I. Diseases and cities

1. HIV was the result of a “spillover” event from chimpanzees in the early 20th century and spread from Kinshasa (and then killed ~35 million people).
2. SARS (which came from bats) started in S. China but didn’t “go global” until it hit Hong Kong and subsequently went to Toronto, Singapore etc.
3. Cities are important hotspots for the spread of pandemics.
4. Urbanization can have important relationships with wildlife-pathogen interactions increasing or decreasing disease rates.
   a. Biodiversity loss and dilution effects – if hosts are lost in fragmented areas than humans might be targets (e.g. Lyme disease in the U.S.).
   b. Resource provisioning increasing contact rates within species – more food in cities increases densities of wildlife which might carry diseases (e.g. red foxes in Europe and *Echinococcus multilocularis*).
   c. Resource provisioning increasing contact rates between species – more food means greater contact w/ reservoirs (e.g. red and gray squirrels in the UK).
   d. Environmental contaminants and infection susceptibility – pollution, stress or poor condition resulting from living in urban areas increases the susceptibility to infection (e.g. sea otters and toxoplasmosis – urban mammals and rodenticides).
   e. Exotic hosts, translocations and commerce – Exotic species (e.g. sudden oak death, gray squirrels in the UK) and wildlife trade in cities can result in emerging diseases.
5. Disease prevalence is often linked to socioeconomic factors (e.g. income and West Nile Virus in southern California).
6. In many cases, urbanization has had clear positive consequences in diminishing the infection rates of some diseases (malaria in Nairobi).
7. Bird feeding has complicated consequences in urban ecosystems.
   a. Huge proportion of European and American urban households have bird feeders (~50% in some places).
   b. Feeding could increase winter survival for some birds and increase population sizes.
   c. Negative consequences of bird feeders for birds include decreased diet quality, increased exotics, increased predation risk, and increased disease transmission risk.
   d. Positive impacts for people (i.e. why we feed birds) include aesthetic rewards (they’re pretty), economic benefits (billions every year go to bird food companies) and even health rewards – connecting to nature and keeping less stressed could have health benefits.

II. Urban health

8. Health benefits from nature can include active participation (exercise), incidental interaction (walking through green space) and viewing benefits.
   a. Urban green spaces (UGSSs) can help urban heat island effects (and lessen heat related mortality).
b. UGSs can provide more opportunities for exercise and encourage better physical health (sedentary lifestyles are killers!). This is probably the best supported/biggest effect of UGSs on human health.

c. There are psychological health benefits of UGSs as well.
   i. Mind (UK health charity) has found that green activities (gardening, conservation work, running in nature) had significant psychological impacts.
   ii. Relative to exercising indoors Mind has found significant improvements in self-esteem and mood for ecotherapy participants who exercised in UGSs.

d. Greener play areas also correlate with lower attention deficit problems in children.

e. “Healing gardens” are becoming more common in hospitals.

f. UGSs can improve social and neighborhood relationships (e.g. community gardening).

9. In fact, the social, ecological and medical relationships regarding urban health are complicated and require further interdisciplinary study despite some good initial progress.

10. Using the results of “Ecology of a City (HK)” we can examine the health consequences of a variety of “life factors” for Hong Kong:
   a. Air pollution – as we’ve already discussed, air pollution causes morbidity in HK (and it’s dependent on socioeconomics).
   b. Noise levels – 45% say they live in a noisy environment (35% of noise from others) and noise interrupts the sleep of 25% of HKers.
   c. Diet – malnutrition, undernutrition and overnutrition are not common in Hong Kong (although diets are changing).
   d. Pathogens – Contraction of typhoid, cholera, diphtheria and malaria are negligible.
   e. Contact w/ nature – “one of the consequences of urban living has been the removal of wild animals and plants from the daily life experience”
      i. High proportion of homes in HK w/ birds and fish tanks.
      ii. Only 1.9% of built area is open space (vs. 10% in London).
      iii. Visits to parks and beach on the rise (even in 1971!).

11. Dwellings – Majority of HKers live in conditions which might be considered “intolerably crowded by Euro. or American standards”.
   i. Does crowding result in higher crime and suicide? Contagious disease?
   ii. The feeling of being too crowded might be important for health and result in stress and anxiety (25% disturbed in low density to 35% disturbed in high density – males less disturbed).
   iii. Older people are more tolerant of crowding in HK.
   iv. Adaptation (e.g. to crowding) can occur at the societal or individual level.
   v. “HK people’s remarkable ability to cope [w/ crowding]... may have some basis in the simple fact that they are Chinese...”
   vi. Meliors have the opposite effect of stressors including family support, small group interaction (mah-jong) and job quality.

12. Primary cause of death in 1912 (HK) was infectious disease in 1971 (and now probably) it was cancer and heart disease.