KOSTAT-UNFPA Summer Seminar on Population

Workshop 1: Demographic Analysis: Methods and Tools in R

Population Growth

4 July, 2024

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Workshop plan, July 1-5, 2024

1: Monday	Intro concepts, and R setup
2: Tuesday	Mortality and fertility
3: Wednesday	Structure
4: Thursday	**Growth**
5: Friday	Projection

Review of session 3

- Structure to separate risk groups (e.g. age for mortality)
- Proxy structure
- Transient structure versus strata
- Composition can drive aggregate change
- Structure can change its meaning (examples: old age dependency, changing meaning of education)
- `pivot_longer()`, `group_by() |> summarize()`
- Composed pipelines
- `facet_wrap()`, `facet_grid()`, overlaying

Growth

- Empirical growth
- Stationarity and Stability
- Structure, size
- Speedometers
- Model abuse

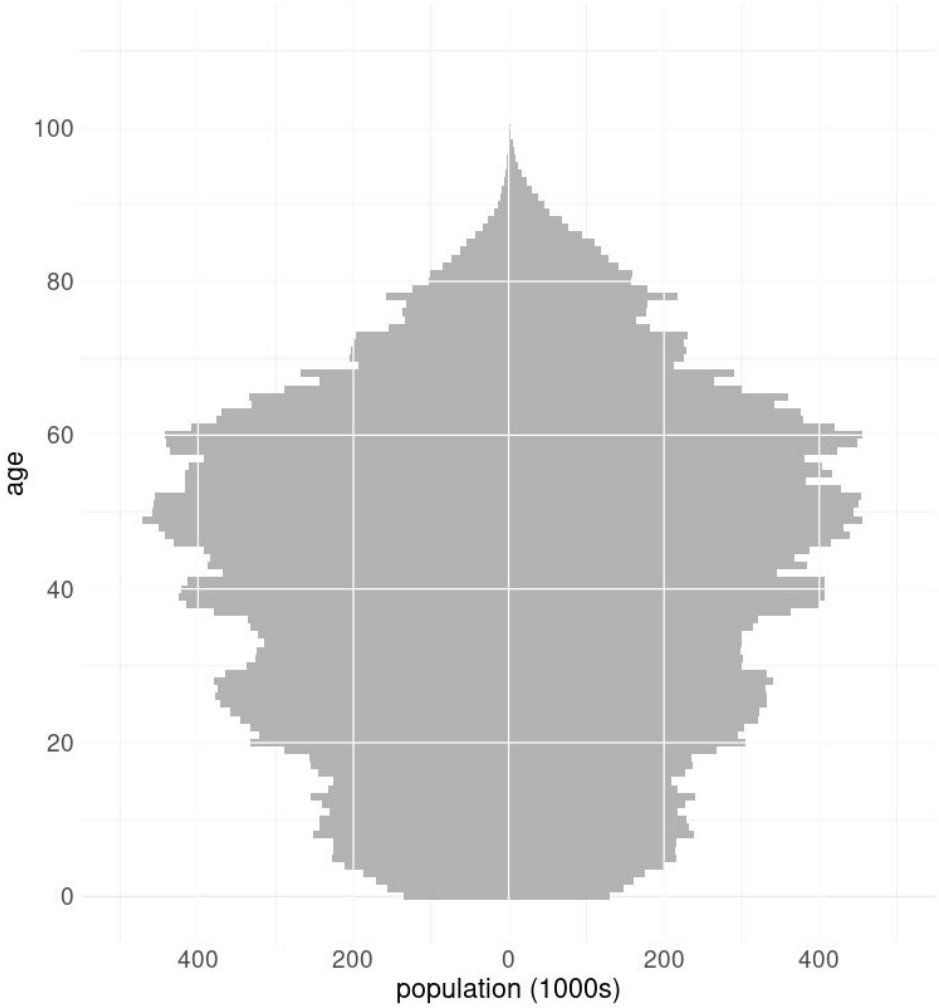
Empirical growth

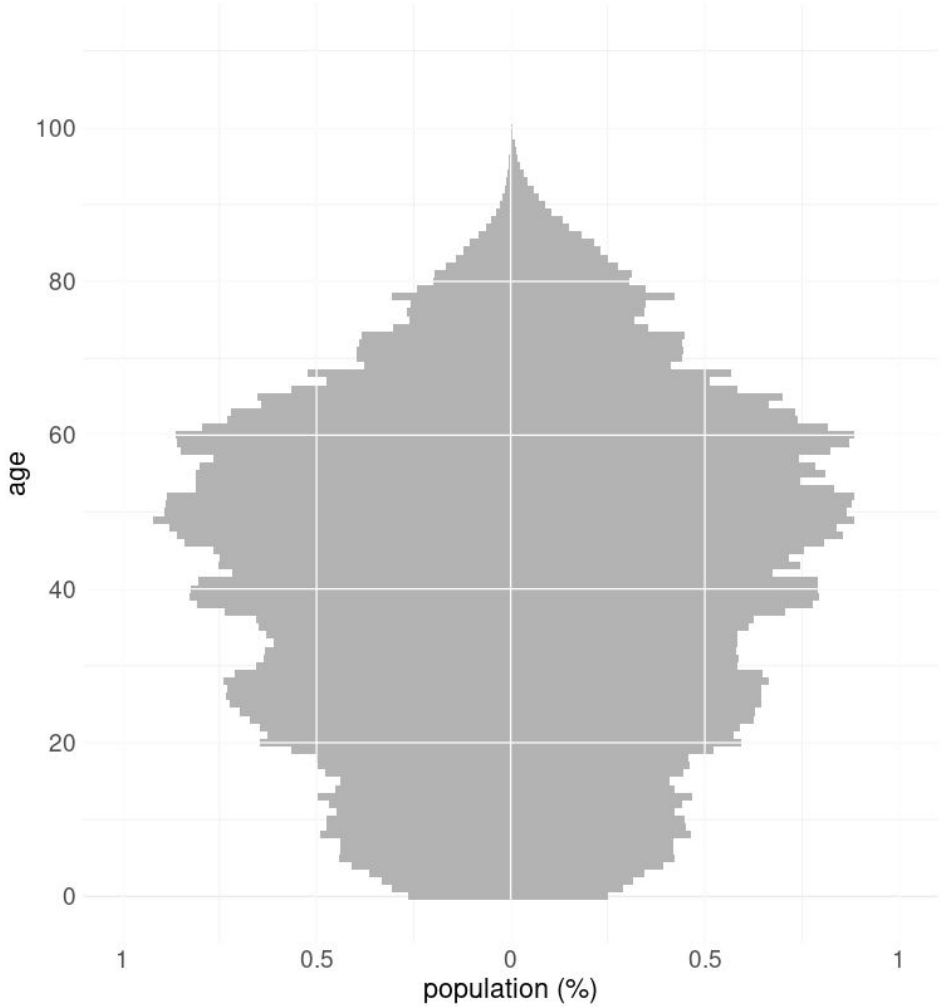
- Geometric

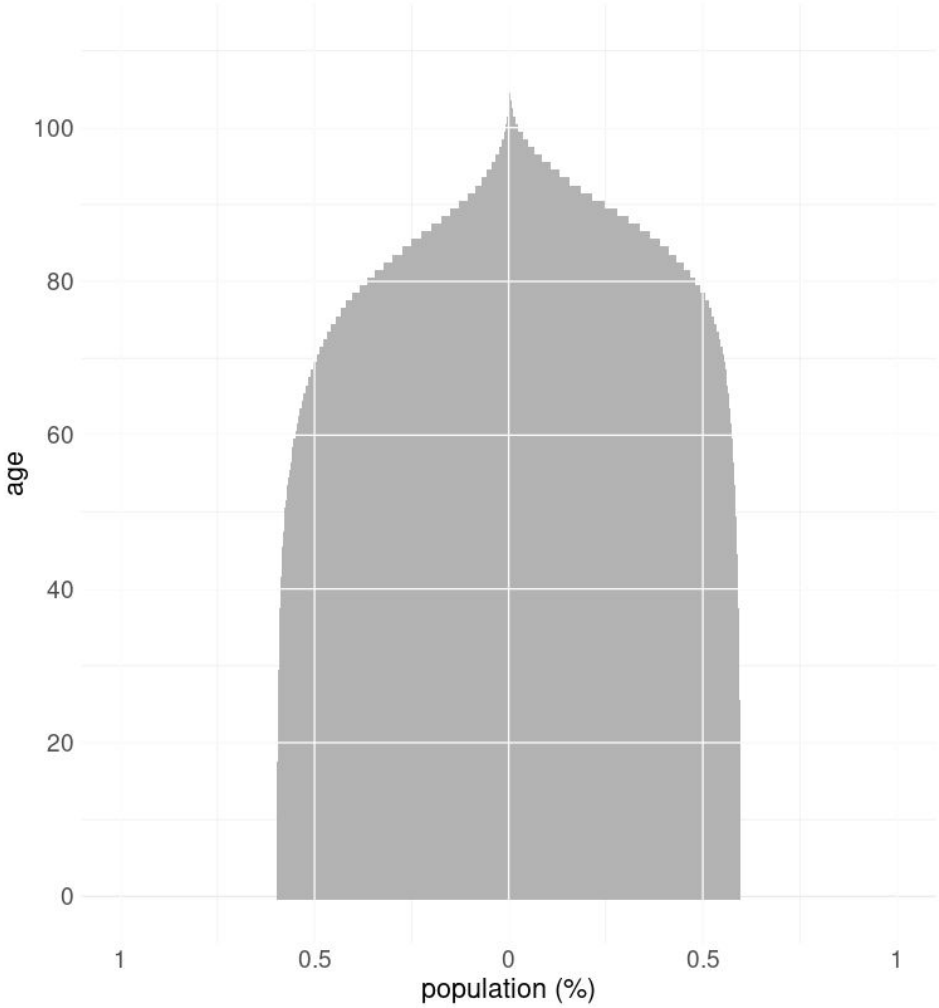
$$r = \frac{N(T) - N(0)}{N(0)} \frac{1}{T}$$

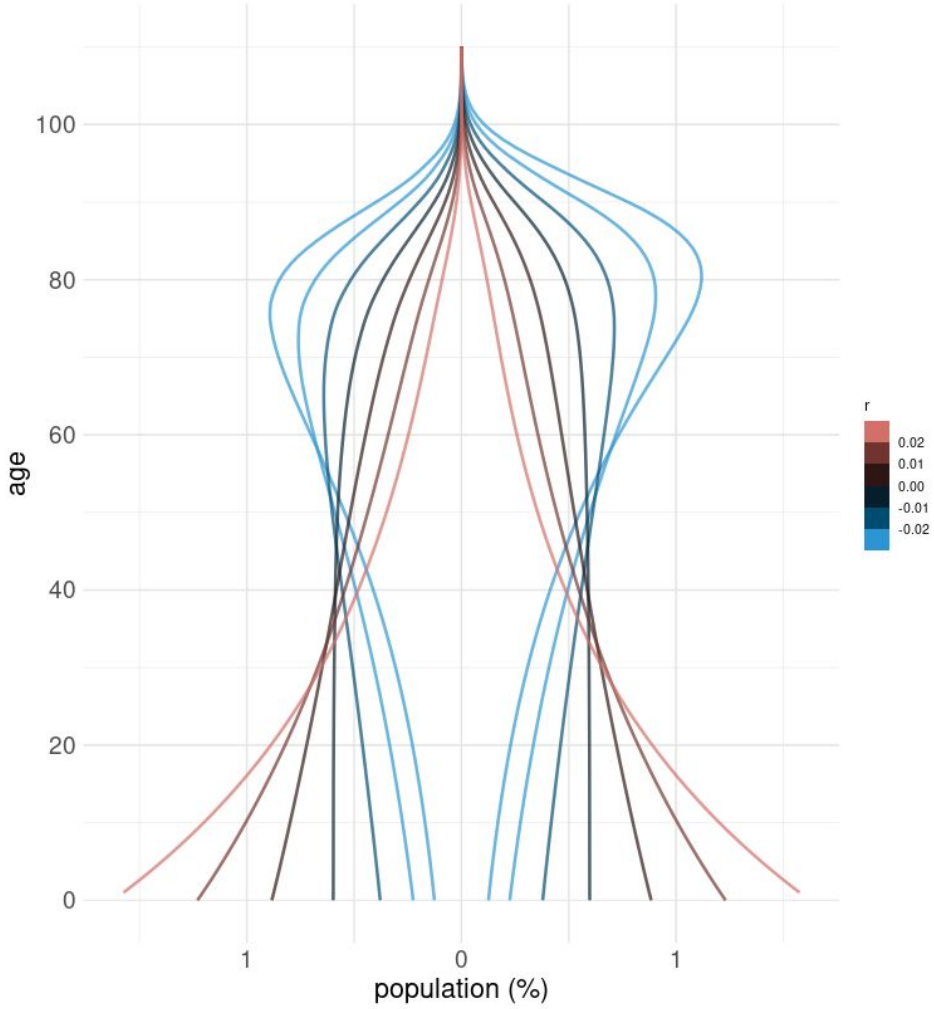
- Exponential

$$r = \frac{ln(\frac{N(T)}{N(0)})}{T}$$


100
80
60
40
20
0
age
400
200
0
200
400
population (1000s)


100
80
60
40
20
0
age
1
0.5
0
0.5
1
population (%)


100
80
60
40
20
0
age
1
0.5
0
0.5
1
population (%)


100
80
60
40
20
0
age
1
0
1
population (%)
r
0.02
0.01
0.00
-0.01
-0.02

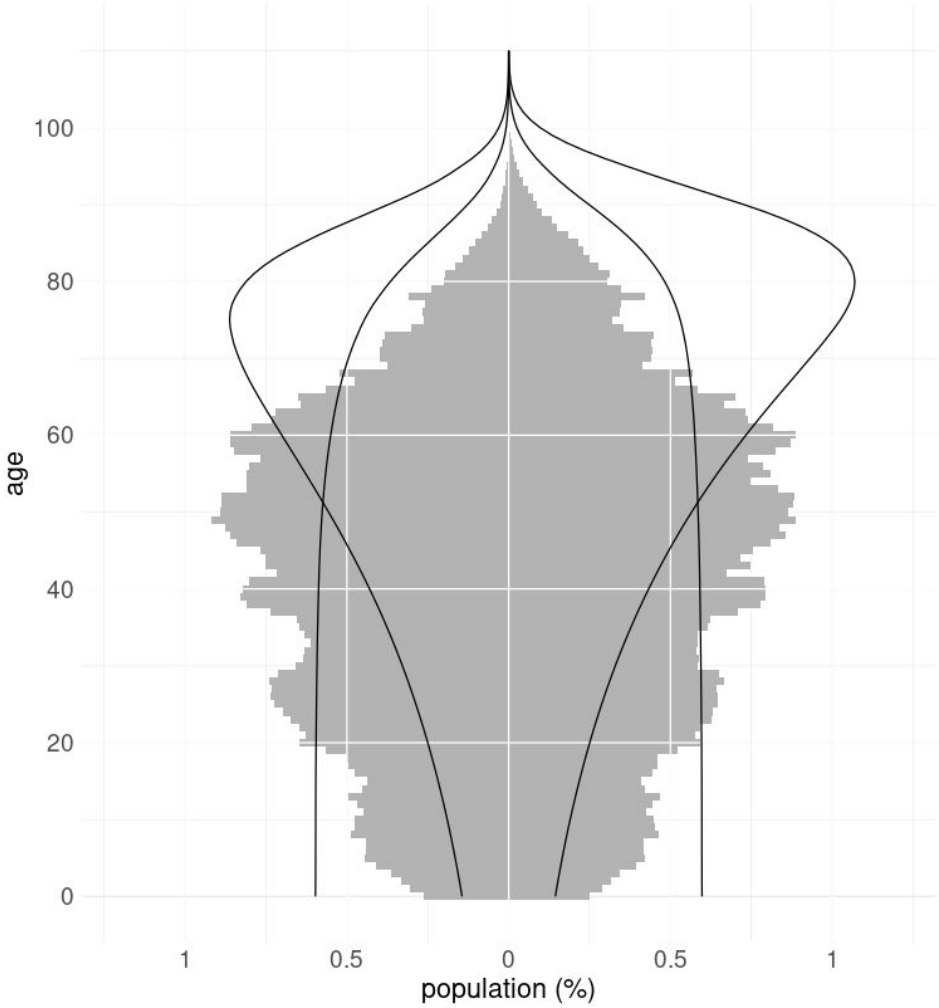

100
80
60
40
20
0
age
1
0.5
0
0.5
1
population (%)

Photo:
Riccardo Pierri

REPORT

Is low fertility really a problem? Population aging, dependency, and consumption

RONALD LEE , ANDREW MASON , MEMBERS OF THE NTA NETWORK, RONALD LEE, ANDREW MASON, EUGENIA AMPORFU, CHONG-BUM AN, LUIS ROSERO BIXBY, JORGE BRAVO , [...], AND QI ZHANG +47 authors Authors Info & Affiliations

SCIENCE · 10 Oct 2014 · Vol 346, Issue 6206 · pp. 229-234 · DOI: 10.1126/science.1250542

NTA data: https://www.ntaccounts.org/web/nta/show/