

Measuring Well-being

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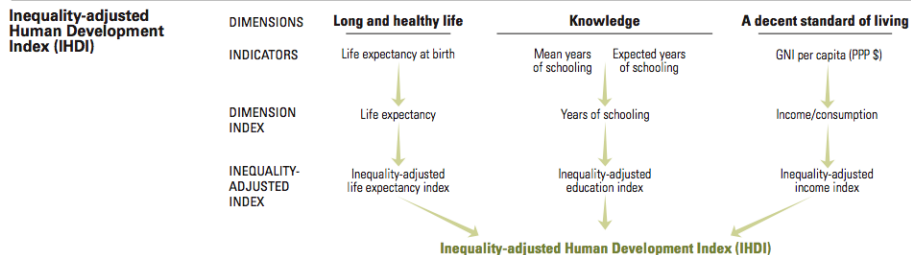
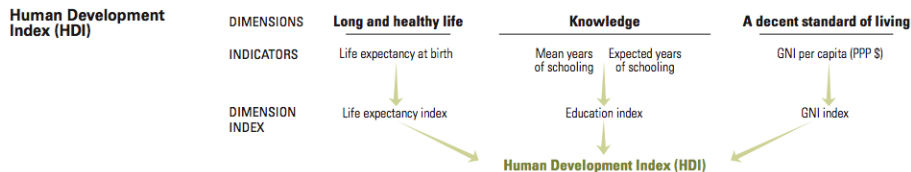
U.S. vs. France

- GDP per capita: French GDP/capita is 67% of U.S.'s (2005)
- Consumption per person: France is 60% of U.S.'s (2005)
- Life expectancy: France – 80; U.S. – 77
- Leisure: France – 535 annual working hours per person; U.S. – 877 hours
- Inequality: France – 0.294; U.S. – 0.394 (2014 Gini coefficient)

Measuring Well-being

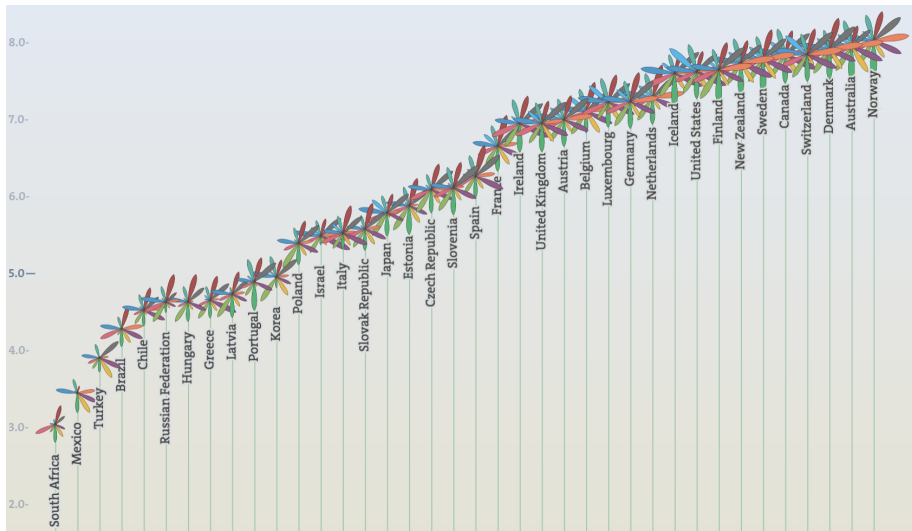
“[GDP] ... does not allow for the health of our children, the quality of their education, or the joy of their play. It does not include the beauty of our poetry or the strength of our marriages, the intelligence of our public debate or the integrity of our public officials. It measures neither our courage, nor our wisdom, nor our devotion to our country. It measures everything, in short, except that which makes life worthwhile, and it can tell us everything about America except why we are proud that we are Americans.” – Robert Kennedy, 1968

Human Development Index (HDI)



Human Development Index

Better Life Index



OECD Better Life Index

Better Life Index

| Well-being domain | Concept | Indicator | Year ¹ | Unit of measurement |
|--------------------------|------------------------|--|-------------------|--|
| Income and wealth | Household income | Household net adjusted disposable income | 2013 | USD at 2010 PPPs, per capita |
| | Financial wealth | Net household financial wealth | 2013 | USD at current PPPs, per capita |
| Jobs and earnings | Employment | Employment rate | 2014 | Employed aged 15-64, as a percentage of the population aged 15-64 |
| | Earnings | Average annual gross earnings per full-time employee | 2013 | USD at 2013 PPPs |
| | Job security | Probability of becoming unemployed | 2014 | The annual inflow into unemployment (percentage points) |
| | Long-term unemployment | Long-term unemployment rate | 2014 | Percentage of the labour force unemployed for one year or more |
| Work-life balance | Working hours | Employees working very long hours | 2013 | Percentage of employees routinely working 50 hours or more per week |
| | Time off | Time devoted to leisure and personal care | Various | Hours per day, persons in full-time employment only |
| Housing | Rooms per person | Rooms per person | 2013 | Average number of rooms per person (excluding bathroom, toilet, kitchenette, scullery/utility rooms and garages) |
| | Housing affordability | Housing expenditure | 2012 | Percentage of household gross adjusted disposable income spent on housing and house maintenance |
| | Basic sanitation | Dwellings without basic sanitary facilities | 2013 | Percentage of people without an indoor flushing toilet for the sole use of their household |












Indicators

Better Life Index

| | | | | |
|--|----------------------------------|---|-------------------|--|
| Environmental quality | Water quality | Satisfaction with water quality | 2014 | Percentage of satisfied people in the overall population |
| | Air quality (PM _{2.5}) | Annual exposure to fine particulate matter (PM _{2.5}) air pollution | 2010-2012 average | Population-weighted exposure to PM _{2.5} concentrations, micrograms per cubic metre |
| Health status | Life expectancy | Life expectancy at birth | 2013 | Number of years a newborn can expect to live |
| | Perceived health | Perceived health status | 2013 | Percentage of adults reporting that their health is "good" or better than good |
| Education and skills | Educational attainment | Educational attainment of the adult population | 2013 | Percentage of people aged 25-64 with at least an upper secondary education |
| | Cognitive skills | Cognitive skills of 15 year old students | 2012 | The OECD Programme on International Students Assessment (PISA) mean score for reading, mathematics and science |
| | Adult skills | Competencies of the adult population aged 16-65 | 2012 | The OECD Programme for the International Assessment of Adult Competencies (PIAAC) mean proficiency scores on literacy and numeracy |
| Social connections | Social support | Perceived social network support | 2014 | Percentage of people who have friends or relatives that they can count on in times of trouble |
| Civic engagement and governance | Voter turnout | Voter turnout | 2014 | Percentage of votes cast among the population registered to vote |
| Personal security | Deaths due to assault | Deaths due to assault | 2012 | Age-standardised rate, per 100 000 population |
| | Self-reported victimisation | Self-reported assault | 2010 | Percentage of people declaring that they have been assaulted in the previous 12 months |
| Subjective well-being | Life evaluation | Life satisfaction | 2014 | Mean values reported using the "Cantril ladder" 0-10 scale, ranging from best possible to worst possible life. |

Indicators

Better Life Index

| | US States | | Country average | OECD average |
|---|-----------|------------|-----------------|--------------|
| | Top 20% | Bottom 20% | | |
|  Community | | | | |
| Perceived social support network (%), average 2006-14 | 95.7 | 88.5 | 92.1 | 88.9 |
|  Jobs | | | | |
| Employment rate (%), 2014 | 74.9 | 64.5 | 69.6 | 66.3 |
| Unemployment rate (%), 2014 | 4.5 | 7.4 | 6.2 | 8.6 |
|  Health | | | | |
| Life Expectancy at birth (years), 2013 | 80.3 | 76.5 | 78.6 | 79.7 |
| Age-adjusted mortality rate (per 1 000 people), 2013 | 7.3 | 9.8 | 8.5 | 8.4 |
|  Civic engagement | | | | |
| Voters in last national election (%), 2015 | 70.9 | 54.7 | 68.0 | 68.1 |
|  Access to services | | | | |
| Households with broadband access (%), 2014 | 83.0 | 72.2 | 78.1 | 69.8 |
|  Environment | | | | |
| Level of air pollution in PM 2.5 ($\mu\text{g}/\text{m}^3$), 2013 | 4.5 | 9.8 | 7.5 | 10.4 |
|  Life satisfaction | | | | |
| Self-evaluation of life satisfaction (scale from 0 to 10), average 2006-14 | 7.6 | 6.9 | 7.2 | 6.7 |
|  Housing | | | | |
| Rooms per person, 2013 | 2.7 | 2.0 | 2.4 | 1.8 |
|  Education | | | | |
| Labour force with at least upper secondary education (%), 2014 | 92.3 | 85.2 | 89.4 | 74.3 |
|  Safety | | | | |
| Homicide Rate (per 100 000 people), 2013 | 2.0 | 6.7 | 4.5 | 3.4 |
|  Income | | | | |
| Disposable income per capita (in USD PPP), 2013 | 43 888 | 31 642 | 37 263 | 17 916 |

Constructing a Welfare Index

- A welfare index may include leisure, health, equality, etc. *in addition to* income.
- Problem: how to weight and combine items of very different nature.
 - ▶ Can we turn everything into equivalent monetary values?
 - ▶ “How much” do we value leisure, health, etc.?

Jones and Klenow (2016)

- Imagine a soul named Rawls who is waiting to be born. Rawls has the opportunity to choose which country he would like to be born into.
- If Rawls chooses to be born into country A, he will then have an income and consumption level that is randomly selected from the income and consumption distributions of country A. His annual working hours will be randomly selected from the distribution of working hours in country A. His life expectancy and probability of death at each age will equal the average of country A.
 - ▶ i.e., when Rawls is choosing a country, he does *not* know whether he will be rich or poor, hardworking or living a life of leisure, or how long he will be able to live. But he knows the distribution. This is the concept of the **original position** behind a **veil of ignorance** proposed by [John Rawls](#).

Jones and Klenow (2016)

- Rawls then needs to solve the following problem – choose the country j that maximizes his expected lifetime utility¹:

$$U^j = E^j \left[\sum_{a=1}^{100} u(C_a, \ell_a) p^j(a) \right] \quad (1)$$

, where E^j denotes expectation based on country j 's consumption (C) and leisure (ℓ) distributions, a denotes age, $u(C_a, \ell_a)$ is the utility of enjoying C_a consumption and ℓ_a leisure at age a , $p^j(a)$ is the probability of living to age a in country j . C_a is drawn from the distribution of $\mathcal{F}^j(C)$ and ℓ_a is drawn from the distribution of $\mathcal{F}^j(\ell)$.

- ▶ Note: (1) includes consideration of inequality too: how C and ℓ are distributed affect U^j .
- ▶ Once $\mathcal{F}^j(C)$, $\mathcal{F}^j(\ell)$ and $p^j(a)$ are known, Rawls will be able to calculate the expected utility for each country and choose the best one.

¹For simplicity, we assume Rawls do not discount future utility.

- We can use (1) to compare countries. Define:

$$U^j(\lambda) = E \left[\sum_{a=1}^{100} u(\lambda C_a, \ell_a) p^j(a) \right]$$

If we compare all countries to the U.S., then we find out the λ^j for each country j such that

$$U^j(1) = U^{U.S.}(\lambda^j)$$

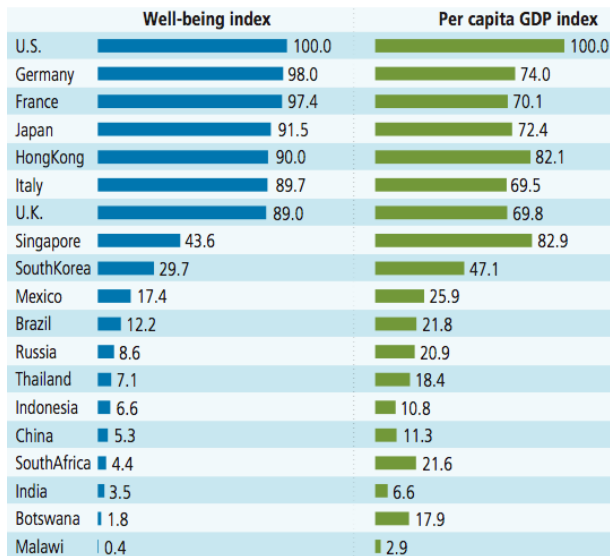
, i.e. λ^j measures how much the U.S. consumption level needs to change in order for the expected utility of living in the U.S. to be equal to the expected utility of living in country j .

- How do we find out the utility of leisure (ℓ)?
 - Solution: look at labor supply elasticity.
 - ① The more people value leisure, the more likely they are going to stay home instead of working.
 - ② The less people value leisure, the more they are going to respond to rising wages by increasing the number of hours they work.
- Thus, by looking at labor supply elasticity, we can deduce the value of leisure, which will allow us to calculate $u(C_a, \ell_a)$.

λ is a welfare index

- The higher the λ , the higher the welfare of a country.
- E.g., $\lambda^{India} = 0.035$ means that for a random person living in the U.S. who enjoys U.S. distribution of consumption, leisure, and life expectancy, in order for her to be willing to live in India instead – and enjoy Indian distribution of consumption, leisure, and life expectancy, her consumption in the U.S. must be reduced by 96.5%.

Jones and Klenow (2016)



The well-being index shows λ^j for each country. $\lambda^{U.S.} = 1$ by construction.