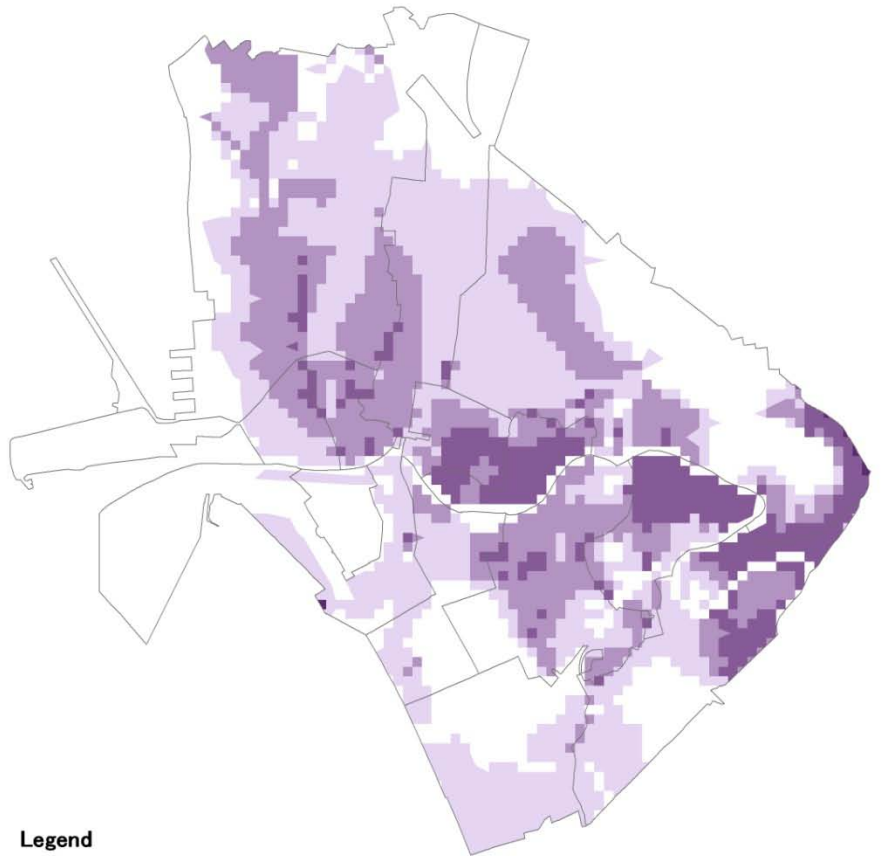
Flooded Areas

- Less than 50cm
- 50 - 100 cm
- 100 - 200 cm
- above 200 cm

0 1.25 2.5 5 Kilometers



Risk distribution

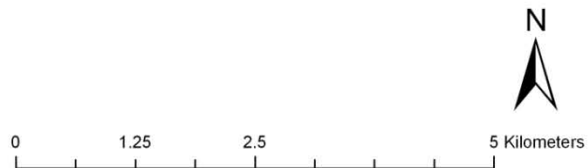


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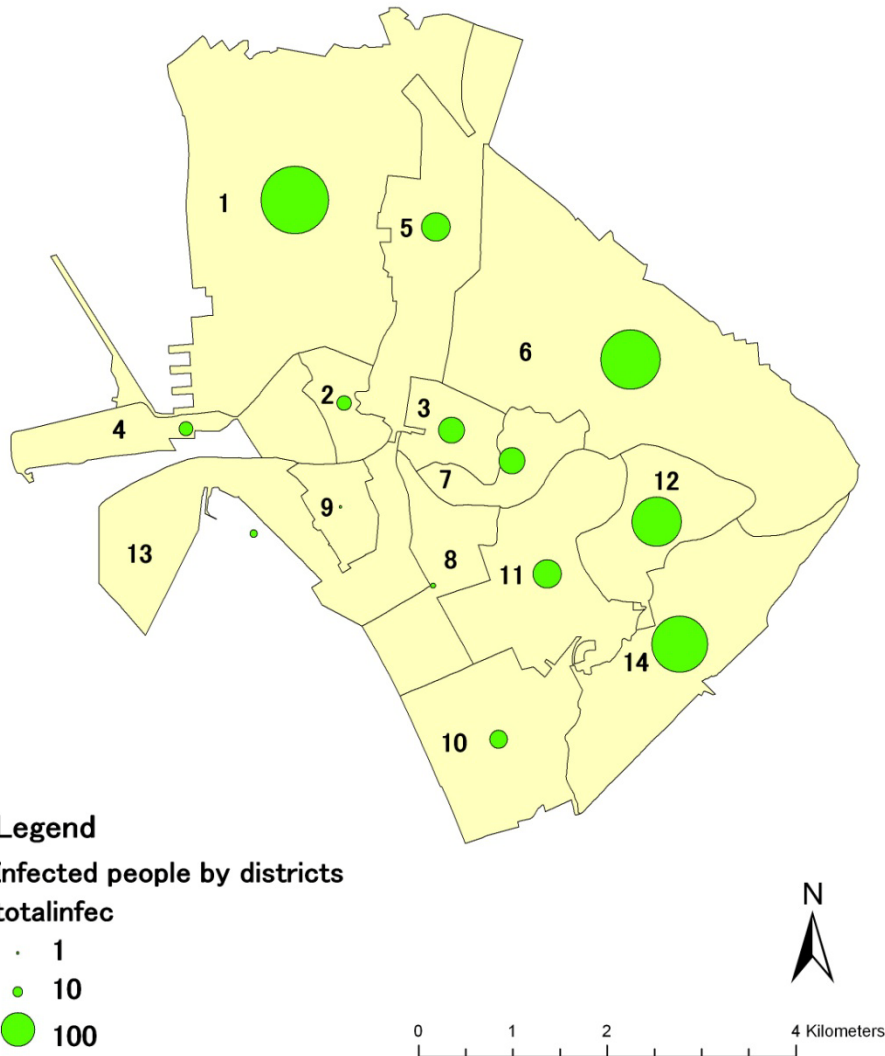
Administrative Boundaries

Risk values

- 0.00674
- 0.001345
- 0.005631
- 0.010328



Number of infected people



Influential factors

- Income status (indicator for scientific literacy, behavior, individual value, etc)
- Infrastructure (wastewater system, safe drinking water source, environmental water quality, pumps)
- Human resource

- Climate change

GDP and Agro- Population

Agro-population ratio was calculated as percent of total working population

