

Years of Good Life (YoGL): A wellbeing indicator designed to serve as sustainability criterion

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What is the ultimate end of human development?

The “wellbeing production function” (Levin & Clark 2010; Clark 2012):

$$W(p, t) = f(C_{i,p,t}, I_{p,t}, K_{p,t})$$

p – population

t – time

C_i – stocks of ‘Capital Assets’ (manufactured capital, human capital and natural capital)

I – institutions (laws, rules, norms, expectations, etc.)

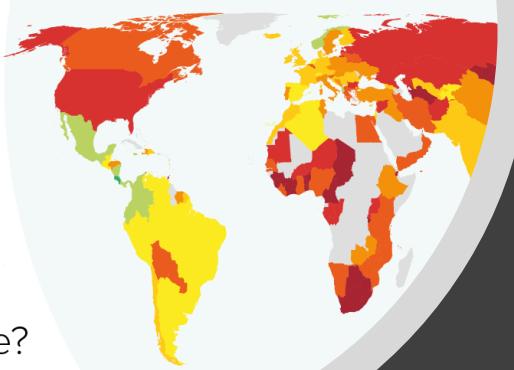
K – knowledge

In sustainability science there is much research on **inclusive wealth/capital** and its change over time but little addressing W directly.



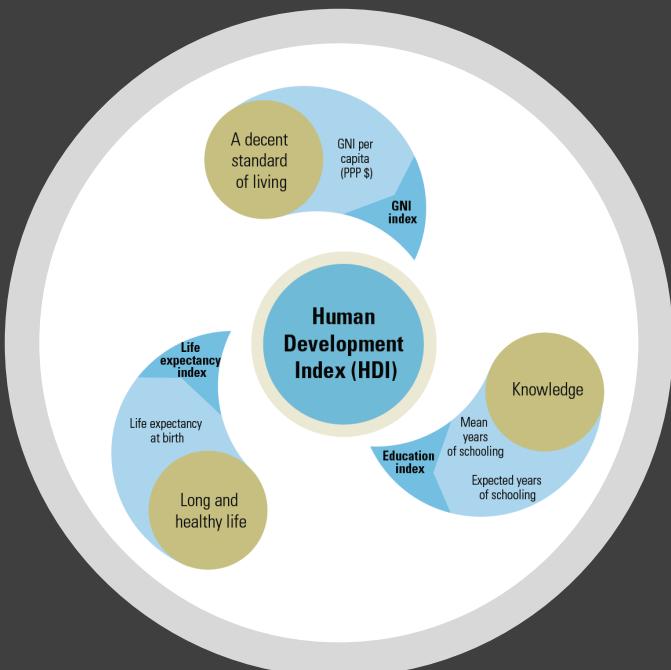
HAPPY PLANET INDEX

How does your country compare?



THE GLOBAL INDEX

For Sustainable Development



A vast array of wellbeing measures

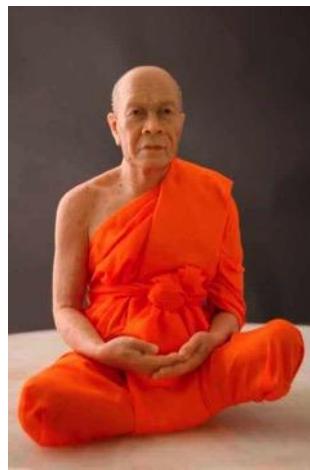


Objective

Propose a tailor-made indicator to serve
as a sustainability criterion.

Six criteria for a wellbeing indicator

- 1) It needs to embody universally shared values in terms of ultimate ends.



PERIOD	OPENING GROUP	LAST BIDDER	LEFT/RIGHT	RTY
1330	MIN	91.00	8358 1700	5220 0
2.91	10-01	2.91	0525 0405 2945	7940 1
2.91	10-01	2.91	2229 0424 2440	5357 16
NP CLOSE	MW	10-01	599 2277 0122	7169 17
FINAL	2.91	10-01	76 0125 4461	6104 12
ES. RATIO			00 0920 0914	9100 01
VALUES TO 135.200			00 0901 0159	5562 01
CHANGER 299.000			00 0254 0254	0104 20
050 0.11	0.81		00 0000 0000	1130 031
T SIZE	2000			6434 0000
PRICE				0398 904
PER PRICE:				0944 0426
EXCHANGES TAKEN				+1e 5375
				7025 6003
				0944 2449
				7169 0127
				2679 UBRISCEBON101DE

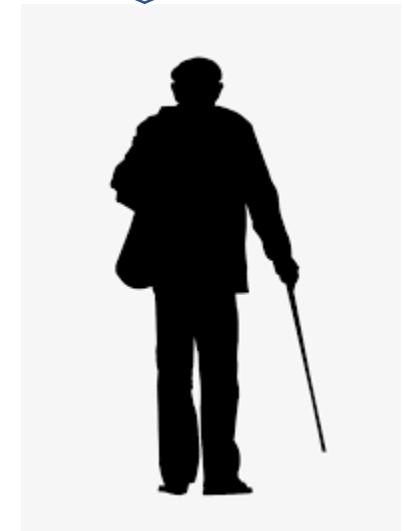


- 2) It needs to be based on **characteristics of individuals** that can be flexibly aggregated to **sub-populations**.
- 3) It needs to be **comparable over time and across sub-populations**.

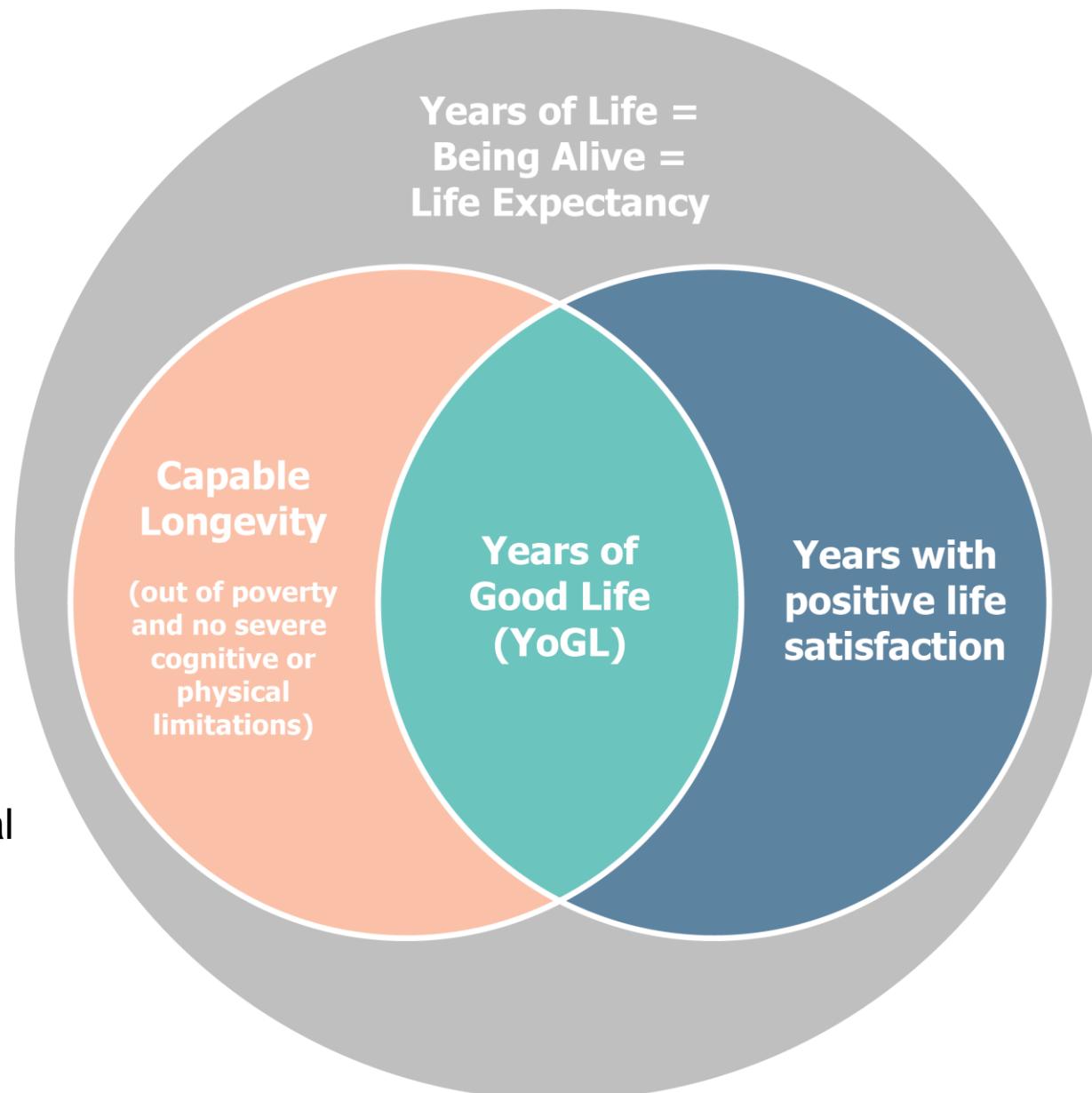
Six criteria for a wellbeing indicator

- 4) It should be theory based and not include **implicit trade-off assumptions or arbitrary weighting schemes.**
- 5) There needs to be sufficient empirical information for different sub-populations and time points to be **fit for serving as the dependent variable** in panel regressions.
- 6) If possible, it should have a substantive interpretation in terms of some **real life analogy** rather than just being an abstract index.

I have 10 years
of good life
ahead



Human Well-being



Capable Longevity

- ✓ Being out of poverty
- ✓ Being free from physical limitations
- ✓ Being cognitively able

How to calculate YoGL?

- Sullivan Method (1971)

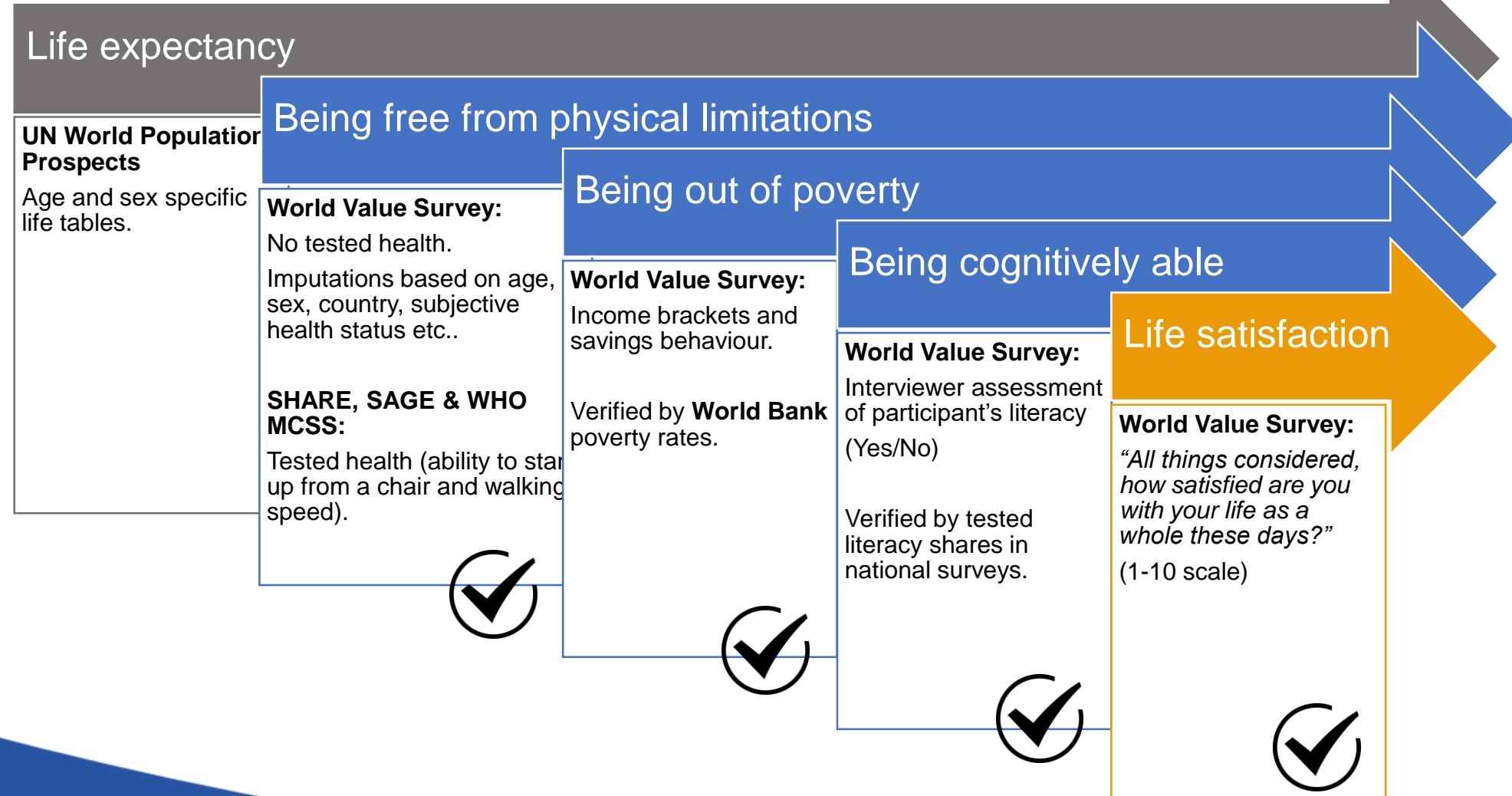
$$\frac{1}{l_0} \sum_{i=0}^A \pi_i L_i$$

- l_i = number of survivors at age x_i (beginning of the interval i)
- L_i = number of person years lived in the age group i
- π_i = prevalence of the state of interest.

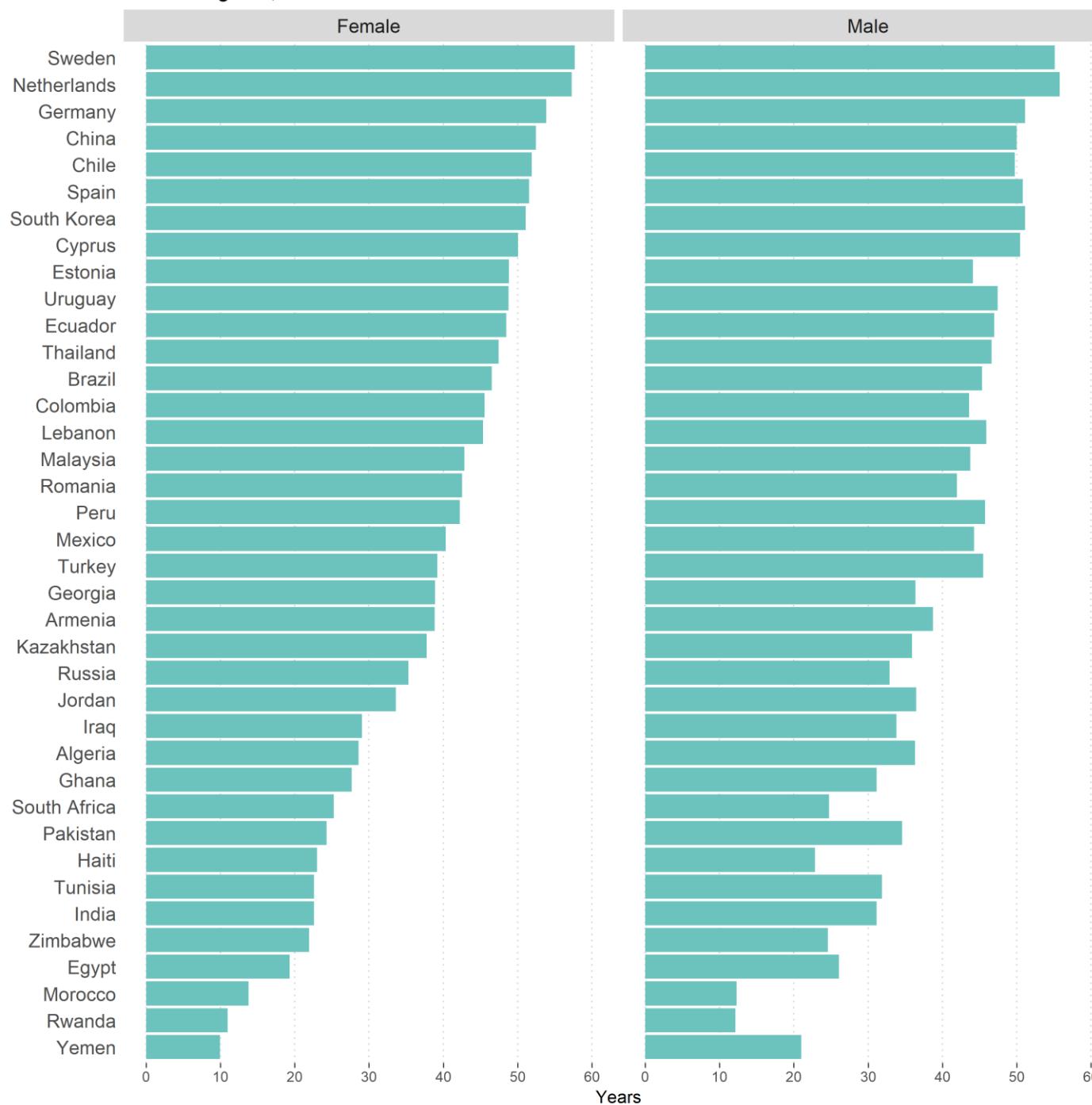
How to calculate YoGL?

<i>Age</i>	l_i	L_i	T_i	π_i	$\pi_i L_i$	$\pi_i T_i$	E_i	$YoGL_i$
20	97038	484338	5323595	0.84	407863	4051990	54.9	41.8
25	96679	482341	4839257	0.84	406182	3644126	50.1	37.7
30	96234	479600	4356916	0.77	370126	3237945	45.3	33.6
35	95564	475593	3877316	0.78	371353	2867818	40.6	30.0
40	94615	469815	3401723	0.83	388501	2496465	36.0	26.4
45	93223	461376	2931908	0.80	368460	2107964	31.5	22.6
50	91196	448876	2470532	0.75	338194	1739504	27.1	19.1
55	88178	431287	2021656	0.71	305722	1401310	22.9	15.9
60+	84091	1590369	1590369	0.69	1095588	1095588	18.9	13.0

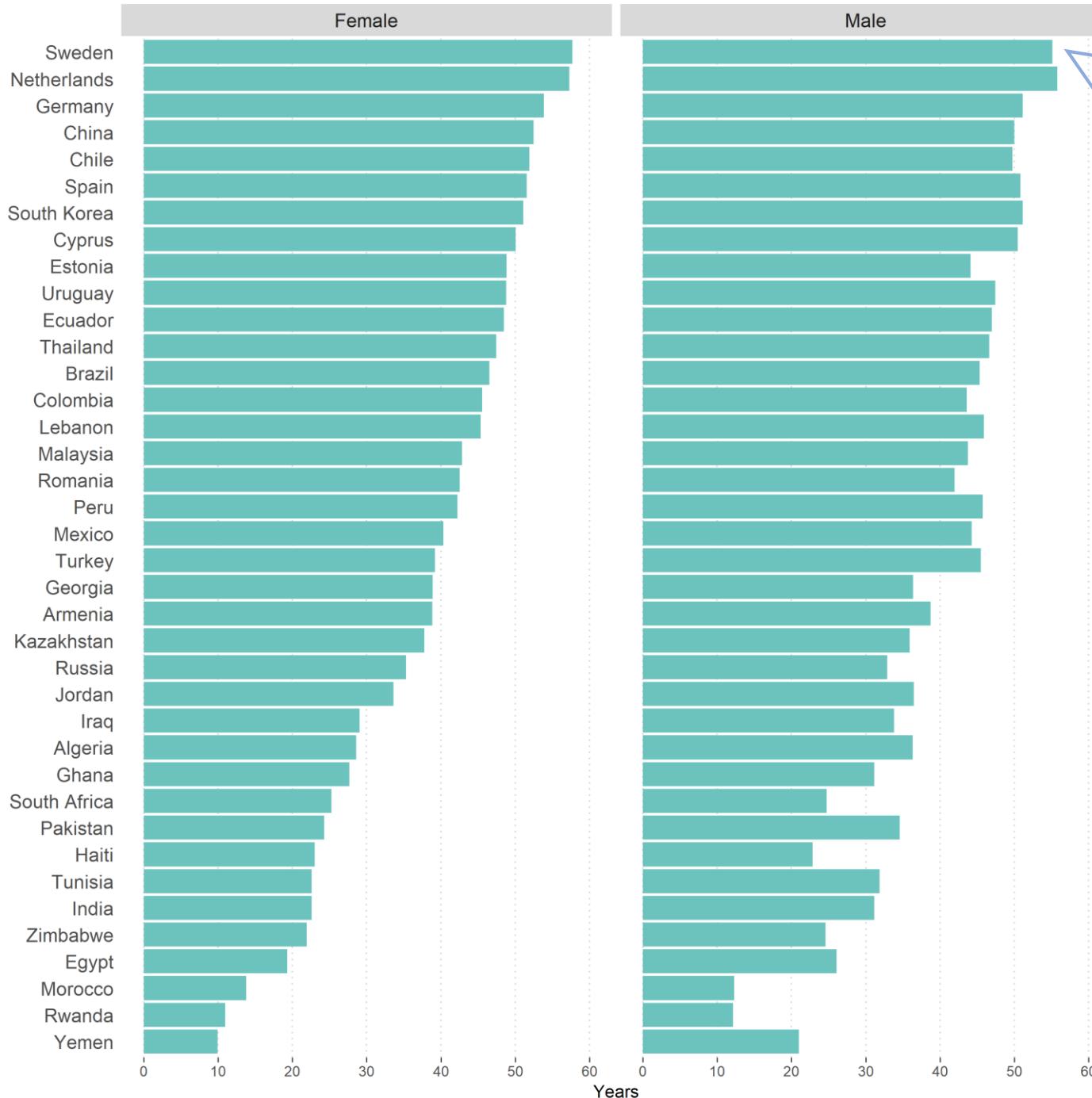
How to calculate YoGL? A practical example



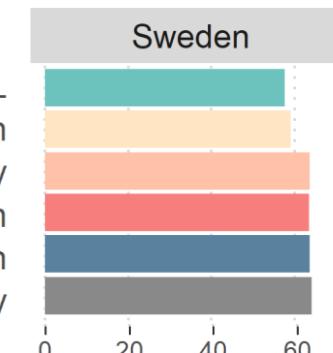
YoGL at age 20, 2010-2015



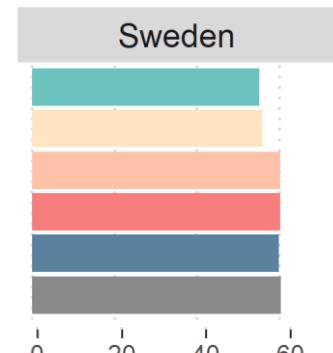
YoGL at age 20, 2010-2015



YoGL
Health
Out of poverty
Cognition
Life satisfaction
Life expectancy

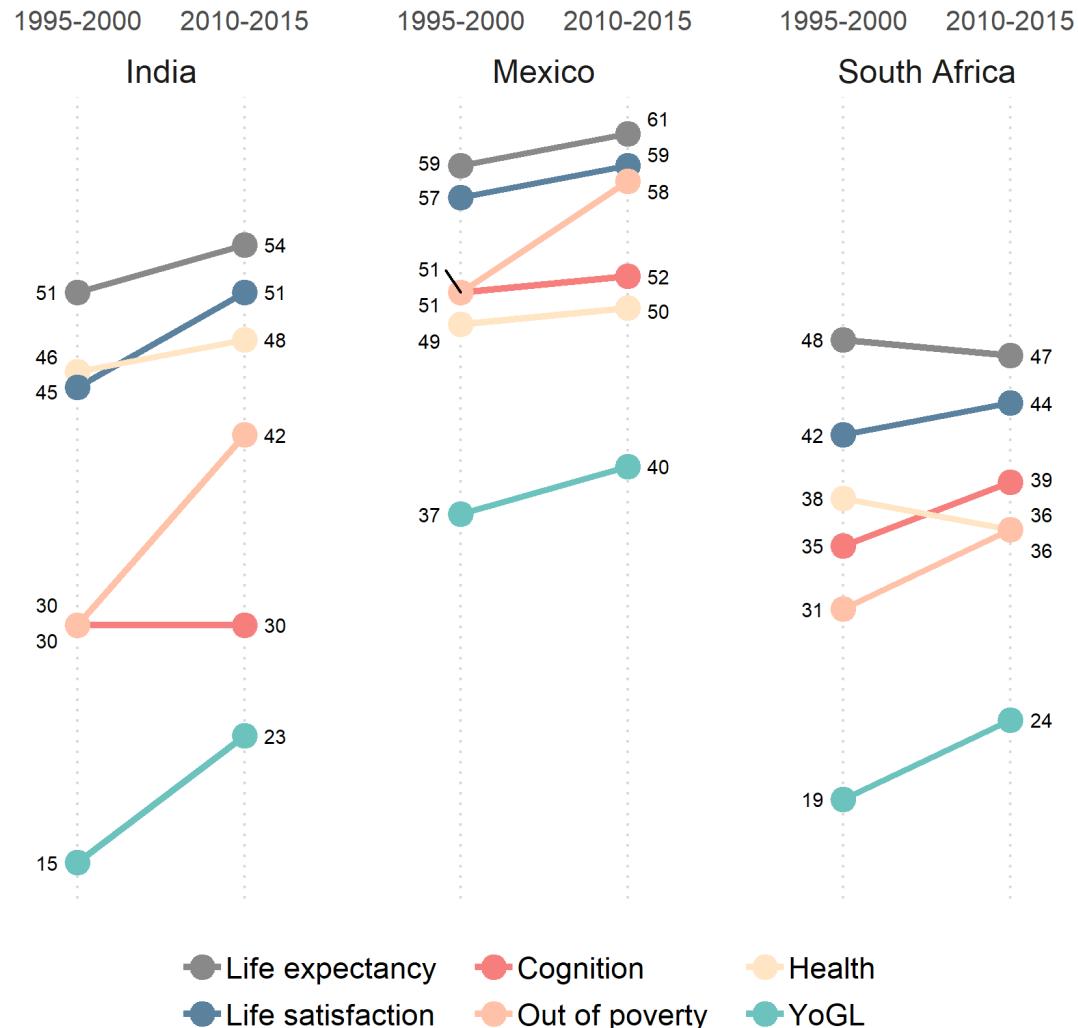


females

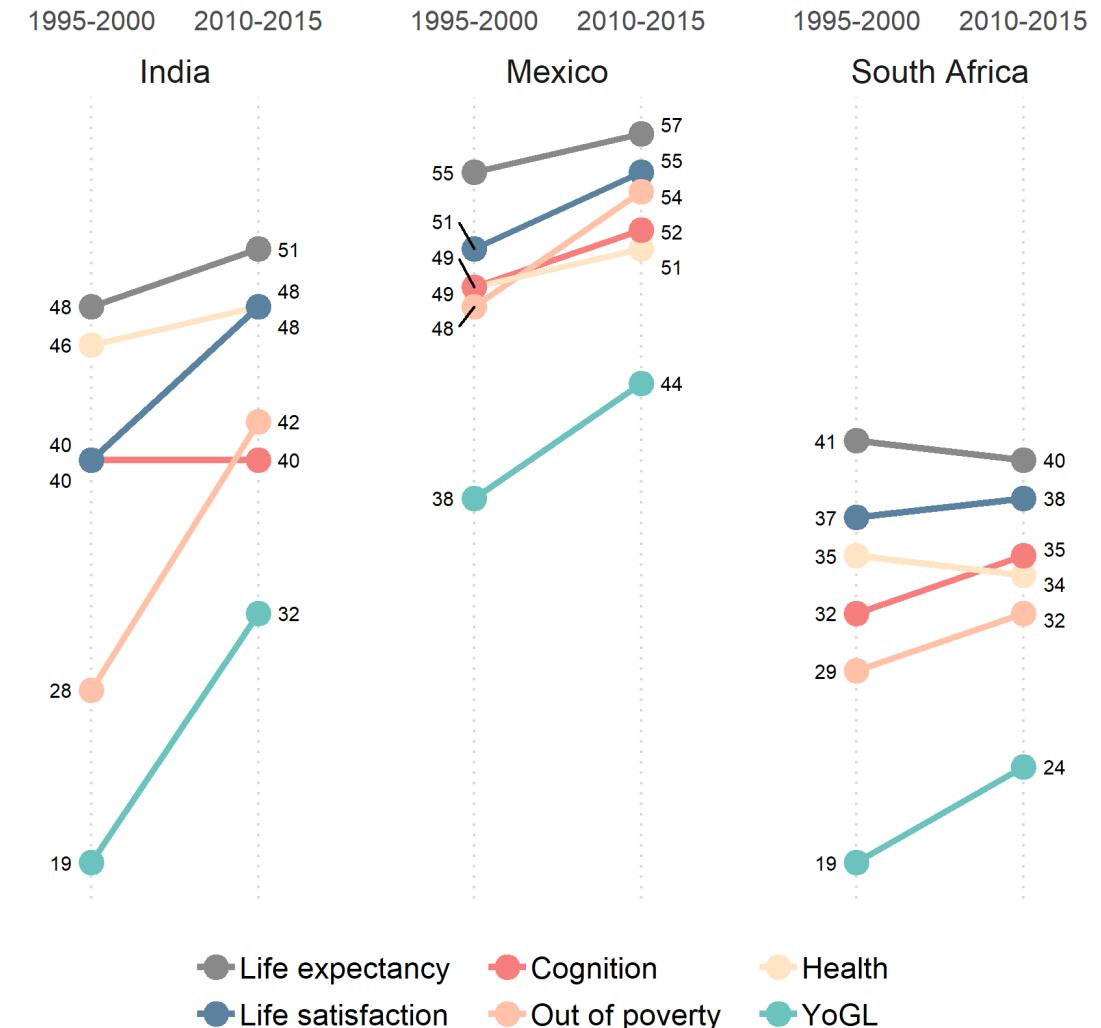


males

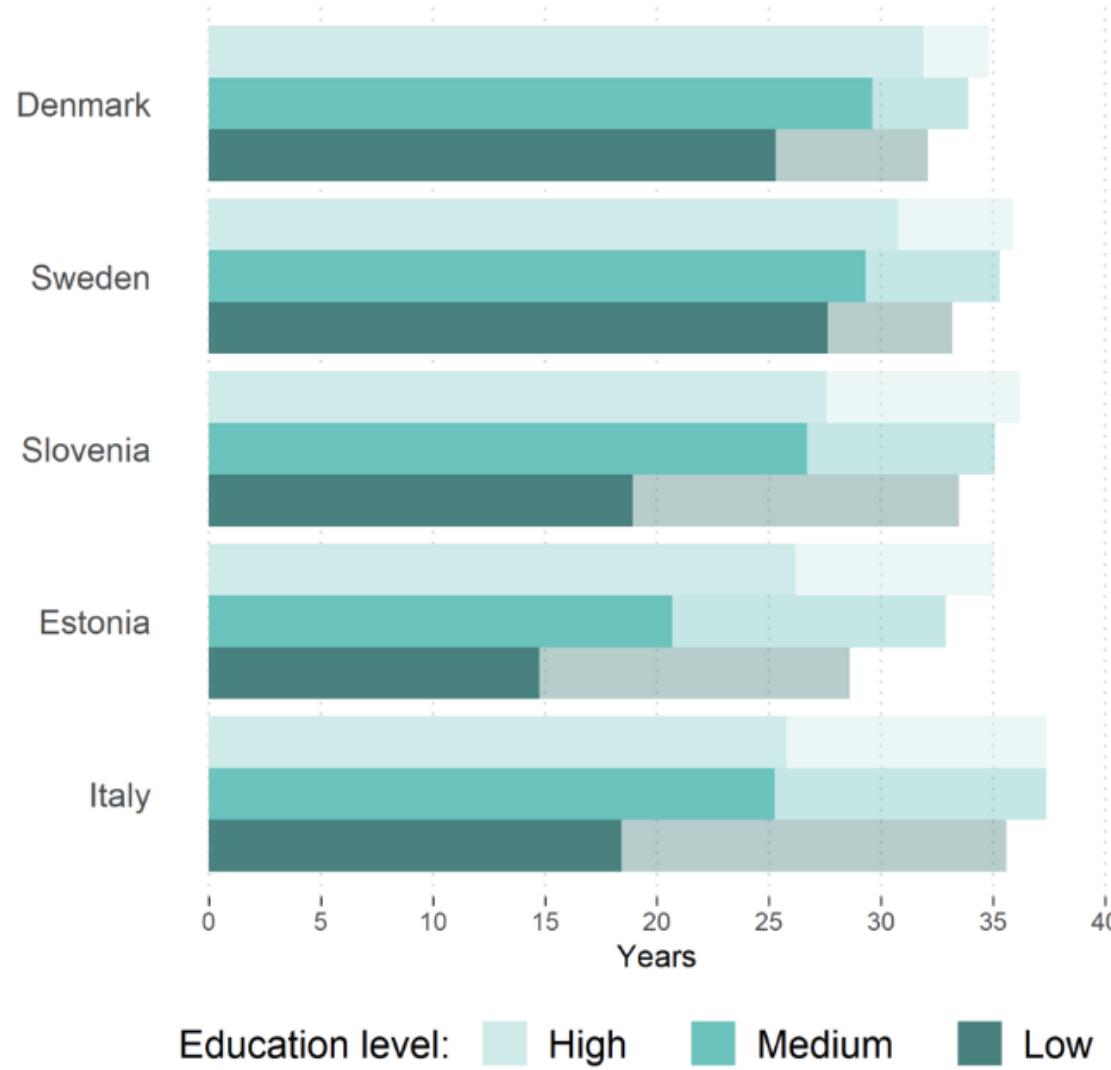
YoGL at age 20, females, change over time
(Years)



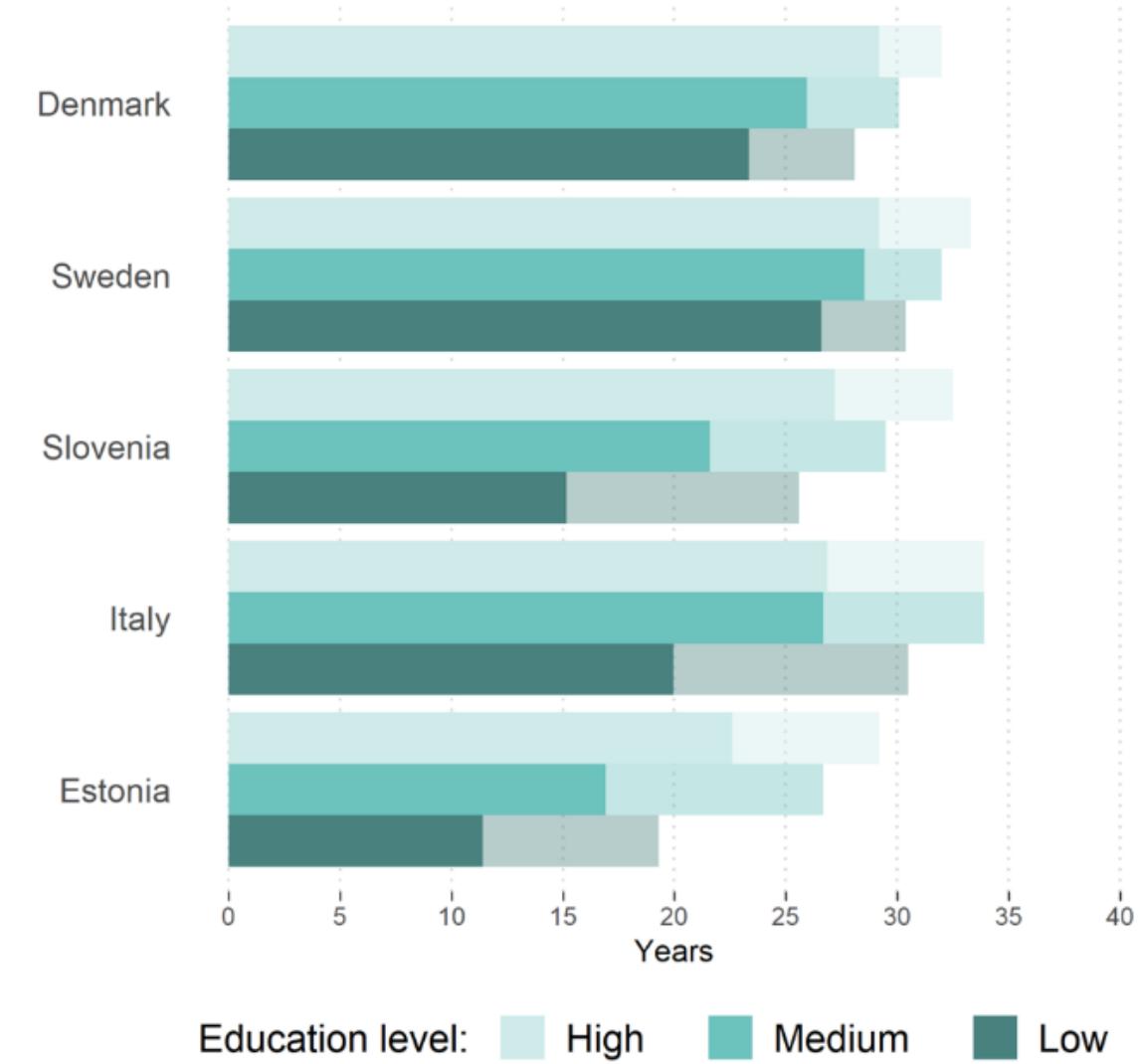
YoGL at age 20, males, change over time
(Years)



YoGL (solid) and life expectancy (transparent) at age 50 females, 2013

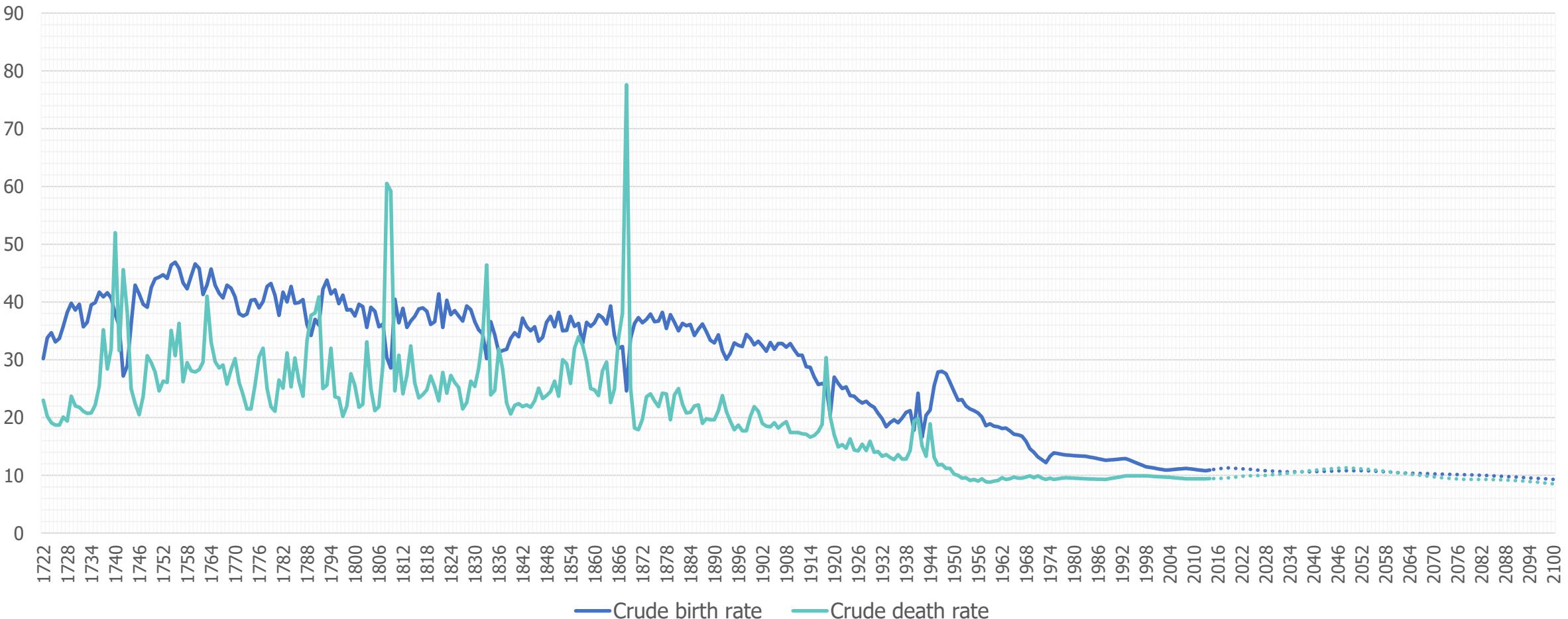


YoGL (solid) and life expectancy (transparent) at age 50 males, 2013



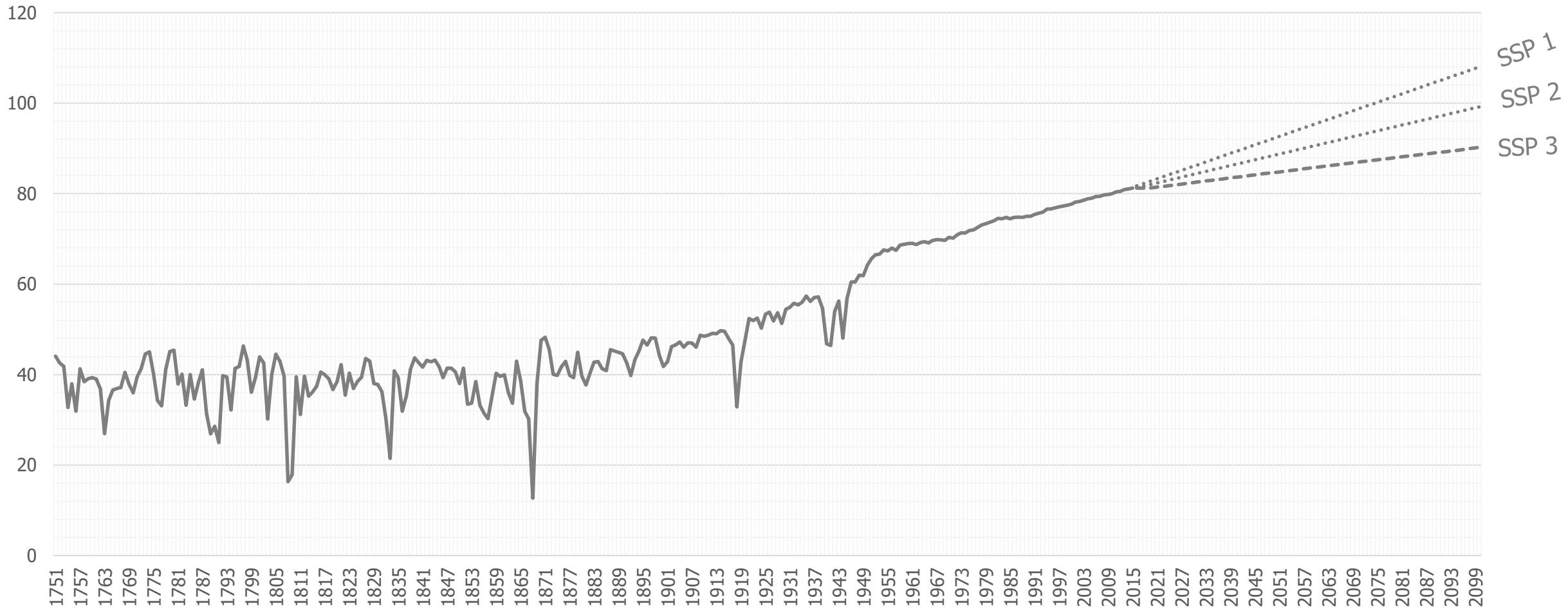
Data sources: SHARE & Eurostat

Applying YoGL to the worlds longest national demographic time series: Finland 1722-2100



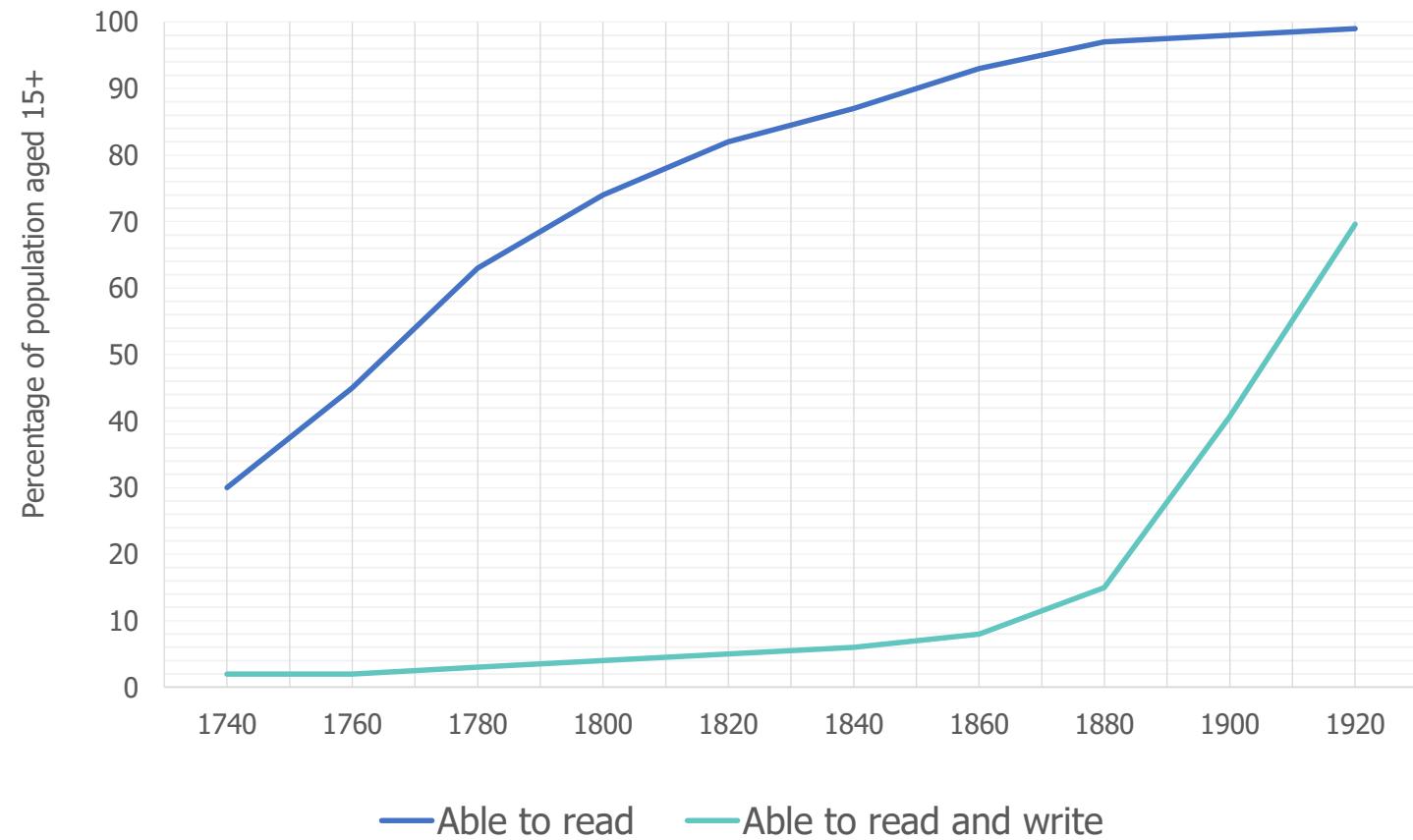
Source: 1750-2015: Statistics Finland, 2015-2100: Wittgenstein Centre Human Capital Data Explorer (2018) – SSP2 Scenario

I. Years of Life in Finland: Life expectancy at birth 1751-2100



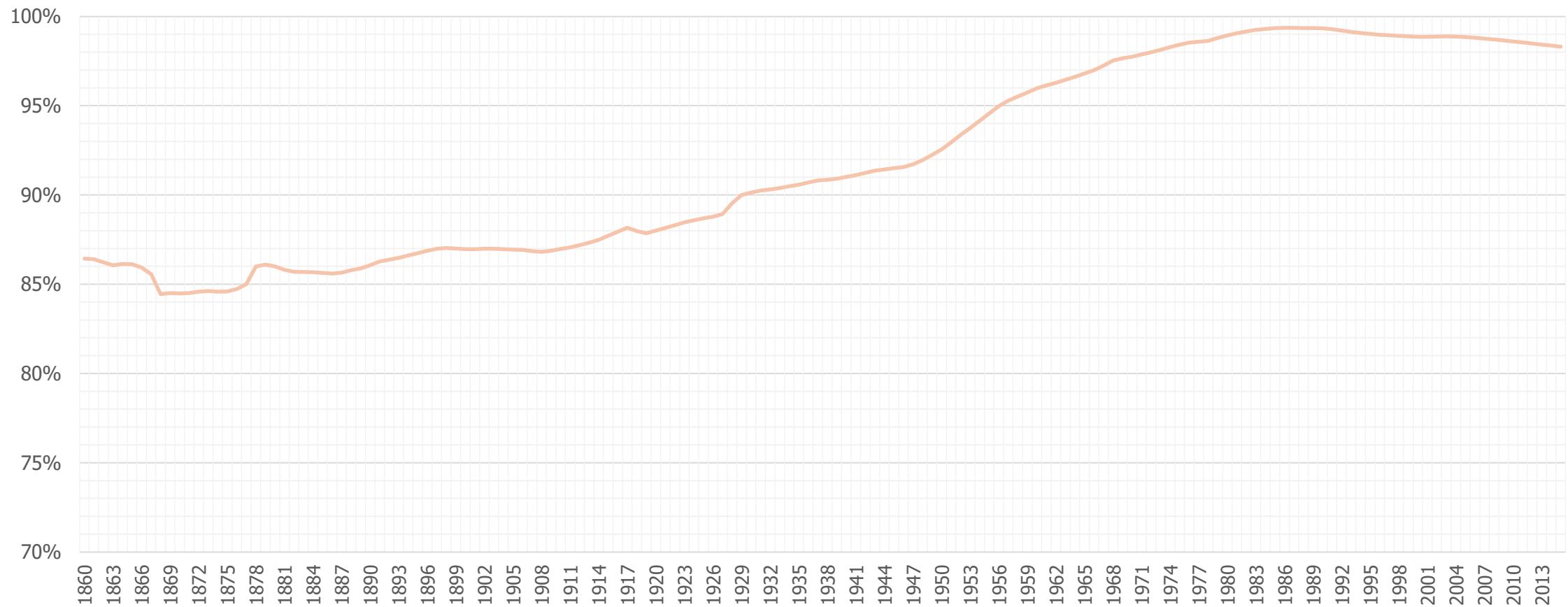
Sources: 1751-1877: Turpeinen (1979), 1878-2015: HMD (2017), 2016-2100: WIC Human Capital Data Explorer (2018)

Estimated proportion of literate population (15+), 1740-1920

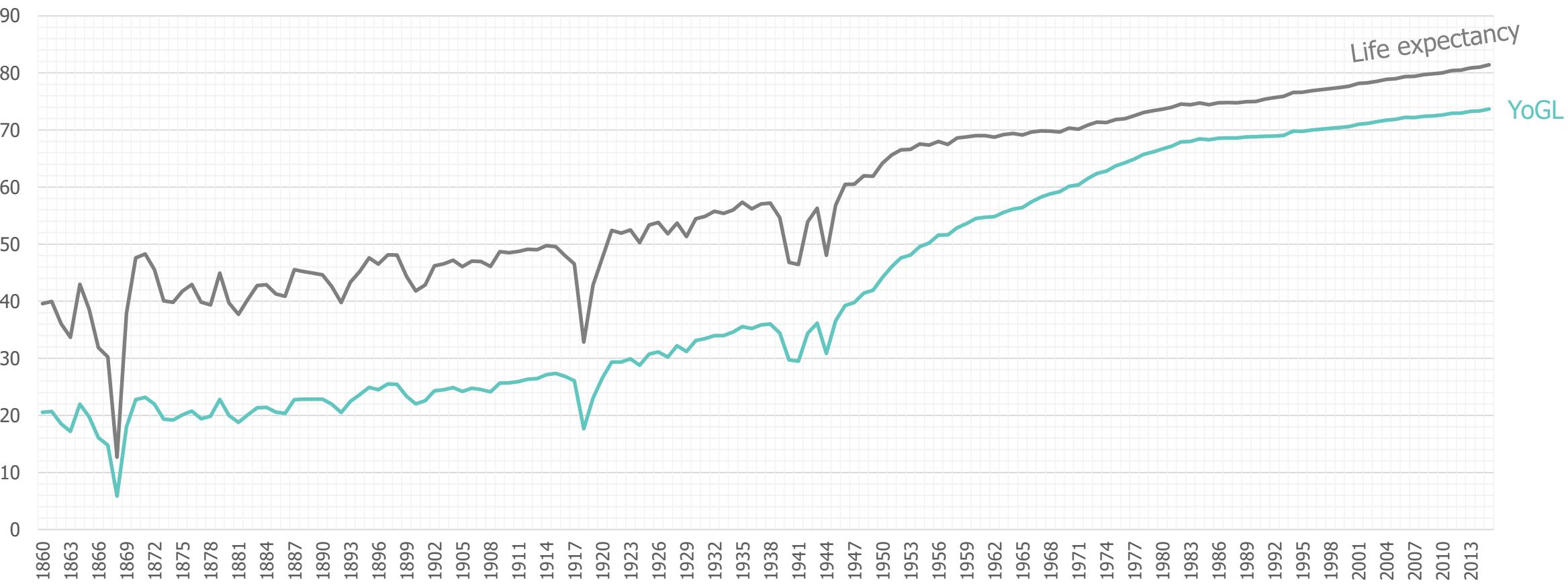


Source: Myllyntaus (1990)

II: Capable Longevity: Estimated share of population with basic cognitive ability, 1860-2015



IV. Years of Good Life (YoGL) vs. life expectancy 1860-2015



The big challenges ahead

- Estimate YoGL for time series 1970-2015 for all countries in the world and selected sub-populations.
- Estimate a “well-being production function” based on a set of capitals. Clear distinction between determinants and constituents (schooling a determinant, cognitive health a constituent).
- Operationalize Population-Development-Environment (PDE) Interactions including feed-backs on YoGL (mortality, obj. indicators, life satisfaction).



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Thank you.

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