Risk transitions, ageing and implications for surveillance and research

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Ageing and health: from evidence to policy, Geneva, 3 June 2010

The risk transition(s)

WHO, 2009

Comparative risk assessment (CRA) framework

CRA methods estimate the reduction in disease and mortality that would have occurred had exposure to each risk been at ideal levels

Attributable burden is determined by:

- Exposure to each risk
- Proportional hazard per unit exposure (usually RR)
- Ideal or counterfactual exposure
- Total (or “background”) disease-specific burden

Attributable burden is usually measured using disability adjusted life-years (DALYs)

Overview

Comparative risk assessment (CRA) and ageing

Innovations in CRA application

- Subnational analyses
- Using CRA to explain health disparities

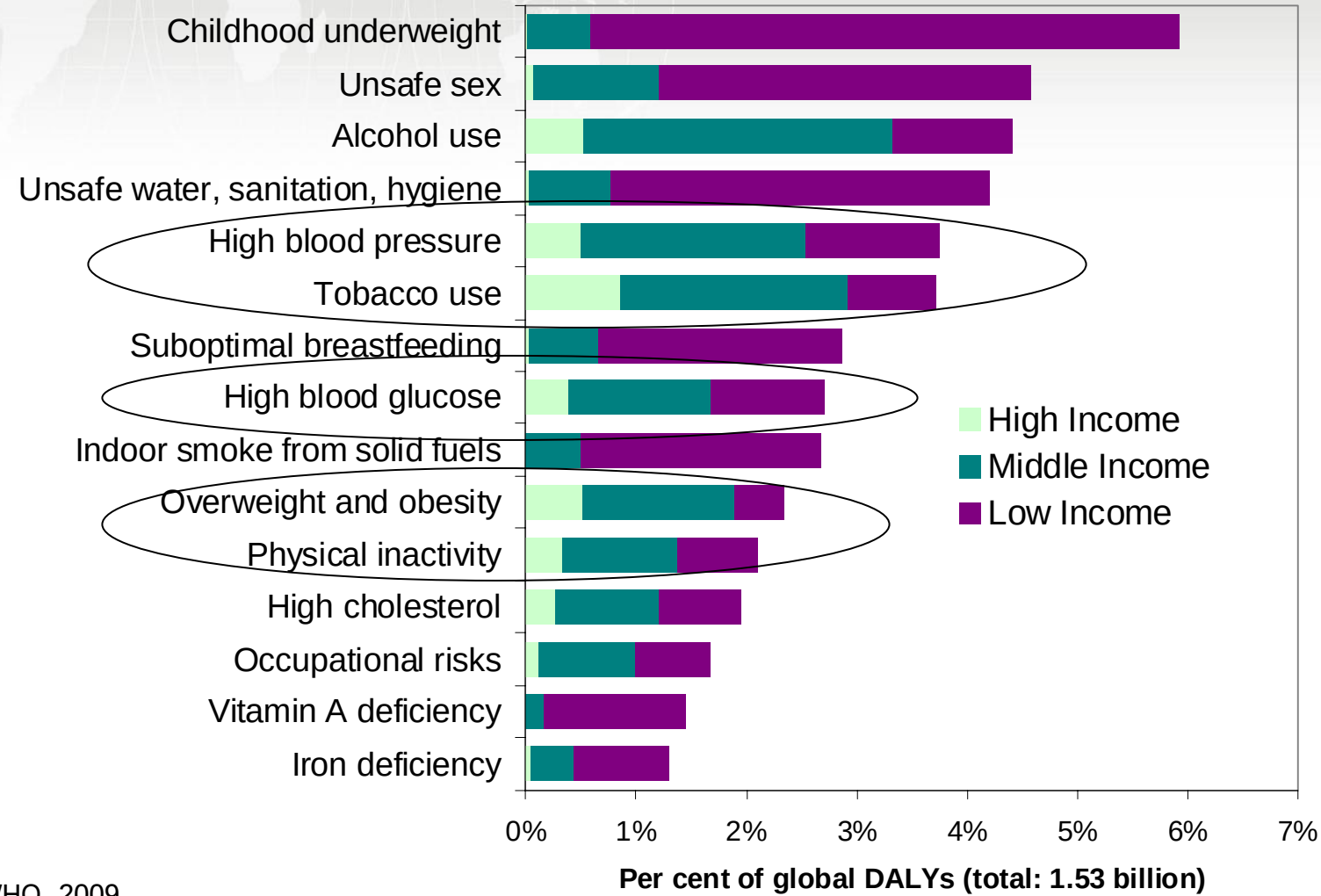
Ongoing research

- Additional age-related risks
- Trends in risk factor burden
- Improvements in estimates for older adults

A brief history of the CRA . . .

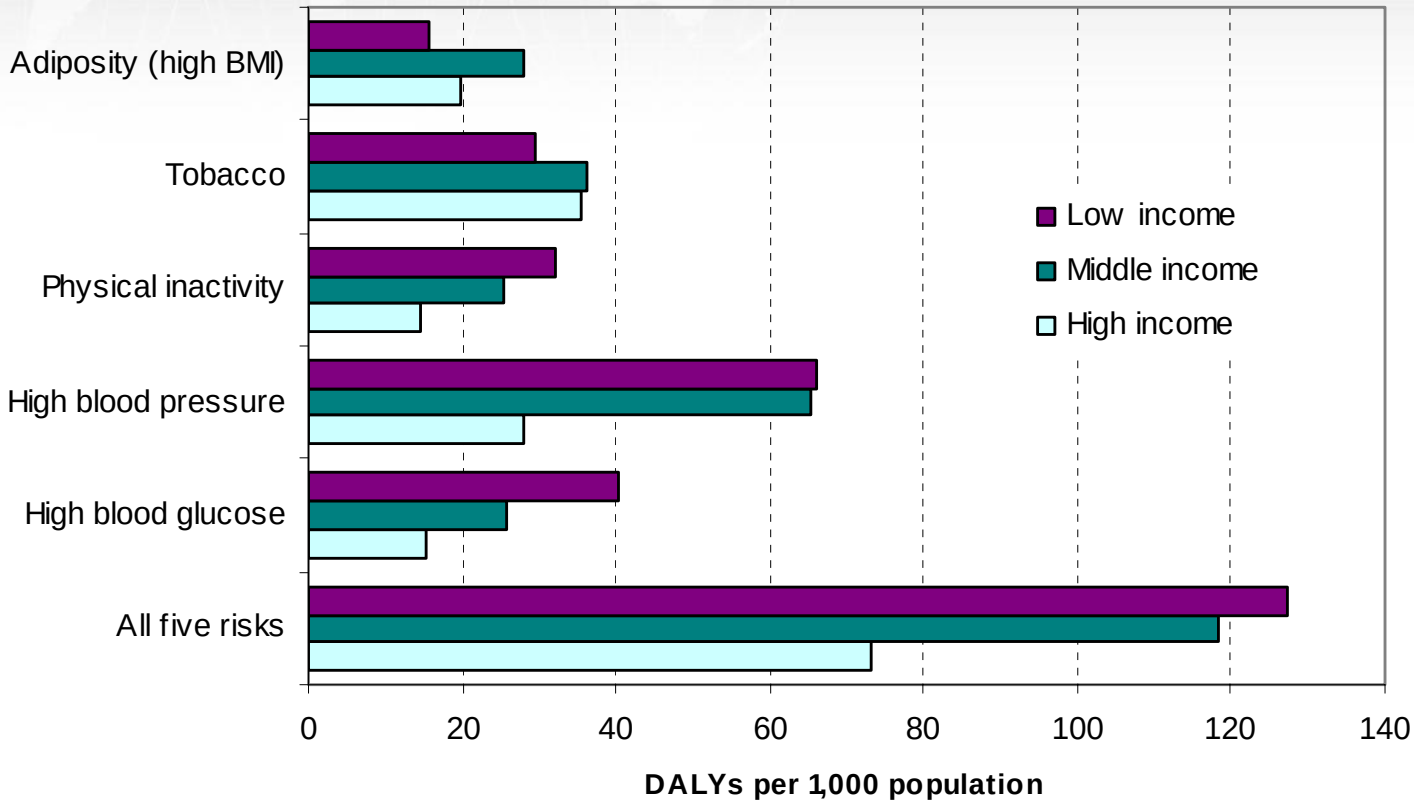
1998-2004	WHO assessments of GBD for 1999-2002 World Health Reports 2000 – 2004 14 WHO regions, 22 risk factors
2005-09	WHO update for 2004 GBD for 2004, 14 WHO regions and 24 risk factors
2007-10	Global Burden of Diseases, Injuries, and Risk Factors Study GBD for 1990 and 2005, 21 regions

Burden of disease attributable to leading individual risk factors in 2004



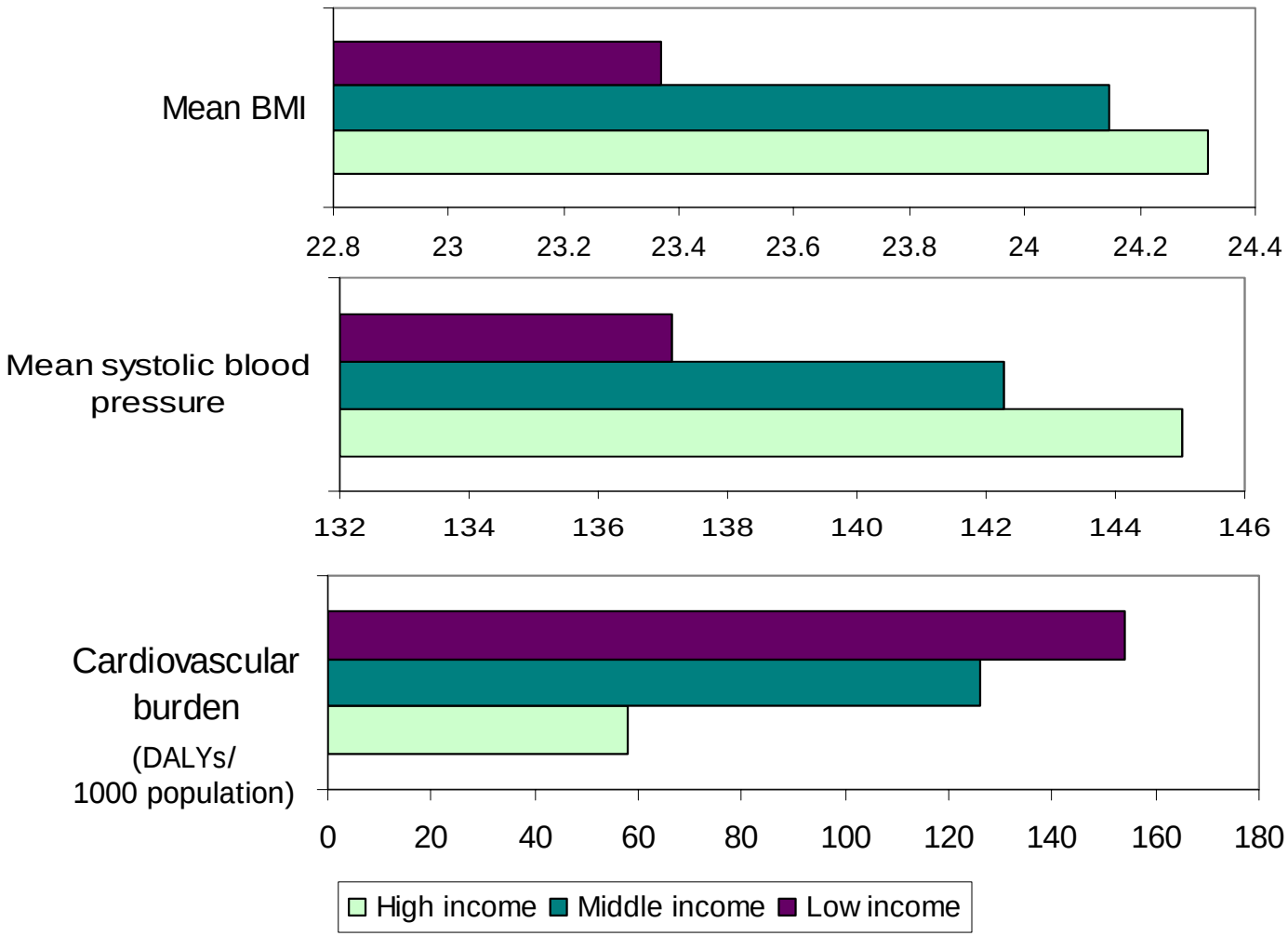
WHO, 2009

Burden of five leading age-related risks among older adults (60 years and over)



WHO, 2009

Mean BMI and SBP levels by country income, older adults (60 years and over)



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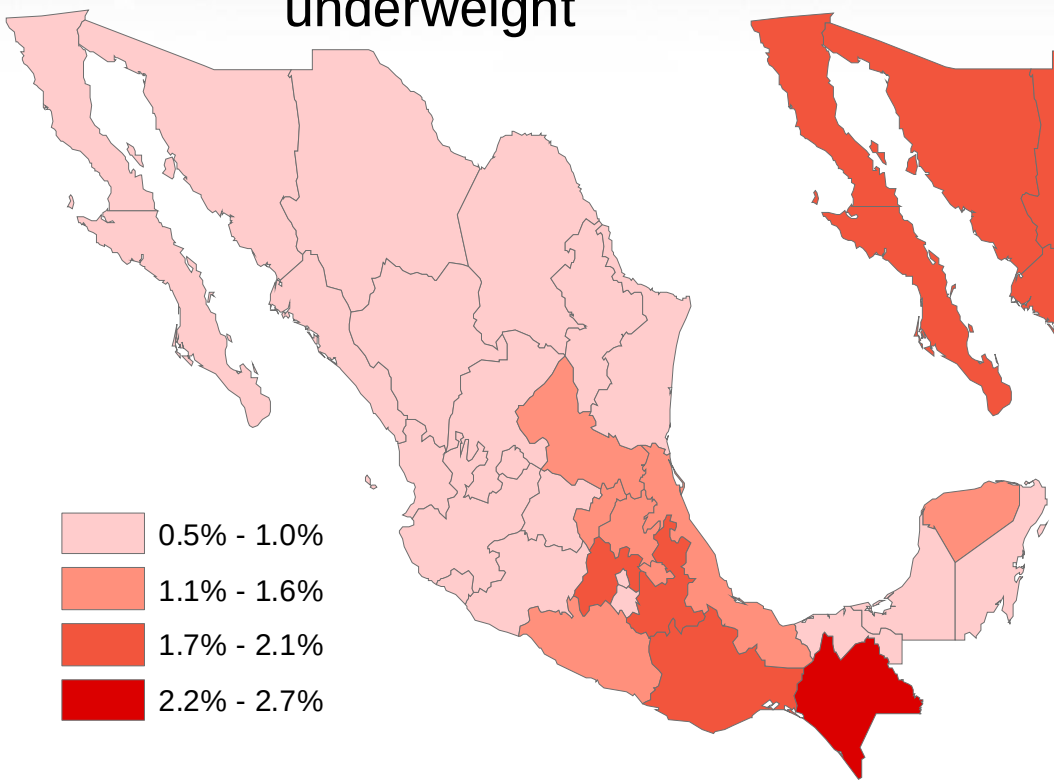
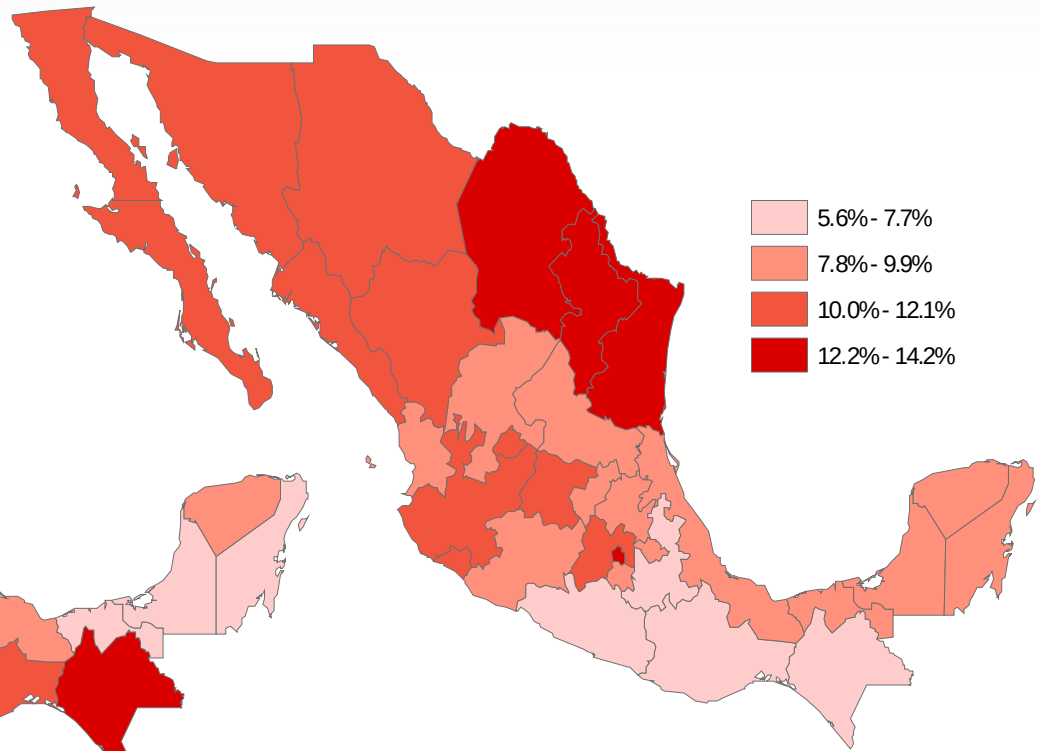
Subnational applications: Mexico

Per cent of DALYs caused by child underweight

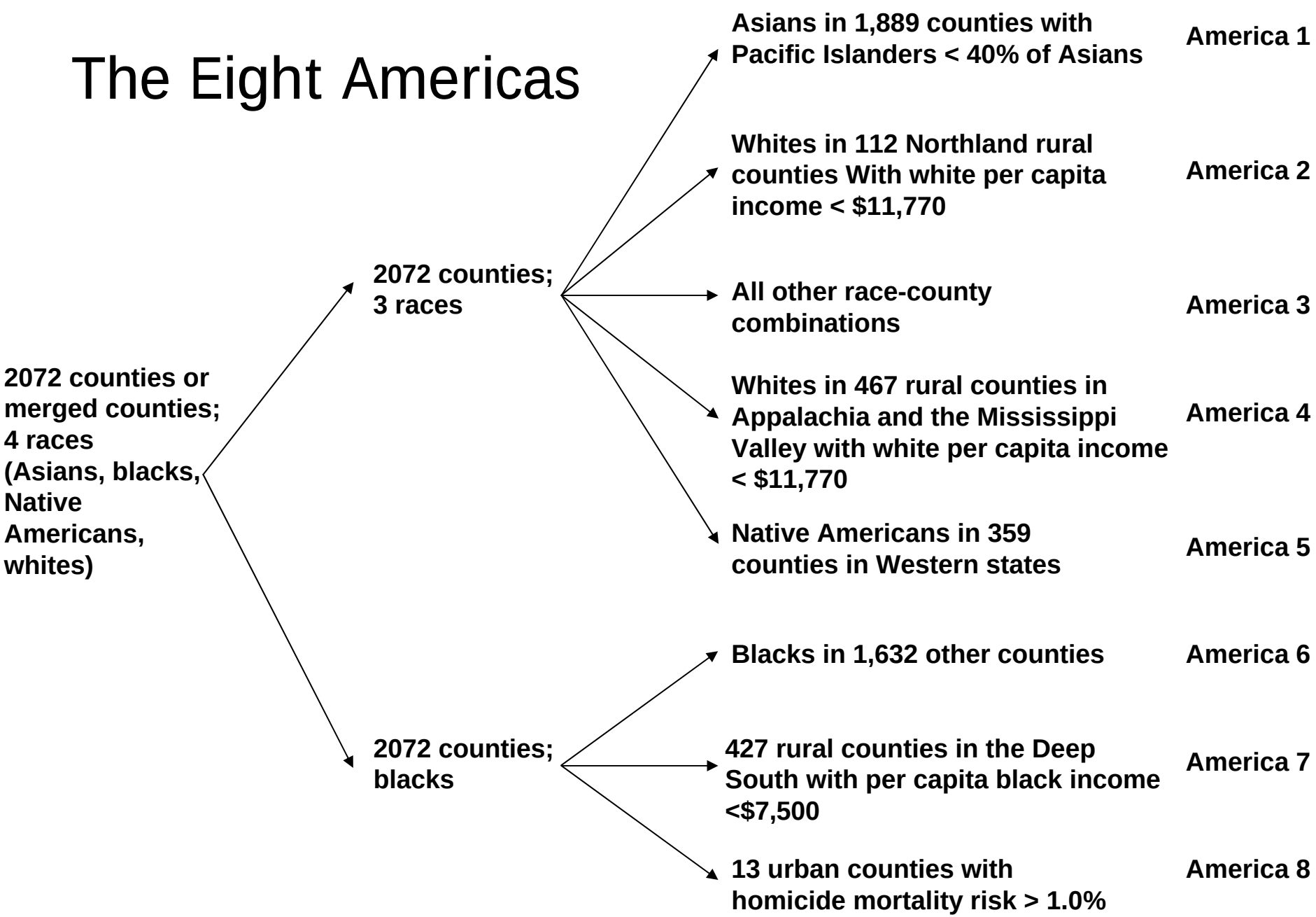


Per cent of deaths caused by high BMI



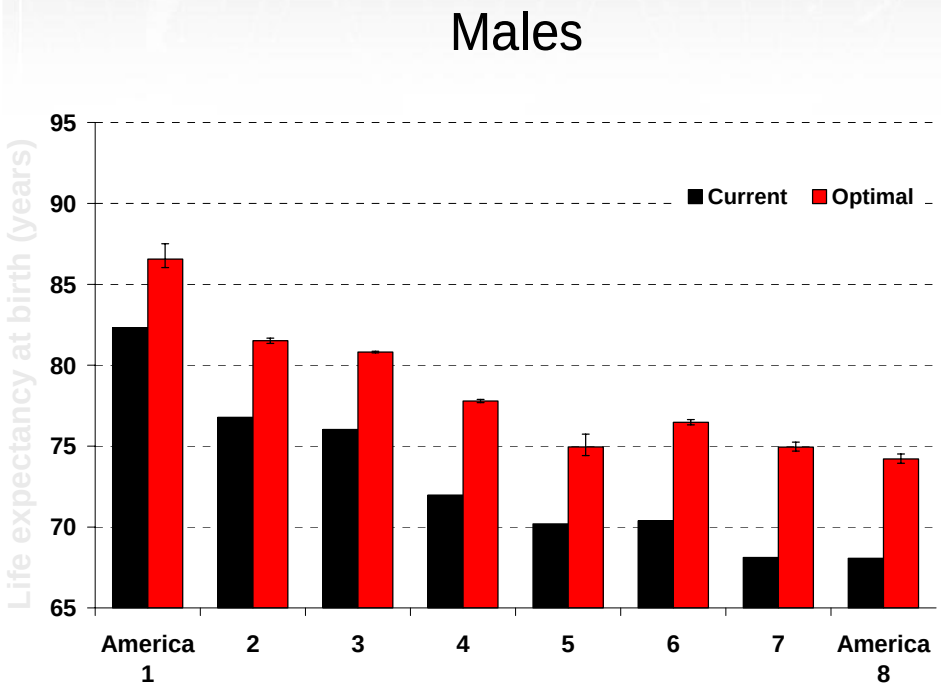
Stevens et al *PLoS Medicine* 2008

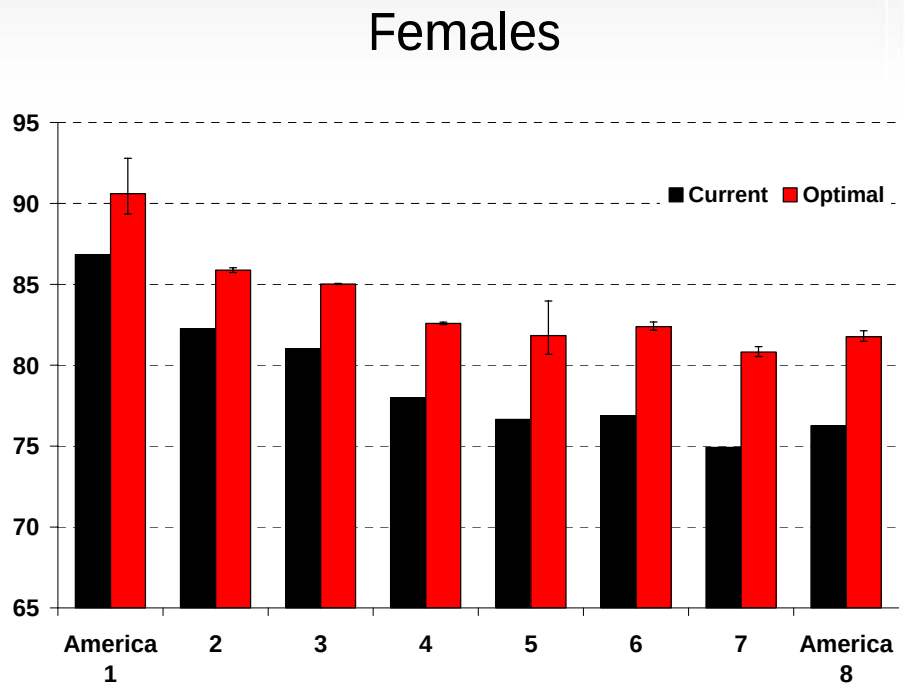
The Eight Americas



Murray et al *PLoS Medicine* 2006

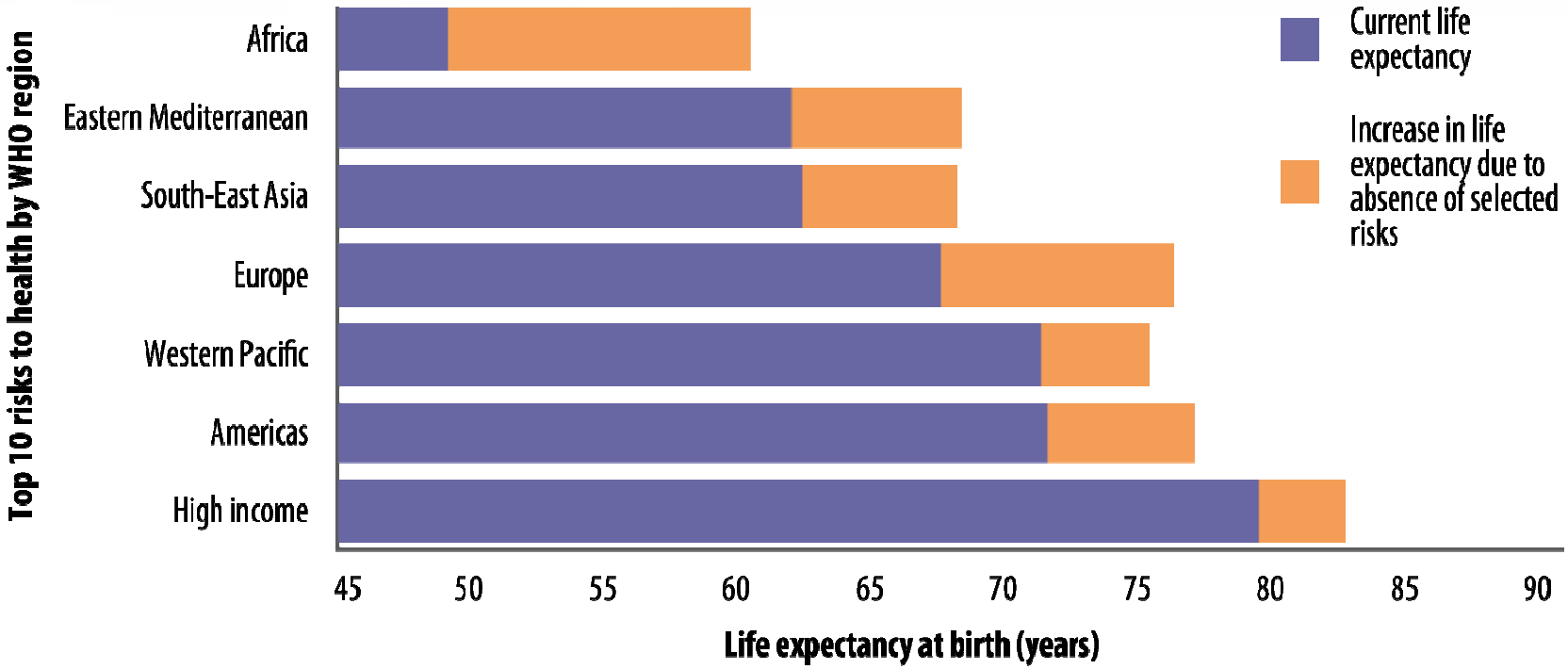
Life expectancy at birth in the Eight Americas in 2005 without the effects of four leading risks





Danaei et al *PLoS Medicine* 2010

Potential life expectancy gain in the absence of 10 risks to global health, 2004



WHO, 2009

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➡ Ongoing research: global burden of disease 2005

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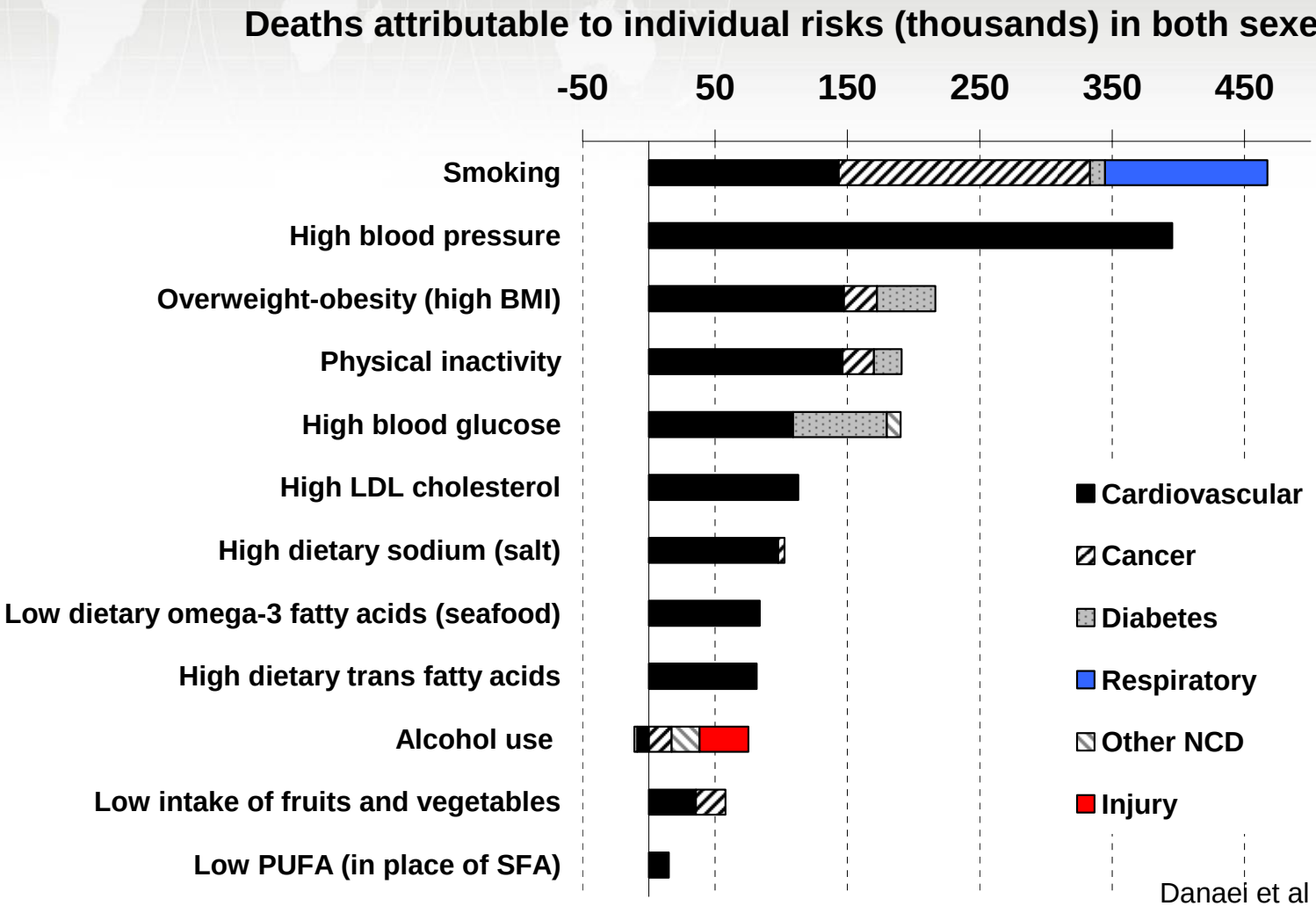
Additional age-related risks

Several new dietary risks for chronic diseases

Counterfactual analysis of the effects of selected diseases, including:

- Osteoporosis
- *H. pylori*, HPV, hepatitis B and C
- Depression

Deaths attributable to individual risk factors in the US, by disease



Danaei et al *PLoS Medicine* 2009

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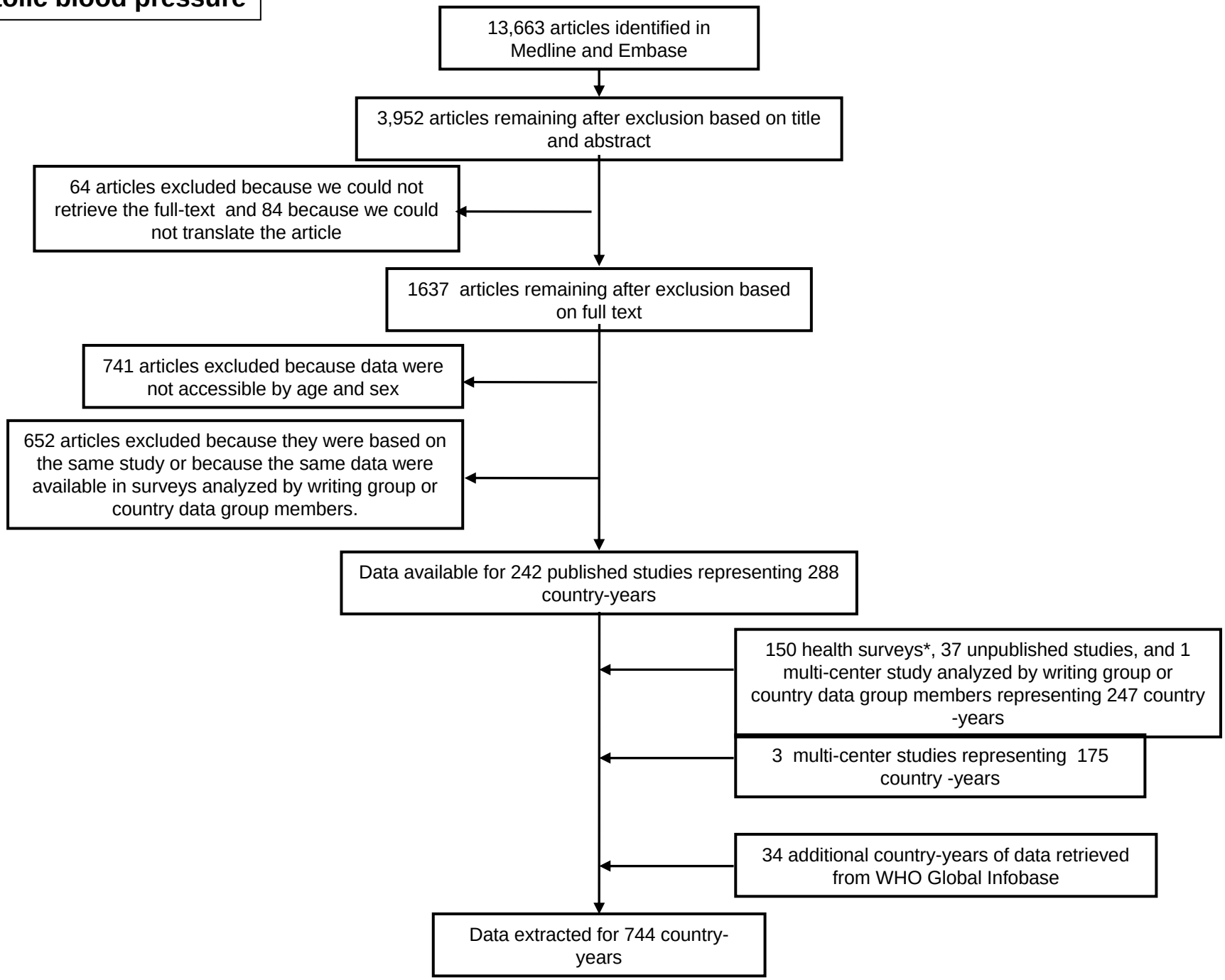
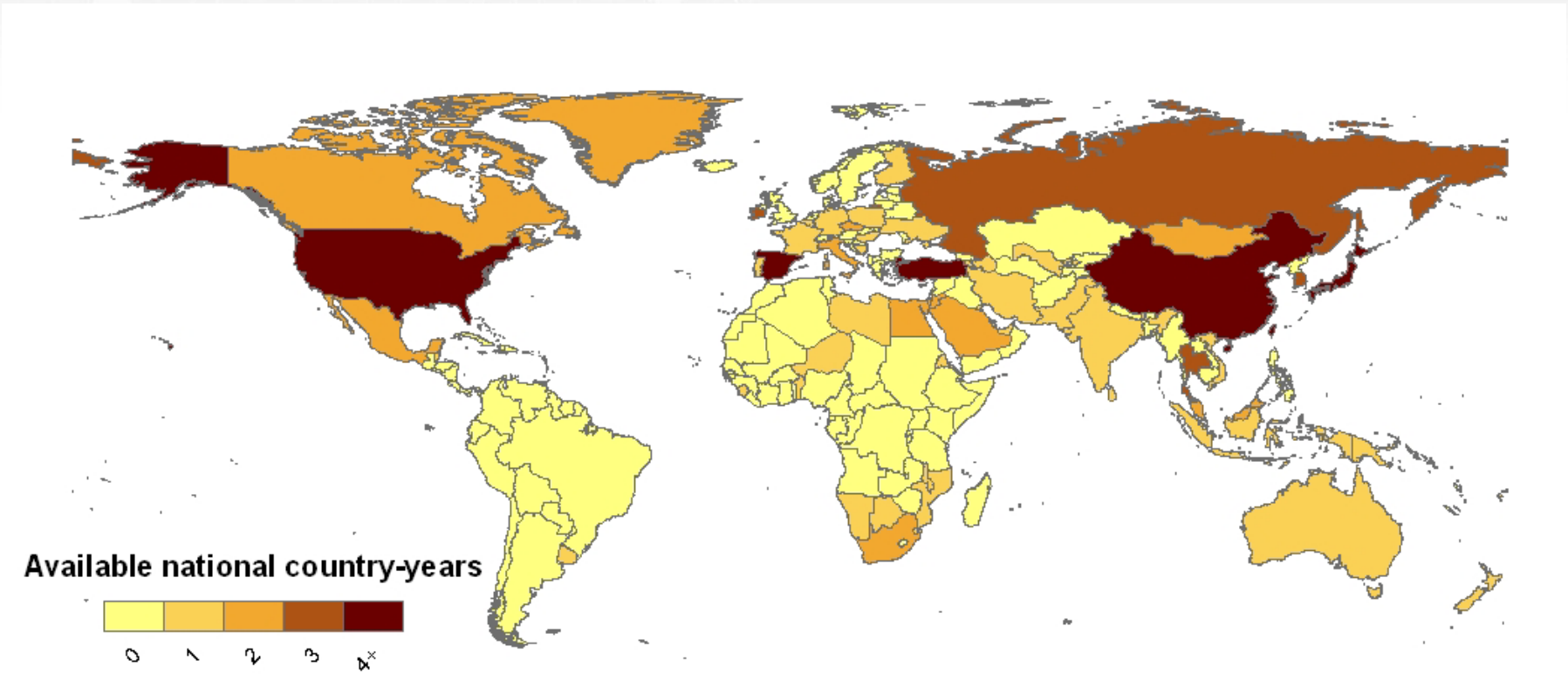
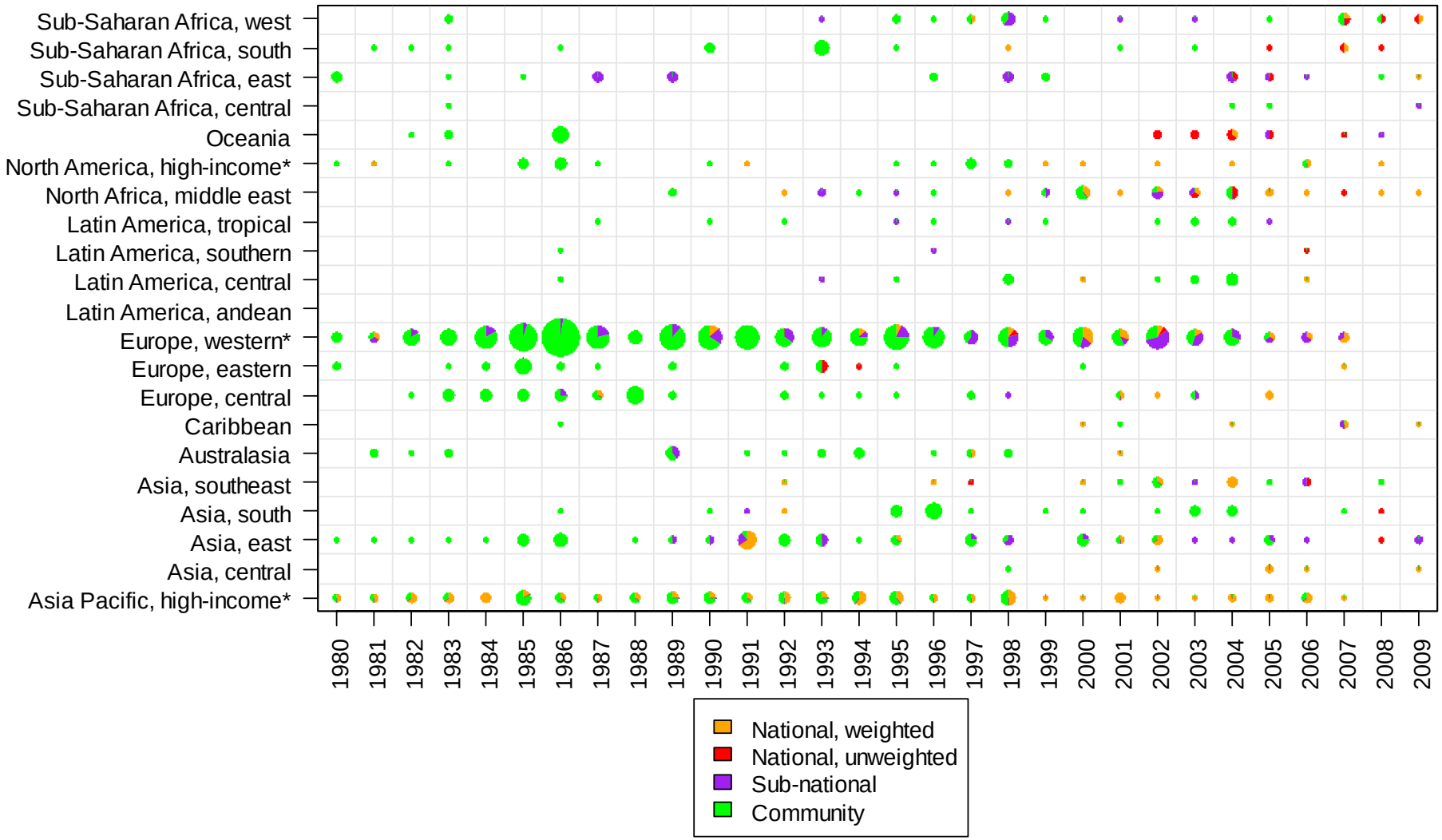
Systolic blood pressure



National studies by country, systolic blood pressure (SBP)



Data availability by year, region, and scope (SBP)



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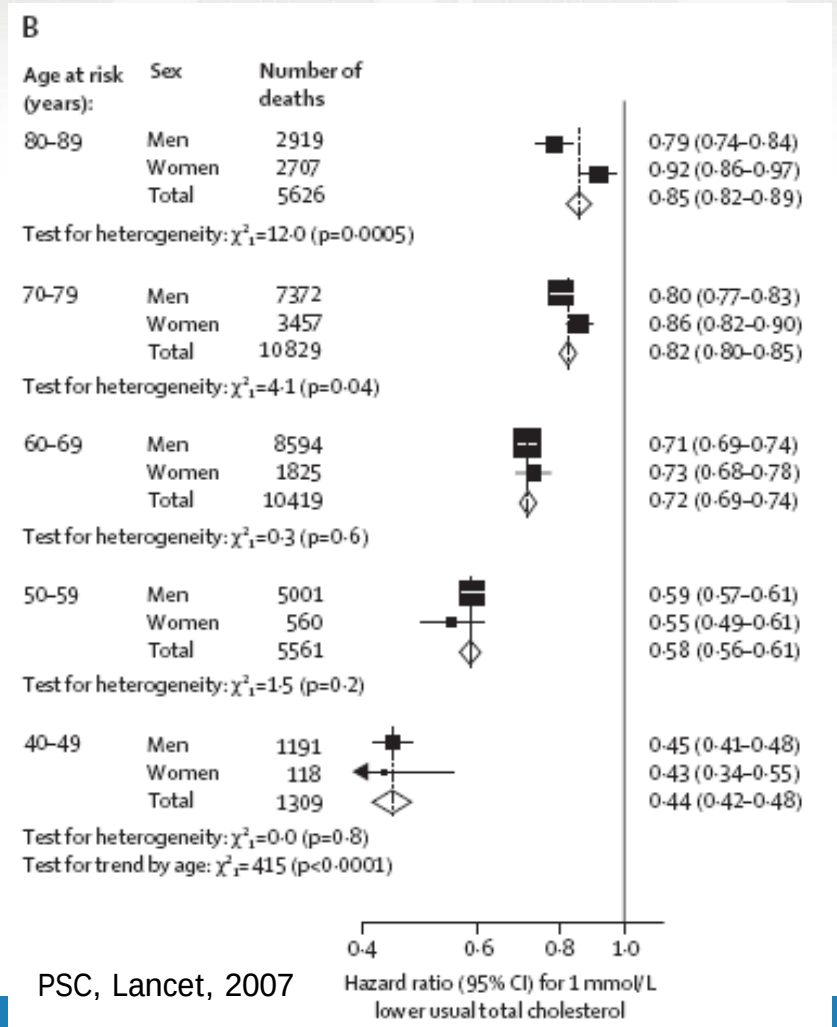
Age attenuation of relative risks

Total cholesterol



PSC, Lancet, 2007

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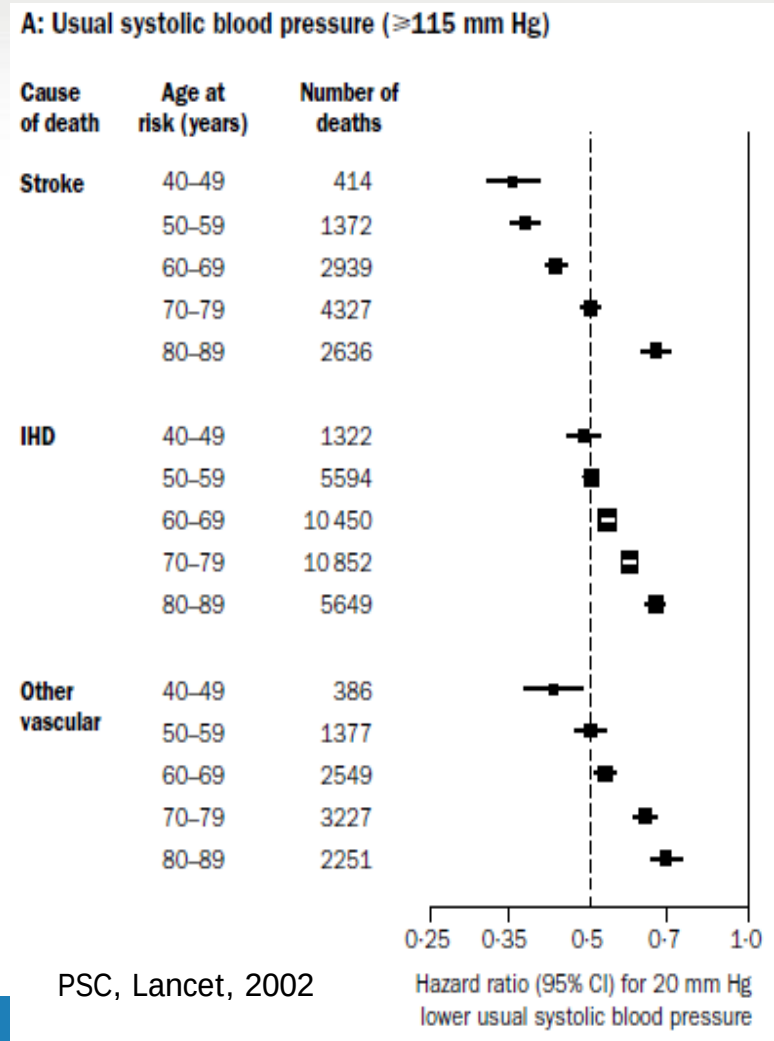

PSC, Lancet, 2002

Conclusions

Current analyses will describe the risk transition better by fully estimating temporal changes in a variety of settings

A major goal of current research is to quantify surveillance needs: how often should data be collected, and what types of data are needed to measure trends in risk exposure?

CRA analysis does not account for cohort effects, i.e., future effects of current exposures among young adults

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