

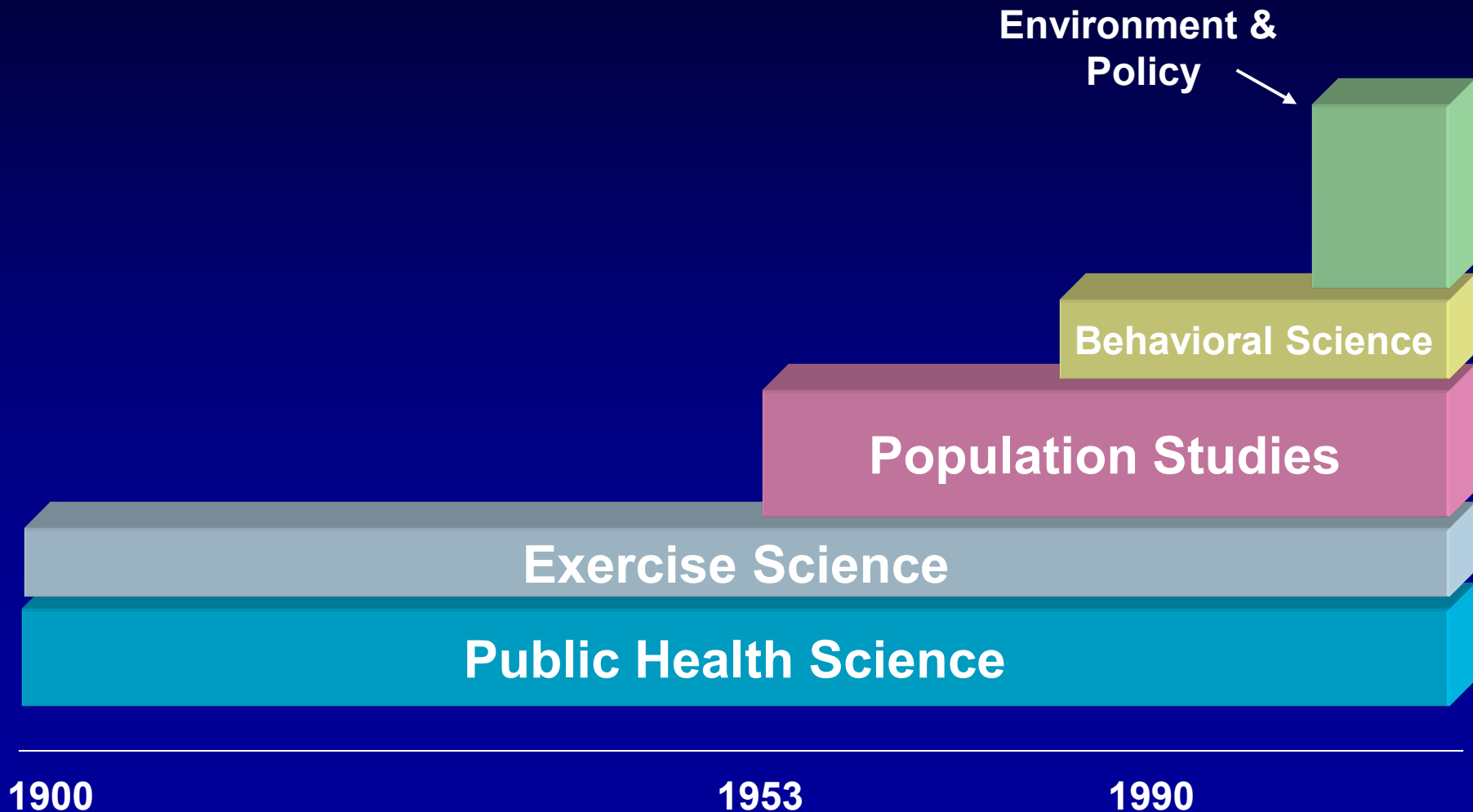
Public Health and Physical Activity Research 101

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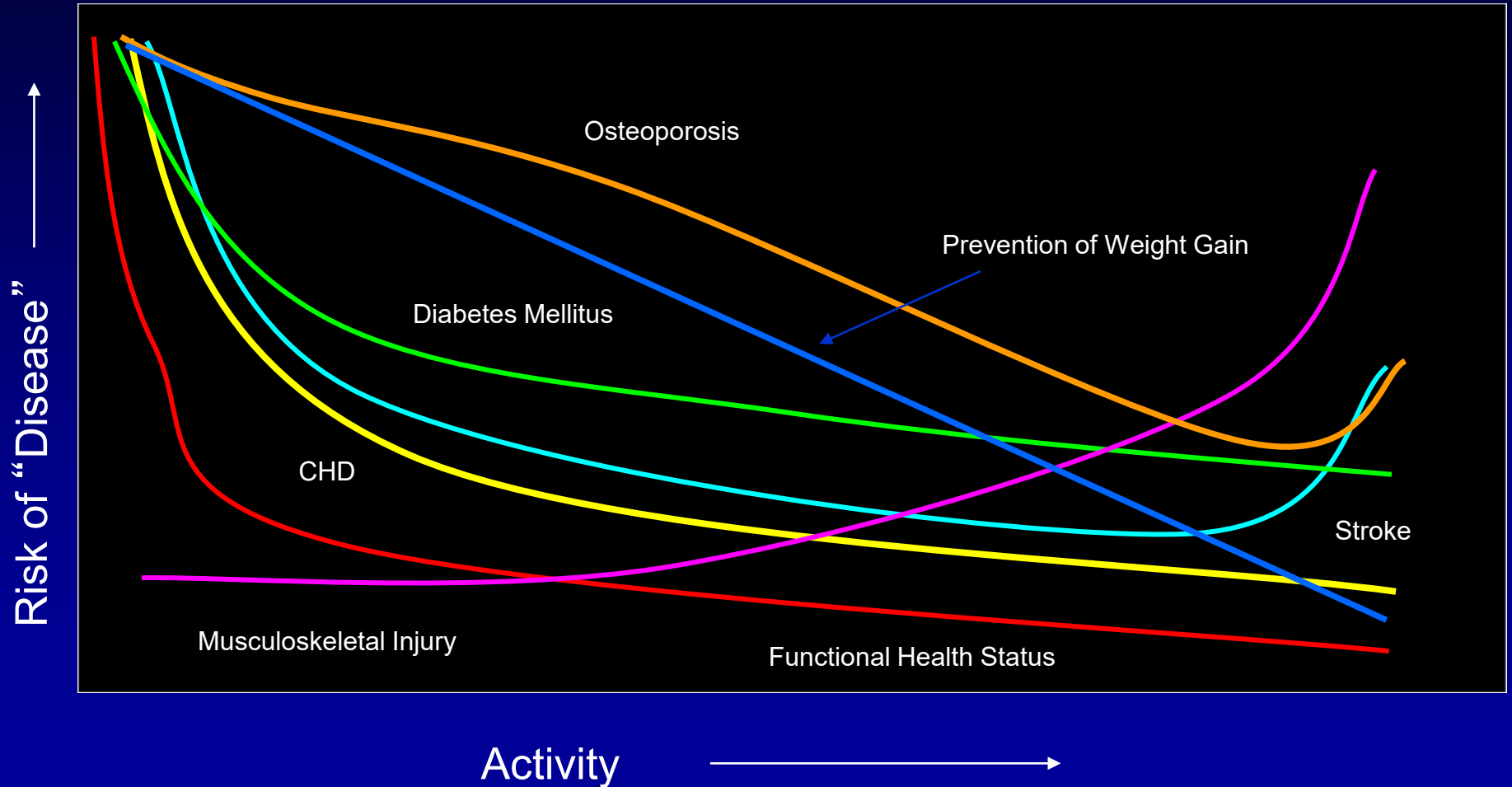
Columbia PAPH – September 2023



Physical Activity and Health – Development of a Field



Physical Inactivity and Health



Public Health

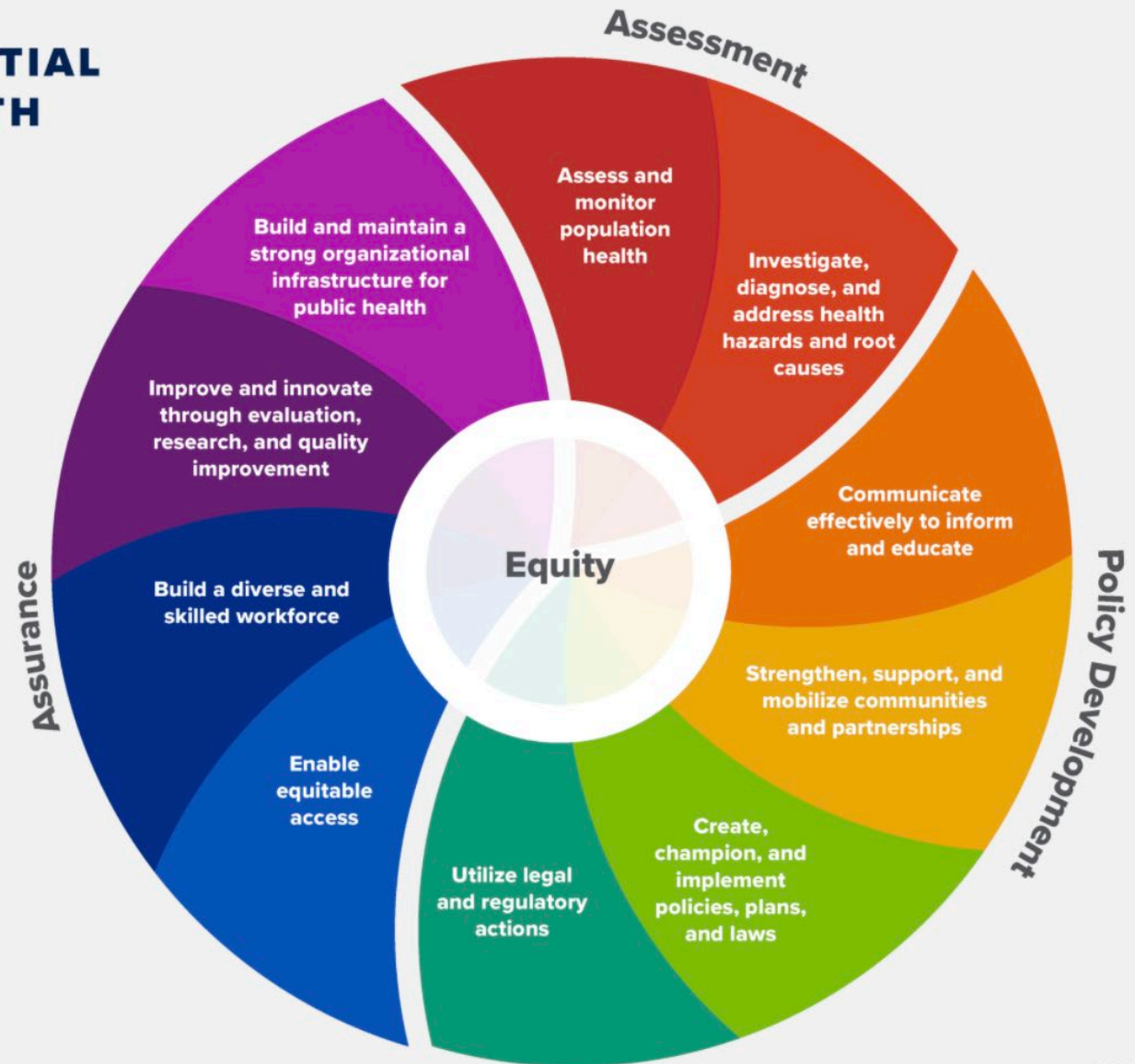
- The science and practice of protecting and improving the health of a community, as by preventive medicine, health education, control of communicable diseases, application of sanitary measures, and monitoring of environmental hazards.

National Public Health Performance Standards Program

THE 10 ESSENTIAL PUBLIC HEALTH SERVICES

To protect and promote the health of all people in all communities

The 10 Essential Public Health Services provide a framework for public health to protect and promote the health of all people in all communities. To achieve optimal health for all, the Essential Public Health Services actively promote policies, systems, and services that enable good health and seek to remove obstacles and systemic and structural barriers, such as poverty, racism, gender discrimination, and other forms of oppression, that have resulted in health inequities. Everyone should have a fair and just opportunity to achieve good health and well-being.



Overview of basic public health concepts

- Key differences between public health and clinical research
 - population versus individual perspective
- Examples of public health strategies
 - surveillance
 - community interventions
- Specific applications of physical inactivity as a public health problem.

Public Health versus Clinical Research

- Population versus individual perspective
- Major emphasis on equity / social justice
- Observational studies



*What causes the
cases?*

Individuals

High Risk Approach

- Traditional medical model
 - Targeted intervention
 - Cost-effective (?)
 - Patient and physician motivation
-

High Risk Approach

- Treats symptoms, not causes
 - Depends on definition of “high risk”
 - Difficulty identifying targets
-

*What causes the
incidence?*

Populations

Population Approach

- Identifies the underlying causes
 - Can alter the entire population
 - Interventions can change the social norm
-

Population Approach

- Individuals find little (and few) benefit(s)
 - Disease-oriented mind-set not conducive to prevention either by patients or physicians
 - Low yield
-



Causality

- Strength of Association
- Consistency of Association
- Specificity
- Temporality
- Dose – Response
- Biological Plausibility

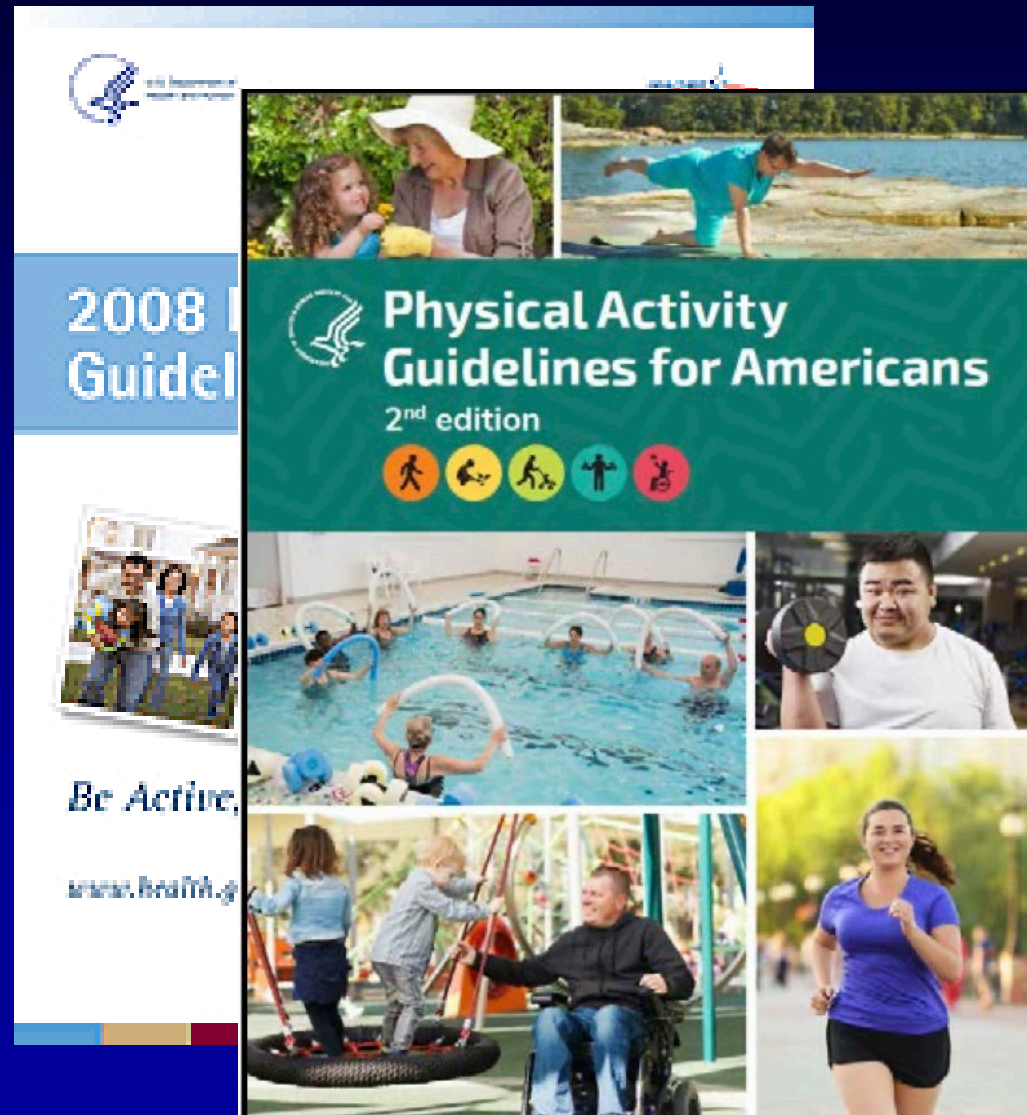


Public Health Strategies

- Science base
- Surveillance
- Intervention research
 - Efficacy
 - Effectiveness
 - Cost effectiveness

Public Health Strategies

- Guidelines
- Communications
- Partnerships

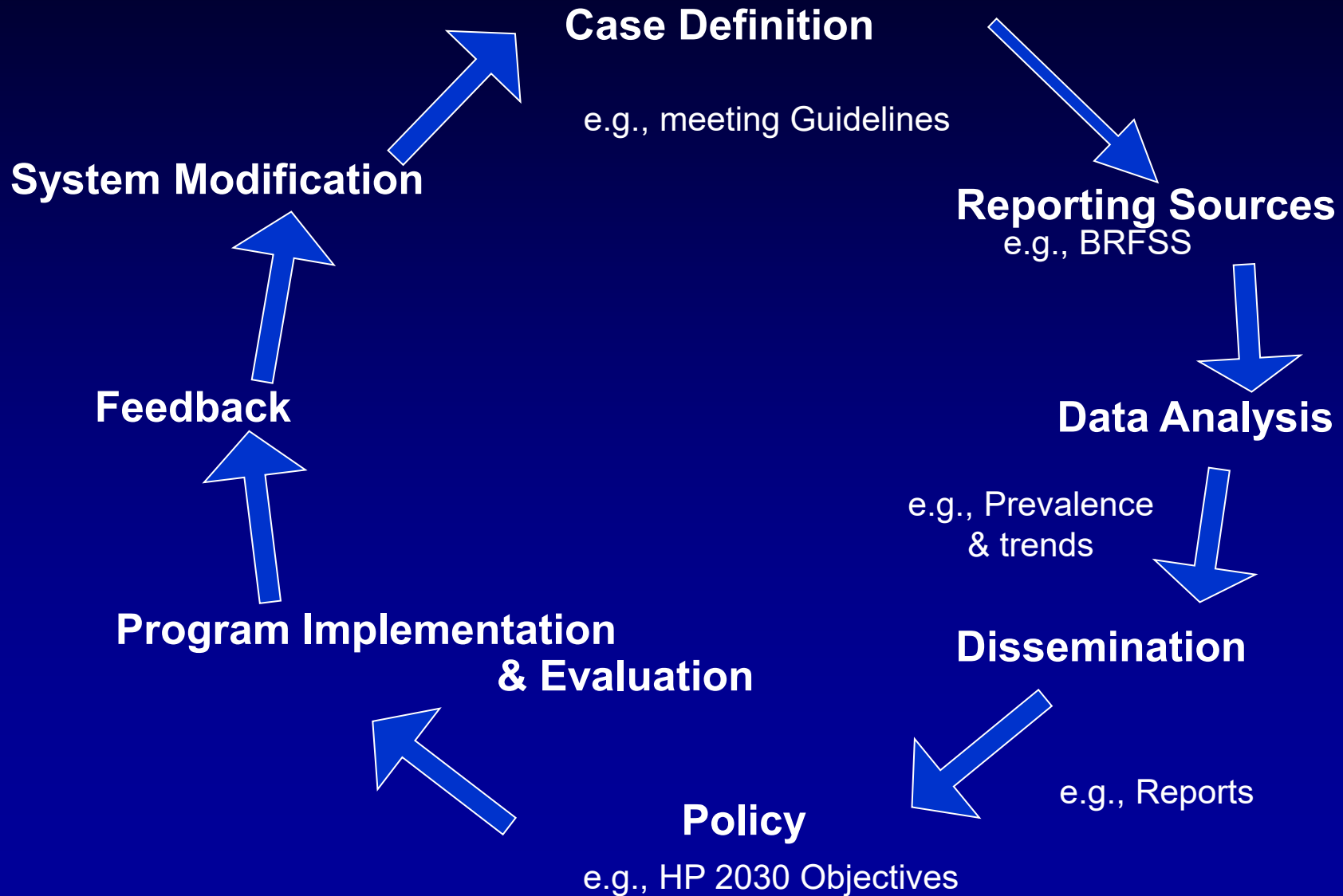




The Uses of Public Health Chronic Disease and Behavioral Surveillance Systems

- Quantify magnitude of health problem
- Describe natural history of disease
- Detect “outbreaks”
- Document Person, Place and Time
- Test hypotheses
- Evaluate intervention measures
(control/prevention)
- Detection of changes in health practices
- Policy and planning

Information Flow in Surveillance





Public Health vs Population Health?

Public Health: What we as a society collectively do to ensure the conditions in which people can be healthy (IOM 1988).

Population Health: The health outcome of a group of individuals including the distribution and determinants of such outcomes within the group (after Kindig and Stoddard 2003).

Community Health: Hybrid that is geographically organized and emphasizes health equity and socioeconomic disparities

THE LANCET

Physical Activity · July, 2012

www.thelancet.com



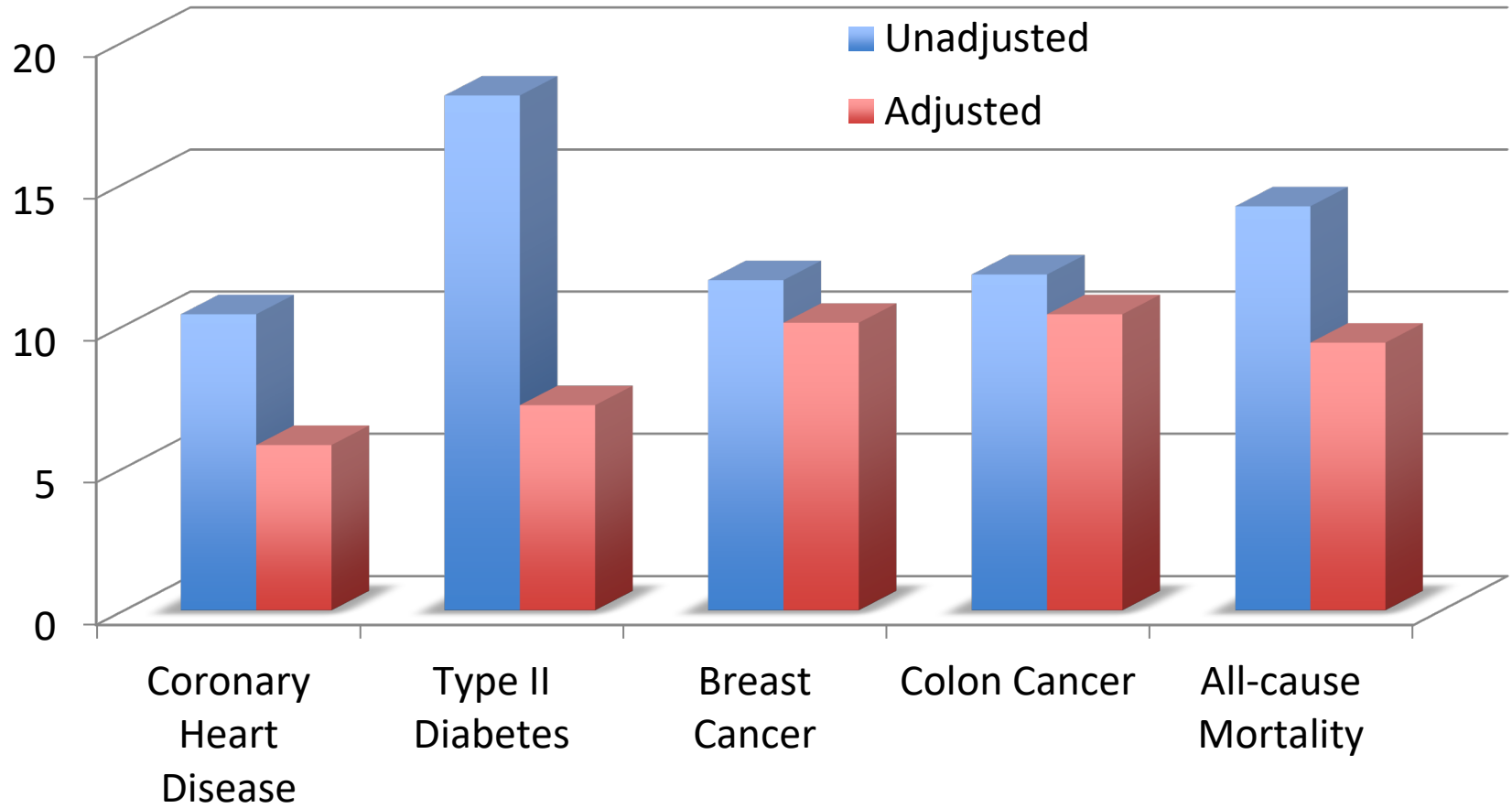
“In view of the prevalence, global reach, and health effect of physical inactivity, the issue should be appropriately described as pandemic, with far-reaching health, economic, environmental, and social consequences.”

<http://www.thelancet.com/series/physical-activity>

A Public Health Problem

- Importance
- Prevalence and trends
- Solutions

Population attributable fraction for major NCDs associated with physical inactivity



Importance

- Between 6-10% of deaths due to the world's major NCDs is attributable to inactivity
- By eliminating inactivity, >5.3 M deaths/y may be prevented
- This leads to an increase of 0.68 years in the world's life expectancy

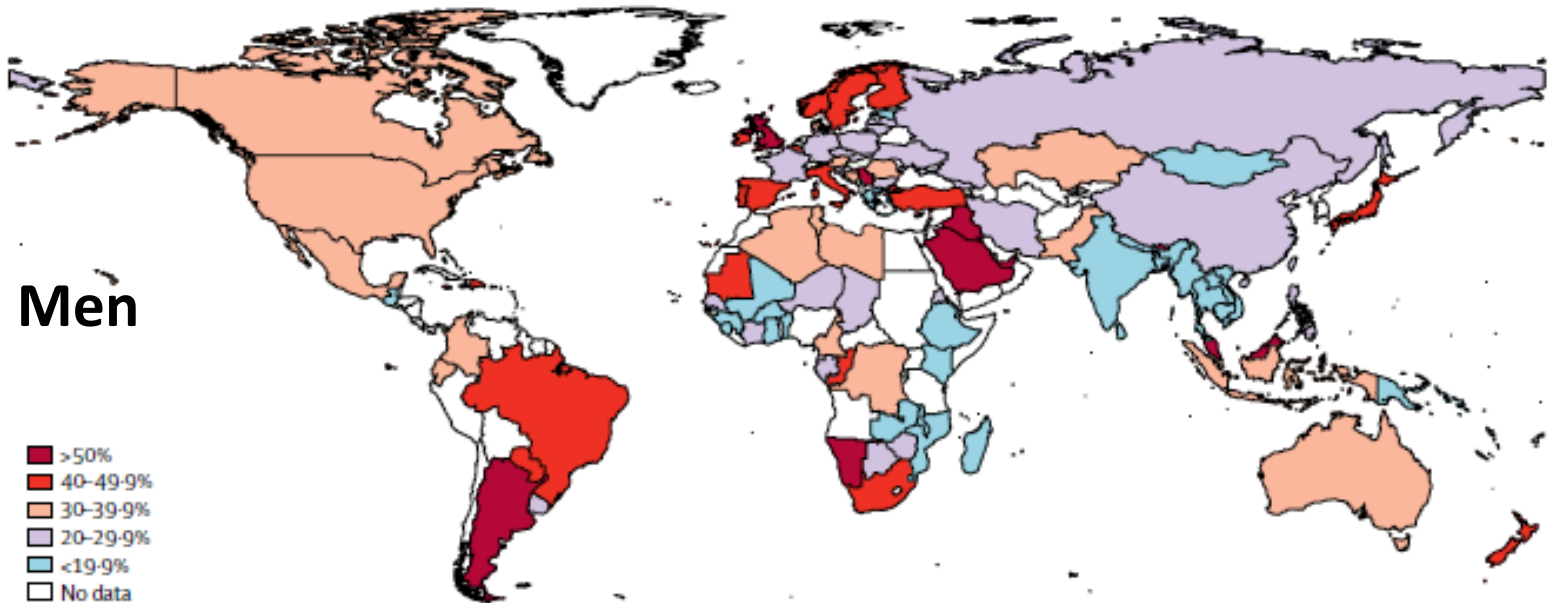
A Public Health Problem

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Pandemic?

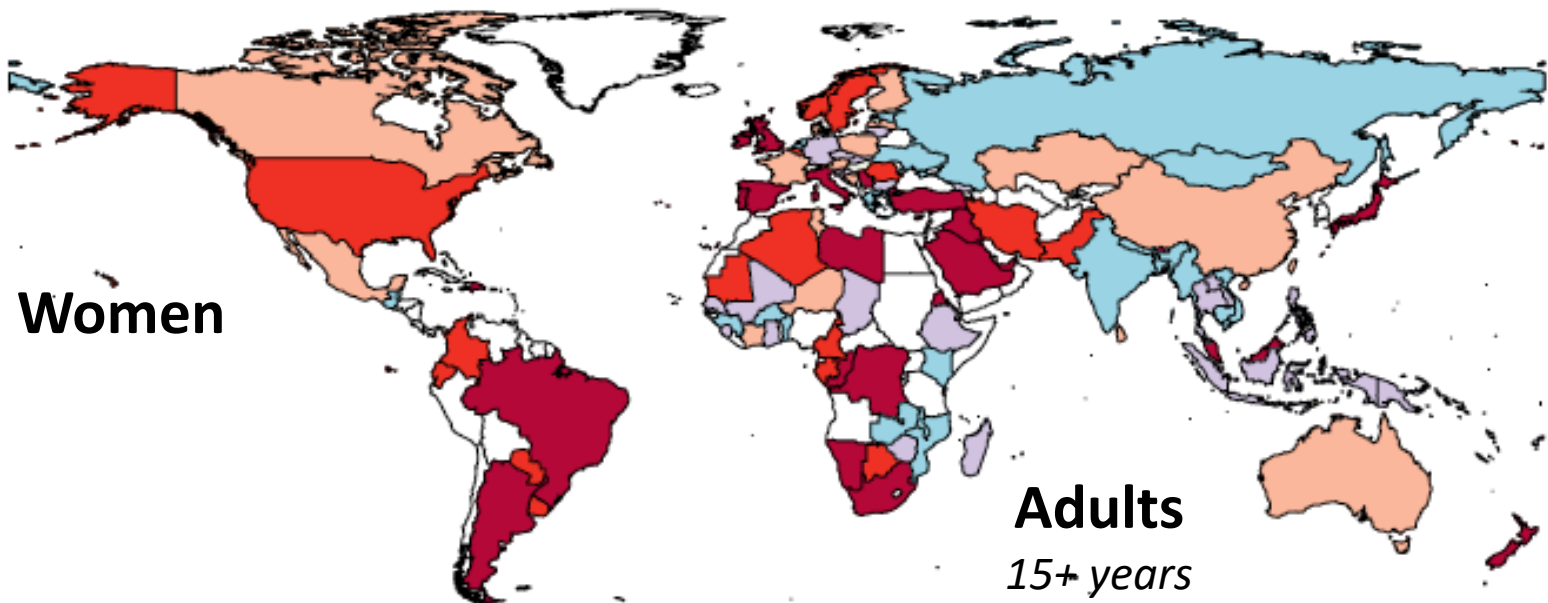
- “...an epidemic occurring worldwide, or over a very wide area, crossing international boundaries, and usually affecting a large number of people...”
- “...the occurrence in a community or region of cases of an illness, **specific health related behavior**, or other health related events clearly in excess of normal expectancy...”

A



Men

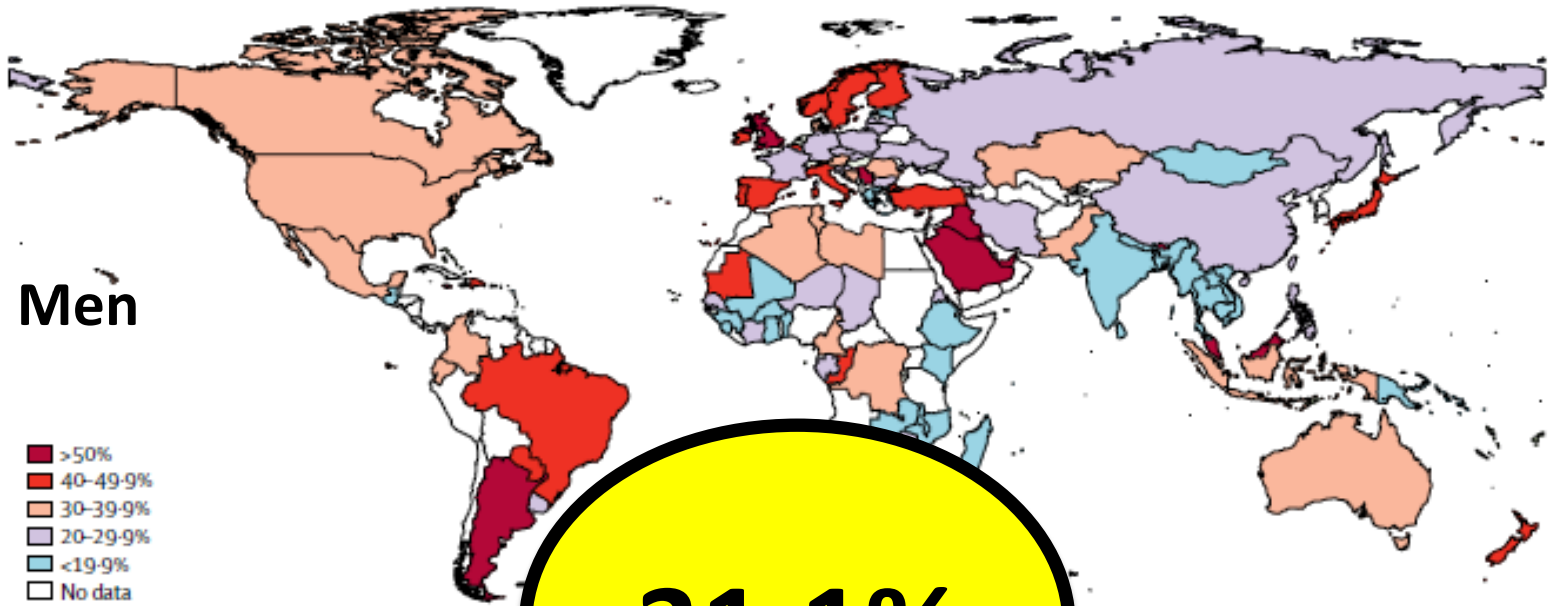
B



Women

Adults
15+ years

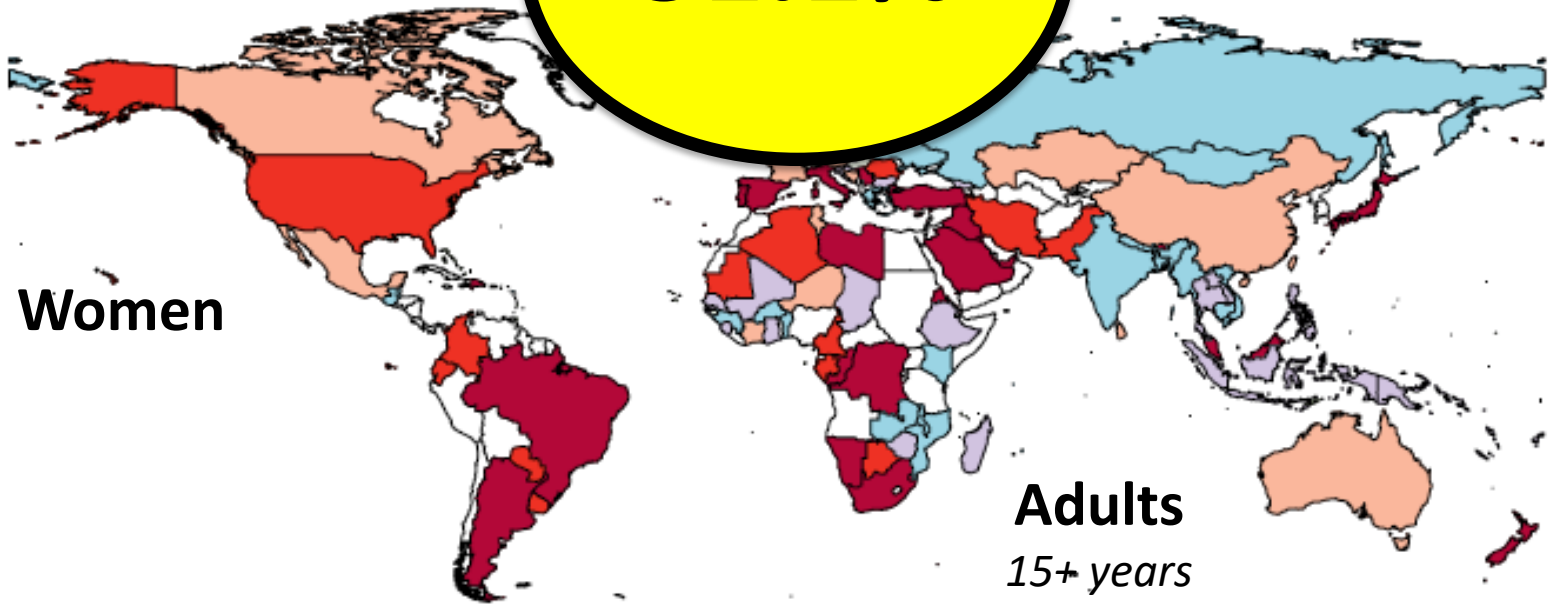
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Men

31.1%

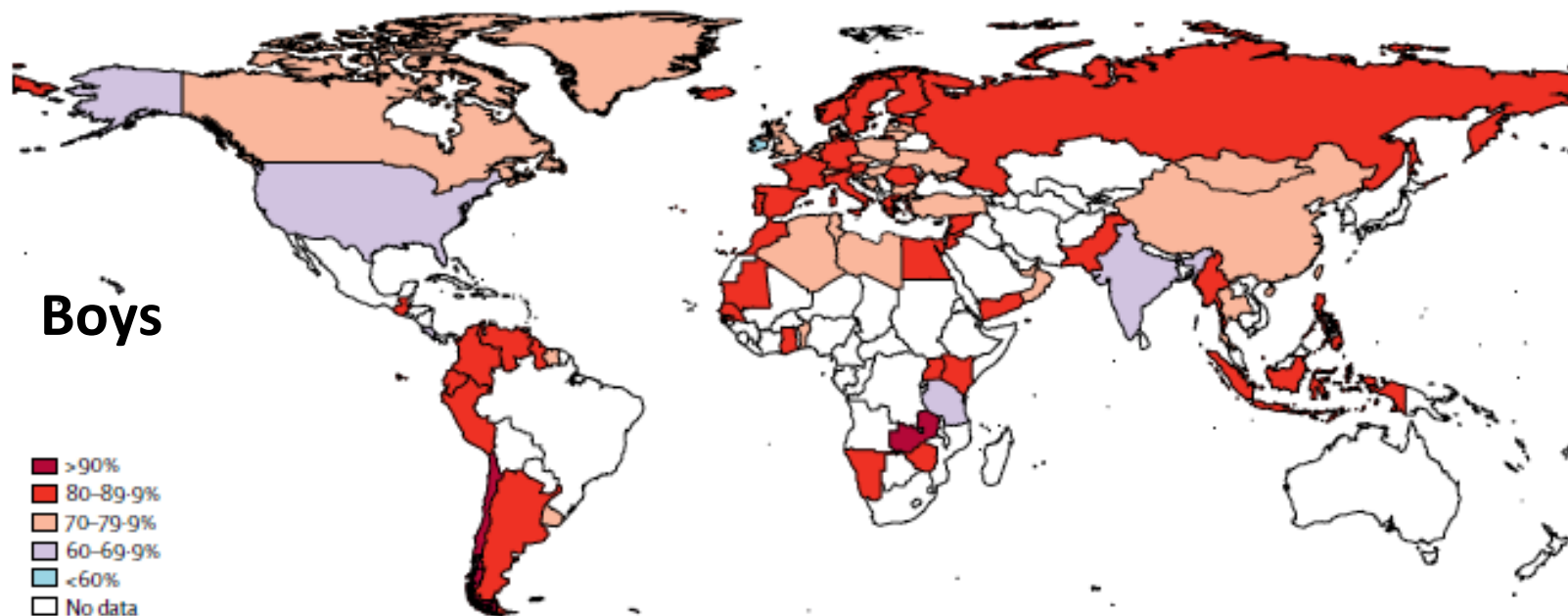
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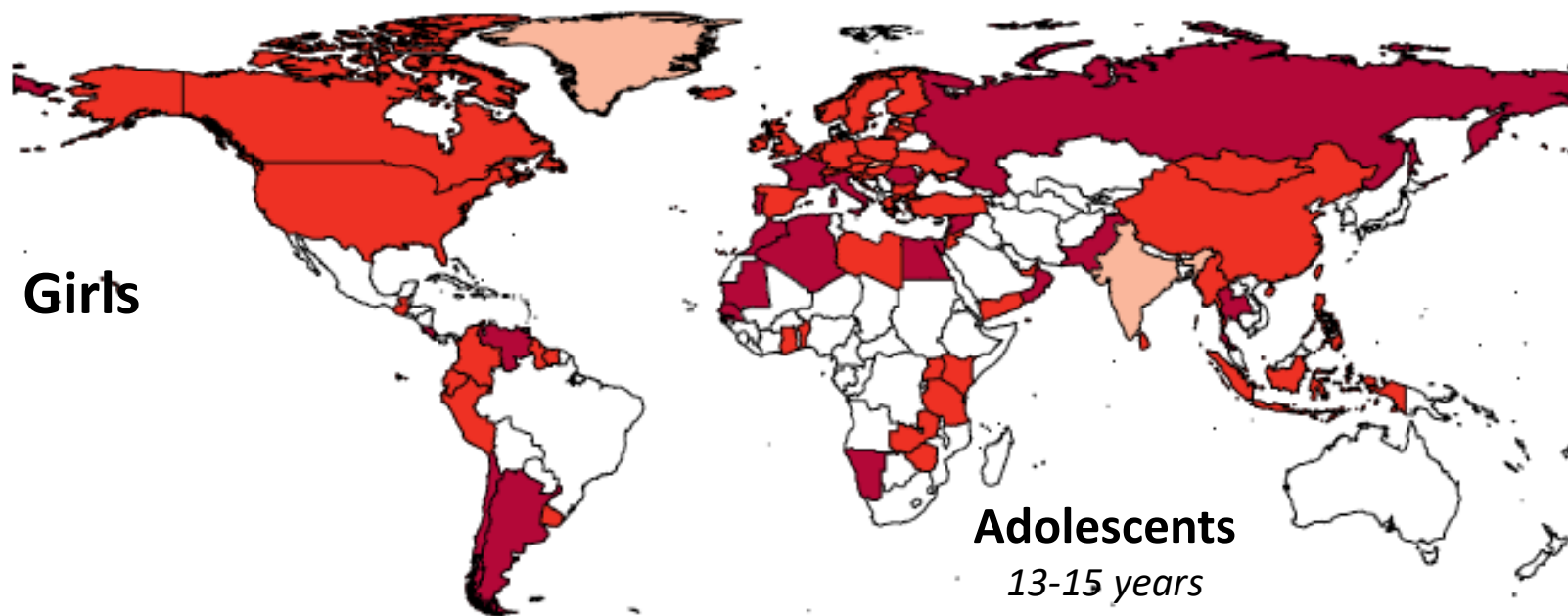
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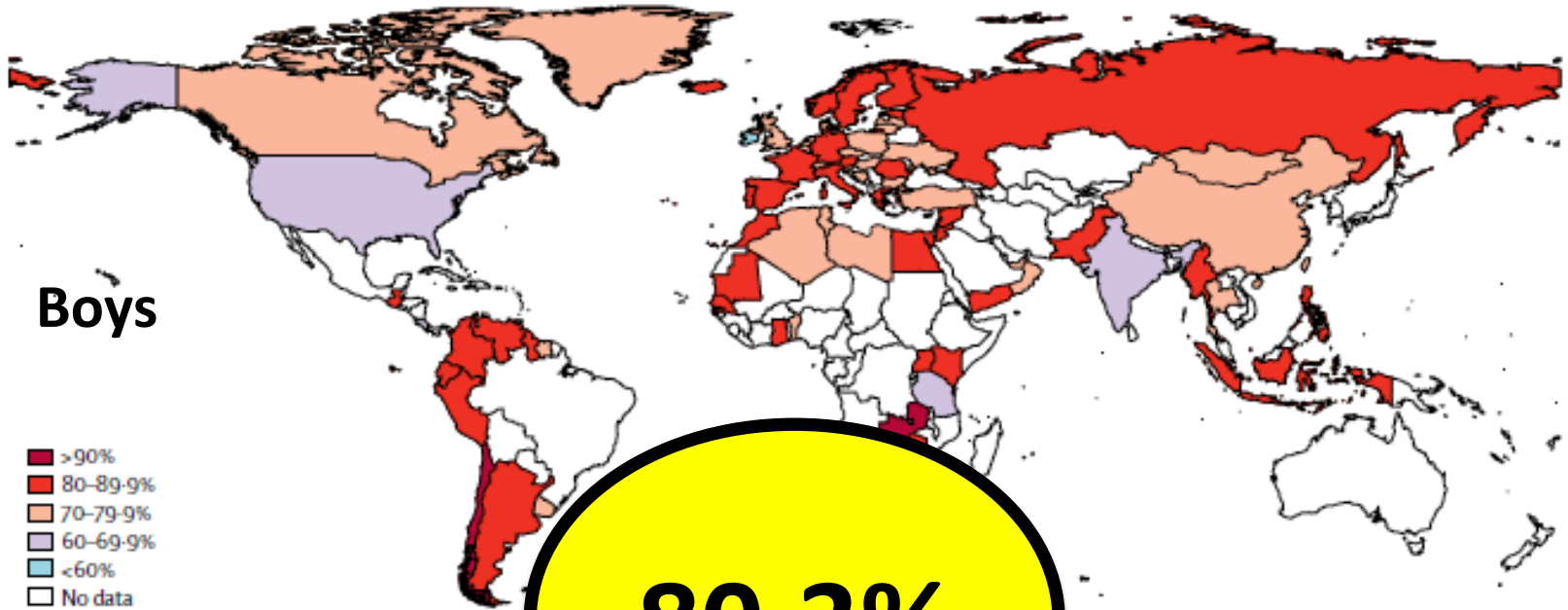
A



B



A

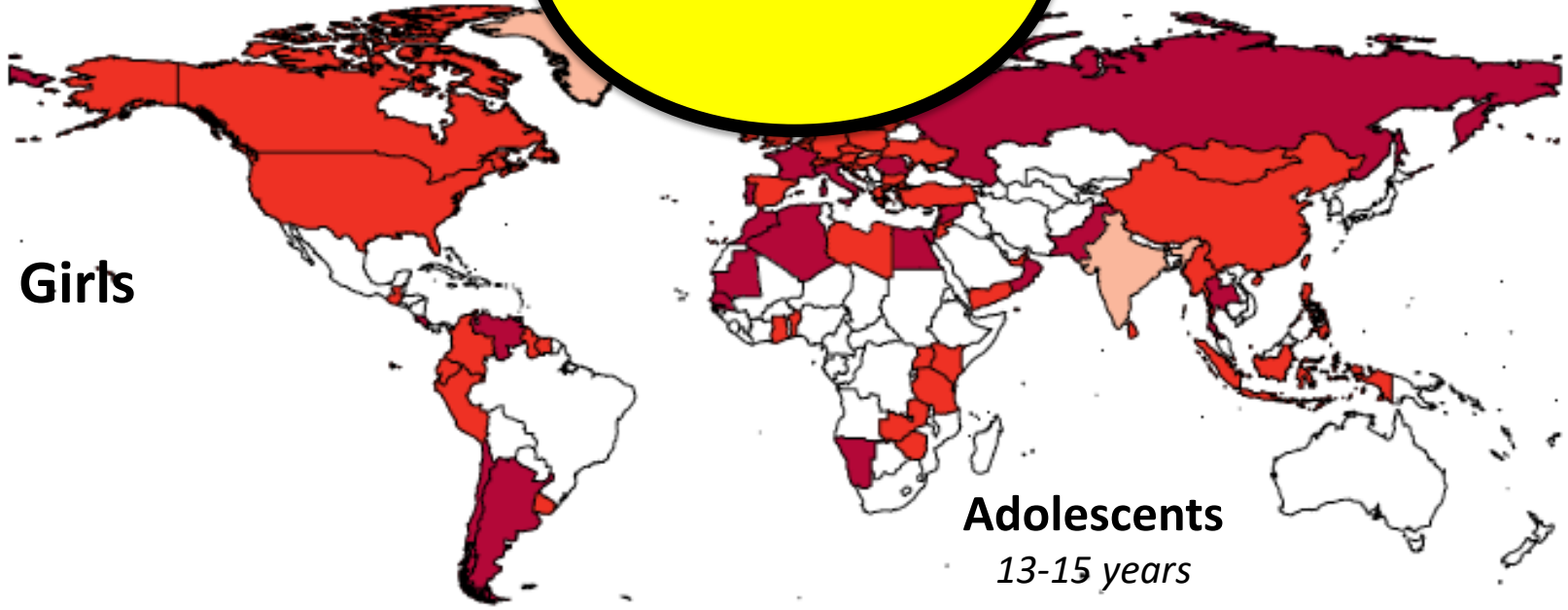


Boys

- >90%
- 80-89.9%
- 70-79.9%
- 60-69.9%
- <60%
- No data

80.3%

B



Girls

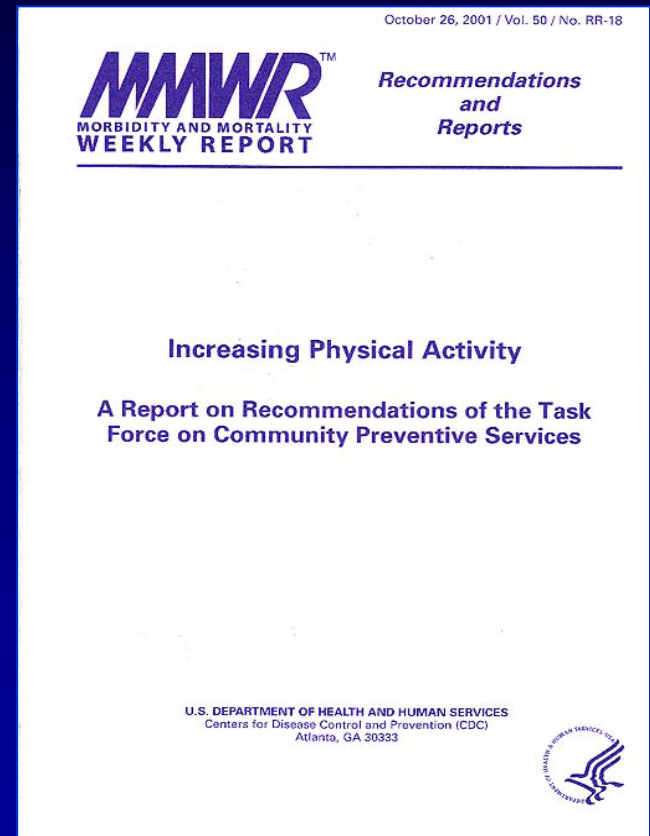
Adolescents
13-15 years

A Public Health Problem

- Importance
- Prevalence and trends
- Solutions

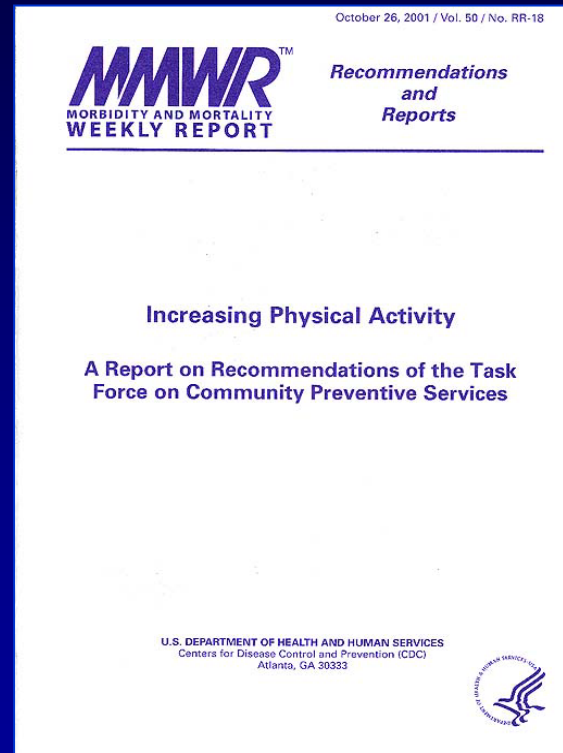
Effective Interventions to Promote Physical Activity

- Informational
 - Community-wide education
 - Point of decision prompts
- Behavioral and social
 - School-based PE
 - Non-family social support
 - Individually adapted behavior change
- Environmental and policy
 - Enhanced access with outreach



Effective Interventions to Promote Physical Activity

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An Urgent Public Health Problem

PREVALENCE AND TRENDS

- ✧ Not meeting PA recommendations: 31%
- ✧ Prevalence: 17%
- ✧ Leisure-time PA: Increased
- ✧ Incidental, Occupational, and Transportation PA: Decreased
- ✧ Economic Shift: Low-income populations have increased NCD's
- ✧ Urbanization: reduced occupational time PA and increased TV viewing

MAGNITUDE AND RISK

- ✧ 6-9% of all NCD deaths are attributed to inactivity
- ✧ 5-5.3 million deaths/year attributed to inactivity

GLOBAL CONSEQUENCES

- ✧ Health
- ✧ Healthcare (Economic)
 - ◆ \$28-334pp: Indirect Costs
 - ◆ \$155-419pp: Direct Costs
- ✧ Reduced Quality of Life

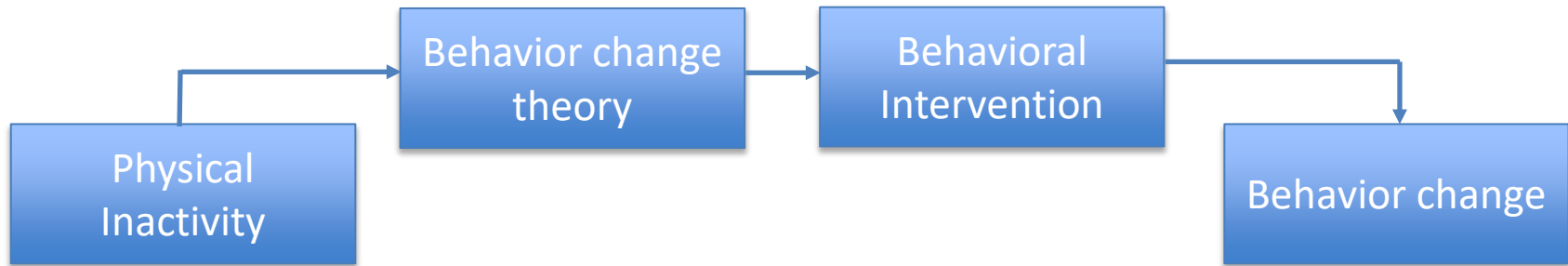
PREVENTION AND CONTROL

- ✧ Effective methods across age, social groups, countries
- ✧ Potential of Global Information and Technologies on PA

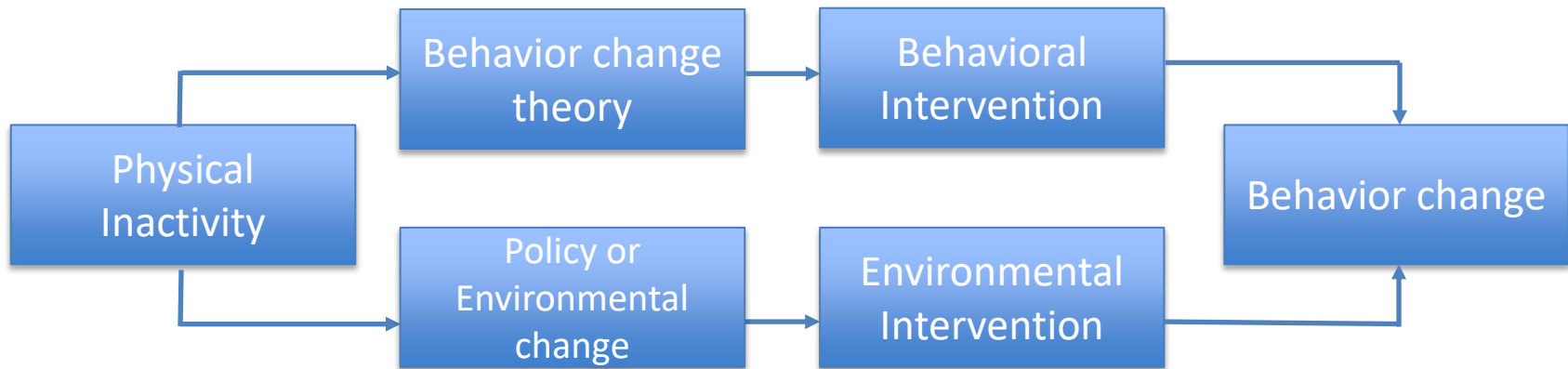
**PUBLIC HEALTH
ACTION PRIORITY**

The whole concept of public health is founded on the insight that health and illness have causes or conditions that go beyond the biology and behavior of the individual human being.

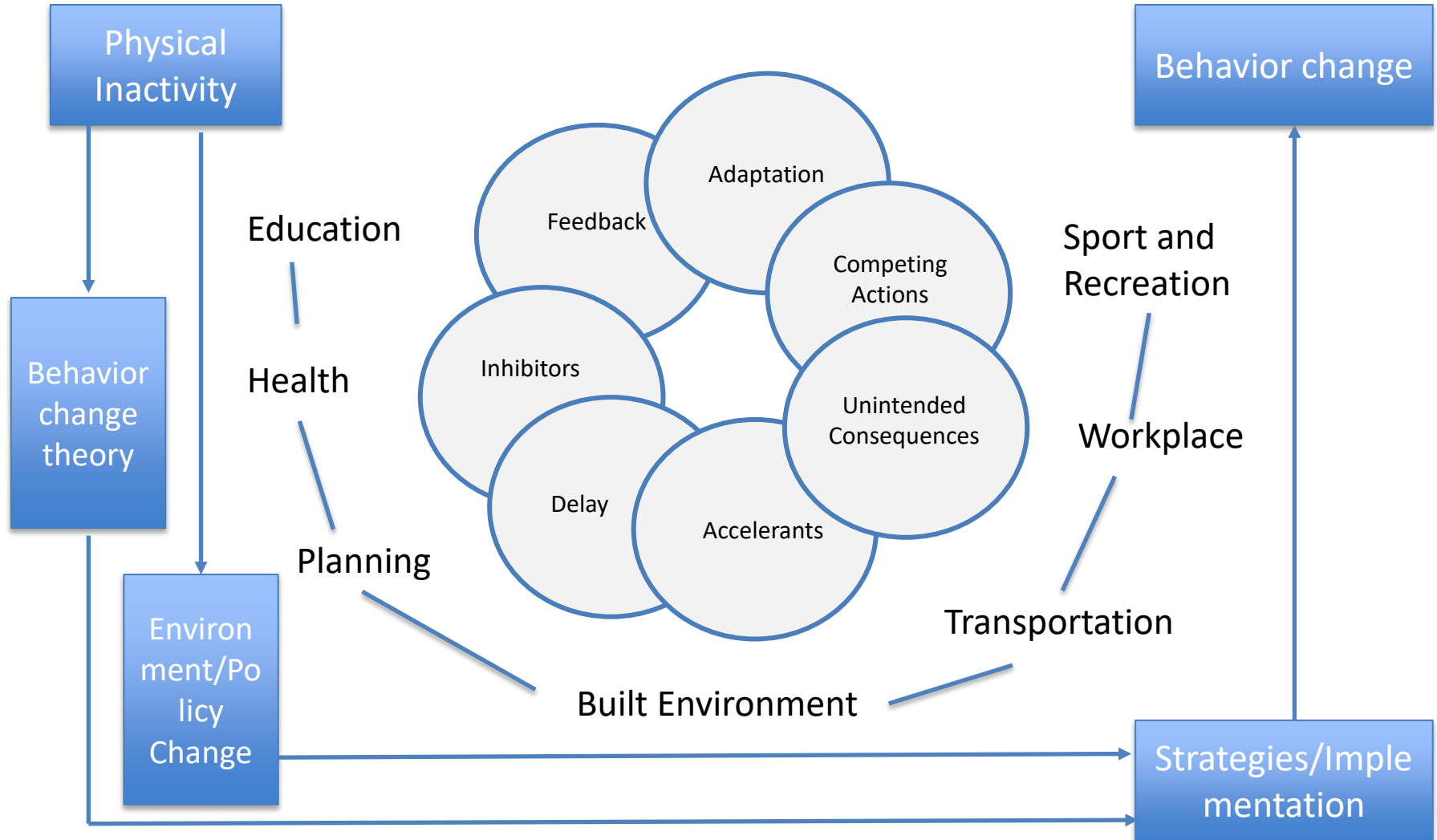
Behavioral Approaches to Health Behavior Change for Physical Inactivity



Behavioral and Environmental Approaches to Health Behavior Change for Physical Inactivity



Toward a Systems Approach for Physical Inactivity



Physical Activity and Public Health Issues

- How much is enough?
 - Dose response issues
- Measurement
- Determinants
 - Individual
 - Community / environmental
- Special populations
- Disparities

Physical Activity and Public Health Issues

- Intervention research
 - Schools
 - Work sites
 - Health care
 - Mass media
 - Community
 - Environment
 - Policy

Physical Activity and Public Health Issues

- Systems science approaches
- Building public health programs
 - Advocacy
 - Mix of strategies
 - Policy research/effectiveness

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