

n > 95 million

n > 95 million

n > 95 million

Ethiopia's Age Structure and the Challenges of Meeting the 2050 Development Goals

Aynalem Adugna

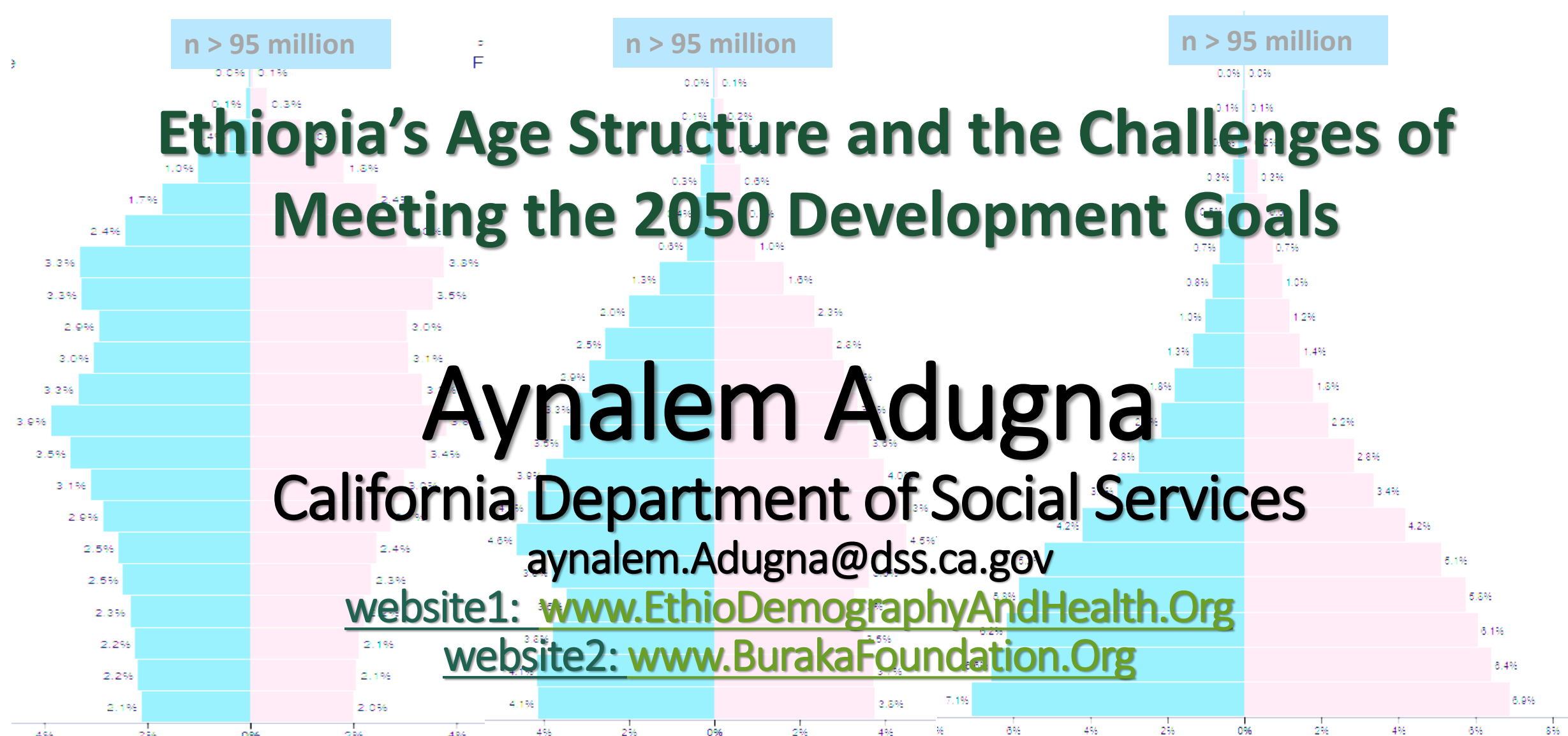
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[website1: www.EthioDemographyAndHealth.Org](http://www.EthioDemographyAndHealth.Org)

[website2: www.BurakaFoundation.Org](http://www.BurakaFoundation.Org)

December 19, 2019



When economic growth isn't catching up to the needs of a rapidly increasing population...

Sure glad the hole isn't at our end.

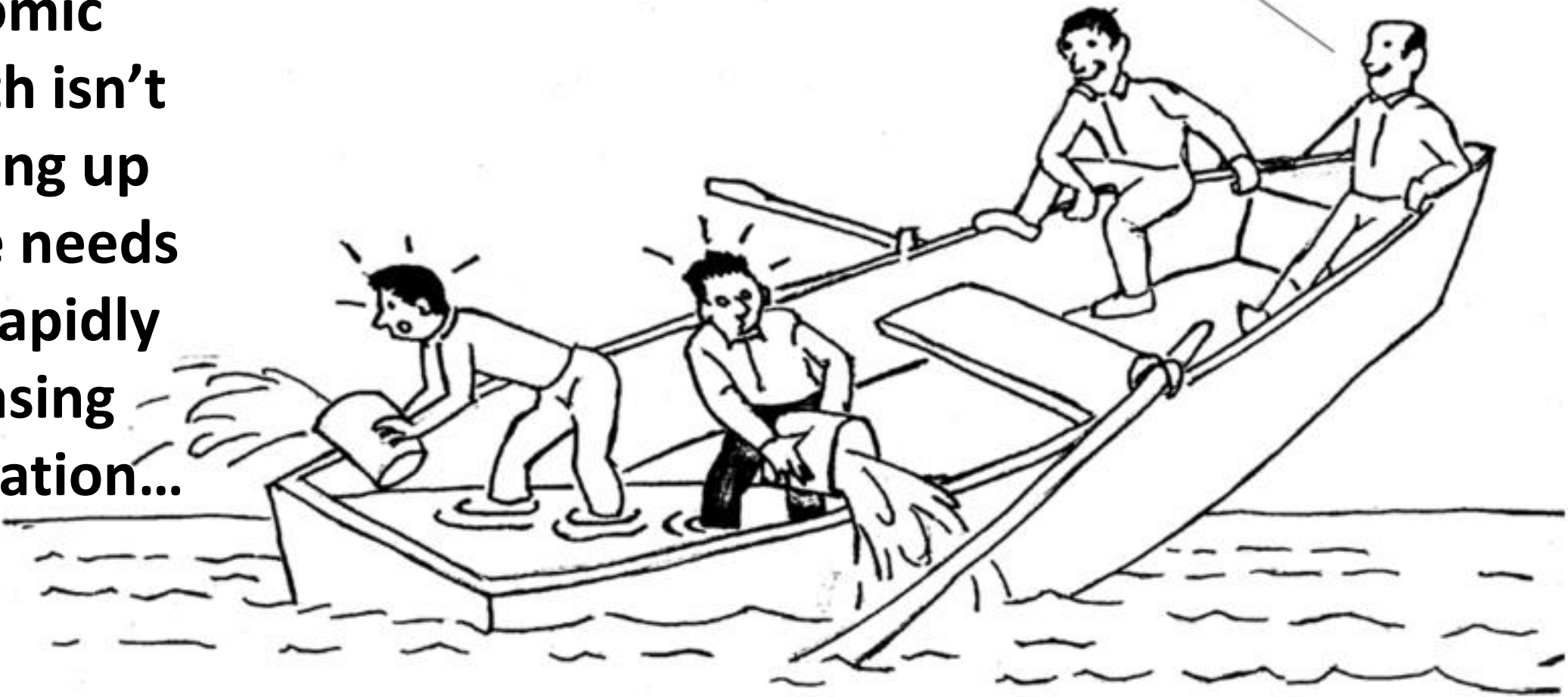
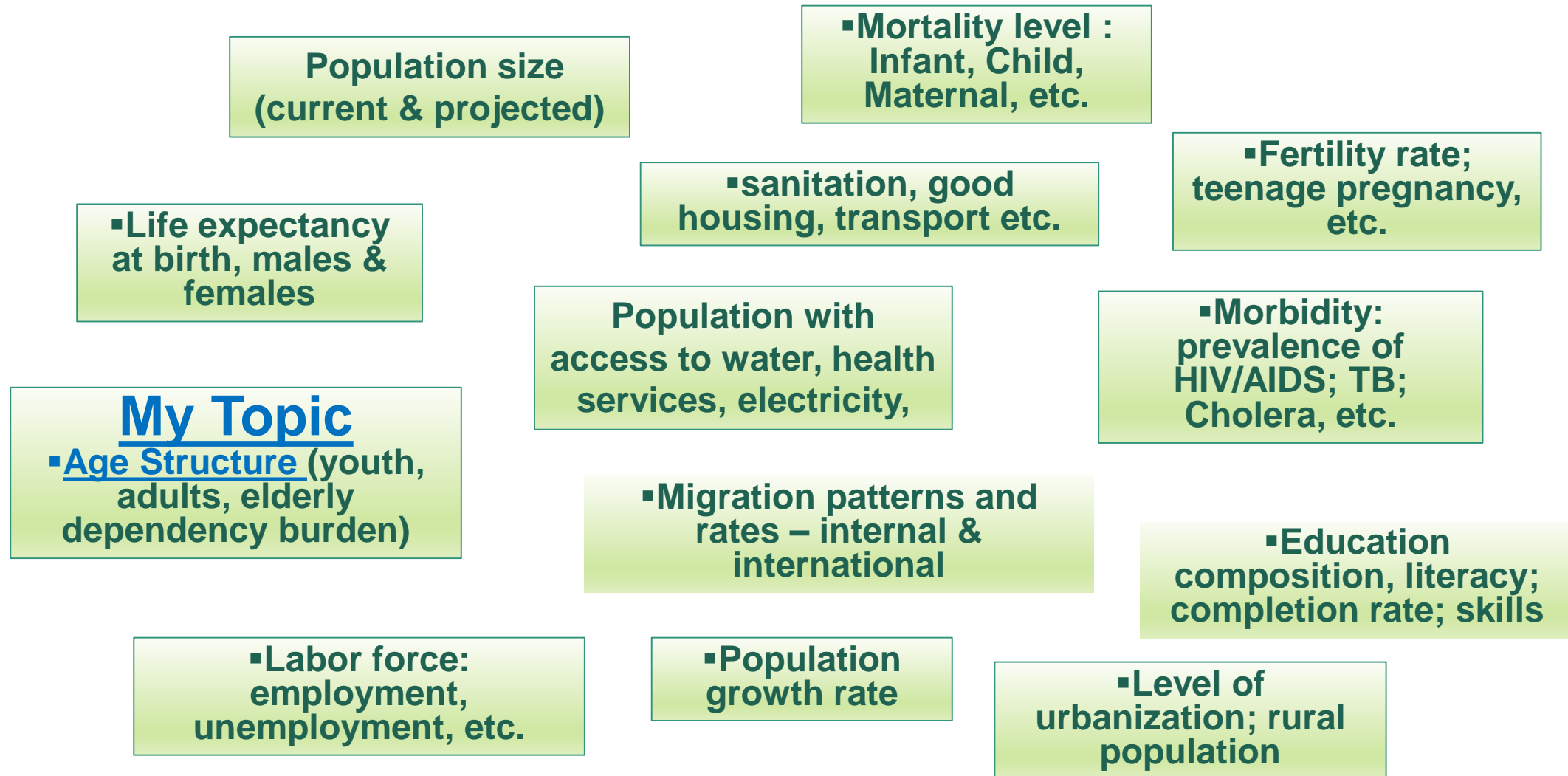


Image source: <https://www.christian-faith.com/busting-a-hole-in-the-boat/>

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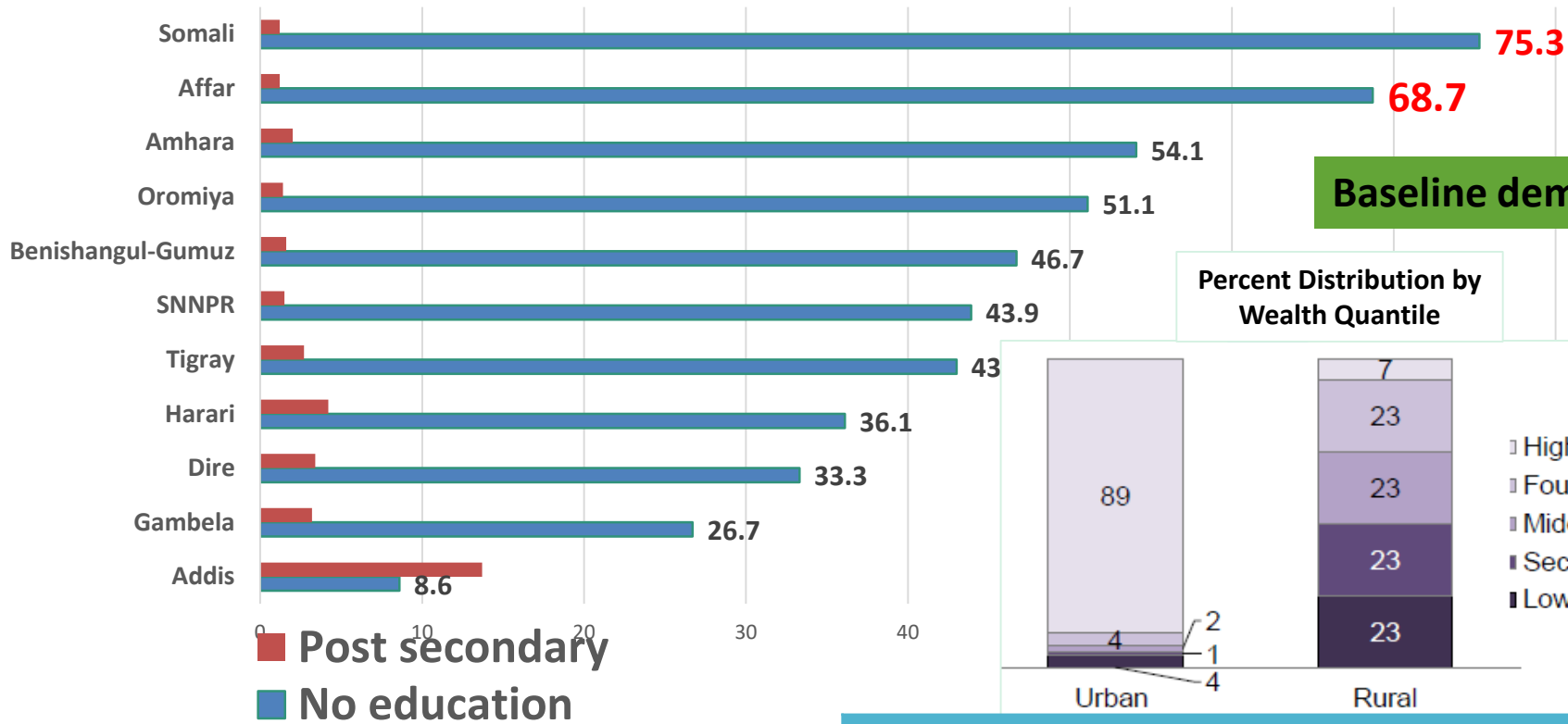
- **Population subject areas**
- **Baseline demography: where are we now?**
- **Vision 2050**
- **Ethiopia's population growth 1900 – 2019**
- **The relationship between a population's age structure and development**
- **The Demographic Dividend: What is it?**
- **Key observations and policy implications**

Selected Subject Areas in Population Studies



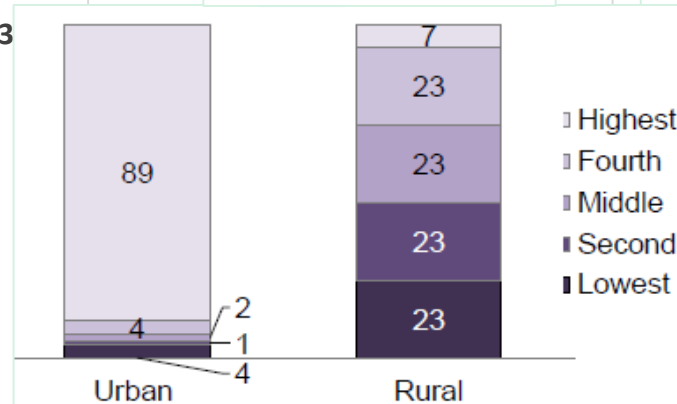
Vision : Ethiopia 2050...baseline, where we are now?

Percentage of Women with no Education and with Post-secondary education

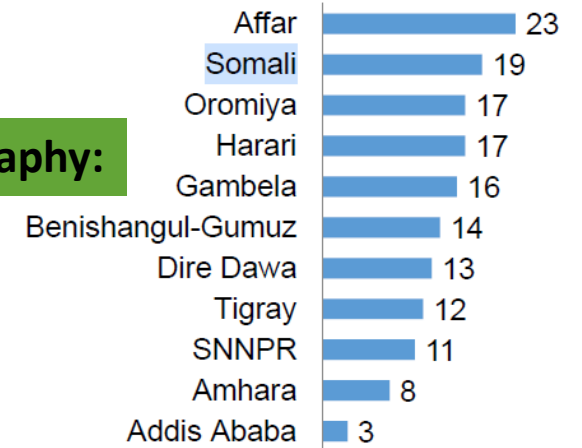


Baseline demography:

Percent Distribution by Wealth Quintile

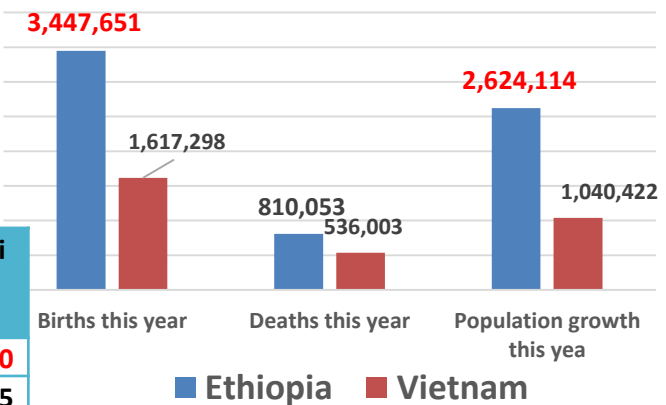


Percentage of women age 15-19 who have begun childbearing



	Ethiopia, 2019		Vietnam, 2019	
	Population	%	Population	%
Below age 15	43,266,670	38.6	22,487,454	22.9
Below age 20	56,117,196	50.1	29,071,245	29.6
Women 15-49	28,450,786	50.7	25,916,694	52.0

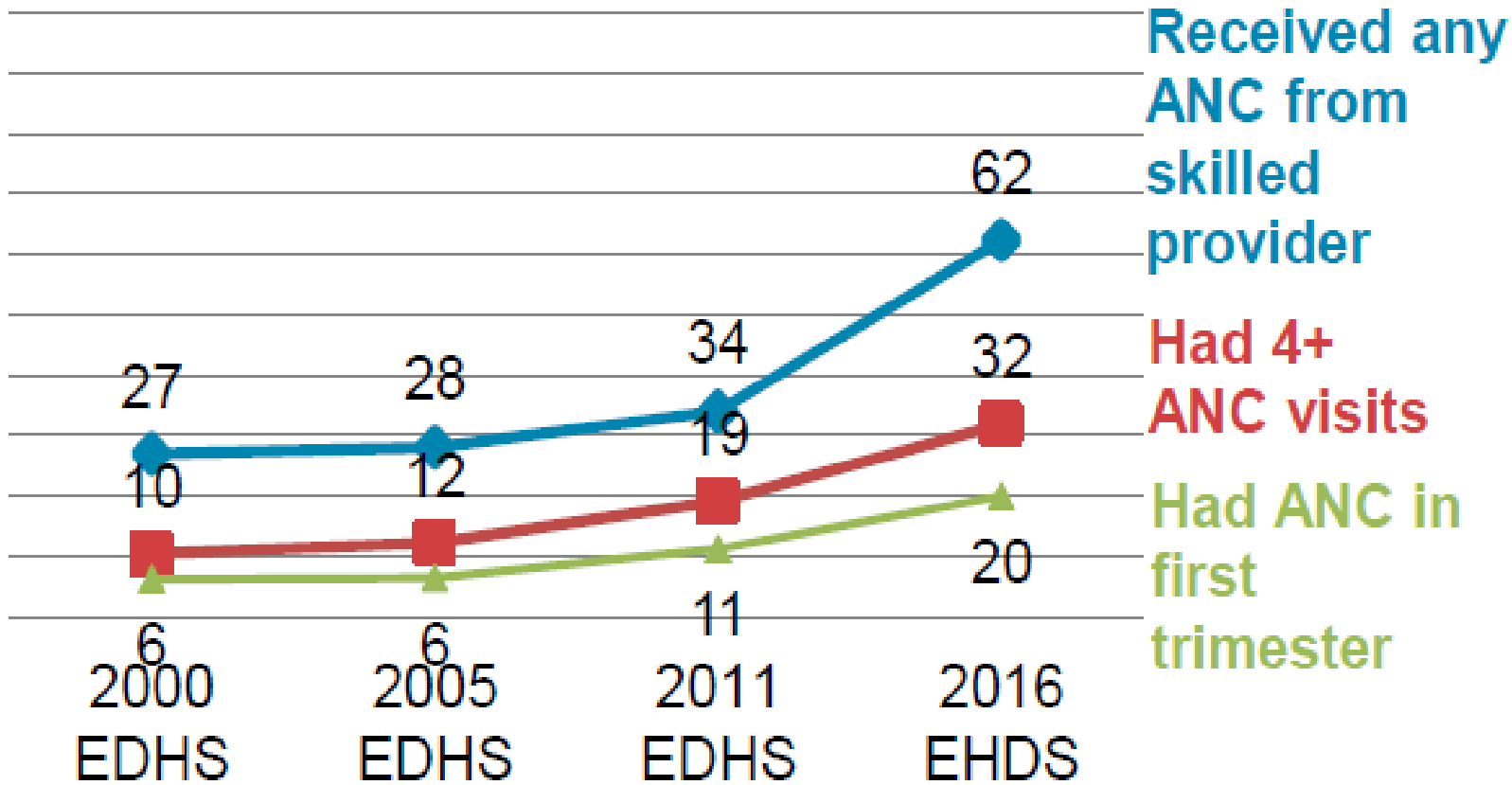
	Addis Ababa	Afar %	Somali %
Using modern contraceptive method	50.0	12.0	1.0
In the lowest wealth quartile (bottom 20%)	0.0	74.2	68.5
Percentage: married women in a polygynous union	2.0	19.0	29.0
Total Fertility Rate (TFR)	1.8	5.5	7.2
Mean ideal number of children	3.6	5.6	10.6



Source: Ethiopia Demographic and Health Survey 2016

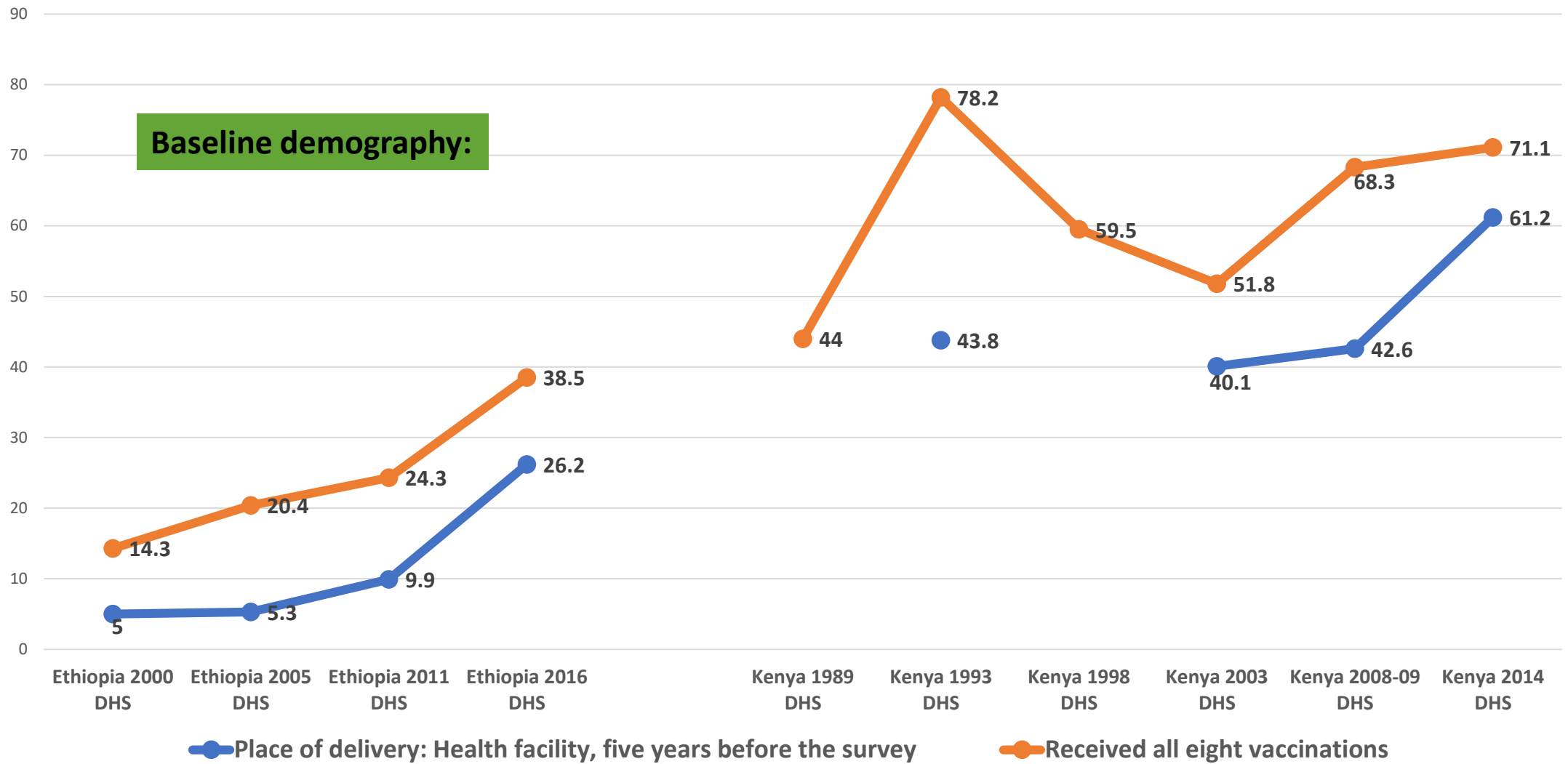
Percentage of women age 15-49 who had a live birth in the 5 years before the survey (for the most recent birth) ..and

Baseline demography:



* Skilled provider for EDHS 2000, 2005, and 2011 includes doctor, nurse, and midwife. Skilled provider for EDHS 2016 includes doctor, nurse, midwife, health officer, and health extension worker.

Ethiopia and Kenya: Percentage of Women with Access to Health Facilities Deliveries and Children who have Achieved Full Immunization During National Demographic and Health Surveys

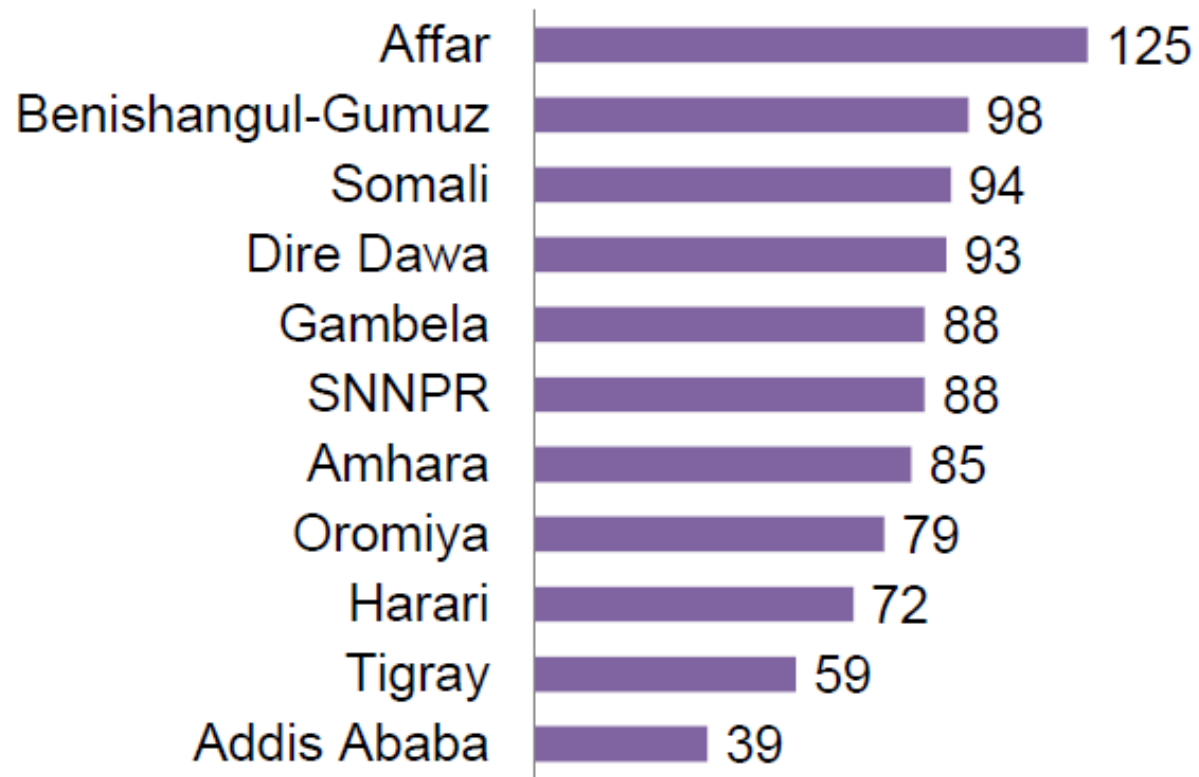


Source: <https://www.statcompiler.com/en/>

Regional Differences

Under 5 Mortality Rate (2016)

Deaths per 1,000 live births for the 10-year period before the survey



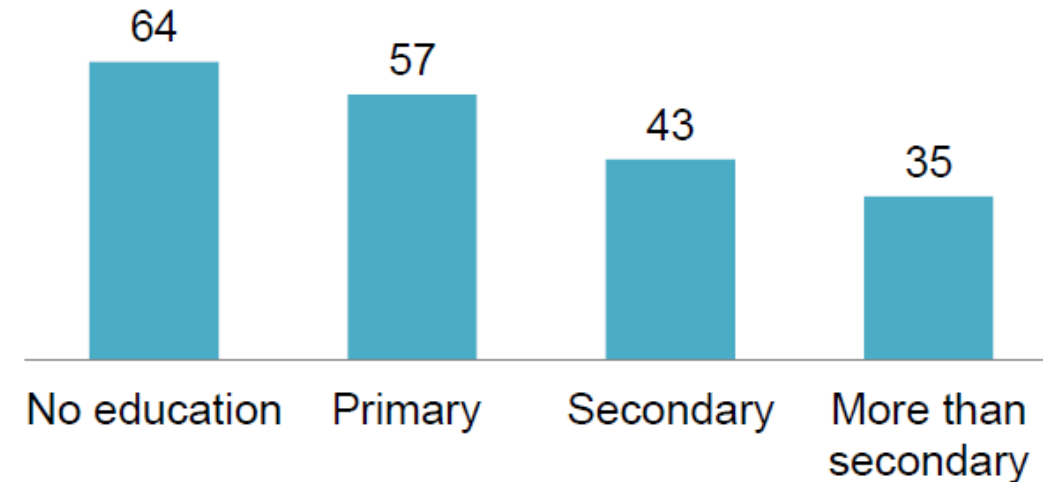
Source: <https://www.statcompiler.com/en/>

Baseline demography:

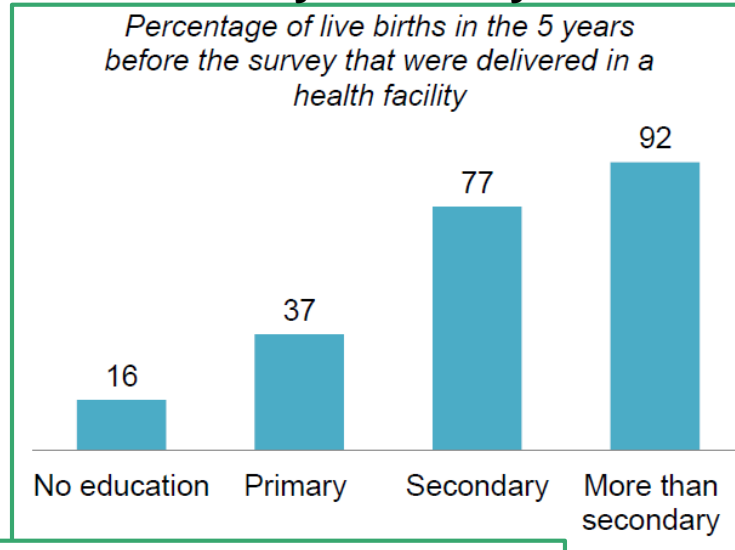
Education of Mothers Makes A Differences

Infant mortality by mother's education (2016)

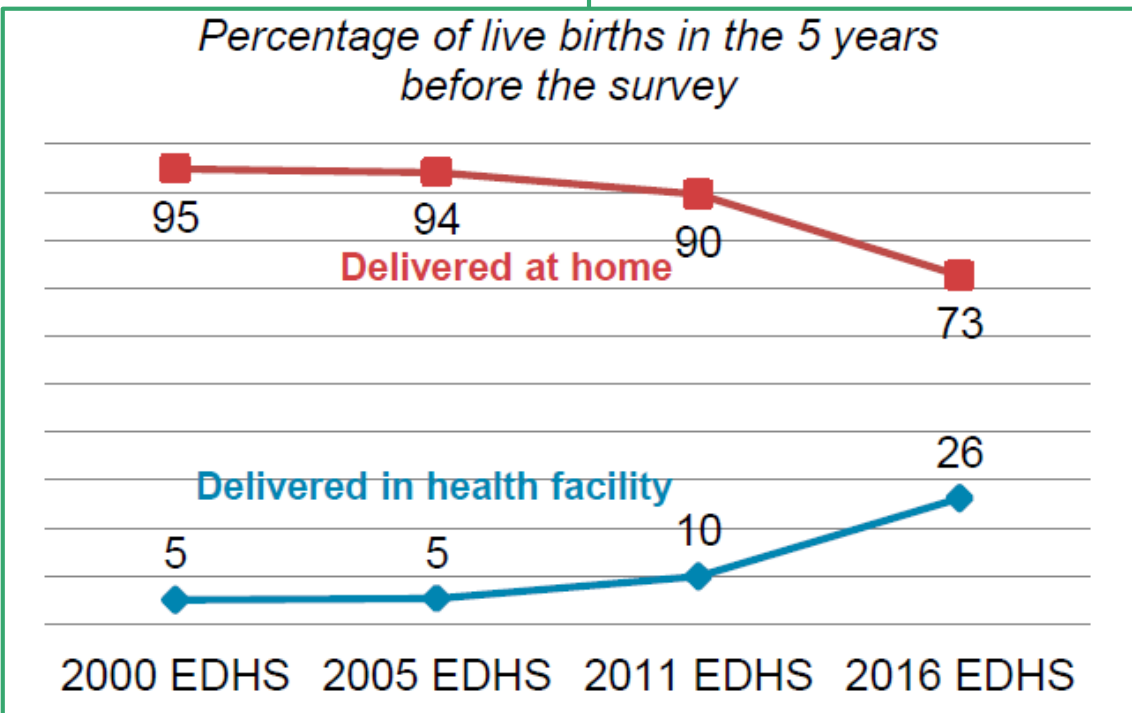
Deaths per 1,000 live births for the 10-year period before the survey



Health facility births by education

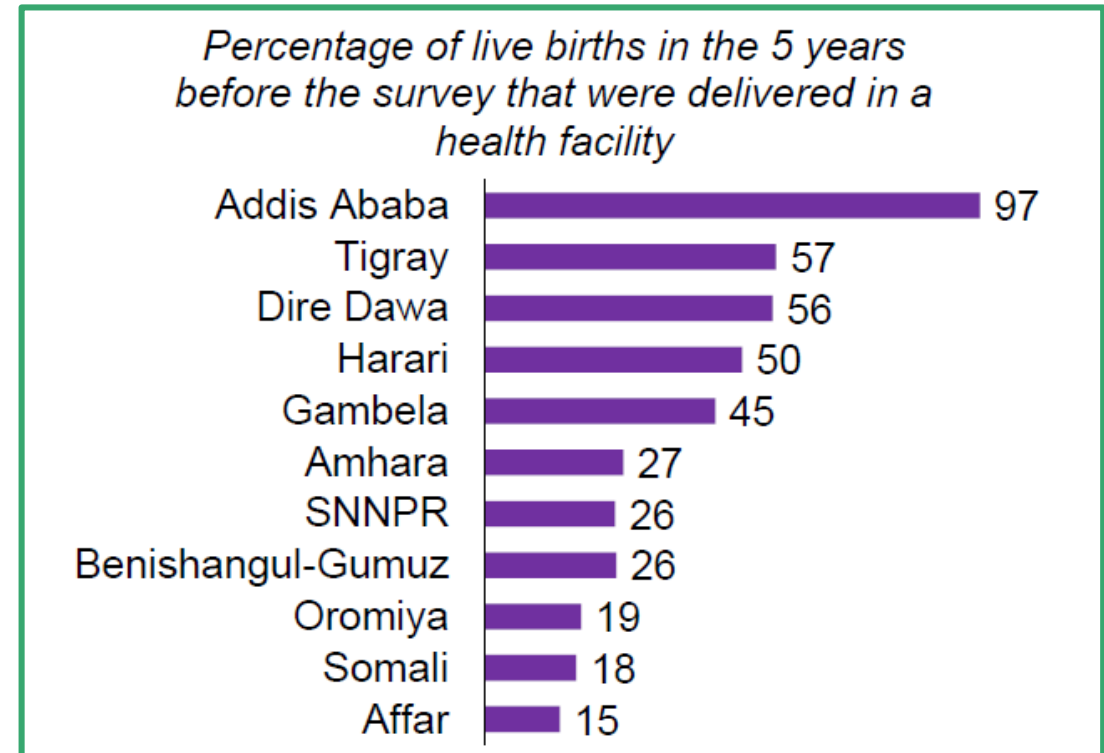


Trends in place of birth



Baseline demography:

Health facility births by region



Vision : Ethiopia 2050

- V1. Year-over-year reductions in net population gain based on the fertility lowering effects of minimum high quality secondary education for all Ethiopians
- V2. Equal status for women and men
- V3. Accelerated urbanization
- V4. Data-driven social/economic/political discourse and policy making
- V5. Focus on families (not masses)

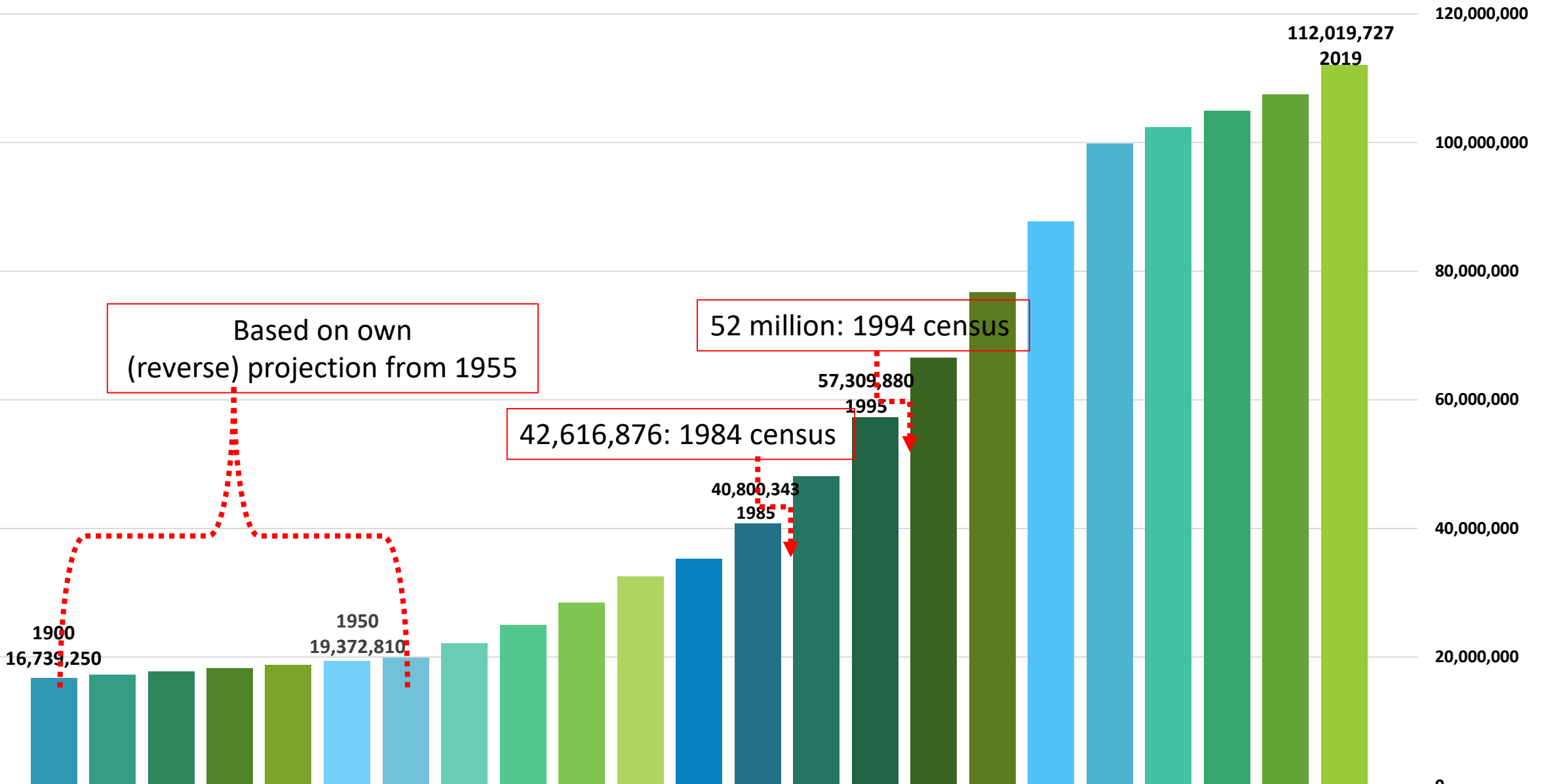


Age Structure Transformation (AST)

- **Wildcards**
 - Degree of Age Structure Transformation
 - Ethiopian politics
 - National debt
 - World affairs including global warming

Ethiopia's Population

1900 - 2019



Based on own
(reverse) projection from 1955

52 million: 1994 census

42,616,876: 1984 census

40,800,343
1985

57,309,880
1995

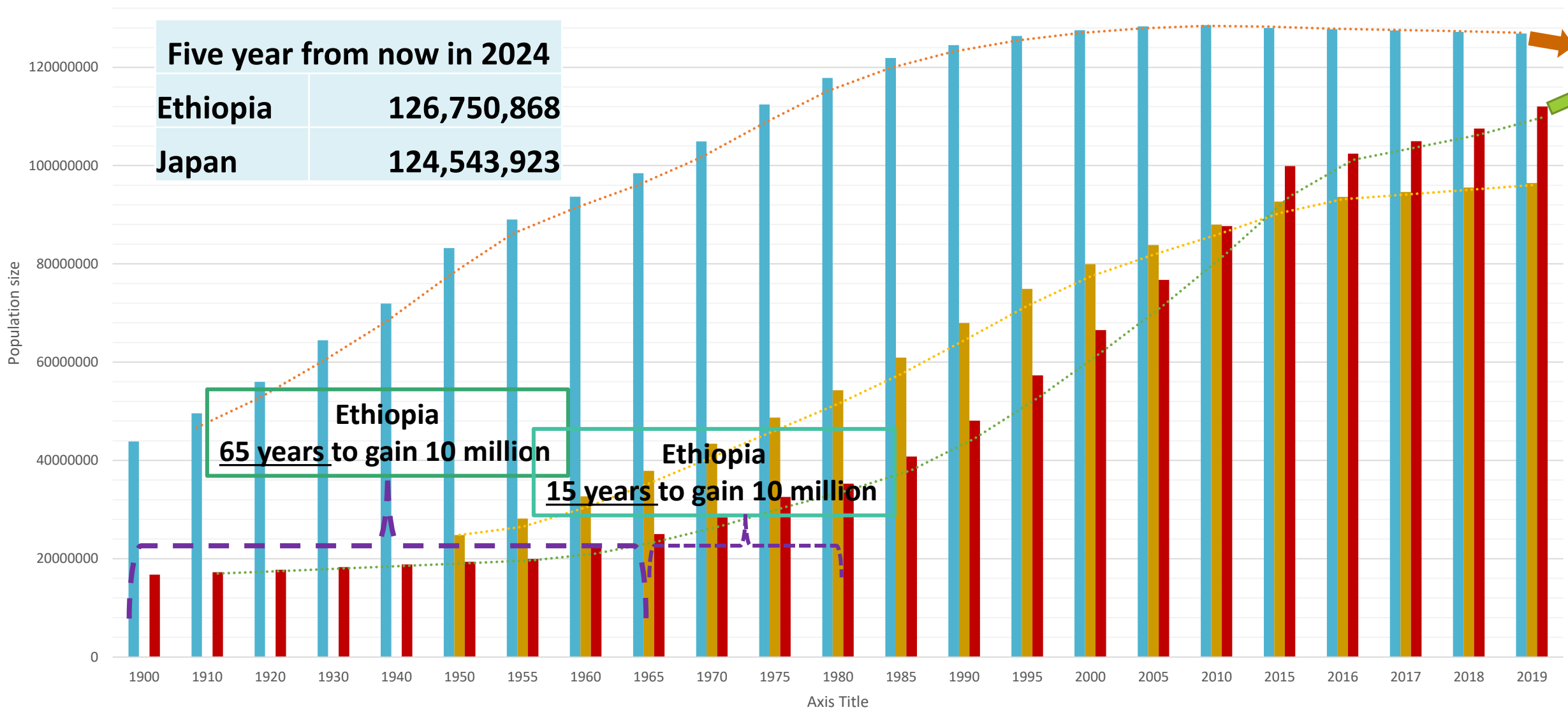
112,019,727
2019

•Based on: [World Population Prospects: The 2019 Revision](#) - United Nations Population Division , a and reverse projection by author to year 1900 based on the 1950 population
 • [The World at Six Billion, World Population, Year 0 to near stabilization](#) [Pdf file] - United Nations Population Division
 Source: <https://www.worldometers.info/world-population/>

**Comparison with
two other countries**

Population of Ethiopia, Vietnam and Japan, 1900 to 2019

Five year from now in 2024	
Ethiopia	126,750,868
Japan	124,543,923

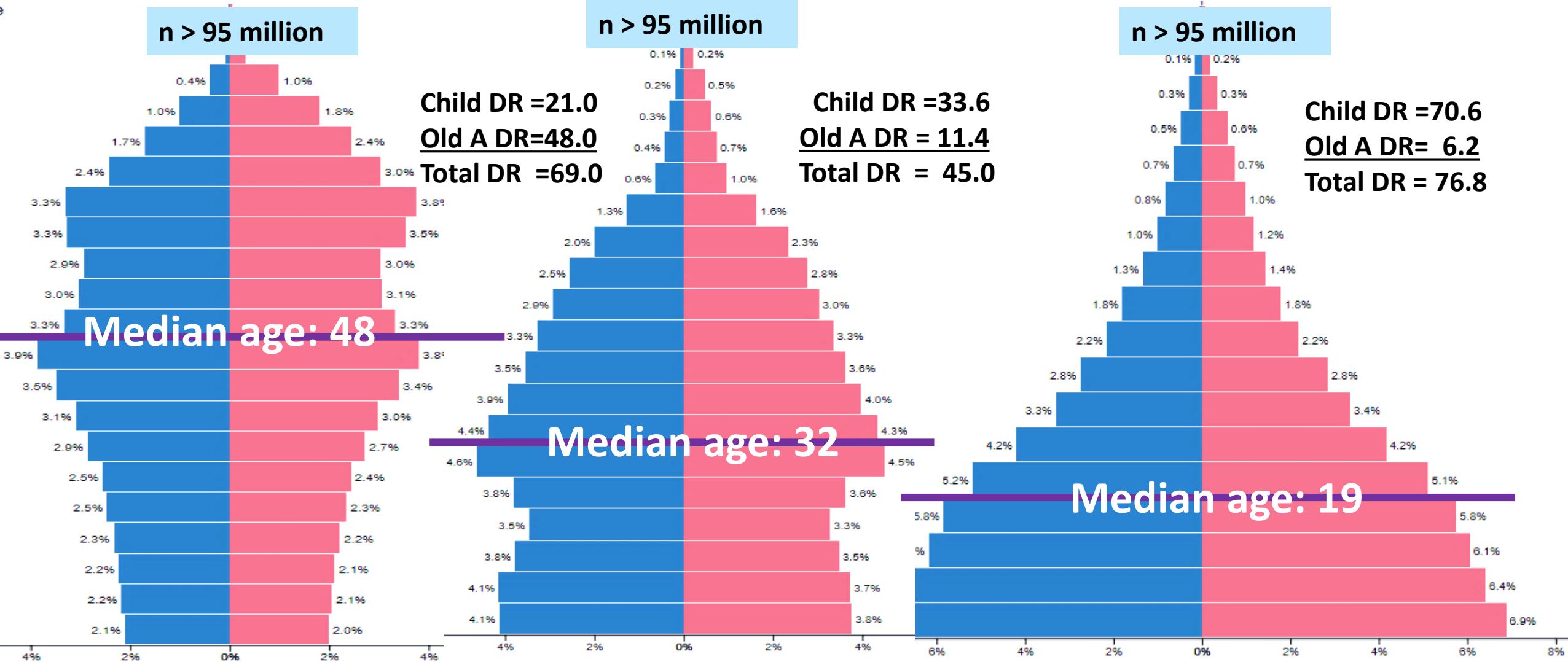


■ Japan
 ■ Vietnam
 ■ Ethiopia
 ⋯ 2 per. Mov. Avg. (Japan)
 ⋯ 2 per. Mov. Avg. (Vietnam)
 ⋯ 2 per. Mov. Avg. (Ethiopia)

Age Structure Transformation (AST) 2020 - 2050

Demography and Development: Age Structure Transformation

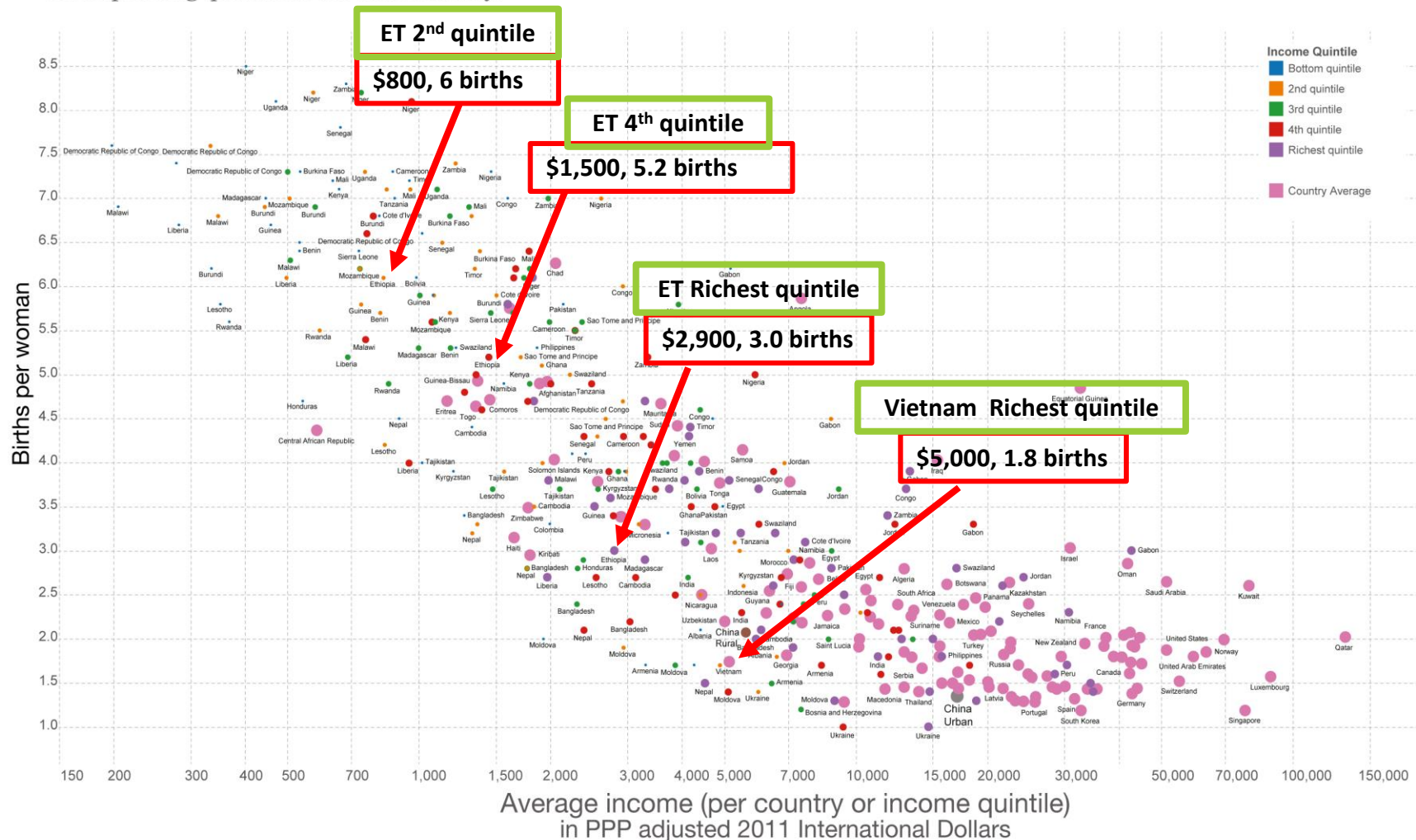
Match the age pyramid with the name of a country : Ethiopia, Japan, Vietnam



Source: <https://www.populationpyramid.net/viet-nam/2020/>

Births per woman by income level, 2013

Pink bubbles ● show country averages for income (GDP per capita, PPP adjusted) and for the total fertility rate. For all other countries the fertility rate is shown for each wealth quintile within the country. It is plotted against the average income per corresponding quintile in the same country.

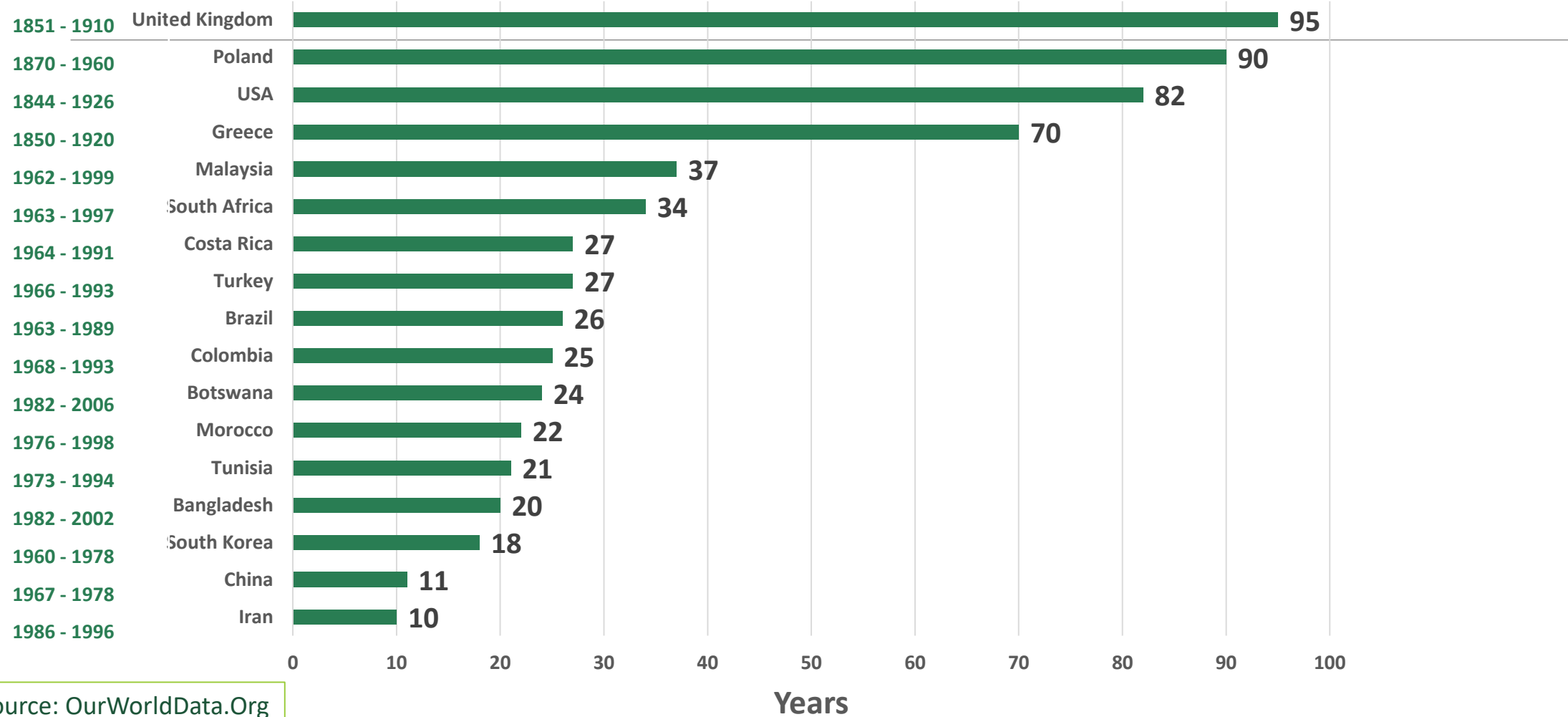


**Which Ethiopia:
2050?**

The ten development goals need to target subpopulations for prioritization, with varying timetables and target dates

Data sources: World Bank for all income measures. Fertility rates: national averages from WDI. Fertility by wealth quintile from the DHS (via the WHO) – except for China for which data was added from various research papers. Most data are from 2013 – none of the data refer to a year earlier than 2005. Licensed under CC-BY-SA by the author Max Roser.

Age structure Transformation: How long does it take for fertility to fall from more than 6 children per woman to fewer than 3 children per woman?

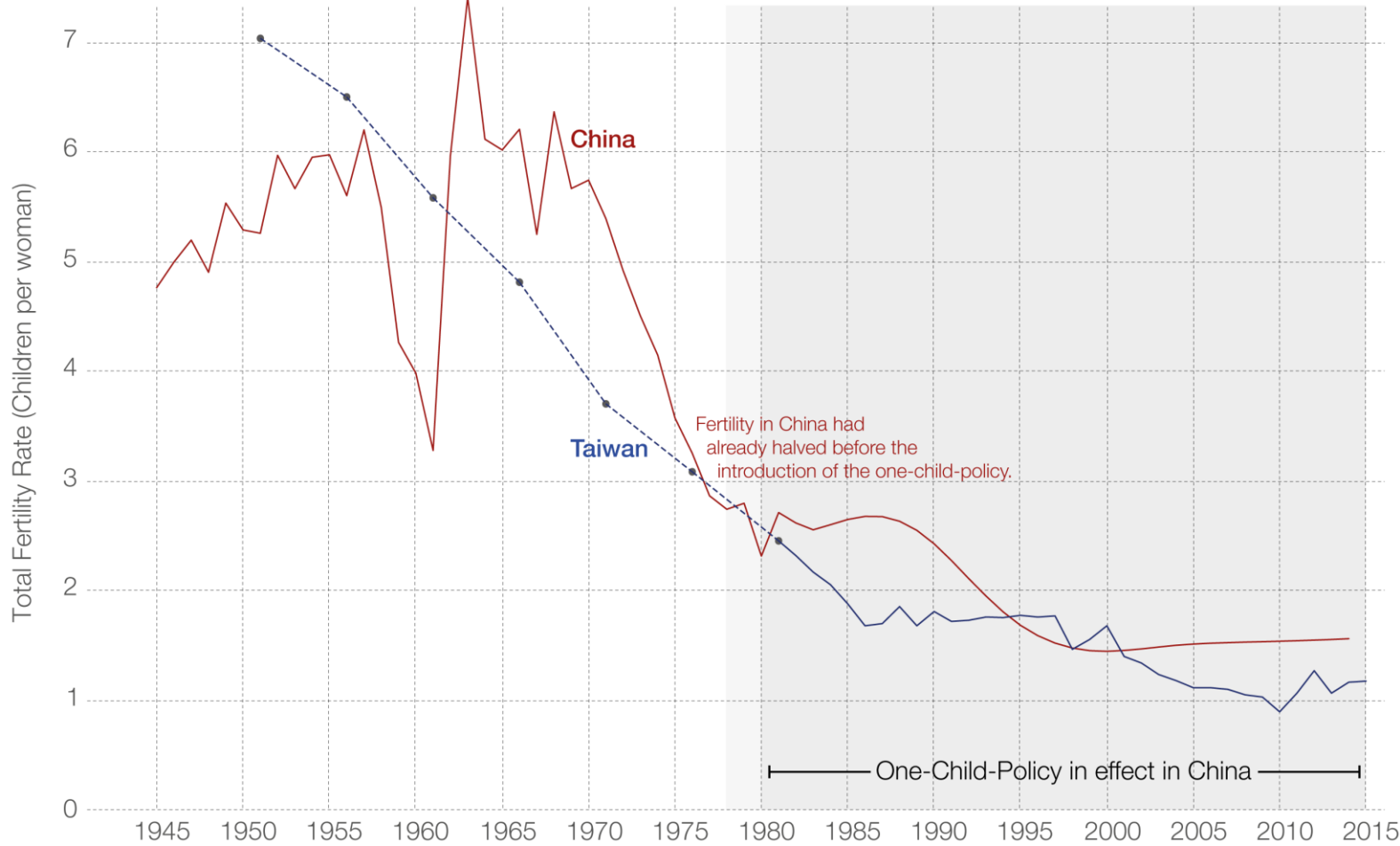


Data source: OurWorldData.Org

Should Ethiopia introduce coercive population policies to meet the 10 development challenges? The answer is no.

Did the one-child-policy work? Fertility in China and Taiwan (1945-2015)

The one-child-policy in China was introduced after 1978 and was in effect from the period 1980 to 2015. Taiwan never introduced a one-child-policy.



This chart shows that fertility started to decline in 1970, long before the introduction of the one-child-policy in 1978.

Taiwan never introduced a one-child-policy but experienced the same decline.

“There is similar evidence from other countries. In India, for example, the "sterilization camps" from the 1970s were ineffective - and it is possible they actually contributed to population growth in the long run by eroding trust in family planning policies.”

(Note: You can read more about coercive population control policies in our entry [here](#). And you can read more about India's sterilization camps in [this academic article](#).)

Data source: Fertility in Taiwan from Taiwan's Ministry of Interior; Fertility in China before 1982 from Coale & Li (1987), later data from the World Bank. The interactive data visualization is available at OurWorldinData.org. There you find the raw data and more visualizations on this topic. Licensed under CC-BY-SA by the author Max Roser.

What is the correct answer?

Meeting the 10 development challenges requires drastic changes in Ethiopia's age structure through rapid urbanizations and population control measures that relied on

- a. gender equality,
- b. empowerment of women and girls
- c. minimum high quality secondary education or higher
- d. All of the above

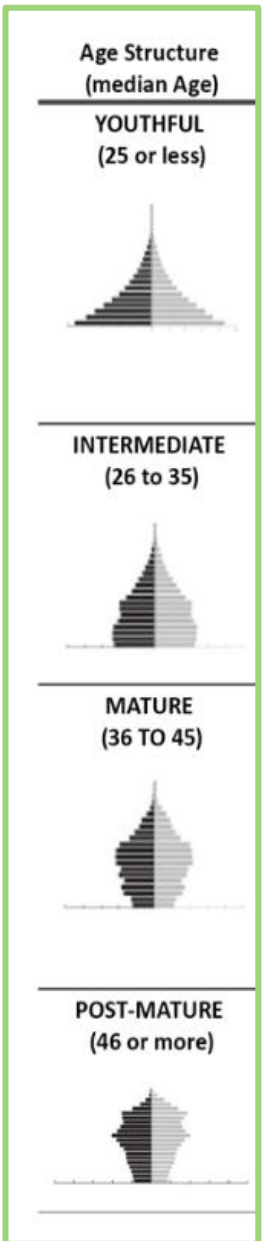
The answer is d

Click HERE for population pyramids past present and future

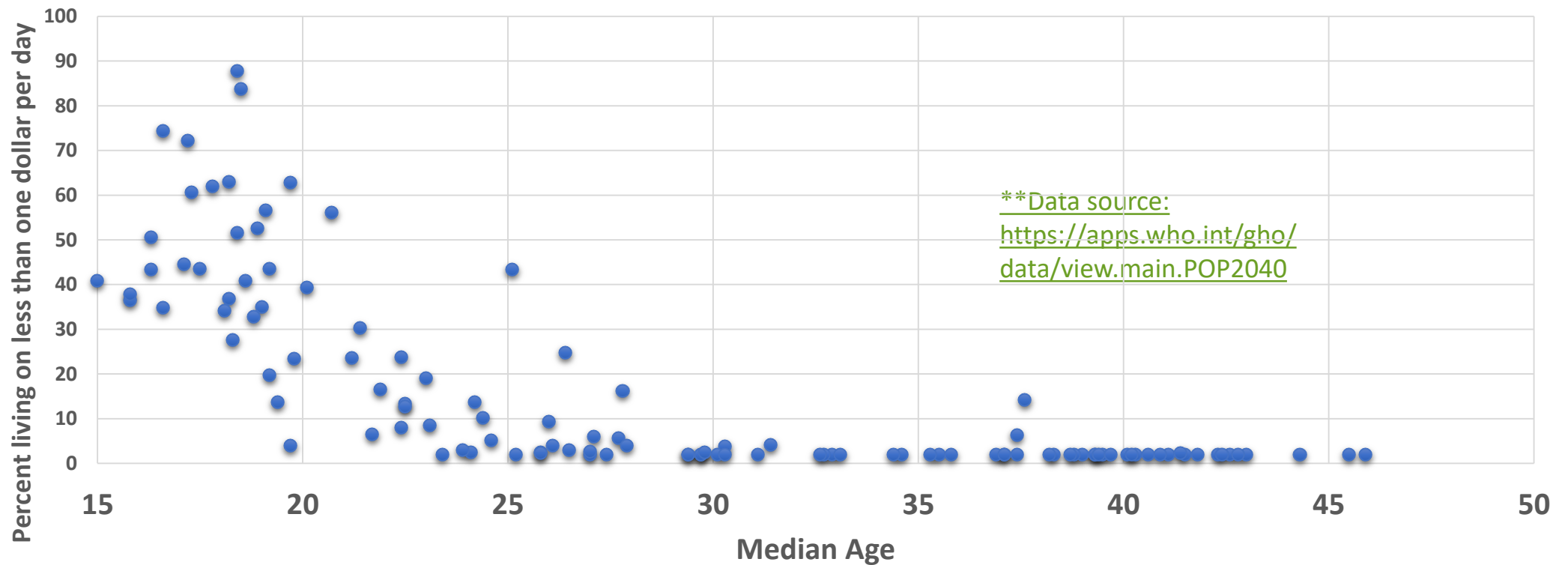
Age Structure and Median Age as key Indicators of Development

Age Structure and Level of Development

The year 2018, marked the 60th anniversary of a landmark publication by demographer Ansley Coale and economist Edgar M. Hoover who first recognized the close relationship between a population's age structure and development. They predicted the rise of Asian "Tiger" countries: Hong Kong, Singapore, South Korea, Taiwan. Africa did not live up to their predictions*

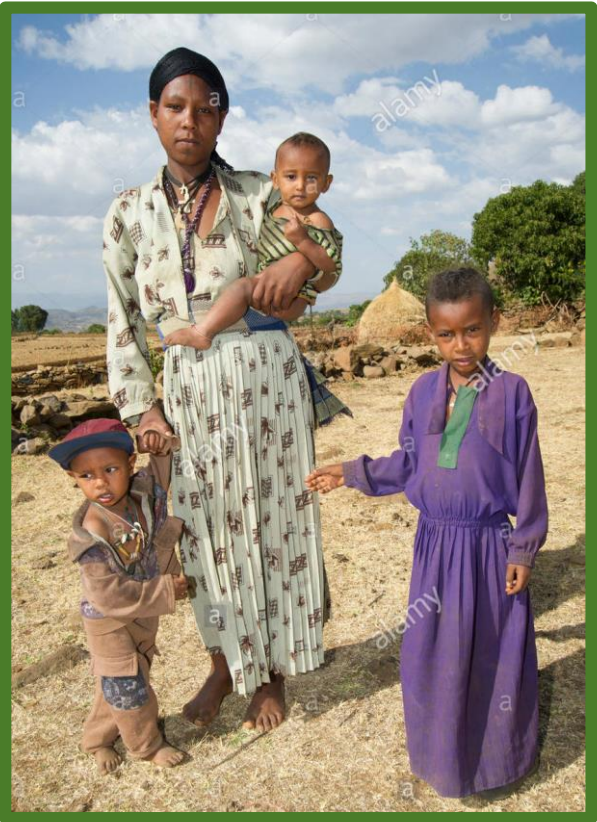
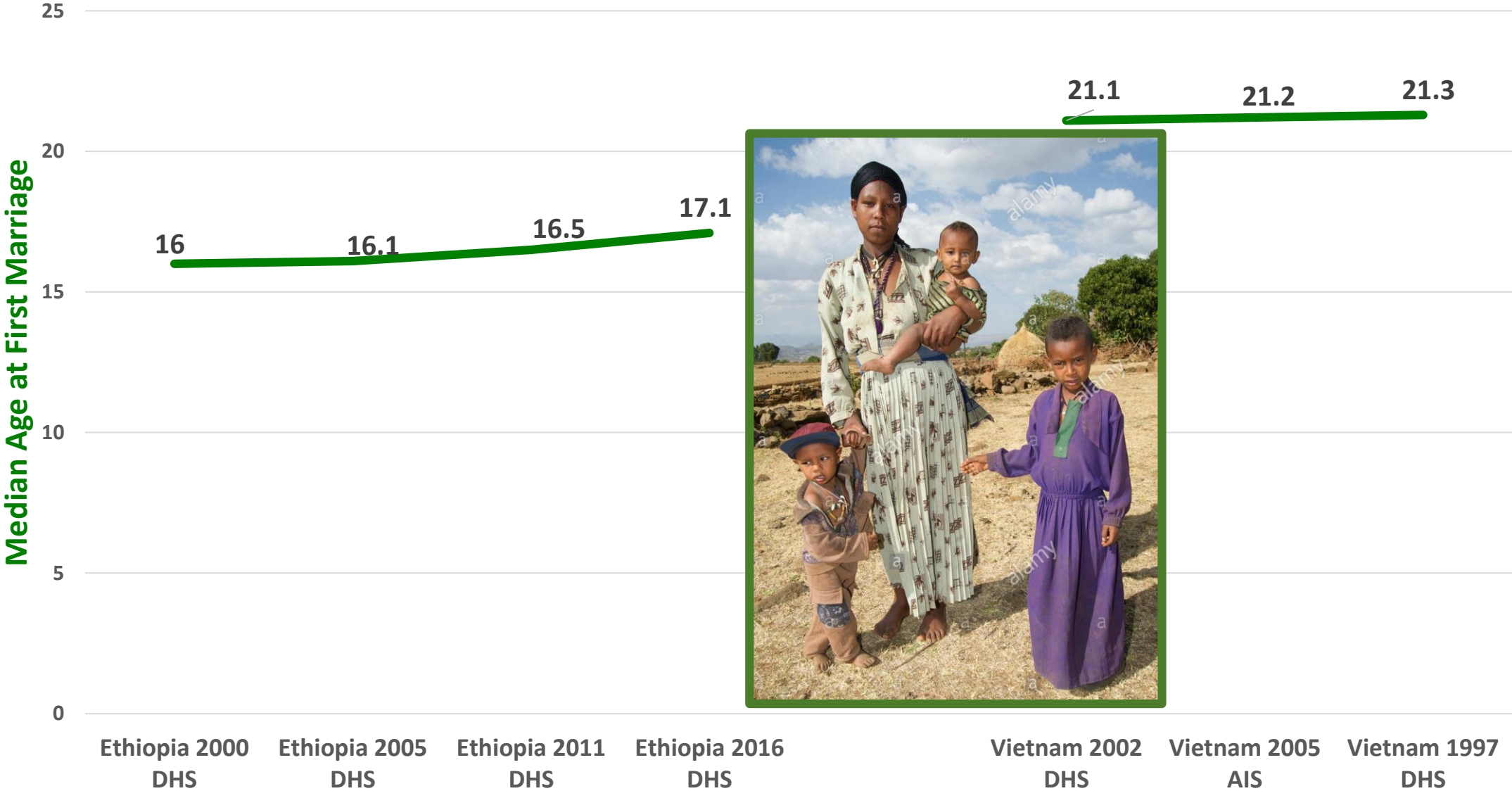


Scatter plot of the Percentage of a Country's Population Living on Less than a Dollar per Day by Median Age of Countries



*Source: <https://www.weforum.org/agenda/2018/12/is-demographic-change-the-key-to-development/>

Ethiopia and Vietnam: Median Age at First Marriage [Women]: 25-49



Ethiopia: Age-Specific and Total Fertility Rate, 2016

Age group	Urban	Rural	Total
	Cumulative Total Fertility Rate (TFR)	Cumulative Total Fertility Rate (TFR)	Cumulative Total Fertility Rate (TFR)
20-24	0.67	1.64	1.4
25-29	1.27	2.86	2.47
30-34	1.83	3.91	3.42
35-39	2.21	4.67	4.11
40-44	2.28	5.07	4.46
45-49	2.28	5.20	4.57



https://en.wikipedia.org/wiki/Kambaata_people#/media/File:KembataFamily.jpg

What do Gender Equality and Female Empowerment Mean?

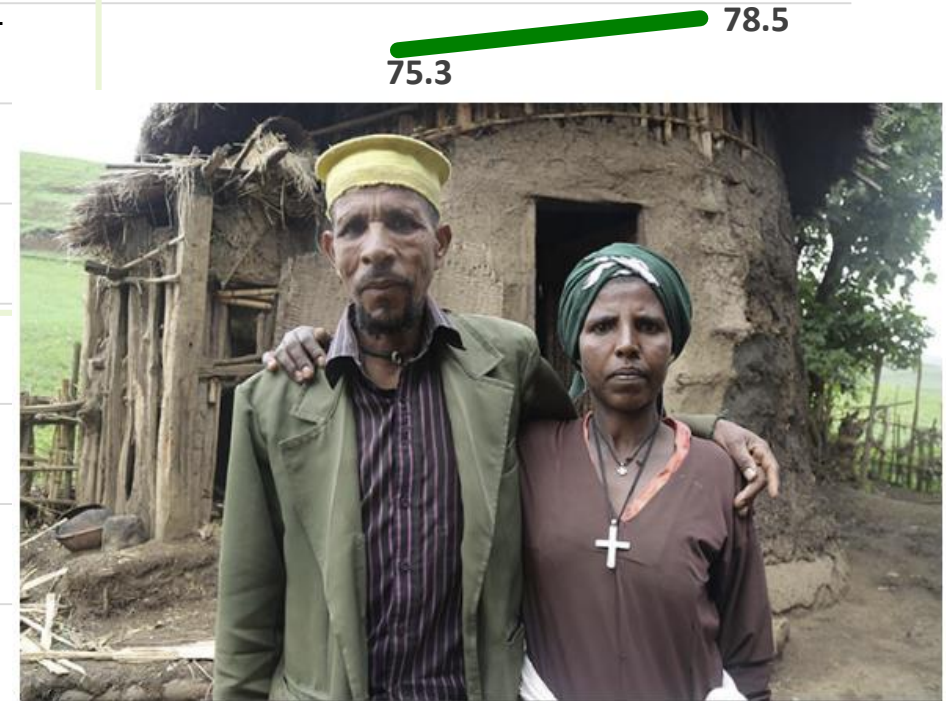
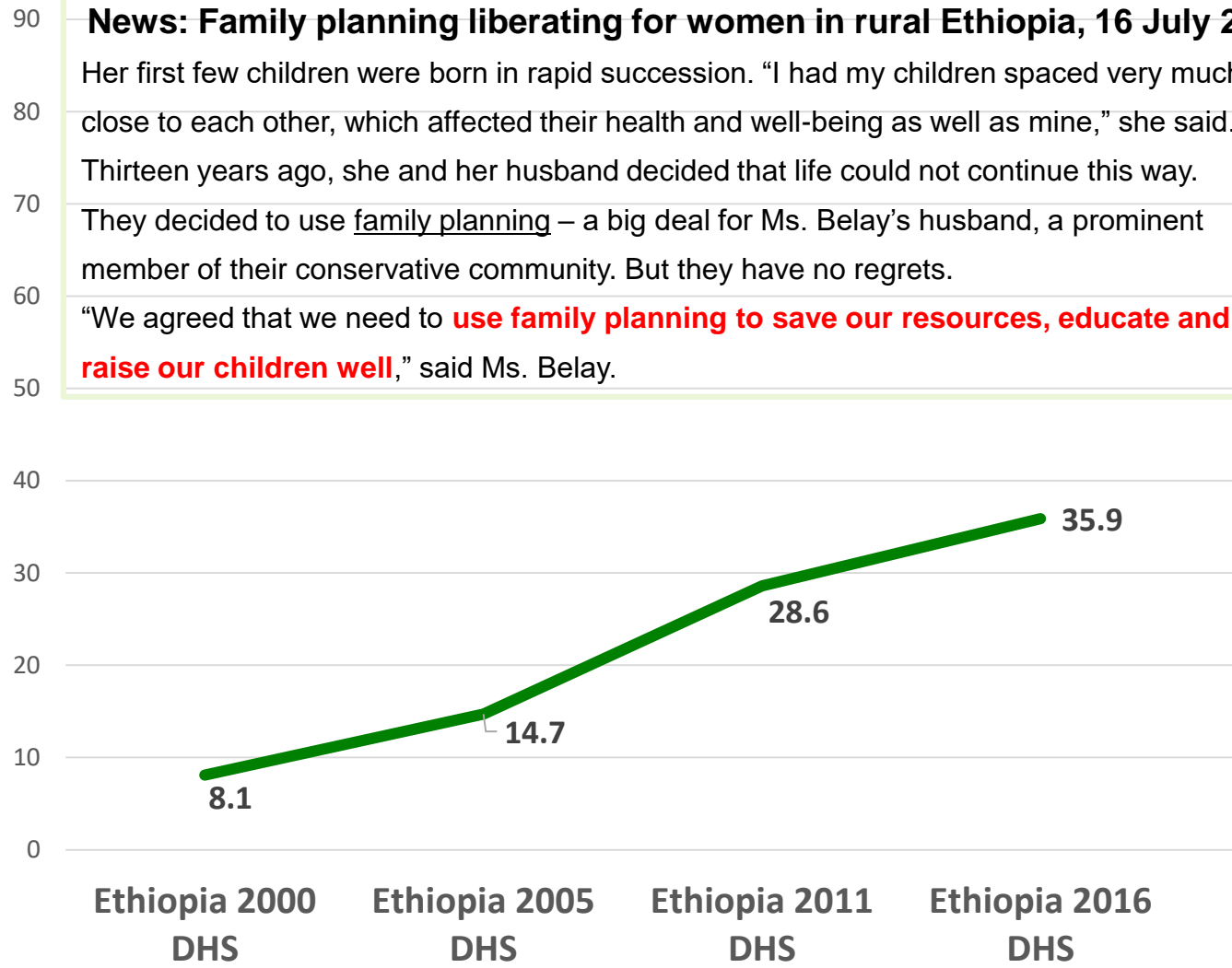
“Gender equality: concerns women and men, and it involves working with men and boys, women and girls to bring about changes in attitudes, behaviors, roles and responsibilities at home, in the workplace, and in the community. Genuine equality means more than parity in numbers or laws on the books; it means expanding freedoms and improving overall quality of life so that equality is achieved without sacrificing gains for males or females.”

“Female empowerment: is achieved when women and girls acquire the power to act freely, exercise their rights, and fulfill their potential as full and equal members of society. While empowerment often comes from within, and individuals empower themselves, cultures, societies, and institutions create conditions that facilitate or undermine the possibilities for empowerment.”

Ethiopia and Vietnam : Married women currently using any method of contraception

News: Family planning liberating for women in rural Ethiopia, 16 July 2018

Her first few children were born in rapid succession. “I had my children spaced very much close to each other, which affected their health and well-being as well as mine,” she said. Thirteen years ago, she and her husband decided that life could not continue this way. They decided to use family planning – a big deal for Ms. Belay’s husband, a prominent member of their conservative community. But they have no regrets. “We agreed that we need to **use family planning to save our resources, educate and raise our children well**,” said Ms. Belay.



Mrs. Belay with her husband, Priest Leul Hunegnaw, in front of their barn. She says contraception has had a liberating effect. © UNFPA Ethiopia

A health extension worker teaches women about family planning.

© UNFPA Ethiopia

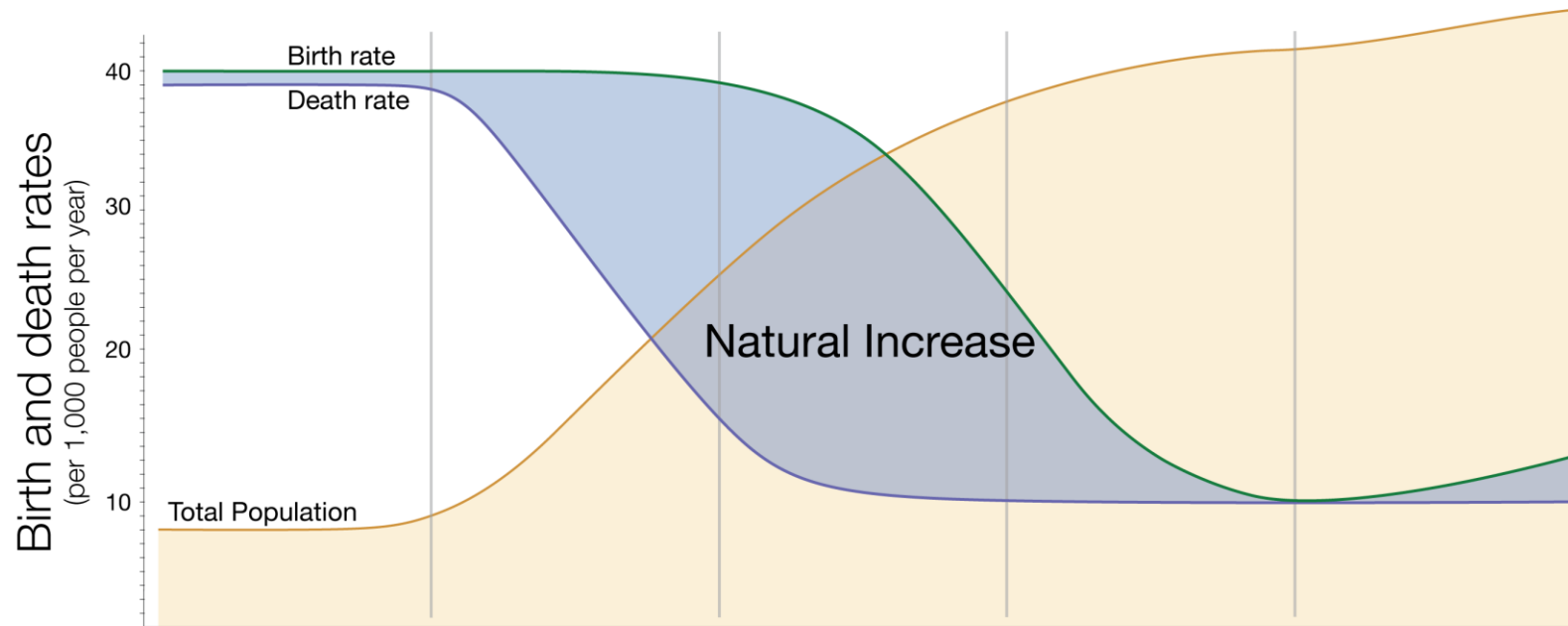


<https://www.unfpa.org/news/family-planning-liberating-women-rural-ethiopia>

The Demographic Dividend

What is it?

The demographic transition in 5 stages



	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Birth rate	High	High	Falling	Low	Rising again
Death rate	High	Falls rapidly	Falls more slowly	Low	Low
Natural increase	Stable or slow increase	Very rapid increase	Increase slows down	Falling and then stable	Stable or slow increase
Population Pyramid					

– Stage 1: Population is stable. There is high fertility and high mortality; so deaths and births cancel out.

– Stage 2: Population grows rapidly. There is high fertility but low mortality.

– Stage 3: Population growth slows down. Social norms adapt to the fact that children survive. Fertility declines with increasing education and labour opportunities for women.

– Stage 4: Population growth stops. Low fertility catches up with low mortality.

– Stage 5: Population potentially starts growing again. The evidence here is limited, but the idea is that further social and economic opportunities may raise fertility again.

(Note: This is only a stylized overview of the demographic transition model. You can find a more complete explanation [here](#). You can also find more details in [this 5-minute video](#) as well as in entry on the [determinants of fertility](#).)

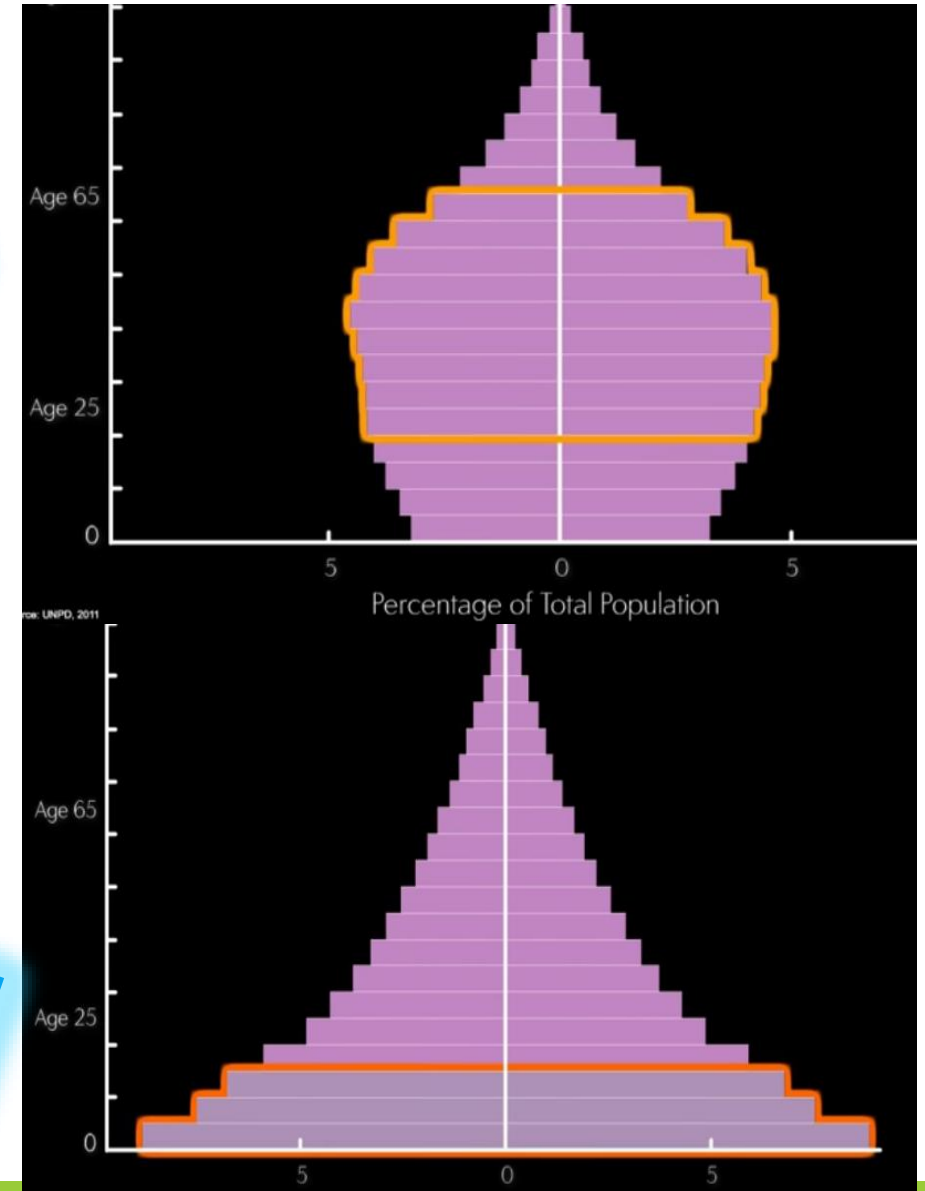
Age structure Transformation Produces a Demographic Dividend

Q. Is Ethiopia's population size an asset; a demographic dividend?

A. No; not in its current composition

“Countries with the greatest demographic opportunity for development are those entering a period in which the working-age population has good health, quality education, decent employment and a lower proportion of young dependents. Smaller numbers of children per household generally lead to larger investments per child, more freedom for women to enter the formal workforce and more household savings for old age. When this happens, the national economic payoff can be substantial. This is a "demographic dividend.”

In other words.....



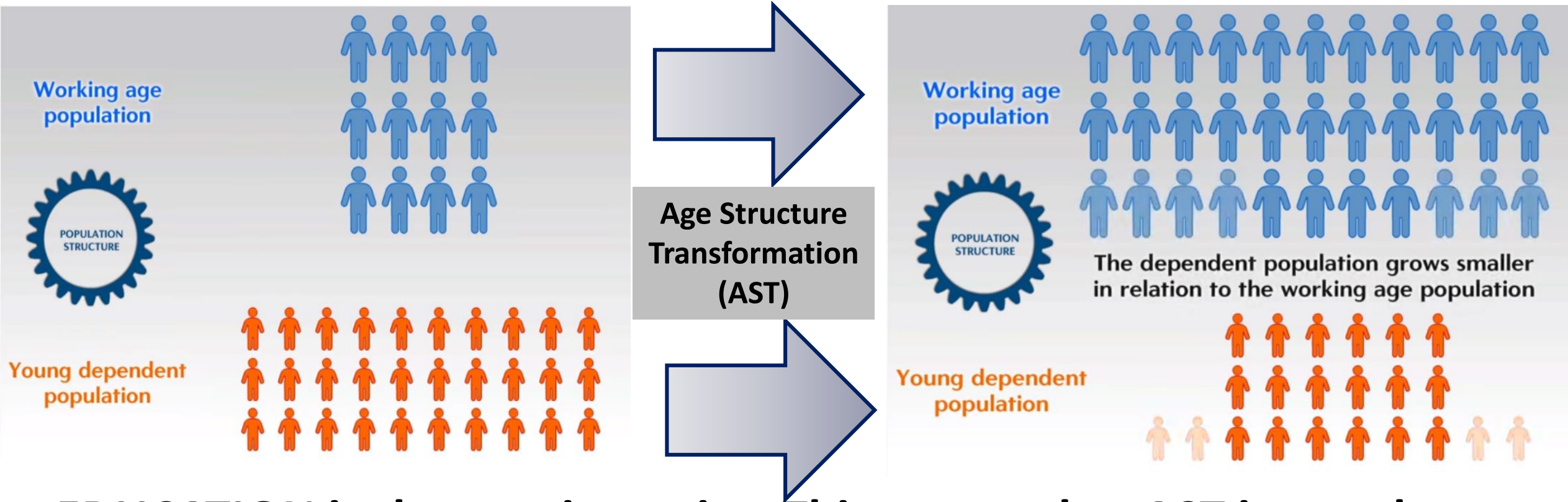
Demographic dividend YouTube

[HERE](#)

<https://www.unfpa.org/demographic-dividend>

No dividend

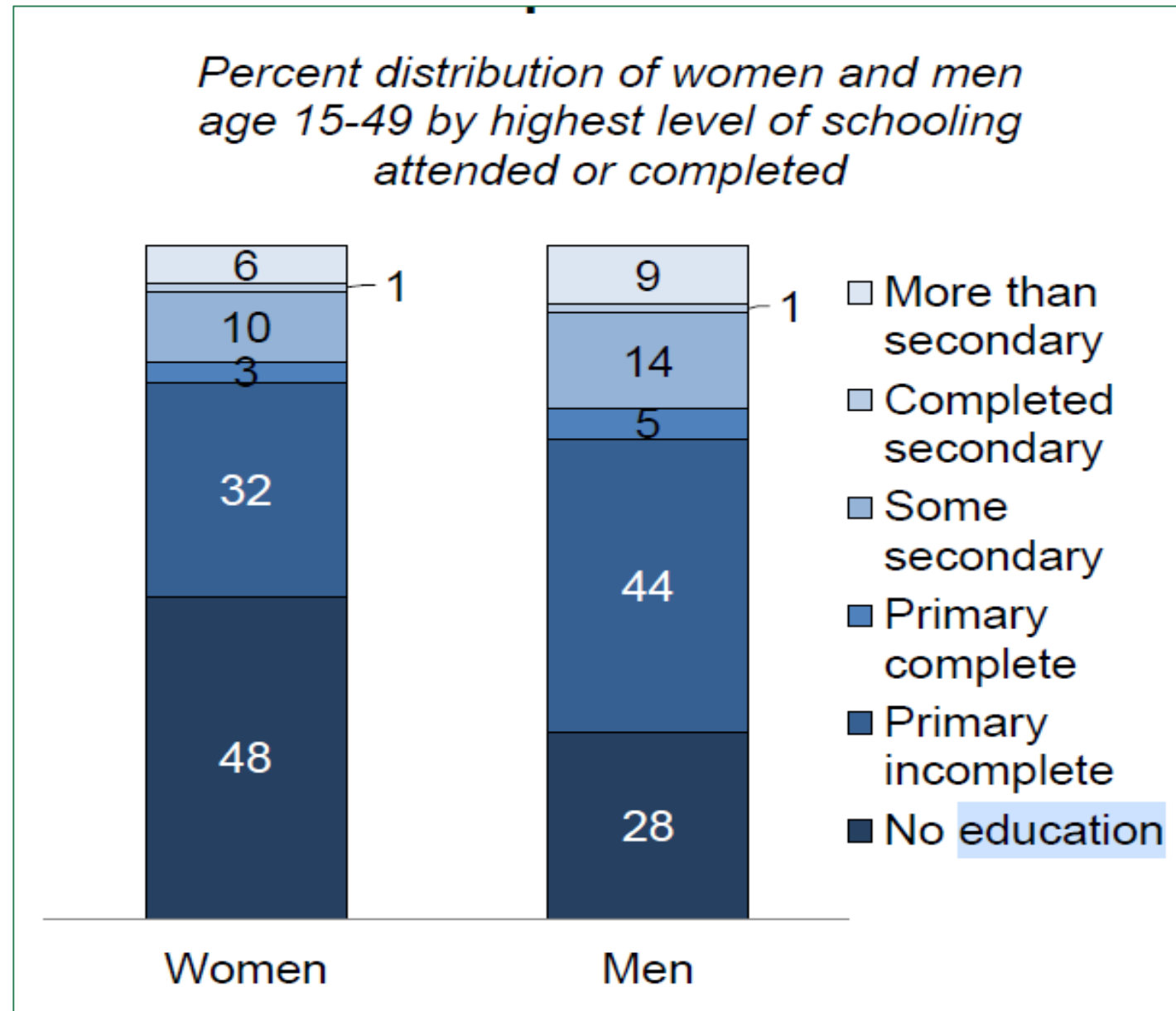
Demographic dividend



EDUCATION is the starting point. This means that AST is not cheap as it requires massive investments, especially if the goal is to bring about parity between the sexes

Education in Ethiopia

Source: Demographic and Health Survey 2016



Source: <https://dhsprogram.com/pubs/pdf/FR328/FR328.pdf>

Obaansi's Story

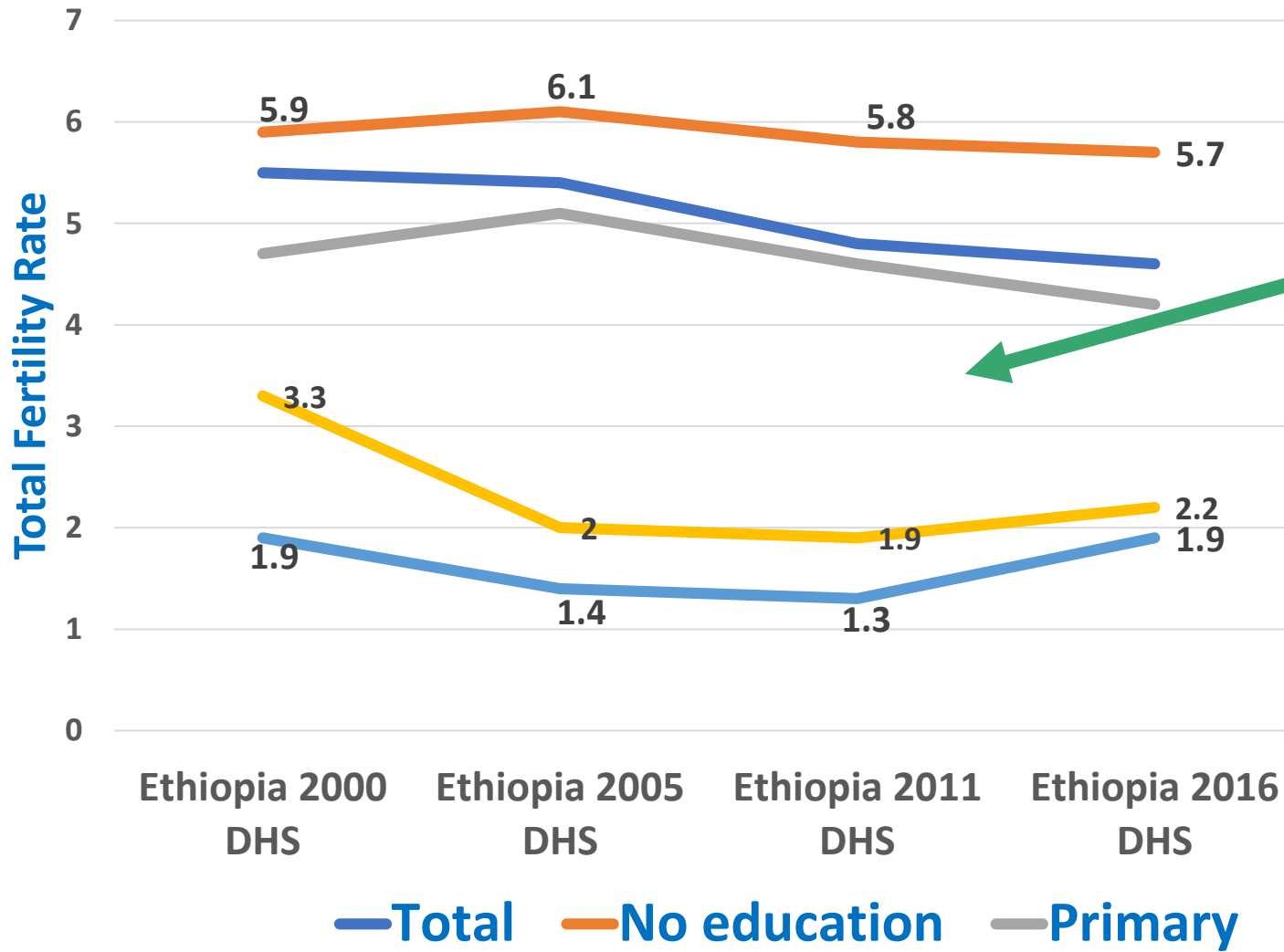


Obaansi's father, was aware of the problems of his daughter getting married that young, thanks to an awareness campaign by Right To Play working with local organizations

“ Like many other families in Ethiopia, [Obaansi's parents] made the brave choice to resist a harmful tradition like child marriage for the sake of their daughter. Not only has Obaansi benefitted, but all the rest of the children in the village benefit too thanks to her work tutoring them.”

“... she's not even done high school but through her teaching she is transforming future generations in her hometown.”

Ethiopia Total fertility Rate [Women 15-49] by Level of Educational Attainment



The education gap



A 1994 school reform in Ethiopia:

- abolished school fees for grades one to ten,
- revised school curriculum,
- introduced local languages as a medium of instruction,
- a school feeding program,

“In our cross sectional data; teenage fertility occurs in around **61%** of women with no education as compared to **16%** of women with completed primary school (8 years or more)”

Figure 1: Average Years of Schooling by Birth Cohort and Reform Coverage

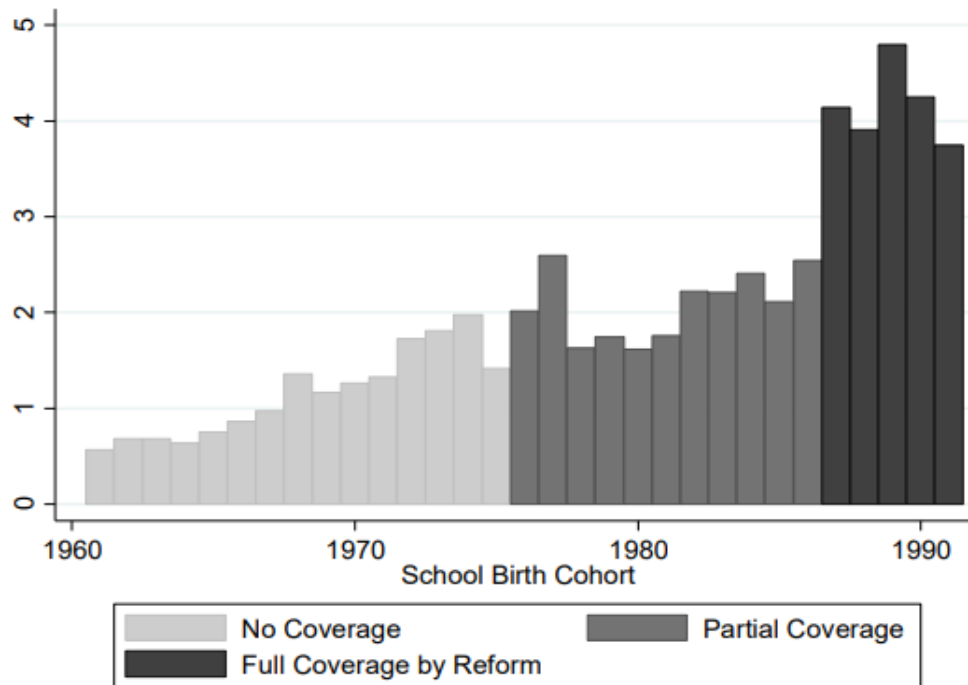
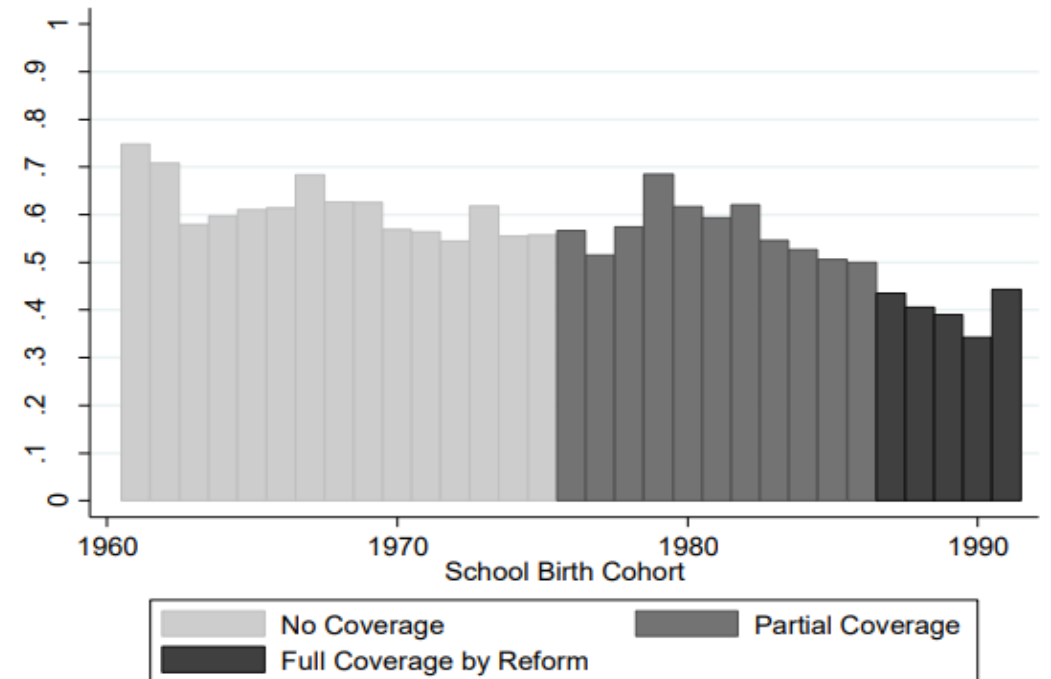


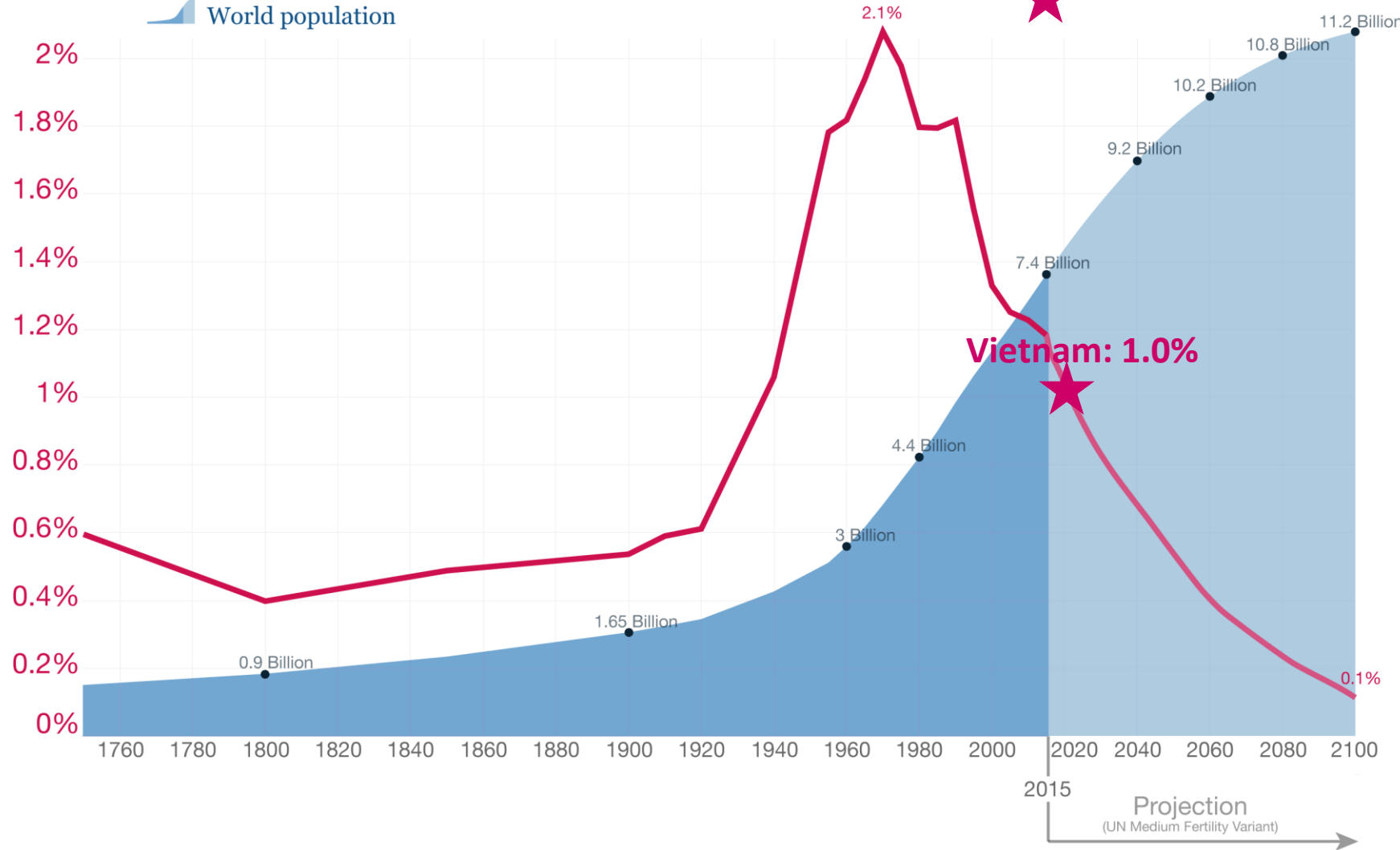
Figure 2: Probability of Childbearing before 20 by Birth Cohort and Reform Coverage



Source: https://cdn1.sph.harvard.edu/wp-content/uploads/sites/1288/2012/11/PGDA_WP_128_Pradhan_Canning.pdf

World population growth, 1750-2100

Annual growth rate of the world population
World population



Ethiopia: 2.5%

Vietnam: 1.0%

It is useful to consider the rate of population change and not just the overall size

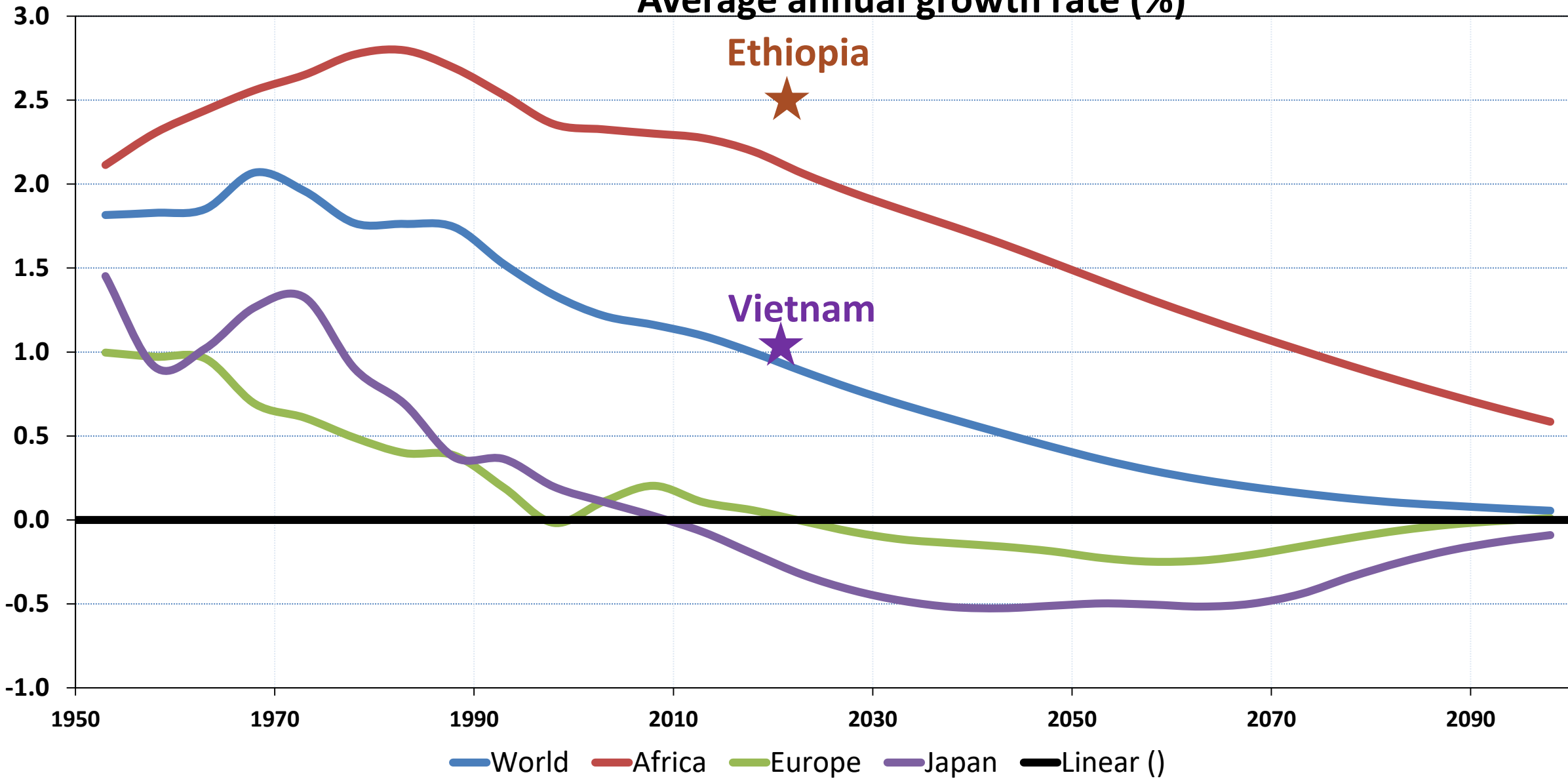
The annual global growth rates peaked in 1962.

Growth rates are likely going to continue decreasing through the century.

While the world population quadrupled in the 20th century, it will not even double in the 21st century.

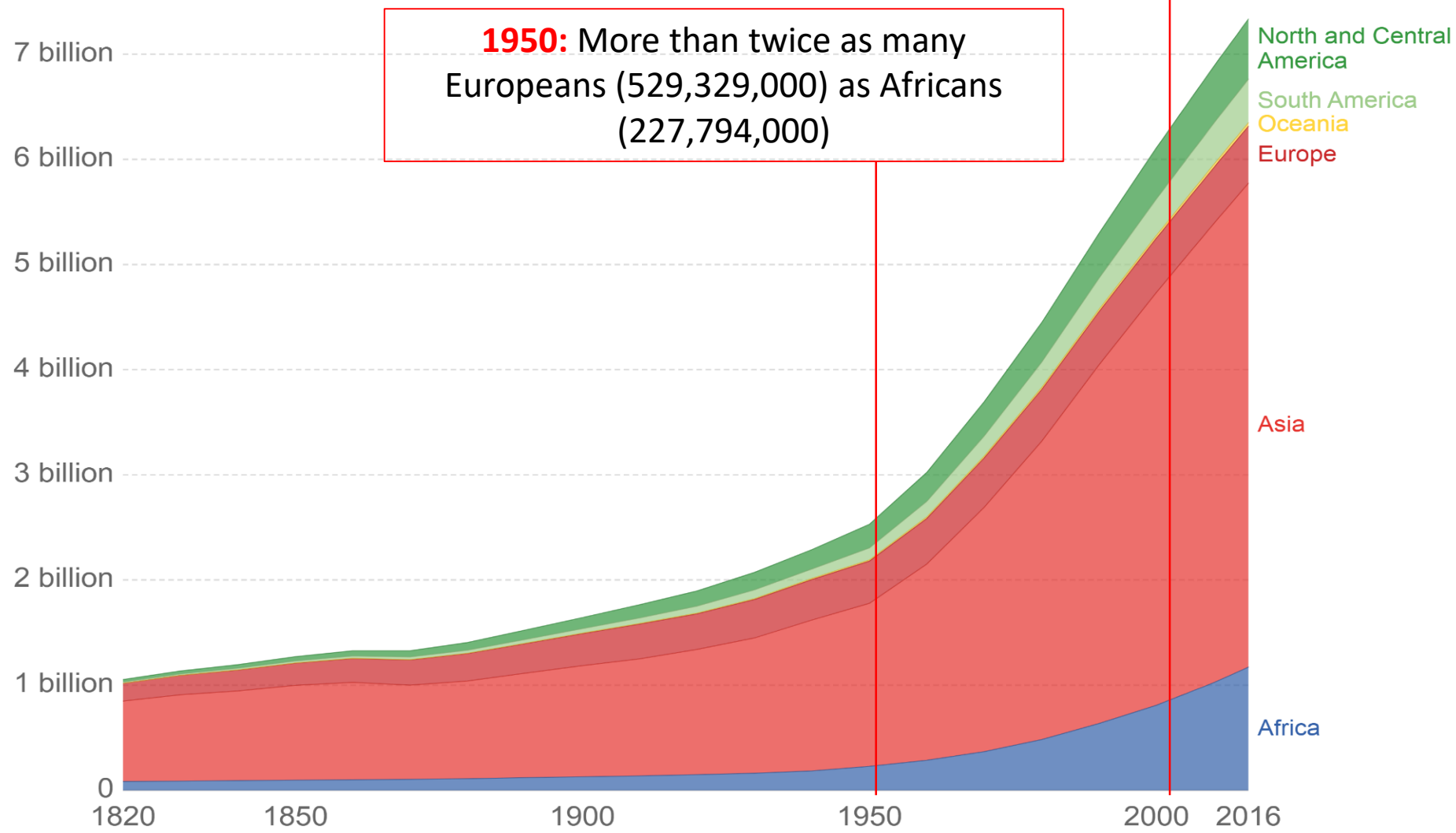
This means that the human population is not currently growing exponentially as some feared.

Average annual growth rate (%)



Source: <https://unstats.un.org/unsd/demographic/meetings/wshops/Morocco/2012/docs/s01.ppt>

World population by world regions

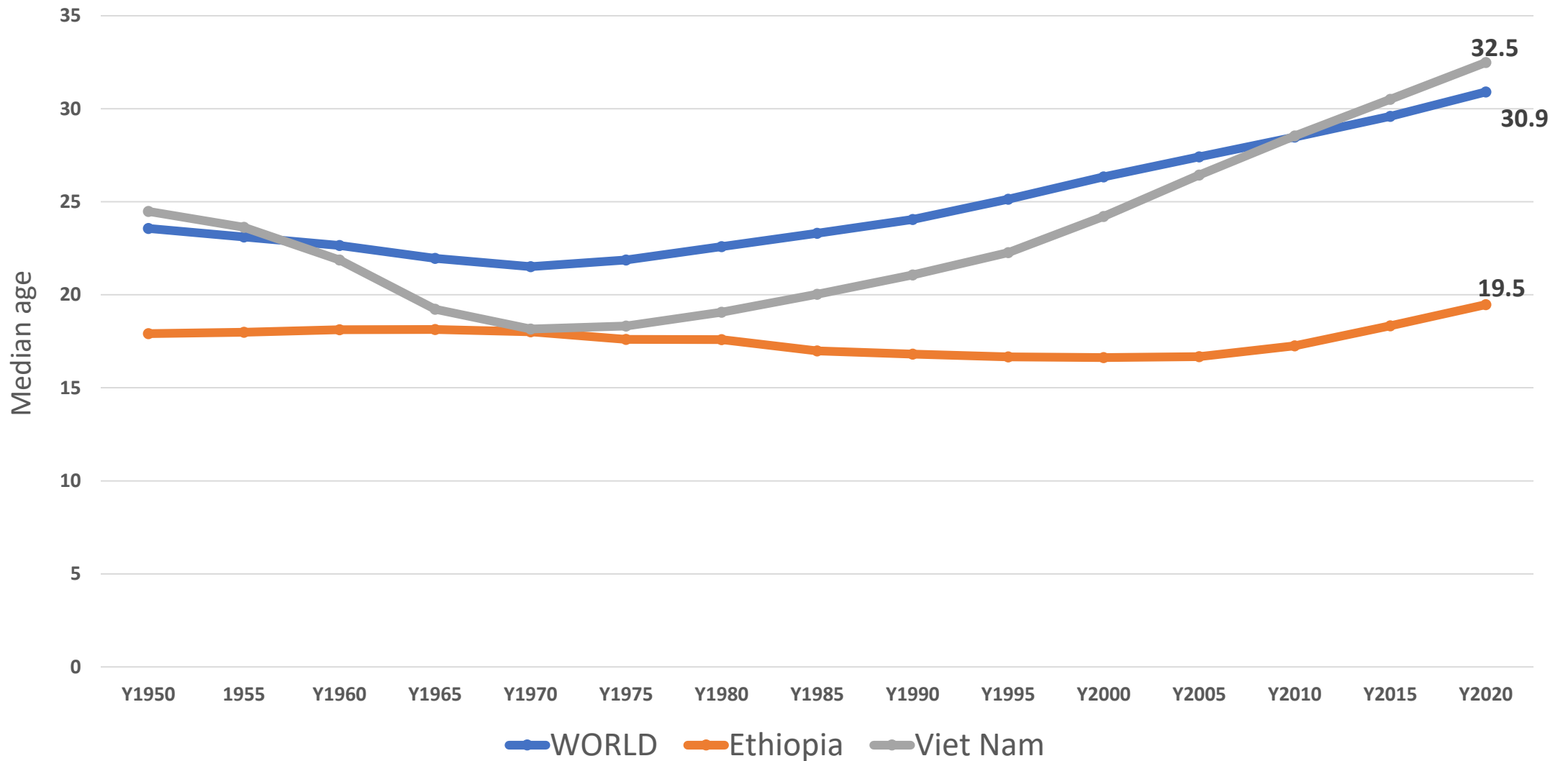


- Global population reached 1 billion in 1820
- 7.8 billion in 2020 (7 percent of humans who ever lived)

Source: Global Population by Region - HYDE (2016)

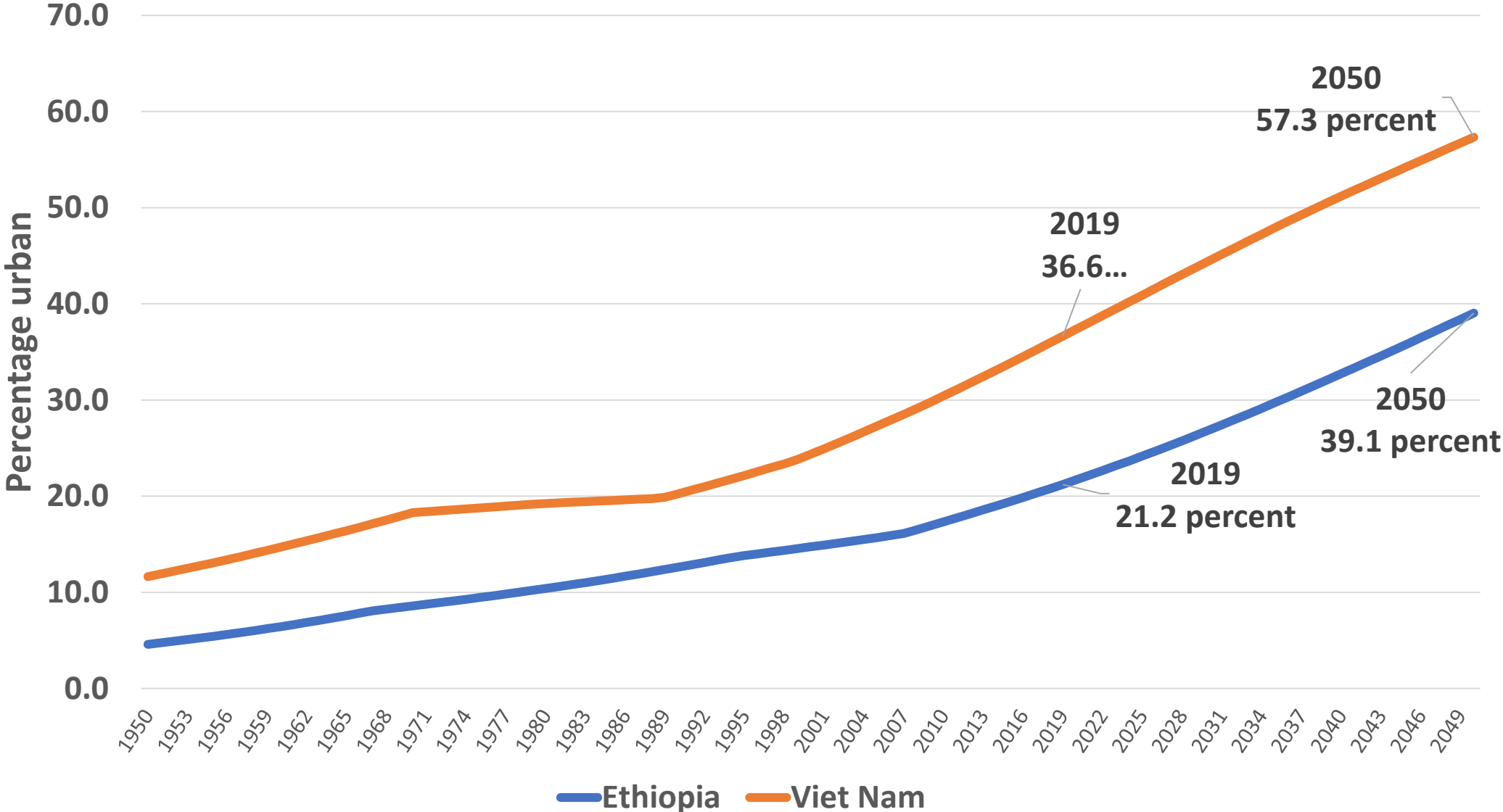
OurWorldInData.org/world-population-growth/ • CC BY-SA

Ethiopia, Vietnam, and the World: Median Age of the Population, 1950 - 2020



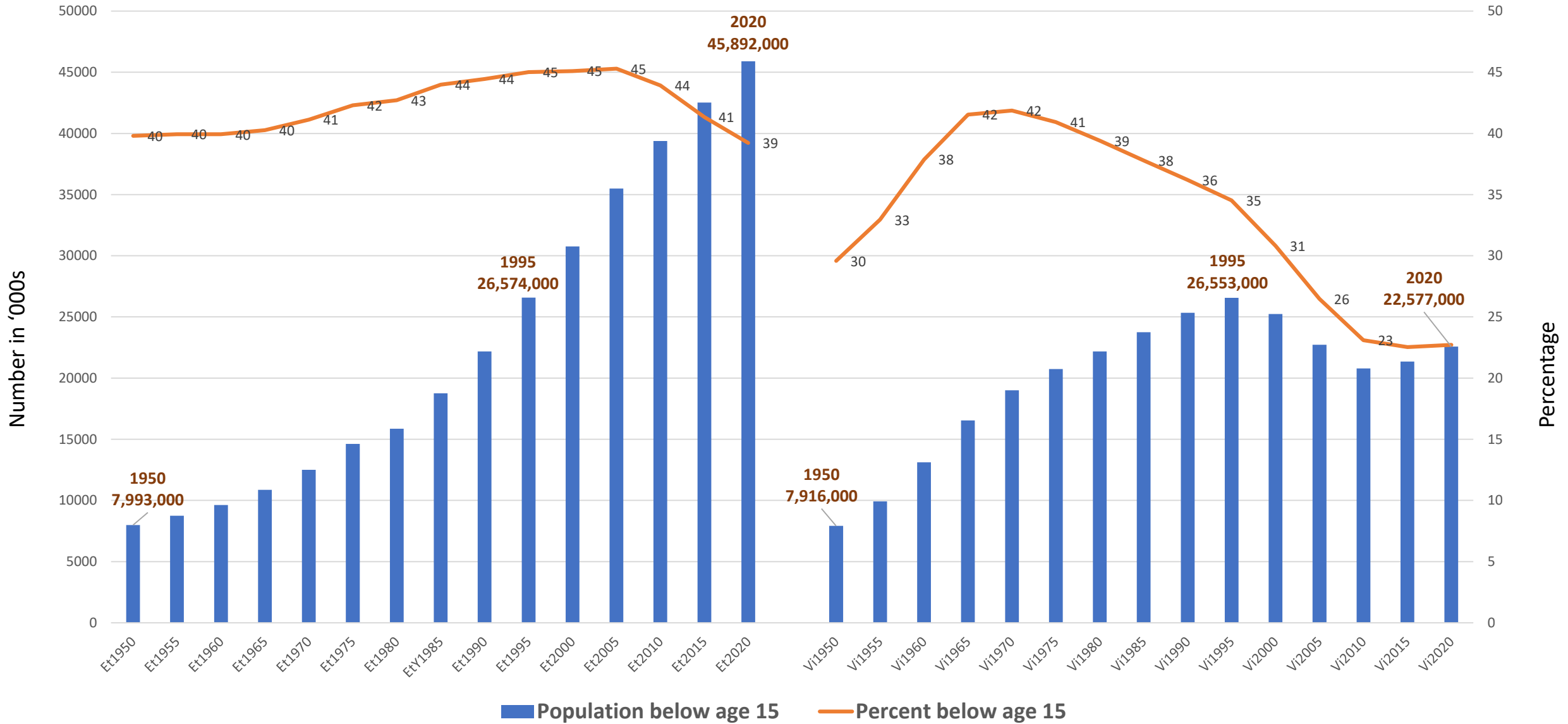
Source: Based on <https://unstats.un.org/unsd/demographic/meetings/wshops/Morocco/2012/docs/s01.ppt>

Ethiopia and Vietnam: Urbanization Trends (1950 – 2050)

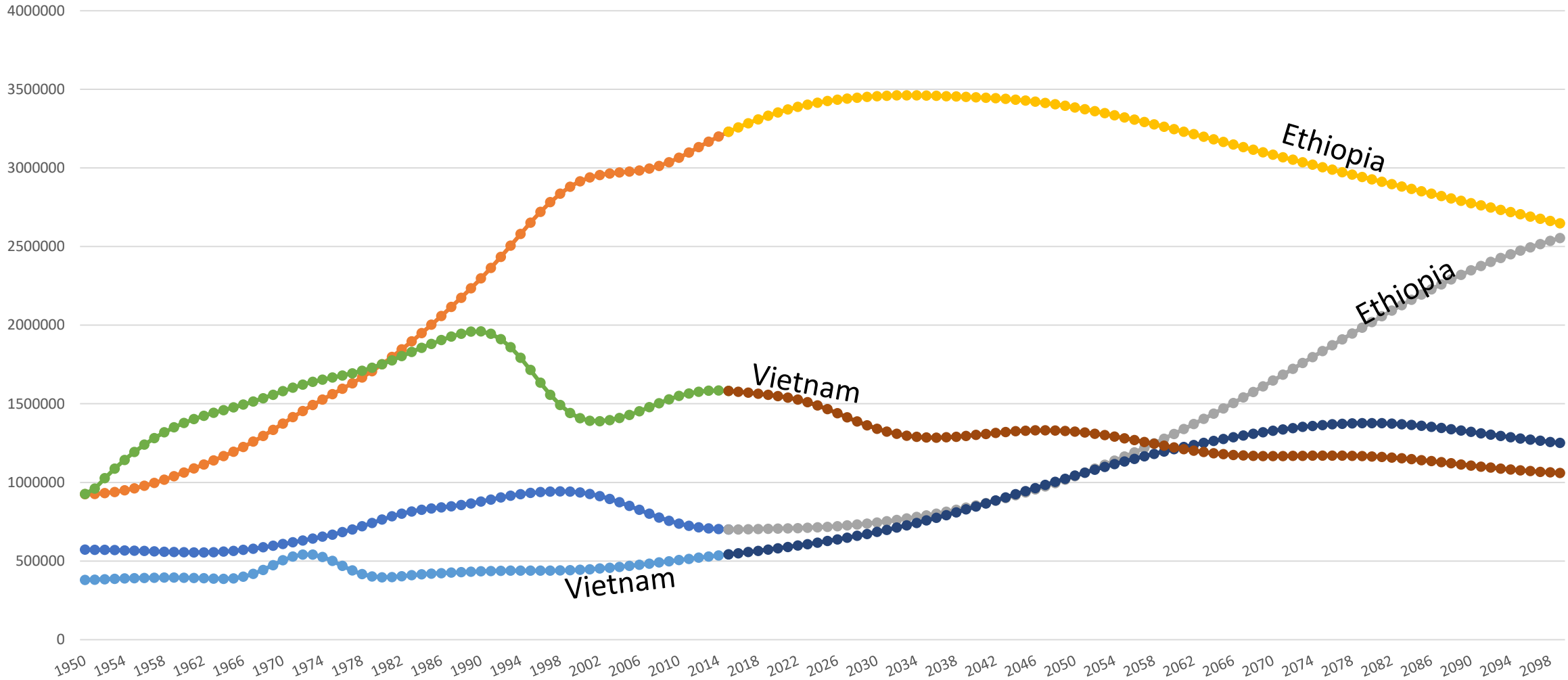


<https://population.un.org/wup/Country-Profiles/>

Ethiopia and Vietnam: The Number and Percentage of the Population Below Age 15, 1950-200



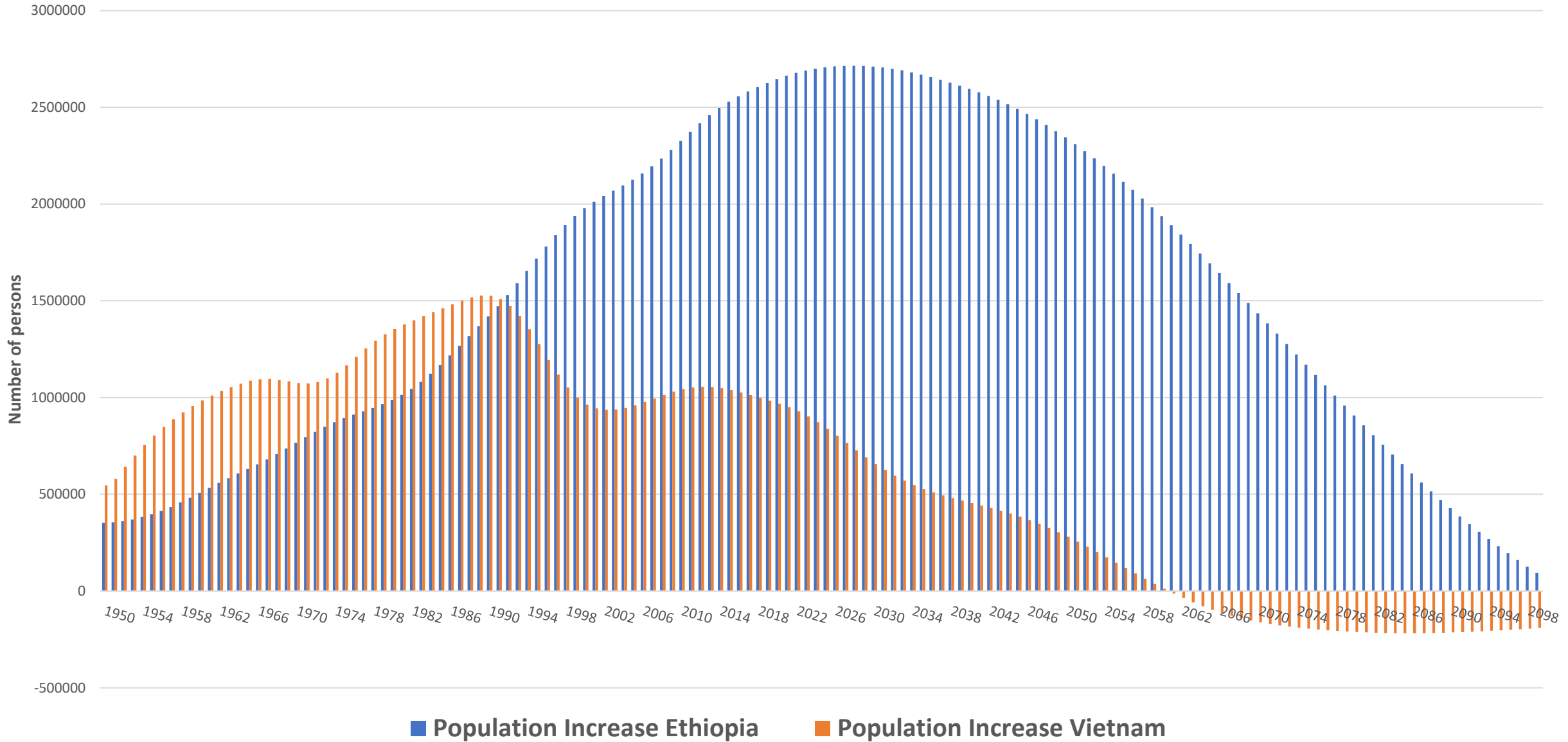
Ethiopia and Vietnam: Estimated and Projected Births and Deaths, 1950 - 2099



- ET, Estimates, 1950 - 2015: Deaths
- ET, Estimates, 1950 - 2015: Births
- ET, Projected, 2015 - 2094: Deaths
- ET, Projected 2015 - 2094: Births
- VI, Estimates, 1950 - 2015: Deaths
- VI, Estimates, 1950 - 2015: Births
- VI, Projected, 2015 - 2094: Deaths
- VI, Projected 2015 - 2094: Births



Ethiopia and Vietnam: Annual Population Increase, 1950 - 2099



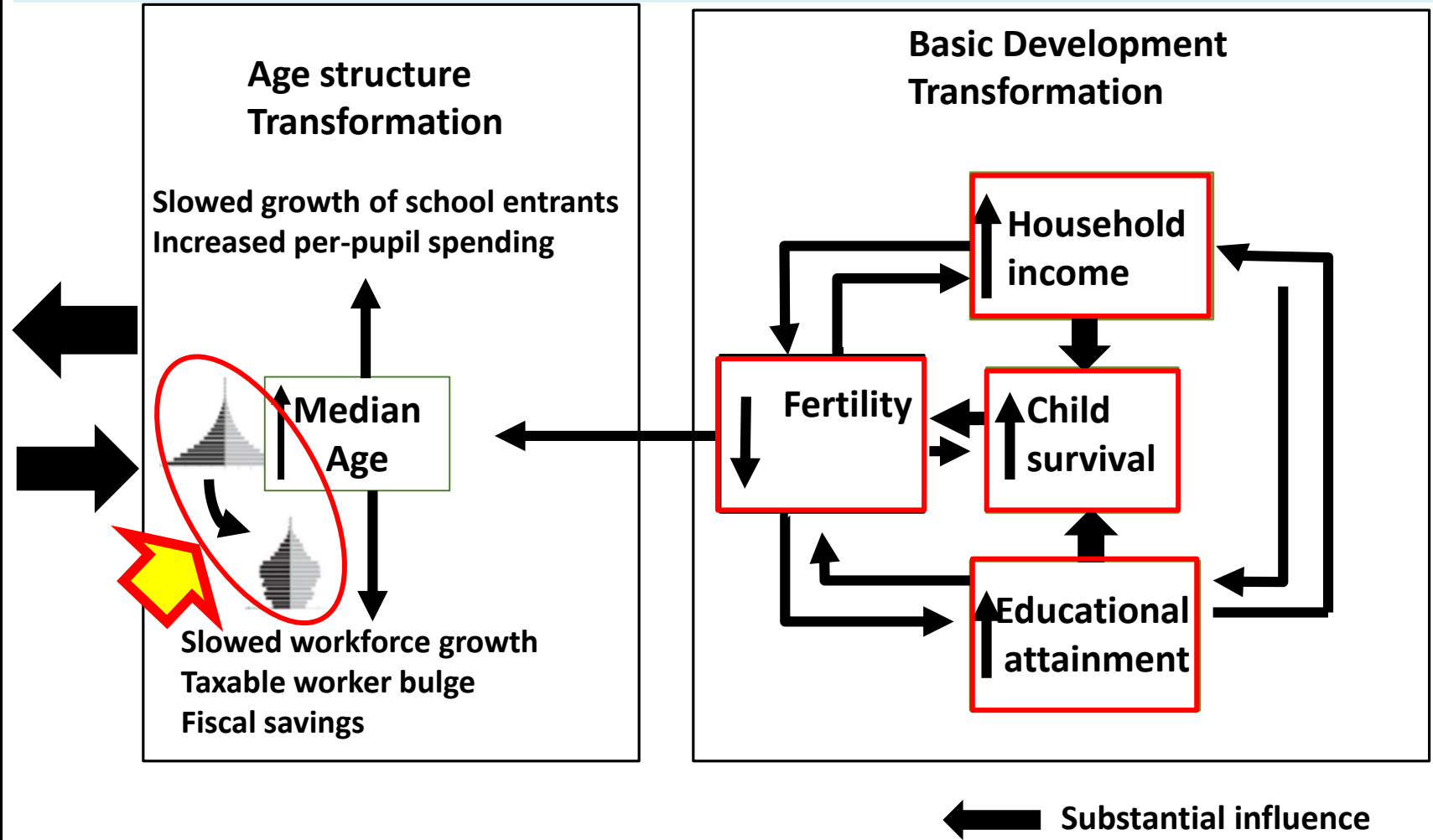
SUMMARY

**Theoretical Model for
Ethiopia: 2050**

Age Structure Transformation

Age structure Transformation and the 10 development goals

6	Advanced Manufacturing	1	Access to Clean Water
7	Transportation	2	Large-Scale Urbanization
8	ICT Infrastructure	3	Food Security
9	Access to Health-Care	4	Sustainability & Environment
10	STEM Education	5	Energy Demand



Source: Adapted from: <https://www.newsecuritybeat.org/2018/12/demographic-change-set-pace-development/>

Key observations: One objective of Ethiopia's 1993 policy on population was to raise the economic and social status of women "...by freeing them from the restrictions and drudgeries of traditional life and making it possible for them to participate productively in the larger community".

Two and a half decades later, this objective remains unmet.

As a result, the main cause of Ethiopia's ongoing socioeconomic malaise remains: a) the rapid increase of its population size and b) the bottom-heavy age structure.

Both are intimately linked to:

1. the very low level of education, especially among women and girls, and
2. their inferior socioeconomic status which is preventing the full exercise of rights to control their fertility while enjoying equal status under the law

Policy implications

Invest massively in education, especially the education of women and girls.

Raise the proportion with secondary school completion or higher, which is only 7 percent currently, to levels required to make Ethiopia a lower middle income country - typically 70 percent or higher - by 2050 (not 2025 as stated in GTPII – the current Growth and Transformation Plan)

Women have to be included in all decision-making processes at all levels of government, as well as in choices relating to marriage and health, family planning, household resource distribution, and income usage.

Government accountability in the enforcement of women's human rights, including development-related rights, is vital.

Implementing these measures now, will speed up the Age Structure Transformation (AST) and contribute to successes in meeting the 10 development goals.

Given that the country's resources are finite, it will also prevent downstream economic costs of accelerated population growth for those yet to be born and those already here.