



## Wellbeing Rankings

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## Wellbeing Rankings

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### **Abstract**

Combining data on around four million respondents from the Gallup World Poll and the US Daily Tracker Poll we rank 164 countries, the 50 states of the United States and the District of Columbia on eight wellbeing measures. These are four positive affect measures - life satisfaction, enjoyment, smiling and being well-rested – and four negative affect variables – pain, sadness, anger and worry. Pooling the data for 2008-2017 we find country and state rankings differ markedly depending on whether they are ranked using positive or negative affect measures. The United States ranks lower on negative than positive affect, that is, its country wellbeing ranking looks worse using negative affect than it does when using positive affect. Combining rankings on all eight measures into a summary ranking index for 215 geographical locations we find that nine of the top ten and 16 of the top 20 ranked are US states. Only one US state ranks outside the top 100 – West Virginia (101). Iraq ranks lowest - just below South Sudan. The Nordic countries that traditionally rank high using life satisfaction do not rank as highly on other measures. Country-level rankings on the summary wellbeing index differ sharply from those reported in the World Happiness Index and are more comparable to those obtained with the Human Development Index. The state level rankings on the summary index look very different from those just based on positive affect measures and look more similar to rankings based on objective wellbeing measures.

**Key words:** wellbeing; happiness; cross-country; Gallup survey

**JEL Classification:** I31; O57

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## 1. Introduction

There is growing interest in behavioral and social sciences about the role of location in individuals' wellbeing. Where you are, who you are with and what you are doing all play a role in one's wellbeing (Bryson and MacKerron, 2017). This varies with ambient conditions (temperature and sunlight) but is also affected by fixed location traits. For instance, the presence of water and green space raise momentary wellbeing (MacKerron and Maurato, 2013). Interest in ranking the wellbeing of countries has grown since the Sarkozy-Stiglitz Commission (Stiglitz et al., 2008) challenged the common assumption that ranking countries by gross domestic product (GDP) per capita was sufficient to establish how "well" countries were doing relative to one another. The premise was that GDP, whilst a useful measure of economic output, was only one indicator of the utility individuals might attach to residing in a particular country. Subjective well-being, whilst positively correlated with GDP per capita (as we show later), was a broader metric of utility and, as such, might reveal aspects of a country's performance which might otherwise go unnoticed. This interest was given further impetus by a growing body of research which pointed to the deleterious effects of income inequality. If a country was wealthy but unequal, this might lead to poorer outcomes for citizens than those facing citizens in less well-off countries which were nevertheless more equal.

Some question the value of ranking individuals, states or countries based on subjective wellbeing for two related reasons. First, it is difficult to account for heterogeneity in the way people assess their wellbeing under objectively similar conditions. This is because they have different reference points against which they are making their evaluations, some of which may be idiosyncratic, while others are linked to social, cultural or other influences. Scientists have sought to overcome such problems – for example, by anchoring survey respondents using vignettes which seek to elicit responses to specific situations to strip out cultural and other context-specific ratings (Chevalier and Fielding, 2011).

Second, Bond and Lang (2019) demonstrated the sensitivity of rankings based on wellbeing means from ordinal scales since those rankings rely on assumptions regarding the functional form of the underlying latent wellbeing metrics captured in the ordinal scales. As Bond and Lang show, this issue affects rankings of groups when individual responses are aggregated. They specifically refer to rank identification problems with regards to country rankings of happiness. However, Chen et al. (2022) argue the Bond and Lang critique does not hold if one focuses on ranking median happiness as opposed to mean happiness.

Others maintain that the correspondence between objective indicators of wellbeing and their subjective counterparts provide some validation of the informational content provided by subjective wellbeing metrics. Examples include the similarity in factors predicting both subjective and biometric wellbeing; the correlations between subjective and biometric indicators of wellbeing, such as pulse (Blanchflower and Bryson, 2022a); associations between subjective wellbeing and the risk of coronary heart disease; the correlation between subjective wellbeing and skin-resistance measures of response to stress electroencephalogram measures of prefrontal brain activity; and the duration of authentic Duchennes smiles (Blanchflower and Oswald, 2004).<sup>3</sup>

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<sup>3</sup> A Duchenne smile occurs when both the zygomatic major and orbicularis oris facial muscles fire. Human beings identify these as 'genuine' smiles.

Blanchflower and Oswald (2016) show that unhappiness is hump-shaped in age as is the taking of anti-depressants.

Subjective wellbeing also responds in predictable ways to good and bad life events such as the advent of unemployment, marriage and divorce/separation, the onset of an injury, illness or disease, and the death of family members or friends. Individuals' own assessment of their subjective wellbeing is also strongly correlated with how friends and family members perceive your wellbeing and is strongly predictive of behavioral outcomes offering further validation (Blanchflower and Oswald, 2004). For example, job dissatisfaction is strongly predictive of quit behavior (Freeman, 1978) and subjective wellbeing predicts mortality (Diener and Chan, 2011).

Blanchflower, Bryson and Piper (2022) find that chronic pain is associated with subsequent job loss, while Blanchflower and Bryson (2022b) find chronic pain at age 44 is associated with a range of poor mental health outcomes, pessimism about the future and joblessness at age 55 whereas short-duration pain at age 44 is not. Pain has strong predictive power for pain later in life: pain in childhood predicts pain in mid-life, even when one controls for pain in early adulthood. Pain appears to reflect other vulnerabilities as we found that chronic pain at age 44 predicts whether or not a respondent has Covid nearly twenty years later.

Notwithstanding the Bond and Lang critique, there is therefore potential merit in ranking locations according to the wellbeing experienced by their residents. It seems reasonable to rank countries according to raw differences in their subjective wellbeing but, if one wants to account for compositional differences in the nature of those reporting from different countries, it seems appropriate to undertake a regression-adjustment to remove those differences related to demographic differences across countries.

Having reviewed the existing literature ranking locations on their wellbeing in Section Two we present our own rankings and, in doing so, make a number of contributions to the literature. First, we move beyond the happiness and life satisfaction metrics that are usually the basis for rankings across countries, comparing rankings across a range of metrics. We exploit comparable data across 164 countries on eight metrics, four of which capture wellbeing, and four of which capture illbeing. This proves important because we find that rankings look somewhat different across positive and negative affect, that is, countries move around quite a bit depending on the metric we use to rank them. This is somewhat surprising since the literature on other factors impacting wellbeing, such as age, race, education, being an immigrant, and labor force status, tend to do so in ways that appear symmetrical with respect to positive and negative affect. For example, joblessness lowers happiness and raises unhappiness.

There is a U-shape in age with positive affect and a hump shape with negative affect. The effects of sex are a little less clear, with some evidence indicating that being female is positive in happiness and unhappiness equations (Blanchflower and Bryson, 2022c). But in the main, variables that are positively correlated with positive affect are negatively correlated with negative affect, and vice versa. In contrast, country rankings are sensitive to whether the ranking is based on positive or negative affect.

Second, we move beyond ranking countries by incorporating the 50 states of the United States, together with the District of Columbia. By exploiting Gallup data for 164 countries in the Gallup World Poll with identical well- and ill-being metrics for the states of the United States in the US Daily Tracker Poll, we can rank those US states alongside countries for the first time. In doing so, we discuss methodological issues that arise.

Third, we take the rankings on the eight well(ill)being metrics and combine them into a single wellbeing ranking index, comparing rankings on this metric with those reported in the World Happiness Index and the Human Development Index to see what we can learn from alternative rankings.

Pooling the data for 2008-2017 we find country and state rankings differ markedly depending on whether they are ranked using positive or negative affect measures. The United States ranks lower on negative than positive affect. Combining all eight measures into a summary index for 215 geographical locations we find that nine of the top ten and 16 of the top 20 ranked are US states. Only one US state ranks outside the top 100 – West Virginia (101). Iraq ranks lowest just below South Sudan. The Nordic countries that traditionally rank high using life satisfaction do not rank as highly on other measures. Country-level rankings on the summary wellbeing index differ sharply from those reported in the World Happiness Index and are more comparable to those obtained with the Human Development Index. The state level rankings on the summary index look very different from those just based on positive affect measures and are more similar to rankings based on objective wellbeing measures.

## 2. Recent Wellbeing Rankings

In the years prior to the Sarkozy-Stiglitz Commission it was commonly accepted that GDP per capita was a sensible metric against which to assess the progress of nations. The World Bank has produced these rankings for many years. [Appendix Table 1](#) presents them for 214 countries in 2020/2021. Of the top twelve Monaco (1), Liechtenstein (2), Luxembourg (3), Bermuda (4), Isle of Man (5), Cayman Islands (9), Channel Islands (10) and Singapore (11) are all small. The top ranked larger countries are Ireland (5), Switzerland (6), Norway (7) with the United States (12), Denmark (14), Sweden (17) and UK (29).

Since the Sarkozy-Stiglitz Commission it has become increasingly common to rank country wellbeing with a single life satisfaction metric. The precise wording of the question and the coding of responses can differ, but this appears to make little difference to rankings based on such questions. Helliwell et al.'s (2022) World Happiness Report was the ninth report to rank countries according to happiness based on responses to the following question: *"Please imagine a ladder with steps numbered from zero at the bottom to ten at the top. Suppose we say that the top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. If the top step is 10 and the bottom step is 0, on which step of the ladder do you feel you personally stand at the present time?"* This is known as Cantril's Ladder. Finland ranked top in 2019-2021, as it had done in 2017-2019 followed by Denmark and Iceland.<sup>4</sup>

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<sup>4</sup> Helliwell et al (2022) rank countries as follows based on 2019-2021 Cantril life satisfaction scores - Finland (1); Denmark (2); Iceland (3); Switzerland (4); Netherlands (5); Luxembourg (6); Sweden (7); Norway (8); Israel (9); New Zealand (10); Austria (11); Australia (12); Ireland (13); Germany (14); Canada (15); United States (16); United Kingdom (17); Czechia (18); Belgium (19); France (20); Bahrain (21); Slovenia (22); Costa Rica (23); United Arab

Similar life satisfaction rankings can be found elsewhere. For example, **Table 1** column 1 shows life satisfaction mean scores on the 10-step life satisfaction measure from the OECD's Better Life Index (BLI) which it produces for its 38 member countries.<sup>5</sup> It is constructed from a number of national surveys including the Australian General Social Survey, the Canadian Community Health Survey, the New Zealand Social Survey and the Gallup World Poll. Column 2 shows country means for the 4-step life satisfaction measure taken from the World Happiness Database (WHD) reports based on the Eurobarometer surveys and the final column presents the same for countries covered in the Latinobarometer.<sup>6</sup> Denmark tops the rankings on the BLI and WHD. Turkey is bottom of the BLI ranking and also performs poorly on the WHD ranking. Albania and Colombia have the lowest life satisfaction scores according to the WHD.

Over time one might expect that the relative rankings of countries' life satisfaction may change with their relative wealth. Indeed, Easterlin (1974) argued that wellbeing rose sharply as developing countries developed and then slowed down as they became richer. His claim was that there was a declining marginal utility of income. He argued—and still does—that the likely reason was that humans are fundamentally creatures of comparison, so that when they see everyone around them becoming richer at the same time as they themselves do they become inured to the benefits of additional income. We go from having one Ford to having three Lexuses, and nobody is happier. Arnold Schwarzenegger, the actor, once famously said: “Money doesn't make you happy. I now have \$50 million but I was just as happy when I had \$48 million”.

In fact, country rankings have tended to be relatively stable over time in the various annual World Happiness Reports since 2009. It is true that, over time, poorer countries have seen some catch-up. For example, as shown below, using the 4-step life satisfaction measure, which is the most widely available measure, Peru saw a rise over the period 2005-2020. Neither Denmark, which is often found to be one of the happiest countries in the world, nor the UK, have seen much of a rise. So, there is some evidence that the gap between the poorer and richer countries narrowed.

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Emirates (24); Saudi Arabia (25); Taiwan (26); Singapore (27); Romania (28); Spain (29); Uruguay (30); Italy (31); Kosovo (32); Malta (33); Lithuania (34); Slovakia (35); Estonia (36); Panama (37); Brazil (38); Guatemala (39); Kazakhstan (40); Cyprus (41); Latvia (42); Serbia (43); Chile (44); Nicaragua (45); Mexico (46); Croatia (47); Poland (48); El Salvador (49); Kuwait (50); Hungary (51); Mauritius (52); Uzbekistan (53); Japan (54); Honduras (55); Portugal (56); Argentina (57); Greece (58); South Korea (59); Philippines (60); Thailand (61); Moldova (62); Jamaica (63); Kyrgyzstan (64); Belarus (65); Colombia (66); Bosnia and Herzegovina (67); Mongolia (68); Dominican Republic (69); Malaysia (70); Bolivia (71); China (72); Paraguay (73); Peru (74); Montenegro (75); Ecuador (76); Vietnam (77); Turkmenistan (78); North Cyprus (79); Russia (80); Hong Kong (81); Armenia (82); Tajikistan (83); Nepal (84); Bulgaria (85); Libya (86); Indonesia (87); Ivory Coast (88); North Macedonia (89); Albania (90); South Africa (91); Azerbaijan (92); Gambia (93); Bangladesh (94); Laos (95); Algeria (96); Liberia (97); Ukraine (98); Congo (99); Morocco (100); Mozambique (101); Cameroon (102); Senegal (103); Niger (104); Georgia (105); Gabon (106); Iraq (107); Venezuela (108); Guinea (109); Iran (110); Ghana (111); Turkey (112); Burkina Faso (113); Cambodia (114); Benin (115); Comoros (116); Uganda (117); Nigeria (118); Kenya (119); Tunisia (120); Pakistan (121); Palestinian Territories (122); Mali (123); Namibia (124); Eswatini, Kingdom of (125); Myanmar (126); Sri Lanka (127); Madagascar (128); Egypt (129); Chad (130); Ethiopia (131); Yemen (132); Mauritania (133); Jordan (134); Togo (135); India (136); Zambia (137); Malawi (138); Tanzania (139); Sierra Leone (140); Lesotho (141); Botswana (142); Rwanda (143); Zimbabwe (144); Lebanon (145) and Afghanistan (146).

<sup>5</sup> <https://www.oecdbetterlifeindex.org/#/111111111111>

<sup>6</sup> [https://worlddatabaseofhappiness-archive.eur.nl/statnat/statnat\\_fp.htm](https://worlddatabaseofhappiness-archive.eur.nl/statnat/statnat_fp.htm)

	Peru	Poland	UK	Denmark
2005	2.5	2.8	3.2	3.6
2009	2.7	2.9	3.4	3.7
2010	3.0	2.9	3.3	3.7
2017	2.9	3.0	3.4	3.7
2020	3.0	3.1	3.2	3.7

Source: World Database of Happiness

There is little evidence to suggest that wellbeing in the United States has risen over time. If anything, if we look at the General Social Survey, which has data going back to the early 1970s, happiness levels in the United States have actually *declined* over the last fifty years (Blanchflower and Bryson, 2022c, Figure 4). It may be that Americans make comparisons within their own country<sup>7</sup> and, because income inequality has grown over this period and wages at the median and below have stagnated, there is increased discontent with one’s lot, despite rising income overall. However, the decline may also reflect the increasing prevalence of health-related problems in the US population. For instance, the number of bad mental health days reported per month in the Behavioral Risk Factor Surveillance System (BRFSS) rose from around 3 in the early 1990s to 4.5 in 2021 (Blanchflower and Bryson, 2022d). In 2019-2021 the United States ranked 16<sup>th</sup> in the World Happiness Report, well below its ranking by wealth. A recent study of OECD countries by Global Wealth Trends found that the US ranked second in terms of being the wealthiest country in the world based on working hours, salaries, tax rates and pensions.<sup>8</sup>

Although life satisfaction, the Cantril Ladder and happiness metrics have a number of advantages as wellbeing metrics – they are simple to collect and readily available from many countries over many years – single item scales rarely capture the dimensionality of complex social constructs such as wellbeing. Life satisfaction has the added disadvantage, noted earlier, that it is usually measured on an ordinal scale, so that country rankings based on the mean rely on functional form assumptions. Also, as noted earlier, comparisons across countries can be difficult when respondents’ reference points for what constitutes ‘good’ or ‘very good’, for instance, may be affected by social norms in that country.

Reliance on a single subjective wellbeing metric can also be problematic because there is a growing literature suggesting that positive and negative affect capture different aspects of wellbeing – they are not simply the “flip side” of one another, a point we return to below. In recognition of the holistic nature of well- and ill-being some agencies have constructed indexes that draw on a number of domains in life to ascertain how good life is across countries. The OECD, for example, has created a Better Life Index (BLI) for each of its 38 member countries which includes ten major components with a number of sub-components to each.<sup>9</sup> It does not construct

<sup>7</sup> For evidence of the importance of comparative income in the United States see Luttmer (2005).

<sup>8</sup> Country rankings were 1=Switzerland; 2=United States; 3=Iceland; 4=Norway; 5=Canada; 6=Australia; 6=Netherlands; 8=Ireland; 8=Luxembourg; 10=Denmark; 11=United Kingdom; 12=Germany; 12=New Zealand; 14=Finland; 15=Estonia; 16=Belgium; 17=Israel; 18=Sweden; 19=Austria; 20=Japan; 21=Slovakia; 22=Czechia; 22=Italy; 24=France; 24=Lithuania; 26=South Korea; 27=Spain; 28=Slovenia; 29=Costa Rica; 30=Hungary; 31=Chile; 32=Latvia; 33=Portugal; 34=Poland; 34=Turkey; 36=Mexico; 37=Colombia; 38=Greece.

<https://tipalti.com/global-wealth-trends/>

<sup>9</sup> <https://www.oecdbetterlifeindex.org/topics/life-satisfaction/>

an overall index, however, providing the rationale that it is not obvious, a priori, how to weight each sub-component. It is unclear what weight, for example, should be given to, say income compared to work-life balance or the environment (OECD, 2020). Instead, they suggest readers experiment with weighting schemes themselves to "create their own index".<sup>10</sup>

However, the United Nations does provide a single index of human wellbeing in the UN Sustainable Development Reports which rank countries by seventeen metrics covering education, pollution and health, and inequality. These are reported in [Appendix Table 2](#).<sup>11</sup> Once again the Scandinavian countries top the list (Finland (1); Denmark (2); Sweden (3); Norway (4). The UK is ranked 11<sup>th</sup> and the United States 41<sup>st</sup>. At the bottom of the 163 countries is South Sudan.

The World Bank produces an annual Human Development Index (HDI) which ranks countries in three dimensions. These change over time but only slowly so the rank of countries moves little from one year to the next.<sup>12</sup> Column 1 of [Table 2](#) shows that the Nordic countries rank highly once again. [Appendix Table 3](#) has the full country rankings for the 2019 HDI; Norway ranks top. The US ranks 17<sup>th</sup>.

In the same way as the WHR and others rank country wellbeing it is possible to rank locations within country. For some time, there has been debate about the best and worst places to live in the United States. Schkade and Kahneman (1998) warned that people's judgements of life satisfaction elsewhere were subject to focusing illusion. Since then, a plethora of wellbeing rankings have appeared that rank each State in the United States according to various wellbeing metrics. Eight of these metrics are summarized in [Table 3](#). Each captures a different aspect of citizens' wellbeing. The first 4 columns are fairly self-explanatory. Column 5 is the Sharecare Community Wellbeing Index which evaluates health risk across 10 domains (Sharecare's Community Wellbeing Index, 2020). The sixth column ranks states by the covid death rate per 100000. The seventh column is Gabriel et al's (2003) 1990 ranking,<sup>13</sup> while column eight is Oswald and Wu's (2010) ranking of States based on how respondents to the Behavioral Risk Factor Surveillance System (BRFSS) evaluate their life satisfaction.

Each metric is capturing something a little different but, even so, it is notable just how much variance there is in the State rankings. For instance, Massachusetts ranks number 1 on the Sharecare and Health indices, but 42<sup>nd</sup> on Oswald and Wu's life satisfaction metric. Louisiana ranks 50<sup>th</sup> for health, social and economic wellbeing but top on Oswald and Wu's life satisfaction

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<sup>10</sup> The OECD provides data on ten dimensions 1) Housing 2) Income 3) jobs 4) Community 5) Education 6) Environment 7) Civic engagement 8) Health 9) Life satisfaction 10) Safety and 11) Work-life balance. <https://www.oecdbetterlifeindex.org/#/1111111111>

<sup>11</sup> <https://s3.amazonaws.com/sustainabledevelopment.report/2022/2022-sustainable-development-report.pdf>

<sup>12</sup> It is based on three dimensions. The health dimension is assessed by life expectancy at birth, the education dimension is measured by mean of years of schooling for adults aged 25 years and more and expected years of schooling for children of school entering age. The standard of living dimension is measured by gross national income per capita. The HDI uses the logarithm of income, to reflect the diminishing importance of income with increasing GNI. The scores for the three HDI dimension indices are then aggregated into a composite index using geometric means. <https://hdr.undp.org/data-center/human-development-index#/indicies/HDI>.

<sup>13</sup> They use precipitation; temperature; windspeed; sunshine; coastal land; inland water; public land; National Parks; hazardous waste sites; environmental 'greenness'; commuting time; violent crime; air quality; student-teacher ratio; local taxes; local spending on education and highways; cost of living to determine their quality-of-life index.

and 46<sup>th</sup> for COVID death rate. New York is bottom (50<sup>th</sup>) for life satisfaction but 5<sup>th</sup> on Sharecare's index.

The starting point for our work with the Gallup World Poll data is Helliwell and Wang (2013). They examined both positive and negative affect data across many countries using the GWP data for 2010-2012. The authors reported means by country for Cantril as well as by positive affect and negative affect.<sup>14</sup> They defined these slightly differently than we do later. They calculated a positive affect variable by summing three (1,0) dummies - Q2 enjoyment and Q3 smiling plus one for happiness that is not available in the Gallup World Poll file from 2008-2013 although it is available in the US Daily Tracker from 2008-2016. Helliwell and Wang's negative affect variable is the sum of three (1,0) dummy variables for Q6 sadness, Q7 worry and Q8 anger. Their summary variables for both positive and negative affect are thus four-step variables from zero to three, with negative affect reverse coded so that a high rank means low negative affect.

Helliwell and Wang's (2013) positive and negative affect rankings are reported together with rankings for the Cantril Ladder in **Table 2** for a selection of countries. Although they did not comment on it, what is notable is how different the rankings are using Cantril, positive and negative affect. Comparing Cantril rankings in 2010-12 (column 4) with positive affect in the same years the biggest difference is Denmark, which is top ranked under Cantril but drops to 52<sup>nd</sup> on positive affect. Iceland goes from 9<sup>th</sup> to 3<sup>rd</sup>, but most other countries drop slightly, with the US going from 17<sup>th</sup> to 21<sup>st</sup>. But the rankings change more sharply when comparing Cantril with negative affect (reverse coded so that a high rank means low negative affect). In column four for Cantril there are eight countries ranked in the top ten, but none are in the top ten in column 6 for low negative affect. Iceland is ranked 15<sup>th</sup> and the US is now ranked 91<sup>st</sup>, while Norway goes from 2<sup>nd</sup> under Cantril to 55<sup>th</sup> on negative affect.

In what follows we pull together wellbeing rankings at US state-level to show how each state in the United States fares on the various well-being measures and how they compare with other countries. We find remarkable differences especially between the positive and negative affect measures. It turns out that wellbeing metrics are not as highly correlated as one might anticipate. In particular, rankings based on wellbeing metrics are not simply the 'flip' side of rankings based on ill-being. It seems they are, at least to some extent, measuring different things. They also differ markedly by gender. The implication is that we might need more than life satisfaction alone to obtain a robust assessment of State rankings on wellbeing.

## **2. Data and Estimation**

The individual level data files we use are 1) the Gallup World Poll across 164 countries and 2) Gallup's US Daily Tracker files. Our analysis focuses on the most recent period for which we have data, 2008-2017 which comes after the Great Recession but before the Covid pandemic. In the former case there are a total of 1,862,900 observations in the data file and 3,530,270 in the latter.

The eight questions we use are reported below. Questions 1 to 4 refer to positive affect. The most widely used of these is Q1 which is used in the various World Happiness Report and measures life

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<sup>14</sup> See their Chapter 2 Appendix available here <https://worldhappiness.report/ed/2013/#appendices-and-data>

satisfaction in terms of how life has turned out, on a scale of 0-10.<sup>15</sup> The other four questions relate to negative affect.

a) Positive affect

**Q1. Cantril's ladder (World Poll sample n=1,598,360, USDT sample n=2,575,022)**

*" Please imagine a ladder with steps numbered from zero at the bottom to ten at the top. Suppose we say that the top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. If the top step is 10 and the bottom step is 0, on which step of the ladder do you feel you personally stand at the present time?"*

**Q2. Enjoy (World Poll sample n=1,544,896, USDT sample n=2,630,634)**

*Did you experience the following feelings during a lot of the day yesterday? How about enjoyment – Yes/No?*

**Q3. Smile (World Poll sample n=1,504,400 USDT sample n=2,462,452)**

*Did you smile or laugh a lot yesterday – Yes/No?"*

**Q4 Well-rested (World Poll sample n=1,539,907 USDT sample n=1,941,209)** *Now, please think about yesterday, from the morning until the end of the day. Think about where you were, what you were doing, who you were with, and how you felt. Did you feel well-rested yesterday*

b) Negative affect

**Q5. Physical pain (World Poll sample n=1,540,737, USDT sample n=2,634,250)**

*" Did you experience the following feelings during a lot of the day yesterday? How about physical pain – Yes/No?"*

**Q6. Sadness (World Poll sample n=1,537,796, USDT sample n=2,474,478)**

*Did you experience the following feelings during a lot of the day yesterday? How about sadness Yes/No?*

**Q7. Worry (World Poll sample n=1,539,088, USDT sample n=2,634,633)**

*"Did you experience the following feelings during a lot of the day yesterday? How about worry - Yes/No?"*

**Q8. Anger (World Poll sample n=1,520,929, USDT sample n=2,101,352)**

*Did you experience the following feelings during a lot of the day yesterday? How about anger - Yes/No?"*

We construct a positive affect composite variable which is the sum of enjoy, smile and well-rested variables. We do not include the Cantril variable in this measure as it is not a 1,0 dummy. We include it later in our positive and overall rankings when we standardize by rank. We also construct a negative composite variable which is the sum of the four negative affect variables – pain, sadness, worry and anger.

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<sup>15</sup> The overall weighted distribution of the variable was 0-4=18%; 5=17%; 6=12%; 7=18%; 8=20%; 9=7%; 10=8%.

In [Appendix Table 4](#) we report the means of each of our eight scores for all countries and US States over the period 2008-2017. The incidence of negative affect (pain, worry, anger and sadness) is about a third as high as for positive affect (enjoyment, smiling or being rested).

[Appendix Table 5](#) reports the correlation matrices between the variables using the micro data for the period 2008-2017. Both positive and negative affect exhibit high internal validity, as indicated by strong inter-item correlations. The positive affect scale sums the three dummy variables well-rested, smiling and enjoyment. The negative affect scale sums the three dummy variables pain, anger and worry. The two scales are negatively correlated with a coefficient of 0.43.

There is an issue with our data for the US as we have data from both the GWP as well as from USDT. Sample sizes are much smaller in the former case than in the latter. In the case of Cantril, which has the largest number of responses of all of our well-being measures, there are 12,175 observations in the former case and 2,575,022 in the latter for the period 2008-2017. The weighted means are reported below.

	GWP	USDT
Cantril	7.08	6.90
Enjoy	.84	.85
Smile	.81	.82
Well-rested	.69	.71
Pain	.29	.24
Worry	.38	.32
Anger	.18	.14
Sadness	.22	.18
Positive	2.33	2.38
Negative	1.07	.87

It is notable that Cantril is higher in the World Poll file but in the other three positive affect variables USDT is higher. In all four negative affect variables USDT is lower.

In [Table 4](#) we estimate OLS regressions using the micro data for three wellbeing metrics, namely the Cantril scale, positive and negative affect as discussed above from the GWP data file across countries pooled with the US Daily Tracker (USDT) file for the period 2008-2017. The models include both a GWP and USDT variable to identify the USA. Equations also include age and its square, gender and nine years dummies.

The estimates confirm that there is a similar U-shape in age in positive affect as documented in Blanchflower (2022), Blanchflower and Graham (2021, 2022) and a hill shape in negative affect as shown in Giuntella et al (2022), Blanchflower (2020) and Blanchflower and Oswald (2008). There is some variation in the sign of the happiness variable by measure by gender, the so-called happiness paradox, as discussed in Blanchflower and Bryson (2022c). These correlations provide some external validation of the scales, since correlations are similar to those found in the previous literature.

When considering the United States, the concern is that the same variables have significantly different means from the two Gallup surveys as shown above. We see that the United States has higher-than-average positive affect compared to all other countries (the reference category) – whether measured by Cantril, the three separate wellbeing metrics, or the positive affect scale – whether we use the data from the GWP or the Daily Tracker. The differences between the means in the two surveys for US respondents is not sizeable, although the well-rested coefficient in the Daily Tracker is twice that in the World Poll. If we turn to the bottom half of the table we see that both US surveys indicate negative affect in the US is lower than elsewhere in all cases, except with regard to worry in the GWP where the US dummy is positive and statistically significant. But with regards to negative affect, it is clear that there are systematic differences in the US scores between those reported in the GWP and the Daily Tracker, with those in the Daily Tracker reporting much lower negative affect. (In all cases the differences between the US scores in the two surveys are statistically significant).

We are minded to prefer the Daily Tracker scores for the US when compared to the GWP because the sample in the US is particularly small for a country with 330 million inhabitants and is much less representative than for other countries. **Appendix Table 6** reports sample sizes showing that other major countries such as China, Germany and the UK have bigger sample sizes than the US, but so too do Bahrain, Jordan, Palestinian Territories and Egypt. We suspect that the countries whose rank position is most heavily impacted by small sample sizes are likely to be large disparate countries like the United States.

The concern is that small sample sizes for some countries may distort rankings as they appear to do for the United States, but that does not appear to be the case at first glance. There are not many other surveys available, especially on negative affect, to check if there is variation in rankings and the problem is that in comparison to all other advanced countries the US has a dearth of well-being data. For example, data on a 4-step life satisfaction variable is available in the BRFSS survey from 2005-2010 but not subsequently. A 3-step happiness variable is available in the General Social Survey since 1972 but sample sizes are small (Blanchflower, 2021). We investigated how similar the Cantril measure was in terms of its rankings in the raw data in the GWP file from 2008-2017, compared to the most widely available global measure, the 4-step measure of life satisfaction.

*Question. How satisfied are you with the life you lead? - very satisfied - fairly satisfied - not very satisfied - not at all satisfied? Where very = 4 ..... not at all = 1.*

We obtained this measure averaged across the period 2008-2017 from the World Database of Happiness<sup>16</sup> and ranked fifty-three countries from Western and Eastern Europe, Latin America and Japan with a correlation of .77. Unfortunately, this 4-step measure is not available for the USA in this time period. Rankings were such that 1<sup>st</sup> is happiest and 53<sup>rd</sup> is least happy. Denmark ranked first on both the Cantril measure and the life satisfaction measure and the Netherlands is third on both and there are other similarities.<sup>17</sup> Bulgaria, Romania, Serbia and North Macedonia rank low on both. So, rankings are consistent on our two measures but the issue warrants further research.

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<sup>16</sup> [https://worlddatabaseofhappiness-archive.eur.nl/hap\\_nat/nat\\_fp.php?mode=7](https://worlddatabaseofhappiness-archive.eur.nl/hap_nat/nat_fp.php?mode=7)

<sup>17</sup> Ranks are as follows with 4-step life ranking followed by Cantril rank, in parentheses. Albania (45, 49); Argentina (26, 22); Austria (20, 6); Belgium (14, 11); Bolivia (38, 36); Brazil (33, 17); Bulgaria (52, 53); Chile (34, 19); Colombia (8, 24); Costa Rica (6, 9); Croatia (39, 38); Cyprus (23, 27); Czechia (27, 20); Denmark (1, 1); Dominican

A similar model is deployed to produce country and US state rankings on all eight, wellbeing metrics. The countries form an unbalanced panel with some countries absent in some years, but the US States are ever-present. We rank countries on the eight separate wellbeing metrics in [Table 5](#). The rankings are based on the location coefficients from pooled regressions for 2008-2017 which condition on age, age squared and a gender dummy to net out demographic differences across locations, as well as year dummies to account for common shocks and trends, and a full set of country and state dummies. The country and state coefficients from these regressions are used to create the rankings.

For simplicity and comparability across measures, we rank regions highest to lowest with the positive affect variables from most “happy” to least “happy”. To be comparable we then rank the negative affect variables from least pain to most pain, from least sadness to most sadness and so on. So, the most-happy country is ranked as one and for ease of comparison as the *least unhappy* country.

If we focus on a couple of countries, we can see how much variation there is by measure. This is especially so for Denmark which is #1 for Cantril but 111<sup>th</sup> for smiling. Finland and Norway see similar jumps: they are highly ranked with Cantril but lower ranked for reverse-coded negative affect. Iceland is highly ranked on seven of nine measures but performs poorly in terms of people suffering pain and feeling rested. There are some locations where the ranking is quite stable regardless of the metric used. For instance, Iraq performs poorly on all measures. If we consider US states and their rank position among the 214 countries/states, Hawaii performs particularly well: it ranks #1 for enjoyment, #6 on smiling and #11 on Cantril. It also ranks high on reverse negative affect (#12 on pain, #21 on sadness, #25 on worry and #28 on anger). In contrast, West Virginia performs particularly poorly: it is #146 on being well-rested and #121 on worry.

As discussed in the literature review there is debate about country-level factors that are correlated with citizens’ wellbeing, particularly in relation to income. We examine this issue in [Table 6](#) building on work originally undertaken by Helliwell et al. (2022) for the World Happiness Report. We run three equations at country level, for Cantril, positive affect and negative affect separately. We replicate their estimates in columns 1, 3 and 5, using their measures of affect and their control variables.<sup>18</sup> Their equations include controls for log GDP, life expectancy, corruption and so on.

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(11, 51); Ecuador (30, 34); El Salvador (28, 31); Estonia (35, 43); Finland (10, 2); France (25, 16); Germany (15, 14); Greece (53, 46); Guatemala (16, 26); Honduras (19, 47); Hungary (48, 48); Iceland (2, 4); Ireland (12, 10); Israel (13, 7); Italy (44, 23); Japan (43, 29); Latvia (41, 40); Lithuania (42, 33); Luxembourg (7, 8); Malta (, 21); Mexico (17, 13); Montenegro (46, 45); Netherlands (3, 3); Nicaragua (21, 37); North Macedonia (47, 52); Panama (5, 15); Paraguay (31, 41); Peru (36, 35); Poland (29, 32); Portugal (49, 39); Romania (50, 44); Serbia (51, 50); Slovakia (37, 30); Slovenia (22, 28); Spain (32, 18); Sweden (4, 5); Turkey (40, 42); UK (9, 12); Uruguay (24, 25);

<sup>18</sup> According to Helliwell Wang, Huang and Norton, M. (2022), ‘Social support’ is the national average of the binary responses (0=no, 1=yes) to the Gallup World Poll (GWP) question “*If you were in trouble, do you have relatives or friends you can count on to help you whenever you need them, or not?*” ‘Freedom to make life choices’ is the national average of binary responses (0=no, 1=yes) to the GWP question “*Are you satisfied or dissatisfied with your freedom to choose what you do with your life?*” ‘Generosity’ is the residual of regressing the national average of GWP responses to the donation question “*Have you donated money to a charity in the past month?*” on log GDP per capita. ‘Perceptions of corruption’ are the average of binary answers to two GWP questions: “*Is corruption widespread throughout the government in this country or not?*” and “*Is corruption widespread within businesses in this country or not?*” Where data for government corruption are missing, the perception of business corruption is used as the overall

However, it is unclear to us why these equations do not include country fixed effects. We include them in columns 2, 4 and 6. With their inclusion, together with the year fixed effects, the models capture the effects of change in the independent variables on changes on within-country wellbeing, having accounted for common time trends. They do so for 156 countries over the period 2005-2021. The inclusion of country fixed effects doubles the variance explained by the positive and negative affect models, confirming the importance of cross-country variance.

The first row indicates that, as countries get richer, as measured by log GDP per capita, so their citizens' wellbeing rises and negative affect falls. These effects are only apparent with the inclusion of country fixed effects capturing within-country change. In their absence, one could come to the erroneous conclusion that there is little association between GDP and wellbeing – apart from in the case of the Cantril model, where there is a positive and significant correlation both with and without country fixed effects.

Other country-level covariates are correlated with wellbeing in much the way we might have expected, with social support, freedom, generosity all associated with higher Cantril scores, higher positive affect and lower negative affect. These effects hold whether one controls for country fixed effects or not, although their inclusion tends to reduce the size of coefficients, except in the case of generosity where their inclusion increases the size of the coefficients. Perceived corruption is negatively correlated with Cantril and increases negative affect, with the size of the effects unaffected by the introduction of country fixed effects. However, it is not associated with positive affect.

In the absence of country fixed effects life expectancy at birth is positively correlated with Cantril but the effect turns negative and non-significant with their inclusion, suggesting the life expectancy effect is driven by cross-country comparisons. Life expectancy at birth is not otherwise correlated with positive or negative affect.

In [Table 7](#) we use data from Helliwell et al (2022) to rank countries according to their Cantril scores. Column 1 ranks them using raw means while column 2 takes the country fixed effects from column 2 of [Table 6](#) as the basis for the ranking having netted out the six country-level macro factors in the model in [Table 6](#). It produces very interesting results. Controlling for these macro variables lowers the rankings of the richest countries relative to their rank position based solely on their raw mean score. For example, Canada goes from 8 to 35; Denmark, 1 to 31; Finland 2 to 13. Luxembourg 16 to 116; the Netherlands 6 to 34; New Zealand 9 to 43; Norway 4 to 18; Sweden 7 to 40. The UK falls from 18 to 85 whilst the United States drops from 13 to 44. Conversely, the ranks of the less developed countries improve: Somalia goes from 87<sup>th</sup> to 1<sup>st</sup>.

When ranking countries on their wellbeing controlling for the factors that cause countries to perform well or badly on these wellbeing ratings does not appear sensible because rankings on

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corruption-perception measure. Positive affect is defined as the average of previous day affect measures for laughter, enjoyment, and doing or learning something interesting. This marks a change from recent years, where only laughter and enjoyment were included. The general form for the affect questions is: "*Did you experience the following feelings during a lot of the day yesterday?*" Only the interest question is phrased differently: "*Did you learn or do something interesting yesterday?*" Negative affect is defined as the average of previous day affect measures for worry, sadness, and anger.

residual wellbeing scores are hard to interpret. Controlling for low GDP, lots of corruption, and low life expectancy Somalians are very happy; they go from 87<sup>th</sup> ranked in the raw data to top ranked controlling for their (bad), macro-economic outcomes. But it is far from clear what this tells us. A similar problem arises with respect to the wellbeing ranking of Oswald and Wu (2010) in the final column of [Table 3](#). They find that, after controlling for lots of variables that explain happiness, Louisiana is the happiest state and New York the least happy.

We rank countries and States in [Table 8](#) based on coefficients of country and state fixed effects using the same model specifications as we used for [Table 5](#) for the eight separate wellbeing metrics, namely age, age squared, male, and year dummies. The first two columns of the table show the resultant rankings in relation to positive and negative affect scales.

In the final column of [Table 8](#) we overcome the problem of including Cantril, which is scored from 0-11, with the three other positive affect variables - enjoy, smile and well-rested – by using ranks and summing. We simply sum up the ranks across the eight variables – four positive and four negative affect variables in [Table 5](#) and re-rank. This imposes the restriction of equal weights for each variable, and we thus weight the positive and negative affect variables equally. By doing this we are comparing like with like and we have four positive and four negative affect variables.

Iraq comes bottom of both the positive affect and (reverse coded) negative affect rankings whilst, at the other end of the spectrum Hawaii does well on both (4<sup>th</sup> for positive affect, 10<sup>th</sup> for negative affect). In many cases, however, the positive and negative affect rankings are very different. Laos, for instance, is 3<sup>rd</sup> for positive affect but 204<sup>th</sup> for negative affect.

[Table 9](#) then sorts the countries by overall rank, which is our preferred summary measure, taken from the final column of [Table 8](#). It runs from Hawaii in 1<sup>st</sup> through to Iraq in 215<sup>th</sup>. The lowest ranking countries are poor, less developed countries. Somalia is now 78<sup>th</sup> rather than first as in [Table 7](#).

US states rank highly in [Table 9](#). They account for sixteen of the top twenty positions, and nine of the top ten, with Hawaii taking top place Minnesota (2), North Dakota (3), South Dakota (4), Iowa (5), Nebraska (6) Kansas (7), Alaska (9) and Wisconsin (10). Only West Virginia ranks outside the top one hundred: Sri Lanka, Bhutan, Eswatini, Suriname and Rwanda are all above West Virginia. Kentucky ranks 89<sup>th</sup> behind Kyrgyzstan, Venezuela and Kenya. The highest ranked countries are Taiwan (8); Austria (11), Netherlands (17) and Iceland (20). East European countries rank poorly: Serbia (200), Romania (188) Bosnia Herzegovina (189). Greece (177) is the lowest ranked Western European country.

It is notable that the USA ranks low when using the GWP compared to the rankings for US States from the USDT. The USA ranks 150<sup>th</sup> using the GWP data, lower than any US state from the Daily Tracker.

### **3. Conclusion**

We examine data on well-being to determine rankings of countries and US states according to eight different well-being measures. These include four positive affect measures - life satisfaction, enjoyment, smiling and being well-rested – and four negative affect variables – pain, sadness, anger and worry. We combine data on approximately four million respondents from the Gallup

World Poll across 164 countries and the US Daily Tracker Poll for the years 2008-2017 which allows us to map in data across 50 states and the District of Columbia. The two surveys include the same questions. We rank states and countries according to positive and negative affect and find there is a considerable difference in country rankings. Many advanced countries and especially the USA rank lower on negative than positive affect.

We use all eight measures to create a final summary index. We find that the top seven ranked of the 215 are US states, in order – Hawaii, Minnesota, North Dakota, South Dakota, Iowa, Nebraska and Kansas with Alaska 9<sup>th</sup> and Wisconsin 10<sup>th</sup>. We find that only one US state ranks outside the top 100 – West Virginia (122<sup>nd</sup>). Palestine, South Sudan and Iraq rank lowest. The Nordic countries that traditionally rank high using life satisfaction measures do not rank as highly with other measures.

Our final country level rankings differ sharply from those reported in the World Happiness Index and are more comparable to those obtained with the Human Development Index. State level rankings look very different from those just based on positive affect measures and more similar to those based on objective measures. Ranking regions by multiple measures seems to be the way forward.

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Table 1. Life satisfaction rates by country, OECD, Europe and Latin America

	10-step BLI	4-step WHD (2020)		4-step WHD (2020)
Albania		2.37	Argentina	2.89
Australia	7.1		Bolivia	2.82
Austria	7.2	3.16	Brazil	2.81
Belgium	6.8	3.18	Chile	2.76
Bulgaria		2.40	Colombia	2.37
Canada	7.0		Costa Rica	3.33
Chile	6.2		Dominican Republic	3.35
Croatia		2.96	Ecuador	3.10
Cyprus		3.20	El Salvador	2.91
Czech Republic	6.9		Guatemala	3.39
Denmark	7.5	<b>3.71</b>	Honduras	3.21
Estonia	6.5	2.91	Mexico	3.17
Finland	7.9	3.17	Montenegro	2.72
France	6.7	3.04	Nicaragua	3.21
Germany	7.3	3.25	North Macedonia	2.71
Greece	5.8	2.60	Panama	3.29
Hungary	6.0	2.96	Paraguay	2.94
Iceland	7.6		Peru	3.03
Ireland	7.0	3.24	Uruguay	3.15
Israel	7.2		Venezuela	2.88
Italy	6.5	2.74		
Japan	6.1			
Korea	5.8			
Latvia	6.2	3.02		
Lithuania		3.03		
Luxembourg	7.4	3.14		
Malta		3.17		
Mexico	6.0			
Netherlands	7.5	3.48		
New Zealand	7.3			
Norway	7.3			
Poland	6.1	3.08		
Portugal	5.8	2.24		
Romania		2.69		
Russia	5.5			
Serbia		2.54		
Slovakia	6.5	2.90		
Slovenia	6.5	3.21		
South Africa	4.9			
Spain	6.5	3.16		
Sweden	7.3	3.40		
Switzerland	<b>7.5</b>			
Turkey	4.9	2.73		
UK	6.8	3.21		
USA	7.0			

Table 2. Country rankings from the Human Development Index and the World Happiness Report

	HDI 2019	Cantril			Positive affect	Negative affect
		2019-2021	2017	2010-2012	2010-2012	2010-2012
Canada	16	15	7	6	8	73
Denmark	10	2	2	1	52	34
Finland	11	1	5	7	37	49
Germany	6	14	16	26	41	23
Iceland	4	3	3	9	3	15
Netherlands	8	5	6	4	13	51
Norway	1	8	1	2	29	55
Sweden	7	7	9	5	26	41
Switzerland	2	4	4	3	14	29
UK	13	17	19	22	19	36
USA	17	16	14	17	21	91

  

2019 WHR	Cantril	Positive.	Negative
Canada	15	25	79
Denmark	3	8	17
Finland	1	54	16
Germany	17	60	40
Iceland	4	18	13
Netherland	6	17	42
Norway	5	23	24
Sweden	8	21	28
Switzerland	2	37	11
UK	14	45	58
USA	19	30	54

Source: World Happiness Reports, 2022, 2017 and 2013 and <https://hdr.undp.org/data-center/human-development-index#/indicies/HDI>

Note: 'Positive affect' is the sum of three (1,0) dummies - 1) Did you smile or laugh a lot yesterday? 2) Did you experience the following feelings during a lot of the day yesterday? How about enjoyment? 3) How about happiness? 'Negative affect' is the sum of three (1,0) dummies - 4) How about worry? 5) How about sadness? 6) How about anger? Both scores have four steps from zero to three. Taken from Helliwell and Wang (2103) Appendix.

Table 3. State rankings, 2020

	Health	Social and economic	Physical environment	Behaviors	Sharecare	Covid Death rate/10000	Gabriel et al 1990 rank	Oswald Wu 2005-8
Alabama	49	42	28	47	44	47	26	9
Alaska	27	36	33	26	23	6	23	11
Arizona	26	40	29	22	27	49	20	5
Arkansas	46	48	12	46	49	41	3	17
California	13	28	49	15	6	13	42	45
Colorado	15	17	6	5	9	11	34	22
Connecticut	3	14	37	6	7	23	32	49
Delaware	30	10	15	33	19	19	30	23
Florida	21	27	30	25	24	34	10	3
Georgia	36	29	11	37	32	31	36	19
Hawaii	2	4	26	19	2	1	38	2
Idaho	4	22	27	12	39	17	5	14
Illinois	17	21	42	29	13	21	48	44
Indiana	35	35	32	36	41	38	44	46
Iowa	29	7	18	27	36	20	15	31
Kansas	33	24	39	31	26	18	19	32
Kentucky	47	32	13	48	46	29	24	35
Louisiana	50	50	46	50	43	46	8	1
Maine	18	12	10	11	29	4	9	10
Maryland	10	15	4	14	4	16	45	39
Massachusetts	1	8	35	8	1	40	27	42
Michigan	40	37	31	30	38	43	49	48
Minnesota	14	2	9	3	15	14	46	26
Mississippi	43	46	45	49	50	50	7	6
Missouri	42	26	23	41	34	28	40	37
Montana	28	38	19	17	33	25	4	7
Nebraska	24	13	14	16	18	10	16	33
Nevada	39	30	24	39	21	30	29	38
New Hampshire	7	1	22	4	16	8	43	27
New Jersey	6	3	50	10	3	48	47	47
New Mexico	37	49	24	34	48	36	14	24

New York	9	41	34	21	5	45	50	50
North Carolina	32	22	8	38	37	12	17	12
North Dakota	23	9	1	35	20	26	6	25
Ohio	38	34	43	42	31	24	33	43
Oklahoma	44	45	41	45	45	35	21	20
Oregon	20	20	47	7	14	7	22	30
Pennsylvania	34	25	48	32	17	39	35	40
Rhode Island	11	19	38	20	12	37	12	41
South Carolina	45	44	7	43	40	32	18	8
South Dakota	19	33	2	28	30	33	2	15
Tennessee	41	39	17	40	42	44	28	4
Texas	22	31	44	23	35	22	25	16
Utah	8	5	15	2	10	3	39	21
Vermont	5	18	21	1	22	2	13	18
Virginia	16	6	5	18	11	9	31	28
Washington	12	11	20	9	8	5	41	36
West Virginia	48	47	36	44	47	42	11	34
Wisconsin	31	16	40	13	25	15	37	29
Wyoming	25	43	3	24	28	27	1	13

<https://www.americashealthrankings.org/explore/annual/measure/Outcomes/state>

Sharecare's Community Well-being Index, 2020 state ranking report'. Covid death rate from CDC ranked lowest to highest

Table 4. OLS regressions, 2008-2017

	<b>Cantril</b>	<b>Positive affect</b>	<b>Enjoy</b>	<b>Smile</b>	<b>Well-rested</b>
US GWP	1.6903 (88.09)	.2707 (28.34)	.1533 (38.65)	.1123 (27.03)	.0118 (2.60)
US DT	1.5134 (661.1)	.3125 (241.8)	.1648 (381.4)	.1266 (265.9)	.0263 (43.19)
Age	-.0215 (73.82)	-.0218 (151.4)	-.0054 (99.47)	-.0065 (111.1)	-.0097 (141.8)
Age <sup>2</sup> *100	+.0267 (93.38)	+.0220 (154.2)	+.0051 (96.06)	+.0052 (90.53)	+.0114 (168.3)
Male	-.1264 (61.13)	+.0336 (32.65)	+.0072 (18.63)	-.1808 (43.49)	+.0443 (90.72)
_cons	5.6304	2.5576	.8201	.8885	.8375
Adjusted R <sup>2</sup>	.1195	.0327	.0392	.0208	.0166
N	4,127,376	3,363,406	4,129,118	3,923,102	3,445,124
	<b>Negative affect</b>	<b>Pain</b>	<b>Sadness</b>	<b>Worry</b>	<b>Anger</b>
US GWP	-.0675 (5.91)	-.0376 (8.55)	-.0160 (4.09)	+.0101 (2.17)	-.0254 (7.04)
US DT	-.2324 (160.0)	-.0888 (185.1)	-.0558 (125.0)	-.0561 (11.03)	-.0561 (122.7)
Age	+.0224 (133.1)	+.0073 (120.2)	+.0034 (61.29)	+.0099 (154.3)	+.0019 (35.07)
Age <sup>2</sup> *100	-.0221 (133.0)	-.0046 (77.58)	-.0029 (52.86)	-.0112 (178.4)	-.0036 (67.86)
Male	-.1354 (112.7)	-.0370 (85.89)	-.0540 (138.0)	-.0459 (100.7)	.0005 (1.21)
_cons	5.5832	.0861	.1527	.1817	.1887
Adjusted R <sup>2</sup>	.0224	.0205	.0113	.0180	.0194
N	3,555,768	4,128,270	3,967,805	4,127,031	3,583,990

Excluded: all other countries. Controls also include nine year dummies  
 Positive is enjoy+smile+well-rested. Negative is pain+sadness+worry+anger

Table 5. Ranks for 164 countries, 50 US states and the District of Columbia obtained from regressions for pooled data for 2008-2017 that include age, age<sup>2</sup>, gender and year – ranked least negative affect and most positive affect

	Cantril	Enjoy	Smile	Well rested	Pain	Sadness	Worry	Anger
Afghanistan	206	176	212	105	141	189	146	158
Alabama	33	40	57	107	87	82	65	64
Alaska	15	4	10	93	80	22	35	24
Albania	144	153	154	175	176	167	159	180
Algeria	118	188	173	131	166	29	139	172
Angola	179	191	178	128	209	187	213	129
Argentina	81	73	15	60	156	143	177	96
Arizona	36	24	22	73	44	51	77	63
Arkansas	57	50	81	119	90	85	74	71
Armenia	189	212	190	215	173	212	206	211
Australia	9	75	101	127	42	88	83	65
Austria	12	88	107	41	10	13	15	13
Azerbaijan	149	184	196	200	124	135	54	150
Bahrain	105	148	140	38	198	185	182	205
Bangladesh	168	155	189	179	102	156	88	93
Belarus	119	192	193	198	86	147	33	76
Belgium	35	84	74	145	99	87	142	112
Belize	98	116	122	34	120	180	136	167
Benin	208	197	152	204	196	160	178	157
Bhutan	137	77	85	1	168	11	158	195
Bolivia	112	123	118	144	177	209	208	192
Bosnia	141	189	197	209	114	126	188	190
Botswana	190	140	132	141	133	121	55	86
Brazil	75	102	115	163	153	151	192	116
Bulgaria	184	178	185	194	78	172	132	32
Burkina Faso	195	194	184	182	165	159	170	126
Burundi	212	161	205	149	104	89	99	107
California	42	48	39	86	47	92	106	91
Cambodia	194	96	108	158	144	210	196	179
Cameroon	170	182	164	147	200	164	167	149
Canada	5	23	23	104	88	97	144	84
CAR	215	202	183	140	215	207	211	176
Chad	196	180	207	132	199	175	169	173
Chile	80	76	64	150	161	157	180	137
China	140	49	110	8	8	2	12	83
Colombia	90	82	52	26	139	174	164	142
Colorado	28	18	45	84	30	34	67	51

Comoros	211	137	180	134	143	6	23	127
Congo Brazzaville	182	187	172	135	186	190	157	162
Congo Kinshasa	175	166	200	53	185	133	119	152
Connecticut	48	56	54	89	14	59	101	82
Costa Rica	25	66	2	27	138	142	156	124
Croatia	117	190	155	172	95	108	199	34
Cyprus	95	95	114	205	112	183	190	168
Czech Republic	83	108	156	183	83	42	124	163
DC	13	38	67	63	2	30	85	27
Delaware	40	45	48	69	36	49	61	58
Denmark	1	2	111	109	68	35	93	42
Djibouti	160	128	202	76	147	66	6	138
Dominican Republic	151	141	113	133	172	194	186	105
Ecuador	107	80	31	31	151	184	183	131
Egypt	176	205	182	159	208	202	187	201
El Salvador	100	91	11	18	179	182	184	143
Estonia	129	105	176	186	45	117	115	8
Eswatini	138	74	83	39	158	130	52	141
Ethiopia	180	157	157	189	62	136	28	132
Finland	4	93	99	122	51	15	130	1
Florida	50	52	25	81	43	69	90	79
France	76	98	95	176	111	99	114	170
Gabon	181	204	168	174	184	173	174	174
Georgia	193	196	214	213	125	102	38	188
Georgia USA	29	30	37	62	38	46	48	50
Germany	74	101	116	78	39	71	17	52
Ghana	165	170	98	43	175	139	47	108
Greece	132	143	148	195	110	162	200	178
Guatemala	94	86	14	21	170	179	173	133
Guinea	207	156	162	180	206	166	204	144
Haiti	203	200	194	170	191	200	116	186
Hawaii	11	1	6	32	12	21	25	28
Honduras	136	106	35	22	154	177	165	104
Hong Kong	125	151	137	16	4	7	133	106
Hungary	147	125	181	207	127	148	155	115
Iceland	7	3	8	190	119	4	24	2
Idaho	43	14	49	110	75	39	96	39
Illinois	51	34	46	67	22	44	80	68
India	169	133	166	117	148	171	129	177
Indiana	62	44	72	103	67	62	79	62

Indonesia	134	58	7	2	60	128	100	154
Iowa	46	9	30	44	21	19	34	21
Iran	156	185	159	184	182	215	201	214
Iraq	162	209	211	210	213	214	210	215
Ireland	30	64	87	51	6	103	45	60
Israel	14	138	165	171	130	155	172	196
Italy	89	147	123	169	46	178	195	101
Ivory Coast	186	165	139	167	207	168	179	153
Jamaica	122	126	105	168	94	181	135	146
Japan	96	117	75	11	5	5	41	110
Jordan	127	162	179	129	204	161	160	191
Kansas	45	13	29	59	32	23	39	29
Kazakhstan	108	115	158	125	77	81	8	23
Kentucky	71	62	88	138	103	113	118	80
Kenya	183	114	126	56	113	80	14	57
Kosovo	121	142	167	142	105	9	31	145
Kuwait	86	127	119	6	155	100	105	164
Kyrgyzstan	146	136	143	92	79	110	3	70
Laos	154	22	3	28	194	134	62	202
Latvia	126	130	199	193	70	138	138	56
Lebanon	142	203	206	173	132	154	162	187
Lesotho	200	121	120	148	150	98	126	125
Liberia	204	214	142	192	201	203	161	165
Libya	120	134	150	99	197	170	163	204
Lithuania	111	186	198	181	74	176	134	136
Louisiana	37	47	32	61	65	83	76	85
Luxembourg	31	87	109	111	76	52	19	111
Madagascar	201	149	94	196	174	120	103	122
Maine	56	32	42	97	49	55	73	31
Malawi	199	158	128	29	164	165	112	89
Malaysia	102	81	102	13	69	90	42	147
Mali	191	113	131	139	135	50	143	12
Malta	88	183	106	91	115	150	214	169
Maryland	18	43	60	82	15	38	60	66
Massachusetts	32	57	66	94	17	78	109	74
Mauritania	171	109	129	121	162	28	13	114
Mauritius	109	111	97	155	187	124	37	118
Mexico	69	90	82	25	128	123	152	11
Michigan	64	37	53	77	58	63	69	69
Minnesota	24	5	19	35	7	17	26	15

Mississippi	38	36	63	80	72	76	53	53
Missouri	65	35	61	95	55	45	64	45
Moldova	115	171	210	211	188	195	140	140
Mongolia	158	146	195	10	52	8	75	16
Montana	26	8	21	70	57	27	56	43
Montenegro	130	175	209	201	93	96	198	208
Morocco	148	179	130	30	159	131	117	175
Mozambique	166	213	144	137	157	169	203	19
Myanmar	187	104	78	156	189	48	120	148
North. Cyprus	103	154	135	178	56	196	113	206
Nagorno-Karabash	157	207	203	214	145	208	197	210
Namibia	177	174	76	46	126	109	141	117
Nebraska	39	12	26	52	24	25	36	25
Nepal	173	145	201	112	160	153	128	161
Netherlands	6	20	43	66	11	43	137	4
Nevada	70	53	50	65	64	74	95	92
New Hampshire	47	31	36	101	16	33	82	47
New Jersey	55	63	65	96	13	79	110	97
New Mexico	22	27	51	90	59	75	81	87
New York	58	65	73	106	35	91	107	100
New Zealand	10	59	84	143	34	67	44	46
Nicaragua	116	119	34	17	181	193	175	128
Niger	197	131	171	185	202	114	58	88
Nigeria	139	152	92	40	131	112	57	155
North Carolina	49	29	40	68	48	65	59	200
North Dakota	23	6	13	33	9	14	20	61
North Macedonia	152	173	208	197	134	144	185	9
Norway	2	15	90	136	20	40	46	22
Ohio	67	54	69	100	63	73	87	81
Oklahoma	60	39	62	118	89	68	66	72
Oregon	52	16	47	98	85	56	89	41
Pakistan	135	181	170	187	203	188	131	203
Palestine	164	193	192	203	205	191	191	207
Panama	73	85	4	9	96	105	94	18
Paraguay	123	51	1	4	123	54	166	3
Pennsylvania	59	46	59	75	37	58	70	77
Peru	110	112	100	126	163	198	202	171
Philippines	143	94	71	54	122	204	147	199
Poland	104	103	121	165	29	115	104	160
Portugal	128	167	103	115	129	192	207	6

Puerto Rico	68	70	16	123	195	197	168	159
Qatar	77	120	133	15	180	163	123	194
Rhode Island	63	61	55	87	33	77	108	78
Romania	133	172	177	208	171	199	194	98
Russia	114	150	169	166	40	104	11	7
Rwanda	210	122	149	47	121	72	78	5
Saudi Arabia	82	118	141	14	167	127	125	181
Senegal	178	124	134	57	190	26	102	44
Serbia	150	198	215	212	106	146	209	198
Sierra Leone	188	215	153	161	211	205	181	197
Singapore	78	139	138	12	54	16	18	103
Slovakia	99	107	161	154	116	101	148	183
Slovenia	97	177	160	72	66	61	193	123
Somalia	145	41	18	113	136	111	10	95
Somaliland	163	99	145	58	25	12	4	10
South Africa	155	97	104	19	98	84	68	38
South Carolina	27	21	24	48	50	53	43	55
South Dakota	44	11	20	50	18	20	27	33
South Korea	101	164	136	42	82	32	122	94
South Sudan	214	206	147	199	214	213	212	212
Spain	79	159	96	45	107	152	189	166
Sri Lanka	174	89	5	151	140	119	5	151
Sudan	172	169	163	164	183	137	92	134
Suriname	87	79	89	36	178	95	51	189
Sweden	8	26	93	157	27	60	16	48
Switzerland	3	83	86	55	31	37	30	49
Syria	198	211	191	191	109	211	205	213
Taiwan	84	68	68	20	3	1	2	35
Tajikistan	159	168	175	74	100	70	22	130
Tanzania	209	129	127	37	149	122	7	99
Tennessee	54	42	70	108	84	93	84	67
Texas	17	33	27	71	41	57	63	73
Thailand	92	67	17	7	91	3	21	75
The Gambia	205	110	9	177	212	149	153	120
Togo	213	208	174	188	210	206	215	185
Trinidad & Tobago	85	71	28	152	92	129	32	135
Tunisia	161	195	187	153	192	64	171	193
Turkey	124	201	188	162	71	201	127	209
Turkmenistan	113	135	204	64	142	141	9	121
UAE	53	100	112	5	152	107	97	156

Uganda	185	160	151	120	193	186	151	182
UK	66	72	77	124	19	94	29	54
Ukraine	167	163	186	202	97	132	91	59
Uruguay	91	78	80	88	137	145	176	90
USA	16	60	79	114	101	125	150	119
Utah	21	7	38	116	61	36	111	30
Uzbekistan	106	55	146	3	81	10	1	113
Venezuela	93	92	12	23	108	116	145	109
Vermont	34	25	56	79	28	47	71	26
Vietnam	131	210	117	24	1	106	98	14
Virginia	20	28	44	85	23	31	49	36
Washington	41	19	41	102	73	41	72	40
West Virginia	72	69	91	146	118	118	121	102
Wisconsin	61	17	33	49	26	24	40	37
Wyoming	19	10	58	83	53	18	50	20
Yemen	202	199	213	206	169	140	154	184
Zambia	153	132	124	130	146	158	149	139
Zimbabwe	192	144	125	160	117	86	86	17

Table 6. Regressions to explain average happiness, 2005-2021 using World Happiness Report 2022 data

Independent	Cantril Ladder		Negative Affect		Positive Affect	
Log GDP per capita	.3598 (5.42)	.5749 (5.40)	-.0132 (1.43)	.0407 (4.61)	.0001 (0.01)	-.0193 (2.81)
Social support	2.4204 (6.57)	2.1444 (6.29)	.3164 (5.77)	.1154 (3.20)	-.3280 (6.75)	-.3255 (7.54)
Healthy life expectancy at birth	.0288 (2.85)	-.0110 (1.26)	-.0007 (0.59)	.0006 (0.69)	.0029 (3.01)	.0021 (1.08)
Freedom to make life choices	1.3053 (4.38)	.7798 (3.49)	.3681 (8.93)	.1004 (4.55)	-.0905 (2.25)	-.0792 (2.77)
Generosity	.5827 (2.20)	.6709 (3.30)	.0900 (2.83)	.1291 (5.95)	.0243 (0.90)	.0708 (2.81)
Perceptions of corruption	-.7041 (2.60)	-.7592 (3.35)	-.0063 (0.23)	-.0065 (0.25)	.0940 (4.22)	.0951 (3.47)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	No	Yes	No	Yes	Yes	Yes
Number of countries	156	156	156	156	156	156
Number of observations	1853	1853	1848	1848	1852	1852
R <sup>2</sup>	.7558	.9058	.4456	.8803	.3298	.7581

Source: World Happiness Report, 2022

Table 7. Cantril ranks from Table 7 above.

	Raw data	Column 2 Table 6
Afghanistan	156	99
Albania	92	77
Algeria	75	82
Angola	122	125
Argentina	34	29
Armenia	115	115
Australia	10	45
Austria	12	30
Azerbaijan	97	121
Bahrain	47	154
Bangladesh	104	27
Belarus	67	106
Belgium	17	37
Belize	40	5
Benin	138	66
Bhutan	84	131
Bolivia	59	16
Bosnia and Herzegovina	82	68
Botswana	145	156
Brazil	25	10
Bulgaria	112	152
Burkina Faso	137	86
Burundi	154	20
Cambodia	133	132
Cameroon	111	70
Canada	8	35
Central African Republic	155	50
Chad	141	59
Chile	31	23
Colombia	41	12
Comoros	148	120
Congo (Brazzaville)	116	65
Congo (Kinshasa)	129	22
Costa Rica	14	2
Croatia	64	72
Cyprus	42	57
Czechia	24	21
Denmark	1	31
Djibouti	100	101
Dominican Republic	80	134
Ecuador	60	33
Egypt	118	138
El Salvador	49	8
Estonia	62	137
Eswatini	119	145
Ethiopia	127	67
Finland	2	13
France	22	49
Gabon	117	148
Gambia	107	56
Georgia	131	139
Germany	19	62
Ghana	102	71
Greece	66	64

Guatemala	39	7
Guinea	134	74
Guyana	48	18
Haiti	147	136
Honduras	74	24
Hungary	76	129
Iceland	5	19
India	123	108
Indonesia	83	112
Iran	99	128
Iraq	108	113
Ireland	15	95
Israel	11	4
Italy	33	53
Ivory Coast	110	81
Jamaica	58	28
Japan	46	110
Jordan	89	109
Kazakhstan	55	100
Kenya	125	130
Kuwait	37	111
Kyrgyzstan	85	46
Laos	93	119
Latvia	73	118
Lebanon	109	140
Lesotho	144	141
Liberia	140	80
Libya	70	98
Lithuania	52	73
Luxembourg	16	116
Madagascar	146	63
Malawi	142	58
Malaysia	57	96
Mali	136	92
Malta	30	93
Mauritania	124	124
Mauritius	54	91
Mexico	23	6
Moldova	65	25
Mongolia	90	135
Montenegro	79	103
Morocco	91	14
Mozambique	105	15
Myanmar	126	150
Namibia	114	142
Nepal	103	61
Netherlands	6	34
New Zealand	9	43
Nicaragua	61	17
Niger	135	41
Nigeria	94	60
North Macedonia	96	126
Norway	4	38
Pakistan	88	9
Palestinian Territories	113	84
Panama	21	11

Paraguay	69	87
Peru	68	32
Philippines	81	78
Poland	51	97
Portugal	72	127
Qatar	26	153
Romania	63	54
Russia	71	114
Rwanda	152	151
Saudi Arabia	27	88
Senegal	120	75
Serbia	78	90
Sierra Leone	139	83
Singapore	28	147
Slovakia	44	55
Slovenia	43	107
Somalia	87	1
South Africa	98	144
South Korea	53	76
Spain	29	47
Sri Lanka	130	155
Sudan	128	123
Suriname	38	26
Sweden	7	40
Switzerland	3	36
Syria	143	143
Taiwan Province of China	32	89
Tajikistan	95	39
Tanzania	151	149
Thailand	45	69
Togo	153	79
Trinidad and Tobago	35	48
Tunisia	106	94
Turkey	86	117
Uganda	132	104
Ukraine	101	133
United Arab Emirates	20	102
United Kingdom	18	85
United States	13	44
Uruguay	36	51
Uzbekistan	56	42
Venezuela	50	3
Vietnam	77	52
Yemen	149	122
Zambia	121	105
Zimbabwe	150	146

Correlation coefficient            0.4673

Table 8. Positive, negative and overall rankings for 164 countries and 50 states and DC, 2008-2017.

	Positive	Negative	Final
Afghanistan	180	150	186
Alabama	55	82	56
Alaska	14	47	9
Albania	157	174	181
Algeria	168	129	151
Angola	177	203	196
Argentina	51	148	95
Arizona	21	51	27
Arkansas	67	87	72
Armenia	214	209	213
Australia	95	44	68
Austria	97	6	11
Azerbaijan	193	102	165
Bahrain	133	200	168
Bangladesh	178	100	154
Belarus	198	94	139
Belgium	96	104	91
Belize	101	140	130
Benin	189	183	201
Bhutan	9	149	99
Bolivia	125	205	178
Bosnia Herzegovina	206	155	189
Botswana	142	90	133
Brazil	120	164	144
Bulgaria	185	111	160
Burkina Faso	188	153	194
Burundi	155	73	153
California	39	88	59
Cambodia	107	201	180
Cameroon	167	181	187
Canada	46	112	65
Chad	184	193	198
Chile	91	161	134
China	18	4	30
Colombia	54	151	106
Colorado	26	41	19
Comoros	161	83	127
Congo Brazzaville	173	171	193
Congo Kinshasa	169	139	164
Connecticut	52	59	50
Costa Rica	10	138	80
Croatia	172	135	147
Cyprus	135	177	162
Czech Republic	148	113	123
DC	33	30	16
Delaware	45	39	29
Denmark	71	66	38
Djibouti	181	95	118
Dominican Republic	117	166	166

Ecuador	69	172	112
Egypt	203	206	207
El Salvador	56	184	116
Central African Republic	190	211	211
Estonia	153	64	110
Eswatini	66	120	98
Ethiopia	171	75	138
Finland	98	31	51
Florida	35	63	47
France	109	121	122
Gabon	195	188	199
Georgia	210	107	177
Georgia USA	28	40	18
Germany	104	16	58
Ghana	128	123	124
Greece	158	167	176
Guatemala	49	175	107
Guinea	165	195	197
Haiti	194	160	202
Hawaii	4	10	1
Honduras	74	152	114
Hong Kong	127	23	79
Hungary	174	136	170
Iceland	83	36	20
Idaho	36	77	39
Illinois	30	50	31
India	149	158	172
Indiana	58	68	60
Indonesia	2	110	74
Iowa	12	15	5
Iran	176	212	205
Iraq	212	215	215
Ireland	70	35	36
Israel	162	180	157
Italy	145	144	142
Ivory Coast	154	199	191
Jamaica	123	127	148
Japan	73	8	37
Jordan	170	191	183
Kansas	16	33	7
Kazakhstan	136	13	82
Kentucky	90	114	89
Kenya	113	65	86
Kosovo	147	14	104
Kuwait	108	165	105
Kyrgyzstan	131	7	92
Laos	3	204	94
Latvia	175	108	143
Lebanon	207	154	190
Lesotho	114	117	149
Liberia	201	196	204

Libya	140	197	175
Lithuania	187	126	167
Louisiana	23	81	45
Luxembourg	99	34	70
Madagascar	146	134	161
Maine	53	53	34
Malawi	132	131	140
Malaysia	81	97	75
Mali	130	96	117
Malta	141	189	152
Maryland	50	48	25
Massachusetts	64	70	55
Mauritania	116	71	102
Mauritius	111	122	121
Mexico	82	118	81
Michigan	32	58	48
Minnesota	7	9	2
Mississippi	40	67	41
Missouri	47	55	40
Moldova	208	170	192
Mongolia	139	11	76
Montana	20	54	12
Montenegro	205	178	182
Morocco	137	133	145
Mozambique	182	163	171
Myanmar	105	130	136
Northern Cyprus	150	147	158
Nagorno Karabakh	215	208	209
Namibia	118	109	129
Nebraska	13	26	6
Nepal	166	156	174
Netherlands	22	43	17
Nevada	41	80	64
New Hampshire	44	45	28
New Jersey	65	72	67
New Mexico	27	69	49
New York	72	89	73
New Zealand	87	32	46
Nicaragua	79	182	128
Niger	164	125	159
Nigeria	110	115	108
North Carolina	24	57	61
North Dakota	6	12	3
North Macedonia	200	176	169
Norway	76	27	22
Ohio	59	79	69
Oklahoma	62	85	66
Oregon	38	78	43
Pakistan	183	194	195
Palestine	197	202	210
Panama	8	91	44

Paraguay	1	105	54
Pennsylvania	43	56	42
Peru	106	198	163
Philippines	92	173	137
Poland	121	101	115
Portugal	134	169	141
Puerto Rico	63	185	132
Qatar	103	186	135
Rhode Island	57	74	63
Romania	191	190	188
Russia	163	18	87
Rwanda	119	49	96
Saudi Arabia	100	157	126
Senegal	112	103	103
Serbia	213	187	200
Sierra Leone	204	207	206
Singapore	126	5	62
Slovakia	144	137	146
Slovenia	159	128	125
Somalia	25	19	78
Somaliland	115	2	53
South Africa	86	24	77
South Carolina	15	42	15
South Dakota	11	22	4
South Korea	143	76	90
South Sudan	196	214	214
Spain	124	162	131
Sri Lanka	88	93	100
Sudan	179	141	173
Suriname	84	146	97
Sweden	93	28	35
Switzerland	89	25	24
Syria	209	213	208
Taiwan	17	1	8
Tajikistan	152	62	113
Tanzania	122	86	109
Tennessee	61	92	71
Texas	29	61	26
Thailand	5	17	23
Gambia	102	159	156
Togo	192	210	212
Trinidad & Tobago	78	99	85
Tunisia	202	179	184
Turkey	199	168	179
Turkmenistan	160	98	120
Uganda	151	192	93
Ukraine	186	106	185
UAEs	80	132	57
USA	77	124	150
UK	85	21	111
Uruguay	75	142	88

Utah	42	84	32
Uzbekistan	60	3	52
Venezuela	68	116	83
Vermont	48	46	21
Vietnam	156	20	84
Virginia	37	37	14
Washington	31	60	33
West Virginia	94	119	101
Wisconsin	19	29	10
Wyoming	34	38	13
Yemen	211	143	203
Zambia	129	145	155
Zimbabwe	138	52	119

Regressions include age and its square, male and 8 year-dummies.

Positive affect is the sum of enjoy, smile and well rested

Negative affect is the sum of pain, sadness, worry and anger.

Final column is from summing the ranks on the eight columns of Table 5, which includes Cantril and reranking them.

Table 9. Final state and country well-being country rankings from Table 8 final column

Hawaii	1	Singapore	62	Czech Republic	123	Tunisia	184
Minnesota	2	Rhode Island	63	Ghana	124	Ukraine	185
North Dakota	3	Nevada	64	Slovenia	125	Afghanistan	186
South Dakota	4	Canada	65	Saudi Arabia	126	Cameroon	187
Iowa	5	Oklahoma	66	Comoros	127	Romania	188
Nebraska	6	New Jersey	67	Nicaragua	128	Bosnia	189
Kansas	7	Australia	68	Namibia	129	Lebanon	190
Taiwan	8	Ohio	69	Belize	130	Ivory Coast	191
Alaska	9	Luxembourg	70	Spain	131	Moldova	192
Wisconsin	10	Tennessee	71	Puerto Rico	132	Congo Brazzaville	193
Austria	11	Arkansas	72	Botswana	133	Burkina Faso	194
Montana	12	New York	73	Chile	134	Pakistan	195
Wyoming	13	Indonesia	74	Qatar	135	Angola	196
Virginia	14	Malaysia	75	Myanmar	136	Guinea	197
South Carolina	15	Mongolia	76	Philippines	137	Chad	198
DC	16	South Africa	77	Ethiopia	138	Gabon	199
Netherlands	17	Somalia	78	Belarus	139	Serbia	200
Georgia USA	18	Hong Kong	79	Malawi	140	Benin	201
Colorado	19	Costa Rica	80	Portugal	141	Haiti	202
Iceland	20	Mexico	81	Italy	142	Yemen	203
Vermont	21	Kazakhstan	82	Latvia	143	Liberia	204
Norway	22	Venezuela	83	Brazil	144	Iran	205
Thailand	23	Vietnam	84	Morocco	145	Sierra Leone	206
Switzerland	24	Trinidad & Tobago	85	Slovakia	146	Egypt	207
Maryland	25	Kenya	86	Croatia	147	Syria	208
Texas	26	Russia	87	Jamaica	148	Nagorno Karabakh	209
Arizona	27	Uruguay	88	Lesotho	149	Palestine	210
New Hampshire	28	Kentucky	89	USA	150	CAR	211
Delaware	29	South Korea	90	Algeria	151	Togo	212
China	30	Belgium	91	Malta	152	Armenia	213
Illinois	31	Kyrgyzstan	92	Burundi	153	South Sudan	214
Utah	32	Uganda	93	Bangladesh	154	Iraq	215
Washington	33	Laos	94	Zambia	155		
Maine	34	Argentina	95	Gambia	156		
Sweden	35	Rwanda	96	Israel	157		
Ireland	36	Suriname	97	N. Cyprus	158		
Japan	37	Eswatini	98	Niger	159		
Denmark	38	Bhutan	99	Bulgaria	160		
Idaho	39	Sri Lanka	100	Madagascar	161		
Missouri	40	West Virginia	101	Cyprus	162		
Mississippi	41	Mauritania	102	Peru	163		
Pennsylvania	42	Senegal	103	Congo Kins	164		
Oregon	43	Kosovo	104	Azerbaijan	165		
Panama	44	Kuwait	105	Dominican R	166		
Louisiana	45	Colombia	106	Lithuania	167		
New Zealand	46	Guatemala	107	Bahrain	168		
Florida	47	Nigeria	108	N. Macedonia	169		
Michigan	48	Tanzania	109	Hungary	170		
New Mexico	49	Estonia	110	Mozambique	171		
Connecticut	50	UK	111	India	172		
Finland	51	Ecuador	112	Sudan	173		
Uzbekistan	52	Tajikistan	113	Nepal	174		
Somaliland	53	Honduras	114	Libya	175		
Paraguay	54	Poland	115	Greece	176		
Massachusetts	55	El Salvador	116	Georgia	177		
Alabama	56	Mali	117	Bolivia	178		
UAE	57	Djibouti	118	Turkey	179		
Germany	58	Zimbabwe	119	Cambodia	180		
California	59	Turkmenistan	120	Albania	181		
Indiana	60	Mauritius	121	Montenegro	182		
North Carolina	61	France	122	Jordan	183		

Appendix Table 1. World Bank GDP per capita rankings US\$ -214 countries

208	Afghanistan	\$517
113	Albania	\$6,494
143	Algeria	\$3,765
80	American Samoa	\$12,845
33	Andorra	\$43,048
166	Angola	\$2,138
75	Antigua and Barbuda	\$14,901
87	Argentina	\$10,729
129	Armenia	\$4,670
56	Aruba	\$23,384
18	Australia	\$59,934
22	Austria	\$53,268
118	Azerbaijan	\$5,384
48	Bahamas, The	\$28,239
57	Bahrain	\$22,232
160	Bangladesh	\$2,503
68	Barbados	\$17,034
107	Belarus	\$7,304
24	Belgium	\$51,768
133	Belize	\$4,421
181	Benin	\$1,428
4	Bermuda	\$110,870
153	Bhutan	\$3,001
150	Bolivia	\$3,415
110	Bosnia Herzegovina	\$6,916
106	Botswana	\$7,348
105	Brazil	\$7,519
42	Brunei Darussalam	\$31,723
85	Bulgaria	\$11,635
193	Burkina Faso	\$918
214	Burundi	\$237
149	Cabo Verde	\$3,446
176	Cambodia	\$1,591
174	Cameroon	\$1,662
23	Canada	\$52,051
9	Cayman Islands	\$85,347
211	Central African Rep.	\$512
201	Chad	\$696
10	Channel Islands	\$74,463
70	Chile	\$16,503
81	China	\$12,556
114	Colombia	\$6,131
179	Comoros	\$1,495
207	Congo, Dem. Rep.	\$584
165	Congo, Rep.	\$2,214
82	Costa Rica	\$12,509
158	Cote d'Ivoire	\$2,579
67	Croatia	\$17,399
93	Cuba	\$9,478
72	Curacao	\$16,110
44	Cyprus	\$30,799
50	Czech Republic	\$26,379
14	Denmark	\$67,803
151	Djibouti	\$3,364
104	Dominica	\$7,560
99	Dominican Republic	\$8,604
116	Ecuador	\$5,935
141	Egypt, Arab Rep.	\$3,876
134	El Salvador	\$4,409
100	Equatorial Guinea	\$8,462
205	Eritrea	\$643

49	Estonia	\$27,281
137	Eswatini	\$4,215
192	Ethiopia	\$944
15	Faroe Islands	\$66,321
121	Fiji	\$5,086
21	Finland	\$53,983
32	France	\$43,519
63	French Polynesia	\$20,183
101	Gabon	\$8,017
197	Gambia, The	\$836
123	Georgia	\$5,042
26	Germany	\$50,802
162	Ghana	\$2,445
62	Greece	\$20,277
20	Greenland	\$54,570
89	Grenada	\$9,929
40	Guam	\$34,624
124	Guatemala	\$5,026
186	Guinea	\$1,174
199	Guinea-Bissau	\$813
94	Guyana	\$9,375
171	Haiti	\$1,815
155	Honduras	\$2,831
27	Hong Kong	\$49,661
64	Hungary	\$18,773
13	Iceland	\$68,384
164	India	\$2,277
136	Indonesia	\$4,292
156	Iran, Islamic Rep.	\$2,757
122	Iraq	\$5,048
5	Ireland	\$99,152
8	Isle of Man	\$86,482
25	Israel	\$51,430
37	Italy	\$35,551
131	Jamaica	\$4,587
35	Japan	\$39,285
135	Jordan	\$4,406
88	Kazakhstan	\$10,042
169	Kenya	\$2,007
178	Kiribati	\$1,515
38	Korea, Rep.	\$34,758
125	Kosovo	\$4,987
51	Kuwait	\$24,812
182	Kyrgyz Republic	\$1,276
159	Lao PDR	\$2,551
61	Latvia	\$20,642
157	Lebanon	\$2,670
187	Lesotho	\$1,167
203	Liberia	\$673
115	Libya	\$6,018
2	Liechtenstein	\$169,049
55	Lithuania	\$23,433
3	Luxembourg	\$135,683
31	Macao SAR, China	\$45,422
210	Madagascar	\$515
204	Malawi	\$643
86	Malaysia	\$11,371
97	Maldives	\$8,995
194	Mali	\$918
41	Malta	\$33,257
138	Marshall Islands	\$4,171
173	Mauritania	\$1,723

98	Mauritius	\$8,812
90	Mexico	\$9,926
148	Micronesia	\$3,477
119	Moldova	\$5,315
1	Monaco	\$173,688
132	Mongolia	\$4,535
95	Montenegro	\$9,367
147	Morocco	\$3,497
212	Mozambique	\$500
185	Myanmar	\$1,187
128	Namibia	\$4,729
83	Nauru	\$12,252
184	Nepal	\$1,223
19	Netherlands	\$58,061
39	New Caledonia	\$34,695
28	New Zealand	\$48,802
167	Nicaragua	\$2,091
206	Niger	\$595
168	Nigeria	\$2,085
111	North Macedonia	\$6,721
60	Northern Mariana	\$20,660
7	Norway	\$89,203
71	Oman	\$16,439
177	Pakistan	\$1,538
78	Palau	\$14,244
77	Panama	\$14,517
154	Papua New Guinea	\$2,916
117	Paraguay	\$5,400
112	Peru	\$6,692
146	Philippines	\$3,549
66	Poland	\$17,841
52	Portugal	\$24,262
43	Puerto Rico	\$31,430
16	Qatar	\$61,276
76	Romania	\$14,862
84	Russian Federation	\$12,173
198	Rwanda	\$834
139	Samoa	\$3,939
30	San Marino	\$45,516
161	Sao Tome & Principe	\$2,449
54	Saudi Arabia	\$23,586
175	Senegal	\$1,607
96	Serbia	\$9,215
79	Seychelles	\$13,307
209	Sierra Leone	\$516
11	Singapore	\$72,794
47	Sint Maarten (Dutch)	\$28,988
59	Slovak Republic	\$21,088
46	Slovenia	\$29,201
163	Solomon Islands	\$2,337
213	Somalia	\$446
109	South Africa	\$6,994
190	South Sudan	\$1,120
45	Spain	\$30,116
142	Sri Lanka	\$3,815
65	St. Kitts and Nevis	\$18,230
92	St. Lucia	\$9,571
58	St. Martin (French)	\$21,459
102	St. Vincent & Grenadines	\$7,997
200	Sudan	\$764
126	Suriname	\$4,836
17	Sweden	\$60,239

6	Switzerland	\$93,457
183	Syrian Arab Republic	\$1,266
195	Tajikistan	\$897
188	Tanzania	\$1,136
108	Thailand	\$7,233
180	Timor-Leste	\$1,458
191	Togo	\$992
130	Tonga	\$4,625
74	Trinidad and Tobago	\$15,243
140	Tunisia	\$3,924
91	Turkey	\$9,587
103	Turkmenistan	\$7,612
53	Turks & Caicos	\$24,047
120	Tuvalu	\$5,292
196	Uganda	\$858
127	Ukraine	\$4,836
36	United Arab Emirates	\$36,285
29	United Kingdom	\$47,334
12	United States	\$69,288
69	Uruguay	\$17,021
170	Uzbekistan	\$1,983
152	Vanuatu	\$3,127
73	Venezuela, RB	\$16,056
144	Vietnam	\$3,694
34	Virgin Islands (U.S.)	\$39,552
145	West Bank and Gaza	\$3,664
202	Yemen, Rep.	\$691
189	Zambia	\$1,121
172	Zimbabwe	\$1,737

Source:

<https://data.worldbank.org/indicator/NY.GDP.PCAP.CD>

Appendix Table 2. Sustainable Ranking by UN Sustainable Development Report

1	Finland	62	Suriname	123	Sao Tome and Principe
2	Denmark	63	Ecuador	124	Rwanda
3	Sweden	64	Algeria	125	Pakistan
4	Norway	65	Kazakhstan	126	Senegal
5	Austria	66	Armenia	127	Cote d'Ivoire
6	Germany	67	Maldives	128	Ethiopia
7	France	68	Dominican Republic	129	Syrian Arab Republic
8	Switzerland	69	Tunisia	130	Tanzania
9	Ireland	70	Bhutan	131	Zimbabwe
10	Estonia	71	Turkey	132	Mauritania
11	United Kingdom	72	Malaysia	133	Togo
12	Poland	73	Barbados	134	Cameroon
13	Czech Republic	74	Mexico	135	Lesotho
14	Latvia	75	Colombia	136	Uganda
15	Slovenia	76	Sri Lanka	137	Eswatini
16	Spain	77	Uzbekistan	138	Burkina Faso
17	Netherlands	78	Tajikistan	139	Nigeria
18	Belgium	79	El Salvador	140	Zambia
19	Japan	80	Jordan	141	Burundi
20	Portugal	81	Oman	142	Mali
21	Hungary	82	Indonesia	143	Mozambique
22	Iceland	83	Jamaica	144	Papua New Guinea
23	Croatia	84	Morocco	145	Malawi
24	Slovak Republic	85	UAE	146	Sierra Leone
25	Italy	86	Montenegro	147	Afghanistan
26	New Zealand	87	Egypt, Arab Rep.	148	Congo, Rep.
27	Korea, Rep.	88	Iran, Islamic Rep.	149	Niger
28	Chile	89	Mauritius	150	Yemen, Rep.
29	Canada	90	Bolivia	151	Haiti
30	Romania	91	Paraguay	152	Guinea
31	Uruguay	92	Nicaragua	153	Benin
32	Greece	93	Brunei Darussalam	154	Angola
33	Malta	94	Qatar	155	Djibouti
34	Belarus	95	Philippines	156	Madagascar
35	Serbia	96	Saudi Arabia	157	Congo, Dem. Rep.
36	Luxembourg	97	Lebanon	158	Liberia
37	Ukraine	98	Nepal	159	Sudan
38	Australia	99	Turkmenistan	160	Somalia
39	Lithuania	100	Belize	161	Chad
40	Cuba	101	Kuwait	162	Central African Republic
41	United States	102	Bahrain	163	South Sudan
42	Bulgaria	103	Myanmar		
43	Cyprus	104	Bangladesh		
44	Thailand	105	Panama		
45	Russian Federation	106	Guyana		
46	Moldova	107	Cambodia		
47	Costa Rica	108	South Africa		
48	Kyrgyz Republic	109	Mongolia		
49	Israel	110	Ghana		
50	Azerbaijan	111	Lao PDR		
51	Georgia	112	Honduras		
52	Fiji	113	Gabon		
53	Brazil	114	Namibia		
54	Argentina	115	Iraq		
55	Vietnam	116	Botswana		
56	China	117	Guatemala		
57	North Macedonia	118	Kenya		
58	Peru	119	Trinidad and Tobago		
59	Bosnia and Herzegovina	120	Venezuela		
60	Singapore	121	India		
61	Albania	122	Gambia, The		

<https://dashboards.sdindex.org/rankings>

<https://s3.amazonaws.com/sustainabledevelopment.report/2022/2022-sustainable-development-report.pdf>

Countries are ranked based on seventeen metrics covering education, pollution & health, and inequality. The overall score measures the total progress towards achieving all 17 SDGs. The score can be interpreted as a percentage of SDG achievement.

Appendix Table 3. Ranks by country HDI 2019

Afghanistan	133	Dominican Republic	75
Albania	61	Ecuador	73
Algeria	77	Egypt	95
Angola	116	El Salvador	101
Argentina	44	Estonia	28
Armenia	69	Ethiopia	136
Australia	8	Finland	11
Austria	18	France	25
Azerbaijan	74	Gabon	97
Bahrain	40	Georgia	54
Bangladesh	109	Germany	6
Belarus	49	Ghana	110
Belgium	14	Greece	31
Belize	90	Guatemala	103
Benin	123	Guinea	140
Bhutan	105	Haiti	134
Bolivia	87	Honduras	108
Bosnia and Herzegovina	64	Hong Kong	4
Botswana	81	Hungary	38
Brazil	71	Iceland	5
Bulgaria	52	India	107
Burkina Faso	143	Indonesia	88
Burundi	146	Iran	62
Cambodia	113	Iraq	100
Cameroon	120	Ireland	2
Canada	16	Israel	19
Central African Republic	149	Italy	29
Chad	148	Ivory Coast	127
Chile	41	Jamaica	82
China	72	Japan	20
Colombia	70	Jordan	83
Congo (Brazzaville)	117	Kazakhstan	47
Congo (Kinshasa)	138	Kenya	112
Costa Rica	55	Kuwait	57
Croatia	42	Kyrgyzstan	98
Cyprus	32	Latvia	35
Czech Republic	26	Lebanon	78
Denmark	10	Lesotho	130
Liberia	139	Serbia	58
Libya	85	Sierra Leone	144
Lithuania	33	Singapore	12
Luxembourg	22	Slovakia	37
Madagascar	129	Slovenia	21
Malawi	137	South Africa	93
Malaysia	56	South Korea	23
Mali	145	South Sudan	147
Malta	27	Spain	24
Mauritania	122	Sri Lanka	63
Mauritius	59	Sudan	135
Mexico	65	Sweden	7
Moldova	76	Switzerland	3
Mongolia	80	Syria	119
Montenegro	45	Tajikistan	102
Morocco	99	Tanzania	128
Mozambique	142	Thailand	68
Myanmar	115	Togo	131
Namibia	106	Trinidad and Tobago	60
Nepal	111	Tunisia	79
Netherlands	9	Turkey	50
New Zealand	15	Turkmenistan	91
Nicaragua	104	Uganda	124

Niger	150	Ukraine	66
Nigeria	126	United Arab Emirates	30
Norway	1	United Kingdom	13
Pakistan	121	United States	17
Palestinian Territories	94	Uruguay	51
Panama	53	Uzbekistan	86
Paraguay	84	Venezuela	92
Peru	67	Vietnam	96
Philippines	89	Yemen	141
Poland	34	Zambia	114
Portugal	36	Zimbabwe	133
Qatar	43		
Romania	46		
Russia	48		
Rwanda	125		
Saudi Arabia	39		
Senegal	132		

Appendix Table 4. Mean well-being weighted scores in 164 countries and 50 states and the District of Columbia, 2008-2017

	Cantril	Enjoy	Smile	Wellrested	Pain	Worry	Sadness	Anger
Afghanistan	3.861	0.609	0.528	0.684	0.284	0.365	0.287	0.228
Alabama	6.935	0.841	0.811	0.697	0.284	0.312	0.191	0.139
Alaska	7.07	0.884	0.847	0.702	0.245	0.284	0.143	0.12
Albania	5.03	0.652	0.668	0.62	0.378	0.417	0.262	0.252
Algeria	5.532	0.575	0.634	0.661	0.34	0.372	0.149	0.258
Angola	4.425	0.574	0.621	0.664	0.451	0.572	0.284	0.197
Argentina	6.449	0.838	0.861	0.725	0.348	0.441	0.216	0.147
Arizona	6.959	0.852	0.83	0.71	0.242	0.315	0.177	0.135
Arkansas	6.83	0.836	0.8	0.689	0.297	0.317	0.194	0.142
Armenia	4.347	0.497	0.612	0.462	0.353	0.517	0.377	0.4
Australia	7.306	0.809	0.777	0.678	0.236	0.321	0.185	0.142
Austria	7.225	0.781	0.769	0.734	0.205	0.256	0.138	0.107
Azerbaijan	4.952	0.595	0.581	0.564	0.283	0.294	0.202	0.209
Bahrain	5.786	0.676	0.706	0.726	0.384	0.47	0.296	0.351
Bangladesh	4.747	0.675	0.615	0.619	0.229	0.297	0.227	0.149
Belarus	5.568	0.576	0.576	0.579	0.252	0.267	0.232	0.143
Belgium	6.961	0.79	0.819	0.674	0.293	0.372	0.185	0.159
Belize	5.956	0.75	0.757	0.739	0.268	0.362	0.267	0.224
Benin	3.741	0.555	0.694	0.56	0.391	0.465	0.253	0.228
Bhutan	5.196	0.816	0.816	0.841	0.363	0.435	0.124	0.297
Bolivia	5.784	0.751	0.786	0.674	0.345	0.536	0.361	0.273
Bosnia Herzegovina	5.018	0.558	0.547	0.516	0.315	0.483	0.226	0.259
Botswana	4.034	0.689	0.735	0.659	0.3	0.303	0.207	0.157
Brazil	6.798	0.76	0.789	0.638	0.322	0.479	0.222	0.163
Bulgaria	4.351	0.621	0.606	0.609	0.238	0.336	0.247	0.113
Burkina	4.075	0.588	0.613	0.614	0.331	0.441	0.241	0.189
Burundi	3.493	0.645	0.582	0.653	0.233	0.308	0.164	0.172
California	6.951	0.842	0.834	0.708	0.235	0.336	0.194	0.15
Cambodia	4.178	0.781	0.798	0.649	0.302	0.506	0.377	0.243
Cameroon	4.567	0.602	0.662	0.673	0.406	0.423	0.246	0.218
Canada	7.429	0.862	0.838	0.694	0.279	0.382	0.196	0.15
Central	3.355	0.531	0.609	0.66	0.582	0.58	0.38	0.262
Chad	4.029	0.588	0.546	0.646	0.425	0.455	0.286	0.261
Chile	6.499	0.818	0.834	0.658	0.363	0.461	0.245	0.199
China	5.036	0.861	0.785	0.81	0.16	0.237	0.083	0.145

Colombia	6.352	0.813	0.851	0.751	0.297	0.414	0.252	0.195
Colorado	6.973	0.86	0.826	0.704	0.23	0.306	0.161	0.134
Comoros	3.744	0.71	0.618	0.678	0.284	0.253	0.094	0.19
Congo Kinshasa	4.349	0.611	0.576	0.696	0.372	0.355	0.221	0.229
Congo Brazzaville	4.262	0.592	0.642	0.676	0.372	0.418	0.302	0.236
Connecticut	6.878	0.838	0.822	0.702	0.218	0.326	0.175	0.144
Costa Rica	7.186	0.854	0.886	0.751	0.296	0.4	0.209	0.175
Croatia	5.516	0.561	0.649	0.604	0.291	0.531	0.209	0.127
Cyprus	5.982	0.76	0.766	0.566	0.295	0.484	0.295	0.239
Czechia	6.496	0.748	0.672	0.626	0.248	0.339	0.15	0.225
DC	7.153	0.856	0.834	0.712	0.173	0.314	0.153	0.127
Delaware	6.88	0.838	0.813	0.702	0.257	0.31	0.181	0.137
Denmark	7.638	0.893	0.773	0.696	0.252	0.308	0.162	0.129
Djibouti	4.84	0.73	0.582	0.717	0.278	0.188	0.144	0.197
Dominica	5.147	0.719	0.803	0.683	0.341	0.446	0.282	0.152
Ecuador	5.88	0.828	0.864	0.749	0.309	0.441	0.267	0.175
Egypt	4.388	0.514	0.617	0.642	0.442	0.457	0.325	0.312
El Salvador	6.014	0.788	0.875	0.768	0.347	0.457	0.267	0.198
Estonia	5.529	0.766	0.644	0.629	0.212	0.309	0.189	0.092
Eswatini	4.867	0.822	0.825	0.701	0.341	0.307	0.221	0.225
Ethiopia	4.438	0.658	0.685	0.591	0.202	0.274	0.212	0.193
Finland	7.496	0.758	0.784	0.68	0.243	0.354	0.143	0.069
Florida	6.86	0.837	0.825	0.713	0.246	0.32	0.185	0.139
France	6.617	0.763	0.787	0.636	0.303	0.338	0.194	0.23
Gabon	4.312	0.512	0.653	0.614	0.395	0.473	0.273	0.266
Georgia	4.218	0.569	0.497	0.522	0.294	0.262	0.18	0.257
Georgia USA	6.942	0.848	0.824	0.712	0.232	0.3	0.171	0.139
Germany	6.715	0.763	0.759	0.724	0.226	0.244	0.165	0.123
Ghana	4.726	0.623	0.808	0.723	0.352	0.288	0.212	0.168
Greece	5.321	0.683	0.685	0.593	0.288	0.509	0.257	0.246
Guatemala	6.241	0.811	0.88	0.763	0.334	0.436	0.252	0.189
Guinea	3.841	0.662	0.682	0.613	0.429	0.525	0.255	0.211
Haiti	4.015	0.548	0.6	0.632	0.371	0.331	0.324	0.272
Hawaii	7.216	0.89	0.86	0.738	0.202	0.266	0.147	0.123
Honduras	5.317	0.769	0.863	0.762	0.316	0.415	0.255	0.158
Hong Kong	5.439	0.644	0.711	0.773	0.161	0.35	0.114	0.162

Hungary	5.129	0.734	0.62	0.559	0.298	0.377	0.228	0.163
Iceland	7.438	0.89	0.858	0.593	0.32	0.27	0.117	0.091
Idaho	6.932	0.862	0.822	0.693	0.256	0.323	0.164	0.127
Illinois	6.89	0.852	0.826	0.712	0.215	0.313	0.169	0.141
India	4.575	0.702	0.645	0.684	0.318	0.363	0.264	0.26
Indiana	6.819	0.844	0.809	0.696	0.257	0.316	0.177	0.141
Indonesia	5.268	0.853	0.874	0.832	0.216	0.332	0.211	0.214
Iowa	6.914	0.869	0.83	0.731	0.219	0.275	0.149	0.114
Iran	4.754	0.587	0.668	0.601	0.372	0.526	0.459	0.468
Iraq	4.682	0.48	0.536	0.501	0.53	0.583	0.461	0.492
Ireland	7.052	0.839	0.808	0.721	0.187	0.298	0.196	0.143
Israel	7.281	0.697	0.646	0.626	0.304	0.441	0.234	0.296
Italy	6.105	0.669	0.73	0.628	0.25	0.517	0.297	0.15
Ivory Coast	4.246	0.638	0.72	0.626	0.454	0.457	0.254	0.219
Jamaica	5.571	0.74	0.792	0.617	0.246	0.358	0.274	0.2
Japan	5.956	0.733	0.815	0.801	0.198	0.277	0.117	0.15
Jordan	5.386	0.643	0.629	0.677	0.396	0.411	0.242	0.288
Kansas	6.932	0.866	0.83	0.719	0.23	0.292	0.153	0.124
Kazakhstan	5.746	0.746	0.678	0.686	0.222	0.205	0.168	0.119
Kentucky	6.734	0.825	0.789	0.665	0.308	0.354	0.215	0.143
Kenya	4.308	0.755	0.762	0.712	0.249	0.245	0.163	0.145
Kosovo	5.516	0.694	0.653	0.68	0.262	0.241	0.108	0.182
Kuwait	6.366	0.72	0.774	0.807	0.318	0.328	0.175	0.236
Kyrgyzstan	5.097	0.709	0.717	0.721	0.204	0.156	0.177	0.133
Laos	4.822	0.876	0.884	0.738	0.389	0.309	0.224	0.34
Latvia	5.446	0.705	0.566	0.596	0.245	0.348	0.212	0.133
Lebanon	5.028	0.52	0.55	0.602	0.302	0.433	0.249	0.28
Lesotho	4.173	0.741	0.771	0.661	0.317	0.338	0.186	0.172
Liberia	3.912	0.451	0.704	0.573	0.424	0.433	0.344	0.236
Libya	5.613	0.7	0.699	0.688	0.428	0.448	0.273	0.367
Lithuania	5.707	0.594	0.581	0.62	0.237	0.347	0.268	0.191
Louisiana	6.947	0.838	0.823	0.716	0.256	0.316	0.192	0.146
Luxembourg	6.969	0.777	0.77	0.699	0.257	0.267	0.172	0.161
Madagascar	3.923	0.671	0.801	0.576	0.36	0.325	0.196	0.184
Maine	6.831	0.847	0.821	0.697	0.257	0.306	0.171	0.121
Malawi	4.092	0.649	0.761	0.74	0.335	0.34	0.256	0.157

Malaysia	5.832	0.806	0.799	0.78	0.202	0.286	0.176	0.203
Mali	4.179	0.754	0.746	0.678	0.279	0.356	0.145	0.109
Malta	6.337	0.586	0.776	0.714	0.301	0.596	0.234	0.233
Maryland	7.033	0.845	0.82	0.702	0.211	0.306	0.164	0.139
Massachusetts	6.948	0.837	0.816	0.702	0.219	0.335	0.183	0.142
Mauritania	4.523	0.745	0.752	0.676	0.334	0.242	0.14	0.173
Mauritius	5.727	0.744	0.797	0.636	0.402	0.284	0.207	0.176
Mexico	6.882	0.781	0.825	0.748	0.285	0.381	0.2	0.112
Michigan	6.808	0.847	0.818	0.706	0.255	0.309	0.176	0.138
Minnesota	6.995	0.873	0.836	0.731	0.205	0.269	0.144	0.114
Mississippi	6.925	0.841	0.807	0.707	0.267	0.31	0.194	0.143
Missouri	6.789	0.846	0.813	0.695	0.253	0.311	0.17	0.135
Moldova	5.702	0.634	0.545	0.524	0.382	0.35	0.3	0.198
Mongolia	4.902	0.696	0.602	0.797	0.186	0.298	0.114	0.125
Montana	6.983	0.871	0.833	0.715	0.255	0.299	0.15	0.121
Montenegro	5.233	0.587	0.518	0.542	0.28	0.53	0.192	0.384
Morocco	5.053	0.615	0.745	0.742	0.33	0.336	0.2	0.24
Mozambique	4.618	0.473	0.716	0.68	0.316	0.516	0.261	0.137
Myanmar	4.381	0.766	0.836	0.629	0.393	0.338	0.162	0.208
Nagorno-	4.856	0.499	0.551	0.438	0.347	0.529	0.398	0.401
Namibia	4.508	0.626	0.841	0.712	0.302	0.384	0.21	0.18
Nebraska	6.985	0.871	0.839	0.727	0.215	0.279	0.15	0.121
Nepal	4.562	0.699	0.588	0.692	0.331	0.344	0.229	0.231
Netherlands	7.455	0.866	0.828	0.712	0.211	0.358	0.165	0.095
Nevada	6.745	0.841	0.826	0.708	0.251	0.329	0.187	0.148
New Hampshire	6.907	0.851	0.82	0.699	0.223	0.312	0.16	0.126
New Jersey	6.884	0.829	0.819	0.699	0.214	0.335	0.183	0.149
New Mexico	7.006	0.855	0.822	0.705	0.255	0.314	0.187	0.144
New York	6.874	0.826	0.815	0.699	0.231	0.329	0.189	0.151
New Zealand	7.291	0.846	0.818	0.67	0.226	0.294	0.167	0.132
Nicaragua	5.737	0.756	0.866	0.771	0.342	0.445	0.286	0.186
Niger	4.134	0.711	0.657	0.616	0.407	0.295	0.186	0.156
Nigeria	5.105	0.658	0.822	0.731	0.275	0.292	0.18	0.222
North Carolina	6.885	0.85	0.819	0.712	0.25	0.309	0.182	0.137
North Dakota	7.040	0.882	0.843	0.742	0.2	0.259	0.135	0.107
North Macedonia	4.900	0.607	0.546	0.579	0.324	0.455	0.228	0.314

Northern	5.751	0.64	0.715	0.619	0.233	0.352	0.336	0.363
Norway	7.572	0.874	0.811	0.668	0.229	0.299	0.17	0.123
Ohio	6.773	0.838	0.808	0.695	0.259	0.321	0.185	0.146
Oklahoma	6.843	0.849	0.818	0.69	0.285	0.312	0.179	0.141
Oregon	6.858	0.859	0.822	0.7	0.279	0.326	0.177	0.127
Pakistan	5.182	0.604	0.645	0.601	0.402	0.356	0.287	0.345
Palestine	4.666	0.575	0.601	0.557	0.412	0.496	0.301	0.381
Panama	6.82	0.801	0.885	0.799	0.24	0.313	0.183	0.122
Paraguay	5.655	0.879	0.896	0.835	0.254	0.396	0.14	0.093
Pennsylvania	6.869	0.845	0.815	0.713	0.239	0.304	0.172	0.138
Peru	5.661	0.753	0.802	0.682	0.339	0.511	0.319	0.239
Philippines	5.116	0.795	0.837	0.724	0.269	0.364	0.34	0.305
Poland	5.893	0.767	0.764	0.64	0.205	0.298	0.189	0.218
Portugal	5.252	0.617	0.766	0.695	0.338	0.543	0.322	0.094
Puerto Rico	7.039	0.834	0.839	0.699	0.413	0.415	0.305	0.191
Qatar	6.554	0.731	0.728	0.759	0.33	0.358	0.245	0.298
Rhode Island	6.81	0.827	0.82	0.707	0.24	0.338	0.193	0.144
Romania	5.456	0.654	0.651	0.572	0.35	0.458	0.305	0.144
Russia	5.598	0.674	0.641	0.632	0.211	0.226	0.181	0.096
Rwanda	3.646	0.735	0.699	0.709	0.269	0.311	0.167	0.111
Saudi Arabia	6.415	0.749	0.719	0.776	0.332	0.347	0.199	0.267
Senegal	4.281	0.726	0.738	0.704	0.388	0.336	0.139	0.15
Serbia	5.025	0.554	0.452	0.512	0.297	0.559	0.236	0.306
Sierra Leone	4.29	0.414	0.678	0.633	0.503	0.477	0.36	0.318
Singapore	6.521	0.685	0.706	0.781	0.221	0.251	0.135	0.156
Slovakia	6.062	0.761	0.663	0.665	0.28	0.361	0.176	0.261
Slovenia	5.923	0.593	0.657	0.71	0.262	0.508	0.17	0.17
Somalia	5.151	0.88	0.87	0.678	0.294	0.231	0.194	0.158
Somaliland	4.888	0.779	0.711	0.719	0.155	0.172	0.114	0.121
South Africa	4.825	0.763	0.795	0.758	0.242	0.307	0.174	0.143
South Carolina	6.94	0.85	0.824	0.721	0.258	0.298	0.178	0.139
South Dakota	6.933	0.868	0.832	0.725	0.209	0.268	0.142	0.123
South Korea	5.941	0.63	0.706	0.731	0.241	0.347	0.147	0.147
South Sudan	3.397	0.495	0.705	0.55	0.57	0.598	0.429	0.435
Spain	6.397	0.619	0.775	0.722	0.292	0.49	0.256	0.237
Sri Lanka	4.284	0.775	0.873	0.651	0.321	0.197	0.202	0.194

Sudan	4.385	0.602	0.645	0.616	0.361	0.316	0.208	0.203
Suriname	6.269	0.813	0.818	0.728	0.351	0.297	0.178	0.275
Sweden	7.369	0.871	0.797	0.647	0.223	0.246	0.164	0.127
Switzerland	7.539	0.799	0.802	0.714	0.227	0.278	0.17	0.126
Syria	4.104	0.483	0.602	0.59	0.235	0.544	0.385	0.456
Taiwan	6.26	0.837	0.83	0.757	0.173	0.178	0.073	0.133
Tajikistan	4.871	0.628	0.638	0.712	0.232	0.246	0.156	0.192
Tanzania	3.634	0.701	0.746	0.723	0.309	0.219	0.202	0.164
Tennessee	6.837	0.839	0.805	0.69	0.281	0.325	0.197	0.142
Texas	7.044	0.849	0.836	0.71	0.232	0.312	0.179	0.145
Thailand	6.182	0.841	0.855	0.802	0.25	0.262	0.098	0.136
The Gambia	4.118	0.762	0.914	0.625	0.541	0.394	0.253	0.185
Togo	3.427	0.486	0.634	0.58	0.501	0.617	0.369	0.283
Trinidad & Tobago	6.394	0.845	0.86	0.647	0.237	0.261	0.19	0.194
Tunisia	4.816	0.564	0.596	0.642	0.384	0.45	0.161	0.291
Turkey	5.35	0.513	0.588	0.632	0.219	0.352	0.339	0.373
Turkmenistan	5.738	0.711	0.569	0.712	0.308	0.233	0.212	0.18
Uganda	4.249	0.641	0.705	0.679	0.382	0.385	0.296	0.283
Ukraine	4.689	0.618	0.578	0.558	0.284	0.313	0.212	0.136
United Arab Emirates	6.897	0.758	0.778	0.806	0.294	0.332	0.191	0.218
United Kingdom	6.873	0.824	0.818	0.691	0.207	0.264	0.177	0.132
United States	7.081	0.837	0.81	0.685	0.292	0.382	0.22	0.178
Uruguay	6.316	0.827	0.833	0.721	0.314	0.433	0.207	0.137
Utah	7.037	0.877	0.833	0.685	0.238	0.343	0.164	0.129
Uzbekistan	5.775	0.871	0.707	0.845	0.205	0.152	0.115	0.167
Venezuela	6.191	0.78	0.858	0.754	0.256	0.36	0.19	0.161
Vermont	6.909	0.852	0.814	0.704	0.238	0.302	0.168	0.124
Vietnam	5.3	0.465	0.768	0.745	0.124	0.326	0.192	0.121
Virginia	6.978	0.851	0.821	0.704	0.223	0.302	0.162	0.133
Washington	6.924	0.86	0.828	0.696	0.26	0.314	0.167	0.13
West Virginia	6.696	0.815	0.776	0.653	0.334	0.357	0.22	0.158
Wisconsin	6.82	0.858	0.827	0.717	0.227	0.289	0.152	0.129
Wyoming	7.039	0.873	0.816	0.714	0.249	0.289	0.137	0.109
Yemen	4.014	0.543	0.512	0.546	0.334	0.385	0.208	0.27
Zambia	4.749	0.706	0.751	0.67	0.312	0.387	0.252	0.214
Zimbabwe	4.167	0.696	0.758	0.641	0.254	0.309	0.17	0.126

Appendix Table 5. Correlation Matrix in the micro data, 2008-2017

correl cantril enjoy smile wellrested pain sad worry anger pos neg if year>=2008 & year<2018  
 (obs=3,293,125)

	cantril	enjoy	smile	wellre~d	pain	sad	worry	anger	ositive	negative
cantril	1.0000									
enjoy	0.2786	1.0000								
smile	0.2296	0.4613	1.0000							
wellrested	0.1753	0.3088	0.2656	1.0000						
pain	-0.1821	-0.1951	-0.1604	-0.2357	1.0000					
sad	-0.2203	-0.2849	-0.2467	-0.2163	0.2550	1.0000				
worry	-0.2366	-0.2702	-0.2254	-0.2616	0.2687	0.4420	1.0000			
anger	-0.1701	-0.2077	-0.1791	-0.1792	0.1792	0.3276	0.2975	1.0000		
positive	0.3015	0.7719	0.7570	0.7218	-0.2646	-0.3310	-0.3371	-0.2512	1.000	
negative	-0.2962	-0.3489	-0.2951	-0.3285	0.6389	0.7252	0.7581	0.6186	0.4326	1.000

Appendix Table 6. GWP sample sizes, 2008-2017

USA Daily Tracker	2,575,022	Denmark	10,746	Latvia	7,959	Portugal	10,931	Uzbekistan	9,799
USA GWP	12,170	Djibouti	4,979	Lebanon	14,026	Puerto Rico	500	Venezuela	9,911
Afghanistan	11,898	Dominican Republic	9,874	Lesotho	2,944	Qatar	6,944	Vietnam	593
Albania	9,000	Ecuador	9,979	Liberia	5,877	Romania	8,899	Yemen	899
Algeria	8,033	Egypt	19,789	Libya	3,973	Russia	22,494	Zambia	8,933
Angola	3,942	El Salvador	9,820	Lithuania	8,807	Rwanda	8,967	Zimbabwe	9,946
Argentina	9,971	Estonia	8,184	Luxembourg	8,983	Saudi Arabia	15,327		
Armenia	9,921	Eswatini	1,000	Madagascar	7,966	Senegal	9,942		
Australia	9,994	Ethiopia	6,461	Malawi	7,984	Serbia	9,014		
Austria	10,978	Finland	9,728	Malaysia	8,967	Sierra Leone	7,831		
Azerbaijan	9,838	France	11,687	Mali	9,886	Singapore	10,521		
Bahrain	13,168	Gabon	6,956	Malta	8,998	Slovakia	7,975		
Bangladesh	11,876	Georgia	10,006	Mauritania	12,864	Slovenia	9,478		
Belarus	10,168	Germany	35,065	Mauritius	3,981	Somalia	3,173		
Belgium	10,000	Ghana	9,898	Mexico	10,990	Somaliland region	7,000		
Belize	501	Greece	8,986	Moldova	9,833	South Africa	10,981		
Benin	7,784	Guatemala	9,730	Mongolia	8,932	South Korea	11,797		
Bhutan	3,016	Guinea	6,897	Montenegro	8,966	South Sudan	3,877		
Bolivia	9,773	Haiti	4,508	Morocco	9,920	Spain	11,995		
Bosnia and Herzegovina	9,001	Honduras	9,837	Mozambique	3,936	Sri Lanka	10,167		
Botswana	8,940	Hong Kong	8,273	Myanmar	6,609	Sudan	7,571		
Brazil	11,060	Hungary	9,025	Nagorno-Karabakh	996	Suriname	490		
Bulgaria	8,956	Iceland	3,602	Namibia	1,972	Sweden	10,706		
Burkina Faso	8,921	India	41,684	Nepal	10,676	Switzerland	6,500		
Burundi	3,993	Indonesia	12,062	Netherlands	9,738	Syria	11,304		
Cambodia	10,496	Iran	11,436	New Zealand	9,001	Taiwan	9,913		
Cameroon	10,081	Iraq	14,800	Nicaragua	9,696	Tajikistan	9,944		
Canada	12,088	Ireland	10,470	Niger	9,944	Tanzania	9,991		
Central African Republic	3,967	Israel	9,978	Nigeria	8,915	Thailand	10,945		
Chad	9,926	Italy	11,976	Northern Cyprus	4,982	The Gambia	981		
Chile	10,217	Ivory Coast	5,927	North Macedonia	9,075	Togo	5,914		
China	46,407	Jamaica	1,966	Norway	7,977	Trinidad & Tobago	2,004		
Colombia	9,927	Japan	13,939	Oman	1,998	Tunisia	12,232		
Comoros	6,989	Jordan	13,973	Pakistan	16,205	Turkey	11,943		
Congo (Kinshasa)	7,960	Kazakhstan	9,772	Palestine	13,975	Turkmenistan	7,959		
Congo Brazzaville	7,365	Kenya	11,165	Panama	9,952	Uganda	9,886		
Costa Rica	9,928	Kosovo	10,065	Paraguay	8,948	Ukraine	9,922		
Croatia	8,807	Kuwait	12,932	Peru	9,862	UAE	16,657		
Cyprus	8,473	Kyrgyzstan	9,904	Philippines	10,960	UK	31,178		
Czech Republic	9,056	Laos	3,751	Poland	9,841	Uruguay	9,888		