



TEORIE E MODELLI DEMOGRAFICI

UNIT 2

THE DEMOGRAPHIC TRANSITION IN THE DEVELOPING COUNTRIES



Same process, different features

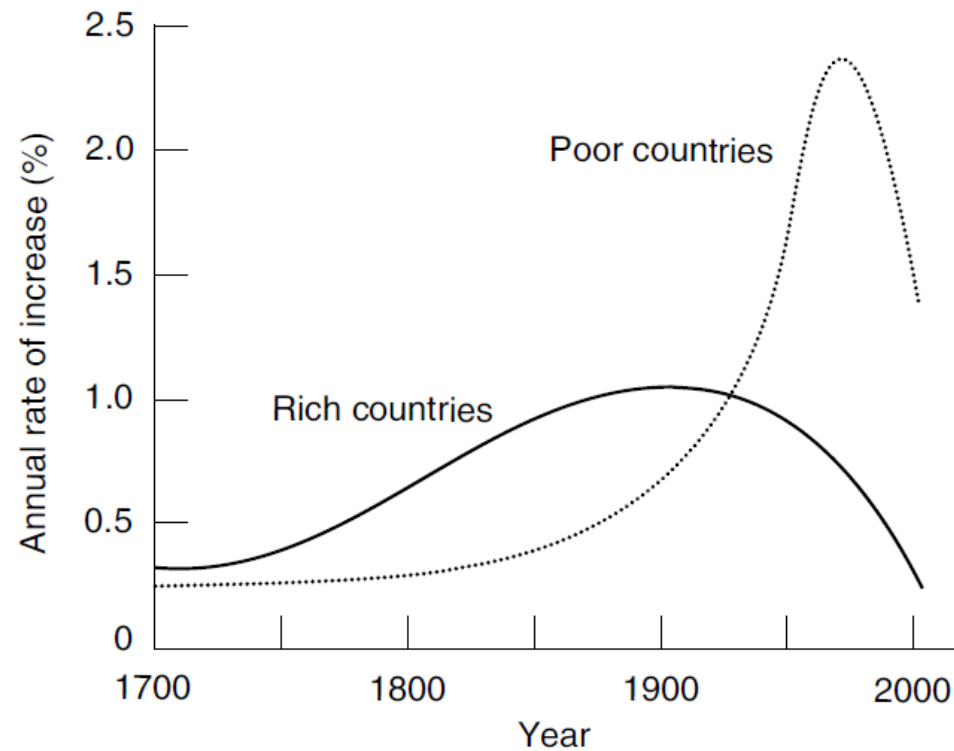


Figure 5.1 Comparison of demographic transitions: rates of increase for poor and rich populations (1700–2000).

The onset of the transition by area

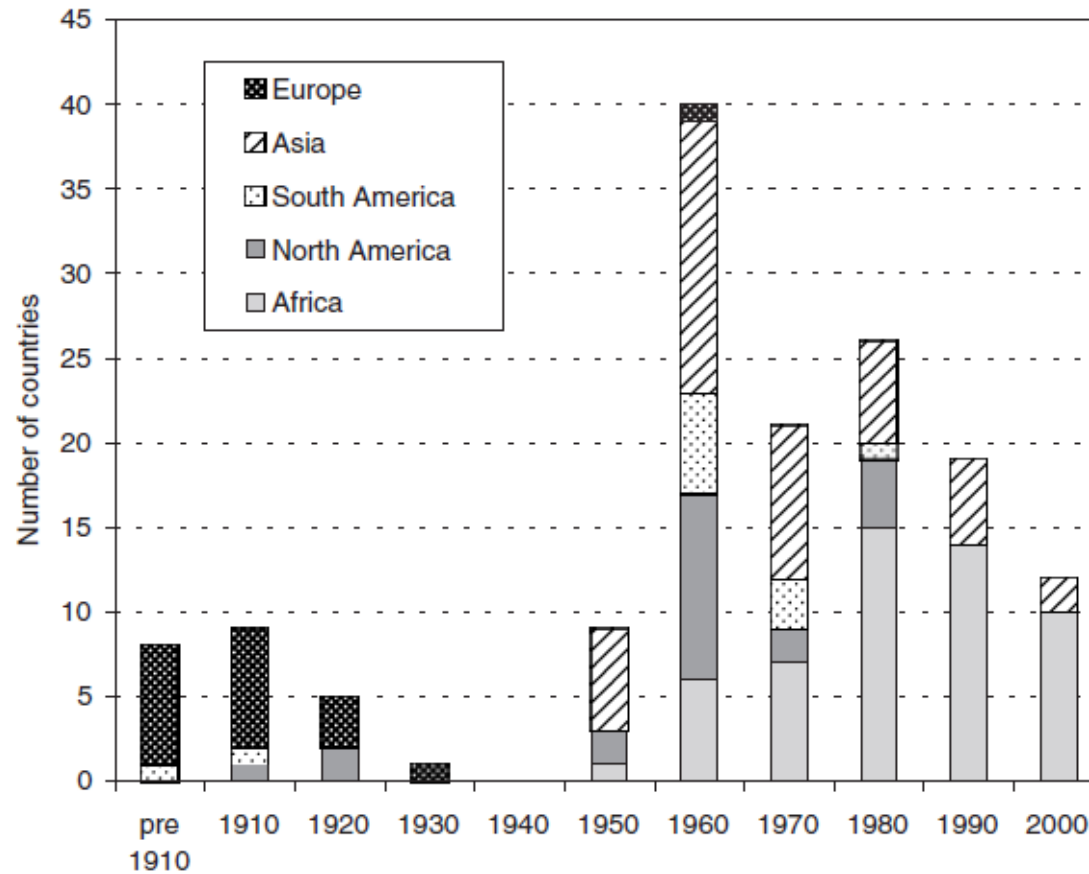


Figure 1. Date of onset of fertility transition, by country and continent.

Fonte: Reher 2011

Comparing DT in more and less developed countries

➤ The starting point

- Transition in developing countries begins later: in the 1950s
- Pre-transition mortality levels are similar ($e_0=40$)
- Average number of children per woman in DCs = about 6-7, while in LDCs = about 4-5

➤ The start-up mechanism

- Endogenous changes in the history of developed countries (DPs)
- Import effects of knowledge assets from DC in LDP initiate mortality reduction

Comparing DT in more and less developed countries

➤ Fertility control technologies

- The transition from high to low fertility without the availability of contraceptive methods in the MDC and without external intervention:
 - ✓ Delayed and non universal marriage, traditional methods
- Effects of policy interventions in the area of family planning in the LDC

➤ The speed

- Accelerated pace for LDC: faster decline in mortality, but slower adjustment in birth rate
- Much higher rates of increase

Comparing the transitions

Table 5.1 World population, rich and poor countries (1900–2020).

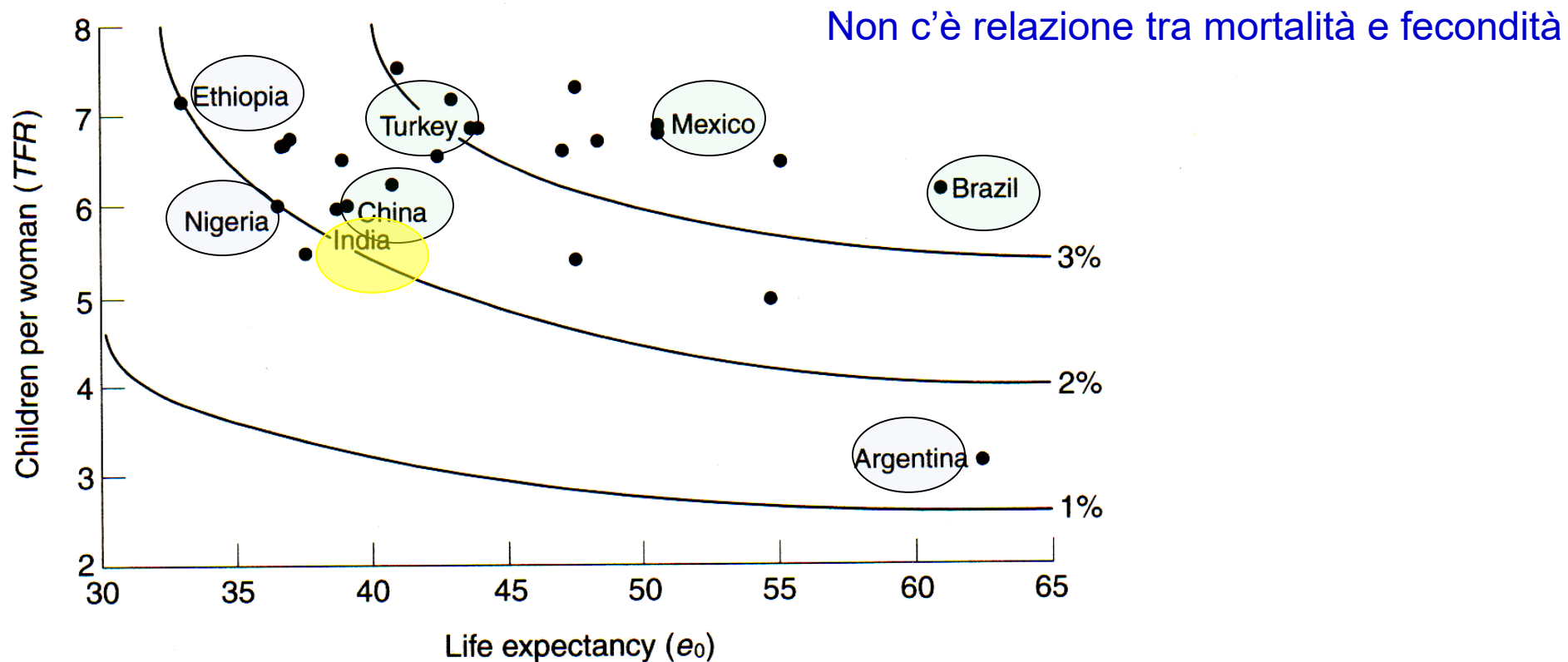
Year	Population (millions)			Annual rate of growth (%)			% share		
	Rich	Poor	World	Rich	Poor	World	Rich	Poor	World
1900	563	1071	1634	–	–	–	34.5	65.5	100
1920	654	1203	1857	0.75	0.58	0.64	35.2	64.8	100
1930	727	1309	2036	1.06	0.84	0.92	35.7	64.3	100
1940	794	1473	2267	0.9	1.2	1.1	35.0	65.0	100
1950	813	1712	2525	0.2	1.5	1.1	32.2	67.8	100
1960	915	2103	3018	1.2	2.1	1.8	30.3	69.7	100
1970	1008	2675	3682	1.0	2.4	2.0	27.4	72.6	100
1980	1082	3358	4440	0.7	2.3	1.9	24.4	75.6	100
1990	1144	4165	5310	0.6	2.2	1.8	21.5	78.5	100
2000	1189	4938	6127	0.4	1.7	1.4	19.4	80.6	100
2010	1233	5696	6930	0.4	1.4	1.2	17.8	82.2	100
2020	1266	6492	7758	0.3	1.3	1.1	16.3	83.7	100

Source: UN estimates; for 1900 author's estimate.

The iso-growth curves

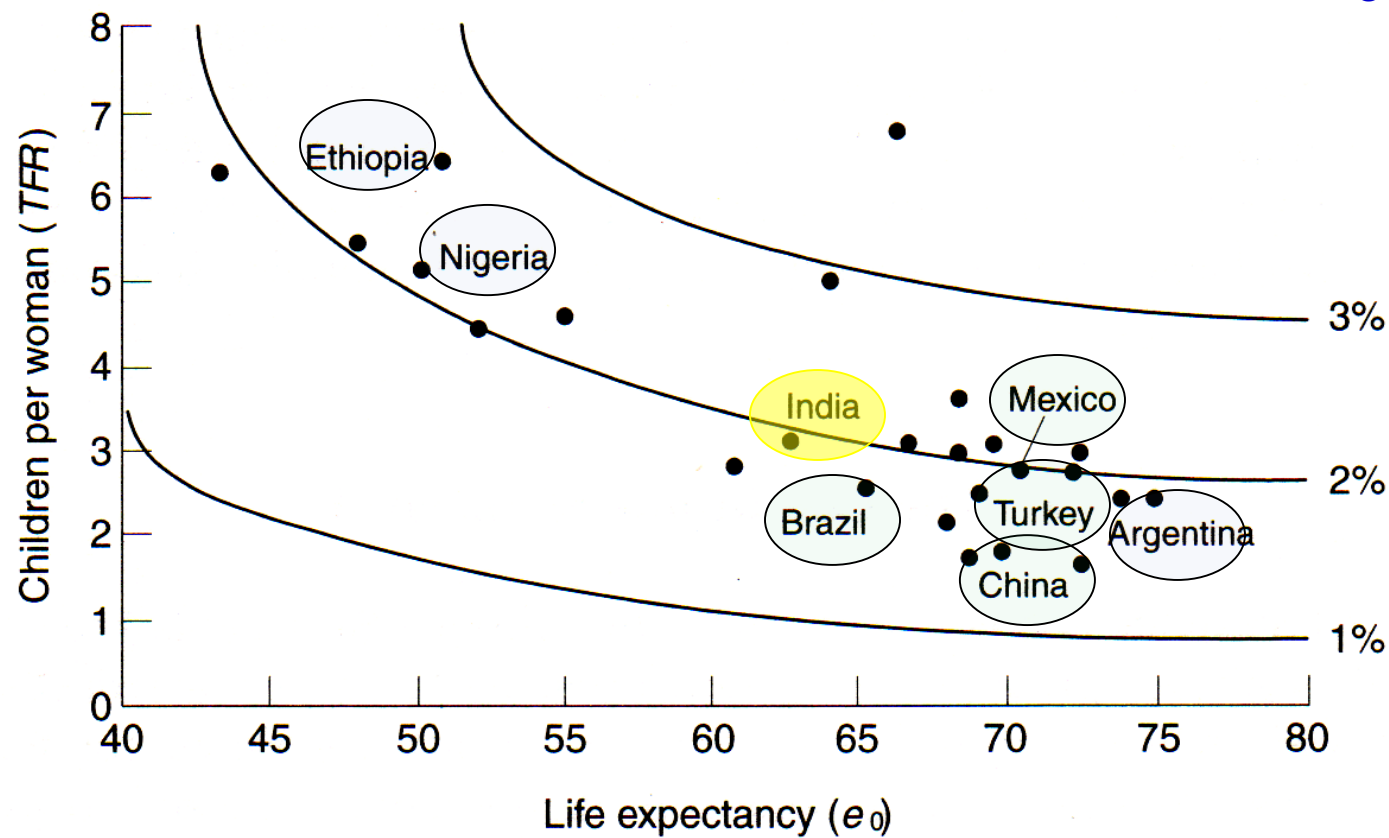
- They show the set of possible combinations of:
 - fertility rates (TFT) and
 - life expectancy at birth (e_0)
- ➡ that result in the same level of growth (r)

PVS nel 1950-55



PVS nel 1995-2000

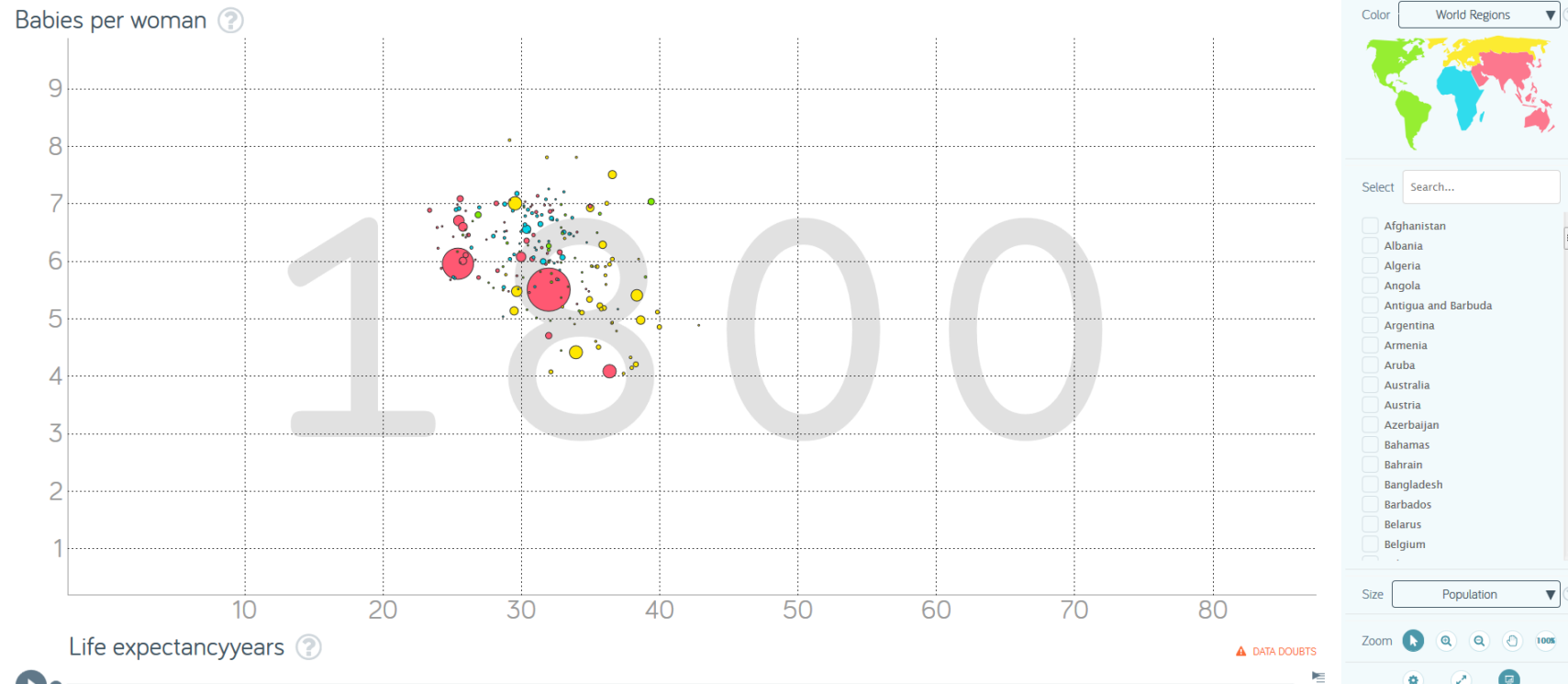
Chiara correlazione negativa tra e_0 and TFR



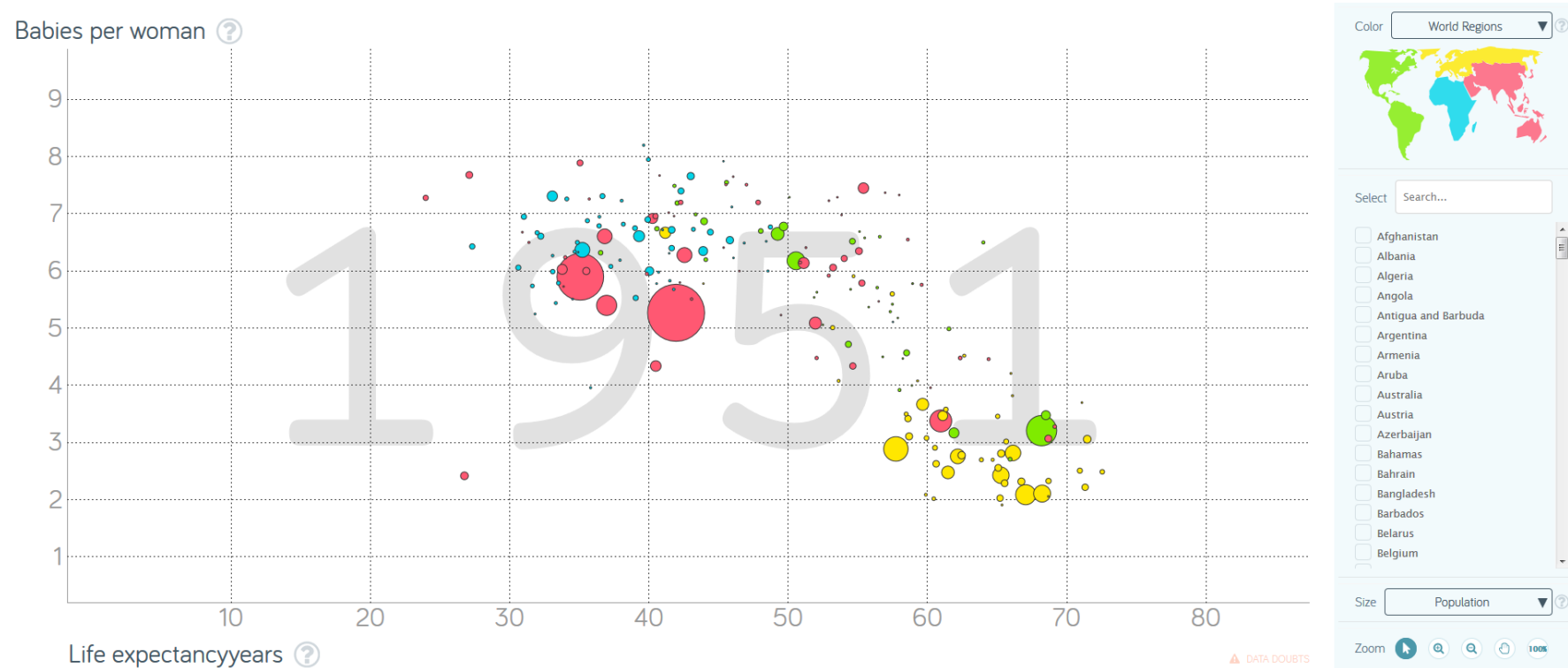
Da Gapminder

- https://www.gapminder.org/tools/#_chart-type=bubbles

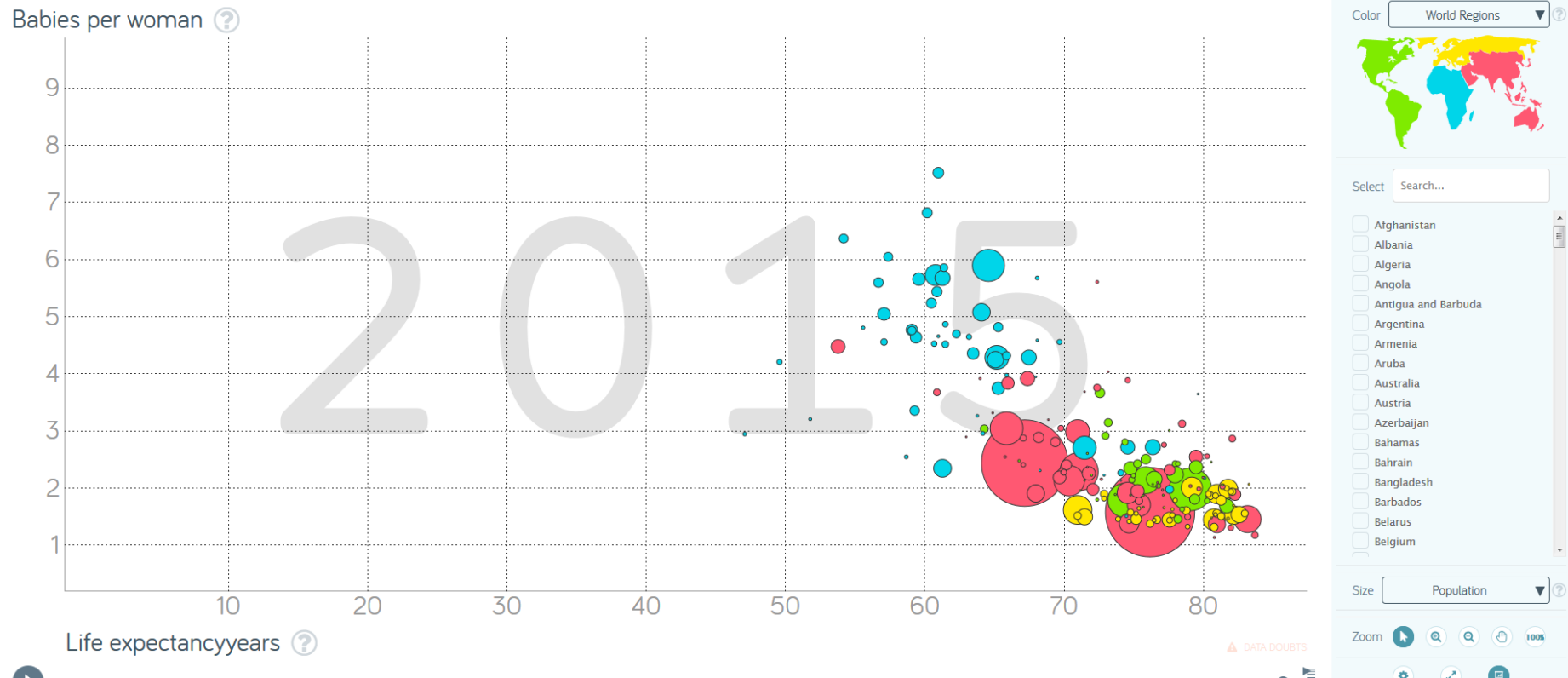
Pre transition: life expectancy at birth and number of children



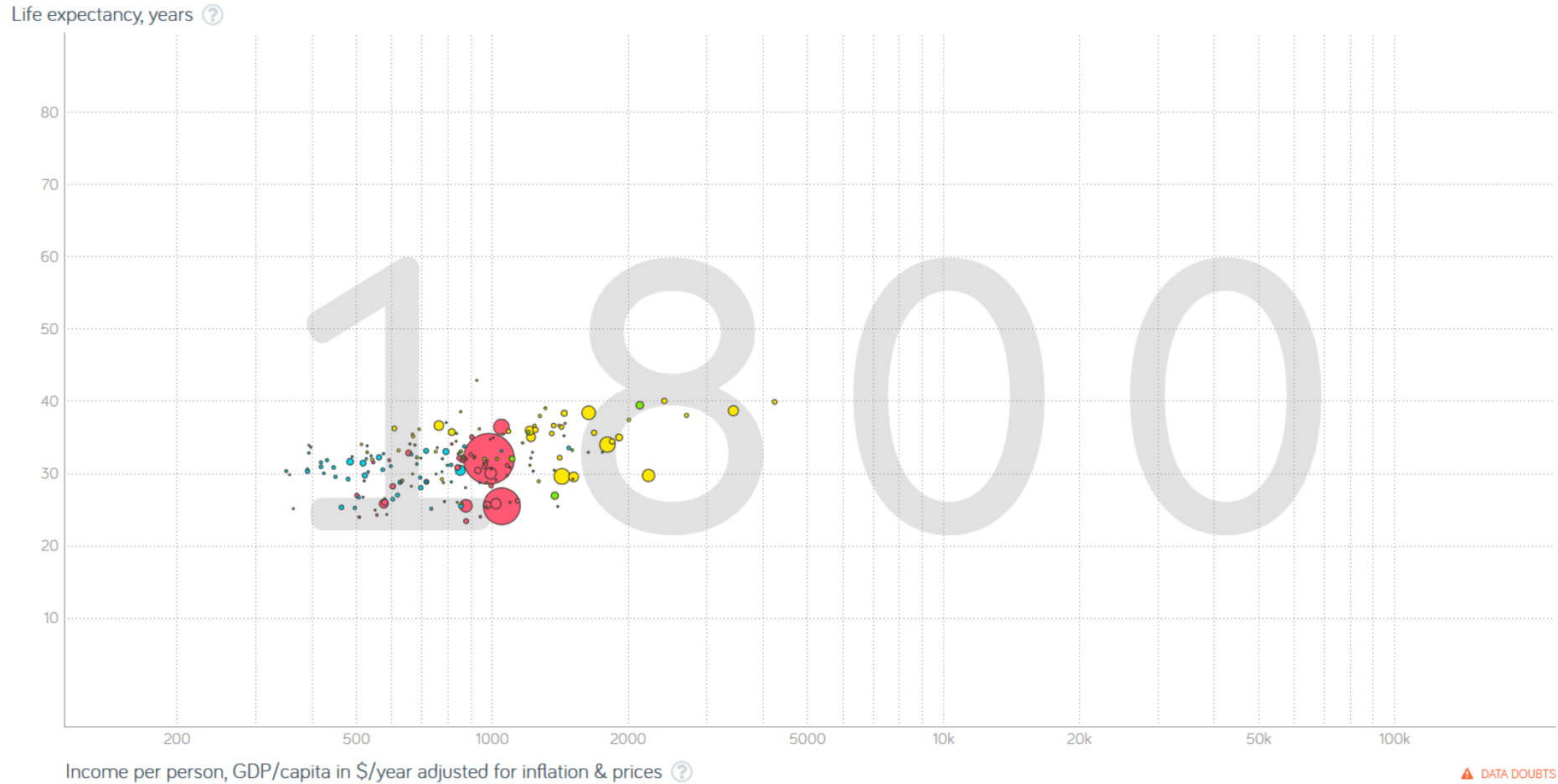
Europe and North America vs. poorer areas



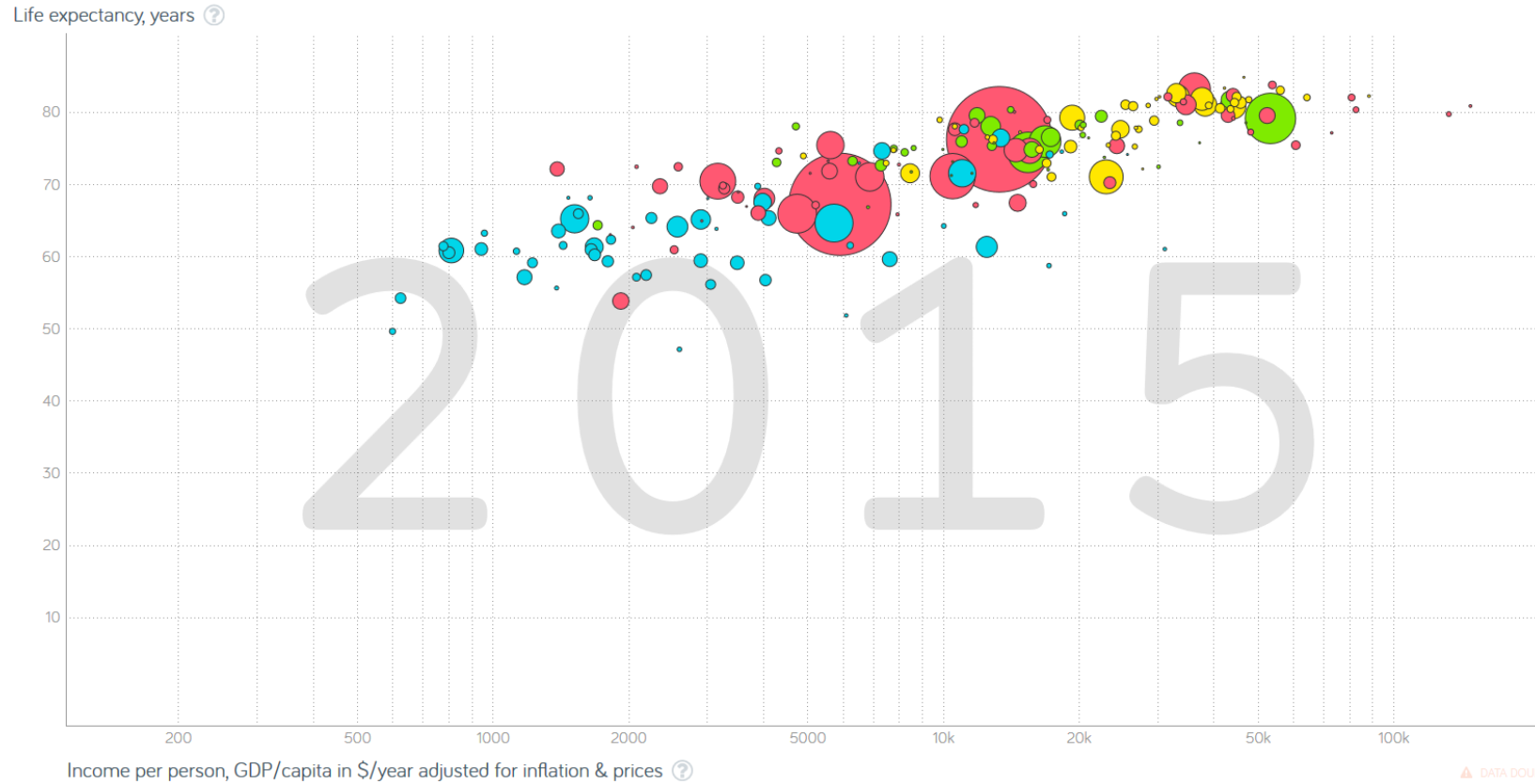
Today: Africa lags behind



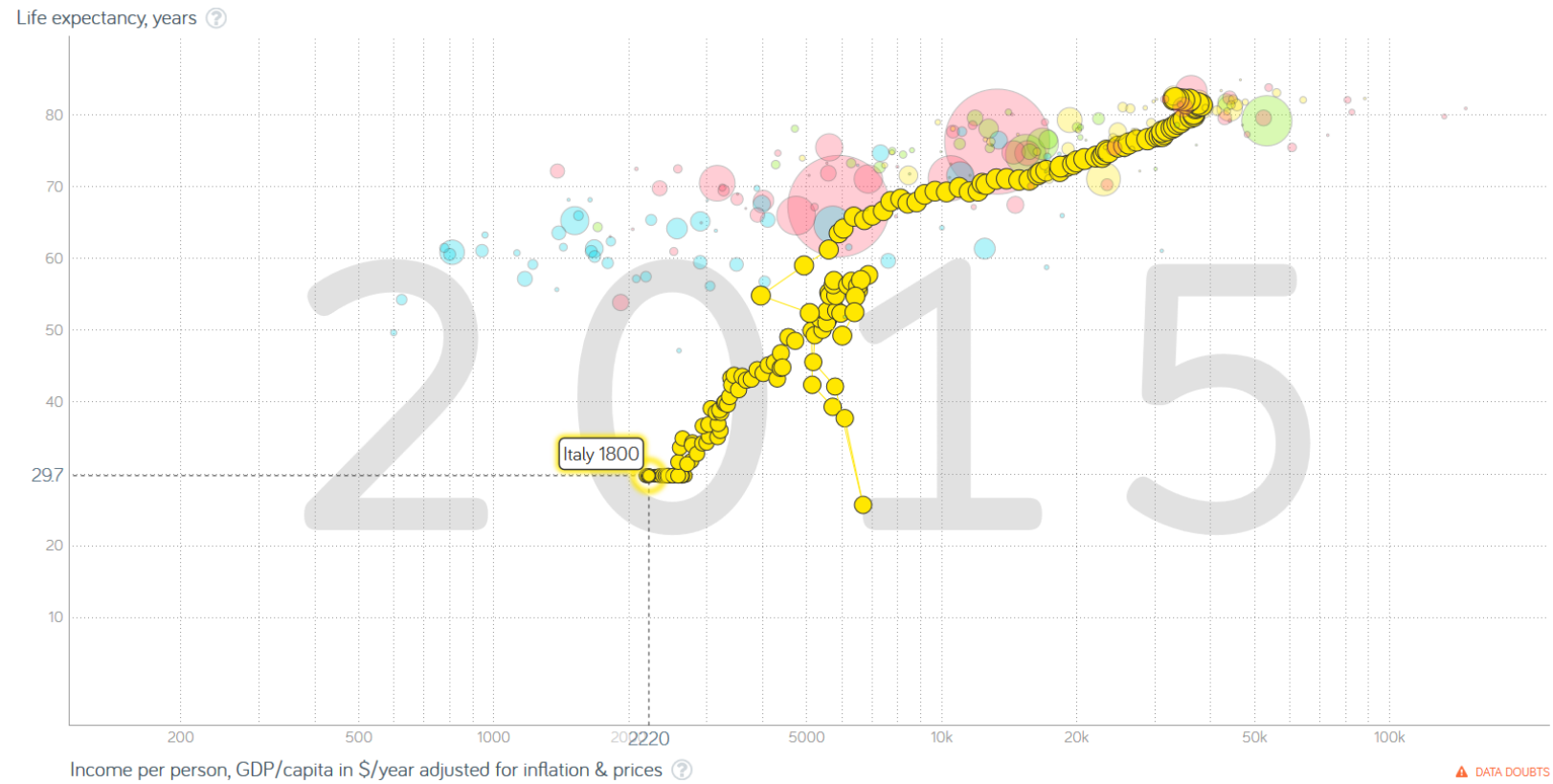
Life expectancy and per capita income



Life expectancy and per capita income



Italy 1800- 2015



Infant and child mortality in LDC

Table 5.3 Infant and child mortality and health indices (2010–14).

Countries	Year of survey	Infant mortality rate 1000(1q0)	Infant and child mortality rate 1000(5q0)	% deliveries in health facility	% children receiving 8 basic vaccines	% children with diarrhea receiving treatment	% Stunted	% wasted	% children underweight	Mean duration (months) of exclusive breastfeeding
AFRICA										
Congo D.R	2013–14	58	104	80	45	42	42	8	23	2.3
Egypt	2014	22	27	88	91	32	21	8	6	1.8
Ethiopia	2011	58	88	11	24	30	44	10	29	2.3
Ghana	2014	41	60	75	77	54	19	5	11	2.5
Kenya	2014	35	52	64	71	65	26	4	11	3.3
Nigeria	2013	69	128	37	25	38	37	8	29	0.5
Tanzania	2010	51	81	80	75	58	42	5	16	2.6
ASIA										
Bangladesh	2011	43	53	29	86	78	41	16	36	3.5
Cambodia	2010	45	54	62	79	35	40	11	28	4.3
Indonesia	2012	32	40	67	66	46				0.7
Pakistan	2012–13	74	89	53	54	42	45	11	30	0.7
Philippines	2013	23	31	66	76	54				0.7
LATIN AMERICA										
Colombia	2010	16	19	95	68	61	13	1	3	1.8
Haiti	2012	58	88	38	45	57	22	5	11	1.7
Peru	2012	17	21	86	73	37	18	1	3	4.2
Dominican Republic	2013	27	31	99	52	52	7	2	4	0.4
Honduras	2011–12	24	29	85	85	60	22	1	7	0.7

Source: The DHS Program, <http://www.dhsprogram.com/> [extracted February 7, 2016].

Notes: Indicators refer to the the 3 years preceding the survey; infant mortality refers to the 5 years preceding the survey; the anthropometric indicators refer to the percent of children 2 standard deviations below the mean.

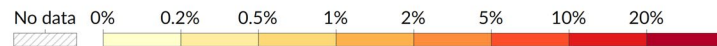
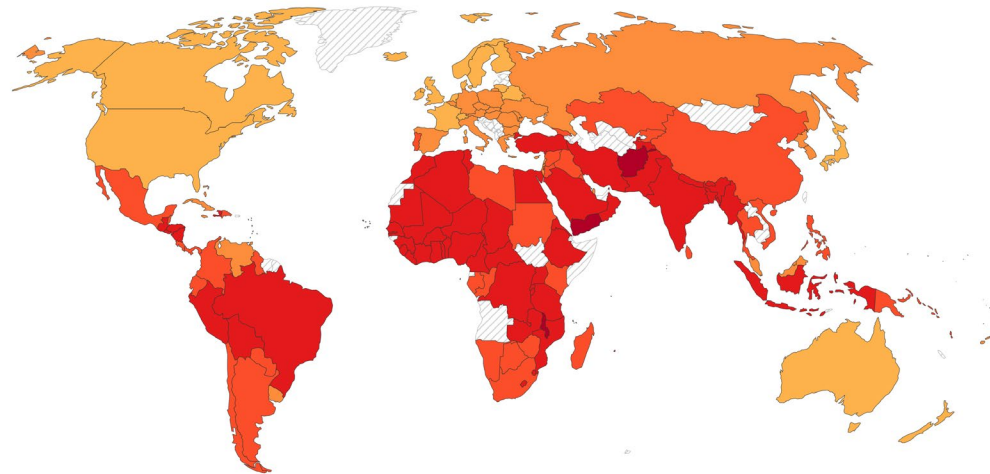
Changing in infant mortality (0-1 years)

➤ <https://ourworldindata.org/grapher/infant-mortality>

Infant mortality rate, 1970

The estimated share of newborns¹ who die before they are one year old.

Our World
in Data



Data source: United Nations Inter-agency Group for Child Mortality Estimation (2024)

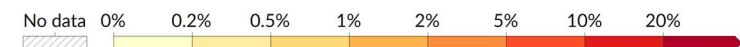
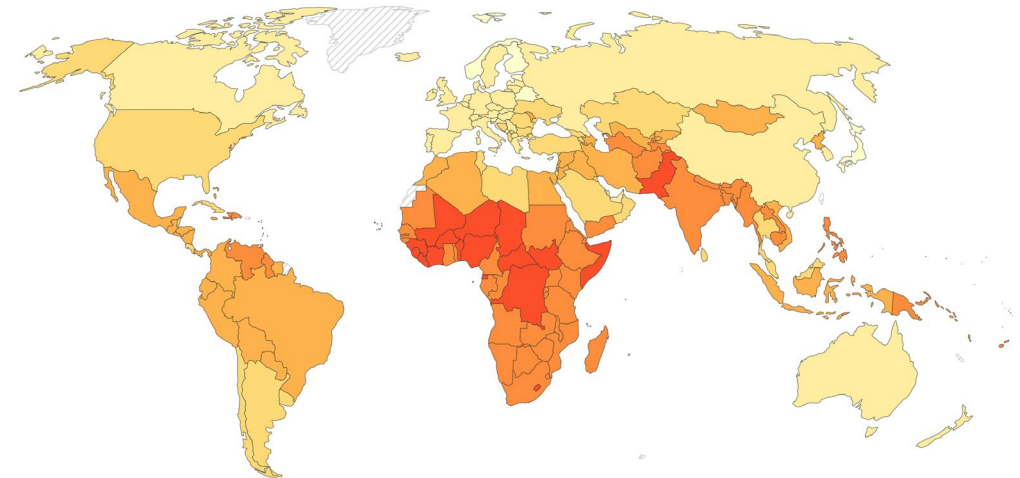
OurWorldinData.org/child-mortality | CC BY

1. **Newborn:** A newborn is defined as a baby born alive, and usually refers to neonates – under 28 days old. Read more in our article: How do statistical organizations define age periods for children?

Infant mortality rate, 2022

The estimated share of newborns¹ who die before they are one year old.

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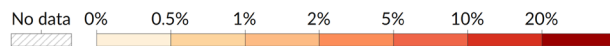
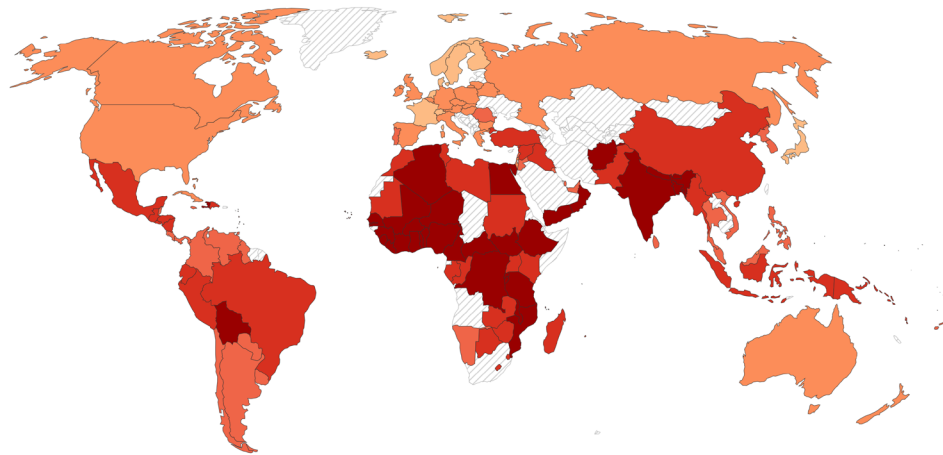
Changing in child mortality (0-5 years)

➤ <https://ourworldindata.org/grapher/child-mortality-igme>

Child mortality rate, 1970

The estimated share of newborns¹ who die before reaching the age of five.

Our World
in Data



Data source: United Nations Inter-agency Group for Child Mortality Estimation (2024)

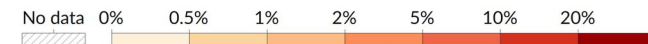
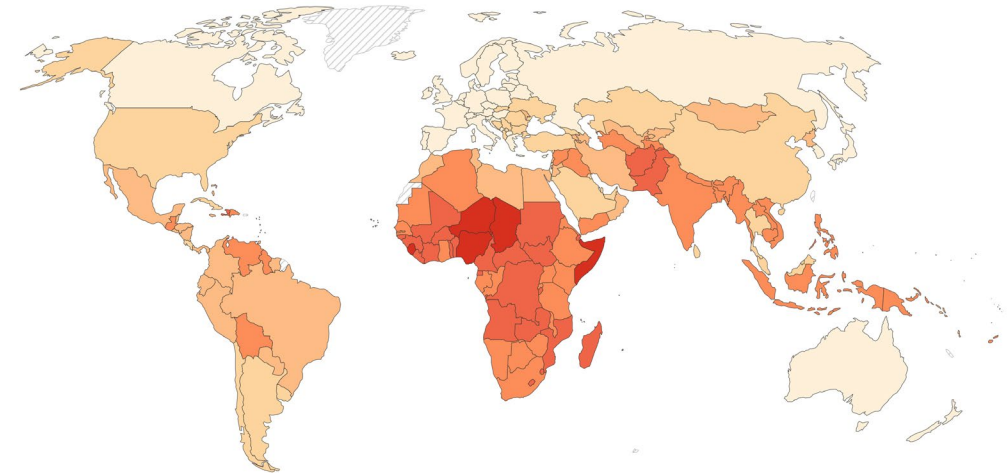
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Drivers of mortality decrease – economic development

Sewage system (sistema fognario) & child mortality

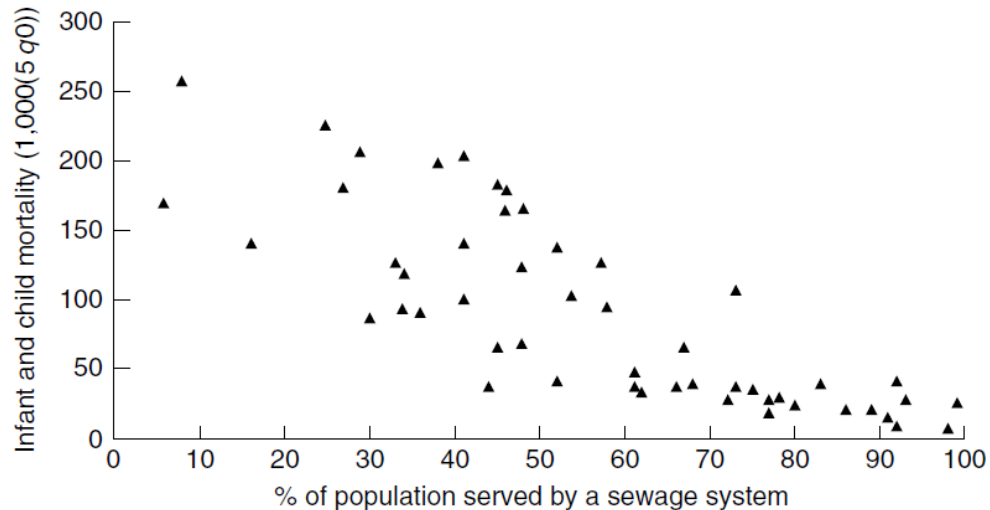


Figure 5.3 Relationship between percentage of the population served by a sewage system and infant and child mortality in 53 less-developed countries (2000).

Per capita GDP (PIL pro capite) & Life Expectancy

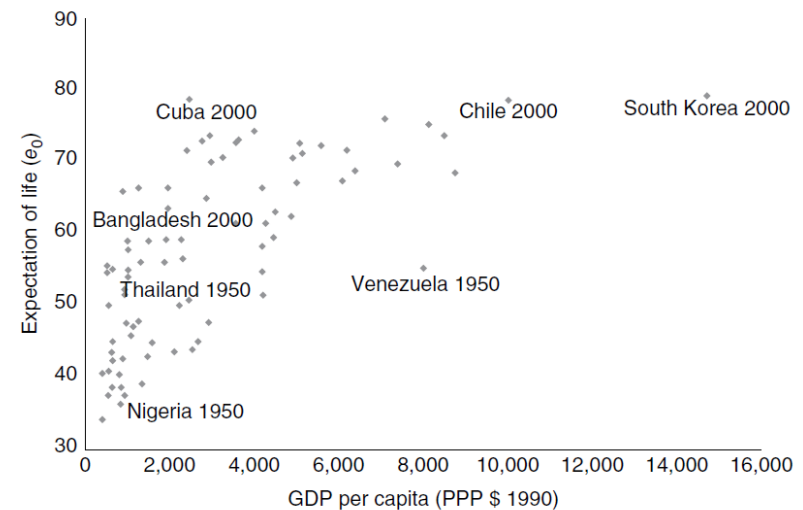


Figure 5.4 Per capita GDP and life expectancy (e_0) in 28 less-developed countries (1950–5, 1980–5, and 2000–5).

Does the model work for everybody?

- Yes, but at different timing

Different timing

- The **forerunners** are those countries where the onset of fertility decline began **before 1935**.
- For the **followers** it began between **1950 and 1964**
- the **trailers** it took place between **1965 and 1979**, and for
- the **latecomers** fertility decline only began **after 1980**.

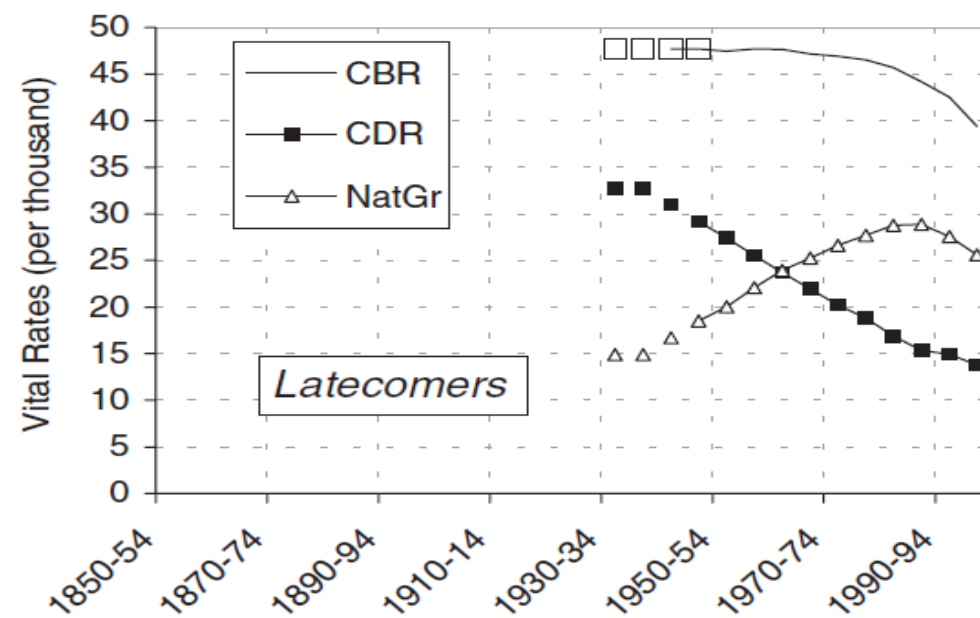
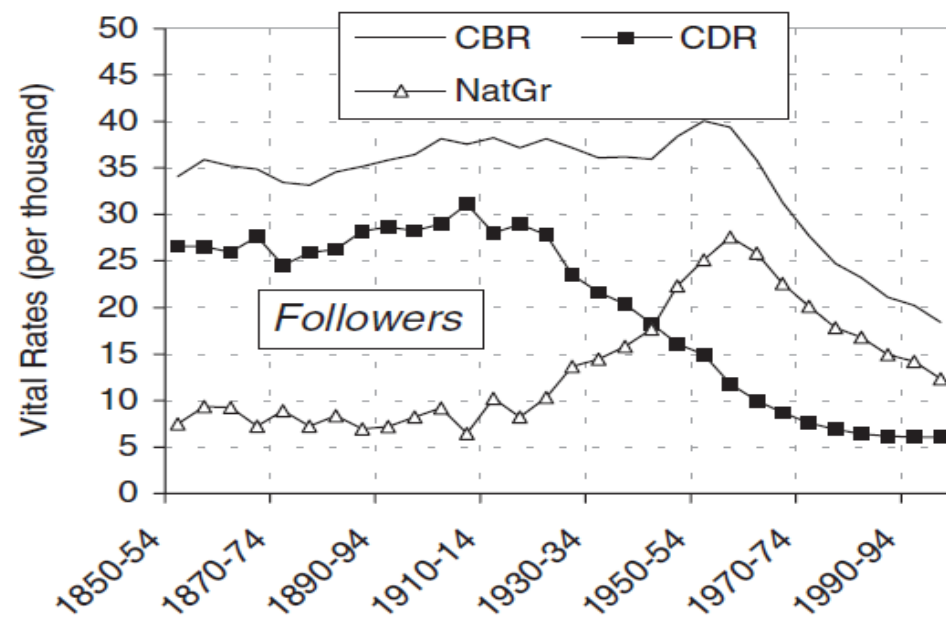
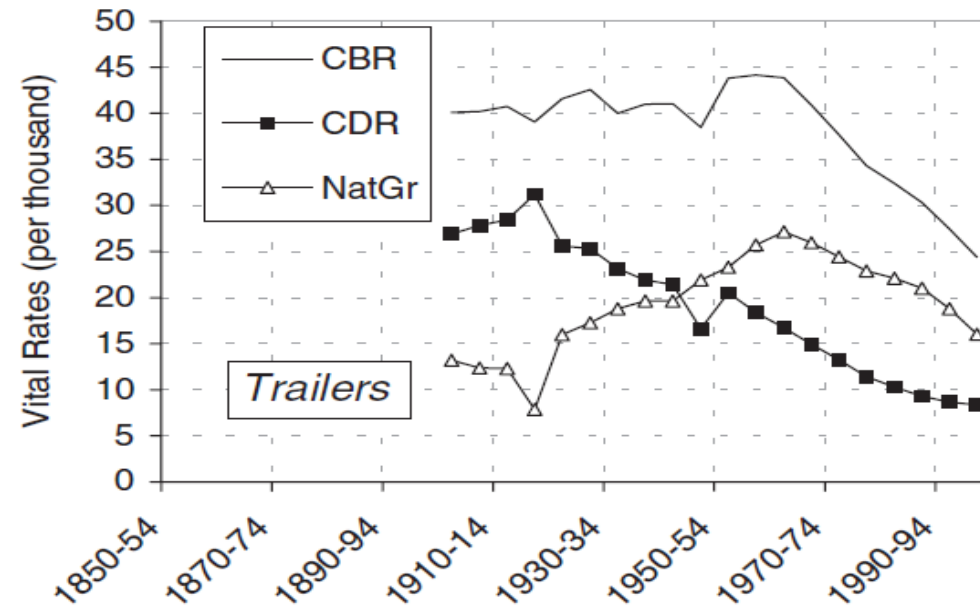
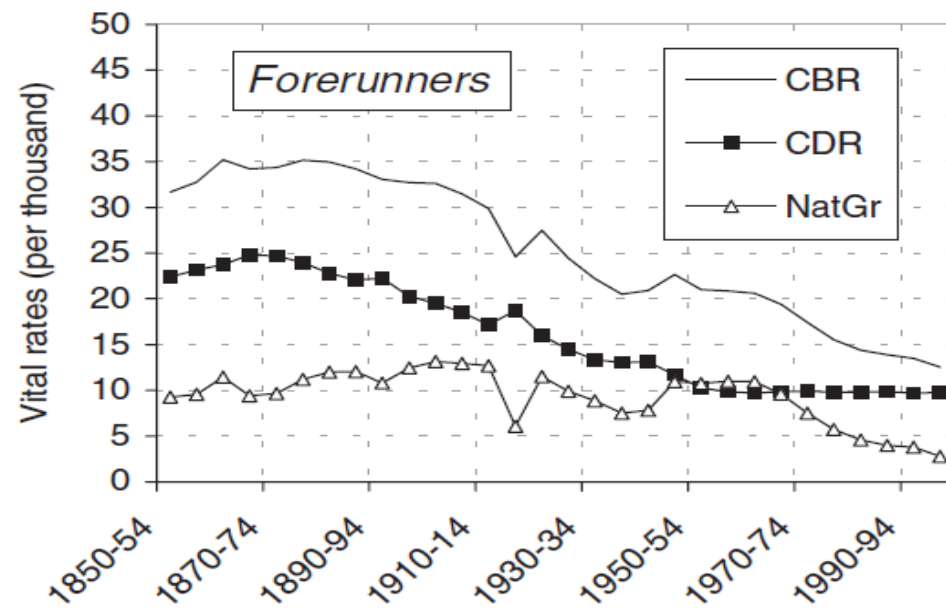


Figure 2. Profiles of demographic transition.

Table 1. Summary indicators of demographic transition (by category).

Indicator	Forerunners	Followers	Trailers	Latecomers	Total
Onset fertility decline	1905	1950–60	1965–75	1980–2000	
Pre-decline birth rates	33–35	36–40	41–44	46–47	
CBR decline (in 10 years)	0.92	0.79	0.84	0.89	
CBR decline (in 20 years)	0.84	0.63	0.74	?	
Time to 50% decline	75	30	?	?	
Time to 10 point decline	30	15	15	?	
Onset of mortality decline (CDR)	1895	1925	1930	<u>1945–50±</u>	
Pre-decline death rates	22–25	26–29	<u>27–30±</u>	<u>33–34±</u>	
CDR decline (in 10 years)	0.88	0.78	0.90	<u>0.87</u>	
CDR decline (in 20 years)	0.77	0.66	0.66	<u>0.74</u>	
Time to 50% decline	50	30	<u>30</u>	<u>45</u>	
Time to 10 point decline	45	20	20	<u>30</u>	
Gap mortality–fertility decline	5–10	30	30	<u>40–45±</u>	
Onset of infant mortality decline	1895	1920	1935	?	
Pre-decline IMRs	170–190	200–220	<u>180–220</u>	<u>180–220+</u>	
IMR decline (in 10 years)	0.91	0.83	0.87	?	
IMR decline (in 20 years)	0.81	0.73	0.73	?	
Time to 50% decline	40	30	35	?	
Time to 50 point decline	30	25	25	?	
Natural growth rates: pre-decline	9–11	7–11	10–13	<u>15</u>	
Natural growth rates: peak	12–13	26–27	26–27	27–29	
Natural growth rates: 1995–2000	2.8	12.6	16.1	25.6	
Countries (by continent)	24	17	48	56	145
Africa	0	2	11	39	52
North America	4	4	10	4	22
South America	2	1	8	1	12
Asia	0	10	18	12	40
Europe	18	0	1	0	19

Note: Underlined estimates are only approximations. ‘?’ means that no estimation is possible.

Does the model work for everybody?

- Some criticisms

Some criticisms

- In many cases, the decline in mortality began before the modernization process and improved health conditions
- Heterogeneity:
 - Wide regional differences
 - Particular groups precursors to the process
 - ✓ Eg: aristocracy
 - ✓ Eg. Jews
- Is there always a true post-transitional equilibrium?
 - Is there a "Second demographic transition"?
 - The very low fertility of Southern and Eastern Europe, Germany or Southeast Asia does not allow for the replacement of generations

Further doubts

- Excessive determinism
- Little importance given to cultural factors and social norms
- Does this work for developing countries as well?
- Is there convergence?

Further readings

- Reher D. S. (2004), The demographic Transition revisited as a Global Process, *Population Space and Place*, 10, 19-41
- Reher D. S. (2011), Economic and Social Implications of the Demographic Transition, *Population and Development Review*, 37 (supplement), 11-33.