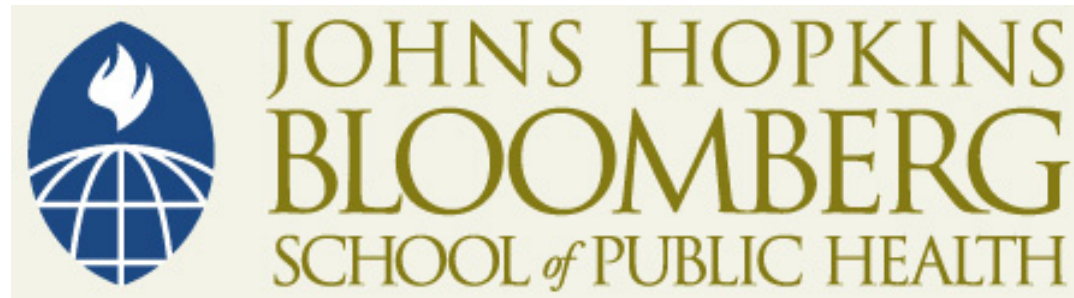


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Equity in Health and Health Services

Barbara Starfield, MD, MPH

Primary Care Course
(Based on Cape Town, South Africa, 2007;
and Barcelona, Spain, 2009)

This presentation first provides a definition of equity that is amenable to measurement of ill health. It then discusses major findings concerning influences on equity in health, findings from research on achievement of equity in health in various countries, and indicators of equity for future studies of equity in health.

Equity in health is the absence of systematic and potentially remediable differences in one or more aspects of health across population groups defined geographically, demographically, or socially.

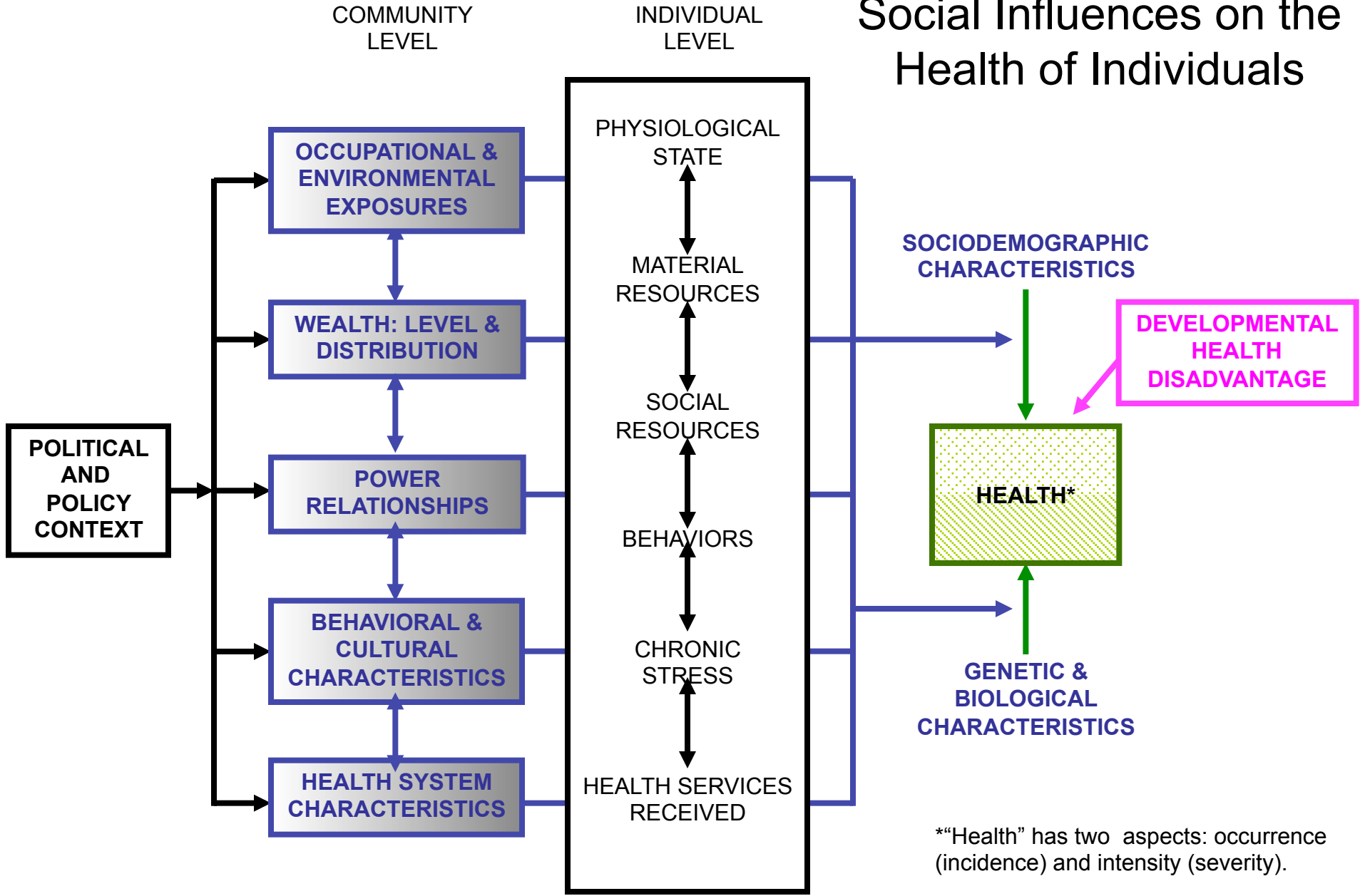
What Are “Systematic” Differences?

“Systematic” means consistent differences and is at the heart of the distinction between inequalities across individuals and inequities. What makes differences “systematic” is a pattern of influences that operate similarly to create differences in health.

Equity Research Is Not the Same as Social Determinants Research

- Social determinants research assumes an individual model of health.
- Equity research assumes a population model of health.
- Social determinants research generally neglects types of influences on health that are other than social.
- Equity research includes consideration of political, policy, environmental, and health systems effects, and their inter-relationships.

Social Influences on the Health of Individuals



*"Health" has two aspects: occurrence (incidence) and intensity (severity).

Shading represents degree to which characteristics are measured at the ecological level (lighter color) or at the individual level aggregated to community.

Characteristics of Social Influences on Health

- They are interactive. Mechanisms of effect cannot be specified, except theoretically, and may differ from one population to another.
- Their relative frequency varies from one population to another so that relative risk, but not attributable risk, is the focus of attention.

Life Course Influences on Health

1. Early influences

- On growth and development, e.g., manifested in intrauterine growth retardation, short stature, neonatal mortality, coronary artery disease
- On infections and their sequelae, e.g., chronic respiratory disease, rheumatic heart disease, gastric cancer, hemorrhagic stroke, hypertension

2. Later influences

- Interactions of sociodemographic (i.e., age) characteristics and socioeconomic status, and other “social” determinants (e.g., almost all diseases)
- Preventive health services (e.g., immunizations, screening for early detection)

Generalizations from Equity Research

Variability in health across geographic areas is greatest among the lower social classes.

The level of geographic aggregation influences the nature and extent of inequities.

The weakest association between income and health is in old age. Social advantage is damaging at any stage in life, but is especially harmful when experienced early in life.

The effects of social class appear to be cumulative over the life course.

Sources: Regidor et al, BMJ 1997; 315:1130-5. Judge & Paterson. Poverty, Income Inequality and Health. Treasury of New Zealand, 2001. Benzeval et al. Income and health over the life course: evidence and policy implications. In: Graham. Understanding Health Inequalities. Open University Press, 2000. Power et al, Am J Public Health 2005; 95:1396-1402.

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Generalizations from Equity Research

People in lower social strata have not only more illnesses, but also more comorbidity.

Differences in health across the social strata are greater for severity than for occurrence of illness.

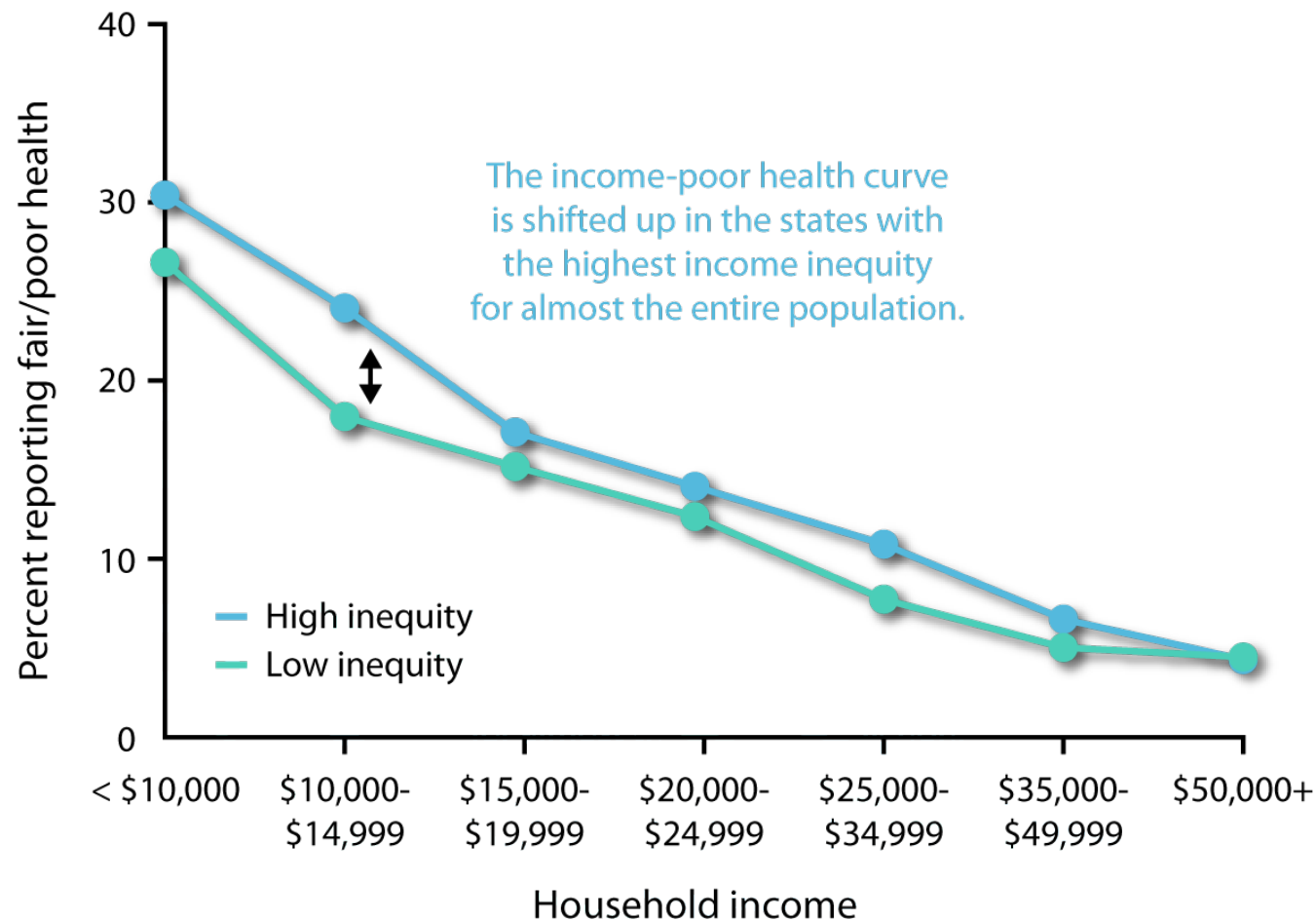
Generalizations from Equity Research

Socioeconomic differences in disability-free life expectancy are more pronounced than differences in life expectancy.

Mortality rates are higher in lower SES for almost all causes.

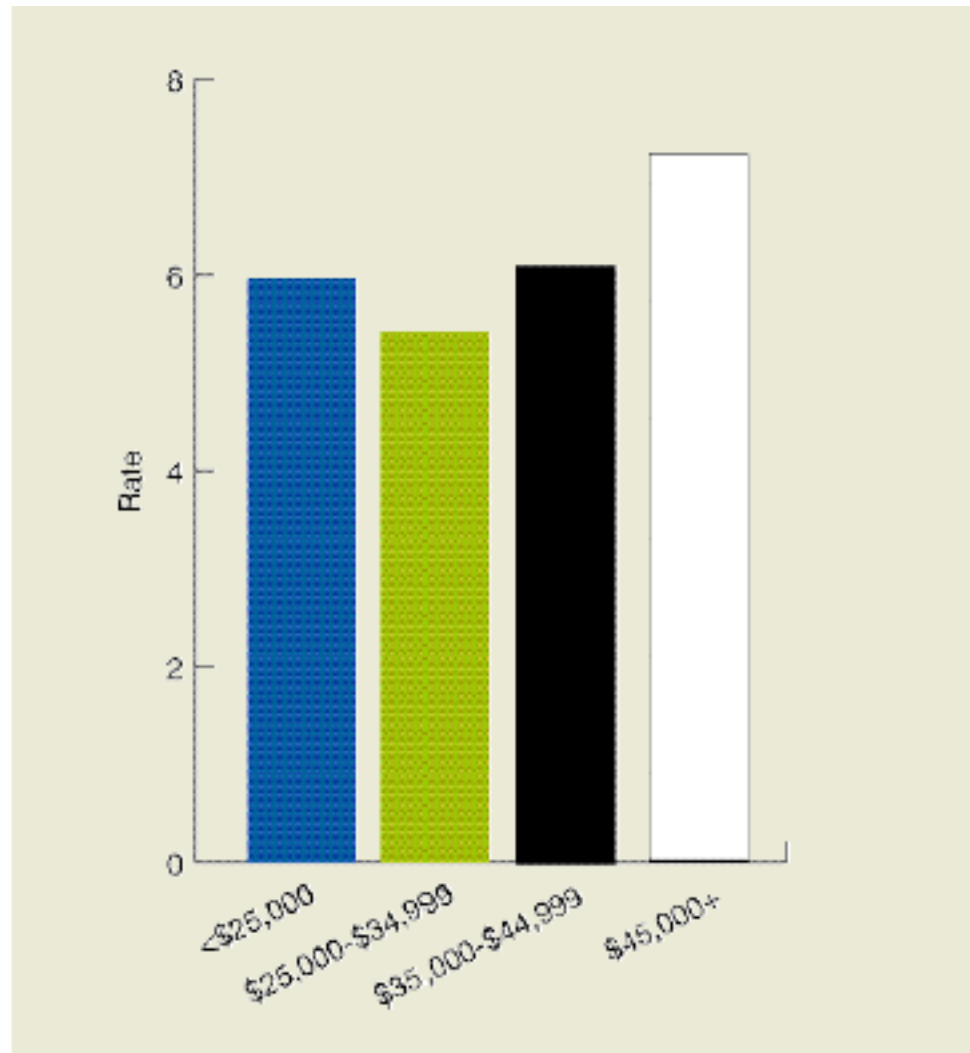
The contributions of specific causes to differences in total mortality varies between countries.

Self-Rated Health and Individual Household Income



Adapted by CTLT from Kawachi and Kennedy, Health Services Research 1999;34:215-227;
Daniels et al, Daedalus 1999;128:215-51.

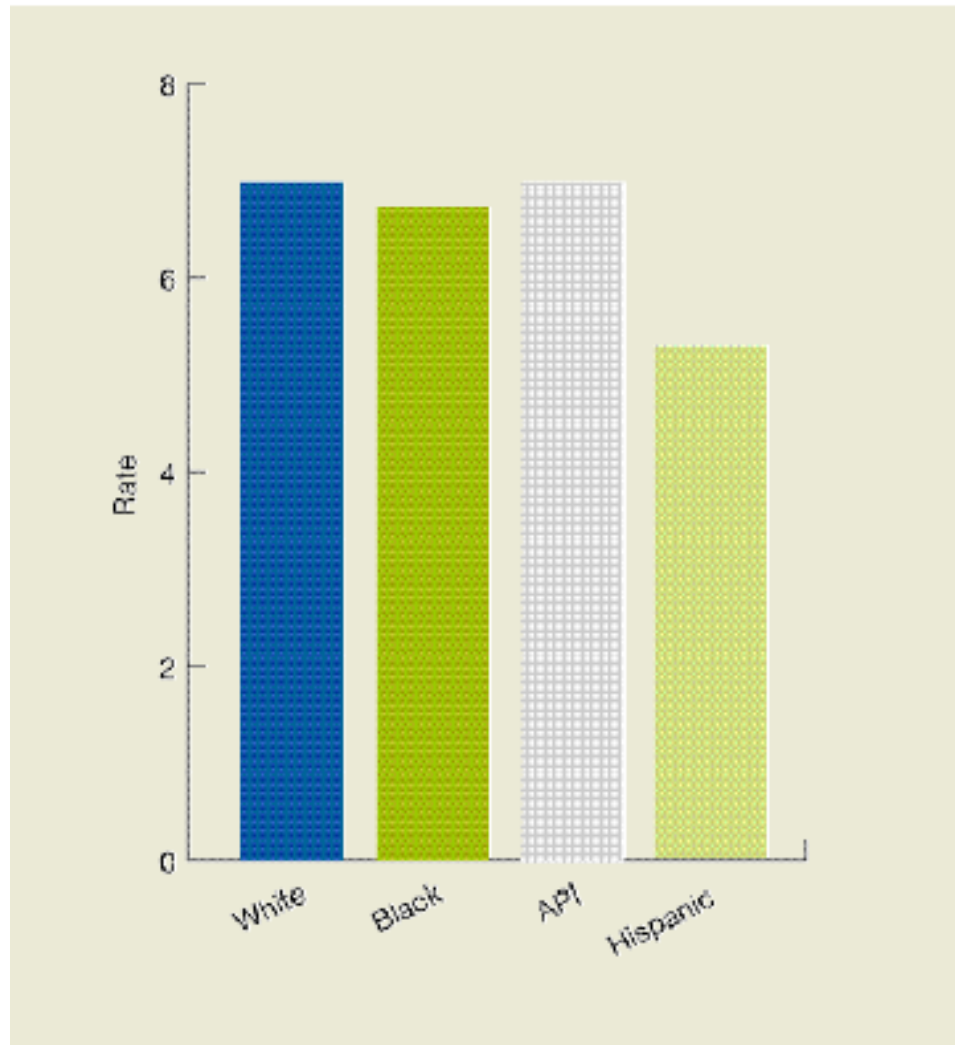
Errors of Commission: Birth Trauma Injury per 1,000 Live Births by Area Income, 2001



Source: AHRQ. 2004 National Healthcare Disparities Report. Rockville, MD: AHRQ 2004.

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QEC 6402 n

Errors of Commission: Birth Trauma Injury per 1,000 Live Births by Race/Ethnicity, 2001



Source: AHRQ. 2004 National Healthcare Disparities Report. Rockville, MD: AHRQ 2004.

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Health services exert their effect primarily on equity in progression of illness and case-fatality rates.

Occurrence of illness is primarily affected by other types of influences.

Mortality rates and life expectancy are influenced by both, so that it is more difficult to sort out mechanisms of effect.

Generalizations from Equity Research

Disadvantaged populations do not do better living in advantaged areas (US data).

Wealthier people living in disadvantaged areas have compromised ACCESS to health services and consequent poorer health potential (US data).

Generalizations from Equity Research

Different types of inequity are related.

Gender	Quintile	LE@birth	Yrs/% differ
Male	5--poorest	73.1	7.6 9.4%
Female		80.7	
Male	4	75.9	5.9 7.8%
Female		81.8	
Male	3	76.7	5.8 7.0%
Female		82.5	
Male	2	77.2	4.9 6.0%
Female		82.1	
Male	1--richest	78.1	4.2 5.1%
Female		82.3	
Canadian data 1996			

Hypothesized Influence on Equity in Health

	INCOME INEQUALITY	
	Little effect	Large effect
High “stress”	Smoking Ischemic heart disease Lung cancer (Finland, Denmark)	Suicide Homicide (US)
Low material/social supports, including primary care	Other cancers Stroke Postneonatal mortality	Infant mortality Low birth weight Child survival (US)

Improving average health, i.e., population-wide rates of morbidity and mortality, is often associated with increasing inequities, because new and effective interventions often reach the more advantaged first, thus increasing the variability within the population. Also, influences with high relative risk of poor health are not necessarily appropriate targets for equity-focused interventions, as their frequency in the subpopulations may be low and hence not contribute much to reductions in inequity overall.

Examples of How Average Mortality Ratios Conceal Meaningful Differences between Poor and Rich Populations

	Gap worse	Gap better
Better average health (lower mortality rate)	Peru Mean IMR: 49.9 Poor: 78.3 Rich: 19.5	Uzbekistan Mean IMR: 43.5 Poor: 49.5 Rich: 46.8
Worse average health (higher mortality rate)	Mozambique Mean IMR: 147.4 Poor: 187.7 Rich: 94.7	Haiti Mean IMR: 87.1 Poor: 93.7 Rich: 74.3

IMR = infant mortality rate

Source: Tugwell et al, Lancet 2006; 328:1128-30.

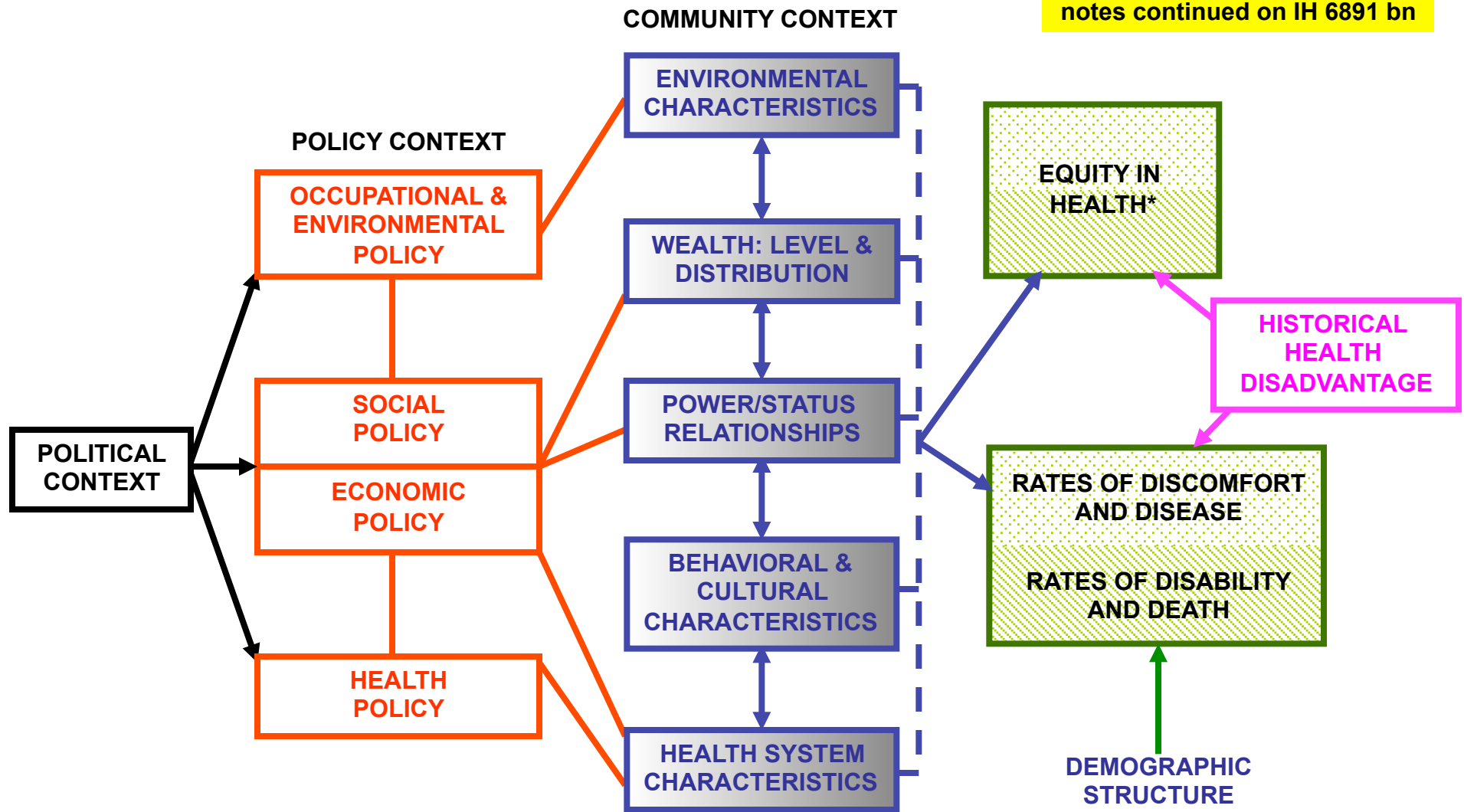
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The “determinants” of health inequity are not only “social”; they are “societal,” involving all aspects of society.

In order to develop strategies to improve equity in health, it is necessary to have a clear picture of the various influences on health and their interactions. Conventional models of “determinants of health” (even those characterized as “population health” models) are more oriented to determinants of health in individuals than populations. In reality, there need to be two models of health: one directed at understanding influences on individual health and one directed at understanding influences on population health.

Societal Influences on Population Health and Equity

notes continued on IH 6891 bn

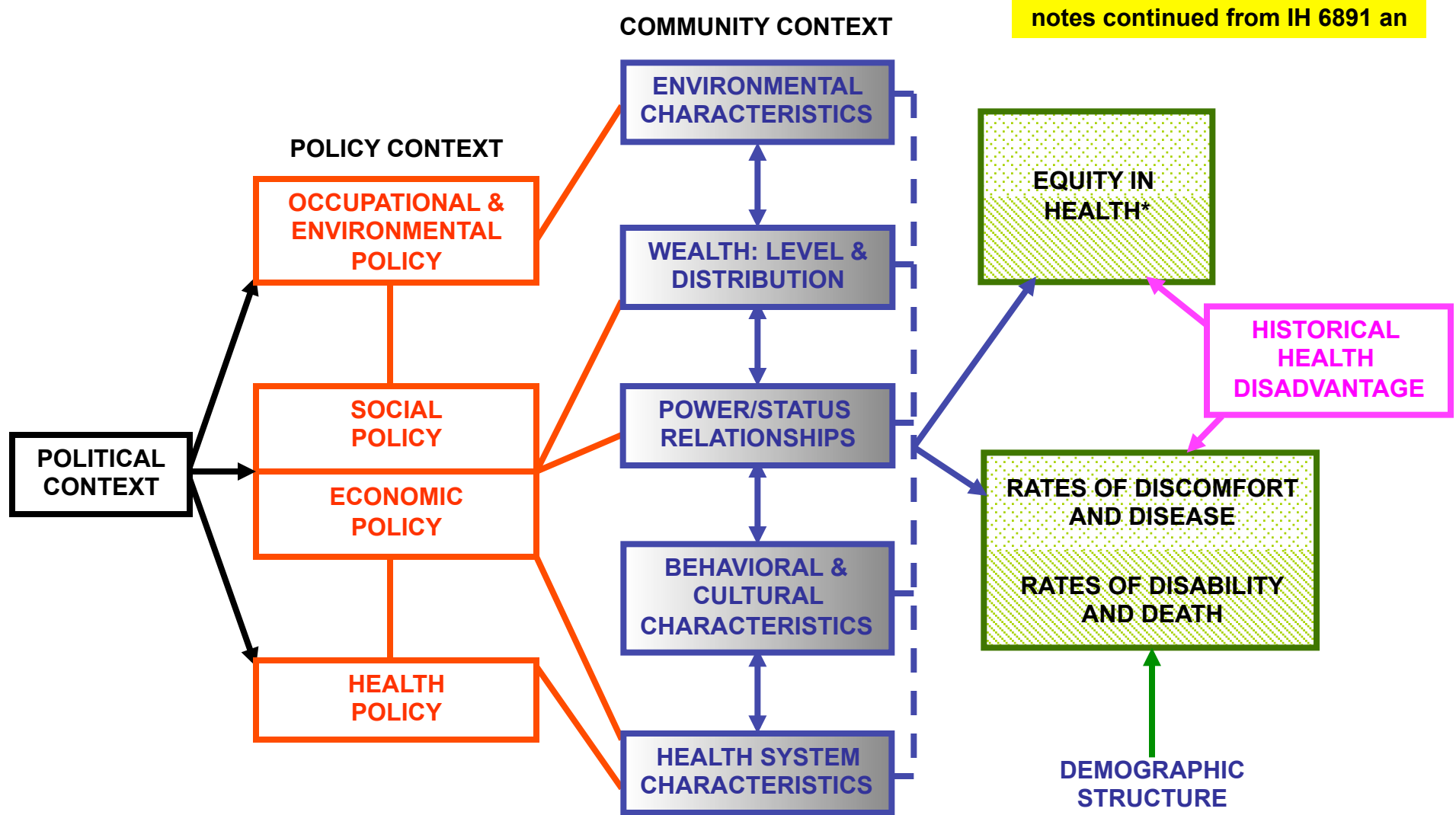


Dashed lines indicate the existence of pathways through individual-level characteristics that most proximately influence health.

Shading represents degree to which characteristics are measured at the ecological level (lighter color) or at the individual level aggregated to community.

*"Health" has two aspects: occurrence (incidence) and intensity (severity).

Societal Influences on Population Health and Equity (continued)

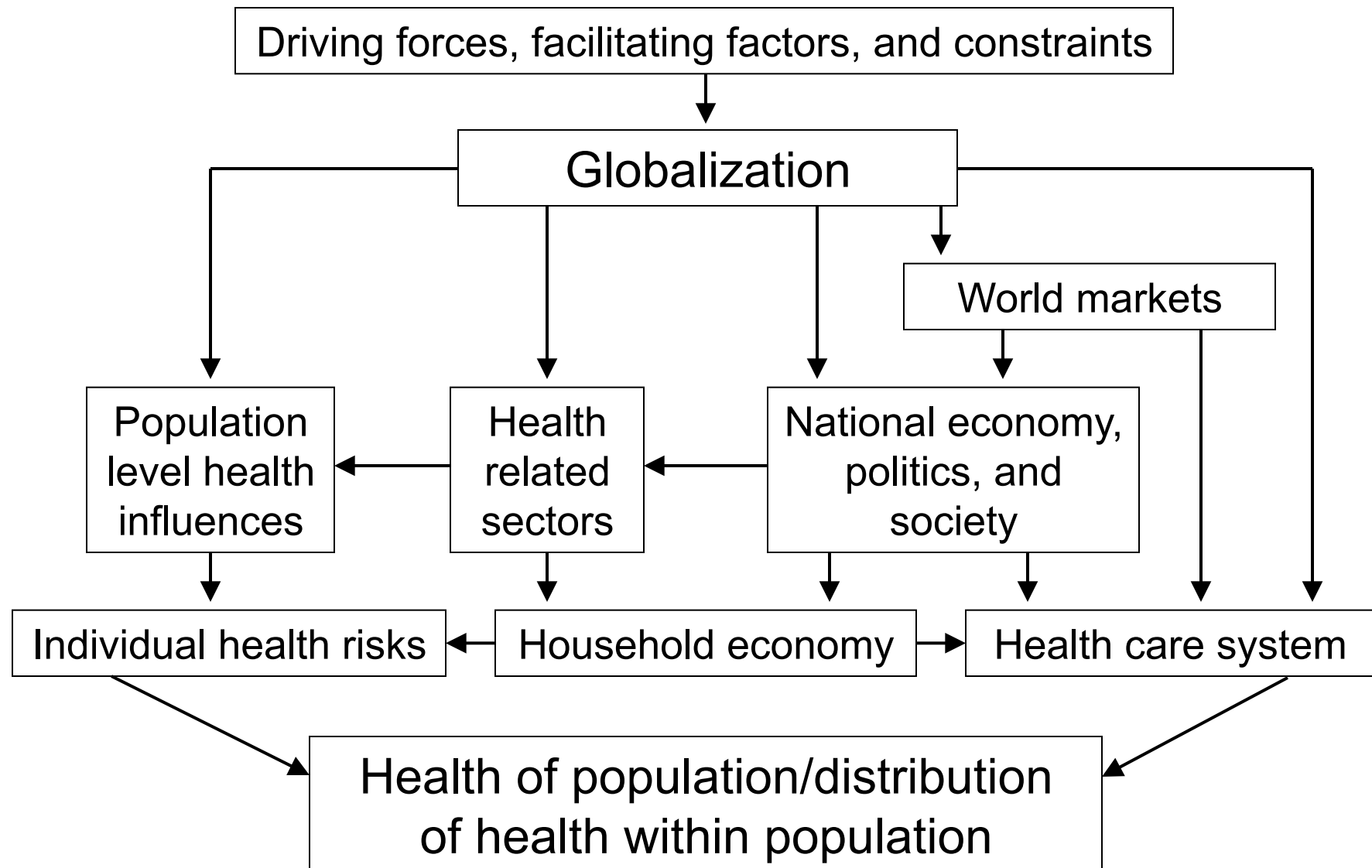


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Conceptual Framework for Globalization and Health



Manifestations of Equity in Health Financing (WHR 2000, Chapters 2 and 5)

- Low cost sharing at point of service
- Equal minimum benefit packages
- Pooling of resources, e.g., community rating
- Regulation to assure universal inclusion in pools

Manifestations of Equity in Health Financing (continued) (WHR 2000, Chapters 2 and 5)

- Large purchasing units
- Combination of payment mechanisms to achieve good health care practices
- Global budgets rather than line-item budgets

The World Health Report 2000 ranked countries on equity of financing. Their measure used a ratio of spending on health divided by household expenditures except for food, which assumes that all households should spend the same proportion of their non-food dollars on health services.

This measure is not consistent with WHO's own discussion of fairness in financing.

Health System Influences on Health

- Public expenditures on health^{1, 2, 3}
- Method of healthcare financing, supply of physicians
- Orientation of health system^{4, 5}

Sources: ¹Navarro & Shi, Soc Sci Med 2001; 52:481-91. ²Or. Exploring the Effects of Health Care on Mortality across OECD Countries. OECD, 2001. ³Houweling et al, Int J Epidemiol 2005; 34:1257-65. ⁴Starfield et al, Milbank Q 2005; 83:457-502. ⁵Mackenbach, Int J Health Serv 2003; 33:523-41.

Starfield 05/06
IH 6579

Countries that have better average health status tend to have less inequality in health status.

System factors and health policy are very important.

Primary care-oriented countries rank higher on features critical to equity.

System Features Important to Primary Health Care

	Resource Allocation (Score)	Progressive Financing*	Cost Sharing	Compre- hensiveness	
Belgium	0	0	0	0	
France	0	0	0	0	
Germany	0	1	2	0	
US	0	0**	0	0	
Australia	1	2	2	2	
Canada	1	2	2	2	
Japan	1	2	1	1	
Sweden	2	2	1	1	*0=all regressive
Denmark	2	2	2	2	1=mixed
Finland	2	2	1	2	2=all progressive
Netherlands	2	0	2	2	**except Medicaid
Spain	2	2	2	1	
UK	2	2	2	2	

Sources: Starfield. Primary Care: Balancing Health Needs, Services, and Technology. Oxford U. Press, 1998. van Doorslaer et al. Equity in the Finance and Delivery of Health Care: An International Perspective. Oxford U. Press, 1993.

Starfield 11/06
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For-profit and Non-profit Primary Care in New Zealand: Financial and Cultural Barriers to Access

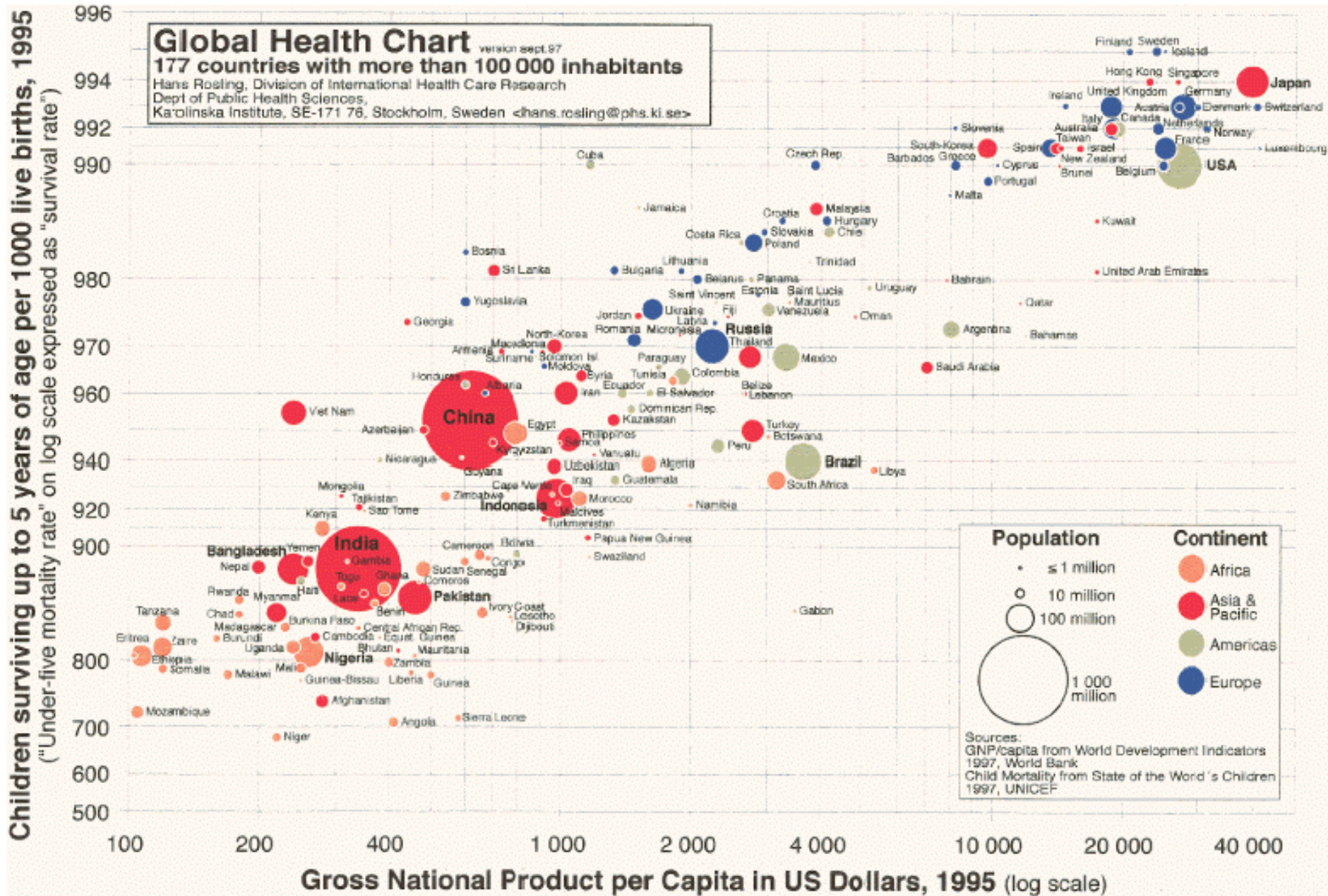
	For-profit	Non-profit
Patient charges	More by up to a factor of 10	(p<0.001)
Maori staff	0.4	4.3 (p<0.001)
Pacific staff	0.1	1.2 (p<0.001)

Equity Effect of For-profit and Non-profit Primary Care in New Zealand: Management and Quality

	For-profit	Non-profit
Community needs assessment	12%	41% (p<0.001)
Written policy on complaints	48%	88% (p<0.001)
Written policy on quality management	23%	75% (p<0.001)

For-profit and Non-profit Primary Care in New Zealand: Sociodemographic Characteristics

	For-profit	Non-profit
Maori or Pacific	15%	60%
Most deprived quintile	17%	53%



Source: Karolinska Institute: www.whc.ki.se/index.php. All Rights Reserved.

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 IC 5644 n

Share of Public Spending on Health among Countries with Similar GNP per Capita But Very Disparate Child Survival (to Age 5) Rates, 1995

Ratio*: percent of expenditures for health from the government to poorest 20% vs. richest 20% of population				
High child survival		Low child survival		Additional children lost per 1000
Sri Lanka	1.1	Ivory Coast	0.3	150
Malaysia	2.6	Brazil	0.4	45
Costa Rica	2.1	South Africa	0.9	55
Jamaica	3.3	Ecuador	0.2	25
Nicaragua	1.0	India	0.3	50
Egypt	0.6	Ivory Coast	0.3	100

*Ratios of one or more signify a greater share of government expenditures to poorest segment of population.

Sources: Calculated from Karolinska Institute, Global health chart, www.whc.ki.se/index.php. Victora et al, Lancet 2003; 362:233-241. Castro-Leal et al, Bull World Health Organ 2000; 78:66-74. Carr. Improving the Health of the World's Poorest People. Population Health Bureau, 2004.

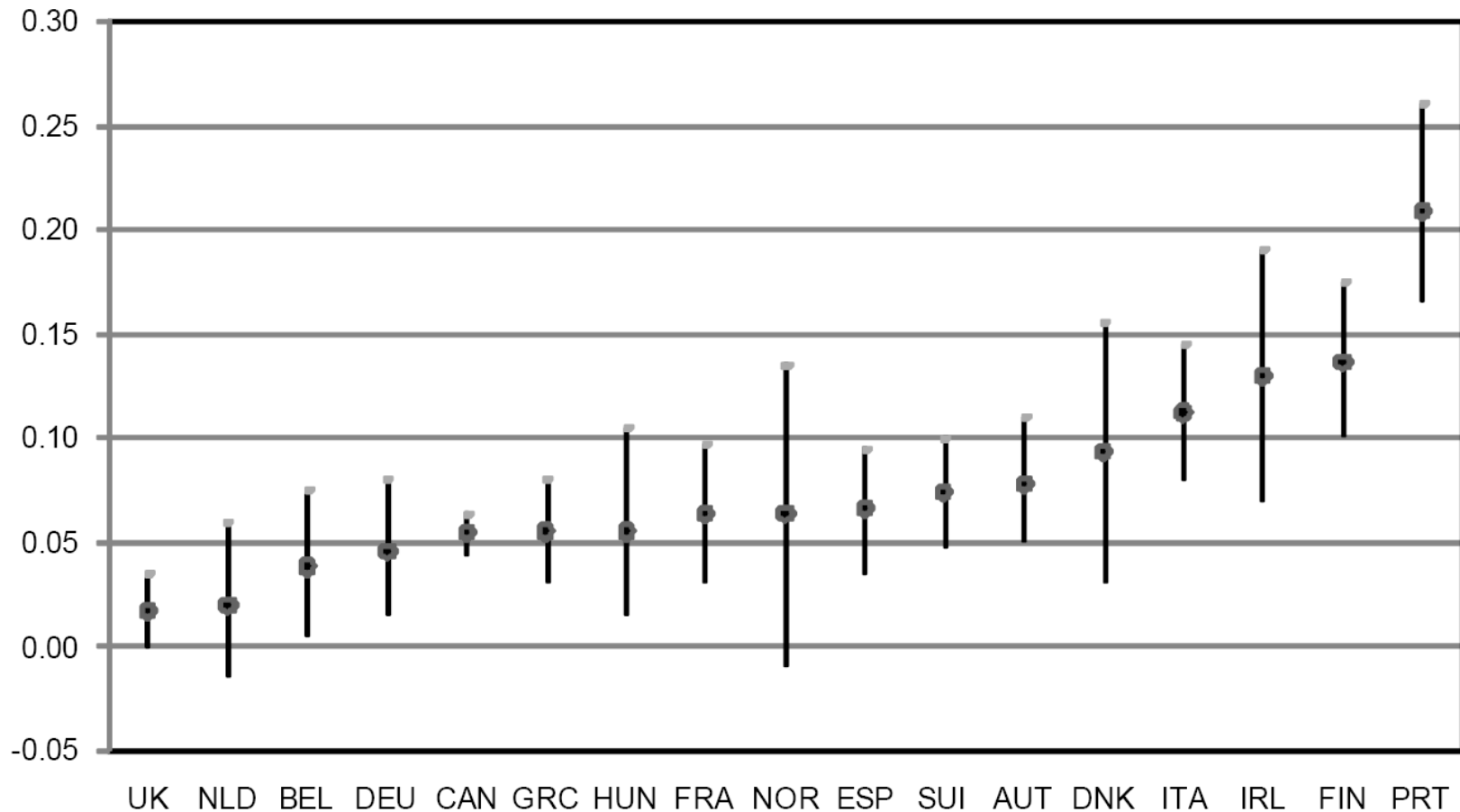
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In 7 African countries

- The highest 1/5 of the population receives well over twice as much financial benefit from overall government health spending (30% vs 12%).
- For primary care, the poor/rich benefit ratio is much lower (23% vs 15%).

“From an equity perspective, the move toward primary care represents a clear step in the right direction.”

Horizontal Inequity Indices for Specialist Care Use in 17 Countries, 2000 or Nearest Available Year



Note: Specialist care is inequitable (in this case, favoring high income groups) if the 95% confidence limit is significantly different from zero. This is so for all countries, except the United Kingdom, the Netherlands, and Norway.

Sources: de Looper & Lafortune, OECD Health Working Paper No. 43 ([http://www.ois.oecd.org/olis/2009doc.nsf/LinkTo/NT00000DE2/\\$FILE/JT03260782.PDF](http://www.ois.oecd.org/olis/2009doc.nsf/LinkTo/NT00000DE2/$FILE/JT03260782.PDF)).

van Doorslaer & Masseria, OECD Health Working Paper No. 14 (<http://fiordiliji.sourceoecd.org/vl=22046792/cl=47/nw=1/rpsv/cgi-bin/wppdf?file=5lgsjhvj7phb.pdf>).

Starfield 05/09
EQ 7236 n

Primary Care Physicians and Equity: Evidence-Based Summary

In areas with low social inequity, the additional effect of primary care is small.

In areas of high social inequity, the additional effect of primary care is larger.

Reductions in Inequality in Health by Primary Care: Self-Reported Health, 60 US Communities, 1996

Percent reporting fair or poor health

- **Areas with low income inequality** (mostly homogeneous high income areas)
 - No effect of primary care resources*
- **Areas with moderate income inequality**
 - 16% increase in areas with low primary care resources*
- **Areas with high income inequality**
 - 33% increase in areas with low primary care resources

*compared with median # of primary care physicians to population ratios

Reductions* in Inequality in Health by Primary Care: Stroke Mortality, 50 US States, 1990

Areas with low income inequality (mostly homogeneous high income areas)

High primary care resources	1.3% decrease in mortality
Low primary care resources	2.3% increase in mortality

Areas with high income inequality

High primary care resources	2.3% decrease in mortality
Low primary care resources	1.1% increase in mortality

*compared with population mean

Reductions* in Inequality in Health by Primary Care: Postneonatal Mortality, 50 US States, 1990

Areas with low income inequality (mostly homogeneous high income areas)

High primary care resources

0.8% decrease in mortality

Low primary care resources

1.9% increase in mortality

Areas with high income inequality

High primary care resources

17.1% decrease in mortality

Low primary care resources

6.9% increase in mortality

*compared with population mean

Equity of Access: Country Rankings

	< average income					> average income				
8 items: 5 ranks*	U K	A U S	C A N	N Z	U S	U K	A U S	C A N	N Z	U S
Within country (range 1-40)	11	19	25	26	39	15	28	24	25	29
Overall rank (range 1-5)	1	2	3	4	5	1	4	2	3	5
Percentage point difference	1	2	4	3	5					

*Lower rank number = better access.

Source: Schoen et al, Health Aff 2004; W4:487-503.

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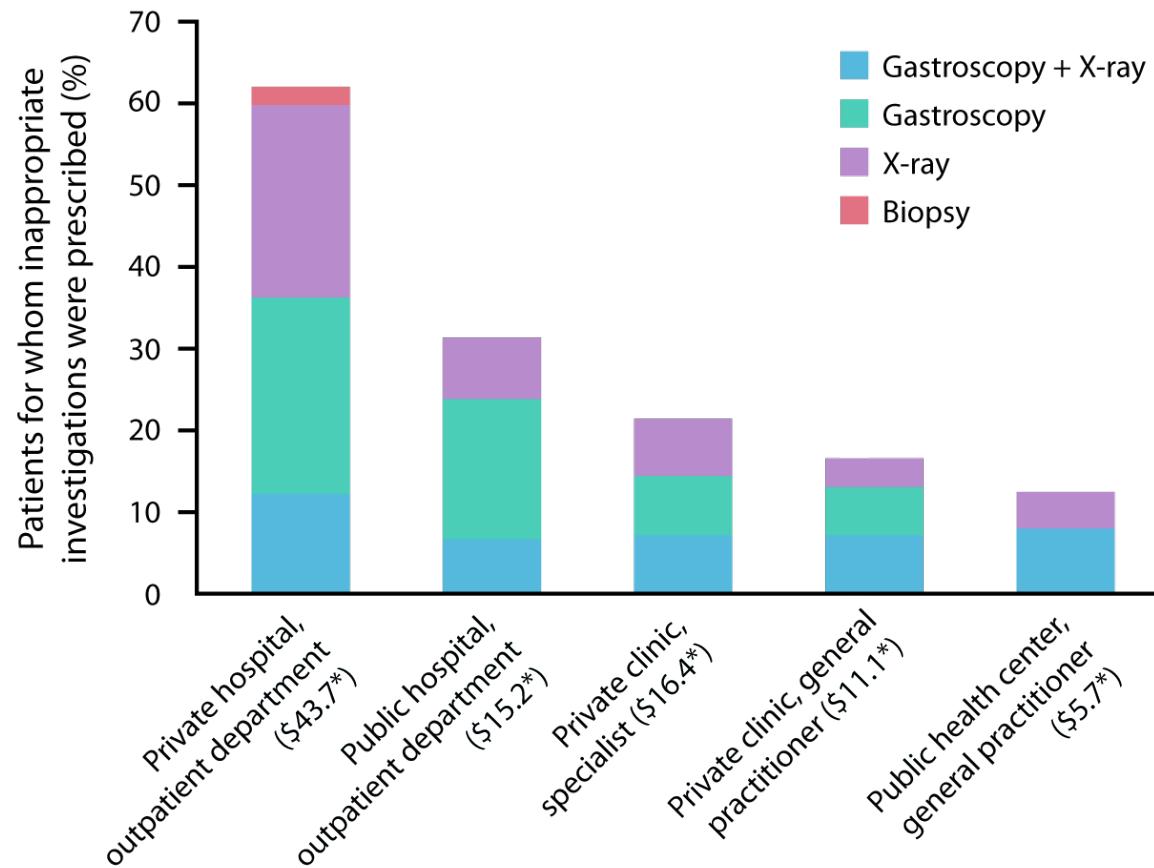
Percentage Reduction in Under-5 Mortality: Thailand, 1990-2000

Poorest quintile (1)	44
(2)	41
(3)	22
(4)	23
Richest quintile (5)	13
Rate ratio (Q1/Q5)	55
Absolute difference (Q1-Q5)	61

Policy changes:

- 1989 At least one primary care health center for each rural village
 - 1993 Government medical welfare scheme: all children less than 12, elderly, disabled
 - 2001 Entire adult population insured
- Activities of Rural Doctors' Society

Inappropriate Investigations Prescribed for Simulated Patients Presenting with a Minor Stomach Complaint, Thailand^{a,b}



^aObservation made in 2000, before introduction of Thailand's universal coverage scheme.

*Cost to the patient, including doctor's fees, drugs, laboratory and technical investigations.

Adapted by CTLT from Pongsupap & Van Lerberghe, Trop Med Int Health;11:81-9.

A comparison of age-adjusted survival from breast cancer showed that

- Low SES is strongly associated with decreased survival in US, but not Canada.
- The survival advantage in Canada is present in low income areas only.
- The survival advantage in Canada is much larger at ages under 65.
- The Canadian survival advantage is larger for later stage diagnosis. That is, there is almost certainly a medical care benefit to equity in the Canadian context.

Studies in other developing and middle income countries also show benefit from primary care reform.

- In Bolivia, reform in deprived areas lowered under-5 mortality rates compared with comparison areas.
- In Costa Rica, primary care reforms in the 1990s decreased infant mortality and increased life expectancy to rates comparable to those in industrialized countries.
- In Mexico, improvements in primary care practices reduced child mortality in socially deprived areas.

Perinatal Indicators

- Low rates of:
 - undesired pregnancies
 - perinatal complications
 - pregnancy-related complications
 - postneonatal mortality
 - neonatal death from tetanus
 - maternal mortality

Infancy Indicators

- Low birth weight (specialty care)
- Postneonatal mortality (primary care)
- Breastfeeding*
- Tetanus toxoid*
- HIV/AIDS

*especially developing countries

Source: Jones et al, Lancet 2003; 362:65-71.

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EQ 5645

Childhood Indicators

- Immunizations (primary care)
 - Child survival to age 5
 - From external causes (public health)
 - From “medical” causes (primary and specialty care)
 - Malaria protection and treatment*
 - Management of gastroenteritis*
 - HIV/AIDS*
 - Treatment of respiratory infection*
- all primary care**

*especially developing countries

Source: Jones et al, Lancet 2003; 362:65-71.

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EQ 5646

Teenage Period Indicators (all primary care)

- Preventive and health-promoting behaviors, especially those not related to specific diseases
- Adverse effects of medications
- Rates of attempted suicide
- Emergency visits for asthma
- Hospitalizations for ambulatory care sensitive conditions

Early and Middle Adulthood Indicators (all primary care)

- Low birth weight of offspring
- Breastfeeding, seat belts, physical activity
- Low smoking rates
- Asthma death rates
- Hypertension and cerebrovascular disease: premature mortality and age-adjusted death rates
- Hospitalizations for ambulatory care sensitive conditions
- Suicide rates
- Symptoms of peptic ulcers
- Adverse effects of medications

Elucidation of pathways is necessary to devise appropriate interventions.¹

Knowing about the pathways to poor health and inequity in health is important. Yet, most “models” of influences on health do not consider pathways and interactions within the pathways that may operate differently in different populations. Even newer conceptualizations² that focus specifically on societal influences do not explicitly recognize pathways and interactions.

Specific disease-oriented interventions will not change inequities in health because the socially disadvantaged are more vulnerable to almost all diseases.

Universal social programs are critical to reducing inequities in health, although they may have to be tailored to the special needs of particular disadvantaged groups. A health system oriented around a strong primary care base is one example of such a strategy.