

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

**Adrien Fabre** (CNRS, CIRED)

*January 2024*

# Introduction

# What makes a country happy?

Which country is the happiest?

# What makes a country happy?

Which country is the happiest?

The answer is often in Scandinavia.

# What makes a country happy?

Which country is the happiest?

The answer is often in Scandinavia.

What do we mean by “happy”?

# What makes a country happy?

Which country is the happiest?

The answer is often in Scandinavia.

What do we mean by “happy”?

# What makes a country happy?

Which country is the happiest?

The answer is often in Scandinavia.

What do we mean by “happy”? Subjective well-being.

# Literature

The literature finds an increasing relationship between GDP pc and well-being.



# Literature

The literature finds an increasing relationship between GDP pc and well-being.  
We challenge this finding.

## Primer of the results

Income is only weakly correlated with national well-being.

## Primer of the results

Income is only weakly correlated with national well-being.

The relationship heavily depends on the well-being indicator chosen.

## Primer of the results

Income is only weakly correlated with national well-being.

The relationship heavily depends on the well-being indicator chosen.

## Primer of the results

Income is only weakly correlated with national well-being.

The relationship heavily depends on the well-being indicator chosen.

For some indicators, the happiest country is in Africa or Latin America.

## Primer of the results

Income is only weakly correlated with national well-being.

The relationship heavily depends on the well-being indicator chosen.

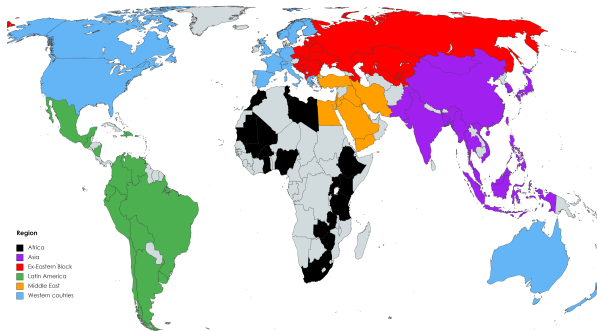
For some indicators, the happiest country is in Africa or Latin America.

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

# Design

# Data

World Values Survey (WVS): representative surveys on 440,000 respondents over 108 countries.

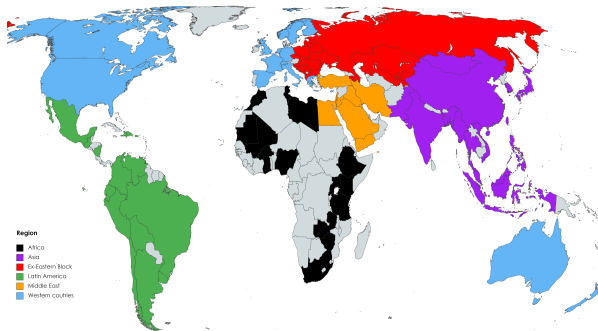




## Data

**World Values Survey (WVS)**: representative surveys on 440,000 respondents over 108 countries.

304 country  $\times$  year observations among 7 waves from 1981 to 2022.

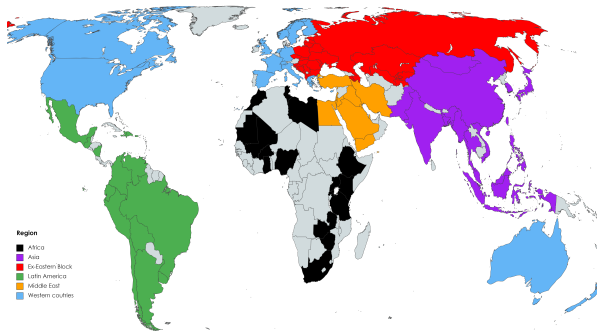


## Data

**World Values Survey (WVS)**: representative surveys on 440,000 respondents over 108 countries.

304 country  $\times$  year observations among 7 waves from 1981 to 2022.

Two subjective well-being questions:



## Data

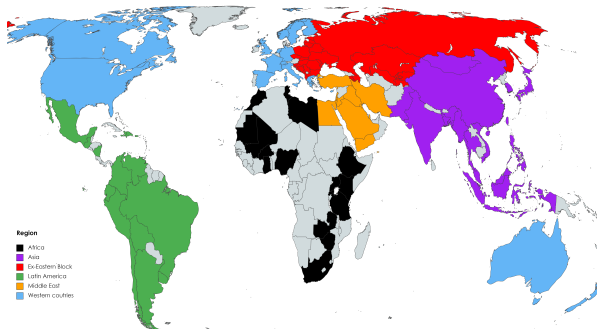
**World Values Survey (WVS)**: representative surveys on 440,000 respondents over 108 countries.

304 country  $\times$  year observations among 7 waves from 1981 to 2022.

Two subjective well-being questions:

**Happiness**: “Taking all things together, would you say you are:”

*Very happy; Quite happy; Not very happy; Not at all happy; PNR*



## Data

**World Values Survey (WVS)**: representative surveys on 440,000 respondents over 108 countries.

304 country  $\times$  year observations among 7 waves from 1981 to 2022.

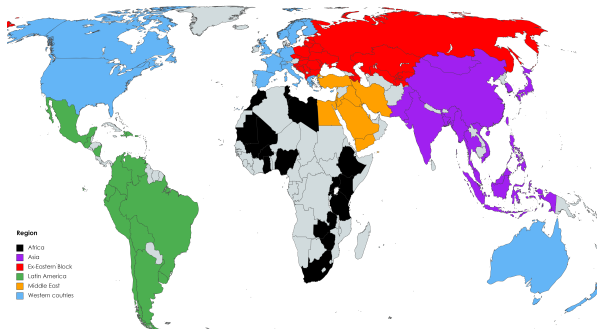
Two subjective well-being questions:

**Happiness**: “Taking all things together, would you say you are:”

*Very happy; Quite happy; Not very happy; Not at all happy*; PNR

**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).

**Happy:** share answering *Quite* or *Very happy*

## 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).

**Happy:** share answering *Quite* or *Very happy*

**Very Happy:** share answering *Very happy*

## 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).

**Happy:** share answering *Quite* or *Very happy*

**Very Happy:** share answering *Very happy*

**Very Unhappy:** share answering *Very unhappy*

## 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).

**Happy**: share answering *Quite* or *Very happy*

**Very Happy**: share answering *Very happy*

**Very Unhappy**: share answering *Very unhappy*

**V. Happy – V. Unhappy**: difference **Very Happy** minus **Very Unhappy**



## 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).

**Happy**: share answering *Quite* or *Very happy*

**Very Happy**: share answering *Very happy*

**Very Unhappy**: share answering *Very unhappy*

**V. Happy – V. Unhappy**: difference **Very Happy** minus **Very Unhappy**

**Happiness (mean)**: mean happiness recoded into  $-3$ ;  $-1$ ;  $+1$ ;  $+3$

## 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).

**Happy**: share answering *Quite* or *Very happy*

**Very Happy**: share answering *Very happy*

**Very Unhappy**: share answering *Very unhappy*

**V. Happy – V. Unhappy**: difference **Very Happy** minus **Very Unhappy**

**Happiness (mean)**: mean happiness recoded into  $-3$ ;  $-1$ ;  $+1$ ;  $+3$

**Satisfaction (mean)**: mean satisfaction

## 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).

**Happy**: share answering *Quite* or *Very happy*

**Very Happy**: share answering *Very happy*

**Very Unhappy**: share answering *Very unhappy*

**V. Happy – V. Unhappy**: difference **Very Happy** minus **Very Unhappy**

**Happiness (mean)**: mean happiness recoded into  $-3$ ;  $-1$ ;  $+1$ ;  $+3$

**Satisfaction (mean)**: mean satisfaction

**Satisfied**: share answering 6 to 10 at satisfaction

# 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).

**Happy**: share answering *Quite* or *Very happy*

**Very Happy**: share answering *Very happy*

**Very Unhappy**: share answering *Very unhappy*

**V. Happy – V. Unhappy**: difference **Very Happy** minus **Very Unhappy**

**Happiness (mean)**: mean happiness recoded into  $-3$ ;  $-1$ ;  $+1$ ;  $+3$

**Satisfaction (mean)**: mean satisfaction

**Satisfied**: share answering 6 to 10 at satisfaction

**Happy + Satisfied**: average of **Happy** and **Satisfied**

This is the variable used by Inglehart & Klingemann (2000)

## How we measure income

Our benchmark *income* indicator is the **log GDP per capita (pc) in PPP** (constant 2017 \$, World Bank)

## How we measure income

Our benchmark *income* indicator is the **log GDP per capita (pc) in PPP** (constant 2017 \$, World Bank)

## How we measure income

Our benchmark *income* indicator is the **log GDP per capita (pc) in PPP** (constant 2017 \$, World Bank)

We also use discrete indicators:

## How we measure income

Our benchmark *income* indicator is the **log GDP per capita (pc) in PPP** (constant 2017 \$, World Bank)

We also use discrete indicators:

**Income sextile:** quantile of income (6 quantiles)



## How we measure income

Our benchmark *income* indicator is the **log GDP per capita (pc) in PPP** (constant 2017 \$, World Bank)

We also use discrete indicators:

**Income sextile**: quantile of income (6 quantiles)

**Income cluster** ( $k = 5, 6$  or  $7$ ): income cluster, with the  $k$  clusters found by the  $k$ -means algorithm

## How we measure income

Our benchmark *income* indicator is the **log GDP per capita (pc) in PPP** (constant 2017 \$, World Bank)

We also use discrete indicators:

**Income sextile**: quantile of income (6 quantiles)

**Income cluster** ( $k = 5, 6$  or  $7$ ): income cluster, with the  $k$  clusters found by the  $k$ -means algorithm

For robustness, we also run our analyses using the log *nominal* GDP pc (constant 2015 \$, World Bank) and corresponding income group and clusters.

## How we measure income

Our benchmark *income* indicator is the **log GDP per capita (pc) in PPP** (constant 2017 \$, World Bank)

We also use discrete indicators:

**Income sextile**: quantile of income (6 quantiles)

**Income cluster** ( $k = 5, 6$  or  $7$ ): income cluster, with the  $k$  clusters found by the  $k$ -means algorithm

For robustness, we also run our analyses using the log *nominal* GDP pc (constant 2015 \$, World Bank) and corresponding income group and clusters.

We manually impute missing income data using IMF data.

## How we measure income

Our benchmark *income* indicator is the **log GDP per capita (pc) in PPP** (constant 2017 \$, World Bank)

We also use discrete indicators:

**Income sextile**: quantile of income (6 quantiles)

**Income cluster** ( $k = 5, 6$  or  $7$ ): income cluster, with the  $k$  clusters found by the  $k$ -means algorithm

For robustness, we also run our analyses using the log *nominal* GDP pc (constant 2015 \$, World Bank) and corresponding income group and clusters.

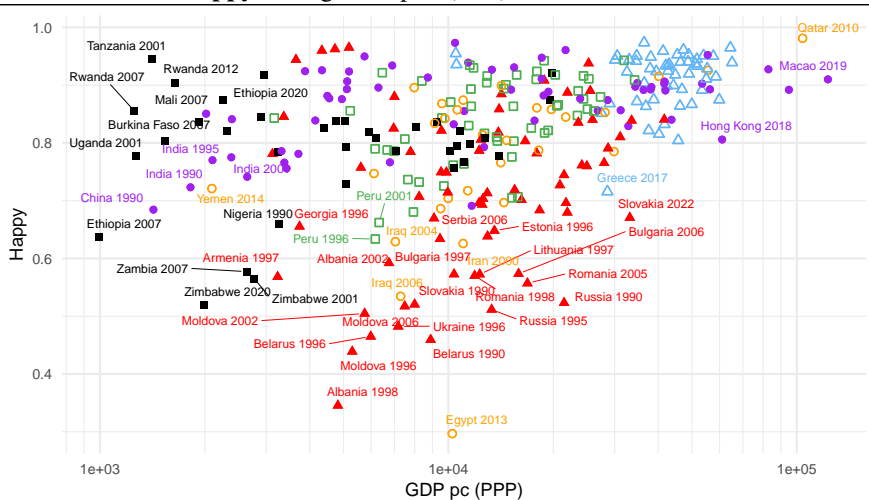
We manually impute missing income data using IMF data.

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.

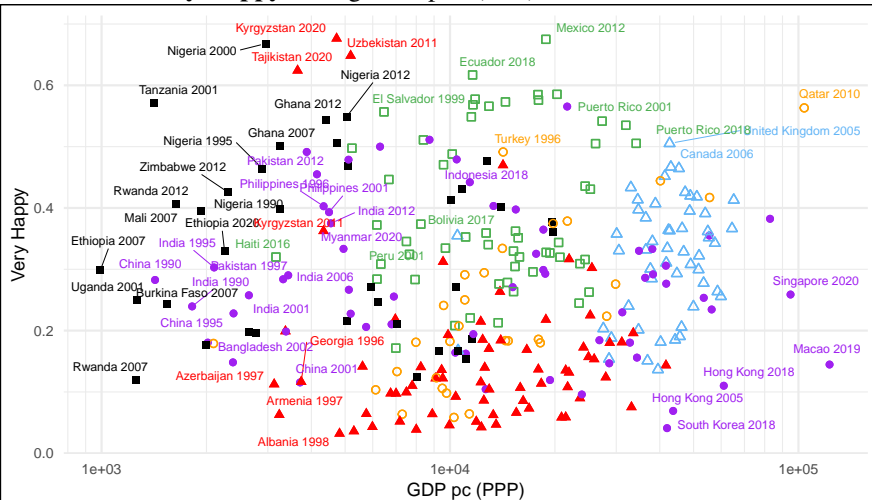


Waves = 1 to 7 ( $R^2 = 0.17$ )

■ Africa    ● Asia    ▲ Ex-Eastern Block    □ Latin America    ○ Middle East    △ Western

# Graphical evidence

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

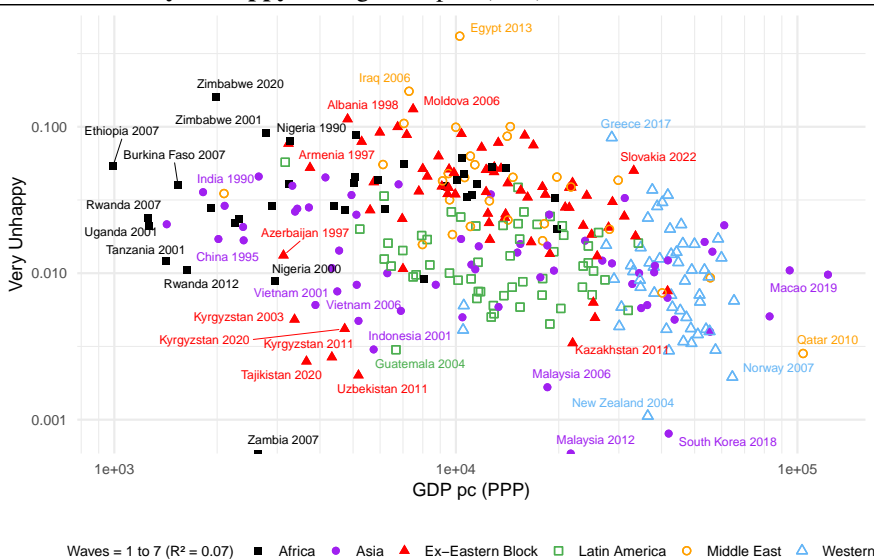


Waves = 1 to 7 ( $R^2 = 0.01$ )

■ Africa ● Asia ▲ Ex-Eastern Block □ Latin America ○ Middle East △ Western

# Graphical evidence

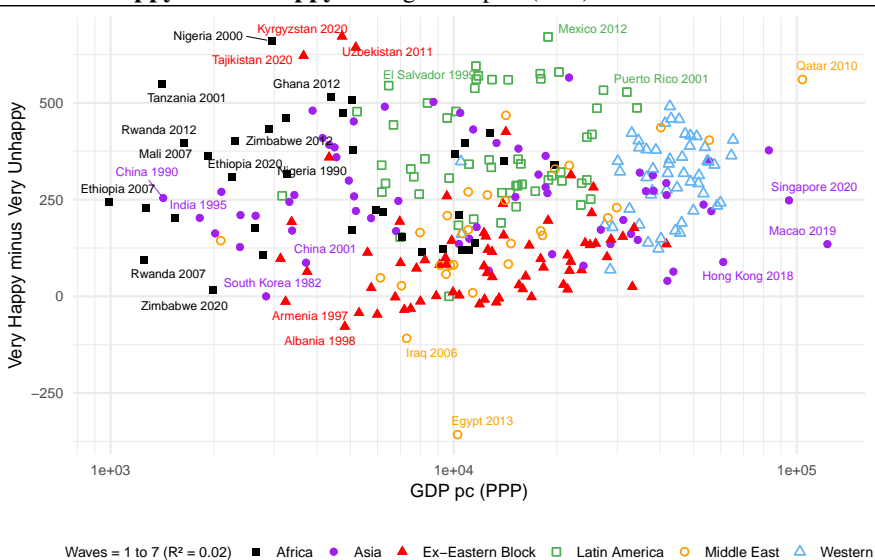
Very Unhappy vs. log GDP p.c. (PPP) — All waves of WVS.





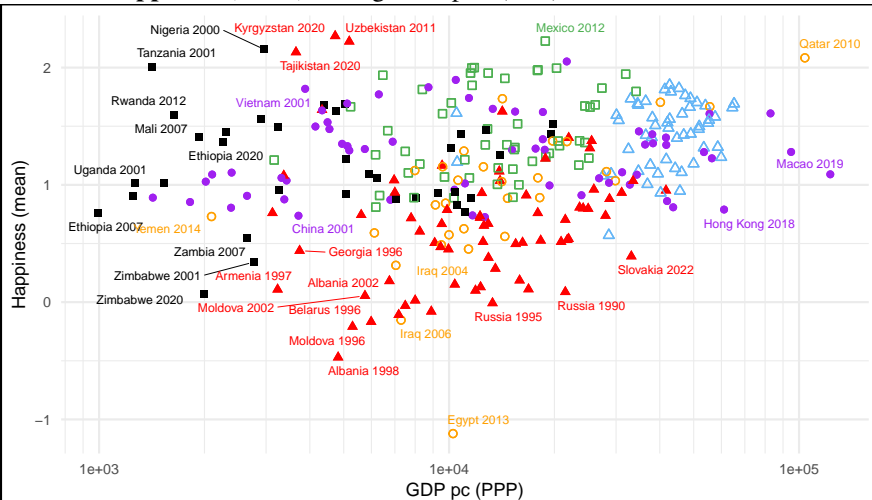
# Graphical evidence

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



# Graphical evidence

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

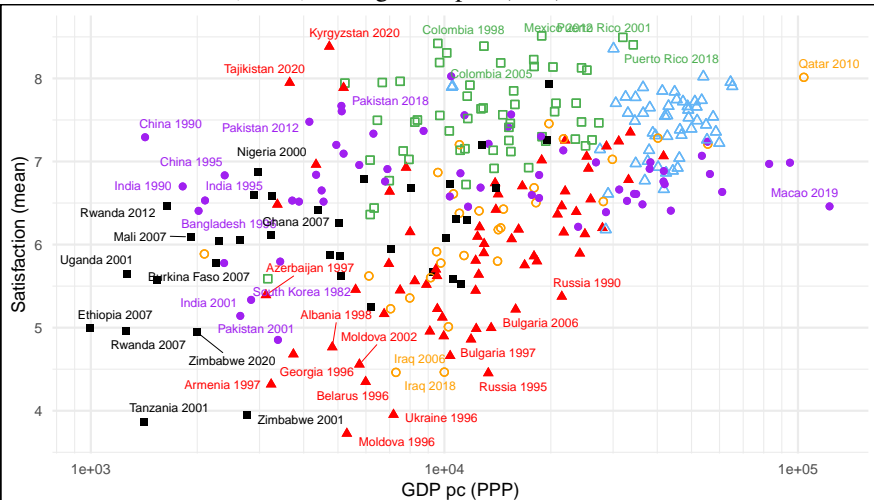


Waves = 1 to 7 ( $R^2 = 0.07$ )

■ Africa    ● Asia    ▲ Ex-Eastern Block    □ Latin America    ○ Middle East    △ Western

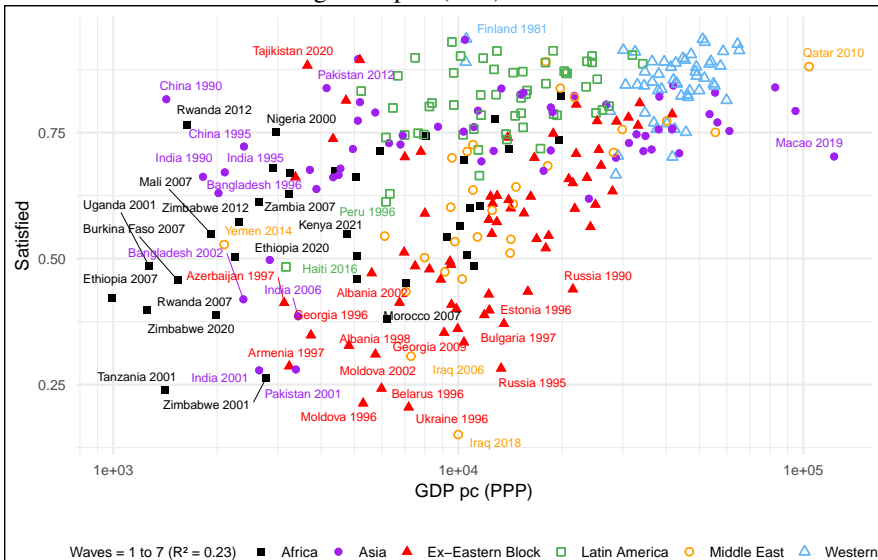
# Graphical evidence

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



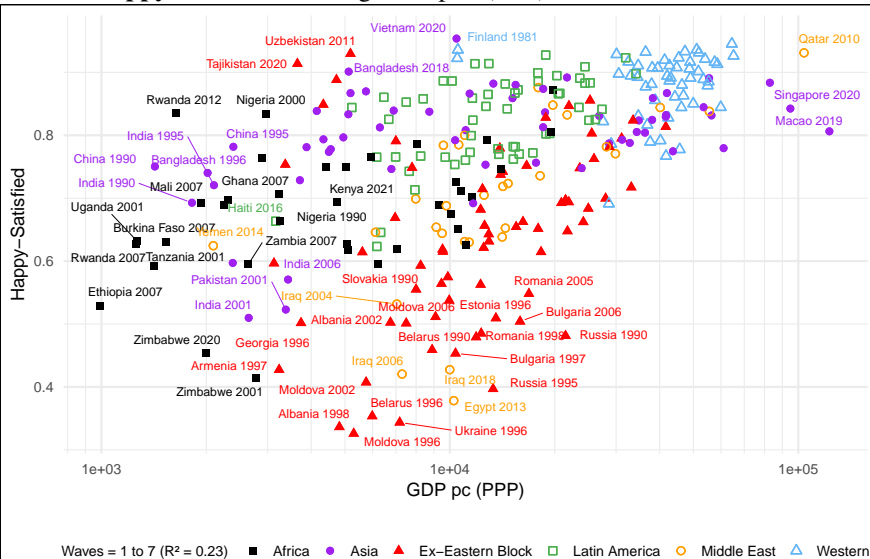
# Graphical evidence

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



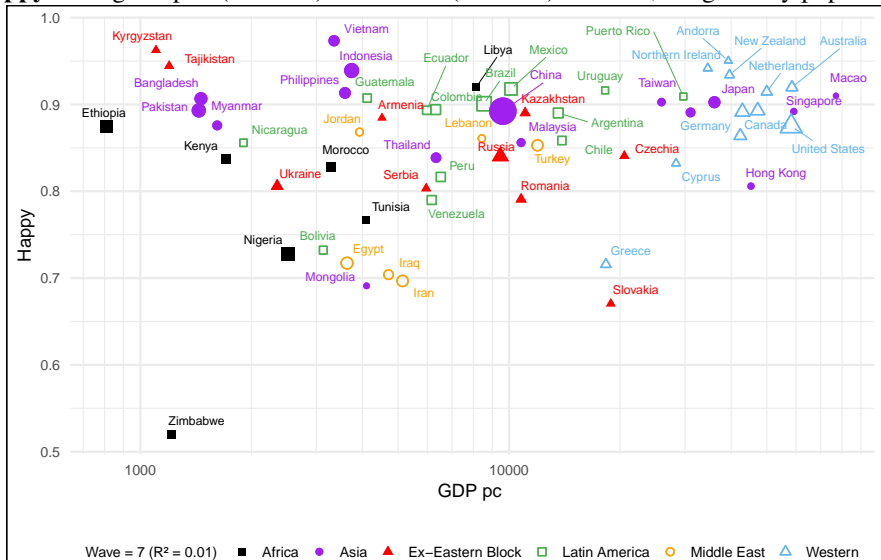
# Graphical evidence

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



# Graphical evidence

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



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

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

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

## Variance explained by GDP p.c. [► 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	0.04	0.01	0.01	0.02	0.04	0.02	0.04
Happy	0.1	0.12	0.14	0.13	0.12	0.13	0.15	0.13	0.15
Very Unhappy	0.05	0.06	0.07	0.07	0.07	0.07	0.1	0.07	0.1
Satisfied	0.19	0.23	0.19	0.2	0.22	0.21	0.24	0.21	0.24
Satisfaction (mean)	0.14	0.16	0.13	0.14	0.16	0.15	0.18	0.15	0.18
Happiness (mean)	0.03	0.04	0.07	0.06	0.05	0.06	0.08	0.06	0.08
Happy + Satisfied	0.17	0.21	0.19	0.19	0.2	0.2	0.23	0.2	0.23
V. Happy – V. Unhappy	0	0.01	0.05	0.02	0.02	0.03	0.05	0.03	0.05
Mean	0.09	0.1	0.11	0.1	0.1	0.11	0.13	0.11	0.13
Max	0.19	0.23	0.19	0.2	0.22	0.21	0.24	0.21	0.24
Number of obs.	304	304	304	304	304	304	304		



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

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

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

**Nominal income clustered into 7 groups** is the income indicator that **explains best well-being**.

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

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

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

**Nominal income clustered into 7 groups** is the income indicator that **explains best well-being**.

On average over well-being indicators, **this indicator explains 13% of the variance**.

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

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

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

**Nominal income clustered into 7 groups** is the income indicator that **explains best well-being**.

On average over well-being indicators, **this indicator explains 13% of the variance**.

**Satisfied** is the well-being indicator that is best explained by income (19% to 24%).

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

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

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

**Nominal income clustered into 7 groups** is the income indicator that **explains best well-being**.

On average over well-being indicators, **this indicator explains 13% of the variance**.

**Satisfied** is the well-being indicator that is best explained by income (19% to 24%).

**Happy + Satisfied** —chosen by Ingelhart et al. (2008)— comes close (17% to 23%).

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

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

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

**Nominal income clustered into 7 groups** is the income indicator that **explains best well-being**.

On average over well-being indicators, **this indicator explains 13% of the variance**.

**Satisfied** is the well-being indicator that is best explained by income (19% to 24%).

**Happy + Satisfied** —chosen by Ingelhart et al. (2008)— comes close (17% to 23%).

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

# What are the happiest countries?

What is the happiest country?

# What are the happiest countries?

## What is the happiest country?

Looking at all waves combined, **Kyrgyzstan**–2020 is the happiest country–year according to 3 indicators

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

# What are the happiest countries?

## What is the happiest country?

Looking at all waves combined, **Kyrgyzstan**–2020 is the happiest country–year according to 3 indicators

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

Counting the occurrences of countries for each wave–indicator (including all waves combined), **Switzerland** is the happiest (10 occurrences) followed by **Mexico** (9) and **Kyrgyzstan** (6).



# What are the happiest countries?

## What is the happiest country?

Looking at all waves combined, **Kyrgyzstan**–2020 is the happiest country–year according to 3 indicators

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

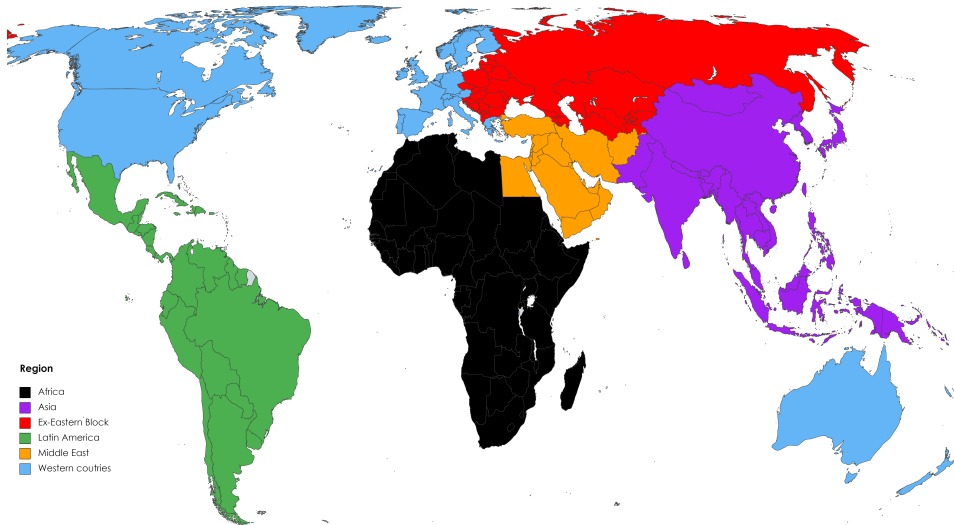
Counting the occurrences of countries for each wave–indicator (including all waves combined), **Switzerland** is the happiest (10 occurrences) followed by **Mexico** (9) and **Kyrgyzstan** (6).

The happiest countries are Western (24), in Latin America (19) or elsewhere (21).

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

# Region grouping

WVS countries grouped into six world regions.



## Comparing the share of variance explained by income vs. region

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

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

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

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

## Comparing the share of variance explained by income vs. region

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

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

$$\text{well-being}_i = \alpha_2 + \gamma_2 \text{region}_i + e_i \quad (2)$$

$$\text{well-being}_i = \alpha_3 + \beta_3 \text{income}_i + \gamma_3 \text{region}_i + \varepsilon_i \quad (3)$$

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

## Comparing the share of variance explained by income vs. region

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

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

$$\text{well-being}_i = \alpha_2 + \gamma_2 \text{region}_i + e_i \quad (2)$$

$$\text{well-being}_i = \alpha_3 + \beta_3 \text{income}_i + \gamma_3 \text{region}_i + \varepsilon_i \quad (3)$$

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

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

## Comparing the share of variance explained by income vs. region

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

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

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

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

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

$R_1^2$  (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  $R^2$ :

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

$$\text{well-being}_i = \alpha_2 + \gamma_2 \text{region}_i + e_i \quad (2)$$

$$\text{well-being}_i = \alpha_3 + \beta_3 \text{income}_i + \gamma_3 \text{region}_i + \varepsilon_i \quad (3)$$

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

$R_1^2$  (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.

$s_i = \frac{R_1^2 + (R_3^2 - R_2^2)}{R_3^2}$  is the share of explained variance that is explained by income.



## Comparing the share of variance explained by income vs. region

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

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

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

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

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

$R_1^2$  (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.

$s_i = \frac{R_1^2 + (R_3^2 - R_2^2)}{R_3^2}$  is the share of explained variance that is explained by income.

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	0.13	0.03	0.04	0.07	0.12	0.06	0.13
Happy	0.27	0.33	0.36	0.34	0.33	0.34	0.39	0.34	0.39
Very Unhappy	0.19	0.25	0.27	0.27	0.27	0.26	0.38	0.27	0.38
Satisfied	0.36	0.42	0.35	0.37	0.39	0.38	0.44	0.39	0.44
Satisfaction (mean)	0.27	0.32	0.26	0.27	0.29	0.28	0.34	0.29	0.34
Happiness (mean)	0.1	0.14	0.21	0.16	0.15	0.17	0.22	0.16	0.22
Happy + Satisfied	0.33	0.4	0.36	0.36	0.37	0.37	0.43	0.38	0.43
V. Happy – V. Unhappy	0.02	0.03	0.14	0.06	0.06	0.09	0.14	0.08	0.14
Mean	0.19	0.24	0.26	0.23	0.24	0.24	0.31	0.24	0.31
Max	0.36	0.42	0.36	0.37	0.39	0.38	0.44	0.39	0.44
Number of obs.	304	304	304	304	304	304	304		

## Region is a better predictor of national well-being than income

Income is never a better predictor than region ( $s_i < 50\%$ )

## Region is a better predictor of national well-being than income

Income is never a better predictor than region ( $s_i < 50\%$ )

For the best-predicting income indicator, income explains 31% of the explained variance, on average over all well-being indicators

## Region is a better predictor of national well-being than income

Income is never a better predictor than region ( $s_i < 50\%$ )

For the best-predicting income indicator, income explains 31% of the explained variance, on average over all well-being indicators

This indicator explains 22% of the explained variance for **Happiness** and 34% for **Satisfaction**.

## Region is a better predictor of national well-being than income

Income is never a better predictor than region ( $s_i < 50\%$ )

For the best-predicting income indicator, income explains 31% of the explained variance, on average over all well-being indicators

This indicator explains 22% of the explained variance for **Happiness** and 34% for **Satisfaction**.

Region is a better predictor than region in 95% 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.



## Take away and future research

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

Richest countries are not necessarily the happiest.

## Take away and future research

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

Richest countries are not necessarily the happiest.

If there is a link between income and well-being, it is that rich countries do not experience low well-being.

## Take away and future research

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

Richest countries are not necessarily the happiest.

If there is a link between income and well-being, it is that rich countries do not experience low well-being.

Poor countries can be happy too. Growth is not necessarily the best goal.

## Take away and future research

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

Richest countries are not necessarily the happiest.

If there is a link between income and well-being, it is that rich countries do not experience low well-being.

Poor countries can be happy too. Growth is not necessarily the best goal.

⇒ Absolute income is not as determining for well-being as is often thought.

## Take away and future research

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

Richest countries are not necessarily the happiest.

If there is a link between income and well-being, it is that rich countries do not experience low well-being.

Poor countries can be happy too. Growth is not necessarily the best goal.

⇒ Absolute income is not as determining for well-being as is often thought.

⇒ We should seek reforms that improve well-being rather than growth.

## Take away and future research

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

Richest countries are not necessarily the happiest.

If there is a link between income and well-being, it is that rich countries do not experience low well-being.

Poor countries can be happy too. Growth is not necessarily the best goal.

⇒ Absolute income is not as determining for well-being as is often thought.

⇒ We should seek reforms that improve well-being rather than growth.

Non-material dimensions seem key to well-being ⇒ Need to study mechanisms.

## Take away and future research

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

Richest countries are not necessarily the happiest.

If there is a link between income and well-being, it is that rich countries do not experience low well-being.

Poor countries can be happy too. Growth is not necessarily the best goal.

⇒ Absolute income is not as determining for well-being as is often thought.

⇒ We should seek reforms that improve well-being rather than growth.

Non-material dimensions seem key to well-being ⇒ Need to study mechanisms.

Despite evidence against translation issues (Sandvik et al., 93; Diener & Lucas, 99; Scollon et al., 05),

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	0.24	0.07	0.15	0.07	0.2	0.25	0.14	0.25
Happy	0.23	0.22	0.22	0.23	0.23	0.21	0.13	0.21	0.23
Very Unhappy	0.06	0.22	0.15	0.16	0.18	0.12	0.18	0.15	0.22
Satisfied	0.23	0.18	0.23	0.36	0.29	0.22	0.16	0.24	0.36
Satisfaction (mean)	0.16	0.17	0.18	0.33	0.21	0.19	0.13	0.2	0.33
Happiness (mean)	0.11	0.18	0.13	0.2	0.16	0.2	0.15	0.16	0.2
Happy + Satisfied	0.28	0.21	0.25	0.32	0.28	0.24	0.17	0.25	0.32
V. Happy – V. Unhappy	0.06	0.15	0.08	0.16	0.09	0.2	0.21	0.14	0.21
Mean	0.15	0.2	0.16	0.24	0.19	0.2	0.17	0.19	0.24
Max	0.28	0.24	0.25	0.36	0.29	0.24	0.25	0.25	0.36
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	0.16	0.29	0.09	0.31	0.13	0.48	0.51	0.28	0.51
Happy	0.53	0.33	0.33	0.53	0.36	0.51	0.47	0.44	0.53
Very Unhappy	0.2	0.26	0.27	0.36	0.33	0.46	0.43	0.33	0.46
Satisfied	0.54	0.25	0.28	0.58	0.4	0.46	0.32	0.4	0.58
Satisfaction (mean)	0.34	0.23	0.23	0.5	0.31	0.4	0.24	0.32	0.5
Happiness (mean)	0.31	0.24	0.18	0.44	0.25	0.47	0.4	0.32	0.47
Happy + Satisfied	0.54	0.27	0.32	0.57	0.39	0.48	0.36	0.42	0.57
V. Happy – V. Unhappy	0.2	0.2	0.11	0.34	0.16	0.47	0.45	0.28	0.47
Mean	0.35	0.26	0.23	0.45	0.29	0.47	0.4	0.35	0.47
Max	0.54	0.33	0.33	0.58	0.4	0.51	0.51	0.44	0.58
Number of obs.	304	26	56	40	58	60	64		