

## PREVIOUS LECTURE....



**Health** is more than absence of diseases and relates to physical, mental and social wellbeing

**Health determinants** include

- social and cultural circumstances, and the
- physical environment, such as our immediate surroundings, but also
- the natural environment and global ecosystems.





## **One Health, EcoHealth**

**Planetary Health** - “the health of human civilization and the state of the natural systems on which it depends” (Rockefeller)

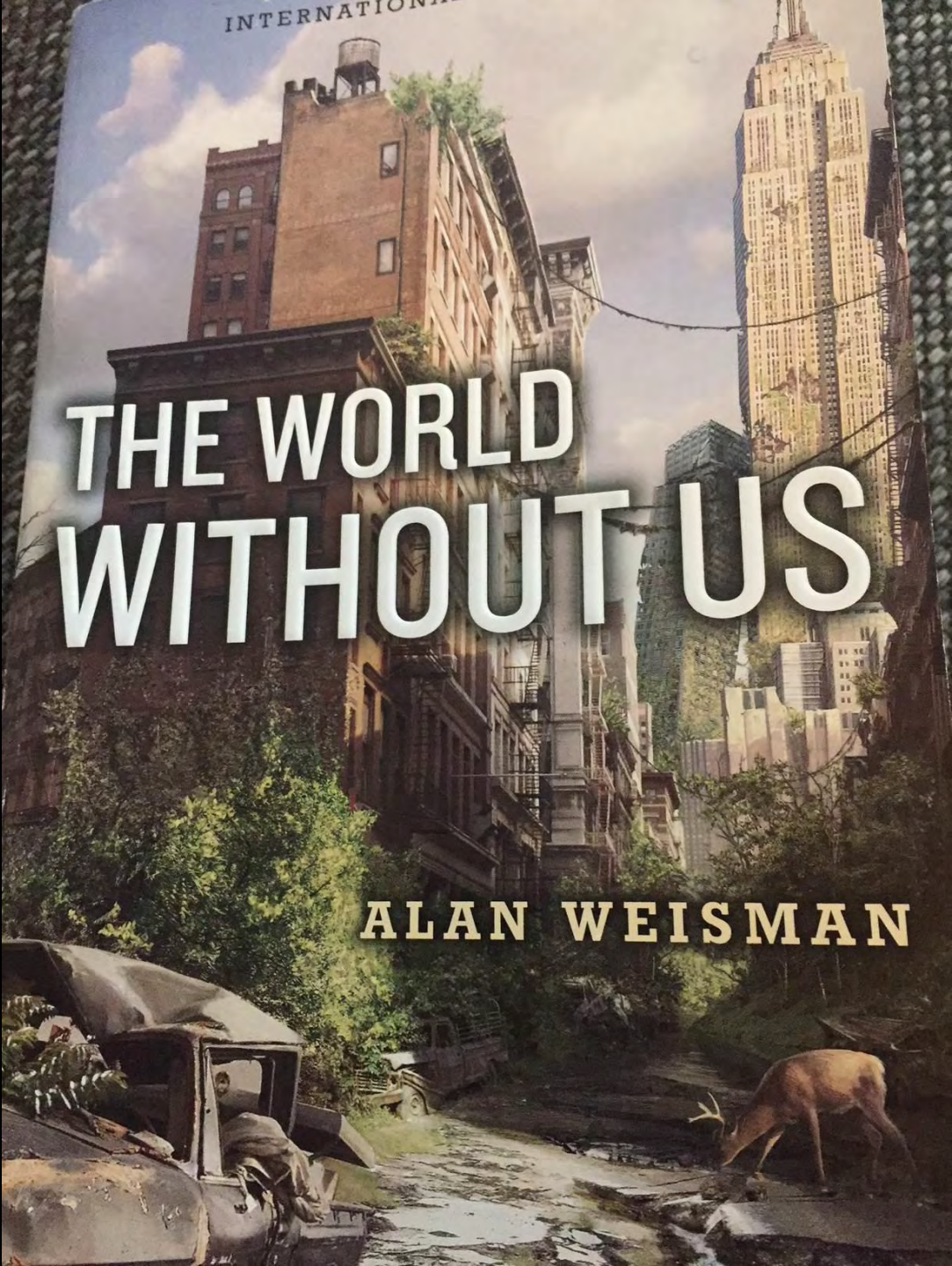
**Urbanisation, climate change, ecosystem services**

**Nature** can be defined as pristine areas, untouched by humans, but can also mean just a single tree



**Human beings** are part of nature, part of ecosystems

**Urban forests and urban green spaces** can include, for example, gardens, lawns, cemeteries, playgrounds, sport fields, parks, atriums, green roofs and walls, riverbanks

The book cover features a detailed illustration of a city, likely New York City, in a state of post-apocalyptic decay. In the foreground, a rusted-out car is partially visible on the left, and a deer stands on the right, looking down at the ground. The middle ground is filled with tall, multi-story buildings, some of which are overgrown with lush green vegetation. The background shows a clear view of the Empire State Building. The sky is a pale blue with soft, white clouds. The overall tone is one of quiet desolation and the passage of time.

# THE WORLD WITHOUT US

ALAN WEISMAN

# THE GLOBAL BURDEN OF DISEASE



Lecture II

JANUARY 10, 2017

## WHY IS IT IMPORTANT TO KNOW ABOUT NATURE AND HEALTH?

- We suffer from different diseases than we did 100 years ago
- Medicine is not enough for keeping people healthy
- We must promote health and prevent disease



Urban forests are probably better health resources than hospitals.

Urban foresters can provide as much health benefits as health practitioners.



About me...





Djurseryd, Sweden







Photo: physician by Yuya Tamai, CC BY 2.0.

Photo: Hurtig, hurtig by Abbilder, CC BY 2.0.



Photo: William Bird





Alnarp, Swedish University of Agricultural Sciences



1. How many people die every year from non-communicable diseases (cancer, heart diseases and stroke, diabetes, and chronic respiratory diseases)?

- a) 10 million people
- b) 27 million people
- c) 38 million people

2. Of the following, which disease causes most death worldwide?

- a) Cancer
- b) HIV/AIDS
- c) Malaria
- d) Tuberculosis

3. Women around the world are most likely to die from:

- a) HIV/AIDS
- b) Heart disease
- c) Road traffic crashes



# Ten leading causes of burden of disease, world, 2004 and 2030

2004 Disease or injury	As % of total DALYs	Rank		Rank	As % of total DALYs	2030 Disease or injury
Lower respiratory infections	6.2	1		1	6.2	Unipolar depressive disorders
Diarrhoeal diseases	4.8	2		2	5.5	Ischaemic heart disease
Unipolar depressive disorders	4.3	3		3	4.9	Road traffic accidents
Ischaemic heart disease	4.1	4		4	4.3	Cerebrovascular disease
HIV/AIDS	3.8	5		5	3.8	COPD
Cerebrovascular disease	3.1	6		6	3.2	Lower respiratory infections
Prematurity and low birth weight	2.9	7		7	2.9	Hearing loss, adult onset
Birth asphyxia and birth trauma	2.7	8		8	2.7	Refractive errors
Road traffic accidents	2.7	9		9	2.5	HIV/AIDS
Neonatal infections and other <sup>a</sup>	2.7	10		10	2.3	Diabetes mellitus
COPD	2.0	13		11	1.9	Neonatal infections and other <sup>a</sup>
Refractive errors	1.8	14		12	1.9	Prematurity and low birth weight
Hearing loss, adult onset	1.8	15		15	1.9	Birth asphyxia and birth trauma
Diabetes mellitus	1.3	19		18	1.6	Diarrhoeal diseases

# Non-communicable diseases (NCDs) —

Life-style related and depend on living environments

- Diabetes
- Cardiovascular diseases
- Obesity
- Chronic respiratory diseases
- Cancer
- *Mental disorders*



# NON-COMMUNICABLE DISEASES RISK FACTORS

- Stress
- Urban living
- Physical inactivity
- Overweight
- Loneliness



Living by OiMax, CC BY 2.0



Loneliness by Irina Souiki CC BY-NC-ND 2.0



Photo credit:© World Obesity

# ALARM

## STRESSORS

- Family Relationships
- Disagreements
- Money Worries
- Need to Succeed
- Exams
- Friends
- Decisions
- New Situations

FIGHT

FLIGHT

COPIING

Coping Strategies

Relaxation

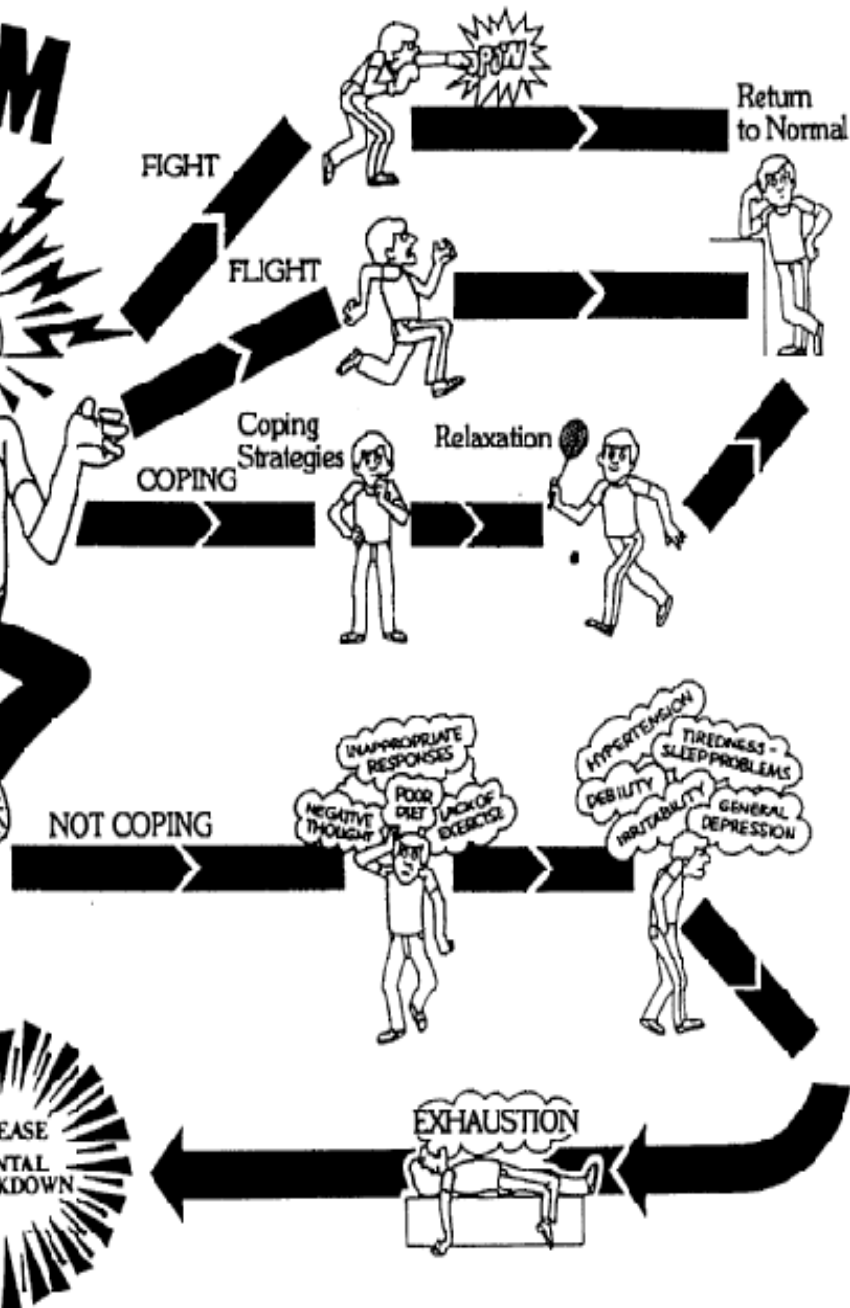
NOT COPING

Return to Normal



EXHAUSTION

**Risk factor: stress**





# The environment affects the brain



Urban vs rural



*Lederbogen et al. 2011.  
City living and urban upbringing  
affect neural social stress  
processing in humans.  
Nature.*



# Global mental health

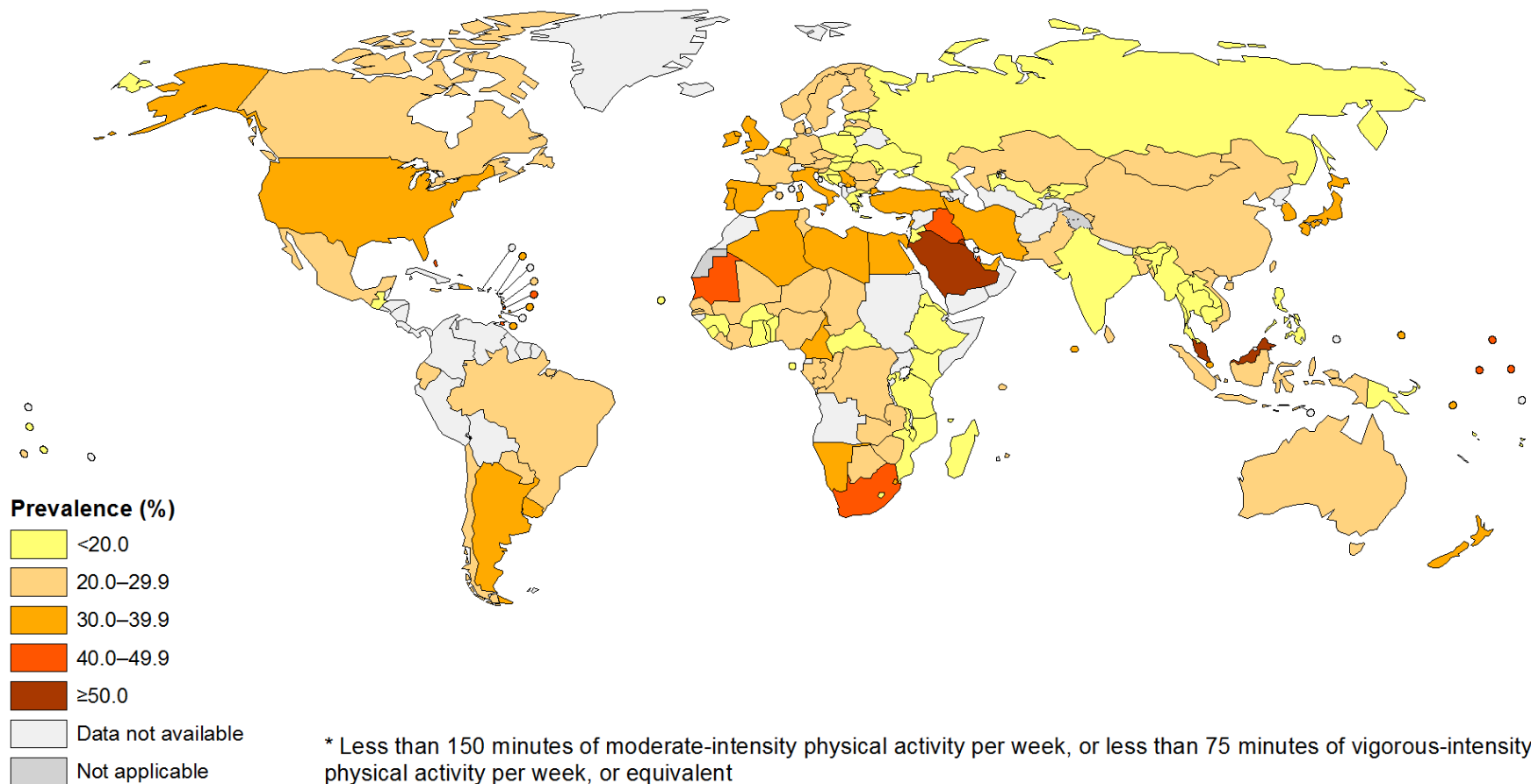
- **450 millions** suffer from mental diseases
- **1 of 4** will be affected throughout life course
- **Suicide** is a more common death reason than car accidents, violence, or war
- Depression and schizophrenia is more common in **cities** than on the countryside (Peen et al. 2010)

Source: WHO

- The prevalence of mental disorders is lower in urban green areas (*van den Berg et al. 2015*)
- Exposure to nature significantly increases happiness (*McMahan & Estes, 2015*)



## Prevalence of physical inactivity\* among adults, ages 18+ (age standardised estimates) Both sexes



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Health Organization  
Map Production: Health Statistics and  
Information Systems (HSI)  
World Health Organization



© WHO 2015. All rights reserved.



**Physical inactivity** has been identified as the **fourth leading risk factor** for global mortality causing an estimated 3.2 million deaths globally (WHO, 2016)



**Physical activity** reduces the risk of

- cardiovascular diseases
- diabetes
- colon and breast cancer
- depression.
- decrease the risk of fractures
- help control weight



Photo credit: © World Obesity

# PHYSICAL ACTIVITY (18-64 YEARS OLD)



Per week:

- at least 150 minutes of moderate-intensity aerobic physical activity,
- or
- at least 75 minutes of vigorous-intensity aerobic physical activity

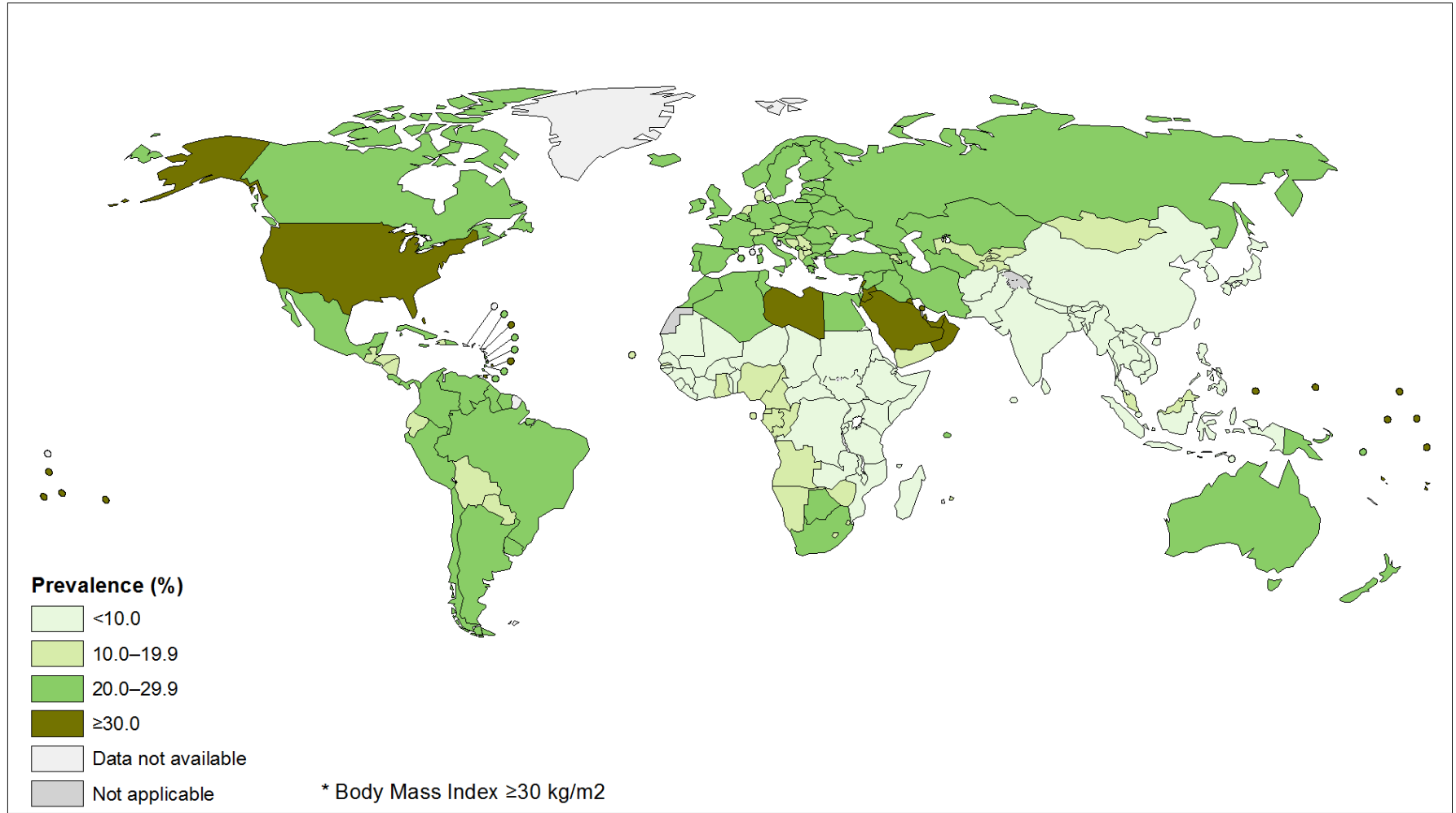
Aerobic activity should be performed in bouts of at least 10 minutes duration.

Muscle-strengthening activities should be done involving major muscle groups on 2 or more days a week.



Photo credit:  
Rudd Center for Food Policy & Obesity

**Prevalence of obesity\*, ages 18+, 2014 (age standardized estimate)  
Both sexes**



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Health Organization  
Map Production: Health Statistics and  
Information Systems (HSI)  
World Health Organization



© WHO 2015. All rights reserved.

# OVERWEIGHT AND OBESITY



## BMI classification

Underweight	<18.5
Normal range	18.5 – 24.9
Overweight:	≥25.0
<i>Preobese</i>	25.0 – 29.9
Obese:	≥30.0
Obese class I	30.0 – 34.9
Obese class II	35.0 – 39.9
Obese class III	≥40.0

weight in kilograms divided  
by the square of the height  
in meters (kg/m<sup>2</sup>)



## RAISED BMI IS A MAJOR RISK FACTOR FOR NCDS, SUCH AS:

- cardiovascular diseases
- diabetes
- musculoskeletal disorders
- many cancers forms

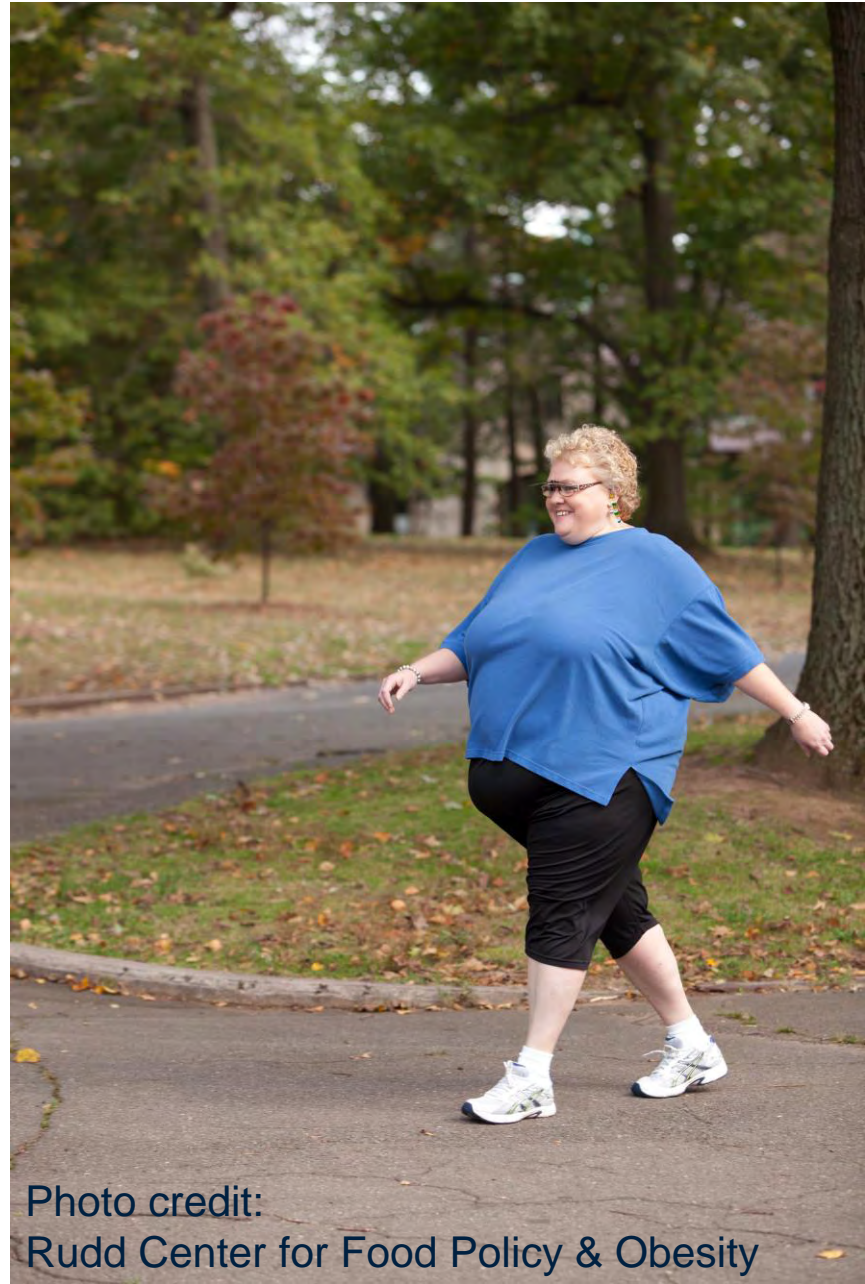


Photo credit:  
Rudd Center for Food Policy & Obesity



- Worldwide obesity has more than doubled since 1980.
- In 2014, 40% of adults aged 18 years and over were overweight and almost 15% were obese.
- More than 40 million children under the age of 5 were overweight or obese in 2014
- Most of the world's population live in countries where *overweight and obesity kills more people than underweight.*
- **Obesity is preventable**

# “LONELINESS AND SOCIAL ISOLATION AS RISK FACTORS FOR MORTALITY” (Holt-Lundstad et al. 2015)



- More dangerous to health than **smoking** 15 cigarettes a day
- Inflammation, heart disease, stroke, dementia, obesity, mortality
- **60 million** sufferers in America alone
- The number has **doubled** since the 1980s
- More common among immigrants, the elderly, the disabled, and those in low-income families
- More common in **big cities**

## Cities

Extreme cities

# What's the world's loneliest city?

In Tokyo, you can rent a cuddle. Loneliness is a health issue in Manchester. And perhaps nobody is as isolated as a migrant worker in Shenzhen. But can we really know what makes a city lonely?



“The Vancouver Foundation think-tank asked community leaders and charities to identify the biggest issues facing Vancouverites and were told it wasn’t homelessness or poverty; it was **isolation**.”

The Guardian, April 7, 2016

<https://www.theguardian.com/cities/2016/apr/07/loneliest-city-in-world>



# Global status report on noncommunicable diseases 2010



**80 %**

of premature heart  
disease, stroke and  
diabetes can be  
**prevented**

(WHO, 2010)



# PREVENTING DISEASE WITH URBAN FORESTRY

- Reduce stress
- Reduce physical inactivity and overweight
- Enhance social capital and happiness



## Salutogen<sup>©</sup>

- Lowers blood pressure
- Lowers heart rate
- Promotes wellbeing

Available from all parks, seashores,  
forests or countryside near you.

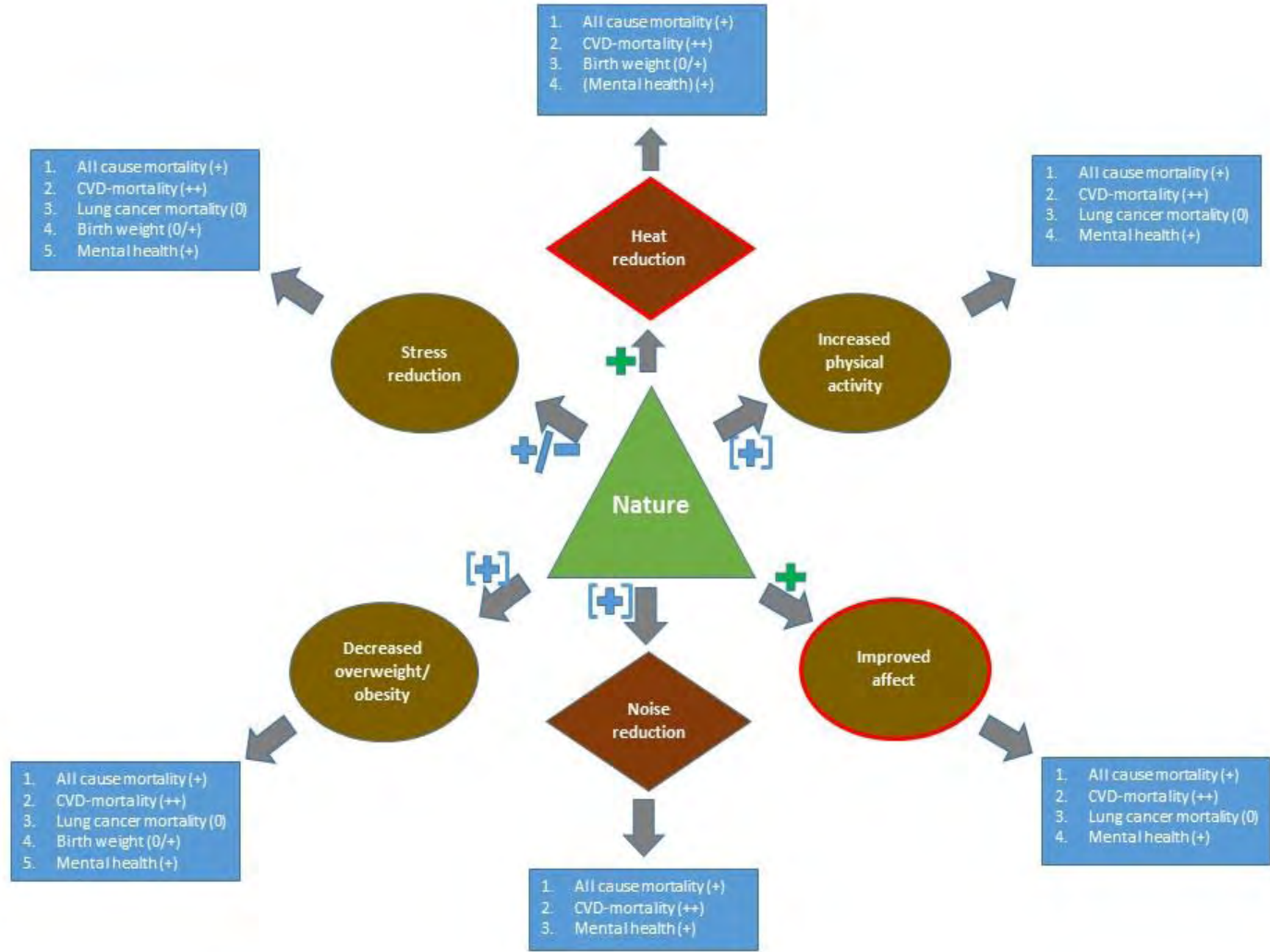
**SYMBOLS**

- +/- no significant association proven
- [+] positive association, weak or inconsistent evidence
- ++ positive association, moderate to strong evidence

Health outcomes

Socio-behavioural pathways

Regulating Ecosystem Services



**GAPMINDER, [HTTPS://M.GAPMINDER.ORG/](https://m.gapminder.org/)**



<https://m.gapminder.org/videos/hans-rosling-ted-2006-debunking-myths-about-the-third-world/>