

GDP per capita is a poor predictor of national well-being

Adrien Fabre (CNRS, CIRED)

January 2024

Introduction

What makes a country happy?

What country is the happiest? \Rightarrow Answer on: **sli.do/2601**

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What country is the happiest? ⇒ Answer on: sli.do/2601

HAPPIEST COUNTRIES IN THE WORLD 😊

- | | | | | | |
|---|---|--------------------------|----|---|----------------------|
| 1 |  | Finland
7.769 | 6 |  | Switzerland
7.480 |
| 2 |  | Denmark
7.600 | 7 |  | Sweden
7.343 |
| 3 |  | Norway
7.554 | 8 |  | New Zealand
7.307 |
| 4 |  | Iceland
7.494 | 9 |  | Canada
7.278 |
| 5 |  | The Netherlands
7.488 | 10 |  | Austria
7.246 |

Source: World Happiness Report 2019

 /philstarnews

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The answer is often a **Scandinavian**, high-income country.

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Is money really buying happiness?

Literature

World Values Survey, $R^2 = .49$ (Inglehart & Klingemann, 2000)

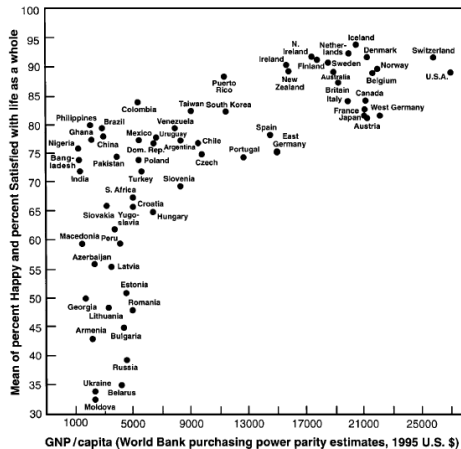


Figure 7.2

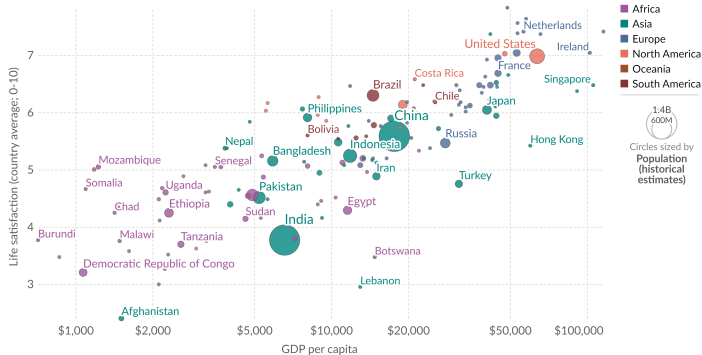
Subjective well-being by level of economic development ($R = 0.70$, $N = 65$, $p < 0.0000$).
Source: World Values Surveys; GNP/capita purchasing power estimates from World Bank,
World Development Report, 1997.

Literature

World Happiness Report (Gallup, 2023)

Self-reported life satisfaction vs. GDP per capita, 2022

Self-reported life satisfaction is measured on a scale ranging from 0-10, where 10 is the highest possible life satisfaction. GDP per capita is adjusted for inflation and differences in the cost of living between countries.



Data source: World Happiness Report (2023); World Bank (2023)
Note: GDP per capita is expressed in international-\$¹ at 2017 prices.
OurWorldInData.org/happiness-and-life-satisfaction | CC BY

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We study new indicators and challenge the view that national income is the best predictor of well-being.

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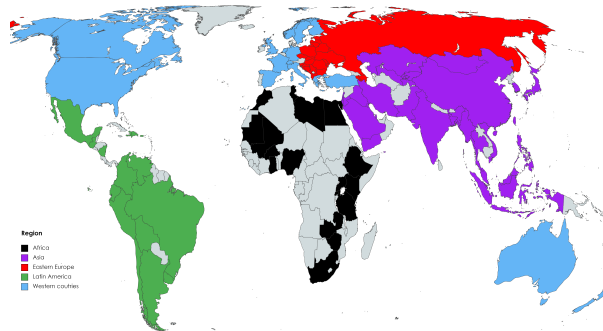
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Another simple variable, the country's (macro) region, is a better predictor of national well-being.

Design

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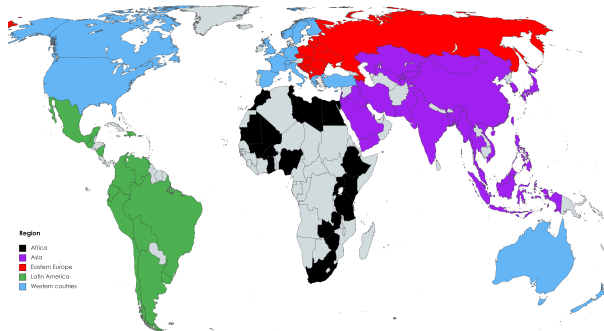
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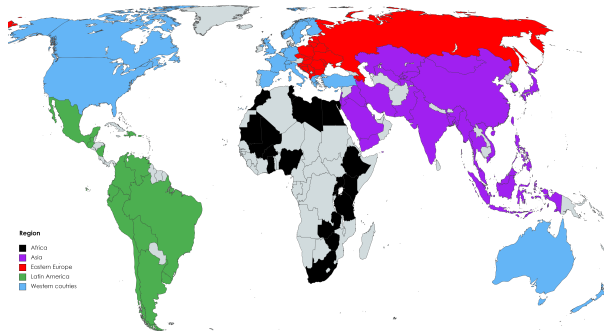


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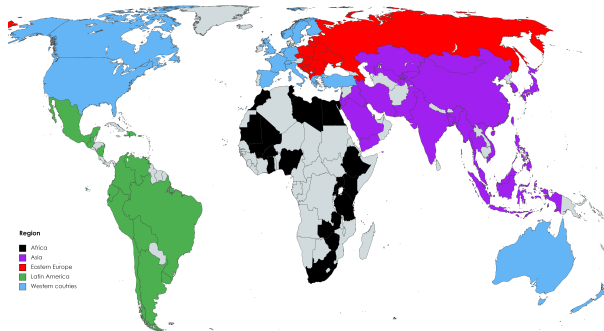
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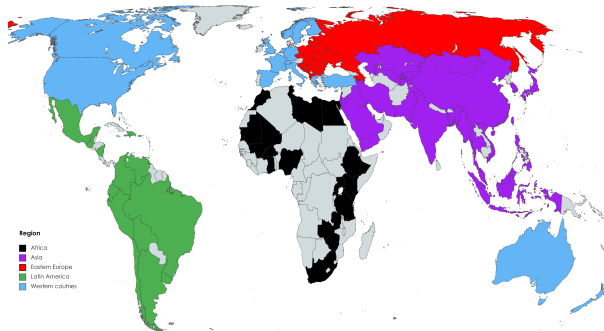
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Satisfaction: “All things considered, how satisfied are you with your life as a whole these days?”

1-Completely dissatisfied – 10-Completeley satisfied; PNR



What is national well-being?

With the two well-being questions, **we can define various** national **indicators** (all weighted using survey weights, all excluding PNR).

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Bond & Lang (19) show that no single indicator can reliably identify two group's relative well-being, justifying reliance on several indicators.

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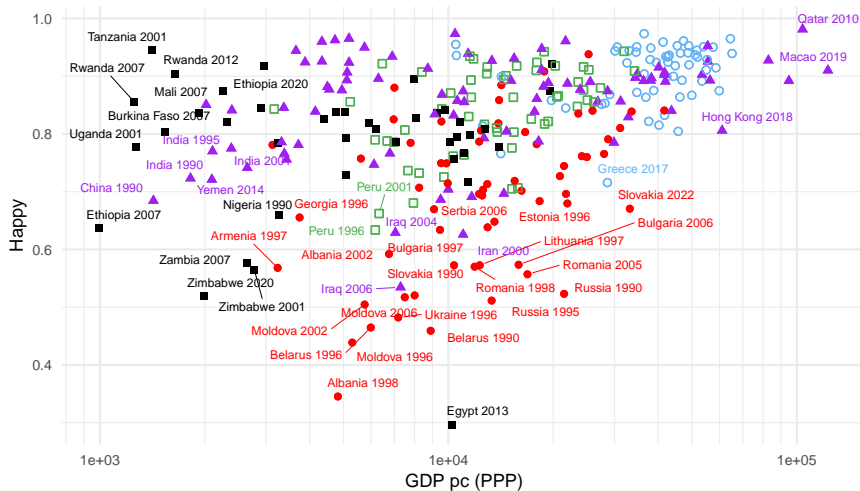
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For robustness, we also run our analyses without this imputation (excluding countries with missing GDP data).

National well-being and income

Graphical evidence

Happy vs. log GDP p.c. (PPP) — All waves of WVS.



Waves = 1 to 7 ($R^2 = 0.17$)

■ Africa

▲ Asia

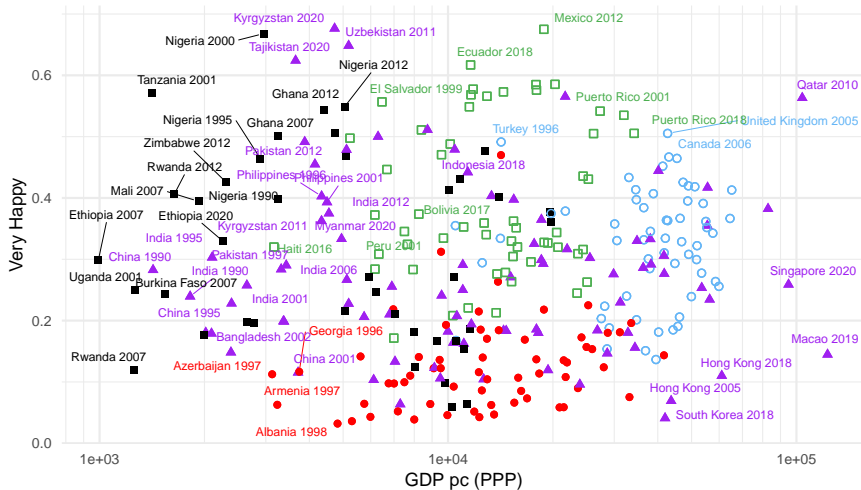
● Eastern Europe

□ Latin America

○ Western

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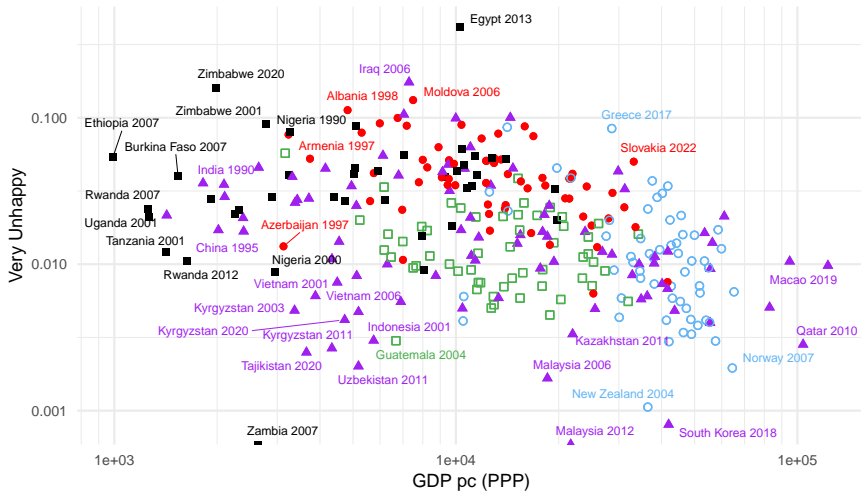
Very Happy vs. log GDP p.c. (PPP) — All waves of WVS.



Waves = 1 to 7 ($R^2 = 0.01$) ■ Africa ▲ Asia ● Eastern Europe □ Latin America ○ Western

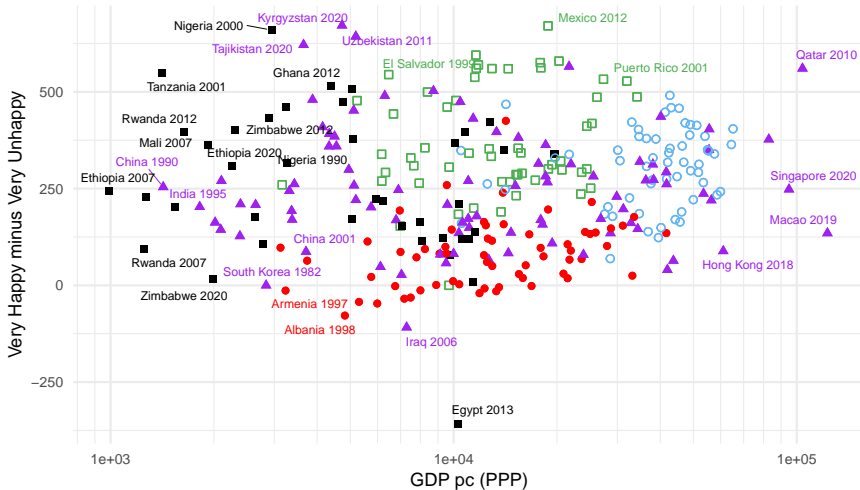
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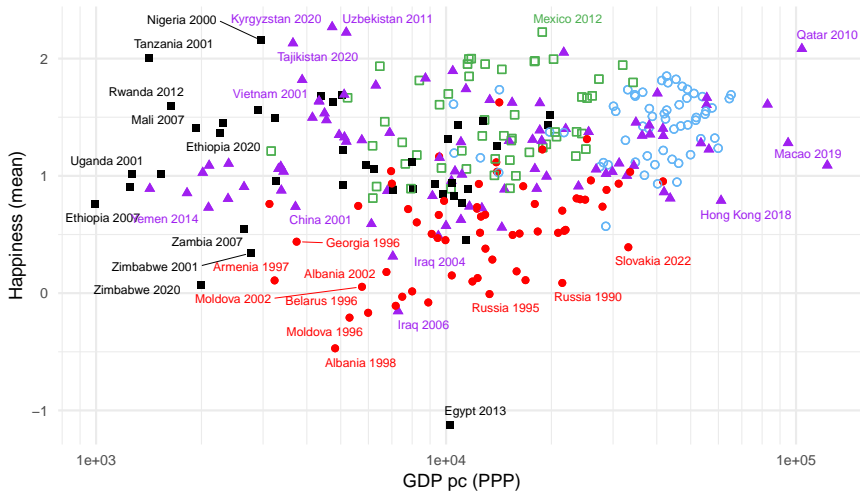
V. Happy – V. Unhappy vs. **log GDP p.c. (PPP)** — All waves of WVS.



Waves = 1 to 7 ($R^2 = 0.02$) ■ Africa ▲ Asia ● Eastern Europe □ Latin America ○ Western

Graphical evidence

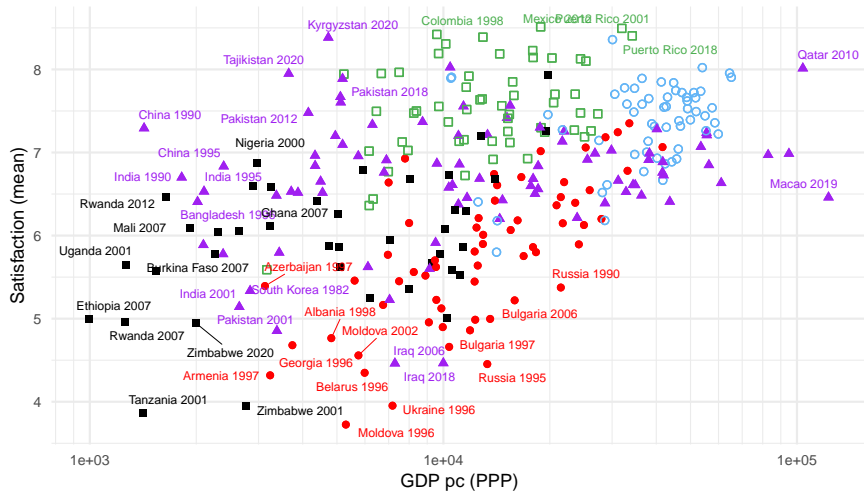
Happiness (mean) vs. log GDP p.c. (PPP) — All waves of WVS.



Waves = 1 to 7 ($R^2 = 0.07$) ■ Africa ▲ Asia ● Eastern Europe □ Latin America ○ Western

Graphical evidence

Satisfaction (mean) vs. log GDP p.c. (PPP) — All waves of WVS.



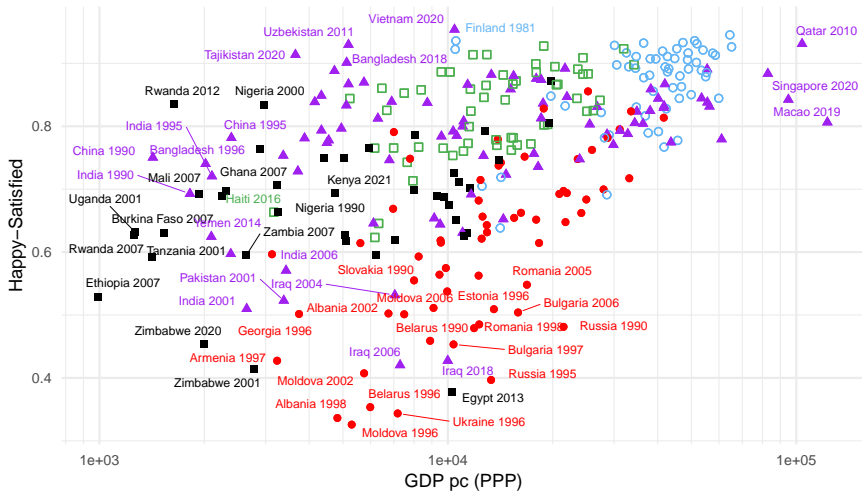
Waves = 1 to 7 ($R^2 = 0.15$) ■ Africa ▲ Asia ● Eastern Europe □ Latin America ○ Western

Satisfied vs. log GDP p.c. (PPP) — All waves of WVS.



Graphical evidence

Happy + Satisfied vs. log GDP p.c. (PPP) — All waves of WVS.

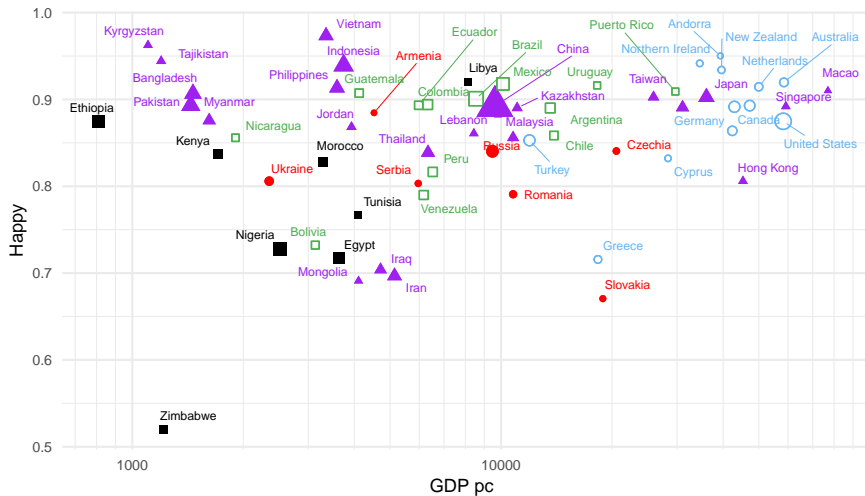


Waves = 1 to 7 ($R^2 = 0.23$)

■ Africa ▲ Asia ● Eastern Europe □ Latin America ○ Western

Graphical evidence

Happy vs. **log GDP p.c. (nominal)** — Wave 7 (2017-22) of WVS, weighted by population.



Wave = 7 ($R^2 = 0.01$) ■ Africa ▲ Asia ● Eastern Europe □ Latin America ○ Western

Variance explained by GDP p.c. [► More results](#)

For different *well-being* and *income* indicators, we compute the R^2 of the regression:

$$well-being_i = \alpha + \beta income_i + u_i$$

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Happiness variable	log GDP p.c.		sextile PPP	Income cluster				Mean	Max
	PPP	nominal		k = 5 PPP	k = 6 PPP	k = 7 PPP	k = 7 nominal		
Very Happy	0	0	0.04	0.01	0.06	0.03	0.03	0.02	0.06
Happy	0.1	0.12	0.14	0.13	0.15	0.14	0.16	0.13	0.16
Very Unhappy	0.04	0.06	0.07	0.07	0.08	0.08	0.11	0.07	0.11
Satisfied	0.2	0.24	0.2	0.21	0.2	0.2	0.24	0.21	0.24
Satisfaction (mean)	0.14	0.17	0.13	0.15	0.14	0.14	0.17	0.15	0.17
Happiness (mean)	0.03	0.04	0.07	0.06	0.09	0.07	0.07	0.06	0.09
Happy + Satisfied	0.18	0.22	0.19	0.2	0.2	0.19	0.23	0.2	0.23
V. Happy – V. Unhappy	0	0.01	0.04	0.02	0.06	0.03	0.04	0.03	0.06
Mean	0.09	0.11	0.11	0.1	0.12	0.11	0.13	0.11	0.13
Max	0.2	0.24	0.2	0.21	0.2	0.2	0.24	0.21	0.24
Number of obs.	304	304	304	304	304	304	304		

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Happiness (mean) is **poorly explained** by income (8% at best).

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Finland, Malaysia, Mexico, Qatar, Vietnam according to other indicators.

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The happiest countries are Western (24), in Latin America (19), Asia (16) or Africa (6).

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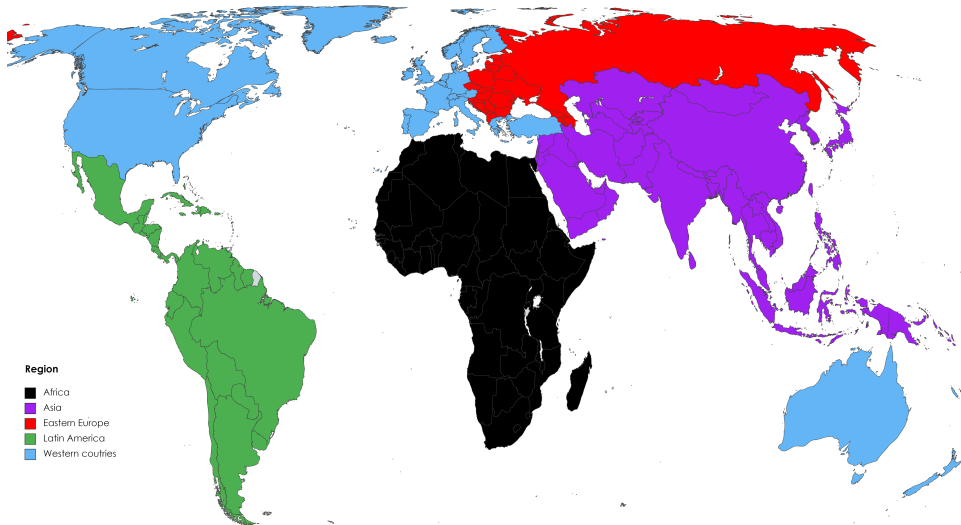
The happiest countries are Western (24), in Latin America (19), Asia (16) or Africa (6).

Blanchflower & Bryson (2023) show that on respective positive/negative affects, the happiest state is: Bhutan (well-rested), Denmark (satisfaction), Finland (anger), Hawaiï (enjoy), Paraguay (smile), Taiwan (sadness), Uzbekistan (worry), Vietnam (pain).

Region vs. GDP per capita as predictor of well-being

Region grouping

WVS countries grouped into the five UN regional groups.



Comparing the share of variance explained by income vs. region

For different *well-being* and *income* indicators, we run regressions and compute corresponding R^2 :

$$well-being_i = \alpha_1 + \beta_1 income_i + u_i \quad (1)$$

$$well-being_i = \alpha_2 + \gamma_2 region_i + e_i \quad (2)$$

$$well-being_i = \alpha_3 + \beta_3 income_i + \gamma_3 region_i + \varepsilon_i \quad (3)$$

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R_3^2 is the **share of variance explained** by income and region (3).

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R^2_3 is the share of variance explained by income and region (3).

R^2_1 (resp. R^2_2) is the share of variance explained by income (resp. region) alone.

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R_1^2 (resp. R_2^2) is the share of variance explained by income (resp. region) alone.

$R_3^2 - R_2^2$ is the additional share of variance explained by income, after adding it alongside region.

Comparing the share of variance explained by income vs. region

For different *well-being* and *income* indicators, we run regressions and compute corresponding R^2 :

$$\text{well-being}_i = \alpha_1 + \beta_1 \text{income}_i + u_i \quad (1)$$

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This follows the LMG methodology (Lindeman, Merenda & Gold, 1980; Grömping, 2007).

Share of explained variance that is explained by income [► More results](#)

Happiness variable	log GDP p.c.		sextile PPP	Income cluster				Mean	Max
	PPP	nominal		k = 5 PPP	k = 6 PPP	k = 7 PPP	k = 7 nominal		
Very Happy	0	0.01	0.11	0.03	0.14	0.07	0.08	0.06	0.14
Happy	0.24	0.3	0.32	0.31	0.34	0.32	0.37	0.32	0.37
Very Unhappy	0.24	0.32	0.35	0.36	0.37	0.36	0.48	0.35	0.48
Satisfied	0.35	0.42	0.35	0.36	0.36	0.36	0.42	0.37	0.42
Satisfaction (mean)	0.26	0.31	0.24	0.26	0.25	0.26	0.32	0.27	0.32
Happiness (mean)	0.08	0.12	0.18	0.14	0.21	0.16	0.19	0.15	0.21
Happy + Satisfied	0.32	0.39	0.34	0.35	0.35	0.35	0.41	0.36	0.41
V. Happy – V. Unhappy	0.01	0.03	0.12	0.05	0.15	0.09	0.1	0.08	0.15
Mean	0.19	0.23	0.25	0.23	0.27	0.24	0.3	0.25	0.3
Max	0.35	0.42	0.35	0.36	0.37	0.36	0.48	0.37	0.48
Number of obs.	304	304	304	304	304	304	304		

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This indicator explains 19% of the explained variance for **Happiness** and 32% for **Satisfaction**.

Region is a better predictor than region in 94% of alternative specifications: looking at each wave separately, weighting countries by population, dropping pandemic years... (including 86% of 88 specifications involving the best-predicting income variable). [► More results](#)

Conclusion

Take away and future research

National well-being is more correlated with the world region than with the GDP p.c.

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Despite evidence against translation issues (Diener & Suh, 2000),

We should check whether emotions are better predicted by region than income.

Robustness checks

Variance explained by PPP income cluster (k = 7) [Go back](#)

Happiness variable	All waves	Only selected waves							
	Pop. weight	1 & 2	3	4	5	6	7	Mean	Max
Very Happy	0.05	0.25	0.06	0.17	0.06	0.12	0.21	0.13	0.25
Happy	0.21	0.19	0.24	0.23	0.22	0.17	0.06	0.19	0.24
Very Unhappy	0.04	0.2	0.15	0.19	0.16	0.1	0.08	0.13	0.2
Satisfied	0.23	0.2	0.22	0.35	0.26	0.23	0.1	0.23	0.35
Satisfaction (mean)	0.16	0.23	0.17	0.32	0.2	0.21	0.05	0.19	0.32
Happiness (mean)	0.09	0.18	0.13	0.22	0.15	0.14	0.07	0.14	0.22
Happy + Satisfied	0.27	0.2	0.25	0.33	0.27	0.21	0.09	0.23	0.33
V. Happy – V. Unhappy	0.05	0.16	0.07	0.19	0.08	0.12	0.16	0.12	0.19
Mean	0.14	0.2	0.16	0.25	0.18	0.16	0.1	0.17	0.25
Max	0.27	0.25	0.25	0.35	0.27	0.23	0.21	0.23	0.35
Number of obs.	304	26	56	40	58	60	64		

Share of explained variance that is explained by PPP income cluster (k = 7) [Go back](#)

Happiness variable	All waves		Only selected waves						
	Pop. weight	1 & 2	3	4	5	6	7	Mean	Max
Very Happy	0.19	0.3	0.08	0.36	0.13	0.37	0.47	0.27	0.47
Happy	0.54	0.33	0.36	0.58	0.39	0.48	0.26	0.42	0.58
Very Unhappy	0.25	0.26	0.28	0.57	0.44	0.43	0.34	0.37	0.57
Satisfied	0.57	0.35	0.28	0.56	0.38	0.42	0.25	0.4	0.57
Satisfaction (mean)	0.36	0.37	0.22	0.47	0.3	0.38	0.12	0.32	0.47
Happiness (mean)	0.31	0.25	0.18	0.46	0.25	0.43	0.23	0.3	0.46
Happy + Satisfied	0.57	0.32	0.32	0.57	0.39	0.42	0.24	0.41	0.57
V. Happy – V. Unhappy	0.22	0.22	0.1	0.38	0.16	0.41	0.38	0.27	0.41
Mean	0.38	0.3	0.23	0.5	0.3	0.42	0.29	0.34	0.5
Max	0.57	0.37	0.36	0.58	0.44	0.48	0.47	0.42	0.58
Number of obs.	304	26	56	40	58	60	64		

