Demography

Key point

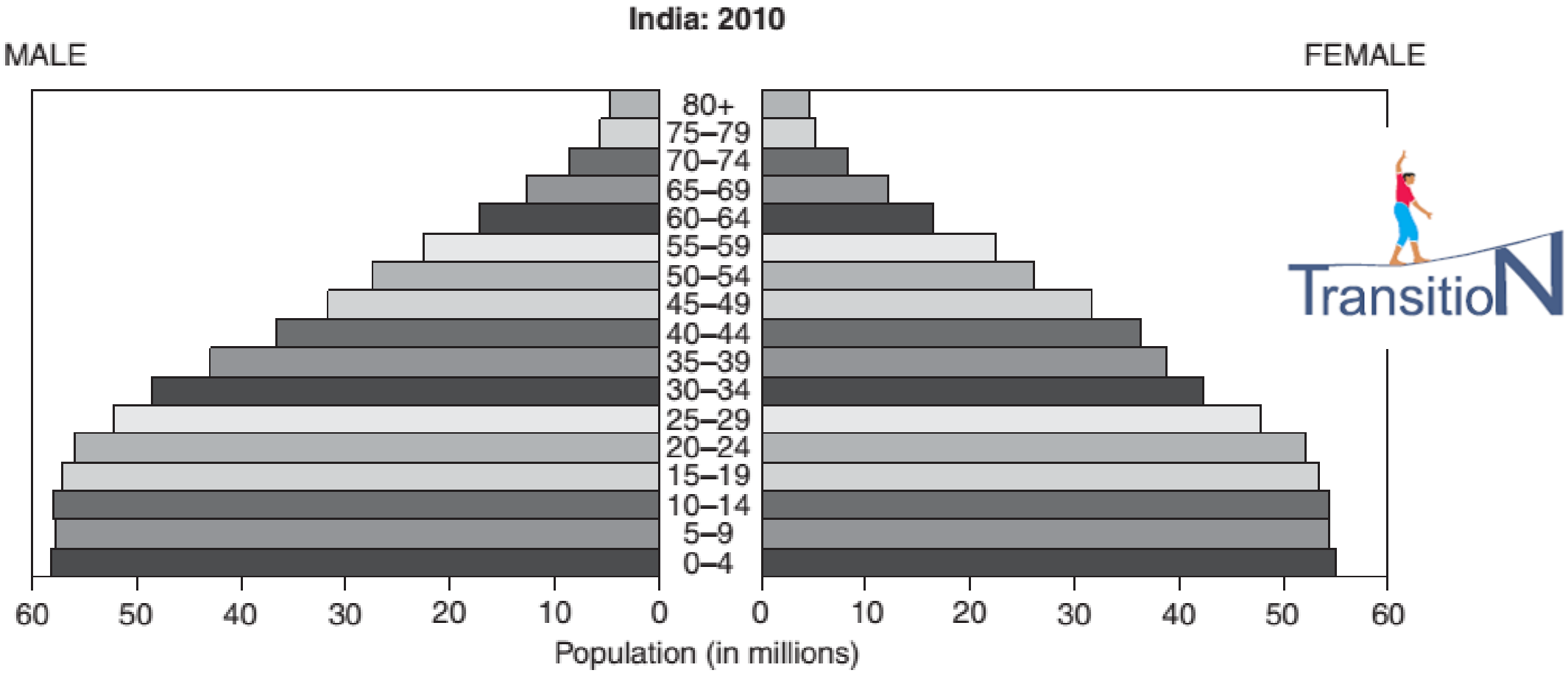
- جمعیت شناسی (دموگرافی) مطالعه علمی جمعیت های انسانی است
- برای برنامه ریزی بهداشتی مداخلات بهداشت عمومی دانش ساختار جمعیت حائز اهمین می باشد- ساختار جمعیتی می تواند به صورت یک هرم سنی نمایش داده شود
- افزایش یا کاهش جمعیت ها بسته به میزان موالید، مرگ و میر و مهاجرت ها دارد
- مفاهیم گذارهای دموگرافیک، اپیدمیولوژیک و سلامت در تشریح تییرات عمده در ساختار های جمعیتی، الگوی بیماریها در کشورهای مختلف کمک کننده می باشند.
- اندازه گیری آماره های دموگرافیک مشکل می باشد و معمولا از مدل سازی های مختلف برای ایجاد داده های قابل قیاس در دنیا استفاده می شود.

Population structure

- اطلاع از ساختار جمعیتی همچون تعداد، درصد زنان و مردان در گروههای سنی مختلف در برنامه ریزی های مداخله ای پیشگیریانه و مراقبتهای پزشکی کاربرد دارد.
- یکی از شیوه های نمایش ساختار جمعیتی استفاده از هرم جمعیتی یا هرم سنی است. این روش مناسب و ساده ای برای مقایسه ساختار جمعیتی کشور هاست و معیاری برای نشان دادن وضعیت توسعه ای آنها به حساب می آید.

- همانگونه که در اسلاید های بعدی خواهید دید هرم جمعیتی دو کشوری هند (الگوی یک کشور در حال توسعه) و انگلیس (توسعه یافته) به نمایش گذارده شده است.

Use the two pyramids to describe in words the population structure of India and the UK.



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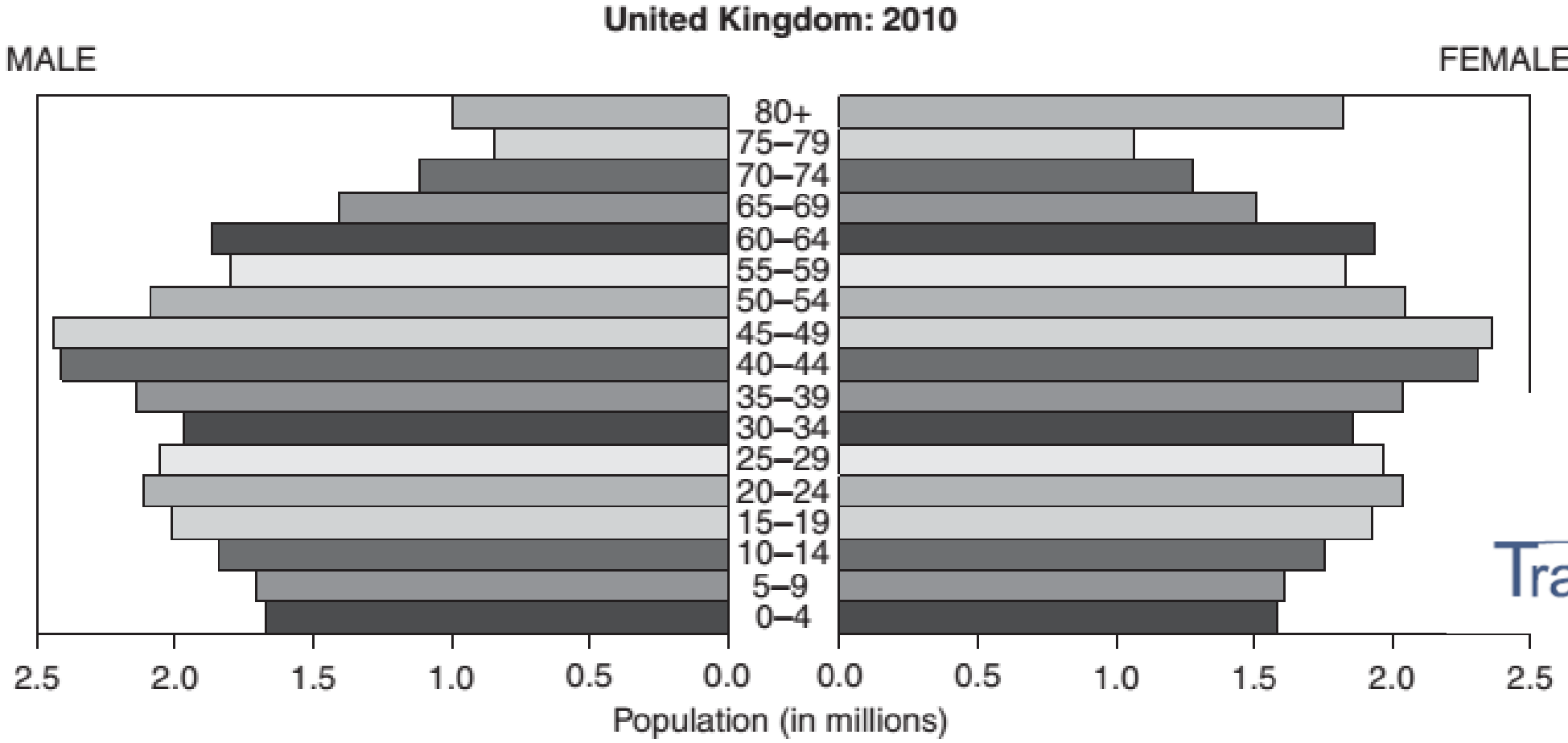


Global issues- Population trends

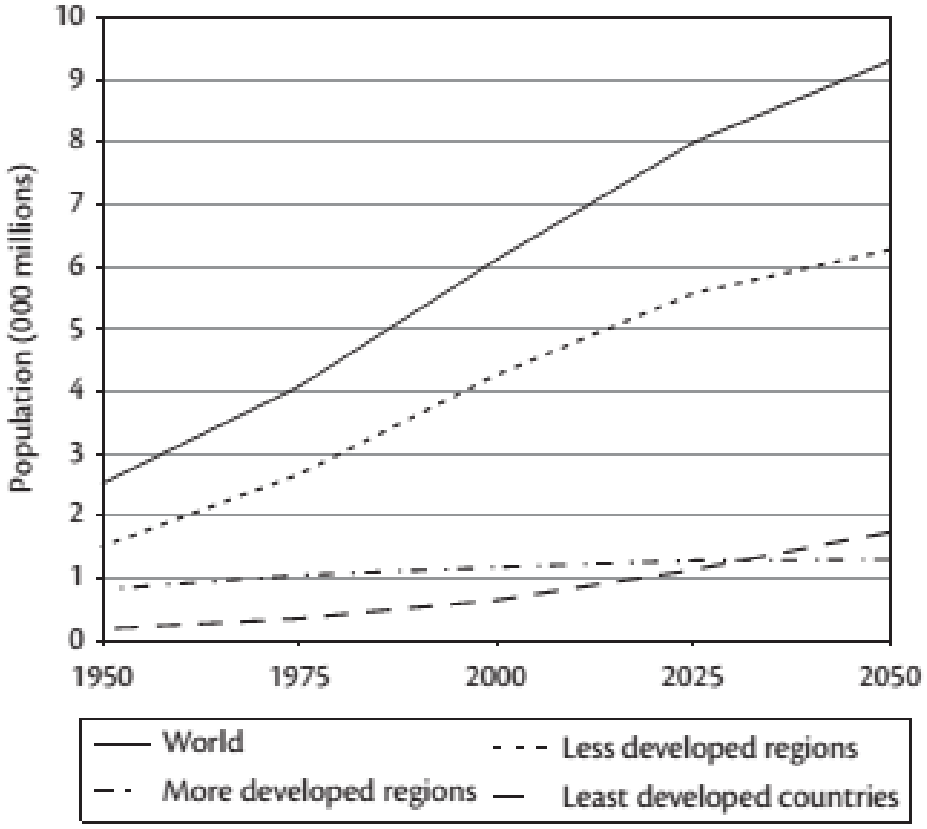


Fig. 6.3.1 Population and projected population of the world and more, less, and least developed regions, 1950–2050.

Source: data from United Nations, *World Population Prospects: The 2010 Revision*, United Nations, New York, USA, Copyright © 2011, available from http://esa.un.org/unpd/wpp/Excel-Data/population.htm.

Box 6.3.1 Country and regional classifications by level of development

- The UN classifies countries into 'more' and 'less' developed
  - The more developed category includes all of Europe, North America, Australia, New Zealand, and Japan.
  - The least developed countries are mostly in sub Saharan Africa but also include Afghanistan, Bangladesh, Cambodia, and Myanmar.
- The classification has some anomalies:
  - some wealthy Asian and Near Eastern countries are counted as less developed (e.g. South Korea, Singapore, Cyprus, Israel) whereas some poorer former Eastern bloc countries are treated as more developed (e.g. Albania, Belarus, Bulgaria).
- The World Bank employs a classification based on gross national income per capita which divides countries into high, middle, and low income groups

Assignment?
What is Human Development Index?

Table 6.3.1 Indicators of age structure, fertility, and mortality: world regions and selected countries, 2011

Region/country		Proportion (%) of population aged:		Total fertility rate	Life expectancy at birth (years)
		<15	65 and over		
Africa		41	3	4.6	58
	Sub-Saharan	43	3	5.0	56
	Northern	33	5	3.1	70
Asia		25	7	2.2	70
	India	30	5	2.6	67
	China	18	9	1.5	75
	Japan	14	23	1.4	84
	Indonesia	27	6	2.3	71
	South Korea	16	11	1.2	79
Australia		18	14	1.8	82

Europe		15	16	1.6	76
	Italy	14	20	1.4	82
	Poland	15	14	1.3	76
	Germany	13	21	1.4	80
	Sweden	15	20	1.7	81
	Ukraine	14	15	1.3	69
	UK	17	16	1.9	80
Latin America and Caribbean		27	7	2.2	74
	Brazil	25	7	1.8	73
	Chile	22	9	1.9	78
	Guatemala	38	4	3.3	71
North America		19	14	2.0	79
	United States	20	13	2.1	78
World		26	8	2.4	68

Source: data from United States Census Bureau, Population Division, International Programs Center, International Data Base, available from http://www.census.gov/population/international/data/idb/informationGateway.php.

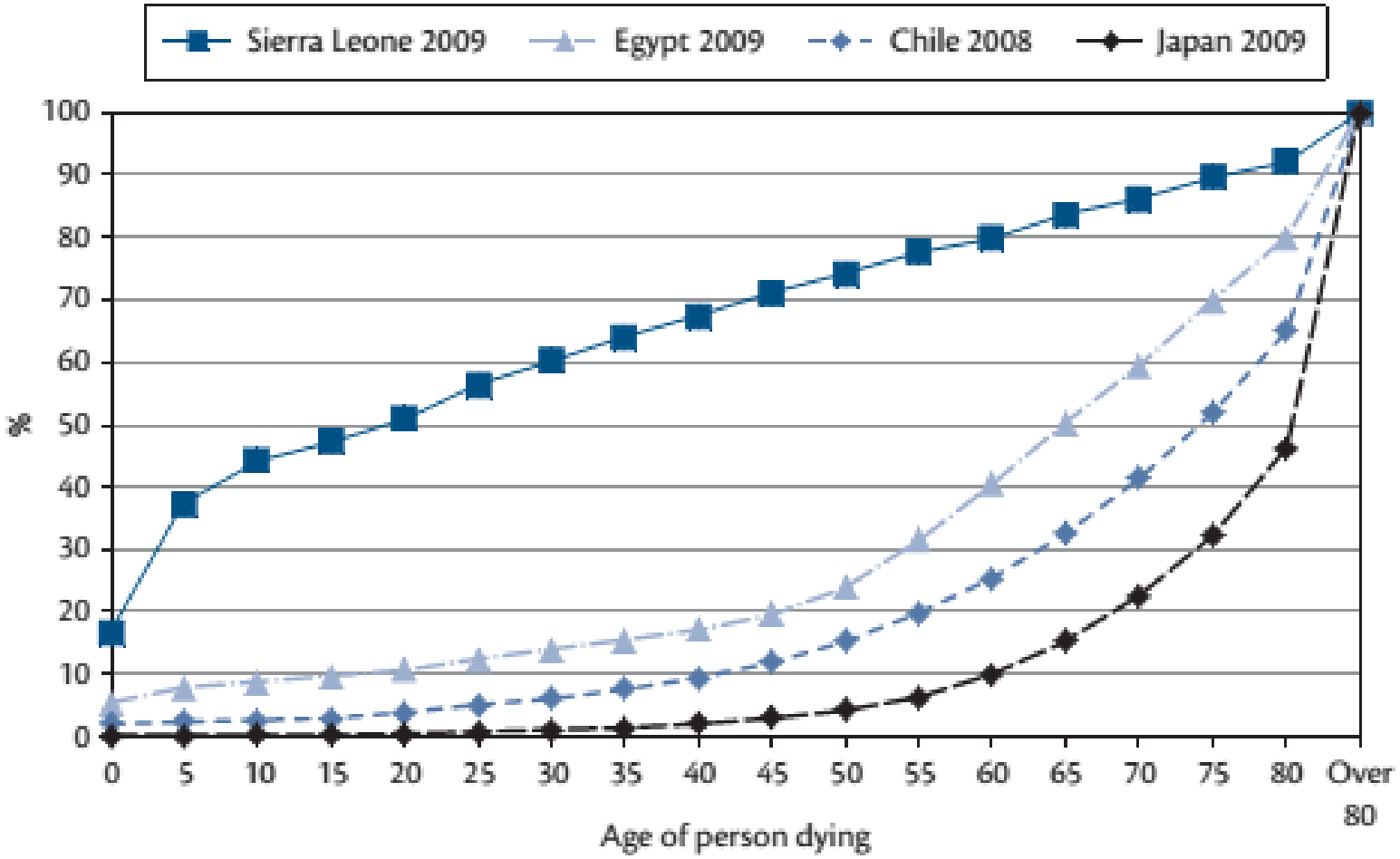


Fig. 6.3.2 Cumulative distribution of deaths by age; Sierra Leone 2009, Egypt 2009, Chile 2008, Japan 2009.

Source: data from United Nations Department of Economic and Social Affairs, Demographic Yearbook 2011, ST/ESA/STAT/SER.R/41, United Nations, New York, USA, Copyright © United Nations 2012, available from http://unstats.un.org/unsd/demographic/products/dyb/dybsets/2011.pdf

Table 6.3.2 Distribution of deaths (%) by cause group and world region, 2010

	Communicable	Non-communicable	Injuries
Global	24.9	65.5	9.6
Europe	5.1	88.3	6.6
North America	5.3	88.0	6.8
High-income Asia and Pacific	11.4	81.1	7.5
Oceania	15.1	78.1	6.9
Latin America and Caribbean	14.2	69.0	16.8
North Africa and Middle East	16.2	75.2	8.6
Asia (excl. high-income and Middle East)	23.3	66.2	10.4
sub-Saharan Africa	66.5	24.9	8.6

Source: data from Global Burden of Disease Study 2010, Mortality Results 1970–2010, Institute for Health Metrics and Evaluation (IHME), Seattle, Washington, USA, Copyright © 2012, available from http://ghdx.healthdata.org/record/global-burden-disease-study-2010-gbd-2010-mortality-results-1970-2010.

Demographic data and methods of analysis

- John Graunt, generate early life table, leading to him being dubbed the ‘father of modern demography’. he lacked data on the population at risk and could **not compute death rates**.

- Essentially all demographic analysis requires data:
- the population ‘stock’
- ‘flows’ in and out—births, deaths, and migration.
- The traditional sources of information:
  - censuses
  - vital registration systems

Reasons for population trends

- Fertility
- Mortality
- Migration

Fertility

Mortality

Mortality

Question

- Can you think of ways of reducing maternal mortality? The provision of extended family-planning services, the availability of safe abortion and improved services for antenatal and obstetric care illustrate the importance in this area of technical interventions.

Migration

Migration

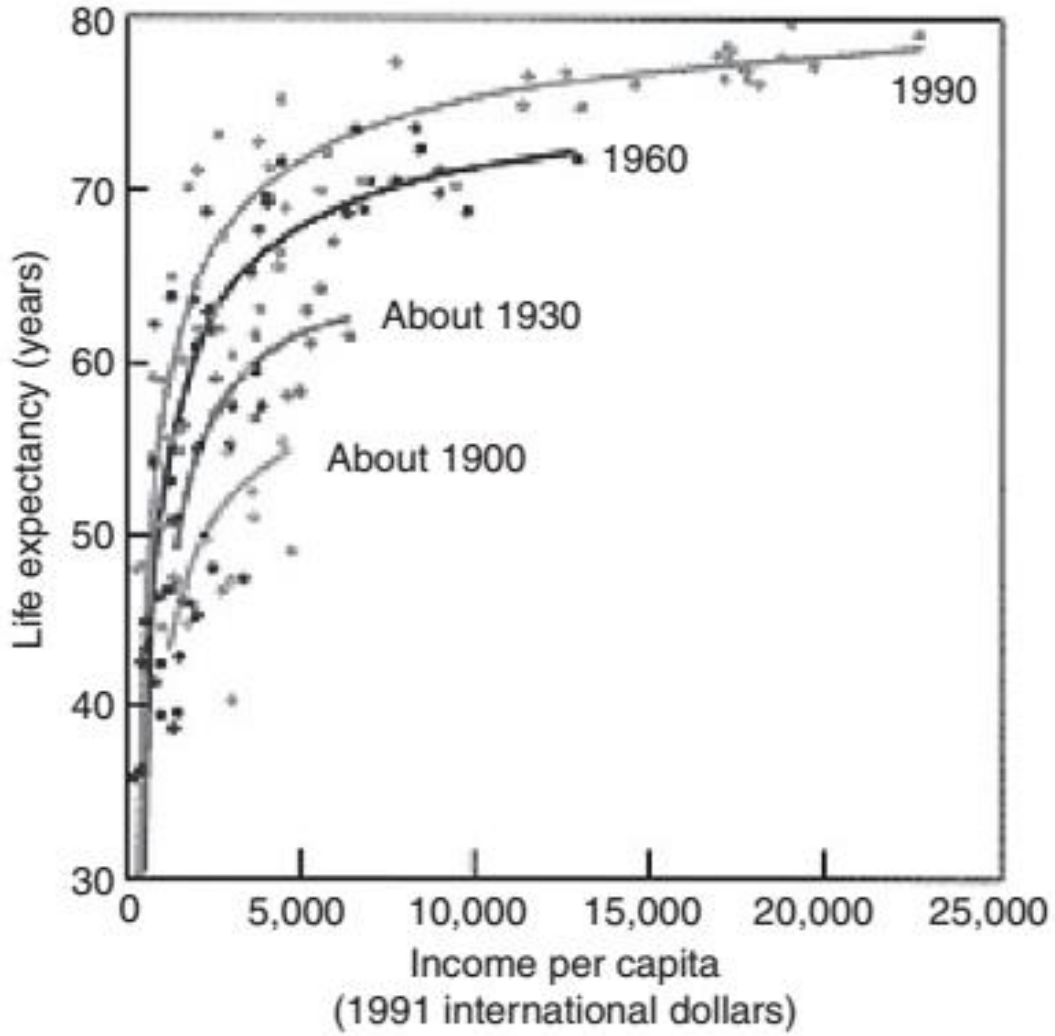
Life expectancy

Life expectancy

Life expectancy

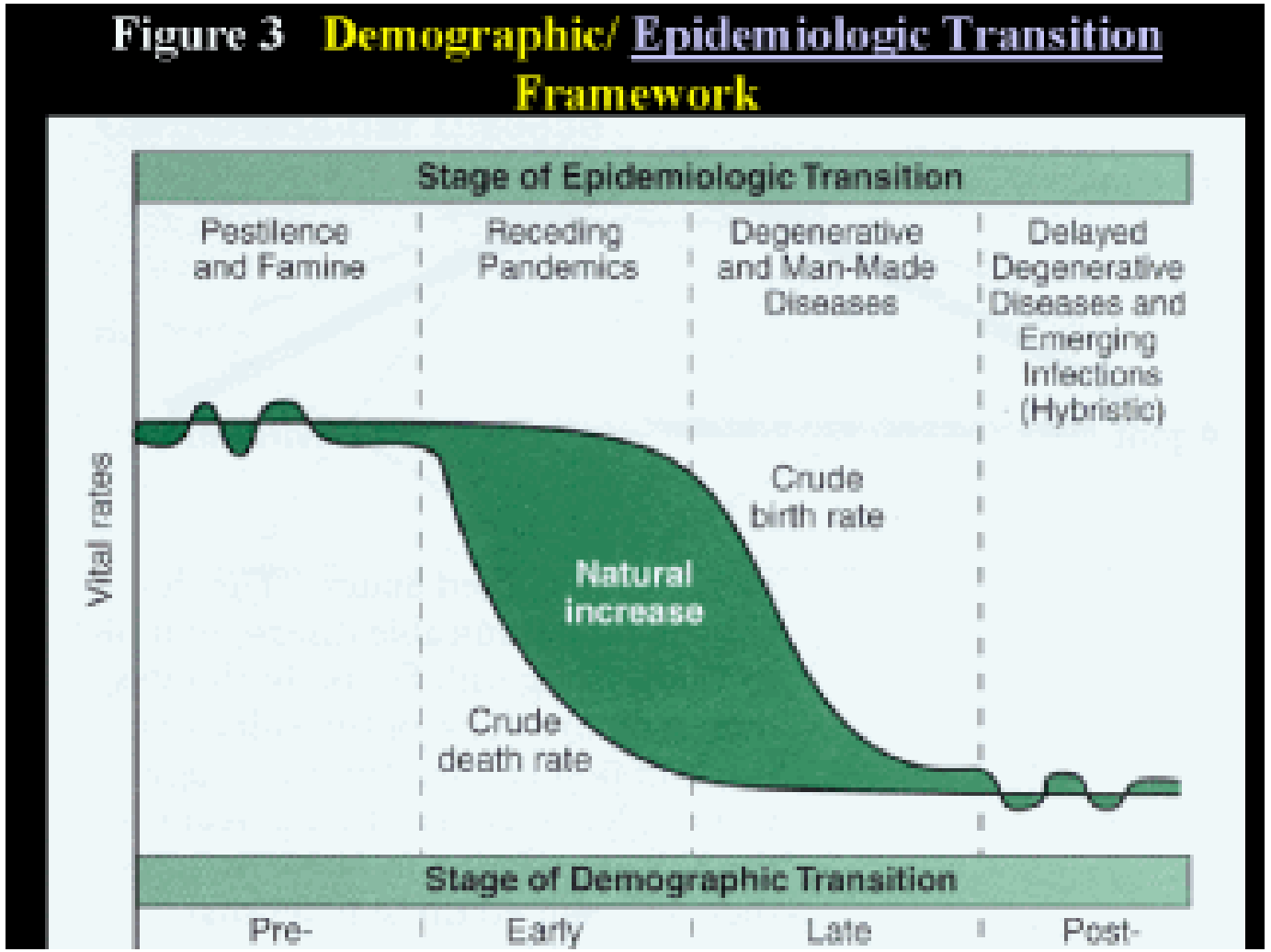
Life expectancy

Figure 2.3 The changing relationship between life expectancy and income during the twentieth century [4].

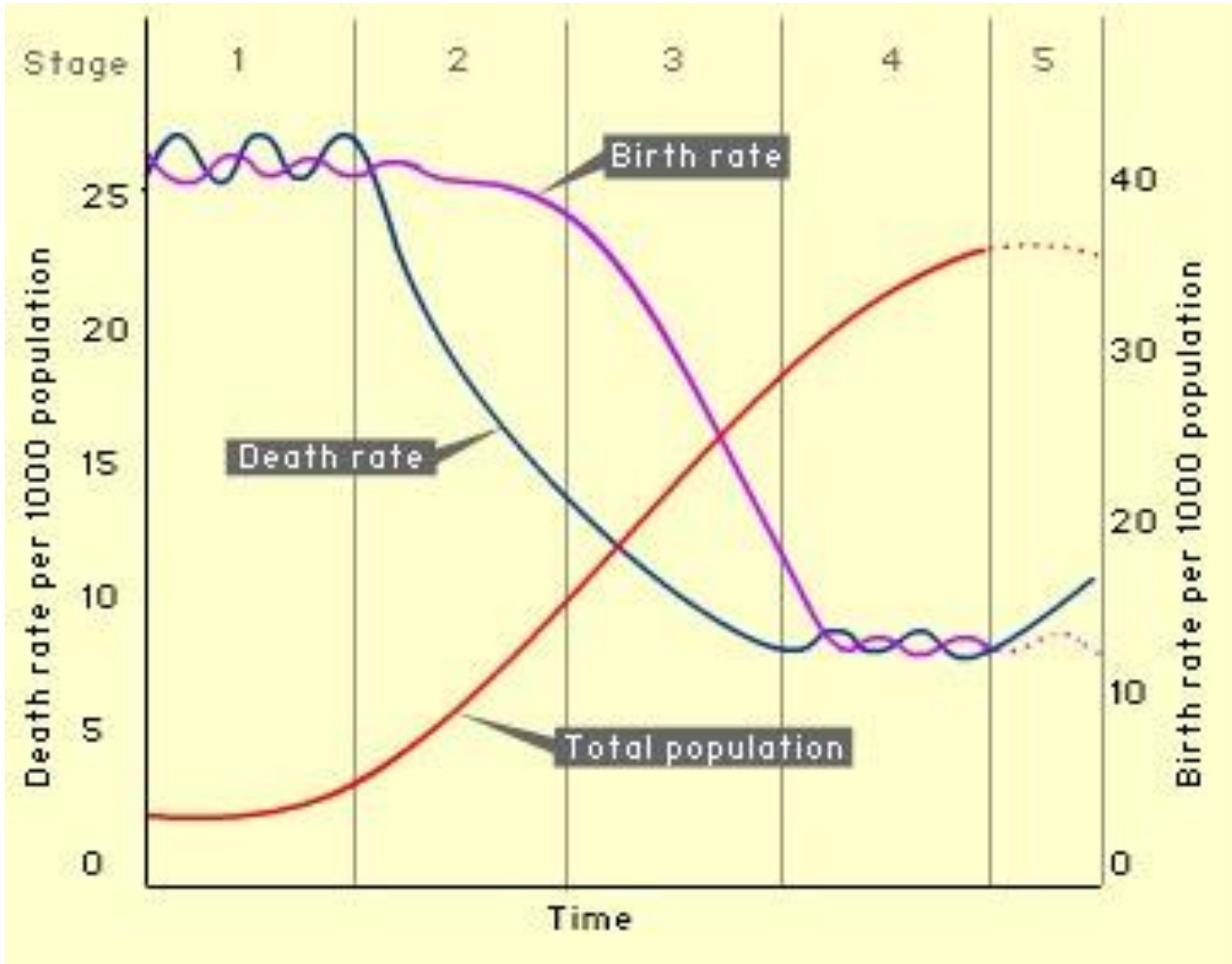


Health transitions

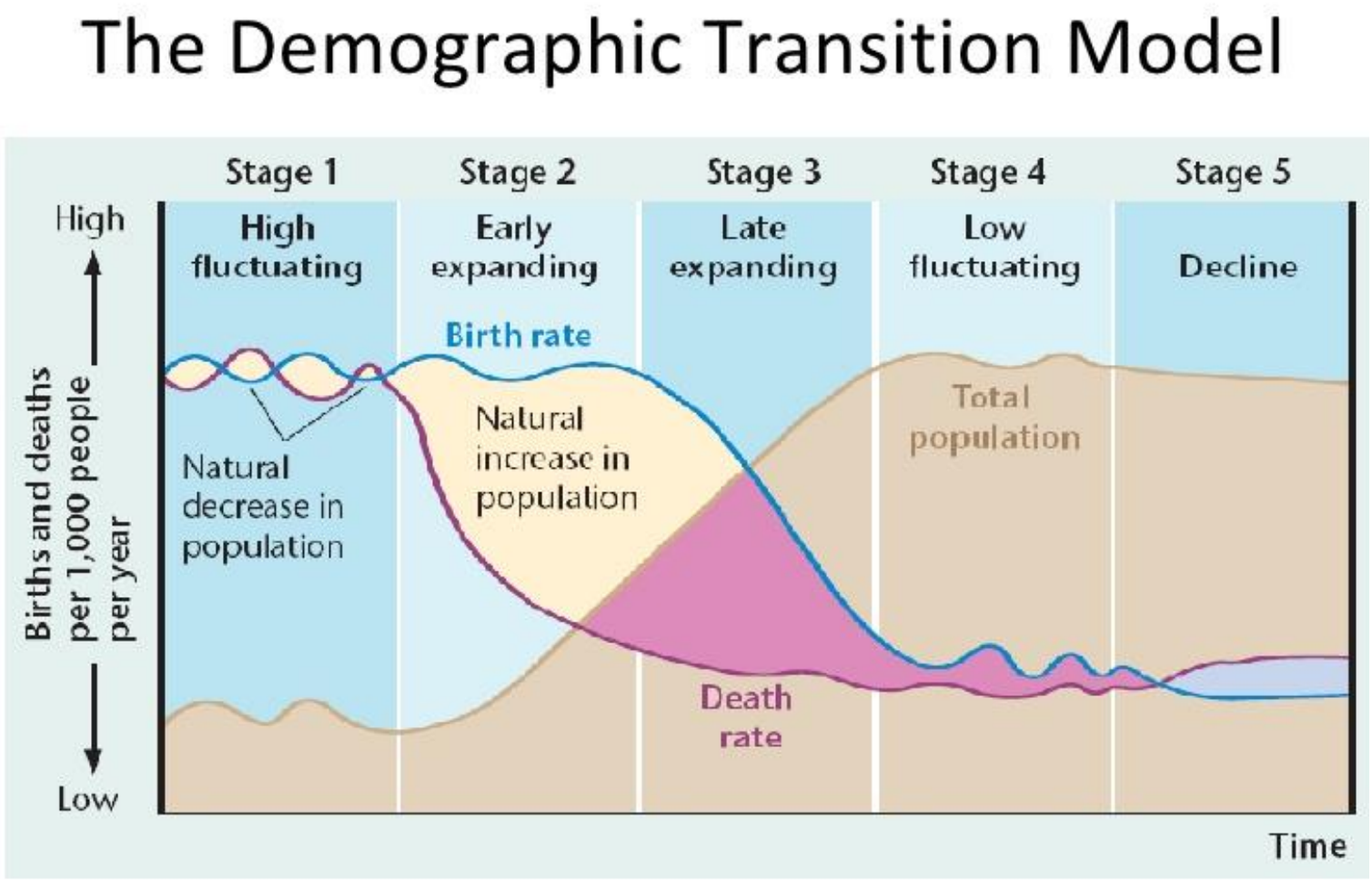
Epidemiological changes

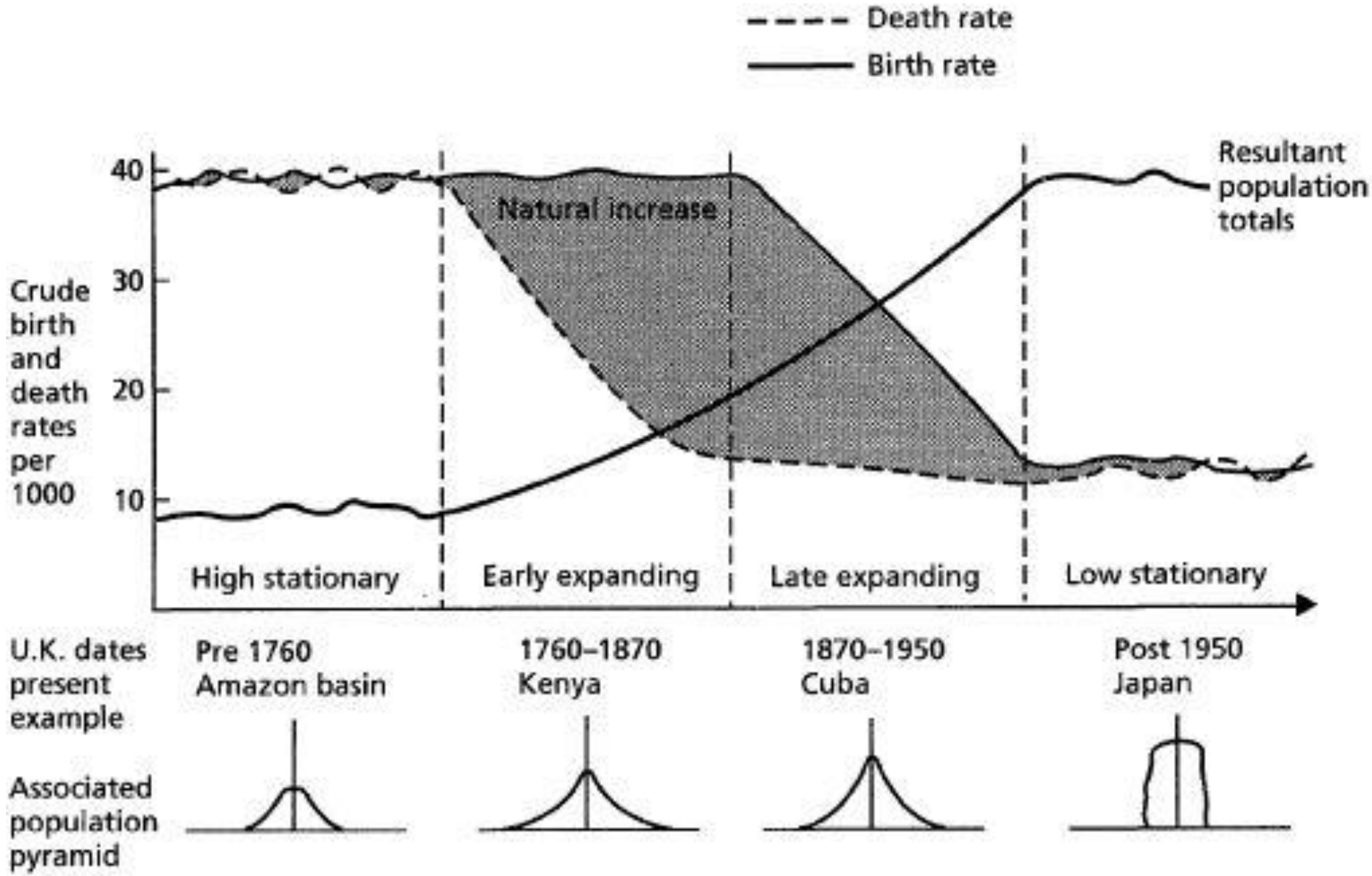


Demographic transition

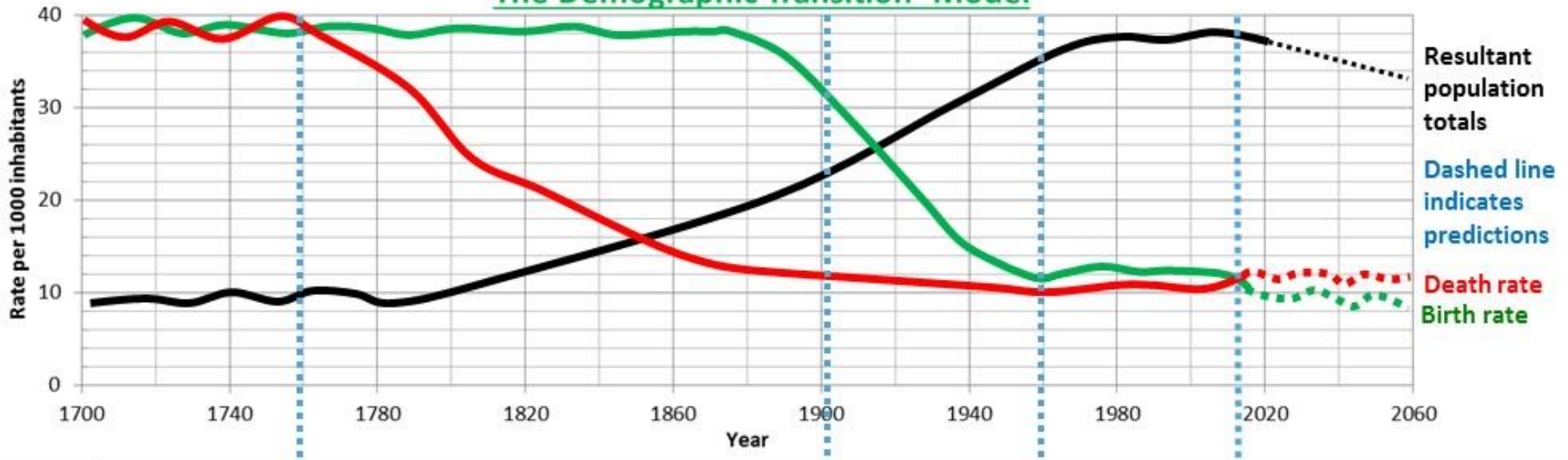


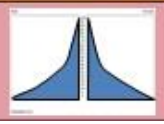
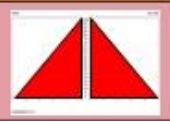
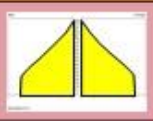
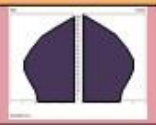
Demographic transition




Death rate
Birth rate
Resultant population totals
Natural increase
Crude birth and death rates per 1000
40
30
20
10
High stationary
Early expanding
Late expanding
Low stationary
U.K. dates present example
Pre 1760
Amazon basin
1760–1870
Kenya
1870–1950
Cuba
Post 1950
Japan
Associated population pyramid

The Demographic Transition Model



	Stage 1 – High fluctuating	Stage 2 – Early expanding (Youthful)	Stage 3 – Late expanding	Stage 4 – Low fluctuating	Stage 5 – Decline (Ageing)
When for the UK?	UK pre 1760	UK 1760 to 1870	UK 1870 to 1950	Post 1950	Soon?
Current examples	Amazon Basin tribes, **LDCs**	Ethiopia **LDCs and LEDCs**	India, Brazil **NICs**	UK, USA **MEDCs**	Russia, Germany, Japan **MEDCs**
Birth rate	HIGH	HIGH	FALLING	LOW	VERY LOW
Death Rate	HIGH	FALLS RAPIDLY	FALLS SLOWLY	LOW	LOW
Natural Increase	Stable or slow increases & decreases	Very rapid increase	Increases at a slower rate	Stable or slow increase	Slow decrease
Reasons for changes to BR	Religious values strong and promote large families, children required for work in farming & manufacturing. High Infant and child mortality rates so high REPLACEMENT rates. Lack of contraceptives & family planning.		Falling Infant mortality. Laws against child work so fewer needed. Improved medical care and diet.	Emancipation & education of women. Materialism (wealth chosen over large families). Later child birth. Later & fewer marriages. Huge range of family planning options.	
Reasons for changes to DR	Diseases (e.g. Plague). Famines. Poor medical knowledge	Improvements in medical care (e.g. sterilisation, small pox vaccine), better sewers, water supply and sanitation. Improved food supply & education		Medical advances (e.g. transplants, heart operations etc.) Better food supply. Preventative medicine.	
Population Pyramid Shape					

Health transitions

- مراحل گذار جمعیت

1. جمعیت ثابت- موالید و مرگ و میر هر دو بالا می باشد
2. افزایش اولیه جمعیت- مرگ و میر رو به کاهش ولی موالید همچنان بالا (بدون تغییر) است
3. افزایش کند جمعیت- مرگ و میر همچنان کاهش یافت و موالید رو به کاهش بود
4. جمعیت با ثبات کم- موالید و مرگ و میر پایین
5. کاهش جمعیت- روند کاهش موالید بیش از مرگ و میر است

Health transitions

- Box 2.2 [10] Impact of non-communicable diseases in developing
- Countries
- The burden of mental illnesses, such as depression, alcohol dependence and
- schizophrenia, has been seriously underestimated by traditional approaches
- that take account of deaths and not disability.
- Adults under 70 years of age in sub-Saharan Africa today face a higher
- probability of death from a non-communicable disease than adults of the
- same age in established market economies.
- By 2020, tobacco is expected to kill more people than any single disease, even
- HIV/AIDS.

Health transitions

Disease and disability

Disease and disability

Methodological issues in demography

Methodological issues in demography

Methodological issues in demography

Conclusion

- Thefield of demography requires a detailedunderstanding of various data sources
- and robust methods to analyse their accuracy and deal with consequent levels of
- uncertainty. However, demography provides the public health practitioner with
- some of the most fundamental measures with which to assess the health of a
- population.