*HSS1101D: Determinants of Health*

# Environmental Determinants of Health Part 1: The Built Environment, and Universal Design

## March 14, 2012

***NOTE: Original lecture borrowed from HSS1101C (Prof Thy Dinh). Current lecture modified++ by Prof Sonia Gulati. Information is taken from sources as indicated at the bottom of or within the slides.**

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# Topics to be Covered

- Defining the built environment
- Concept of accessibility
- Universal Design
- The built environment and health

# The Built Environment

- Structural features of the environment that are created and modified by human beings (Srinivasan, 2003).
- Includes places such as our homes, schools, workplaces, parks, industry, roads, and our cities.
- ~80% of North Americans live in towns and cities (Hancock, 2002)

# ICF: e ENVIRONMENTAL FACTORS (sample)

**e1 CHAPTER 1: PRODUCTS AND TECHNOLOGY**

e.g., food, drugs, clothes, prosthetics, cars, wheelchairs, transfer devices, communication boards, cochlear implants, special computer technology

**e2 CHAPTER 2: NATURAL ENVIRONMENT AND HUMAN-MADE CHANGES TO ENVIRONMENT**

e.g., physical geography, population, climate, natural events, light, air quality

**e3 CHAPTER 3: SUPPORT AND RELATIONSHIPS**

e.g., family, friends, acquaintances, peers, community members, personal assistants, pets, health professionals

**e4 CHAPTER 4: ATTITUDES**

e.g., family, friends, colleagues, people in positions of authority or subordinate positions, societal attitudes, social norms, practices/ideologies

**e5 CHAPTER 5: SERVICES, SYSTEMS AND POLICIES**

e.g., architecture, housing, transportation, civil protection, legal, media, economic, social security, health, education and training, labour and employment, political

(ICF, WHO, 2001)

# Structure of the Environment

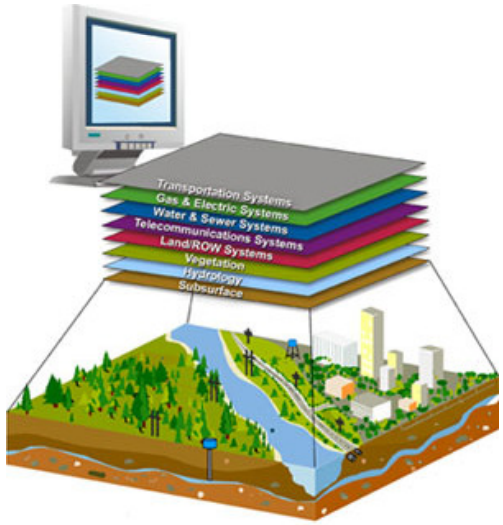
- The environment is described as those contexts and conditions which occur outside individuals and have the probability of influencing the individual and eliciting responses from them.

- Implicit in the definition of environment is the idea that the environment is a multilevel, multidimensional hierarchical system which ranges from physical ecological features TO specific proximal transactions.

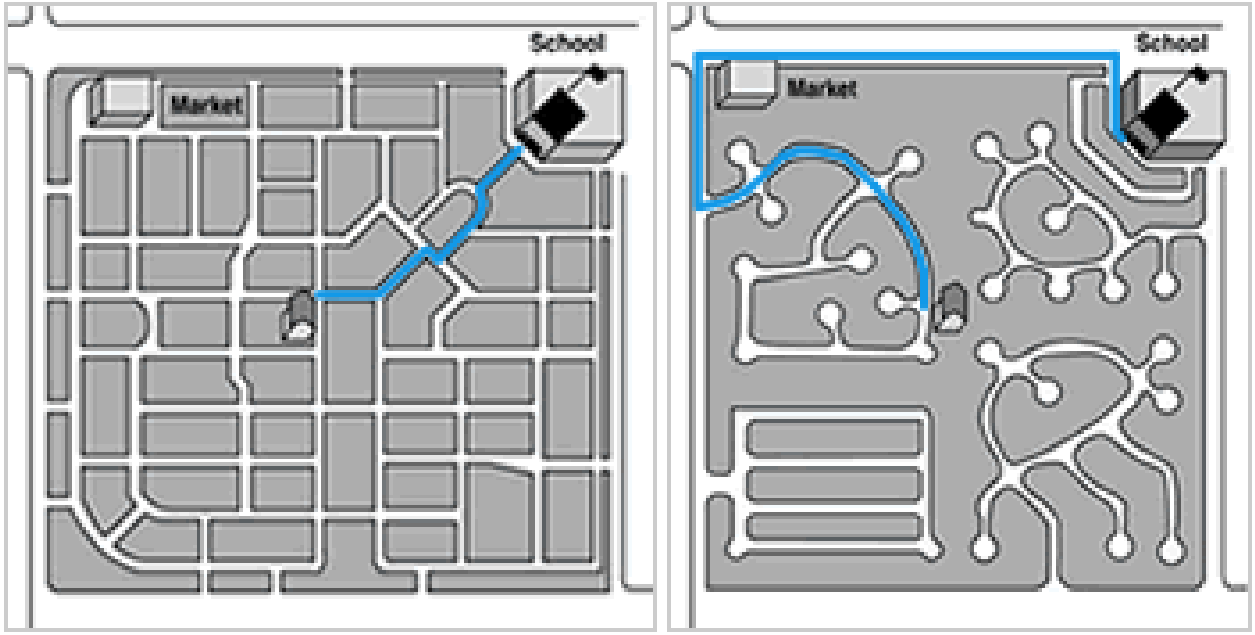
- The environment operates not only in space (the objective environment) and within the individual (the subjective environment), but also across time (the temporal environment).

# The Built Environment – Measurement

- Perceived or objectively measured
- Lack of reliable indicators
- Is it a matter of what is actually in the environment or what residents believe is available and accessible?
- What about quality?



# The Built Environment – Availability vs. Accessibility




Transportation and Growth Management Oregon Guide for Reducing Street Widths

- If a school or resource is available in the community does that mean it is easily accessibly by all? What about travel times, safety to get from point A and B, etc?

# Accessibility Initiatives

- Accessibility initiatives must consider:
  - Affordability
  - Competing priorities
  - Available technology and knowledge/information
  - Advancements in information and communication technology
  - Scientific evidence and research
  - Education, creating awareness, and marketing
  - Cooperation between institutions
  - Geographic and climatic constraints
  - User participation
  - Cultural differences
  - Stages of development
  - Enforcing laws and regulations
  - Focusing on “pull” factors rather than “push” factors

# The current environment & accessibility

***Given contemporary society and current practices, which "areas" do you think continue to be inaccessible to persons with disabilities and chronic illnesses?***

# Universal Design

- Universal design refers to the overall or general design of environments and products being usable by all people without the need for adaptation or specialized designs.
- Traditionally, most designs were established to suit the “average” able-bodied person. Accommodations for persons with disabilities was mostly in the form of specialized design.
- The aim of universal design is to simplify life for everyone by making products, communication and the built environment more user-friendly at little or no extra cost (it is practical, feasible and affordable even in lower income countries depending on the designs and practices implemented)
- Universal design is inclusive of people’s broad range of capabilities, and can benefit people of all ages and abilities.

# Examples – Universal Design

***What are some examples of universal design?***

# Principles of Universal Design

- **1. Equitable Use:** Design is useful to people with diverse abilities and does not disadvantage any user.
- **2. Flexibility in Use:** Design accommodates a range of individual preferences and abilities.
- **3. Simple and Intuitive Use:** Design is easy to understand regardless of the user's experience, knowledge and skills.
- **4. Perceptible Information:** Design communicates necessary information to the user regardless of the atmosphere and the user's sensory abilities.

NC State University, The Center for Universal Design, 1997

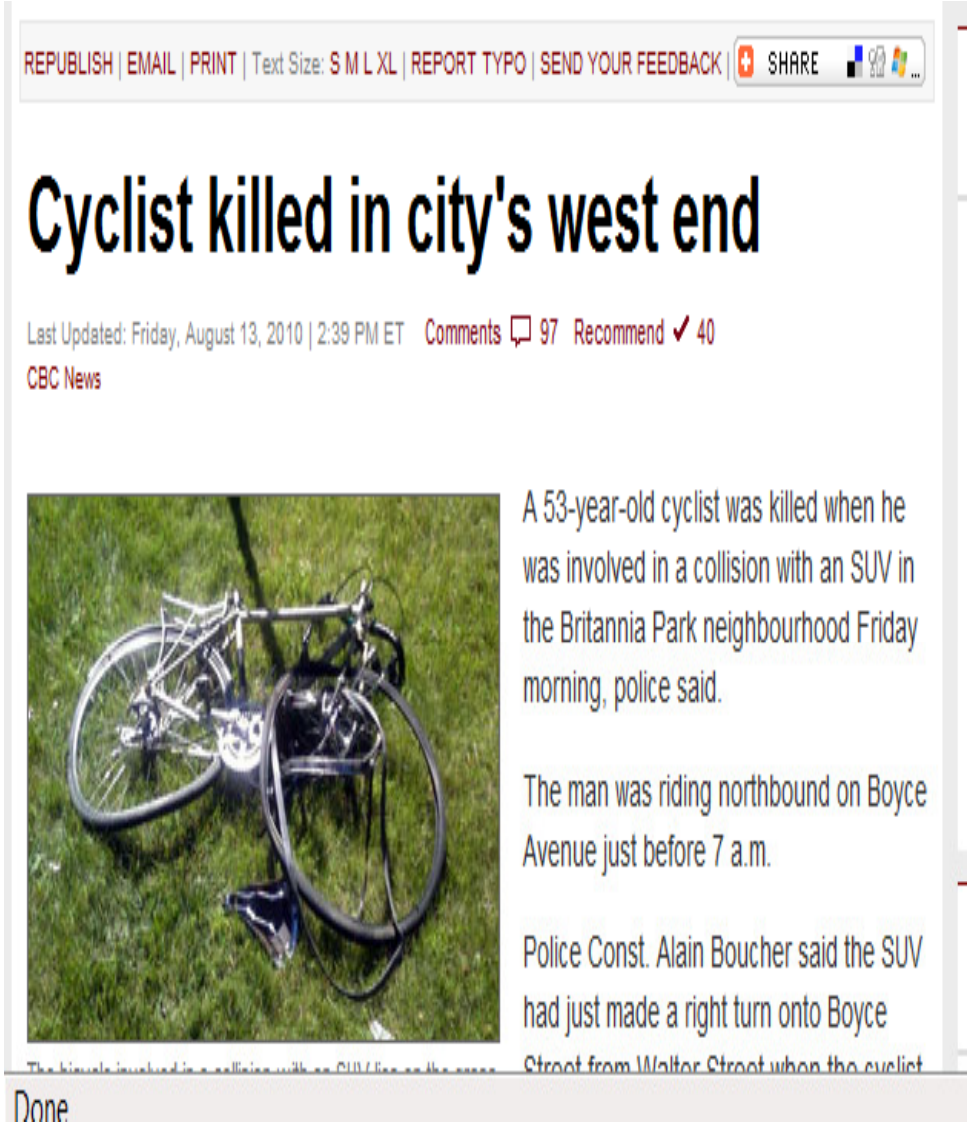
# cont'd principles of universal design...

- **5. Tolerance for Error:** Design minimizes hazards and the adverse consequences of accidental or unintended actions.
- **6. Low Physical Effort:** Design can be used efficiently and comfortably with minimal fatigue.
- **7. Size and Space for Approach and Use:** Design provides appropriate size and space for approach, reach, manipulation and use regardless of the user's body size, posture or mobility.

# The Built Environment – Injuries

- For those under the age of 45 years living in Canada, injury is the most common cause of death and it is the fourth most common cause for all ages (Schuurman, 2009).
- Injuries are due to factors such as absence of appropriate play areas and bicycle paths, lack of pedestrian cross-walks, lack of safe and poorly maintained pedestrian paths, and high traffic volume.
- Factors to consider: Traffic design, pedestrian safety, safety at play, and accessibility/maintenance (e.g., older adults).
- Traffic calming has been shown to reduce rates of injury and death (Bunn et al., 2003).
- The City of Ottawa has specific measures that they use to calm traffic, including speed bumps, raised crosswalks, raised intersections, traffic circles, etc.

- Research in Ottawa has shown that bicycle injuries occur most frequently on sidewalks than on roads and pathways. This may suggest that bicycle lanes are needed on roads (Aultman-Hall and Hall, 1998)



REPUBLISH | EMAIL | PRINT | Text Size: S M L XL | REPORT TYPO | SEND YOUR FEEDBACK | SHARE

# Cyclist killed in city's west end

Last Updated: Friday, August 13, 2010 | 2:39 PM ET Comments 97 Recommend 40

CBC News

A 53-year-old cyclist was killed when he was involved in a collision with an SUV in the Britannia Park neighbourhood Friday morning, police said.

The man was riding northbound on Boyce Avenue just before 7 a.m.

Police Const. Alain Boucher said the SUV had just made a right turn onto Boyce

Done

HSS1101C (Dinh, 2011; Stephanie Prince-Ware, 2010)

Ottawa-Carleton commuter cyclist (Aultman-Hall et al., 1998)

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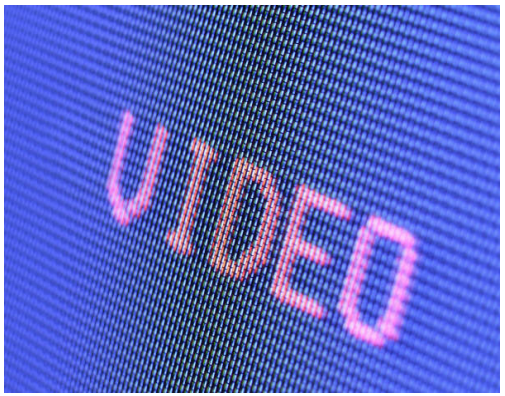
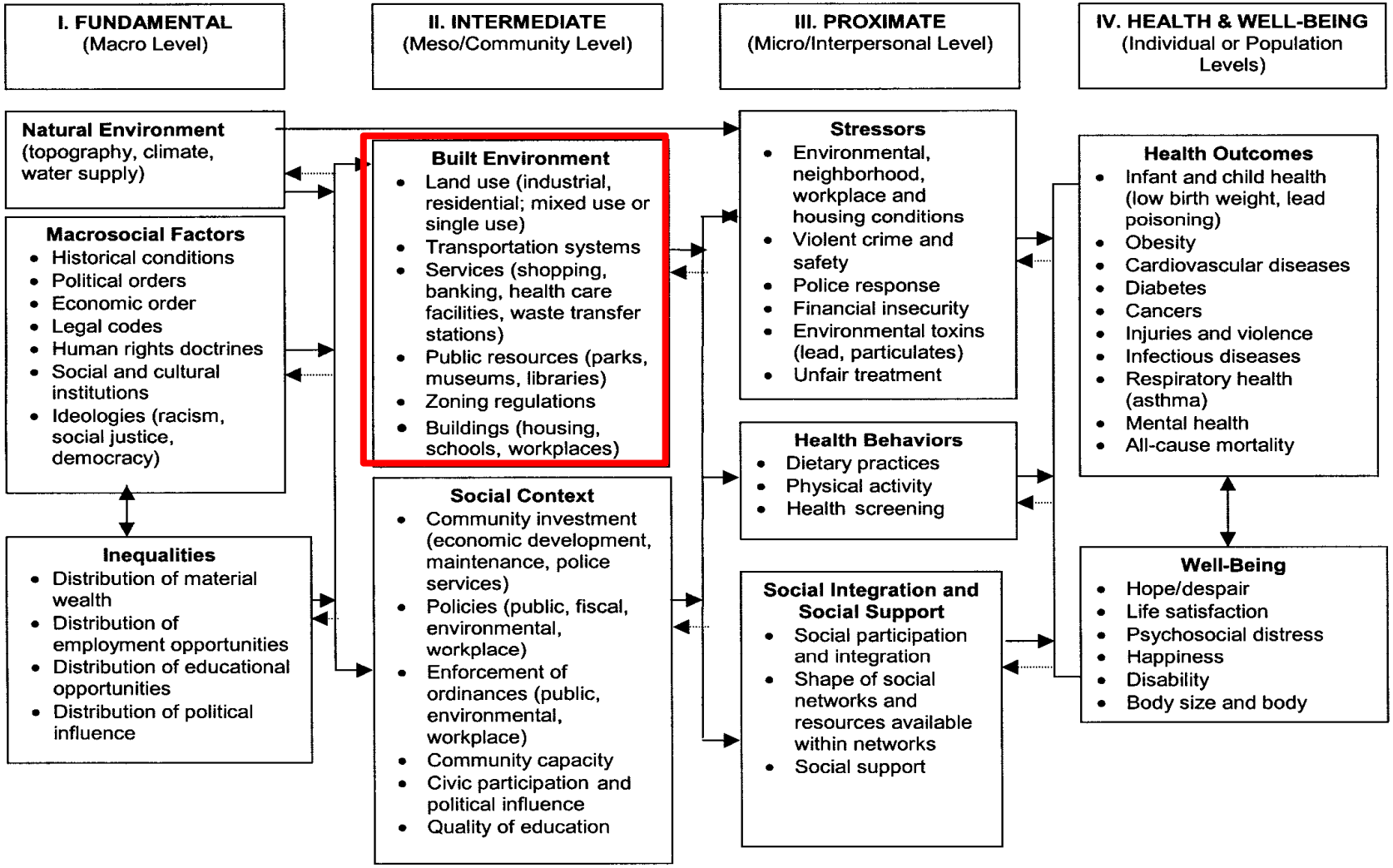
# Video: Bicycle Accidents




- **Worst bike accidents(New) Part 2 (2:00)**

  http://www.youtube.com/watch?v=Rw6p3kpqmeQ

# The Built Environment – Health Connection




HSS1101C (Dinh, 2011; Stephanie Prince-Ware, 2010)

Sorting out the connections between the built environment and health (Northridge et al., 2003)

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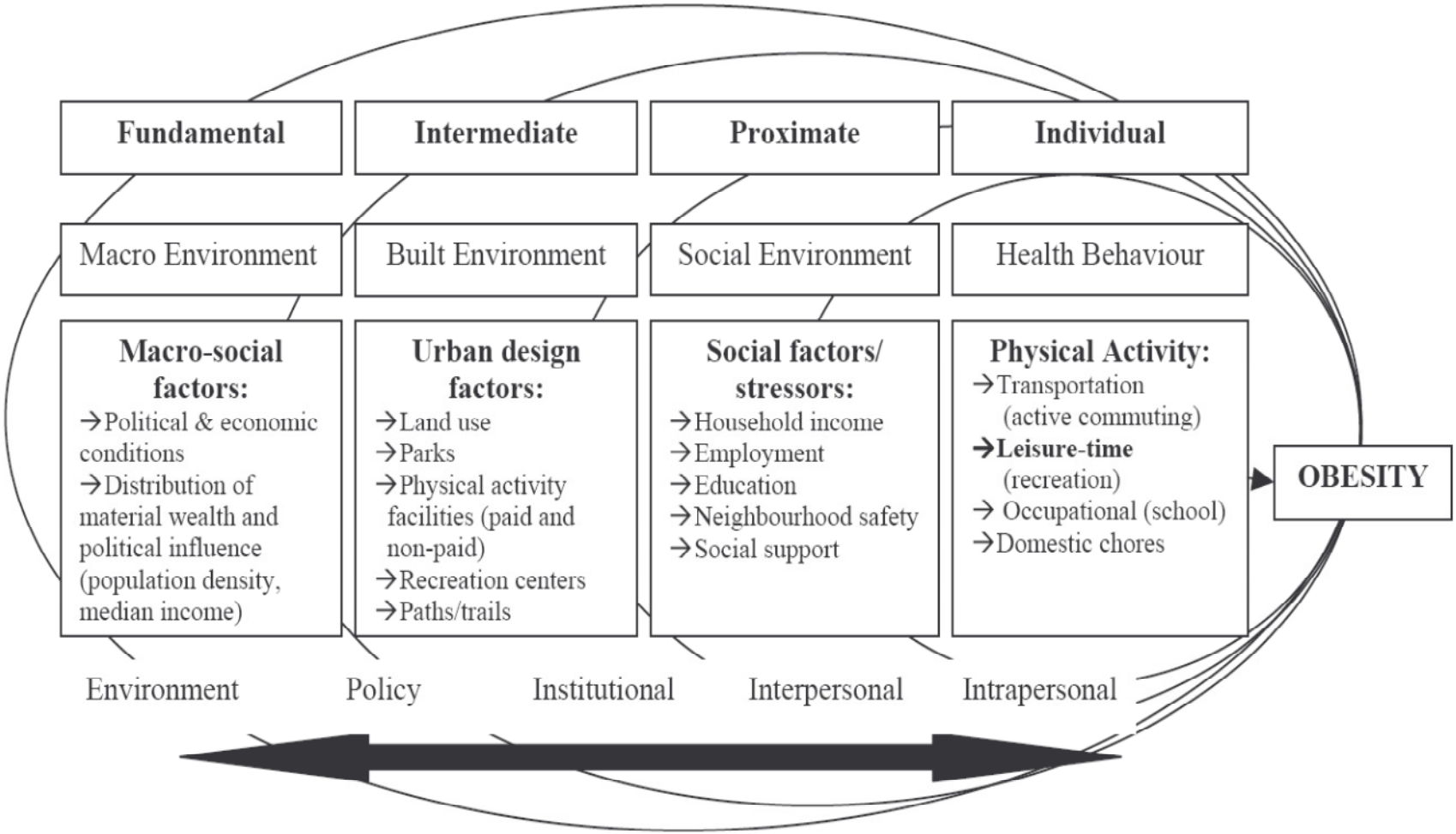
# The Built Environment – Health Outcomes

- Disease and illness
- Mental health
- Well-being
- Injury/accidents
- Respiratory problems
- Physical activity
- Nutrition
- Obesity

# The Built Environment – A Conceptual Model




HSS1101C (Dinh, 2011; Stephanie Prince-Ware, 2010)

Aytur et al., 2007 (American Journal of Health Promotion, 21(4): 397-407)

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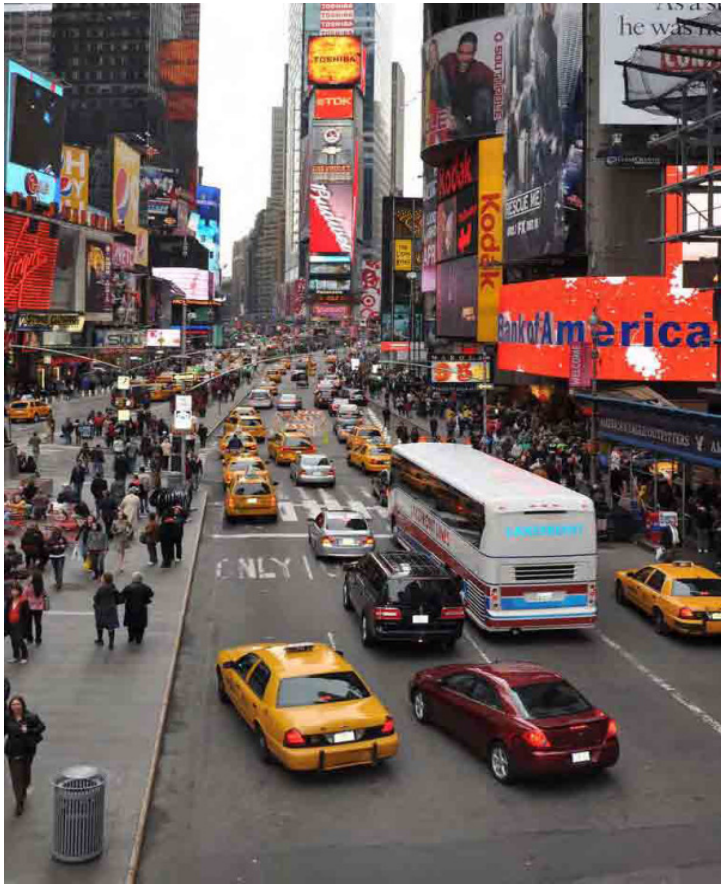
# The Built Environment – Physical Activity & Obesity

- ↑ "Walkability" → ↑ PA for transport & ↓ BMI (Ewing et al., 2003, Frank et al., 2004, Frank et al., 2007)
- ↑ Perception of availability → ↑ PA & ↓ BMI (Addy et al., 2004, Booth et al., 2000, Humpel et al., 2004, Sallis et al., 1997)
- ↑ Number & ↑ Proximity to facilities →↑ PA & ↓ BMI (Troped et al., 2001, Diez-Roux et al., 2007, Sallis et al., 1990, Giles-Corti et al, 2003, Gordon-Larsen 2006)

# The Built Environment – Physical Activity & Obesity

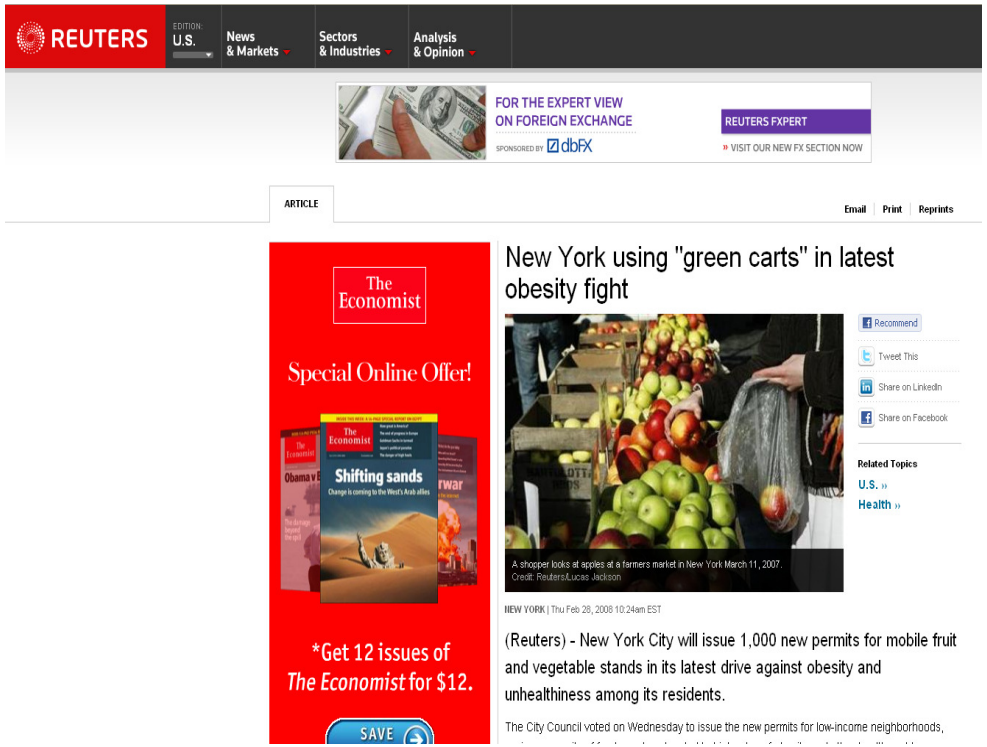
***What do these pictures suggest?***




# The Built Environment – Nutrition

- ↑ Fast food outlets → ↑ obesity (Giskes et al, 2010, Larson et al., 2009)
- Food desserts where there is limited access to healthy food because of physical and economic barriers (Beaulac et al., 2007)
- ↑ Accessibility to supermarkets → ↑ obesity & poorer nutrition (Giskes et al., 2010)
- ↑ Convenience stores →↑ obesity and poorer nutrition (Larson et al., 2009)

# The Built Environment – Nutrition





HSS1101C (Dinh, 2011; Stephanie Prince-Ware, 2010)

http://www.life.com/image/82055766

http://www.reuters.com/article/idUSN27385913200802228

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# The Built Environment – Interplay with Other Health Determinants

- *SES: are resources affordable for all, clustering of poor environments, interaction with environment may differ by SES (i.e., blue collar jobs), etc
- *Sex: preferences may differ between men and women's roles in society, etc
- *Culture: food preferences, activity preferences, etc.