



PROSPERITY INDEX

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The United States Prosperity Index

Methodology Report

2020

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The Walton Family Foundation is, at its core, a family-led foundation. Three generations of the descendants of our founders, Sam and Helen Walton, and their spouses, work together to lead the foundation and create access to opportunity for people and communities. We work in three areas: improving K-12 education, protecting rivers and oceans and the communities they support, and investing in our home region of Northwest Arkansas and the Arkansas-Mississippi Delta.



The Legatum Institute would like to thank the Legatum Foundation for their sponsorship and for making this report possible. Learn more about the Legatum Foundation at www.legatum.org

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Introduction

Our mission at the Legatum Institute is to create a global movement of people committed to creating the pathways from poverty to prosperity and the transformation of society. We analyze the many complex drivers of prosperity at a local, national, and global level to help understand how it is created and perpetuated.

Genuine prosperity is about far more than a society's economy or an individual's financial wealth; it represents an environment in which everybody is able to reach their full potential. A nation is prosperous when it has effective institutions, an open economy, and empowered people who are healthy and educated.

The measurement of prosperity is an important task for all leaders, and for those who hold them to account. It is the real test of whether a nation, state, or community is truly fulfilling the potential of its people, in terms of both their productive capacity and their collective wellbeing. Our Indexes deliberately combine the wide range of elements that drive prosperity, in order to help policymakers and influencers focus on the broader implications of institutional, economic, and social policies.

In 2019, we published the inaugural United States Prosperity Index, seeking to explore why the undeniable economic success of the United States was not translating fully into social wellbeing across the 50 states of the Union and Washington D.C. We are very grateful to the 40 U.S. experts, who advised us on how prosperity is generated within the United States and with the selection of the most appropriate datasets on how to measure it. A list of the experts can be found on our website: www.usprosperity.net.

This year's report presents an update on the prosperity of the 50 states and D.C., as well as providing a brand-new, in-depth analysis

of prosperity across 829 counties in eight selected states (California, Colorado, Georgia, Iowa, Montana, New York, Oklahoma, and Texas).

These Indexes have been purposefully designed to be transformational tools that complement each other. The comprehensive set of indicators provides a rich and policy-focused dataset, allowing the potential of all states (and all counties in the selected states) to be identified and understood. This enables much more targeted policy responses that can drive tangible improvements in prosperity. Our ambition is that national, state, and local governments, business leaders, investors, philanthropists, and civil society leaders across the U.S. will use the Index to help set their agendas for growth and development, and that others will use it to hold them to account.

This report describes the methodology underpinning the production of the United States Prosperity Index, at a state and county level, through four parts. Part I defines U.S. prosperity, using knowledge built up over the 13 years of measuring and studying prosperity at the global level. Part II addresses and explains moving from definition to measurement, how indicators have been selected to fit the prosperity framework in the U.S., and the process of going from these indicators to an overall measure of prosperity. Part III assesses the U.S. Prosperity Index, exploring the statistical properties of the Index, and the tests undertaken, as well as comparing the Index with other U.S. indexes. Part IV highlights the amendments and refinements to the Index since last year, and their impact on the findings.

Our aim in publishing this methodology report is to provide all the information required to understand the United States Prosperity Index and to present it in a way that is transparent, useful, and informative.

Part I

Defining prosperity

What is prosperity?

In over 13 years of measuring and understanding prosperity at a global level, it has become evident that the multidimensional nature of true prosperity must be clearly articulated. Prosperity entails much more than wealth: it reaches beyond the financial into the political and judicial realms, as well as the wellbeing and character of people — it is about creating an environment where a person is able to reach their full potential. The following section outlines the definition of prosperity that underpins the United States Prosperity Index, describing its core components and structures.

Prosperity is multifaceted and cannot be defined by simple linear measures. It is a multidimensional concept, which the United States Prosperity Index seeks to measure, explore, and understand as fully as possible. The framework of the Index captures prosperity through three domains, which are the essential foundations of prosperity — Inclusive Societies, Open Economies, and Empowered People.

The domains of prosperity

The **Inclusive Societies** domain captures the relationship structures that exist within a society, between and among individuals and broader institutions, and the degree they either enable or obstruct societal cohesion and collective development. These social and legal institutions are essential in protecting the fundamental freedoms of individuals, and their ability to flourish. This domain consists of the Safety and Security, Personal Freedom, Governance, and Social Capital pillars.

The **Open Economies** domain captures the extent to which an economy is open to competition, encourages innovation and investment,

promotes business and trade, and facilitates inclusive growth. For a society to be truly prosperous, it requires an economy that embodies these ideals. This domain consists of the Business Environment, Market Access and Infrastructure, and Economic Quality pillars.

The **Empowered People** domain captures the quality of people's lived experience and the associated aspects that enable individuals to reach their full potential through autonomy and self-determination. This domain consists of the Living Conditions, Health, Education, and Natural Environment pillars.

Together, these domains comprise 11 pillars. It is important to note that the pillars within each domain do not only associate with other pillars in the domain, but interrelate with pillars across the other domains, and each pillar should therefore be understood in the wider context of the Index. For example, the Living Conditions pillar looks at the set of basic material conditions present in everyday life that provide the platform for members of society to attain prosperity and wellbeing. Other necessities for wellbeing, such as health, education, and freedom from coercion, are captured in other pillars.

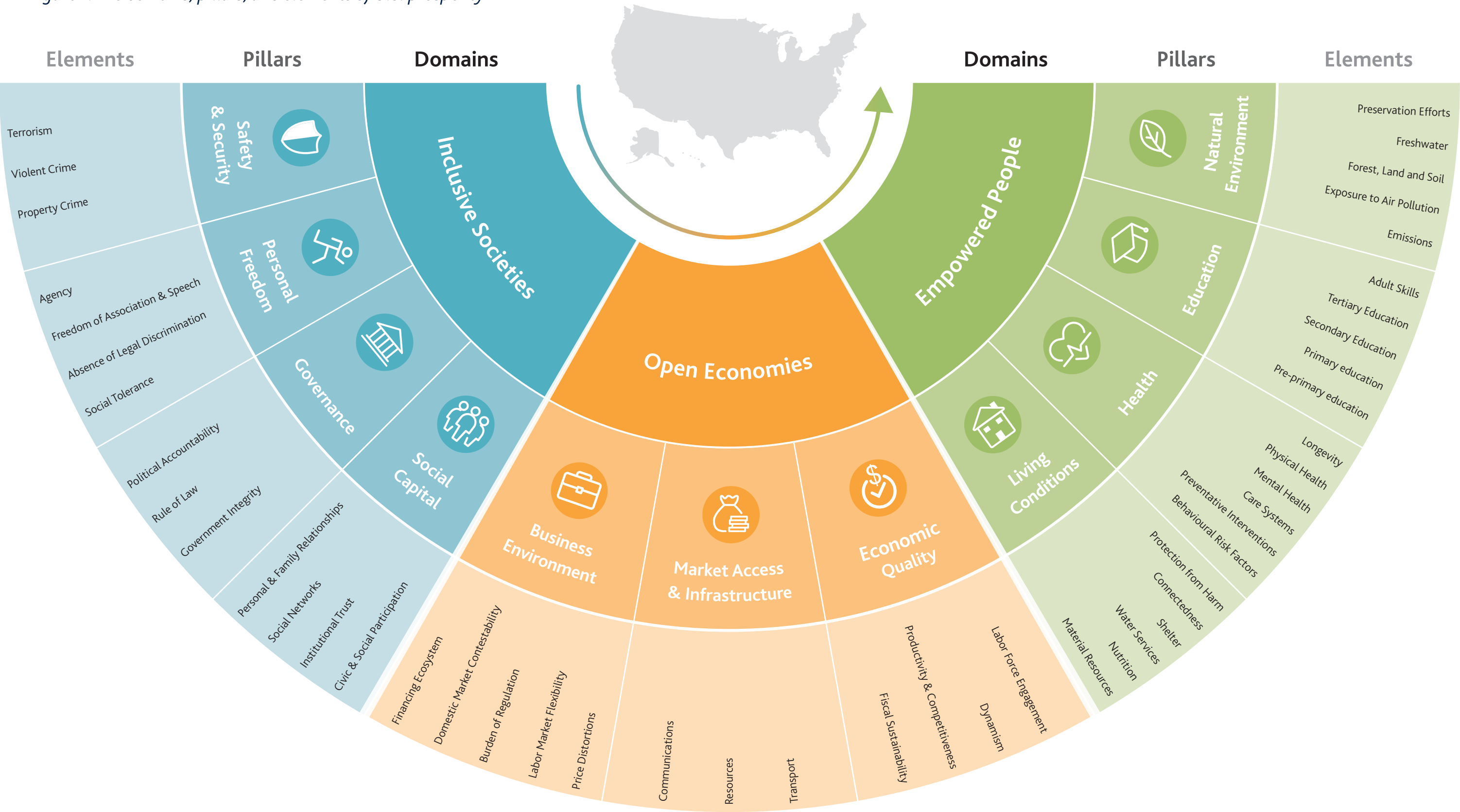
For each of the 11 pillars within the three domains, we identified the core distinct concepts that best define them, and are integral to each of them, comprising a structure which:

- Covers all aspects relevant to the pillar;
- Has conceptual clarity and academic backing;
- Uses a language that speaks to policymakers.

The result is a set of 48 distinct policy-focused elements, organised under the 11 pillars. Each element has been designed to reflect a discrete policy area that policymakers and others can influence, enabling actionable insight to be generated from the Index to help drive policy and other initiatives.

An infographic that sets out the structure of the 2020 United States Prosperity Index, and the linking of the 3 domains, 11 pillars, and 48 elements is illustrated on the next page (Figure 1). The pages that follow give clarity and greater detail to the definition of each of the domains, pillars, and elements underpinning this structure.

Figure 1: The domains, pillars, and elements of U.S. prosperity



Inclusive Societies

Inclusive Societies are an essential requirement for prosperity, where social and legal institutions protect the fundamental freedoms of individuals, and their ability to flourish. This domain explores the relationship structures that exist within a society, and the degree to which they either enable or obstruct societal cohesion and collective development.

Areas within this domain range from the relationship of citizen and state, to the degree to which violence permeates societal norms, to the interaction of freedoms of different groups and individuals, to the way in which individuals interact with one another, their communities, and institutions. These issues have been both a practical consideration for the majority of modern human experience, as well as a subject of academic study.

We examine the fundamental aspects of inclusive societies across four pillars, each with component elements.

Safety and Security measures the degree to which individuals and communities are free from terrorism, violent crime, and property crime. The lives of individuals, their freedoms, and the security of their property are at risk in a society where these activities are present, both through their current prevalence, and long-lasting effects. In short, a community or society can prosper only in an environment of security and safety for its citizens.

Personal Freedom measures basic legal rights (agency), individual liberties (freedom of assembly and association, freedom of speech and access to information), the absence of legal discrimination and the degree of social tolerance experienced in a society. Societies that foster strong civil rights and freedoms have been shown to enjoy increased levels of satisfaction among their citizens. Furthermore, society benefits from higher levels of income when its citizens' personal liberties are protected and when it is welcoming of the diversity that stimulates innovation.

Governance measures the extent to which there are checks and restraints on power, and whether governments operate effectively and without corruption. It also assesses the degree to which there is political accountability, both in the way of representation in state legislatures and how well each state runs national elections. The nature of governance has a material impact on its prosperity.

Social Capital measures the strength of personal and family relationships, social networks and the cohesion a society experiences when there is high institutional trust, and people respect and engage with one another (civic and social participation). A person's wellbeing is best provided for in a society where people trust one another and have the support of their friends and family. Societies with lower levels of trust tend to experience lower levels of economic growth. Thus, the word "capital" in "social capital" highlights the contribution of social networks as an asset that produces economic returns and improves wellbeing.

The following pages provide a more detailed definition for each of these pillars, and an overview of their relationship to prosperity.

Safety and Security

The presence or absence of violent and other criminal activities determines how safe and secure the population is. The lives of individuals and the security of their property are at risk in a society where these activities are present. The effect that crime has on both economic growth, and subjective wellbeing, is widely explored in the literature. Crime impedes economic growth via the discouragement of investment and capital accumulation, through an undermining of property rights.¹

At its most destabilizing level, as elucidated by Mehlum et al., economies have two potentially stable equilibria, "a) One where crime rates are high and capital stock, labor demand, and income is low. b) One where crime rates are low and capital stock, labor demand, and income is high."² Endemic crime can result in an economy finding a so called 'poverty trap', where crime becomes the most effective means of individual gain, but acts as a break on real opportunity for development. Mehlum concludes by establishing the existence of the "vicious circle of increasing crime and stagnation".³

In addition to the economic impacts, crime affects the wellbeing of individuals and communities in several ways. The impact of the trauma of crime on the direct victims and their loved ones can be profound and devastating, and Graham (2011) concluded that being a victim of crime always has a negative effect on happiness.⁴ Scholars such as Cohen argue that crime has relatively little effect on the sum wellbeing of a community due to 'adaptation to adversity', where individuals effectively 'get used to' higher levels of crime, and the "risk-fear paradox" as coined by Farral, Gray & Jackson shows that the direct relationship between crime and individual wellbeing is not straightforward; those who are more at risk of crime are likely to exhibit and experience less fear.^{5,6}

In addition, the detriment to the wellbeing of people may be found through the indirect effects of crime. Crime may have even more acute effects on individual neighborhoods, and the individuals who reside in or around them. High levels of crime, lawlessness, or gang activity can create 'no-go' areas through which residents and locals don't move that can discourage individual opportunity via the prevention of travel for work or other purposes, and have distinct effects on individual wellbeing, undermining governance.⁷ This particular pervasive effect of crime is the reason for the large number of community-based crime-prevention efforts, the largest of which in the U.S. is the Neighborhood Watch program.⁸

For a society or community to be truly safe and secure, there must be an absence of both domestic and national security risks. The effects of mass shootings and terrorism can be pervasive. The damage done by such events reaches far beyond the event itself; communities must rebuild themselves, cope with grief, and address psychological traumas arising from the atmosphere created. For this reason, the Terrorism element captures the extent to which such events have destabilised societies over the past five years.

Elements of Safety and Security

1. **Terror-related Crime** — The effect of terrorism and mass shootings on both individuals and communities.
2. **Violent Crime** — The level to which violent domestic crime affects residents, encompassing homicide, aggravated assault, rape, and robbery.
3. **Property Crime** — The level to which property crime, such as arson and burglary, destabilize the security of individuals.

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2. Mehlum, Halvor, Karl Moene, and Ragnar Torvik. "Institutions and the resource curse." *The Economic Journal* 116, no. 508 (2006): 1-20.

3. Ibid.

4. Graham, Carol. "Adaptation amidst prosperity and adversity: Insights from happiness studies from around the world." *The World Bank Research Observer* 26, no. 1 (2010): 105-137.

5. Cohen, Mark A. "The effect of crime on life satisfaction." *The Journal of Legal Studies* 37, no. S2 (2008): S325-S353.

6. Farral, Stephen, Emily Gray, and Jonathan Jackson. "Theorising the fear of crime: The cultural and social significance of insecurities about crime." Working Paper 5, *Experience & Expression in the Fear of Crime* (2007).

7. Wilson, Ronald E., Timothy H. Brown, and Beth Schuster. "Preventing neighborhood crime: Geography matters." *National Institute of Justice Journal* 263 (2009): 30-35.

8. Ibid.

Personal Freedom

The Personal Freedom pillar measures the progress towards basic legal rights, individual liberties, and social tolerance. Our definition of freedom takes root in the school of thought that has permeated modern liberal thinking for the past few centuries, with roots in John Locke's assertion that freedom implies an individual not "be subject to the arbitrary will of another, but freely follow his own."⁹ Isaiah Berlin best articulated the concept of freedom that underpins the Personal Freedom pillar as "negative liberty" (the concept of non-interference by others), whereas "positive liberty", which is the removal of impediments to one's fulfilment or potential, is not a consideration of our measurement.¹⁰

When freedom is restricted it becomes more difficult for people to live their lives in the ways that they choose. Freedom is important because it underpins personal flourishing, enabling people to pursue their ambitions and follow their paths in life. With freedom also comes responsibility for actions. When individuals are responsible for their own actions, and free to test new ideas and ways of acting, they can learn from mistakes and all can benefit from the innovations. Societies that foster strong civil rights and freedoms have been shown to enjoy increased levels of both happiness and life satisfaction among their residents, with the satisfaction effect being more pronounced in more developed countries, such as the U.S.^{11,12,13}

The concepts covered in our personal freedom pillar are considered protected by America's signature on international human rights treaties, along with the Constitution.

A society benefits from higher levels of income when its residents' personal liberties are protected and when it is welcoming of the social diversity that stimulates innovation. There are four pathways through which human freedom can spur economic growth: reduced economic inequality, human development, effective institutions and governance, and the absence of conflict and political instability.¹⁴

The relationship between free societies and economic progress is questioned more often today due to the successful development of authoritarian nations such as China or Singapore. There are clearly many paths to development through an economic lens, but Sen argues that human rights are not the primary end of development, but among the principle means; they constitute a necessary condition for income and growth.¹⁵

Civil and political freedoms such as freedom of speech and elections help promote economic security. Uncertainty associated with lack of respect for human rights makes the return on investment more insecure and volatile. This suggests that disregarding human rights may lead to lower investment rates, lower productivity, and lower growth.

The definition of Personal Freedom can be separated into those elements that capture freedom for the population as a whole to act in all its forms (including freedom of movement, assembly, and speech), and elements that impact specific subsets of the population, whether through de jure discrimination or the de facto experience of freedom and tolerance.

Elements of Personal Freedom

1. **Agency** — The degree to which individuals are free from coercion or restriction and are free to move. Indicators such as incarceration rates and shootings of civilians by lawmakers are used to proxy the degree to which people's agency is restricted by state actors;
2. **Freedom of Association & Speech** — The degree to which people have the freedom to engage themselves in the civic sphere in collective interest groups, and the degree to which they are free to share ideas in public forums;
3. **Absence of Legal Discrimination** — The degree to which there is no discrimination by law, and how much the law protects individuals and groups from suffering discrimination;

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15. Sen, Amartya. "Development as Freedom (New York: Anchor)." *SOUTH INDIAN ICT CLUSTERS* 227 (1999).

4. **Social Tolerance** — The degree to which societies are tolerant of differences within the population, and the level of tension arising over differences in identity. Societal discrimination and intolerance can engender serious issues within a society and are a significant inhibitor of individual's de facto freedoms.

Governance

Stable and trustworthy governance is one of the central and underlying components of economic exchange. The more culturally embedded the rule of law and good governance becomes, the more effective these measures are in promoting and supporting a healthy economic environment. Governance is at its most robust when it has been established over time through natural evolution and is essentially a codification of cultural expectations and behaviors.¹⁶

The importance of strong governmental institutions to long-run economic growth cannot be overstated; it has been shown that institutional capacity was more important to long-term success than discrete policy choices.¹⁷ Even when controlling for extraneous factors such as culture, there is evidence that economic institutions are one of the main determinants in differences in economic prosperity, and that these effects can last for centuries.¹⁸ Replications of these findings have shown that institutions are more important to long-run growth than either trading or geographic factors.¹⁹

Economic progress is not possible without the firm foundation of the rule of law. The absence of the rule of law will result in depressed domestic and foreign investment, and cronyism in the business environment, leading people to rely primarily on personal networks and patronage rather than the strength of their own ideas. The rule of law has also been linked to important improvements in personal freedoms.²⁰ Improvements in governance have a dramatic effect on raising overall economic prosperity. A recent study has shown that a shift to democracy leads to a 20% increase in GDP per capita in the long run.²¹ However, once an effective base of trustworthy governance has been achieved, the effects of further improvements to governance are subject to diminishing returns.

The minimization of corruption is also critical to the functioning of a society. High levels of corruption are associated with higher levels of poverty and income inequality.²² Corruption will corrode trust, which is critical to ensuring an environment where frictionless (or near-frictionless) transactions can take place. A culture of trust invariably takes time to become established. These attributes are more valuable if good behaviors, such as trust, respect, and diligence are embedded in a culture, as opposed to imposed from some outside force as a part of a treaty or international agreement.

Governance can be conceptually split between the structural and operational aspects of how political and administrative power is checked, and how it is applied. The structural aspects capture how a government and political administration adhere to the law, the extent to which there is accountability to the public, and the rule of law. The operational aspects capture the integrity of a government.

Elements of Governance

1. **Political Accountability** — The extent to which the public can hold public institutions accountable (e.g. elections), ensuring power transitions according to law. It also captures the degree of political pluralism and other mechanisms of accountability;
2. **Rule of Law** — Captures the fairness, independence, and effectiveness of the judiciary (in applying both civil and criminal law), along with the accountability of the public to the law;
3. **Government Integrity** — assesses the integrity of a government, encompassing both the absence of corruption, and the degree to which government fosters citizen participation and engagement, through open information and transparent practices.

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22. Gupta, Sanjeev, Hamid Davoodi, and Rosa Alonso-Terme. "Does corruption affect income inequality and poverty?." *Economics of Governance* 3, no. 1 (2002): 23-45.

Social Capital

Social Capital represents the networks and the cohesion a society experiences when people trust and respect one another. Loosely, social capital refers to the factors of effectively functioning social groups, encompassing interpersonal relationships, a shared sense of identity, norms, values, trust, co-operation, and reciprocity, but there is no clear consensus on its exact definition. It can be considered as a social organization facilitating the achievement of goals that could not be achieved in its absence, or could be achieved only at a higher cost, or in other words the existence of a certain set of informal rules or norms shared among members of a group that permits cooperation among them.^{23, 24} Alternatively, it has also been described as the connections among individuals — social networks — and the norms of reciprocity and trustworthiness that arise from them.²⁵

A person's wellbeing is best provided for in a society where people trust one another and have the support of their friends and family. The link between social capital and wellbeing in forms from health, education, to political participation and good governance has been widely explored.^{26, 27}

The process by which it operates has been described as follows: (1) social capital generates positive externalities for members of a group; (2) these externalities are achieved through shared trust, norms, and values, and their consequent effects on expectations and behavior; (3) shared trust, norms, and values arise from informal forms of organizations based on social networks and associations.²⁸

In general, higher trust environments correlate with higher life satisfaction, subjective wellbeing, and health, and that the frequency of interaction with friends and neighbors has a strong correlation with higher assessments of subjective well-being and health.²⁹

Societies with lower levels of trust tend to experience lower levels of economic growth. Thus, the word 'capital' in 'social capital' highlights the contribution of social networks as an asset that produces economic returns and improves wellbeing. For example, it has been argued that Northern Italy developed faster than Southern Italy because the former was better endowed with social capital — measured by membership in groups and clubs.³⁰

The networks of social capital can operate on a range of different dimensions — with different effects. Hence, we measure a range of elements of social capital, ranging from relationships with family and close personal friends, to social networks, including generalized trust. We also consider institutional trust, and civic and social participation.

Elements of Social Capital

1. **Personal and Family Relationships** — captures the strength of the closest-knit personal relationships and family ties. These relationships form the core structure that individuals can turn to for support emotionally, mentally, and financially on a daily basis.
2. **Social Networks** — measures the strength of, and opportunities provided by, ties that an individual has with people in their wider network. These ties are a vital part of social support, and these networks can bolster bridging capital when social and community networks straddle different strata within society. Local social networks depend on building and maintaining relationships with other individuals and families, including neighbors.
3. **Institutional Trust** — captures the degree to which individuals trust their institutions. Trust in institutions is an important foundation upon which the legitimacy and stability of political systems are built.

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30. Putnam, Robert D., Robert Leonardi, and Raffaella Y. Nanetti. *Making democracy work: Civic traditions in modern Italy* (Princeton University Press, 1994).

4. **Civic & Social Participation** — measures the amount to which people participate within a society, broadly split into the civic and social spheres.

Open Economies

Open Economies encourage innovation and investment, promote business and trade, and facilitate inclusive growth. This domain captures the extent to which the economies of each state embody these ideals. Without an open, competitive economy, it is very challenging to create lasting social and economic wellbeing where individuals, communities, and businesses are empowered to reach their full potential. Trade between states, communities, and other nations is fundamental to the advance of innovation, knowledge transfer, and productivity that creates economic growth and prosperity. Research shows that open economies are more productive, with a clear correlation between increased openness over time and productivity growth. In contrast, in an uncompetitive market, or one that is not designed to maximize welfare, growth stagnates, and crony capitalism thrives, with knock-on impacts elsewhere in society.

One of the biggest opportunities for policymakers is to resist protectionism and cronyism, and to actively reinvigorate an agenda that embraces open and pro-competitive economies, both domestically and internationally, that attracts innovation, ideas, capital, and talent. While most policymakers focus on the big fiscal and macro-economic policy tools at their disposal, the microeconomic factors are sometimes overlooked, and their potential to drive openness and growth is underestimated.

With a focus on these microeconomic factors, we examine the fundamental aspects of open economies across three pillars, each with component elements.

Business Environment measures the amount and variety of investment finance available (Financing Ecosystems) and how easy it is for businesses to start, compete, and expand (Domestic Market Contestability). Contestable markets with low barriers to entry and adequate pools of funding are important for businesses to innovate and develop new ideas. This is essential for a dynamic and enterprising economy, where the Burden of Regulation and any inhibitors on the flow of goods and services between businesses (Price Distortions), enables, rather than hinders business and responds to the changing needs of society and ensures Labor Market Flexibility.

Market Access and Infrastructure measures the quality of the infrastructure that enables trade (Communications, Transport, and Resources). Where markets have sufficient infrastructure and few barriers to trade, they can flourish. Such trade leads to more competitive and efficient markets, allowing new products and ideas to be tested, funded, and commercialized, ultimately benefiting consumers through a greater variety of goods at more competitive prices.

Economic Quality measures how robust an economy is (Fiscal Sustainability) as well as how an economy is equipped to generate wealth (Productivity and Competitiveness, Dynamism). A strong economy is dependent on high labor force engagement and the production and distribution of a diverse range of valuable goods and services.

The following pages provide a more detailed definition for each of these pillars, and an overview of their relationship to prosperity.

Business Environment

A healthy economy is a dynamic and competitive one, where regulation supports business, allowing and encouraging it to respond to the changing priorities of society. Entrepreneurial activity is one of the key drivers of long-term prosperity, and its importance will only grow as the pace of technological change increases and the number of people involved in that change rises. Given the pace of change inherent to the information age, the ability to react quickly to new firm and market level opportunities is critical to overall prosperity. This entrepreneurial behavior is especially important for the employment market and tax revenues. A state's regulatory structure underpins its business environment.

Financial depth and complexity, which ensures that adequate capital of the right type is available for investable propositions, is robustly and positively correlated with economic growth.^{31,32} A well-functioning financial system is highly effective at mobilizing savings and investments that support entrepreneurs and innovations that are vetted by their potential to improve productivity.³³

The regulatory structure needs to encourage and support enterprise, if entrepreneurial activity is to flourish, and is also important in determining how people interact with businesses in any given state. Where these elements are not in good working order, it is difficult to encourage formal business activity. Taxation, for example, is a critical factor in deciding where and how businesses are structured. If it is not made both simple and reasonable, it will be avoided.³⁴ In addition to

the taxation structure, it is clear that overburdening businesses with tough-to-follow regulations does not necessarily discourage business activity; it discourages formalized business activity that can be monitored and taxed by the state, as people seek ways of circumventing burdensome regulation. Highly restricted labor markets will similarly discourage formal employment, opening workers up to instability and the potential for exploitation.³⁵

The quality of a business environment can broadly be separated into those measures that promote entrepreneurship, and those that limit commercial development. These two groups of elements express the factors which might persuade or dissuade an individual from going into business.

Domestic market contestability, which measures how open the market is to new participants, versus protections in place for incumbents, falls into the former category, as does financing ecosystems. The growth in the sophistication of financial markets over the last four decades has been considerable, and the appreciation of the role of capital in economic growth and prosperity has been growing.^{36,37,38} As evidenced from studies in the United States, financial depth and sophistication have become more important than ever for the availability of venture capital, which provides critical early-stage funding to new companies.^{39,40}

The burden of regulation, which captures the amount of government regulation, can limit commercial development, as can price distortions which include subsidies and taxes as disrupters of fair competition.

31. De Gregorio, Jose, and Pablo E. Guidotti. "Financial development and economic growth." *World Development* 23, no. 3 (1995): 433-448.

32. See for example: Levine, Ross. "Finance, growth and economic prosperity." *Macroeconomic Review* (2018): 82-88.

33. King, Robert G., and Ross Levine. "Finance, entrepreneurship and growth." *Journal of Monetary Economics* 32, no. 3 (1993): 513-542.

34. Mankiw, N. Gregory, Matthew Weinzierl, and Danny Yagan. "Optimal taxation in theory and practice." *Journal of Economic Perspectives* 23, no. 4 (2009): 147-74.

35. Radulescu, Roxana, and Martin Robson. "Does labour market flexibility matter for investment? A study of manufacturing in the OECD." *Applied Economics* 45, no. 5 (2013): 581-592.

36. Ross Levine. "Finance and growth: Theory and evidence," chap. 12 in *Handbook of economic growth*, ed. Philippe Aghion and Steven Durlauf, vol. 1 (Amsterdam: Elsevier, 2005): 865-934.

37. Anne O. Krueger. "Financial markets and economic growth." *IMF*, September 28, 2006, <https://www.imf.org/en/News/Articles/2015/09/28/04/53/sp092806>

38. Fischer, Stanley. "The importance of financial markets in economic growth." (lecture given at International Derivatives and Financial Market Conference of the Brazilian Mercantile and Futures Exchange Conference, Brazil, August, 2003): 20-23.

39. Maula, Markku, and Gordon Murray. "Corporate venture capital and the creation of U.S. public companies: The impact of sources of venture capital on the performance of portfolio companies" in *Creating value: Winners in the new business environment* (Oxford: Blackwell Publishers, 2002) : 164-187.

40. Manigart, Sophie, and Harry Sapienza. "Venture capital and growth" in *The Blackwell Handbook of Entrepreneurship* (Oxford: Blackwell Publishers, 2017): 240-258.

Labor market flexibility, which captures how dynamic the workplace is for both employers and employees, also falls into the latter category.

Elements of Business Environment

1. **Financing Ecosystems** — measures the availability of money for investment from sources such as banking and bank debt, to corporate debt and more sophisticated financial markets.
2. **Domestic Market Contestability** — examines how open the market is to new participants, versus protection of the incumbents.
3. **Burden of Regulation** — captures how much effort and time are required to comply with regulations, including tax regulations.
4. **Labor Market Flexibility** — measures how dynamic and flexible the workplace is for both employer and employee.
5. **Price Distortions** — The extent to which competitive markets are disrupted by subsidies and taxes.

Market Access and Infrastructure

Trade enables the movement of goods, services, ideas, capital, and people. Our Market Access and Infrastructure pillar measures the quality of the infrastructure that enables trade (Communications, Resources, and Transport). Where markets have sufficient infrastructure and few barriers to the exchange of goods and services, trade can flourish. Such trade leads to more competitive and efficient markets, enabling new products and ideas to be tested, funded, and commercialized.^{41,42} Unencumbered trade is a vital component of prosperity, delivering benefits to producers, consumers, and society as a whole.⁴³ Producers with access to good transport and communications infrastructure are more likely to succeed than those with de facto barriers. Consumers benefit from the increased competition that freer trade brings, which tends to improve quality, lower prices, and increase the variety of goods and services available.

The infrastructure that enables trade and commerce to operate can be measured by assessing the critical enablers of trade. Trade enablers are

the things that enhance and make trade in all its forms possible. Chief amongst these is communications, where information technology, flowing through a modern communications network, has become the very lifeblood of industry.⁴⁴ Economic production is impossible without the resources of energy and water. Transport, and the infrastructure upon which it operates, is the great enabler of physical trade, but is also vital for services as it allows people to move to seek and build business opportunities.

Elements of Market Access and Infrastructure

1. **Communications** — The quality of communications infrastructure and the extent of communications access.
2. **Resources** — The quality and reliability of the energy network, as well as the access to, and use of, water resources.
3. **Transport** — The quality, diversity, and penetration of all forms of transport, and the quality of the physical infrastructure upon which transport depends, including road, rail, and air.

41. Paul Krugman, "Scale economies, product differentiation, and the pattern of trade" *American Economic Review*, 70, no. 5, (1980): 950-959.

42. Stiglitz, Joseph E., and Avinash K. Dixit, "Monopolistic competition and optimum product diversity" *American Economic Review*, 67, no. 3 (1977): 297-308.

43. Frankel, Jeffrey A., and David H. Romer. "Does trade cause growth?" *American Economic Review* 89, no. 3 (1999): 379-399.

44. Farhadi, Maryam, Rahmah Ismail, and Masood Fooladi. "Information and communication technology use and economic growth." *Public Library of Science ONE* 7, no. 11 (2012): e48903.

Economic Quality

Economic Quality measures how well an economy is equipped to generate wealth sustainably and with the full engagement of its workforce. A strong economy is dependent on the production of a diverse range of valuable goods and services and high labor force participation.

Trust in the economic system is underpinned by predictability, which is important for both consumers and businesses. People are better able to adapt to an unpleasant certainty than uncertainty, as shown in the aftermath of the financial crisis.⁴⁵ Volatility has also long been shown to negatively correlate with economic growth.^{46,47,48}

The ability to produce valuable products, more so than producing the same product faster or at a lower cost, is also vital to economic growth. Acquiring new productive capabilities, thereby evolving a comparative advantage, is one of the cornerstones of economic growth — not just at the forefront of the technological frontier, but also in less-developed economies.^{49,50} A dynamic economy means that more ideas are entering the market, with determinants of long-run productivity growth found to be human capital and research and development.⁵¹

Growth must also be inclusive if it is to improve the prosperity of all. Everyone must have the opportunity to participate in the labor market,

use and develop their skillset, and reach their productive potential. This is important at the level of the individual, as it means that income inequality can be mitigated — this being a key determinant of happiness and subjective wellbeing.^{52,53} In addition to the implications for social wellbeing, it is also important at a more macro-level, as income inequality has negative consequences for aggregate economic potential.^{54,55}

For an economy to be of high quality, it must be robust to shocks, measured in our fiscal sustainability element. This measures both historical stability and the capability of a government to sustain its spending policies into the future. The capacity for value generation is a central aspect of the economy. Increases in the complexity of products, as well as in the efficiency with which they are produced, are central to long-run increases in growth, and captured in the productivity and competitiveness element. For this to happen, there must be a churn of businesses, with new, more productive firms entering the market, which is the focus of the dynamism element. The links between dynamism and productivity growth have been studied widely and suggest that the decline in startup activity, with the concomitant decline in the opportunities for selective pressure and market-share reallocation, is a driver of stagnating productivity growth in the U.S.^{56,57} The final element, labor force engagement, measures the extent to which the

45. Graham, Carol. "Happy peasants and miserable millionaires: Happiness research, economics, and public policy," VOX, January 30, 2010, <https://voxeu.org/article/happy-peasants-and-miserable-millionaires>.

46. Hnatkovska, Viktoria, and Norman Loayza, "Volatility and growth." *The World Bank* (2004).

47. Judson, Ruth, and Athanasios Orphanides. "Inflation, volatility and growth." *International Finance* 2, no. 1 (1999): 117-138.

48. Imbs, Jean. "Growth and volatility." *Journal of Monetary Economics* 54, no. 7 (2007): 1848-1862.

49. Ricardo Hausmann. "What are the challenges of economic growth?" *The Growth Lab*, 2015, <https://growthlab.cid.harvard.edu/publications/what-are-challenges-economic-growth>.

50. Hausmann, Ricardo, and Bailey Klinger. "The structure of the product space and the evolution of comparative advantage." *Center for International Development at Harvard University* 146 (2007).

51. Bronzini, Raffaello, and Paolo Piselli. "Determinants of long-run regional productivity with geographical spillovers: The role of R&D, human capital and public infrastructure." *Regional Science and Urban Economics* 39, 2 (2009): 187-199.

52. Jebb, Andrew T., Louis Tay, Ed Diener, and Shigehiro Oishi. "Happiness, income satiation and turning points around the world." *Nature Human Behaviour* 2, no. 1 (2018): 33.

53. Diener, Ed, and Louis Tay. "Subjective well-being and human welfare around the world as reflected in the Gallup World Poll." *International Journal of Psychology* 50, no. 2 (2015): 135-149.

54. Ferreira, Francisco HG. "Inequality and economic performance: a brief overview to theories of growth and distribution." *World Bank* (1999).

55. Stiglitz, Joseph E. "Inequality and economic growth," in *Rethinking Capitalism*, (Chichester: Wiley-Blackwell, 2016), pp. 134-155.

56. Alon, Titan, David Berger, Robert Dent, and Benjamin Pugsley. "Older and slower: The startup deficit's lasting effects on aggregate productivity growth." *Journal of Monetary Economics* 93 (2018): 68-85.

57. Decker, Ryan A., John Haltiwanger, Ron S. Jarmin, and Javier Miranda. "Declining Dynamism, Allocative Efficiency, and the Productivity Slowdown." *American Economic Review* 107, 5 (2017): 322-26.

growth of the economy is inclusive in terms of the opportunity for everyone to participate in the workforce to the fullest extent.

Elements of Economic Quality

1. **Fiscal Sustainability** — assesses the ability of a government to sustain its current spending, tax, and other policies in the medium to long term.
2. **Productivity and Competitiveness** — captures the efficiency of the labor force, as well as the export value of goods and services.
3. **Dynamism** — examines the churn of businesses — the number of new startups and failed firms entering and exiting an economy.
4. **Labor Force Engagement** — looks at the intersection of demography and the workforce, including the rates of unemployment, participation in the labour force, the level of unemployment, and workforce engagement

Empowered People

Empowered People captures the quality of people's lived experiences and the features present that enable individuals to reach their full potential through autonomy and self-determination. This domain starts with the necessary resources required for a basic level of wellbeing, ranging from levels of material resources, to adequate nutrition, to basic health and education outcomes, access, and quality, and to a safe and clean environment. Many of these issues are inter-related. The pillars in this domain differentiate performance on these fundamental measures of social wellbeing to distinguish where greater numbers of people are disadvantaged and less likely to achieve wellbeing.

We examine the fundamental aspects of empowered people across four pillars, each with component elements.

Living Conditions measures the set of conditions or circumstances that are necessary for all individuals to attain a basic level of wellbeing. This set of circumstances includes a level of material resources, adequate nutrition, and access to basic services and shelter. It also measures the level of connectedness of the population, and the extent to which they are in a safe living and working environment. These enable the individual to be a productive member of society and to pursue prosperity and build a flourishing life.

Health measures health service provision and the health outcomes of a population — including the quality of both mental health and physical health, each of which affects longevity. It also assesses

the set of behavioral risk factors that affect the quality of the population's health, and the quality of the healthcare provision through the lenses of care systems and preventative interventions. For a state to truly prosper, its residents must have good health. Those who enjoy good physical and mental health report high levels of wellbeing, while poor health keeps people from fulfilling their potential.

Education measures the enrollment, outcomes, and quality of four stages of education (pre-primary, primary, secondary, and tertiary education), as well as the adult skills in the population. Education allows people to lead more fulfilling lives, and a better educated population is more able to contribute to society. Over the long-term, education can help to drive economic development and growth while improving social and health outcomes, as well as leading to greater civic engagement.

Natural Environment measures the elements of the physical environment that have a direct impact on the ability of residents to flourish in their daily lives. Also measured is the extent to which the ecosystems that provide resources for extraction (Freshwater and Forest, Land and Soil) are sustainably managed. A well-managed rural environment yields crops, material for construction, wildlife and food, and sources of energy. The extent of preservation efforts is also captured, as these are critical to longer-term sustainability.

The following pages provide a more detailed definition for each of these pillars, and an overview of their relationship to prosperity.

Living Conditions

Living conditions are the set of basic material conditions present in everyday life that provide the platform for members of society to attain prosperity and wellbeing. If these basic materials are present, then poverty — along a multi-dimensional approach — will be avoided. This outcome is a good in itself, and furthermore provides individuals an opportunity to flourish in society.

Decent living conditions are necessary to meet the basic needs of a population, provide central capabilities, and achieve wellbeing. The basic needs approach, as developed by Doyal and Gough, argues that there are a set of basic universal needs, without which there will be a “fundamental disablement in the pursuit of one’s vision of the good.”⁵⁸ The capabilities approach, as developed by Sen and Nussbaum, argues a person’s capability to live a good life is defined in terms of the set of functions one is able to do and to which one has access.^{59,60} Neither of these are possible without a set of adequate living conditions.

Adequate living conditions not only provide intrinsic worth through enabling individuals with wellbeing, they also provide a platform for success. Ensuring basic needs are met is an effective way of maintaining health and furthering education, both of which are key components of human capital and have significant economic benefits to individuals and society. To be productive, individuals should have access to sufficient material resources to provide for themselves and their loved ones, have access to suitable accommodation that is connected to the necessary services, be free from illness or death caused by an unsafe living or working environment, have adequate nutrition and energy intake to be healthy and work effectively, and have sufficient resources to access jobs and technology.

Ensuring all members of society are connected to core activities and services allows individuals the opportunity to include themselves in cultural, economic, and social activities important for human flourishing.

Decent living conditions should address vulnerabilities in society, be they economic shocks, safety in the living and working environment, or food security. This idea of security or vulnerability of living conditions has been captured in the following indicators: liquid asset poverty rate, household food security, and the availability of affordable housing.

Elements of Living Conditions

1. **Material Resources** — measures the proportion of individuals with the minimum amount of resources necessary to survive and attain wellbeing, including the reliability of income and resilience to economic shocks.
2. **Nutrition** — assesses the availability, supply, and diversity of food intake available to individuals to allow them to participate in work, ensure cognitive development, and avoid ill-health.
3. **Water Services** — captures the accessibility, availability, and quality of water facilities required for human wellbeing.
4. **Shelter** — reflects the availability and affordability of accommodation as well as the population without any shelter.
5. **Connectedness** — measures the proportion of individuals that have the ability to access the internet and communicate with members of society outside of their immediate geography.
6. **Protection from Harm** — assesses the safety of the environment in which individuals live and work. This includes accounting for traffic deaths and death from unintentional injuries.

58. Len Doyal and Ian Gough. *A theory of human need* (London: Macmillan International Higher Education, 1991).

59. Amartya Sen and John Muellbauer. *The standard of living* (Cambridge: Cambridge University Press, 1988).

60. Martha C. Nussbaum. *Women and human development: The capabilities approach* (Cambridge: Cambridge University Press 2001).

Health

Health has intrinsic worth, but it also has significant importance in facilitating well-being. Good health allows individuals to flourish and to lead more fulfilling lives than would otherwise be possible and it is shown to positively impact wellbeing. Ill-health can cause poor educational outcomes and can negatively affect productivity.

Health is included in the set of goods required for all individuals to attain wellbeing.⁶¹ Several studies have shown the link between good health and wellbeing, with mental health showing a stronger relationship than physical health.⁶² Conversely, ill-health has been shown to worsen life-satisfaction.⁶³

Health, alongside education, is often considered a key component of human capital, contributing to economic growth. A healthier workforce is more productive as fewer sick days are taken, people are physically and mentally able to work for longer, and there is a greater chance of developing experience.⁶⁴ Better health leads to more creativity and innovation, while poor health (such as stress) can lead to a narrowed perspective and lower productivity. Poor health during childhood can affect educational outcomes through worsening cognitive ability, so improving childhood and infant health is of particular importance for productivity outcomes, though reducing the impact of diseases that affect those of working age is equally important.⁶⁵

There are three conceptual ideas within the Health pillar. The first of these captures behaviors that affect health outcomes. The second captures the health care system, considering both preventative interventions and ongoing care and treatment. The third component captures health outcomes, which has been split into the length of life of the population and the quality of the physical and mental health of the population.

Elements of Health

1. **Behavioral Risk Factors** — assesses the set of lifestyle patterns molded by a complex set of influences that increase the likelihood of developing disease, injury, or illness, or of suffering from premature death.
2. **Preventative Interventions** — measures the extent to which a health system prevents diseases, illnesses, and other medical complications from occurring, to improve quality of life and avoid premature death.
3. **Care Systems** — assesses the accessibility to the health care system, as well as the capacity of that health system to treat and cure diseases and illnesses once they are present in the population.
4. **Mental Health** — captures the level and burden of mental illness on the population, using self-reported and objective measures. Mental health can have a significant impact on an individual's wellbeing and ability to participate effectively in the labour market.
5. **Physical Health** — the level and burden of physical illness on the population. Physical health can have a significant impact on an individual's wellbeing and ability to participate effectively in the labour market.
6. **Longevity** — captures mortality rates at different stages in the lifecycle to differentiate the drivers of longer and shorter life expectancies.

61. Len Doyal and Ian Gough. *A theory of human need* (London: Macmillan International Higher Education, 1991).

62. Paul Dolan, Tessa Peasgood, and Mathew White. "Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective wellbeing," *Journal of Economic Psychology* 29, no. 1 (2008): 94-122.

63. Ahmad Al-Windi, "The relations between symptoms, somatic and psychiatric conditions, life satisfaction and perceived health. A primary care based study," *Health and Quality of Life Outcomes* 3, no. 1 (2005): 28.

64. Robert J. Barro, "Health and economic growth," *Annals of Economics and Finance* 14, no. 2 (2013): 329-366.

65. WHO Commission on Macroeconomics and Health, Working Group 1 & World Health Organization. "Health, economic growth and poverty reduction," *World Health Organization*, 2002.

Education

Education is a building block for prosperous societies; the accumulation of skills and capabilities contributes to economic growth. Education provides the opportunity for individuals to reach their potential and experience a more fulfilled and prosperous life. A better-educated population also leads to greater civic engagement and improved social outcomes — such as better health and lower crime rates.

In general, better-educated workers have a greater choice of work and their skills are more in demand, leading to rises in individual earnings. Recent research has shown that one additional year of schooling results in a 9% increase in hourly earnings, with higher returns for women.⁶⁶

Improved education ultimately leads to productivity gains in the economy.⁶⁷ A labor force that is highly skilled and has the capacity to continually refresh or learn new skills will produce far more than a labor force of the same size that is unskilled. In the workplace, an individual's education will indirectly benefit others, as they are more likely to be productive and may boost the productivity of colleagues through training and management.

Education has been shown to indirectly increase the subjective well-being of individuals as a result of its positive effects on income, employment, health, and crime.⁶⁸ People with higher levels of education are less likely to be unemployed due to the demand of their skills in the workforce. There is evidence that a better-educated person will be healthier as they are more likely to have knowledge of health issues. Better cognitive skills also enable them to maintain better health, and the secondary effect of higher income allows increased health expenditure, and therefore better health outcomes.⁶⁹

While other institutional, legal, and social structures must be in place as well, education can help to empower marginalized parts of society and reduce inequalities. For instance, a basic set of skills, such as being able to make basic inferences and locate needed information, can provide access to opportunity for the disadvantaged in society. Education can support the development of democracy through greater civic participation and social cohesion and has been shown to contribute to stronger social identity, more political engagement, greater tolerance of immigrants, and a cleaner environment.^{70,71,72}

Education can be conceptualized functionally in terms of access, attainment, and quality. Instead, we have incorporated these ideas into a framework that organizes education by level. Education has been split into the four stages of the U.S. education system and the skills of the adult population. Enrollment, outcomes, and quality are measured for each stage of education, and the skills of the adult population are measured by educational attainment.

Elements of Education

1. **Pre-Primary Education** — measures enrollment and quality of early years (Pre-K) education. Pre-school learning and early childhood development has been shown to improve the non-cognitive skills of children.
2. **Primary Education** — measures the enrollment, completion, and quality of education at the primary (K-12 Middle School) stage of education. The critical formative stage of schooling, where enrollment is near-universal, but where large variations in quality persist.
3. **Secondary Education** — measures the enrollment, completion, and quality of education at the secondary (K-12 High School)

66. Psacharopoulos, George, and Harry Anthony Patrinos. *Returns to investment in education: a decennial review of the global literature* (Washington D.C.: The World Bank, 2018).

67. Hanushek, Eric A., and Ludger Wößmann. *The role of education quality for economic growth* (Washington D.C.: The World Bank, 2007).

68. Dolan, Paul, Tessa Peasgood, and Mathew White. "Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective wellbeing." *Journal of Economic Psychology* 29, no. 1 (2008): 94-122.

69. Wigley, Simon, and Arzu Akkoyunlu-Wigley. "Human capabilities versus human capital: gauging the value of education in developing countries." *Social Indicators Research* 78, no. 2 (2006): 287-304.

70. Acemoglu, Daron, Simon Johnson, James A. Robinson, and Pierre Yared. "From education to democracy?" *American Economic Review* 95, no. 2 (2005): 44-49.

71. Milligan, Kevin, Enrico Moretti, and Philip Oreopoulos. "Does education improve citizenship? Evidence from the United States and the United Kingdom." *Journal of Public Economics* 88, no. 9-10 (2004): 1667-1695.

72. "The wellbeing effect of education", *Economic and Social Research Council*, 2014: last accessed July 12 2019, <https://esrc.ukri.org/news-events-and-publications/evidence-briefings/the-wellbeing-effect-of-education/>.

stage of education. Increased years of education (and its quality) improve life outcomes.

4. **Tertiary Education** — measures enrollment, graduation, and quality of education at the tertiary stage, which includes community colleges and universities. Tertiary education is increasingly important at a national level as the knowledge economy plays an ever-larger role.

5. **Adult Skills** — This captures the skill-base of the existing working-age population which is a reflection of the historic quality of education as well as providing a base level for the short-term potential of the economy.

Natural Environment

The Natural Environment pillar captures those elements of the physical environment that have a direct impact on the ability of people to flourish in their daily lives, as well as those that affect the prosperity of future generations.

At the basic level, ecosystems provide the resources for extraction upon which many economies depend. A well-managed rural environment yields crops, materials for construction, wildlife and food, and sources of energy. A healthy climate has an impact on many areas of society: industries such as agriculture rely on healthy soil and favorable weather in order to be fruitful, while recreational activities require that natural resources (such as lakes and reservoirs) are free from pollutants and are well managed. More directly, the quality of people's everyday lived experience is dictated by exposure to environmental health hazards such as air pollution.

Exploiting natural capital in the short term may well result in short-term economic growth. However, change of ecosystems should be managed to ensure degradation does not affect their long-term value.⁷³ Ecosystem degradation, by causing floods, increasing infectious diseases risk, and forcing population displacement, tends to affect the poor disproportionately. Therefore, environmental management is linked closely to poverty alleviation.⁷⁴

Ecosystems provide aesthetic, recreational, and educational services to the human experience, contributing to essential aspects of wellbeing; they can form our sense of identity and community.⁷⁵ Access to green spaces has a direct impact on mental and physical health and an indirect impact on wellbeing by enhancing interactions between

people, and therefore improving social cohesion and creating a sense of belonging.⁷⁶ Noise, temperature, pollution, and crowding increase stress and reduce the ability to cope as well as having detrimental effects on cognitive and social functioning.

The elements of the Natural Environment pillar reflect different aspects of the environment, and also preservation efforts, which encompasses the degree to which the natural environment is being protected for the future. The Emissions and Exposure to Air Pollution elements both cover air quality but distinguish between the effect the quality of the air has on the lived experience of a population and the contribution to damaging the quality of the air.

Elements of Natural Environment

1. **Emissions** — captures the level of emissions and air pollutants. This captures the long-term and short-term pressures placed on the local and global atmosphere due to atmospheric emissions.
2. **Exposure to Air Pollution** — assesses the effect of emissions on a population. This captures the harm and outcomes exposure to air pollution has at the present, regardless of where that pollution comes from.
3. **Forest, Land and Soil** — measures the quality of land, forest, and soil resources.
4. **Freshwater** — assesses the availability and quality of freshwater, and the demands placed on that water availability.
5. **Preservation Efforts** — captures the extent of efforts to preserve and sustain the environment for future generations.

73. Assessment, Millennium Ecosystem. *Ecosystems and human wellbeing*. Vol. 5. (Washington, D.C.: Island press, 2005).

74. Ibid.

75. Ibid.

76. Helliwell, John F., and Christopher P. Barrington-Leigh. "Measuring and understanding subjective well-being," *Canadian Journal of Economics* 43, no. 3 (2010): 729-753.

Part II

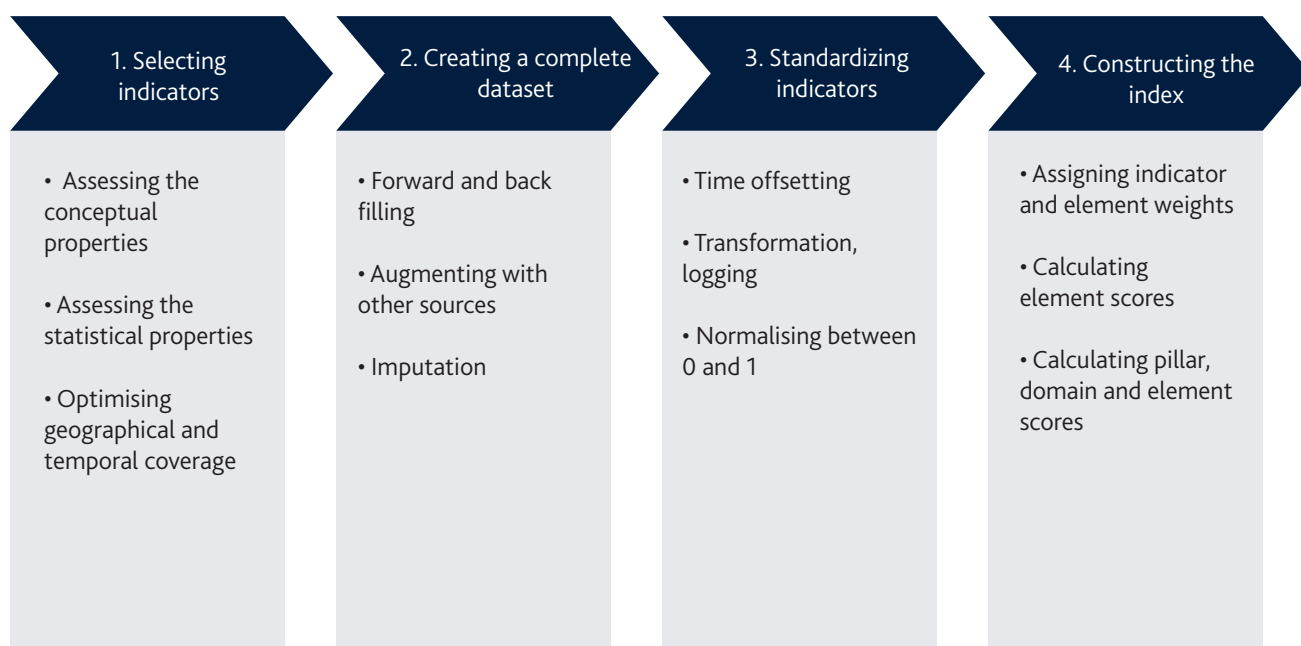
Measuring prosperity

Overview

Using a conceptual framework for measuring prosperity across the U.S. comprising 3 domains, 11 pillars, and underpinned by 48 policy-focused elements, we created a measurement system.

The following section describes the construction of the United States Prosperity Index, at a state and county level, broadly split into four sections: (1) the selection of indicators underpinning each of the 48 elements; (2) creating a complete dataset; (3) standardising the indicators; (4) constructing the Index through a process of transformation and aggregation. This process is outlined in Figure 2, below, with more detail within each stage.

Figure 2: Overview of the calculation of the United States Prosperity Index



1. Selecting indicators

The goal of selecting and organising indicators underneath the framework defining prosperity has been to enable measurement of prosperity for the 50 states of the Union and Washington D.C., and for the 829 counties of the eight selected states (California, Colorado, Georgia, Iowa, Montana, New York, Oklahoma, and Texas). We aim to use a set of indicators that (a) collectively act as a good proxy for the elements, and (b) have good geographic and temporal coverage.

The United States Prosperity Index was first constructed for each of the 50 states and D.C., using a suitable set of indicators in 2019. With the advice of our panel of 40 U.S. experts, we developed criteria for selecting indicators — this is outlined below. Over the past year we have constructed the Index at a county level, for the eight selected states, to mirror the Index at the state level, which has involved sourcing indicators at a county level where available. We explore later in this section the county indicators that have been used and how they compare with the state level indicators.

Connection to the element

The first set of considerations when selecting indicators for each element was how well these indicators, both in isolation and as a collective grouping, create a good interpretation of the element in question. Both conceptual and statistical reasoning were taken into consideration to identify how well a set of indicators act as a proxy for each element.

- **Supported by academic literature:** We choose indicators where there is wide consensus that they capture the underlying meaning of the element and are important to improving prosperity. As well as undertaking our own literature review, our panels of 40 U.S. experts were indispensable in advising on which indicators were best used;
- **Connection to GDP per working age population and Cantril's Ladder:** We choose indicators that are plausibly a causal factor of both wealth and wellbeing. To explore this link, we look at two things: (1) the degree of correlation each indicator has with proxies for economic and social wellbeing, namely GDP per working age population and Cantril's Ladder (see Part III of this report), and (2) the research and academic literature around

each indicator, and their connection to wealth and wellbeing. Considering both of these factors, we selected indicators that are seen as plausible drivers of fundamental aspects of prosperity;

- **Objectivity and reliability:** Data quality and availability were binding constraints in selecting indicators for the U.S. Prosperity Index. Indicators with strong conceptual relationships could not be used if they either had bias from their sources, or significant issues in measuring what they were purporting to measure. For example, in "Social Tolerance", two indicators were considered to capture the degree to which societal intolerance results in hate driven activity: 'hate group concentration', and 'hate crime rate'. While hate group concentration has its own measurement issues and potential biases (much as any source does), the inconsistency of hate crime reporting across the U.S. is well documented, and so hate crime rates were not included in the final Index.⁷⁷

Spatial and temporal coverage

The second set of considerations in selecting indicators was the geographic and temporal coverage of each indicator:

- **Wide geographic coverage of states and counties:** This consideration is more relevant at the county level, as at the state level most data sources cover all states (with a few notable exceptions such as D.C., see page 108 for a summary of how many states have missing data for specific pillars). At the county level we had to consider whether data was available at a county level, metropolitan/micropolitan statistical area (MSA) level, or other sub-state level (see page 28 or how we used data at a MSA level in the Index).
- **Coverage through time:** We intended to create an Index that demonstrates how prosperity has shifted over time, rather than just the current state. To that end, we prefer indicators that capture change over time. We also prefer indicators that will continue to be measured so that we can use updated data in future editions of the Index.

Using these criteria, we selected 216 indicators, underpinning the 48 elements that provided the best articulation of these building blocks of U.S. prosperity. Before the Index could be calculated from these indicators, the issue of missing data points had to be addressed (see "2. Creating a complete dataset").

77. Pezzella, Frank S., Matthew D. Fetzer, and Tyler Keller. "The Dark Figure of Hate Crime Underreporting." *American Behavioral Scientist*, (January 2019).

doi:10.1177/0002764218823844.

Comparison of state level indicators to county level indicators

Our intention was to mirror the county level Index on the state level Index, so our preference was to source county level data that match the state level. This was not always possible or appropriate, however, and we have classified the county indicators into four types to show how closely they match the state level indicators.

1. The state indicator is available at county level. An example is the 'complete kitchen and plumbing facilities' indicator.
2. The state indicator is not available at county level but is available at a different sub-state level. An example is the 'adult doctor visits' indicator, which uses data from the Behavioral Risk Factors Surveillance Survey at the Metropolitan Statistical Area (MSA) level.
3. The state indicator was not available at county or sub-state level, so an alternative county indicator was selected that captures the concept behind the state indicator as closely as possible. An example is the percent of public water sources without health-based violations, which is not available at a county level.
- 4a. No identical or alternative indicator was found at county level, even though county variation is likely to occur. In this case, state values were applied to each county within the state.
- 4b. The state level indicator is conceptually relevant to all counties within the state, for example the 'state minimum wage' indicator. In this case, state values were applied to each county within the state.

Figure 3: Type of match of county to state-level indicators

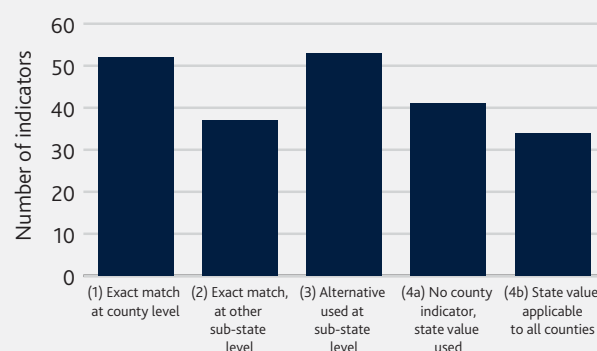


Figure 3 below presents a summary of the numbers of indicators at the county level according to the four types above. Of the 216 indicators, 141 are available at sub-state level, and 75 are only available at state level. A full comparison of indicators, at a state and county level, can be found in Appendix II.

In Part III, we assess the Index as constructed at the state level with that at the county level for the eight selected states to determine comparability.

2. Creating a complete dataset

The U.S. Prosperity Index, as with most composite indexes, faces the problem of incomplete data. Some data points for some years might be missing for some states or counties, some indicators might be missing entirely for some states or counties, and some indicators might be released with time lag. To complete our dataset, we prioritised real data in the following order:

1. Where missing data are detected, we first use the latest known value for that indicator. For example, indicators with missing data in 2015 are assigned the corresponding values of 2014;
2. Where data are missing and no prior data are available, which mainly happens with the Index's earlier years, the earliest data available are employed. For example, the Public Religion Research Institute's latest data set for support of same sex marriage only

started in 2014. That means the earliest data, from 2014, is used to back-fill all previous years;

3. Where no reliable real data for a specific state or county are accessible from the main source for an indicator, augmentation and imputation are employed on a case-by-case basis.

Augmenting data with other sources

The preferred approach for dealing with data missing for a state or county for all years is to insert values directly based on other sources for the data. For example, the U.S. Fish and Wildlife Service provide data on Wetlands and Deepwater Habitats, but excluded Alaska and Hawaii in their reporting. The data for Alaska for this indicator was sourced from the Wetlands and Deepwater Habitats Alaska Region, and the Hawaii data from the Hawaii Wetland Resources.^{78,79}

Imputation

At the state level

If we could not insert data from an appropriate alternative source, we used linear regressions to impute an indicator based on other independent variables. We used the following independent variables:

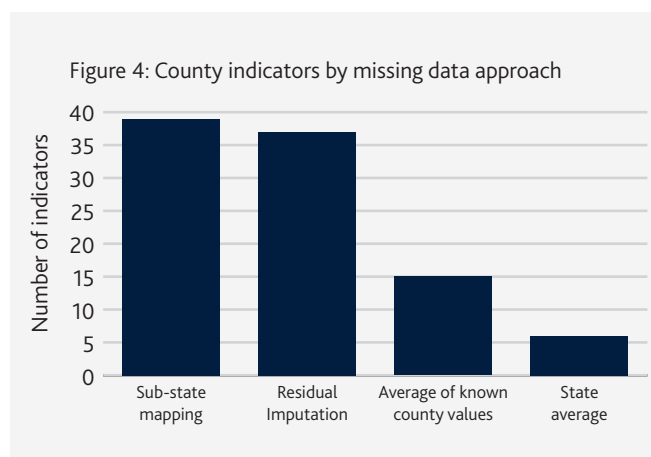
- Log(GDP/Working Age Population)
- Regional groupings.⁸⁰

Imputation was used very occasionally in the construction of the state level U.S. Prosperity Index as nearly all data sources provided data for all states, with the District of Columbia being the main exception. Information about the degree of imputation for each state is available, broken down by pillar, in Appendix V.

At the county level

Higher levels of missing data were apparent at the county level as opposed to the state level. We dealt with missing data at the county level with the following hierarchy: (1) mapping sub-state data to counties; (2) residual imputation, (3) a fallback option of either the state value or the average of county values.

Some indicators required both sub-state mapping and imputation where the original dataset did not cover all sub-state areas in a state. Figure 4 below shows the number of indicators which used each approach. It shows that 39 indicators required mapping from a sub-state level to the county level, and 37 indicators used the residual imputation approach.



1. Mapping sub-state data to counties

At the county level, in the cases where data was only available at a geographic level larger than a county, such as at Metropolitan Statistical Area (MSA) level, or a sub-state region defined by a specific source, we assigned the value of the larger sub-state region to all counties contained in that area. We used definitions from the Census Bureau to assign counties to MSAs.

Examples of sources that only release data at sub-state area level include The Current Population Survey, Civic Engagement Supplement, which only releases data at the MSA level, and The National Survey on Drug Use and Health conducted by the Substance Abuse and Mental Health Services Administration, which is conducted at a more localised level and documents which counties are contained within each sub-state region.

2. Residual imputation

Residual imputation has been applied where state data was available for an indicator and where we had reported data for some but not all

78. Jonathan Hall, Frayer, Bill Wilen, "Status of Alaska Wetlands," *U.S. Fish & Wildlife Service*: last accessed July 10 2019, <https://www.fws.gov/wetlands/documents/Status-of-Alaska-Wetlands.pdf>

79. "Hawaii Wetland Resources," *U.S. Fish & Wildlife Service*: last accessed July 10 2019, <https://www.fws.gov/wetlands/data/Water-Summary-Reports/National-Water-Summary-Wetland-Resources-Hawaii.pdf>

80. Following the National Geographic definition.

counties within the state. Using the reported state value and the known county values enabled us to calculate the missing counties values, as the average of all counties in the state should equal the state value.

The missing values were therefore calculated by taking the residual value of all known county values from the state value and applying this value to all counties where data was missing.

This is calculated as follows:

$$\text{Residual Value} = \frac{(\text{State Val} \times \text{State Pop}) - \sum(\text{County Val} \times \text{County Pop})}{\text{Residual Pop}}$$

The residual imputation approach was used where the total population of the counties that had missing values was greater than 5% of the population of the state. The residual value was capped at two standard deviations away from the state value.

3. Fallback option

In cases where the residual population was less than 5% of the state's population, or where the state level and county level indicator were different, we either applied the fallback of the state value, or used the average of all known county values.

- We used the state value when the state and county indicators were sufficiently similar and were measuring the same concept, such as the 'adults with no health care coverage' indicator.
- We used the average of all known county values where the indicators at the state and county level were measuring something different, or where the unit of measurement was different, for example the 'public drinking water violations' indicator.

The extent of imputation at a county level within the eight selected states is shown in Appendix V.

3. Standardising indicators

Once the set of indicators had been selected and missing data points filled at a state and county level, standardised them so that they can then be aggregated to produce composite scores at the element level, and further aggregated to pillar, domain, and Index level. This section outlines the steps undertaken to standardise indicators.

Time offsetting

The lags between when data is recorded, published by the source organisation, and subsequently made use of in this Index can vary by a

matter of months to years, because very little data is released in the year it was collected. This means we need to consider how to align the time-series of each indicator before they can be aggregated into an Index

Figure 5a: Indicators offset, state level

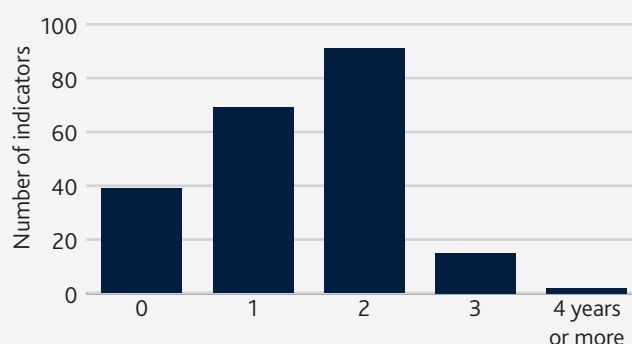
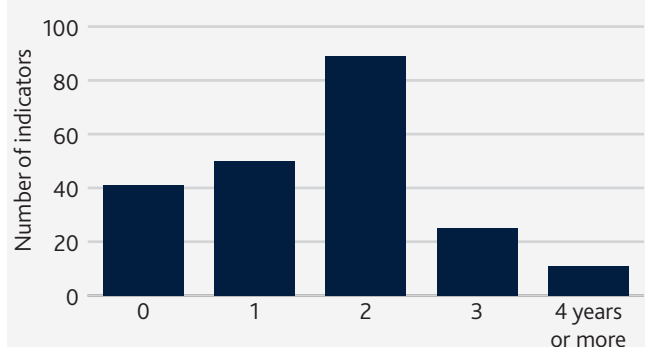


Figure 5b: Indicators offset, county level



We offset the majority of indicators by 0-2 years, based on when they became available. So if, for example, data for an indicator for the year 2018 only became available in 2020, we would assign the data for the year 2018 to the 2020 Index, and the data for 2017 to the 2019 Index score, and so on — thereby offsetting by two years. Practically, this means that we assign data to the Index year in which it becomes available, rather than the year in which it is collected. All but 11 indicators used in the U.S. Prosperity Index at both state and county levels were given an offset of three years or less, as shown in Figures 5a) and 5b).

On the other hand, assigning the data to the Index year in which it was recorded would mean that for most indicators, the data in the latest Index year would be exactly the same as the year before (due to the fact that when data is missing in a year, we roll forward a previous year's data). This would have two major disadvantages. The first is that it would create an artificial flat lining in the last year of the Index. Second, it would mean the most recent year's score would change

significantly as reported in the subsequent year's Index, as the data are updated. While there will always be small changes to previous year's scores, we wanted to minimise this as much as possible.

It is worth noting that this process affects only the presentation of historical values. It does not affect the latest score: both approaches create a prosperity score based on the latest available data.

We considered the benefits and disadvantages of each approach. Our view was that the offsetting approach was preferable, because it was more important to see the historical trend of prosperity, rather than the exact year in which a change occurred. Due to the fact that we note the year in which data was collected, this still means that it is possible to investigate policy changes that stimulate improvements or deteriorations in prosperity.

Transformation

The indicators in the Index, at both a state and county level, are based on many different units of measurement, such as percentages and ordinal scales. These different units need to be normalised for comparisons between indicators and countries to be meaningful. One of the critical decisions was whether to take a logarithm of each indicator. In cases where the data distribution is skewed or has long tails, we log-normalise the indicator. For example, the rate of terrorism deaths per million population is below 1 in most states in most years. However, in several states in several specific years, much higher rates occurred. Variation of this nature requires normalisation by taking the logarithm of the values, so that different observations can be compared within a narrower data range, and so that extreme variation in a single indicator does not unreasonably affect overall performance. Thirty-six indicators at the state-level and thirty-seven indicators at the county level were transformed in this manner.

Normalisation

The next step was to normalise each of the 216 indicator values, at a state and county level, into values between 0 and 1. A distance-to-frontier (DTF) approach was used for this task. The DTF approach compares performance in an indicator with the values of the assumed best-case and worst-case for the indicator. In this way, a state or county's relative position can be captured by the DTF score generated. The first step was to define the frontiers — the best and worst cases for each indicator.

Defining the frontiers

For indicators which have logical upper and lower bounds, the best and worst cases might be set at, or close to, their highest and lowest possible values. This scenario mainly applied to indicators with ordinal scales as units of measurement. The indicator "free speech in public

places", for instance, is limited to values between 0 and 3, thus its frontiers can be defined according to its logical boundaries.

However, where possible, we set the boundaries such that the normalised values (between 0 and 1) contain a relatively consistent standard deviation across indicators. For indicators with clearly defined logical bounds, this often means the DTF does not rely on 'logical bounds'. That is because, in many cases, the upper or lower logical bound is never actually achieved. This is particularly the case with survey variables.

For indicators with values that can vary on a spectrum that is unlimited at one or both ends, best and worst cases are imposed on the basis of the data collected for the Index since 2007. In cases where it is likely that the historical upper bound will be superseded in the future, as with ultra-fast internet access, we left room for improvement, incrementally extending the upper bound.

Where greater values indicate worse outcomes — for instance, in the case of the "unemployment" indicator — we invert the DTFs, such that higher scores always indicate better performance.

In general, we set the same best and worse values at the county level as at the state level, where the indicators were measuring the same concept. For some indicators, there was greater variation at county level than at state level owing to counties being smaller units of aggregation. As a result, in these instances we widened the DTFs for that county indicator, such as for the 'poverty' indicator.

Excluding outliers

Another key consideration in applying distance-to-frontiers was to decide whether or not there were outliers that should be excluded when selecting best and worst cases. This was done primarily because selecting frontiers to include outliers would result in some instances of very little differentiation between the rest of the values for that indicator.

We are typically guided by the 5% and 95% percentiles for observed values in excluding outliers. Selecting frontiers based on these percentiles means that each indicator's DTF scores differentiate between states to a similar degree to other indicators, which is crucial when aggregating these scores to create element and pillar scores. We decided to opt for compatibility of DTF scores for aggregation over avoiding penalisation of extremely high or low performers.

For example, the hate group concentration per state over the last decade ranged from 0 per 100,000 people, to 3.8 per 100,000 people. However, 95% of the time, a state had between 0 and 0.9 hate groups per 100,000 people. The boundaries set for this indicator were 0 and 1, based on the 95% upper bound for values.

Normalising the values

After we determined the frontiers, the next step was to calculate a DTF score for each indicator, at a state and county level. For a given indicator i , if we write *Worst Case* and *Best Case* for the frontiers established for this indicator, and x_i^J for state or county J 's raw value in indicator i , then the state or county's normalised score is given by the following equation:

$$\text{Normalised Score} = \frac{x_i^J - \text{Worst Case}}{\text{Best Case} - \text{Worst Case}}$$

Using distance-to-frontier scores allows direct comparison of values across indicators and areas, and also allows tracking and comparison of a state or county's performance across years. Since the upper and lower frontiers are fixed across years, changes in a state or county's year-to-year DTF score reflects its improvement or deterioration in the same indicator, pillar, or overall score in absolute terms.

4. Constructing the Index

At this stage of the construction process, there is a set of 216 state and county level indicators, using a comparable scale, organised underneath the definitional framework of prosperity. To create the U.S. Prosperity Index at a state and county level, the indicators are combined and aggregated up to measure each element, pillar, and domain of prosperity, as well as the overall measurement of prosperity.

Weighting

The first step in constructing the Index was to assign weights to the indicators to determine the element score, and weights to the elements to determine the overall pillar score. As noted earlier, we recognise that not every indicator is equally important to an element, and not every element is equally important to a pillar. Therefore, each indicator was assigned a weight within an element, indicating the level of importance it has in that element. Similarly, each element was assigned a weight that reflects its importance in the overall pillar.

We first weighted indicators within an element. Indicators were assigned one of four weights: 0.5, 1, 1.5, or 2. The default weight for each indicator is 1 and, based on its significance to the element in which it is contained, its weight was adjusted downwards or upwards. An indicator with a weight of 2 is twice as important in affecting the concept its element represents as an indicator with a weight of 1.

Weights were determined by three factors:

- The relevance and significance of the indicator with respect to its element, which is informed by the academic literature, policy debate, and expert opinion;
- The robustness and reliability of the indicator in question, including whether it has any known measurement flaws;
- The significance of the indicator in its relationship with both economic and social wellbeing in the U.S. context.

While seemingly more objective to weight each of our indicators equally, we choose variable weights for our indicators for a number of reasons. First, because we include a wide variety of different indicators, in line with our multidimensional view of prosperity. Second, because some indicators are more important than others in delivery prosperity. In the U.S. Prosperity Index, equal weighting would be tantamount to claiming that in the Terror-related Crime element of the Safety and Security pillar, for example, the number of terrorism events (weight of 0.5) is as important as the number of deaths caused by terrorism (weight of 1).

After weighting the indicators, we weighted elements within each pillar, led by the same three factors above. At the element level we applied weights as percentages rather than factors.

Ultimately, our weighting approach — as with any weighting approach — involves a level of judgement and subjectivity. To understand the robustness of our weighting structure, we tested the impact of applying equal weights, as well as randomly-assigned weights, to all indicators, and assessed the impact on the overall rankings (see page xx). Users of the Index are also able to apply their own indicator and element weights to see how this affects overall rankings at our website (www.usprosperity.net).

Calculating element scores

Once the indicators had been normalised and assigned a weight, they could be aggregated to create an element score. We use the convention of indicator scores lying between 0 and 1 after normalisation.

In each element, the scores for each indicator are summed together to give an element score.⁸¹ As a formula, an element score E for an element with indicator scores ind_j with respective weights w_j for $j = 1, \dots, n$ is given by:

$$E = 100 * \frac{\sum_{j=1}^n w_j * ind_j}{\sum_{j=1}^n w_j}$$

This results in an element score between 0 and 100.

Calculating pillar, domain, and index scores

Once element scores have been constructed, they are summed to give pillar scores out of 100.⁸² As a formula, the pillar score P for a pillar with element scores E_j and weights κ_j for $j = 1, \dots, m$ is given by

$$P = \frac{\sum_{j=1}^m \kappa_j * E_j}{\sum_{j=1}^m \kappa_j}$$

Once pillar scores have been determined, these are aggregated into domain scores by weighting each pillar equally within each domain. We then aggregate domains into index scores by weighting each domain

equally, as we consider each of the institutional, economic and social domains equally important to Prosperity.

Conclusion

As set out in this section, there is a significant amount of detail within the four stages of Index construction, of indicator selection, creating a complete data set, standardising indicators, and the calculation of the Index that underpins measurement of prosperity. In being able to set out these details, we hope to formalize the logic that underpins the way the United States Prosperity Index measures prosperity, at a state and county level. This section, we hope, not only gives transparency about how prosperity is measured but also provides a blueprint for the technical underpinning of any multidimensional index. Building such an index requires a multitude of discrete technical decisions. Should aggregation happen using weights? Should an arithmetic or geometric mean be used? How should cases of missing data be handled? The discretization of each decision, whilst still seeing the picture of the whole process, enables careful decision making in the technical task of index building. Part III

81. Weighted sum, using the weights assigned.

82. Ibid.

Part III

Assessing the United States Prosperity Index and its pillars

Introduction

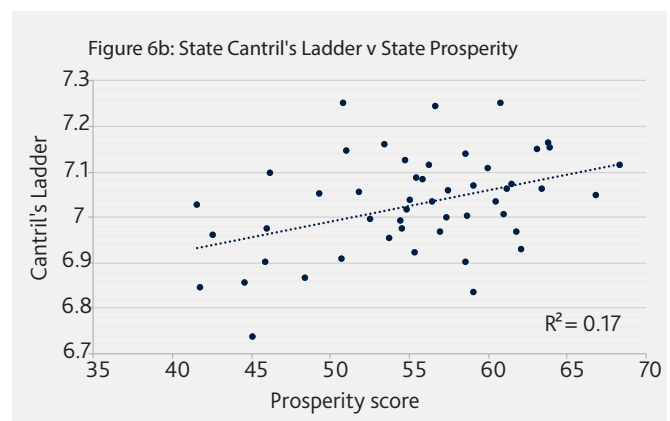
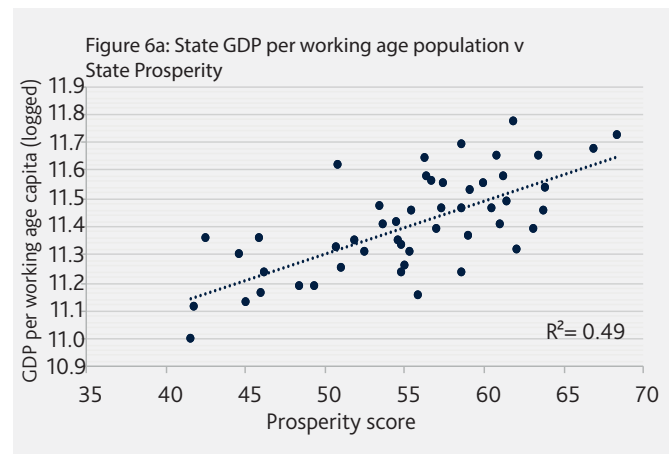
To test the structural integrity of the Index we conducted the following analyses for each pillar. Further summary statistics can be found in Appendix IV.

In line with our approach at the global level, the first test we employ is to test the Index scores against common benchmarks for both economic output and social wellbeing.

Comparison with GDP per Working Age Population and Cantril's Ladder

State level comparison:

For testing scores at the state level, we used two proxies: Log (GDP per Working Age Population) and Cantril's Ladder. This is a way of benchmarking the U.S. Prosperity Index against established measures of both wealth and wellbeing. Figures 6a) and 6b) shows the relationship:



The relationship between these measures and the state level U.S. Prosperity Index is weaker than the relationship they have with the prosperity of countries, as seen in our analysis on the Global Prosperity Index. This is due to the phenomenon of *range restriction*.⁸³ Essentially, on a global level, the extremities in country performance on single measures across the world allows for a far greater range of values, and this fosters a stronger statistical relationship. In the U.S., on the other hand, single measurements are on a much narrower scale, and thus fluctuations in scores appear far more dramatic.

To help illustrate this point, the range of scores seen across the 50 states of the U.S. and D.C. is similar to the range of scores between Luxembourg (9th globally of 167 countries), and Portugal (26th). If we restrict the comparative analysis to only the countries between Luxembourg and Portugal in the global prosperity rankings, the correlation between prosperity and GDP per working age population drops to 0.58, in line with the strength of relationship we see in U.S. Index. While this relationship between GDP per capita and prosperity is as strong between states as it is between countries, the relationship between Cantril's Ladder and prosperity is not as strong between states as it is between countries.

County level comparison:

We compared GDP per capita at the county level with prosperity scores but did not find an association ($R^2 = 0.05$). At a local level, such as county, the economic output generated within the county is not necessarily shared amongst the residents of that county, which results in some very large per capita estimates for counties with a small population but large economic output (oil producing counties for example). Instead, we used median income as a measure of economic wellbeing of the residents of a county, compared this with prosperity, which elicited an R^2 of 0.4. This result is in the same order of magnitude as for the state level index. We were not able to conduct a comparison between social wellbeing and prosperity at the county level because Cantril's Ladder is not available at this level.

Internal tests

In constructing the Index, we wanted to ensure that the selected indicators within each element, as well as the elements within each pillar, had a high degree of internal consistency. To do this, we used

Cronbach's alpha, which assesses how closely related a set of items are as a group. The Cronbach's alpha for each pillar and element, can be found in Appendix IV. We aim to get a Cronbach's alpha above 0.7 as a rule of thumb, with an important caveat at the U.S. level. This was not always possible for two reasons.

- Firstly, certain indicators had a reverse relationship with wealth and wellbeing, and other indicators. For example, the 'tree canopy cover' indicator, in the Natural Environment pillar, had a negative correlation with Log (GDP/Working Age Population) and Cantril's Ladder, and a number of other indicators in its element. This is because tree cover is reduced by urbanization, whereas urbanization has improved wealth in the U.S.
- Secondly, as is the case shown earlier with the relationship between U.S. prosperity and both GDP per working age capita and Cantril's ladder, there was little variation between states in numerous indicators. While indicators were important from a conceptual and policy standpoint, indicators didn't always follow a straightforward pattern. This adds to, rather than detracts from, the Index, accounting for various factors for which more prosperous states may still lag behind.

In addition, for those pillars and elements that have a Cronbach alpha below 0.7, we discussed their conceptual standing with external experts and found that reasons for their inclusion counterbalanced the statistical findings.

Sensitivity to changes in weighting

Our weighting choice is only one of many possible approaches that would be justifiable on different grounds. In discussions with experts, the issue of sensitivity of composite indexes to different weighting choices was a topic that often came up, but the conceptual importance of an indicator was given as much consideration as its statistical significance as assessed using factor and regression analysis.

In this section, we test the impact on the Index's scores and rankings by changing our weighting approach in two ways: (1) by comparing against an Index generated using equally weighted indicators within each element, and (2) assessing against an Index generated using

83. Goodwin, Laura D., and Nancy L. Leech. "Understanding correlation: Factors that affect the size of r ." *The Journal of Experimental Education* 74, no. 3 (2006): 249-266. <https://pdfs.semanticscholar.org/b6cf/001cbab0375a96c370585462dd3c163669af.pdf>.

randomised indicator weightings, derived using Monte Carlo randomisation simulations.

We don't equally or randomly weight the elements as this could create some inappropriate distortions in the results, such as giving more weight to Pre-primary Education (currently 5%) than Secondary Education (25%).

We used an almost identical set of indicators and weighting scheme at the state and county levels, and the results at state and county level closely align. Given this, the weighting sensitivity analysis has been undertaken at the state level only.

Equal weighting approach

The first test of the sensitivity of the Index to changes in the choice of weightings is to understand how the rankings of the Index would change if we were to use equal weighting across indicators.

Figure 7 plots, on the vertical axis, state's rankings derived by equally weighting indicators and, on the horizontal axis, state's rankings derived using the current weighting approach. The overall correlation is strong, though many states experience minor changes in their overall prosperity score and ranking.

In six states, the ranking differed by more than ten places: New Jersey (+15 vs. equal weighting), Pennsylvania (+14), Idaho (-13), Illinois (+13), South Dakota (-11), California (+11). The breakdown of the rank change in the remaining states is: No change — 12%, 1 rank — 14%, 2 ranks — 22%, 3 ranks — 6%, 4 ranks — 16%, between 5 and 10 ranks — 20%.

Overall, the weights chosen for the indicators do not create a large deviation in ranks when compared to equal weightings.

Randomised weighting approach

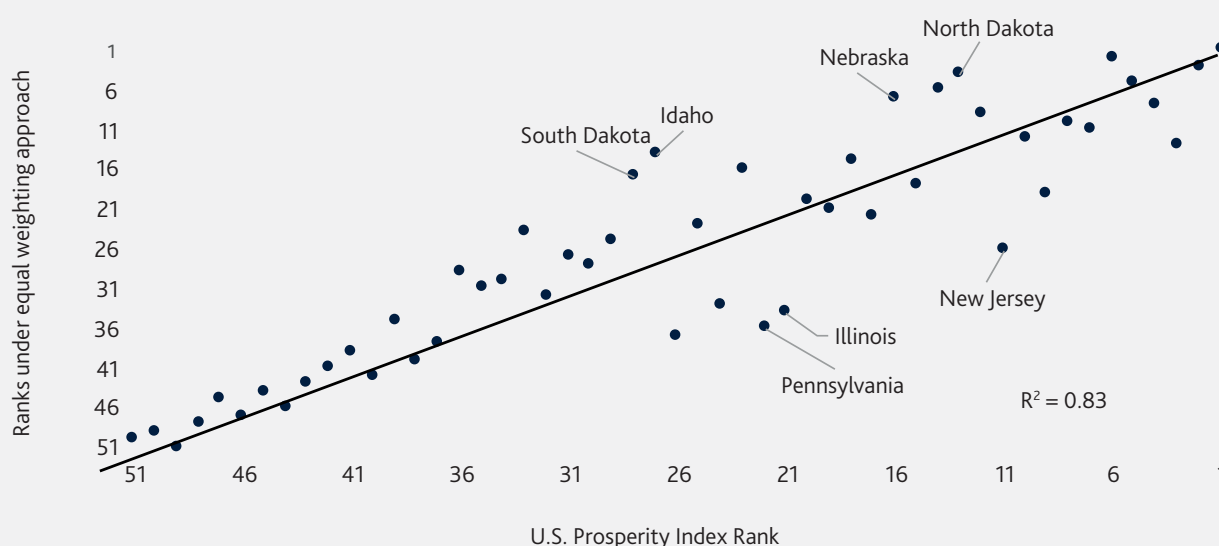
A second test to understand the sensitivity of the Index to the particular choice of indicator weightings, is to understand how the rankings of the Index vary when indicator weighting choices are randomised. To do so, we used Monte Carlo simulations, generating Index ranks 1,000 times with indicators randomly allocated a weighting (from 0.5, 1.0, 1.5, 2.0) each time.

Figure 8 shows the outcome of this simulation for each state. The states have been ordered by their ranks under the current weighting approach (illustrated with a red cross). The range between the 5th and 95th percentile ranks for each state is shown by the vertical bar for each state. This illustrates the volatility of the rank based on the indicator weightings. The median rank is also marked on the line with a horizontal black bar.

The range of ranks is uniformly quite small across all states and D.C., with only one state (California) having a range over 10 places, with a range of twelve. Furthermore, the median rank is a better comparator after 1,000 simulations, and only four states' median ranks differ by more than three places from their rank in the U.S. Prosperity Index — Iowa (+5 vs. median rank), Illinois (-5 vs. median rank), New York (-4 vs. median rank), and New Jersey (-4 vs. median rank).

The choice and application of weights constitute our view of the relative importance of indicators in their contribution to prosperity, after

Figure 7: Ranking with U.S. Prosperity Index weighting vs equal weighting



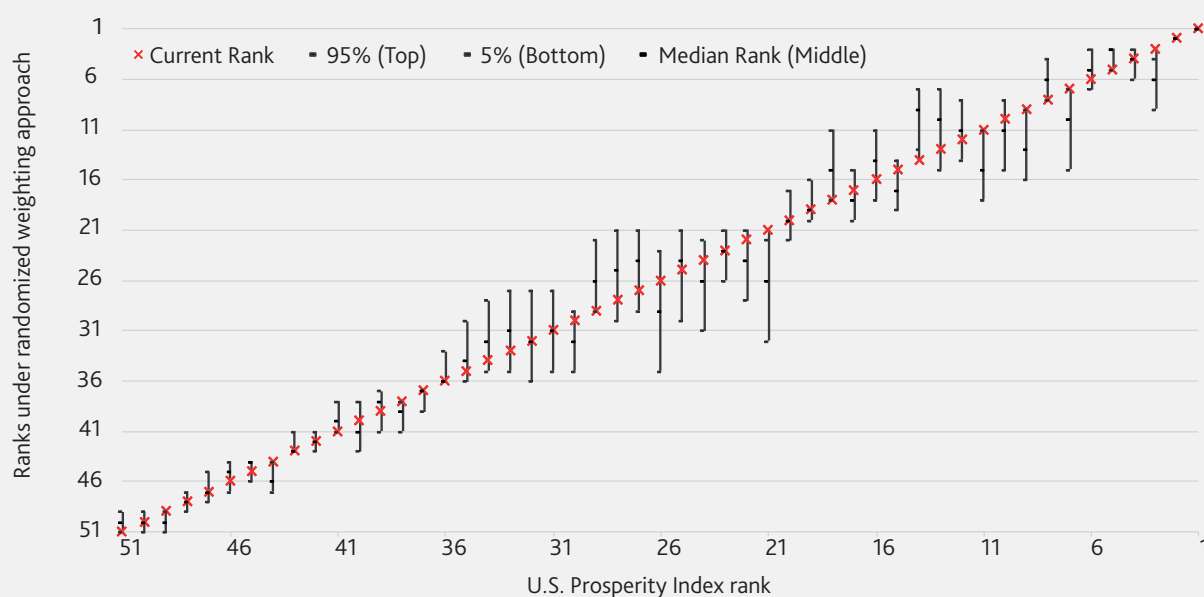
considering the statistical analysis and seeking the advice of our panel of experts.

The sensitivity analysis demonstrates that the rankings are relatively stable when they are placed under different weighting scenarios. This implies that the scores and rankings in the Index are affected more

by variables in the indicator values than the weights that have been applied.

Whilst equally weighting the indicators, or randomly assigning indicator weights, results in some differences in the state rankings, the specific choice of weighting has been carefully chosen after full consideration of the statistical analysis and lengthy discussions with experts.

Figure 8: Range of ranks under randomised weighting approach



Limitations of the Index:

No nationwide index can fully explain the true picture and nuance between areas. Some primary limitations of the U.S. Prosperity Index are the following:

Data availability: A key limitation encountered in creating a robust Index for the U.S. was the availability of data. There are certain issues where data is simply not collected across all states or counties, and there is a wealth of data collected that lacks comparability or has significant flaws in either its collection methodology or accuracy.

We hope that in presenting the U.S. Prosperity Index, in addition to explaining prosperity at a sub-national level, it highlights areas in which data collection efforts could be bolstered, particularly at county level.

The efficacy of the data: There are always challenges obtaining data that captures the core idea of what we are trying to communicate. That is why, in some cases, we need to use outcome data rather than input data.

Comparing the United States Prosperity Index at a state and county level

We closely based the production of the county level Index on the state level Index. To test the integrity of the county results, we compared the aggregated county level population weighted scores of the eight selected states from 2010 to 2020 with the state level scores for these states. We find a high degree of consistency between the two sets of results, with an $R^2 = 0.98$ for prosperity, an $R^2 \geq 0.9$ for eight pillars, and an $R^2 > 0.8$ for all pillars. (For the Governance pillar, the county level Index is made up entirely of state level indicators, so the two match exactly.)

There are differences between the state and county level results for several reasons. Firstly, in using population to aggregate indicators from county to state level we are introducing differences for some indicators. For instance, the 'tree cover canopy' indicator would best

be aggregated using the land area of a county, rather than population. For the purposes of this comparison exercise we felt it sufficient to use population weighting, as an approximate weighting measure to assess comparability.

Secondly, there are some differences due to slightly different indicators being used at a county level compared to the state level. For instance, the 'life years lost from air pollution' indicator is used in the state level index, but this is not available at county level, so we have used 'life expectancy loss from air pollution'.

Thirdly, some county indicators use modelling as part of their methodology and as such aggregated county values may not equal state values, one example being the 'obesity' indicator. Finally, differences can be attributed to different DTF bounds being used at a state and county level, as there can be greater variation at county level.

Despite these differences, there is a high degree of correlation between the Index at a state and county level for prosperity as well as for each pillar. See Figures 9a-9k.

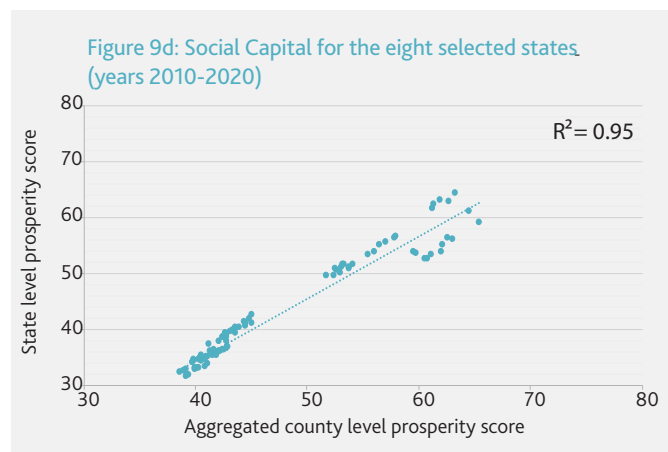
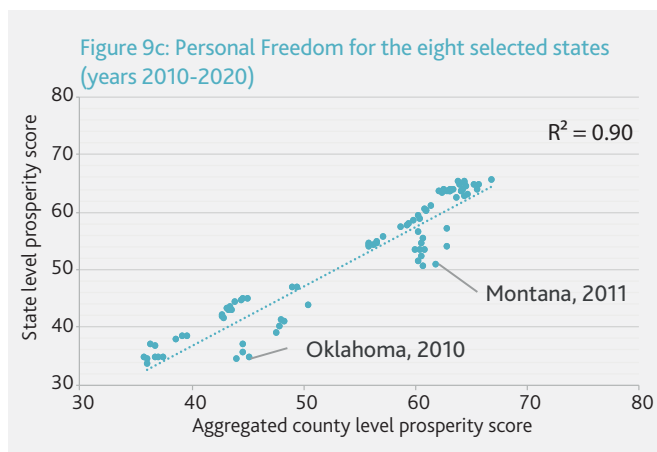
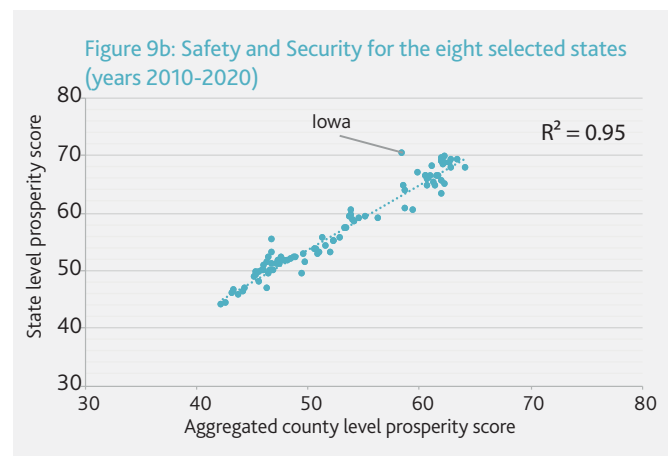
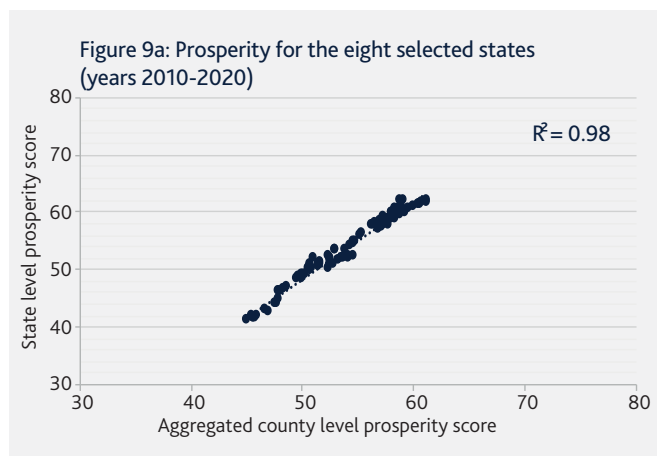


Figure 9e: Business Environment for the eight selected states (years 2010-2020)

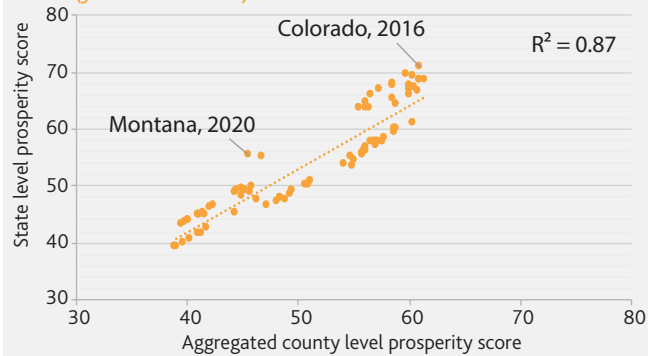


Figure 9f: Market Access and Infrastructure for the eight selected states (years 2010-2020)



Figure 9g: Economic Quality for the eight selected states (years 2010-2020)

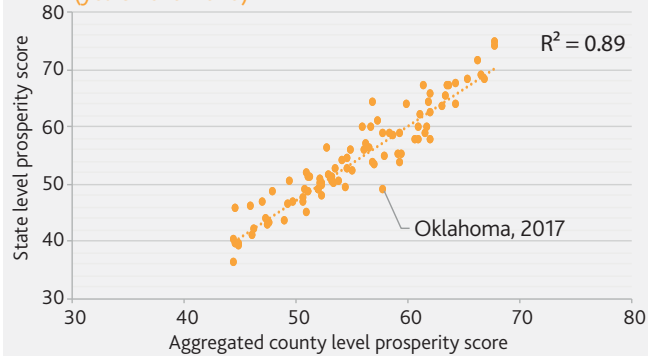


Figure 9h: Living Conditions for the eight selected states (years 2010-2020)



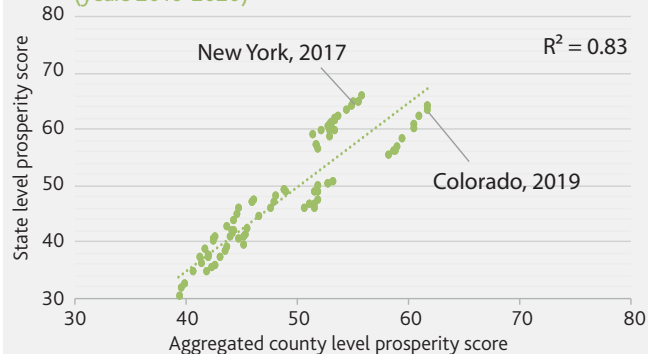
Figure 9i: Health for the eight selected states (years 2010-2020)



Figure 9j: Education for the eight selected states (years 2010-2020)



Figure 9k: Natural Environment for the eight selected states (years 2010-2020)



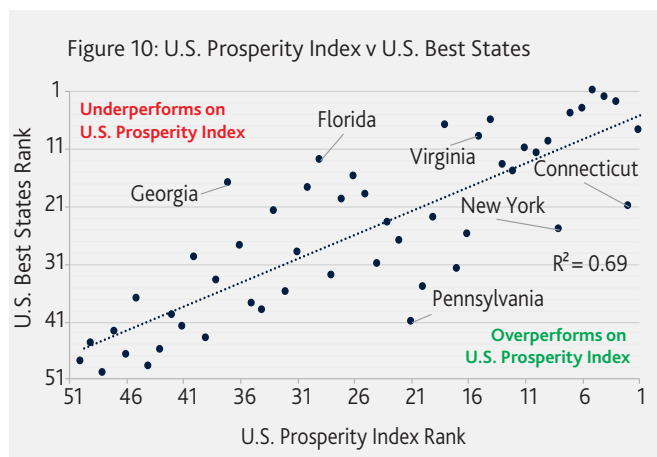
Comparison of the United States Prosperity Index with other U.S. indexes

State level

As part of the stress-testing of the U.S. Prosperity Index, we wanted to compare the Index with two other indexes that examine areas of social or economic wellbeing of each state:

- The Best States Rankings (U.S. News) — Compared against the U.S. Prosperity Index rankings;
- The Social Progress Index (Social Progress Imperative) — Compared against the Inclusive Societies and Empowered People domains of the U.S. Prosperity Index.

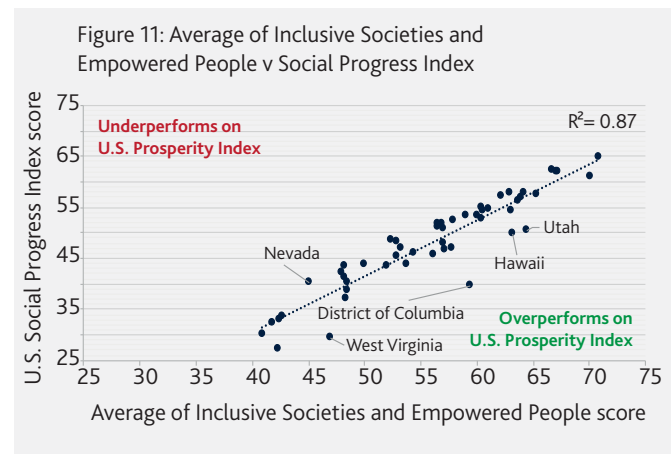
We ran simple regressions against both of these indexes to identify the similarities and differences between our Index and other indexes. During this process we looked at how similar the scores are, and what can be learned from examining the outliers in each Index.



The U.S. Best States Rankings broadly covers topics similar to ours, except for Personal Freedom, Governance, and Social Capital, and it is primarily these exclusions that explain the differences. Despite this, the correlation of 0.69 as shown in Figure 10 suggests the rankings are broadly aligned.

The Social Progress Index (SPI) measures 51 social and environmental indicators, focusing on life outcomes from shelter and nutrition

to rights and education. It divides these indicators across three broad dimensions of social progress: Basic Human Needs, Foundations of Wellbeing, and Opportunity. The SPI does not capture the economic aspects of a society, so we have compared the SPI with the combined score for the Inclusive Societies and Empowered People domains of the U.S. Prosperity Index.



There is a high correlation between the two measures ($R^2=0.87$), due to a high level of overlap between the data sources used in the two indexes (the U.S. Prosperity Index contains 29 indicators used in the Social Progress Index, out of a total of 53 used in their index).⁸⁴ Nevertheless, there are differences in both the conceptual framework and organizing structure, leading to the slight differences in scores and rankings. For instance, the Social Progress Index have specified 'Shelter', 'Water & Sanitation' and 'Access to Information' as "components", whereas we designate these concepts as elements, which results in them having less weight in our Index. See Figure 11.

County level

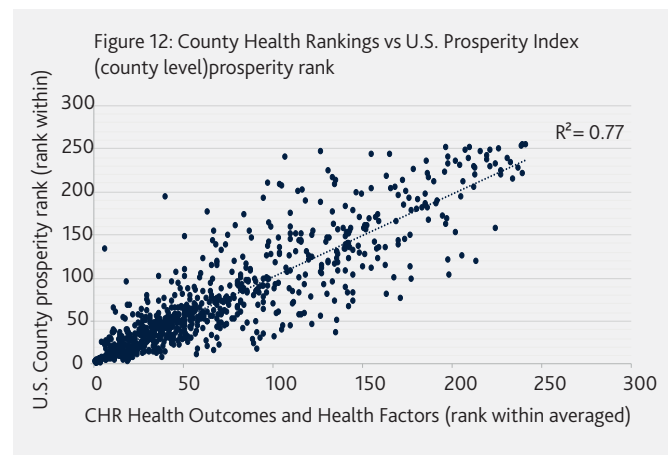
We also wanted to compare the U.S. Prosperity Index at the county level with other indexes that examine the social, institutional, or economic wellbeing of each county. For benchmarking purposes, we examined the 2020 County Health Rankings and compared them against the prosperity rankings of the counties of the eight selected states in the U.S. Prosperity Index.

The County Health Rankings combine health and a broader set of measures, including access to jobs, quality of education, safety of a neighborhood, availability of affordable housing, proximity to green

⁸⁴ Including indicators that have been either grouped together or disaggregated in the U.S. Prosperity Index. For example, the Social Progress Index uses 'Violent crime rate', which is disaggregated into four separate indicators that we include in the Safety & Security Pillar.

space, and transportation, as these things shape day-to-day life and create long-term opportunities for good health. Given the County Health Rankings include indicators of social, economic, and environmental determinants of health, as well as health indicators, we compared their rankings with the overall prosperity rankings of the counties within the eight selected states.

The R^2 of 0.77 suggests broad alignment between the two Indexes. When comparing the counties in each of the eight selected states between the two indexes, we see the closest correlation in California ($R^2 = 0.90$) and the least correlation in New York ($R^2 = 0.55$). Differences between the two measures are mainly explained by the indicators used within each. Of the 35 indicators in the County Health Rankings, there are 13 exact indicator matches in the U.S. Prosperity Index, 10 that are similar, and 12 which do not feature in the U.S. Prosperity Index.



Part IV

Comparison to the previous Index

Introduction

Since launching the United States Prosperity Index in the summer of 2019, we have made a number of minor improvements. This includes correcting some anomalies in the previous Index, ensuring consistency in the data sources used at a state and county level, improving the standardisation of indicators with regards to time offsetting and the distance-to-frontiers approach, and equally weighting the domains — rather than equally weighting the pillars, which ensures the Open Economies domain has the same importance in the Index as the other two domains.

While the changes made have strengthened the integrity of the Index, the overall measure of prosperity remains very similar. This section explains these changes in more detail and assesses their overall impact on the results.

What changes have been made to the Index?

The improvements can be categorised under 1) Structural changes and 2) Indicator changes.

1. Structural changes

- **Relocation of the Market Distortions element** — The Market Distortions element in the Market Access and Infrastructure pillar has been moved to the Business Environment pillar and renamed

to Price Distortions. This change was made to capture the difference between policies that distort the market through discrimination of foreign goods and services, mainly through non-tariff measures (Market Distortions) and those that distort an internal market by virtue of altering the true market value of goods and services through the use of subsidies, price controls, and taxes (Price Distortions).

- **Revision of time offsets** — In last year's Index, time offsets were calculated as the latest year of data subtracted from the current year. This has now been corrected as the difference in years between when the data was released and what year the data refers to. This change has not impacted scores or ranks in the most recent year, only the historical trend of Prosperity.
- **Revision of DTFs** — Having updated the Index with another year of data and setting the DTF's for the newly created county Index, this led us to review the DTFs of each indicator at a state level and made slight adjustments to ensure consistency within and across each pillar.
- **Equal domain weighting** — To fully represent economic wellbeing within the Index, we now weight each domain equally. Last year we weighted each pillar equally, which led to the economic components of prosperity accounting for 3/11 of prosperity, given there are fewer pillars in the Open Economies domain than in either the Inclusive Societies domain or the Empowered People domain. This is now in line with the Global Prosperity Index.

2. Indicator changes

- **Indicator fixes** — The data ingest of several indicators has been amended to correct for unintended errors. This included:
 - the 'state minimum wage' indicator, which was incorrectly assigning the lowest minimum wage to some states;
 - the 'mass shooting deaths' indicator, which was reporting all firearm deaths and not just mass shooting events;
 - the 'unintentional injuries' indicator, which included deaths from accidental poisoning which mostly reflects drug overdose deaths, which is covered elsewhere in the Index.
- **Improvements to indicator selection and greater temporal coverage** — In reviewing the indicators chosen in 2019, we have made some changes. These include:
 - ingesting more years of data that was available, but was not ingested in last year's Index, as with the 'memberships organisations' indicator;
 - using the age-standardized rate where available across all indicators in the Health pillar;
 - switching to alternative sources, where their data was considered more comprehensive. For example, for the 'trafficking' indicator, we are using data from the Polaris Project rather than from the FBI Uniform Crime Reporting Statistics, as well as for the indicators in the Communications element, where we have moved to using Broadband Now as the source for the Internet indicators.

Ensuring consistency in indicators at a state and county level —

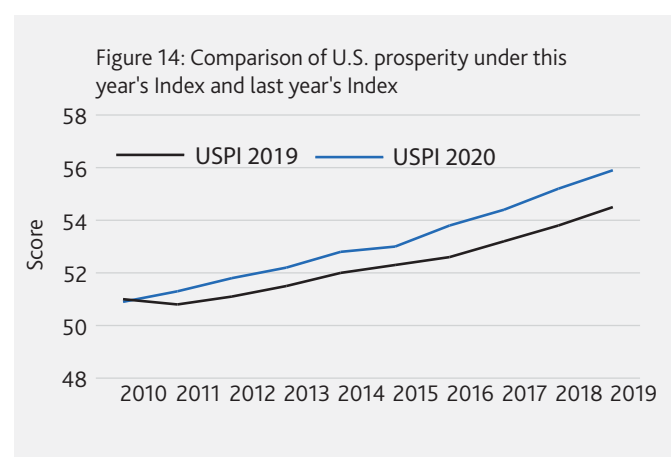
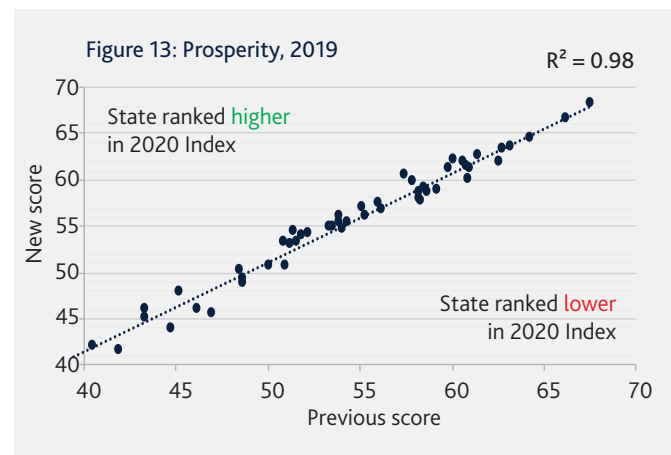
in a few cases, where data quality was not compromised, alternative data sources were chosen to ensure consistency between state and county indicators. An example is the 'traffic deaths' indicator, which was sourced from the Federal Highway Association last year. However, the Federal Highway Association does not provide county level data, whereas the CDC does. We now use data for 'traffic deaths' from the CDC at both state and county levels.

Appendix III provides a full list of the state and county level indicators used within the 2020 United States Prosperity Index.

Impact of changes on overall prosperity

In comparing the results of this year's Index with last year's, we find that the overall results are very similar, as shown by the following two analyses.

1. Figure 13 shows the overall state level prosperity scores for the year 2019 from the 2020 Index compared with those from the 2019 Index. While the chart shows that there have been some minor changes to the scores of some states due to the changes made to the Index, the strength of relationship between the this year's and last year's Indexes is very strong, indicated by the R^2 of 0.98.



2. We see from Figure 14 that prosperity across the U.S. over time has followed a similar trend using both last year's and this year's Index.

Some states have been affected more than others — we can assess the impact by comparing the 2019 ranks of the 2019 Index and the 2020 Index. North Dakota has seen the biggest positive change between the 2019 Index and the 2020 Index, rising eight ranks. This is largely due to the impact of weighting the three domains equally. For the same reason, Hawaii — which ranks 47th on the Open Economies domain — ranks four places lower for prosperity in the 2020 Index than it did in the 2019 Index. Maryland has fallen five ranks as a result of indicator changes, particularly those made in the Communications element — while it ranked 10th for this element in the 2019 Index, it ranks 17th in the 2020 Index.

Impact of changes at the pillar level

In order to understand the impact of the changes made at the pillar level, we compared state scores in this year's Index against the scores of last year's Index. The following Figures 15a-15k show the results for each of the eleven pillars, displaying scatter plots of 2019 state scores in this year's and last year's Indexes.

With an R^2 above 0.9, 2019 scores for all but two pillars show a strong relationship between the 2020 Index and the 2019 Index,

and most states have similar scores in both Indexes. The outlier in the Governance pillar is the District of Columbia, which has a higher score under the 2020 Index as a result of improving the imputation approach for the 'state integrity investigation' indicator and the 'state campaign disclosure' indicator as D.C. does not have reported data for these indicators.

The Business Environment and Market Access and Infrastructure pillars — the two pillars with R^2 values lower than 0.9 — have been most affected by the changes implemented. This is in part due to moving the Market Distortions element from Market Access and Infrastructure to the Business Environment pillar. Indicator changes in Market Access and Infrastructure also contributed to the differences. Firstly, in the Resources element, an electricity outages indicator was added to capture more effectively the reliability of electricity provision. Secondly, changing our data source for most of the indicators within the Communications element to Broadband Now, which provides more up-to-date data using a consistent methodology, across a number of internet indicators, and also provides data at the county level, ensuring consistency between the two measures.

Overall, the changes made to the Index have not significantly altered current or historical levels of U.S. prosperity.

Figure 15a: Safety and Security, 2019

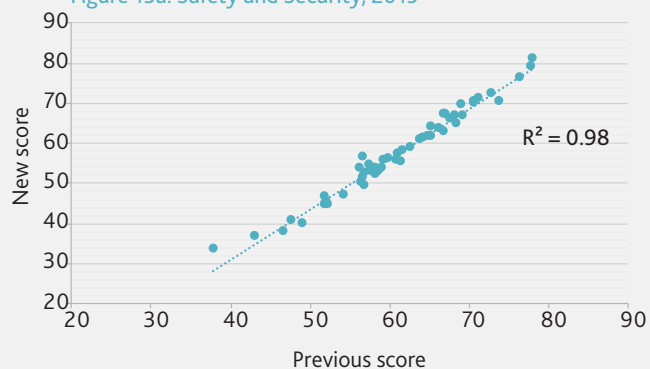


Figure 15b: Personal Freedom, 2019

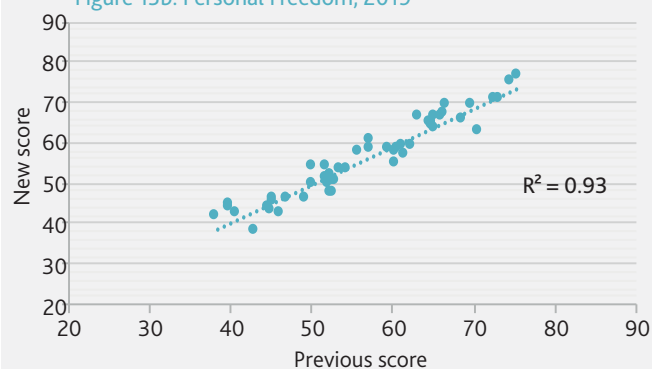


Figure 15c: Governance, 2019

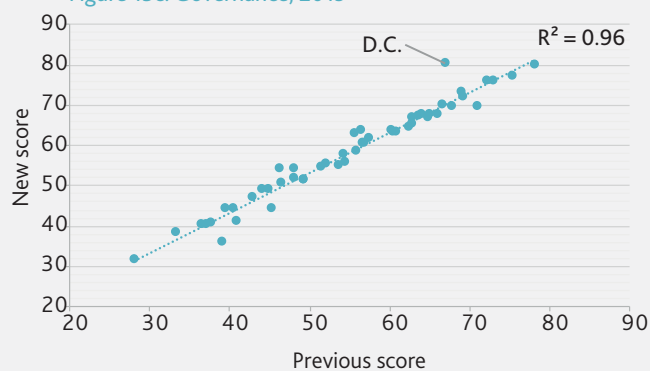


Figure 15d: Social Capital, 2019

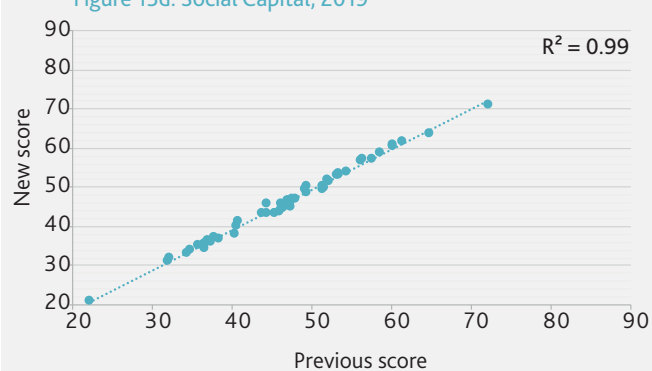


Figure 15e: Business Environment, 2019

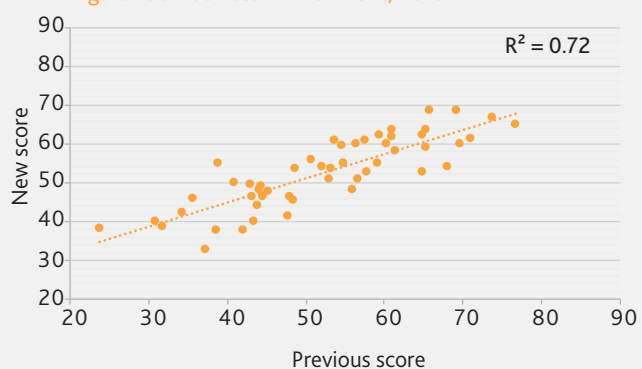


Figure 15f: Market Access and Infrastructure, 2019

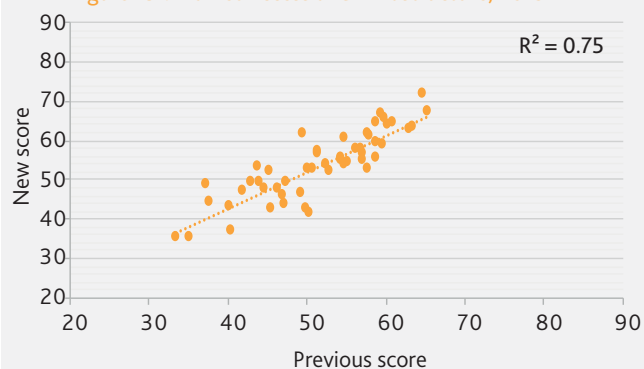


Figure 15g: Economic Quality, 2019

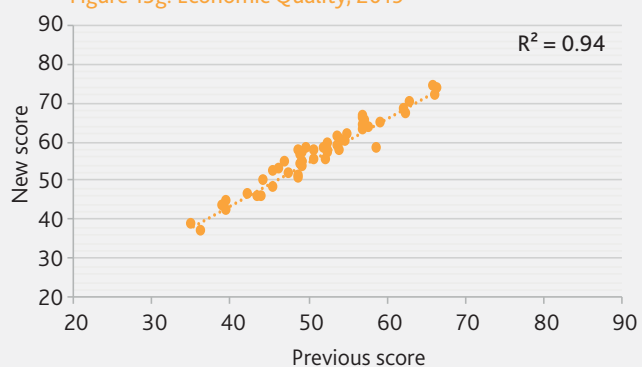
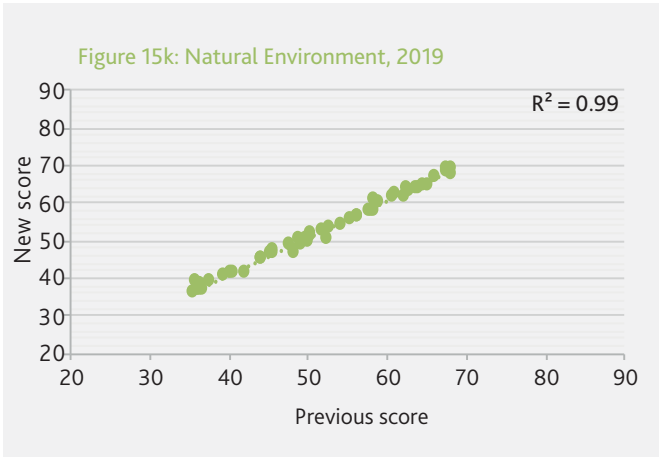
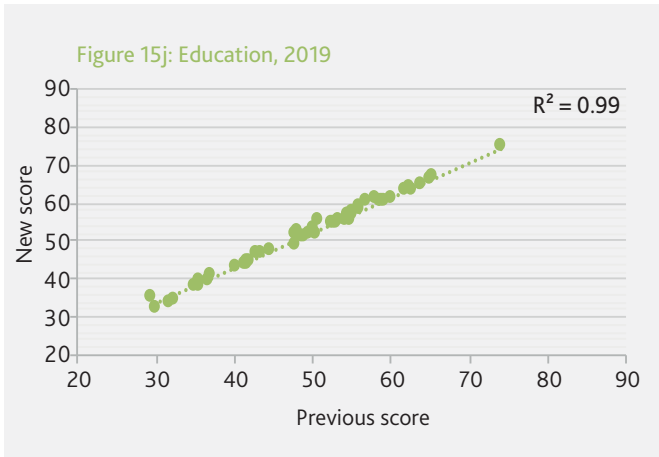
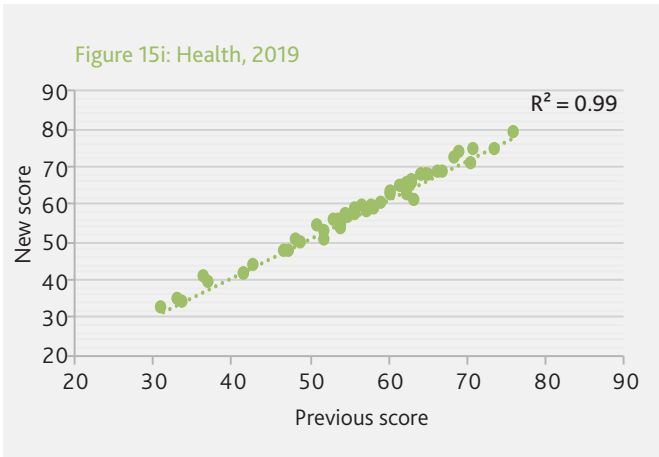


Figure 15h: Living Conditions, 2019





Appendix

Appendix I: List of data sources

Source Code	Source Name	Web address
AAR	Association of American Railroads	https://www.aar.org/
ACLU	American Civil Liberties Union	https://www.aclu.org/
ANES	American National Election Studies	https://electionstudies.org/
ATRF	American Tort Reform Association	http://www.atra.org/
BallotP	Ballotpedia	https://ballotpedia.org/Main_Page
BBN	BroadbandNow	https://broadbandnow.com/
BIEM	Brookings Institution Export Monitor	https://www.brookings.edu/research/export-monitor-2018/
BRFSS	Behavioral Risk Factor Surveillance System	https://www.cdc.gov/brfss/index.html
Cato	Cato - Freedom in the 50 States	https://www.freedominthe50states.org/
CAWP	Center for American Women and Politics	https://www.cawp.rutgers.edu/
CDC	Centers for Disease Control and Prevention	https://www.cdc.gov/
CHR	County Health Rankings	https://www.countyhealthrankings.org/
CJRP	Census of Juveniles in Residential Placement	https://www.ojjdp.gov/research/CJRP.html
CMS	Centers for Medicare & Medicaid Services	https://data.cms.gov/mapping-medicare-disparities
CNCS	Corporation for National and Community Service, Volunteering & Civil Life in America	https://www.nationalservice.gov/serve/via
CPI	Center for Public Integrity	https://publicintegrity.org/

Source Code	Source Name	Web address
CPS	Current Population Survey, Civic Engagement Supplement	https://cps.ipums.org/cps/civic_engagement_sample_notes.shtml
Cuil.	Dave Cuillier, School of Journalism, University of Arizona	Via personal correspondence
FA	Feeding America	https://www.feedingamerica.org/
FBI	Federal Bureau of Investigation Uniform Crime Reporting Statistics	https://www.fbi.gov/services/cjis/ucr
FCC	Federal Communications Commission	https://www.fcc.gov/
FDIC	Federal Deposit Insurance Corporation	https://www.fdic.gov/
FI	Fraser Institute	https://www.fraserinstitute.org/
FR	Federal Reserve	https://www.federalreserve.gov/
FTC	Federal Trade Commission, Consumer Sentinel Network	https://www.ftc.gov/enforcement/consumer-sentinel-network
Gallup	Gallup Dailies	https://www.gallup.com/home.aspx
GT	Google Trends	https://trends.google.com/trends/?geo=US
GTD	Global Terrorism Database	https://www.start.umd.edu/gtd/
GVA	Gun Violence Archive	https://www.gunviolencearchive.org/
HCAHPS	Hospital Consumer Assessment of Healthcare Providers and Systems	https://www.hcahpsonline.org/
HJK	Henry J Kaiser Family Foundation	https://www.kff.org/
ICS	Institute for Corruption Studies	http://greasethehewheels.org/
IHME	Institute for Health Metrics and Evaluation	http://www.healthdata.org/
IJ	Institute for Justice	https://ij.org/
JBEN	Bennett et al. 2019. "Particulate matter air pollution and national and county life expectancy loss in the USA: A spatiotemporal analysis".	Via personal correspondence
Kauf	Kauffman Foundation	https://www.kauffman.org/
MAP	Movement Advancement Project	http://www.lgbtmap.org/
MIT	MIT Election and Data Science Lab coding of state policies	https://electionlab.mit.edu/
Mukh.	Mukherjee et al.	Via personal correspondence
NAACP	National Association for the Advancement of Colored People	https://www.naacpldf.org/

Source Code	Source Name	Web address
NACJD	National Archive Of Criminal Justice Data	https://www.icpsr.umich.edu/web/pages/NACJD/index.html
NAEP	National Assessment of Educational Progress	https://nces.ed.gov/nationsreportcard/
NCAJ	National Center for Access to Justice	https://ncforaj.org/
NCES	National Center for Education Statistics	https://nces.ed.gov/
NCIRD	National Center for Immunization and Respiratory Diseases	https://www.cdc.gov/ncird/index.html
NCSL	National Conference of State Legislatures	http://www.ncsl.org/
NIEER	National Institute for Early Education Research	http://nieer.org/
NIMP	National Institute on Money in Politics	https://www.followthemoney.org/
NLCD	National Land Cover Database	https://www.usgs.gov/centers/eros/science/national-land-cover-database?qt-science_center_objects=0#qt-science_center_objects
NLIHC	National Low Income Housing Coalition	https://nlihc.org/
NSCH	National Survey of Children's Health	https://www.childhealthdata.org/learn-about-the-nsch/NSCH
NTIA	National Telecommunications and Information Administration	https://www.ntia.doc.gov/
NVCA	National Venture Capital Association	https://nvca.org/
OECD	Organisation for Economic Cooperation and Development	https://www.oecd.org/unitedstates/
Oreg.	State of Oregon	https://www.oregon.gov
Pew	Pew Research Center	https://www.pewresearch.org/
PNS	Prosperity Now Scorecard	https://scorecard.prosperitynow.org/
Pol. Proj.	Polaris Project	https://polarisproject.org/
PRRI	Public Religion Research Institute	https://www.prri.org/
QG	QuantGov	https://quantgov.org/
QS	QS World University Rankings	https://www.topuniversities.com/qs-world-university-rankings
SAMHSA	Substance Abuse and Mental Health Services Administration, The National Survey on Drug Use and Health	https://www.samhsa.gov/
SEDA	Stanford Education Data Archive	https://edopportunity.org/

Source Code	Source Name	Web address
SPLC	Southern Poverty Law Center	https://www.splcenter.org/
TF	Tax Foundation	https://taxfoundation.org/
TP	Talk Poverty	https://talkpoverty.org/
UI	Urban Institute	https://www.urban.org/
USACS	United States Census Bureau, American Community Survey	https://www.census.gov/programs-surveys/acs
USBEA	United States Bureau of Economic Analysis	https://www.bea.gov/
USBJS	United States Bureau of Justice Statistics	https://www.bjs.gov/
USBLS	United States Bureau of Labour Statistics	https://www.bls.gov/
USBTS	United States Bureau of Transportation Statistics	https://www.bts.gov/
USCB	United States Census Bureau	https://www.census.gov/
USDA	United States Department of Agriculture	https://www.usda.gov/
USDE	United States Department of Education	https://www.ed.gov/
USDOL	United States Department of Labor	https://www.dol.gov/
USEIA	United States Energy Information Administration	https://www.eia.gov/
USEPA	United States Environmental Protection Agency	https://www.epa.gov/
USFWS	United States Fish and Wildlife Service	https://www.fws.gov/
USGS	United States Geological Survey	https://www.usgs.gov/
USHUD	United States Department of Housing and Urban Development	https://www.hud.gov/
USPFT	United States Press Freedom Tracker	https://pressfreedomtracker.us/
USPIRG	United States Public Interest Research Group	https://uspirg.org/
USPTO	United States Patent and Trademark Office	https://www.uspto.gov/
USRC	United States Religious Census	http://www.usreligioncensus.org/
Wash. Post.	Washington Post	https://github.com/washingtonpost/data-police-shootings

Appendix II: Indicator lists

The following pages set out the state-level and county-level indicators used within each domain, pillar, and element of the United States Prosperity Index. The Index at a county level has been closely based on the state level Index, and the availability of county indicators are classified into three groupings:

- **Exact or very similar match:** Exactly the same data is available at a county level as at the state level (i.e. number of burglaries per 100,000 population), or where the county indicator is so very marginally different to the state indicator (e.g. a five year smoothed value is used at the county level, whereas a single year has been used at the state level). These indicators appear as one row in the table, with state and county illustrated in the Index column;
- **Alternative indicator used:** An exact indicator match is not available at county level but similar data that is different in nature has been used (e.g. The percent of public water sources without health-based violations is not available at a county level, so we have used a binary indicator capturing whether at least one community water system in the county received at least one health-based violation during the specified time frame, from the County Health Rankings). These indicators are shown as two rows in the table;
- **No county indicator:** No county match or alternative is available, so the state value has been used for all counties within the state. These indicators are shown as one row in the table, with a note in the Index column.

Inclusive Societies

Safety and Security

Indicators for Terror-related Crime (weight = 15%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Mass shooting deaths	The death rate from mass shootings, averaged over the previous five years	State & County	*deaths /1,000,000 population	Gun Violence Archive	2019	1.5
Mass shooting injuries	The injury rate from mass shootings, averaged over the previous five years.	State & County	*injuries /1,000,000 population	Gun Violence Archive	2019	1
Terrorism deaths	The death rate from terrorism, averaged over the previous five years.	State & County	*deaths /1,000,000 population	Global Terrorism Database	2018	1
Terrorism injuries	The injury rate from terrorism, averaged over the previous five years.	State & County	*injuries /1,000,000 population	Global Terrorism Database	2018	0.5
Terrorism events	The number of terrorism events, averaged over the previous five years	State & County	*events /1,000,000 population	Global Terrorism Database	2018	0.5

Indicators for Violent Crime (weight = 50%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Up-date	Weight
Murder	The homicide rate.	State	*deaths /100,000 population	Federal Bureau of Investigation Uniform Crime Reporting Statistics	2018	1.5
	The homicide rate.	County	*deaths /100,000 population	National Archive of Criminal Justice Data	2016	1.5
Rape	The rape rate.	State	*incidents /100,000 population	Federal Bureau of Investigation Uniform Crime Reporting Statistics	2018	1
	The rape rate.	County	*incidents /100,000 population	National Archive of Criminal Justice Data	2016	1
Aggravated assaults	The aggravated assault rate.	State	*assaults /100,000 population	Federal Bureau of Investigation Uniform Crime Reporting Statistics	2018	1
	The aggravated assault rate.	County	*assaults /100,000 population	National Archive of Criminal Justice Data	2016	1
Robbery	The robbery rate.	State	*incidents /100,000 population	Federal Bureau of Investigation Uniform Crime Reporting Statistics	2018	0.5
	The robbery rate.	County	*incidents /100,000 population	National Archive of Criminal Justice Data	2016	0.5

Indicators for Property Crime (weight = 35%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Up-date	Weight
Burglary	The motor vehicle theft rate.	State	*incidents /100,000 population	Federal Bureau of Investigation Uniform Crime Reporting Statistics	2018	1.5
	The motor vehicle theft rate.	County	*incidents /100,000 population	National Archive of Criminal Justice Data	2016	1.5
Motor vehicle theft	The motor vehicle theft rate.	State	*incidents /100,000 population	Federal Bureau of Investigation Uniform Crime Reporting Statistics	2018	1
	The motor vehicle theft rate.	County	*incidents /100,000 population	National Archive of Criminal Justice Data	2016	1
Larceny theft	The larceny theft rate.	State	*incidents /100,000 population	Federal Bureau of Investigation Uniform Crime Reporting Statistics	2018	0.5
	The larceny theft rate.	County	*incidents /100,000 population	National Archive of Criminal Justice Data	2016	0.5
Identity theft	The identity theft rate.	State & County	*victims /100,000 population	Federal Trade Commission, Consumer Sentinel Network	2019	0.5

Personal Freedom

Indicators for Agency (weight = 30%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Fatal police shootings of unarmed civilians	The rate of fatal shootings of unarmed civilians by police officers.	State & County	*deaths /100,000 population	Washington Post	2019	1
Death row population	The number of prisoners on death row in each state.	State (state value used for counties in state)	*prisoners /100,000 population	NAACP Legal Defense and Educational Fund	2019	1
Adult incarceration	The incarceration rate of adults.	State (state value used for counties in state)	prisoners /100,000 adult population	United States Bureau of Justice Statistics	2016	1
Youth incarceration	The incarceration rate of people under 21.	State (state value used for counties in state)	prisoners /100,000 youth population	Census of Juveniles in Residential Placement	2015	0.5
Trafficking	The rate of reported trafficking.	State (state value used for counties in state)	reports /100,000	Polaris Project	2018	1

Indicators for Freedom of Association and Speech (weight = 15%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Free speech in public places	A coding of whether state law mandates free speech on private property. (3=malls, universities, & neighborhood associations, ..., 0=none)	State (state value used for counties in state)	coding, 0-3	Cato — Freedom in the 50 States	2016	1
Right-to-work	A coding of a state's right to work laws, 1 if a state has a "Right to Work" law, 0 if not.	State (state value used for counties in state)	coding, 0-1	National Conference of State Legislatures	2019	0.5
Press suppression	The rate of suppression, covering press who were arrested, denied access or had their equipment seized, averaged over the last five years.	State (state value used for counties in state)	number /100,000 population	United States Press Freedom Tracker	2019	0.5
Invasive cell phone surveillance	A coding of the known use of stingray tracking devices by state and local police departments. A state is given a score of 1 if it's known that local and state police agencies in the state have this technology, 0.5 if only local police do, and 0 if it's not known that either do.	State (state value used for counties in state)	coding, 0-1	American Civil Liberties Union	2019	0.5

Indicators for Absence of Legal Discrimination (weight = 25%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Religious freedom restoration act enacted	A coding of the states' religious freedom restoration acts. A state receives 1 if any burden or infringement serves as basis for "compelling interest" review, 0.75 if "substantial burden" may generate compelling interest review, 0.5 if there are broad exemptions, and 0 if there is no religious freedom restoration act.	State (state value used for counties in state)	coding, 0-1	Cato — Freedom in the 50 States	2016	1
Employment anti-discrimination law	A coding of whether a state has enacted an employment anti-discrimination law covering any non-federal category.	State (state value used for counties in state)	coding, 0-1	Cato — Freedom in the 50 States	2016	1
Government discrimination based on sex prohibited	A coding of whether a state's constitution prohibits government discrimination on basis of sex. (1=yes, broadly, 0.5=yes, in some decisions, 0=no)	State (state value used for counties in state)	coding, 0-1	Cato — Freedom in the 50 States	2016	1
Affirmative action in public services banned	A coding of whether a state bans affirmative action. (=2 if yes, in constitution, =1 if yes, by statute or executive order, =0.5 if in education only, =0 if no)	State (state value used for counties in state)	coding, 0-2	Cato — Freedom in the 50 States	2016	0.5
LGBT relationships and parenthood recognition	A coding of state laws relating to the legal recognition of LGBT relationships & parenthood, based on; second-parents adoption, family leave, adoption non-discrimination protections, foster care non-discrimination protections, consent to inseminate laws and legal recognition of de facto parents.	State (state value used for counties in state)	coding, 0-10	Movement Advancement Project	2020	0.5
LGBT non-discrimination laws	A coding of state laws relating to LGBT non-discrimination laws; employment, housing, public accommodations, credit and lending, state employees, and (negative) whether the state bans cities and counties from passing non-discrimination laws.	State (state value used for counties in state)	coding, -1-9	Movement Advancement Project	2020	0.5

Indicators for Social Tolerance (weight = 30%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Hate group concentration	The number of hate groups (of any type) in operation. ¹	State & County	*number /100,000 population	Southern Poverty Law Center	2018	1
Ethnic slur Google traffic²	The level to which people have searched for certain ethnic slurs. This indicator is the average of: Twice the search traffic for the n-word, search traffic for “cracker”, search traffic for “greaser” / “beaner”, search traffic for “injun”, and search traffic for “chink” / “chinaman”.	State & County	index, 0-100	Google Trends	2019	1
Same sex marriage support	The percentage of people who responded favor/strongly favor to the survey question: “All in all, do you strongly favor, favor, oppose or strongly oppose allowing gay and lesbian couples to marry legally?”	State (state value used for counties in state)	percentage	Public Religion Research Institute	2017	0.5
LGBT non-discrimination law support	The percentage of people who responded favor/strongly favor to the survey question: “All in all, do you strongly favor, favor, oppose or strongly oppose laws that would protect gay, lesbian, bisexual, and transgender people against discrimination in jobs, public accommodations, and housing?”	State (state value used for counties in state)	percentage	Public Religion Research Institute	2018	0.5

1. A hate group is classified as operating in a county if that group either: (a) operates statewide, (b) operates across a region of the state covering the county, (c) has been identified to operate in that county alone, or (d) operates in a city/town/area within that county.

2. The Ethnic Slurs indicator allows comparison of searched for terms between different states and different counties, but not across time, due to how Google provides the analysis. To avoid incorrect comparisons over time, earlier years have been backfilled from 2019.

Governance

Indicators for Political Accountability (weight = 30%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Elections Performance Index	A composite measure of election administration policy and performance, based on: returned and rejected ballots, postelection audits, ballot problems, voter registration rate, turnout, voter waiting time, online election tool accessibility.	State (state value used for counties in state)	index score, 0-1	MIT Election and Data Science Lab coding of state policies	2016	1.5
Gender balance in legislatures	The percentage of legislators in each state who are women.	State (state value used for counties in state)	percentage	Center for American Women and Politics	2020	0.5
State campaign disclosure	A composite measure of each states' independent spending disclosure practice, measuring: disclosure of contributor information, timeliness and quality of campaign finance data, and public access to data.	State (state value used for counties in state)	index score, 0-1	National Institute on Money in Politics	2016	1
Term limits	An encoding of legislator term limits, taking a value of 1 if term limits apply, 0 if they do not.	State (state value used for counties in state)	coding, 0-1	National Conference of State Legislatures	2019	0.5

Indicators for Rule of Law (weight = 35%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Justice Index	A composite measure of access to justice, based on: attorney access, self-representation, language access, and disability access.	State (state value used for counties in state)	index rank, 1-51	National Center for Access to Justice	2016	1.5
Judicial integrity	The ATR Foundation calls out courts they deem as out of balance. This indicator scores a 1 if the state has a court that has been called out, 0.5 if an area in the state is on a "watch list" and 0 if it does not.	State (state value used for counties in state)	coding, 0-1	American Tort Reform Association	2019	0.5

Indicators for Government Integrity (weight = 35%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Legal corruption perceptions	A rating of the level of legal corruption across the three branches of government, based on a survey of reporters.	State (state value used for counties in state)	expert survey, 3-15	Institute for Corruption Studies	2018	1
Illegal corruption perceptions	A rating of the level of illegal corruption across the three branches of government, based on a survey of reporters.	State (state value used for counties in state)	expert survey, 3-15	Institute for Corruption Studies	2018	1
Corruption Reflection Index	A composite measure of the level to which state corruption is reported in the news.	State (state value used for counties in state)	index score, 0-1	Institute for Corruption Studies	2013	0.5
State Integrity Investigation	A composite measure of each state's transparency and accountability based on the laws and systems they have in place to deter corruption.	State (state value used for counties in state)	index rank, 1-51	U.S. Center for Public Integrity	2015	1
Public record request compliance	The percentage of public records requests that state agencies complied with over a four-year period.	State (state value used for counties in state)	percentage	Dave Cuillier	2018	1
Online Spending Transparency Index	A composite measure of the transparency of state websites on information regarding state spending.	State (state value used for counties in state)	index score, 0-100	United States Public Interest Research Group	2018	0.5

Social Capital

Indicators for Personal and Family Relationships (weight = 25%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Divorce	The divorce rate, by state of occurrence.	State (state value used for counties in state)	instances /1,000 population	Centers for Disease Control and Prevention	2018	1
Children in unmarried households	The percentage of all children living in unmarried households.	State & County	percentage	United States Census Bureau	2018	1
Teen births	The rate of births to females aged 15-19 years.	State & County	instances /1,000 female 15-19 population	Centers for Disease Control and Prevention	2018	1
Parent's attendance of children's activities	The percentage of parents responding "Always/Sometimes" to the question "During the past 12 months, how often did you attend events or activities that this child participated in?"	State (state value used for counties in state)	percentage	National Survey of Children's Health	2018	0.5
Shared meals with household members	The percentage responding "A few times a week/Basically every day" to the question "How often do you eat dinner with household members?"	State & County	percentage	Current Population Survey, Civic Engagement Supplement	2013	0.5
Frequently hear from family and friends	The percentage responding "A few times a week/Basically every day" to the question "How often do you see/hear from friends or family?"	State & County	percentage	Current Population Survey, Civic Engagement Supplement	2017	1
Close friends	Average number of close friends. "Close friends" were described to the respondent as "people you feel at ease with, can talk to about private matters, or call on for help."	State & County	number	Current Population Survey, Civic Engagement Supplement	2008	1

Indicators for Social Networks (weight = 25%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Favors between neighbors	The percentage responding "A few times a month/A few times a week/Basically every day" to the question "How often do you do favors for neighbors and vice-versa?"	State & County	percentage	Current Population Survey, Civic Engagement Supplement	2013	1
Frequently talk with neighbors	The percentage responding "A few times a month/A few times a week/Basically every day" to question "How often do you talk with neighbors?"	State & County	percentage	Current Population Survey, Civic Engagement Supplement	2017	1
Trust in people in neighborhood	The percentage responding "All"/Most of the people" to the question "How many of the people in the neighborhood do you trust?"	State & County	percentage	Current Population Survey, Civic Engagement Supplement	2013	1.51
Supportive neighborhood for a child	Percentage responding "Yes" to the question "Does your child live in a supportive neighborhood?"	State (state value used for counties in state)	percentage	National Survey of Children's Health	2018	0.5
Trust in people	A weighted average of responses to the question "Generally speaking, how often can you trust other people?" with responses given the following weights; Always = 1, most of the time = 0.75, about half the time = 0.5, some of the time = 0.25, never = 0.	State (state value used for counties in state)	coding, 0-1	American National Election Studies	2016	1

Indicators for Institutional Trust (weight = 20%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Confidence in corporations	The percentage responding "A Great Deal of Confidence/ Some Confidence" to the question "How much confidence do you have in Corporations to do what is right?"	State & County	percentage	Current Population Survey, Civic Engagement Supplement	2013	1
Confidence in the media	The percentage responding "A Great Deal of Confidence/ Some Confidence" to the question "How much confidence do you have in the Media to do what is right?"	State & County	percentage	Current Population Survey, Civic Engagement Supplement	2013	1
Trust in federal government	A weighted average of responses to the question "How often can you trust the federal government in Washington to do what is right?" with responses given the following weights; Always = 1, most of the time = 0.75, about half the time = 0.5, some of the time = 0.25, never = 0.	State (state value used for counties in state)	coding, 0-1	American National Election Studies	2016	0.5

Indicators for Civic and Social Participation (weight = 30%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Volunteer rate	The rate of volunteering over the past year.	State (state value used for counties in state)	instances /1,000 population	Corporation for National and Community Service, Volunteering & Civil Life in America	2018	1
Volunteer-ing intensity	The number of hours of volunteering per year.	State (state value used for counties in state)	*hours, per capita	Corporation for National and Community Service, Volunteering & Civil Life in America	2015	1
Active in neighborhood	The percentage of people who reported being active in their neighborhood.	State (state value used for counties in state)	percentage	Corporation for National and Community Service, Volunteering & Civil Life in America	2015	1
Helping the community	The number of people who say they spend time helping their community, per 1,000 people.	State (state value used for counties in state)	instances /1,000 population	Corporation for National and Community Service, Volunteering & Civil Life in America	2015	1
(Non-religious) membership organizations	The number of membership organizations in the arts, entertainment and recreation sectors, per 1,000 people.	State & County	number /1,000 population	U.S. Census Bureau, County Business Patterns	2017	1
Religious membership organizations	The number of religious congregations, per 1,000 people.	State & County	number /1,000	United States Religious Census	2010	0.5
Religious organization participation	The percentage responding "Yes" to the question "Have you participated in religious organization in the last 12 months? [Yes/No]"	State & County	percentage	Current Population Survey, Civic Engagement Supplement	2013	0.5
Sport or recreation organization participation	The percentage responding "Yes" to the question "Have you participated in sports/recreation organization in the last 12 months? [Yes/No]"	State & County	percentage	Current Population Survey, Civic Engagement Supplement	2013	0.5

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
School, neighborhood, or community association	The percentage responding “Yes” to the question “Have you participated in school, neighborhood, or community association in the last 12 months? [Yes/No]”	State & County	percentage	Current Population Survey, Civic Engagement Supplement	2013	0.5

Open Economies

Business Environment

Indicators for Financing Ecosystems (weight = 40%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Venture capital invested	The amount of venture capital invested per capita.	State	\$/capita	National Venture Capital Association	2019	1
	An estimate of the amount of venture capital invested, using county GSP of Finance and Insurance (NAICS: 52) to allocate state venture capital allocated to counties within the state.	County	\$/capita	National Venture Capital Association, Bureau of Economic Analysis	2018	1
Number of venture capital deals	The number of venture capital deals.	State	number /1,000,000	National Venture Capital Association	2019	1
	An estimate of the number of venture capital deals, using county GSP of Finance and Insurance (NAICS: 52) to allocate the number of state venture capital deals to counties within the state.	County	number /1,000,000	National Venture Capital Association, Bureau of Economic Analysis	2018	1
Assets under management	The number assets under management.	State	\$/capita	National Venture Capital Association	2019	1
	An estimate of the amount of assets under management, using county GSP of Finance and Insurance (NAICS: 52) to allocate the state amount of assets under management to counties within the state.	County	\$/capita	National Venture Capital Association, Bureau of Economic Analysis	2018	1
Venture capital fundraising	The total venture capital fundraising.	State	\$/capita	National Venture Capital Association	2019	1
	An estimate of the amount of assets under management, using county GSP of Finance and Insurance (NAICS: 52) to allocate the state amount of assets under management to counties within the state.	County	\$/capita	National Venture Capital Association, Bureau of Economic Analysis	2018	1

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
New foreign direct investment	The total foreign investment into firms in their first year of operation.	State (state value used for counties in state)	\$/capita	Bureau of Economic Analysis	2018	1
Bank branch access	The number of bank branches per square mile. This includes federal and state chartered commercial banks.	State & County	number /square mile	Federal Deposit Insurance Corporation	2018	1.5

Indicators for Domestic Market Contestability (weight = 30%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Low-income licensed occupations	Number of low-income licensed occupations.	State (state values used for counties in state)	number	Institute for Justice	2017	1.5
Occupational licensing training cost	Mean occupational licensing training cost.	State (state values used for counties in state)	\$	Institute for Justice	2017	1
Occupational licensing training time	Mean occupational licensing training time.	State (state values used for counties in state)	days	Institute for Justice	2017	1
Age requirements for license	Age requirements for license.	State (state values used for counties in state)	years	Institute for Justice	2017	1
Regulation density index	A composite measure of anti-competitive regulations.	State (state values used for counties in state)	index score	Cato — Freedom in the 50 States	2016	1

Indicators for Burden of Regulation (weight = 10%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Federal Regulation and State Enterprise Index	A composite measure of the degree to which federal regulation enacted over the past year has impacted private sector industries.	State (state value used for counties in state)	index score	QuantGov	2015	1
State regulation	The number of restrictions in the state regulatory text, expressed as a percentage of the total number of words.	State (state value used for counties in state)	percent	QuantGov	2019	1

Indicators for Labor Market Flexibility (weight = 10%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Collective bargaining agreement coverage	The rate of workers who are covered by a collective bargaining agreement.	State (state value used for counties in state)	number /10,000 population	Fraser Institute	2017	1
Employee health insurance cost	Average annual single premium per enrolled employee for employer-based health insurance	State (state value used for counties in state)	\$	Henry J. Kaiser Family Foundation	2018	0.5
Workers Compensation Premium Rate	Workers compensation premiums by state.	State (state value used for counties in state)	\$ per \$100 earnings	State of Oregon	2018	0.5
Minimum wage	The maximum of federal and state minimum hourly wage.	State (state value used for counties in state)	\$	United States Department of Labor	2019	1

Indicators for Price Distortions (weight = 10%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Subsidies to the private sector	Private sector subsidies as a percentage of total state private industry GDP.	State (state values used for counties in state)	percentage	Bureau of Economic Analysis	2017	1
Corporate Tax Score	A composite measure of each state's principal tax on business activities, based on five components; individual income tax, sales tax, corporate income tax, property tax and unemployment insurance tax.	State (state values used for counties in state)	index score	Tax Foundation	2020	1

Market Access and Infrastructure

Indicators for Communications (weight = 40%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Mean download speed	The average download speed reported by residential providers.	State & County	Mbps	Broadband Now	2020	1.5
Ultra-fast internet access	The percentage of the population with access to internet of at least 1Gbps download speed and at least 3Mbps upload speed.	State & County	percentage	Broadband Now	2020	1
Fast internet access	The percentage of the population with access to internet of at least 100Mbps download speed and at least 3Mbps upload speed.	State & County	percentage	Broadband Now	2020	1
Internet providers (Business)	The average number of internet providers for business.	State & County	number	Federal Communications Commission	2015	1

Indicators for Resources (weight = 25%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Customers affected by electricity outages	Customers affected by electricity outages.	State (state value used for counties in state)	number per capita	Mukherjee et al.	2016	0.5
Net electricity generation	The net generation of electricity, by all fuels, per capita.	State (state value used for counties in state)	kWh per capita	United States Energy Information Administration	2019	1
Water usage	The total water extracted per day from both saline and freshwater sources, for non-domestic consumption.	State & County	Mgal per capita	United States Geological Survey	2015	1
Electricity outage duration	System average interruption duration index.	State & County	minutes	United States Energy Information Administration	2018	1
Electricity outage frequency	System average interruption frequency index.	State & County	per year	United States Energy Information Administration	2018	1

Indicators for Transport (weight = 35%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Number of airports	Public and private airports, heliports, and seaplane bases.	State (state value used for counties in state)	number /square mile	United States Bureau of Transportation Statistics	2013	1
Road condition	The percentage of road miles scored in “poor” condition using the International Roughness Index.	State & County	percentage	United States Bureau of Transportation Statistics	2018	1.5
Railroad length	The density of a state’s freight railroad.	State (state value used for counties in state)	miles /square mile	Association of American Railroads	2017	1
Bus transit route mileage	The density of bus transit service (not frequency).	State (state value used for counties in state)	miles /square miles	United States Bureau of Transportation Statistics	2013	0.5
Public road length	The density of public road length.	State & County	miles /square mile	United States Bureau of Transportation Statistics	2013	1
Bridge condition	The percentage of bridges scored in “poor” condition according to the Pavement and Bridge Condition Performance Measures.	State & County	percentage	United States Bureau of Transportation Statistics	2018	0.5
Distance to airport	The average distance to the closest airport.	State & County	Km	United States Bureau of Transportation Statistics	2019	1

Economic Quality

Indicators for Fiscal Sustainability (weight = 25%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Government credit rating	An ordinal scale of a state government's credit rating mapped from a scale of 'AAA' to 'BBB'.	State (state value used for counties in state)	rating	Ballotpedia	2017	0.5
State reserves capacity	Number of days the state government can operate using only their reserves.	State (state value used for counties in state)	days	Pew Research Center	2018	1
Revenue to expenditure ratio	The ratio of the state government's revenue to expenditure.	State	ratio	Pew Research Center	2017	1
	The ratio of the county government's revenue to total expenditures.	County	ratio	United States Census Bureau	2017	1
State budget balance	State government budget balance.	State (state value used for counties in state)	\$	Pew Research Center	2018	1
State pension funding	The amount of pension assets as a percentage of pension liabilities.	State (state value used for counties in state)	percentage	Federal Reserve	2017	1
Debt-to-GDP ratio	A combination of long- and short-term debt, as a percentage of GDP.	County	percentage	United States Census Bureau	2015	1

Indicators for Productivity and Competitiveness (weight = 25%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Manufactured export value	Total value of the exports of manufactured goods, by state origin of movement.	State	\$/capita	United States Census Bureau	2019	1
Export value (goods)	Value of international exported goods.	County	\$/capita	Brookings Institution Export Monitor	2018	1
Non-manufactured export value	Total value of the exports of nonmanufactured goods, by state origin of movement.	State	\$/capita	United States Census Bureau	2019	0.5
Export value (services)	Value of international exported services.	County	\$/capita	Brookings Institution Export Monitor	2018	0.5
Labor productivity	The rate at which labor is used to produce output of goods and services.	State (state value used for counties in state)	\$/hour	United States Bureau of Labor Statistics	2017	2 ³

3. This indicator has a weight of 1.5 in the county level Index, as there is no county level variation.

Indicators for Dynamism (weight = 20%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Up-date	Weight
Startup concentration	The number of startups	State & County	number /1,000 businesses	Kauffman Foundation	2017	0.5
Startup early job creation	The rate of jobs created by startups in their first year.	State (state value used for counties in state)	number /capita	Kauffman Foundation	2018	1
Startup early survival rate	The percentage of startups that are still active after one year.	State (state value used for counties in state)	percentage	Kauffman Foundation	2018	0.5
Opportunity-driven startups	The percentage of new entrepreneurs who were not unemployed and not looking for a job when they started their new business.	State & County	percentage	Kauffman Foundation	2018	1
Rate of new entrepreneurs	The rate of people that start a new business over the course of the year.	State & County	number /100,000	Kauffman Foundation	2018	1.5
Patent applications	The rate of patent applications received by the USPTO in a given year. The state or county of origin is based on the address of the first named inventor.	State & County	number /1,000,000 population	United States Patent and Trademark Office	2015	1

Indicators for Labor Force Engagement (weight = 30%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Up-date	Weight
Unemployment	The percentage of people who are unemployed and actively seeking employment.	State & County	percentage	United States Bureau of Labor Statistics	2019	1
Youth unemployment	The percentage of 16-24-year olds who are unemployed and actively seeking employment.	State & County	percentage	United States Bureau of Labor Statistics	2019	1
Employee engagement	The percentage of employees classified as engaged by the "Employee Engagement Index" which classified employees as engaged, not engaged, or actively disengaged.	State (state value used for counties in state)	percentage	Gallup Dailies	2016	0.5
Underemployment	The proportion of the civilian labour force who are involuntarily part-time employed.	State (state value used for counties in state)	percentage	United States Bureau of Labor Statistics	2019	1
Labor force participation	The percentage of the total population aged 20-64 in the civilian labor force.	State	percentage	United States Bureau of Labor Statistics	2019	1
	Percentage of the total population aged 16 years and over in the labor force.	County	percentage	United States Census Bureau	2019	1.5

Empowered People

Living Conditions

Indicators for Material Resources (weight = 25%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Low income	The percentage of individuals below 150% of the federal poverty line.	State & County [†]	percentage	U.S. Census Bureau, American Community Survey	2018	1
Poverty	The percentage of individuals below 100% of the federal poverty line.	State & County [†]	percentage	U.S. Census Bureau, American Community Survey	2018	1
Deep poverty	The percentage of individuals below 50% of the federal poverty line.	State & County [†]	percentage	U.S. Census Bureau, American Community Survey	2018	1
Liquid asset poverty	The percentage of households without sufficient liquid assets to subsist at the poverty level for three months in the absence of income.	State & County ⁴	percentage	Prosperity Now Scorecard	2016	1
High risk loans	The percentage of households that used high-cost, high-risk forms of credit to make ends meet, including payday loans, automobile title loans, refund anticipation loans, rent-to-own, and pawning.	State (state value used for counties in state)	percentage	Talk Poverty	2019	1

[†] County data is a 5-year trailing mean.

4. The county data uses modelled data, alongside reported data.

Indicators for Nutrition (weight = 15%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Food security	The percentage of households that were certain of having, or able to acquire, enough food to meet the needs of all their household members, for the whole year.	State	percentage	United States Department of Agriculture	2018	1
	The (reported and modelled) percentage of households that were certain of having, or able to acquire, enough food to meet the needs of all their household members, for the whole year.	County	percentage	Feeding America	2017	1
Borderline food security	The percentage of households where the normal eating patterns of no members were disrupted, or food intake reduced, at any time during the year due to insufficient money or other resources.	State (state value used for counties in state)	percentage	United States Department of Agriculture	2018	1
Fruit consumption	The percentage of adults who report consuming fruit at least once daily.	State & County	percentage	Behavioral Risk Factor Surveillance System	2017	0.5
Vegetable consumption	The percentage of adults who report consuming vegetables at least once daily.	State & County	percentage	Behavioral Risk Factor Surveillance System	2017	0.5

Indicators for Water Services (weight = 15%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Clean and safe water	The percentage responding “easy” to the question, “In the city or area where you live is it easy or not to get clean and safe water?”	State (state value used for counties in state)	percentage	Gallup Dailies	2013	0.5
Public drinking water violations	The percent of public water sources without health-based violations.	State	percentage	United States Environmental Protection Agency	2019	1
	A binary indicator capturing whether at least one community water system in the county received at least one health-based violation during the specified time frame.	County	score, 0 or 1	County Health Rankings	2018	1
Complete kitchen and plumbing facilities	The percentage of households that have complete kitchen and plumbing facilities.	State & County	percentage	United States Department of Housing and Urban Development	2016	1

Indicators for Shelter (weight = 15%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Up-date	Weight
Homelessness	The rate of homelessness.	State & county	number /10,000 population	United States Department of Housing and Urban Development	2019	0.5
Unsheltered homeless rate	The percentage of homeless people that are unsheltered.	State & County	percentage	United States Department of Housing and Urban Development	2019	0.5
Households with overcrowding	The percentage of households with overcrowding (more than one person per room in the household).	State & County	percentage	United States Department of Housing and Urban Development	2016	1
Availability of affordable housing	The rate of affordable and available units for renters with extremely low income.	State	units/100 extremely low-income tenants	National Low-Income Housing Coalition	2018	1
	The rate of affordable and available units for renters with extremely low income.	County	units/100 extremely low-income tenants	Urban Institute	2014	1

Indicators for Connectedness (weight = 15%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Urban access to broadband	The percentage of urban population with access to 25 Mbps download /3 Mbps upload broadband.	State	percentage	Federal Communications Commission	2017	0.5
Rural access to broadband	The percentage of rural population with access to 25 Mbps download /3 Mbps upload broadband.	State	percentage	Federal Communications Commission	2017	1
Access to broadband	Percent of total population with access to 25 Mbps download /3 Mbps upload broadband.	County	percentage	Federal Communications Commission	2017	1.5
Households with a smartphone	The percentage of households with one or more smartphones.	State & County [†]	percentage	U.S. Census Bureau, American Community Survey	2018	1

Indicators for Prevention from Harm (weight = 15%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Fatal unintentional injuries	The rate of fatal unintentional injuries.	State & County [†]	number /100,000 population	Centers for Disease Control and Prevention	2018	1
Traffic deaths	The rate of traffic deaths.	State & County	number /100,000 population	Centers for Disease Control and Prevention	2018	1

[†] County data is a 5-year trailing mean.

Health

Indicators for Behavioral Risk Factors (weight = 15%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Obesity	The percentage of adults who have obesity.	State	percentage	Behavioral Risk Factor Surveillance System	2018	1
	The (reported and modelled) percentage of adults who have obesity.	County	percentage	Centers for Disease Control and Prevention - Diabetes Atlas	2016	1
Smoking	The percentage of adult respondents who report currently smoking every day or some days and having smoked 100 cigarettes or more in their lifetime.	State	percentage	Behavioral Risk Factor Surveillance System	2018	1.5
	The (reported and modelled) percentage of adult respondents who report currently smoking every day or some days and having smoked 100 cigarettes or more in their lifetime.	County	percentage	County Health Rankings	2017	1.5
Alcohol use disorder	The percentage of adults with alcohol use disorder.	State & County	percentage	Substance Abuse and Mental Health Services Administration	2018	0.5
Illicit drug use disorder	Percent of adults with illicit drug use disorder.	State & County	percentage	Substance Abuse and Mental Health Services Administration	2018	0.5
Pain reliever misuse	The rate of pain reliever misuse amongst adults.	State & County	percentage	Substance Abuse and Mental Health Services Administration	2018	0.5

Indicators for Preventative Interventions (weight = 15%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Adult dentist visits	The percentage of adults who report having been to the dentist or a dental clinic in the previous year.	State & County	percentage	Behavioral Risk Factor Surveillance System	2018	0.5
Adult doctor visits	The percentage of adults who responded, "Within the past year" to the question: "About how long has it been since you last visited a doctor for a routine check-up".	State & County	percentage	Behavioral Risk Factor Surveillance System	2018	0.5
Colorectal cancer screening	The percentage of adults aged 50-75 years who have had a fecal occult blood test, sigmoidoscopy, or colonoscopy, complying with USPSTF recommendations.	State & County	percentage	Behavioral Risk Factor Surveillance System	2018	0.5
Child medical visits	The percentage of children aged 12-17 years who have had one or more preventative medical care visits during the past 12 months.	State (state value used for counties in state)	percentage	National Survey of Children's Health	2017	0.5
HPV immunizations	The percentage of males and females aged 13 to 17 who are up to date on all the recommended doses of human papillomavirus (HPV) vaccine.	State (state value used for counties in state)	percentage	National Center for Immunization and Respiratory Diseases	2018	1
Pap smear test	The percentage of women aged 21-65 who have had a Papanicolaou test in the past three years.	State & County	percentage	Behavioral Risk Factor Surveillance System	2018	0.5
Child immunization	The percentage of children aged 19-35 months who are immunized. Vaccines in this series include at least 4 doses of DTaP, 3 doses of Polio, 1 dose of MMR, 3 doses of Hep B, 3 doses of Hib, 1 dose of Varicella antigens, and 4 doses of Pneumococcal conjugate vaccine.	State (state value used for counties in state)	percentage	National Center for Immunization and Respiratory Diseases	2017	1
Child dentist visits	The percentage of children aged 1-17 years who received any type of dental care during the past 12 months.	State (state value used for counties in state)	percentage	National Survey of Children's Health	2018	0.5

Indicators for Care Systems (weight = 15%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Child mental health access	Percentage of respondents whose child received or needed mental health care but had a small or big problem getting it.	State (state value used for counties in state)	percentage	National Survey of Children's Health	2017	1
Adults with no health care coverage	The percentage of adults responding "no" to the question "do you have any kind of health care coverage?"	State	percentage	Behavioral Risk Factor Surveillance System	2018	0.5
	The (modelled) percentage of the population under age 65 without health insurance coverage.	County	percentage	County Health Rankings	2017	0.5
Avoided medical care due to cost	The percentage of adults responding "yes" to "Was there a time in the past 12 months when you needed to see a doctor but could not because of cost?"	State & County	percentage	Behavioral Risk Factor Surveillance System	2018	1
Hospital rating	The percentage of patients who gave their hospital a rating of 9 or 10 on a scale from 0 to 10.	State & County	percentage	Hospital Consumer Assessment of Healthcare Providers and Systems	2018	0.5
Preventable hospitalization for medicare enrollees	The rate of discharges for ambulatory care-sensitive conditions amongst medicare enrollees.	State	discharges /100,000	Centers for Medicare & Medicaid Services	2018	1
	The rate of discharges for ambulatory care-sensitive conditions amongst medicare enrollees.	County	discharges /100,000	County Health Rankings	2018	1

Indicators for Mental Health (weight = 15%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Suicide	The death rate from suicide (intentional self-harm).	State & County	deaths /100,000 population	Centers for Disease Control and Prevention	2018	1
Drug overdose deaths	The death rate from drug-poisoning.	State & County	deaths /100,000 population	Centers for Disease Control and Prevention	2018	0.5
Serious mental illness	The percentage of adults with serious mental illness, defined as having a diagnosable mental, behavioral, or emotional disorder, other than a developmental or substance use disorder that results in serious functional impairment, in the past year.	State & County	percentage	Substance Abuse and Mental Health Services Administration	2018	1
Disability weighted prevalence of mental illness	The age standardized rate of years lived with disability from all mental disorders.	State (state value used for counties in state)	years /100,000 population	Institute for Health Metrics and Evaluation	2017	1
Self-reported mental health not good	The percentage of adults who responded "14 or more days" to the question "Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?"	State	percentage	Behavioral Risk Factor Surveillance System	2018	1
	The (reported and modelled) percentage of adults who responded "14 or more days" to the question "Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?"	County	percentage	County Health Rankings	2017	1

Indicators for Physical Health (weight = 20%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
High blood pressure	The percentage of adults who have high blood pressure.	State & County	percentage	Behavioral Risk Factor Surveillance System	2017	1
Diabetes	The percentage of adults who have been diagnosed with diabetes.	State	percentage	Behavioral Risk Factor Surveillance System	2018	1
	The (reported and modelled) percentage of adults who have been diagnosed with diabetes.	County	percentage	Centers for Disease Control and Prevention	2016	1
Heart attack	The percentage of adults who have experienced myocardial infarction (heart attack).	State & County	percentage	Behavioral Risk Factor Surveillance System	2018	1
Disability weighted prevalence of infectious disease	The age standardized rate of years lived with disability from all communicable and nutritional diseases.	State (state value used for counties in state)	years /100,000 population	Institute for Health Metrics and Evaluation	2017	0.5
Self-reported poor physical health	The percentage of adults who responded, “14 or more days” to the question “Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?”	State	percentage	Behavioral Risk Factor Surveillance System	2018	1
	The (reported and modelled) percentage of adults who responded “14 or more days” to the question “Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?”	County	percentage	County Health Rankings	2017	1

Indicators for Longevity (weight = 20%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Maternal mortality	The death rate from maternal hemorrhage; maternal sepsis and other maternal infections; maternal hypertensive disorders; maternal obstructed labor and uterine rupture; maternal abortion, miscarriage, and ectopic pregnancy; indirect maternal deaths; late maternal deaths; other maternal disorders; maternal deaths aggravated by HIV/AIDS.	State & County	deaths /100,000 population	Institute for Health Metrics and Evaluation	2017	0.5
Under 5 mortality	The 0-5 death rate.	State & County	deaths /100,000 under 5 population	Centers for Disease Control and Prevention	2018	1
5-14 mortality	The 5-14 death rate.	State & County	deaths /100,000 5-14 population	Centers for Disease Control and Prevention	2018	0.5
15-64 mortality	The 15-64 death rate.	State & County	deaths /100,000 15-64 population	Centers for Disease Control and Prevention	2018	2
Mortality risk 65-85	The chance of a 65-year-old dying before they reach the age of 85, expressed as a percentage.	State & County	percentage	Institute for Health Metrics and Evaluation	2014	1

Education

Indicators for Pre-Primary Education (weight = 5%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Pre-primary enrollment	The percentage of 3-4 year olds enrolled in school.	State & County [†]	percentage	United States Census Bureau American Community Survey	2018	2
State pre-K quality	State pre-school quality along a checklist of ten measures.	State (state value used for counties in state)	index score, 0-10	National Institute for Early Education Research	2018	1

[†] County data is a 5-year trailing mean.

Indicators for Primary Education (weight = 20%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Primary enrollment	The percentage of 5-9 year olds enrolled in school.	State & County [†]	percentage	United States Census Bureau American Community Survey	2018	1
Math grade 4 score	The average scale score of students taking the mathematics grade 4 exam.	State	score, 0-500	National Assessment of Educational Progress	2019	2
Math grade 4 level	The average grade level of Grade 4 students in math.	County	grade level	Stanford Education Data Archive	2016	1
Science grade 4 score	The average scale score of students taking the science grade 4 exam.	State (state value used for counties in state)	score, 0-300	National Assessment of Educational Progress	2015	2 ⁵
Reading grade 4 score	The average scale score of students taking the reading grade 4 exam.	State	score, 0-500	National Assessment of Educational Progress	2019	2
English, language and arts grade 4 level	The average grade level of Grade 4 students in english, language and arts.	County	grade level	Stanford Education Data Archive	2016	2

[†] County data is a 5-year trailing mean.

5. This indicator has a weight of 1.5 in the county level Index, as there is no county-level variation.

Indicators for Secondary Education (weight = 25%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Secondary enrollment	The percentage of 15 to 17 year olds enrolled in school.	State & County [†]	percentage	United States Census Bureau American Community Survey	2019	1
Math grade 8 score	The average scale score of students taking the mathematics grade 8 exam.	State	score, 0-500	National Assessment of Educational Progress	2019	1.5
Math grade 8 level	The average grade level of Grade 8 students in math.	County	grade level	Stanford Education Data Archive	2016	1.5
Science grade 8 score	The average scale score of students taking the science grade 8 exam.	State (state value used for counties in state)	score, 0-300	National Assessment of Educational Progress	2015	1.5 ⁶
Reading grade 8 score	The average scale score of students taking the reading grade 8 exam.	State	score, 0-500	National Assessment of Educational Progress	2019	1.5
English, language and arts grade 8 level	The average grade level of Grade 8 students in English, language and arts.	County	grade level	Stanford Education Data Archive	2016	1.5
High school graduation rate	The four-year adjusted cohort graduation rate from high school.	State	percentage	United States Department of Education	2017	1
	The four-year adjusted cohort graduation rate from high school.	County	percentage	County Health Rankings	2017	1

[†] County data is a 5-year trailing mean.

6. This indicator has a weight of 1 in the county level Index, as there is no county level variation.

Indicators for Tertiary Education (weight = 25%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
College enrollment	The percentage of 18 to 24 year olds enrolled in college.	State & County [†]	percentage	United States Census Bureau American Community Survey	2018	1
College graduation rate	The percentage of first-time full-time bachelor's degree-seeking students earning any formal award (certificate, associate, or bachelor's degree) within six years from Title IV degree-granting institutions.	State (state value used for counties in state)	percentage	National Center for Education Statistics	2018	1
University quality for enrolled students	The score given to the top 1000 Universities according to QS Ranking, weighted by enrollment and normalised by overall state tertiary enrollment.	State (state value used for counties in state)	Legatum Institute score	QS World University Rankings	2020	1
Community college graduation rate	Percentage of first-time two-year degree-seeking students earning any formal award within three years from Title II degree-granting institutions.	State & County	percentage	National Center for Education Statistics	2018	0.5

† County data is a 5-year trailing mean.

Indicators for Adult Skills (weight = 25%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Adult population with at least a high school diploma	The percentage of the over 25 population with at least a high school diploma.	State & County [†]	percentage	United States Census Bureau American Community Survey	2018	1
Adult population with bachelor's degree or higher	The percentage of the over 25 population with a bachelor's degree or higher.	State & County [†]	percentage	United States Census Bureau American Community Survey	2018	1

† County data is a 5-year trailing mean.

Natural Environment

Indicators for Emissions (weight = 25%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Toxic air releases	The average of two normalized scores for toxic air releases/per capita and toxic air releases/Gross State Product.	State & County	index, 0-1	United States Environmental Protection Agency	2018	2
CO₂ emissions	The average of two normalized scores for CO ₂ emissions/per capita and CO ₂ emissions/Gross State Product.	State & County	index, 0-1	United States Environmental Protection Agency	2017	2
Nitrous oxide emissions	The average of two normalized scores for nitrous oxide emissions/per capita and nitrous oxide emissions/Gross State Product.	State & County	index, 0-1	United States Environmental Protection Agency	2017	0.5
Carbon monoxide emissions	The average of two normalized scores for carbon monoxide emissions/per capita and carbon monoxide emissions/Gross State Product.	State & County	index, 0-1	United States Environmental Protection Agency	2017	0.5
PM_{2.5} emissions	The average of two normalized scores for PM _{2.5} emissions/per capita and PM _{2.5} emissions/Gross State Product.	State & County	index, 0-1	United States Environmental Protection Agency	2017	0.5
Sulfur dioxide emissions	The average of two normalized scores for sulfur dioxide emissions/per capita and sulfur dioxide emissions/Gross State Product.	State & County	index, 0-1	United States Environmental Protection Agency	2017	0.5
Ozone emissions	The average of two normalized scores for volatile organic compound emissions/per capita and volatile organic compound/Gross State Product.	State & County	Index, 0-1	United States Environmental Protection Agency	2017	0.5
Lead emissions	The average of two normalized scores for lead emissions/per capita and lead emissions/Gross State Product.	State & County	index, 0-1	United States Environmental Protection Agency	2014	0.5

Indicators for Exposure to Air Pollution (weight = 25%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Life years lost from air pollution	The rate of disability adjusted life years lost from air pollution (ambient particulate matter pollution, ambient ozone pollution and household air pollution from solid fuels).	State	DALYs /100,000 population	Institute for Health Metrics and Evaluation	2017	2
Life expectancy loss from air pollution	Life expectancy loss in 2015 from PM2.5 exceeding the observed minimum of 2.8 µg/m ³ .	County	years	Bennett et al. 2019.	2015	2
Fine particulate matter exposure	The average (mean) population exposure to PM2.5.	State & County	µg/cubic meter	Organisation for Economic Cooperation and Development	2017	1

Indicators for Forest, Land and Soil (weight = 20%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Toxic land releases	The net toxic land releases in pounds (lb) per square mile of area.	State & County	lb/square mile	United States Environmental Protection Agency	2018	1
Rural parks and wildlife areas	The percentage of total land area made up of rural parks and wildlife areas.	State (state value used for counties in state)	percentage	United States Department of Agriculture - Economic Research Service	2012	1
Compliant underground storage tanks facilities	The proportion of underground storage tanks facilities which are in compliance with requirements for detection and prevention of release.	State (state value used for counties in state)	percentage	United States Environmental Protection Agency	2016	1
Exposure to pesticides	The rate of pesticide exposure, (any pesticide).	State (state value used for counties in state)	number /100,000 population	CDC National Environmental Public Health Tracking Network	2018	1
Tree canopy cover	The percentage of total land area made up of tree canopy cover.	State & County	percentage	National Land Cover Database	2016	1
Wetlands and deepwater habitats	The percentage of total land area made up of wetlands and deepwater habitats. Wetland types include freshwater - forested and shrub wetland, freshwater emergent wetland, freshwater pond, estuarine and marine wetland, riverine, lakes and other freshwater wetland.	State & County	percentage	United States Fish and Wildlife Service	2019	1

Indicators for Freshwater (weight = 20%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
Good quality rivers and streams	The percentage of a state's rivers and streams that meet eligibility criteria for their attainment status to be considered "Good".	State (state value used for counties in state)	percentage	United States Environmental Protection Agency	2016	0.5
Good quality lakes, reservoirs and ponds	The percentage of a state's lakes, reservoirs and ponds that meet eligibility criteria for their attainment status to be considered "Good".	State (state value used for counties in state)	percentage	United States Environmental Protection Agency	2016	0.5
Total freshwater withdrawals per capita	Total freshwater withdrawal per 1,000 population in Mgal/d. This is made up of public supply, domestic supply, industrial use, irrigation, livestock, aquaculture, mining and thermoelectric.	State & County	million gallons/day /1,000 population	United States Geological Survey	2015	1
Toxic water releases	The net toxic water releases in pounds (lb) per square mile of area, including the quantity of chemicals released from facilities to receiving streams or other water bodies.	State & County	lb/square mile	United States Environmental Protection Agency	2018	1

Indicators for Preservation Efforts (weight = 10%)

Indicator name	Indicator description	Index	Unit (* = Logged)	Source	Latest Update	Weight
GAP 1 Protected areas	The percentage of total state area protected under GAP 1. GAP 1 is the highest level of environmental protection afforded to a piece of land, more stringent than GAP 2 and GAP 3.	State (state value used for counties in state)	percentage	United States Geological Survey	2017	2
GAP 2 Protected areas	The percentage of total state area protected under GAP 2. GAP 2 is the middle level of environmental protection afforded to a piece of land, more stringent than GAP 3, but less than GAP1.	State (state value used for counties in state)	percentage	United States Geological Survey	2017	1.5
GAP 3 Protected areas	The percentage of total state area protected under GAP 3. GAP 3 is the lowest level of environmental protection afforded to a piece of land, less stringent than GAP 2 and GAP 1.	State (state value used for counties in state)	percentage	United States Geological Survey	2017	1

Appendix III: New and existing state level indicators

Domain	Pillar	No. of Elements	No. of Indicators	Indicator Breakdown	
				Replacement or additional indicator	Indicator match from 2019 USPI
Inclusive Societies	Safety and Security	3	13	0	13
	Personal Freedom	4	19	1	18
	Governance	3	12	0	12
	Social Capital	4	24	1	23
Open Economies	Business Environment	5	19	1	18
	Market Access and Infrastructure	3	16	6	10
	Economic Quality	4	19	1	18
Empowered People	Living Conditions	6	21	3	18
	Health	6	33	9	24
	Education	5	17	1	16
	Natural Environment	5	23	3	20
Total		48	216	26	190

Appendix IV: Summary statistics for pillars and elements

State level Index

Domain and pillar Summary

Domain/Pillar	Mean	Minimum Value	Maximum Value	Standard Deviation	R ² between domain/pillar and:		
					GDP per Working age pop., logged	Cantril's Ladder	U.S. Prosperity Index score
Inclusive Societies	54.87	38.72	68.97	7.94	0.13	0.1	0.73
Safety and Security	59.02	34.58	83.87	11.98	0	0	0.35
Personal Freedom	56.85	38.16	75.23	9.5	0.25	0.12	0.52
Governance	58.22	31.81	80.43	12.24	0.2	0.09	0.35
Social Capital	45.37	20.65	69.72	9.82	0.03	0.11	0.36
Open Economies	54.48	40.09	68.17	6.62	0.43	0.1	0.5
Business Environment	52.78	34.39	68.79	8.97	0.18	0.04	0.4
Market Access and Infrastructure	53.33	35.06	71.43	8.63	0.28	0.02	0.25
Economic Quality	57.33	35.86	74.93	8.49	0.31	0.15	0.23
Empowered People	57.33	39.11	73.97	8.64	0.31	0.19	0.91
Living Conditions	67.03	42.26	82.21	9.06	0.17	0.09	0.78
Health	51.77	31.33	74.06	9.56	0.28	0.09	0.83
Education	57.96	30.71	77.98	11.18	0.34	0.3	0.77
Natural Environment	52.56	36.20	69.44	10.17	0.14	0.11	0.39

Element Summary

Inclusive Societies

Pillar	Element (Weight)	Mean	Minimum Value	Maximum Value	Standard Deviation	R ² between domain/pillar and:		
						GDP per Working age pop., logged	Cantril's Ladder	U.S. Prosperity Index score
Safety and Security	Terror-related Crime (15%)	79.85	17.99	100.00	13.89	0	0.03	0.16
	Violent Crime (50%)	54.59	18.62	81.15	13.10	0.02	0	0.25
	Property Crime (35%)	56.40	33.91	85.82	13.81	0.01	0	0.39
Personal Freedom	Agency (30%)	74.36	46.56	98.31	13.89	0.21	0.08	0.53
	Freedom of Association and Speech (15%)	42.31	18.23	60.00	13.30	0.16	0.03	0.12
	Absence of Legal Discrimination (25%)	43.58	1.85	85.19	21.40	0.17	0.09	0.14
	Social Tolerance (30%)	57.66	34.98	79.73	11.56	0.19	0.07	0.53
Governance	Political Accountability (30%)	62.56	35.57	84.57	11.92	0.06	0.02	0.05
	Rule of Law (35%)	56.13	10.50	100.00	24.55	0.13	0.04	0.22
	Government Integrity (35%)	56.60	33.36	84.15	11.56	0.14	0.13	0.37
Social Capital	Personal and Family Relationships (25%)	63.30	38.04	80.16	10.09	0.02	0.13	0.42
	Social Networks (25%)	42.82	6.74	87.68	15.22	0.02	0.01	0.18
	Institutional Trust (20%)	45.54	18.95	75.64	12.60	0.1	0.12	0.21
	Civic and Social Participation (30%)	32.45	17.19	58.79	10.70	0.08	0.11	0.21

Open Economies

Pillar	Element (Weight)	Mean	Minimum Value	Maximum Value	Standard Deviation	R ² between domain/pillar and:		
						GDP per Working age pop., logged	Cantril's Ladder	U.S. Prosperity Index score
Business Environment	Financing Ecosystem (40%)	52.44	9.26	99.93	21.47	0.33	0.05	0.37
	Domestic Market Contestability (30%)	48.34	0.58	81.16	18.01	0	0	0.06
	Burden of Regulation (10%)	53.90	7.17	89.67	17.08	0	0.01	0.1
	Labor Market Flexibility (10%)	53.15	9.60	79.34	18.74	0.21	0.01	0.23
	Price Distortions (10%)	65.97	27.35	87.06	13.61	0.19	0.02	0.14
Market Access and Infrastructure	Communications (40%)	51.98	24.78	79.40	11.58	0.44	0.16	0.36
	Resources (25%)	59.04	19.64	89.29	13.57	0	0.01	0
	Transport (35%)	50.80	11.46	77.80	15.56	0.08	0.03	0.08
Economic Quality	Fiscal Sustainability (25%)	56.92	1.27	84.62	17.08	0.01	0.03	0
	Productivity and Competitiveness (25%)	48.23	15.92	89.99	20.25	0.53	0.06	0.17
	Dynamism (20%)	48.62	21.00	82.18	12.25	0.05	0.07	0.02
	Labor Force Engagement (30%)	71.06	36.93	93.09	11.91	0	0.04	0.21

Empowered People

						R ² between domain/pillar and:		
Pillar	Element (Weight)	Mean	Minimum Value	Maximum Value	Standard Deviation	GDP per Working age pop., logged	Cantril's Ladder	U.S. Prosperity Index score
Living Conditions	Material Resources (25%)	63.21	22.53	91.13	16.22	0.18	0.20	0.76
	Nutrition (15%)	66.89	33.70	94.72	14.38	0.23	0.25	0.74
	Water Services (15%)	72.32	32.02	94.34	13.83	0.01	0.01	0.14
	Shelter (15%)	68.61	16.46	90.68	15.66	0.10	0.16	0.01
	Connectedness (15%)	76.41	57.98	91.90	7.92	0.27	0.10	0.51
	Protection from Harm (15%)	57.27	25.34	92.46	16.09	0.34	0.06	0.23
Health	Behavioral Risk Factors (15%)	57.64	35.01	82.29	11.07	0.13	0.25	0.37
	Preventative Interventions (15%)	58.48	33.94	87.59	12.21	0.29	0.03	0.52
	Care Systems (15%)	57.73	31.07	92.69	12.08	0.07	0.05	0.22
	Mental Health (15%)	51.22	18.09	73.05	13.41	0.25	0.20	0.14
	Physical Health (20%)	57.89	7.97	87.69	18.28	0.31	0.36	0.71
	Longevity (20%)	63.10	23.70	90.20	16.96	0.17	0.21	0.67
Education	Pre-Primary Education (5%)	49.01	8.50	84.67	16.86	0.08	0.01	0.04
	Primary Education (20%)	55.93	32.26	75.91	10.09	0.05	0.05	0.51
	Secondary Education (25%)	55.88	22.32	78.47	11.62	0.00	0.00	0.41
	Tertiary Education (25%)	43.81	15.46	82.04	12.97	0.42	0.03	0.46
	Adult Skills (25%)	52.83	25.79	93.21	14.58	0.39	0.24	0.68

						R ² between domain/pillar and:		
Pillar	Element (Weight)	Mean	Minimum Value	Maximum Value	Standard Deviation	GDP per Working age pop., logged	Cantril's Ladder	U.S. Prosperity Index score
Natural Environment	Emissions (25%)	64.76	23.87	99.25	16.37	0.21	0.02	0.32
	Exposure to Air Pollution (25%)	61.04	29.84	97.81	17.96	0.06	0.23	0.31
	Forest, Land and Soil (20%)	44.14	24.27	74.95	12.37	0.05	0.00	0.12
	Freshwater (20%)	50.80	26.00	77.48	13.14	0.02	0.01	0.06
	Preservation Efforts (10%)	21.25	0.51	70.26	18.00	0.00	0.04	0.00

County level Index

Domain and pillar Summary

Pillar/Domain	Mean	Minimum Value	Maximum Value	Standard Deviation	R ² between domain/ pillar and U.S. Prosperity Index score
Inclusive Societies	53.93	35.14	73.12	8.27	0.62
Safety and Security	67.41	29.80	99.01	15.24	0.12
Personal Freedom	50.13	29.67	69.36	10.32	0.56
Governance	52.49	35.82	75.71	11.44	0.54
Social Capital	45.72	25.59	64.86	8.04	0.35
Open Economies	48.97	31.87	65.30	5.04	0.17
Business Environment	45.71	18.25	68.66	6.59	0
Market Access and Infrastructure	42.26	16.51	62.99	8.77	0.19
Economic Quality	58.94	37.98	76.77	6.92	0.11
Empowered People	55.26	37.90	75.07	6.96	0.83
Living Conditions	61.67	35.16	86.24	9.25	0.56
Health	54.96	33.58	78.30	8.87	0.81
Education	50.81	26.56	80.82	9.07	0.64
Natural Environment	53.59	30.20	72.98	6.93	0.22

Element Summary

Inclusive Societies

Pillar	Element (Weight)	Mean	Minimum Value	Maximum Value	Standard Deviation	R ² between domain/ pillar and U.S. Prosperity Index score
Safety and Security	Terror-related Crime (15%)	96.67	39.10	100.00	8.85	0
	Violent Crime (50%)	61.25	17.88	100.00	19.09	0.06
	Property Crime (35%)	63.67	12.22	97.69	18.81	0.2
Personal Freedom	Agency (30%)	68.86	31.51	89.54	12.10	0.47
	Freedom of Association and Speech (15%)	43.04	18.23	60.00	8.33	0.03
	Absence of Legal Discrimination (25%)	28.89	1.85	62.59	21.44	0.4
	Social Tolerance (30%)	52.63	32.33	81.28	10.23	0.29
Governance	Political Accountability (30%)	62.03	52.43	84.07	9.32	0.14
	Rule of Law (35%)	43.49	10.50	80.00	19.57	0.38
	Government Integrity (35%)	53.31	37.49	80.13	12.84	0.48
Social Capital	Personal and Family Relationships (25%)	62.08	31.83	87.10	9.36	0.42
	Social Networks (25%)	40.34	10.40	80.40	13.83	0.27
	Institutional Trust (20%)	55.65	10.48	95.42	13.52	0.02
	Civic and Social Participation (30%)	29.96	11.12	66.81	10.47	0.1

Open Economies

Pillar	Element (Weight)	Mean	Minimum Value	Maximum Value	Standard Deviation	R ² between domain/ pillar and U.S. Prosperity Index score
Business Environment	Financing Ecosystem (40%)	34.77	0.02	100.00	19.10	0.01
	Domestic Market Contestability (30%)	49.08	0.58	64.11	13.89	0.01
	Burden of Regulation (10%)	43.35	29.20	69.07	10.43	0.33
	Labor Market Flexibility (10%)	59.84	9.60	74.12	20.35	0.21
	Price Distortions (10%)	67.61	53.09	85.96	13.07	0.13
Market Access and Infrastructure	Communications (40%)	42.14	0.00	94.40	22.99	0.19
	Resources (25%)	54.58	19.93	86.74	10.78	0.05
	Transport (35%)	43.21	22.56	63.94	7.97	0
Economic Quality	Fiscal Sustainability (25%)	55.82	35.96	78.70	8.19	0
	Productivity and Competitiveness (25%)	61.86	14.78	94.21	15.36	0.01
	Dynamism (20%)	51.44	32.26	78.81	9.18	0
	Labor Force Engagement (30%)	64.09	25.97	91.85	11.75	0.3

Empowered People

Pillar	Element (Weight)	Mean	Minimum Value	Maximum Value	Standard Deviation	R ² between domain/ pillar and U.S. Prosperity Index score
Living Conditions	Material Resources (25%)	59.68	12.32	90.81	13.12	0.60
	Nutrition (15%)	62.91	30.84	87.94	12.42	0.51
	Water Services (15%)	65.52	10.13	96.48	23.03	0.05
	Shelter (15%)	57.25	7.57	92.58	13.19	0.01
	Connectedness (15%)	64.79	1.08	99.17	20.25	0.17
	Protection from Harm (15%)	61.20	17.04	98.80	14.45	0.15
Health	Behavioral Risk Factors (15%)	57.63	28.61	84.22	8.82	0.23
	Preventative Interventions (15%)	47.05	29.89	69.13	12.21	0.38
	Care Systems (15%)	48.14	9.97	79.26	17.07	0.43
	Mental Health (15%)	59.45	25.40	86.48	10.84	0.02
	Physical Health (20%)	54.51	16.66	89.01	13.61	0.68
	Longevity (20%)	61.09	25.26	93.37	13.10	0.62
Education	Pre-Primary Education (5%)	50.74	13.33	93.33	16.93	0.01
	Primary Education (20%)	55.73	17.36	89.68	12.25	0.25
	Secondary Education (25%)	61.24	25.62	92.31	11.58	0.30
	Tertiary Education (25%)	39.24	18.88	71.06	9.19	0.37
	Adult Skills (25%)	48.04	1.80	97.50	16.66	0.51

Pillar	Element (Weight)	Mean	Minimum Value	Maximum Value	Standard Deviation	R ² between domain/ pillar and U.S. Prosperity Index score
Natural Environment	Emissions (25%)	60.26	18.03	81.03	9.93	0.10
	Exposure to Air Pollution (25%)	53.55	0.56	97.49	15.18	0.29
	Forest, Land and Soil (20%)	46.78	18.03	67.14	8.72	0.00
	Freshwater (20%)	70.59	20.74	89.73	13.23	0.00
	Preservation Efforts (10%)	16.63	3.52	70.26	18.25	0.07

Appendix V: Degree of imputation

State level¹

State	Overall Prosperity	Safety and Security	Personal Freedom	Governance	Social Capital	Business Environment	Market Access and Infrastructure	Economic Quality	Living Conditions	Health	Education	Natural Environment
District of Columbia	10.6%	0%	42.1%	50.0%	0%	5.3%	0%	26.3%	9.5%	0%	5.9%	0%
Wyoming	1.4%	0%	5.3%	0%	0%	0%	0%	0%	4.8%	3.0%	0%	0%
Alaska	0.9%	0%	0%	0%	0%	0%	0%	0%	4.8%	0%	5.9%	0%
Vermont	0.9%	0%	0%	0%	0%	5.3%	0%	0%	4.8%	0%	0%	0%
Hawaii	0.9%	0%	0%	0%	0%	5.3%	0%	0%	0%	0%	0%	4.3%
South Carolina	0.9%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8.7%
New Jersey	0.5%	0%	0%	0%	0%	5.3%	0%	0%	0%	0%	0%	0%
Rhode Island	0.5%	0%	0%	0%	0%	5.3%	0%	0%	0%	0%	0%	0%
Montana	0.5%	0%	0%	0%	0%	5.3%	0%	0%	0%	0%	0%	0%
Kentucky	0.5%	0%	0%	0%	0%	5.3%	0%	0%	0%	0%	0%	0%
Arkansas	0.5%	0%	0%	0%	0%	5.3%	0%	0%	0%	0%	0%	0%
Delaware	0.5%	0%	0%	0%	0%	0%	0%	0%	4.8%	0%	0%	0%
South Dakota	0.5%	0%	0%	0%	0%	0%	0%	0%	4.8%	0%	0%	0%
Pennsylvania	0.5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4.3%
California	0.5%	0%	0%	0%	4.2%	0%	0%	0%	0%	0%	0%	0%
Indiana	0.5%	0%	0%	0%	4.2%	0%	0%	0%	0%	0%	0%	0%

1 This only shows the states that have some degree of imputation. States not shown have no imputed values.

County level²

State		Overall prosperity	Safety and Security	Personal Freedom	Governance ³	Social Capital	Business Environment	Market Access and Infrastructure	Economic Quality	Living Conditions	Health	Education	Natural Environment
Montana		16.4%	7.0%	4.3%	N/A	43.5%	6.9%	14.7%	18.7%	18.3%	33.0%	7.4%	0%
Oklahoma		13.5%	6.1%	4.1%	N/A	36.0%	0.2%	12.5%	21.0%	12.7%	28.5%	4.4%	0%
Texas		13.2%	5.3%	3.7%	N/A	34.3%	0.5%	12.6%	15.9%	14.5%	29.8%	5.7%	0%
Iowa		13.2%	6.4%	4.4%	N/A	37.5%	5.3%	0.7%	15.6%	14.2%	30.1%	4.5%	0%
Colorado		13.0%	5.6%	4.1%	N/A	34.8%	6.2%	1.2%	15.2%	15.3%	29.3%	6.3%	0.1%
Georgia		11.1%	4.4%	3.5%	N/A	29.1%	0.5%	1.5%	13.6%	13.2%	28.1%	5.1%	0%
New York		8.8%	2.9%	2.5%	N/A	21.6%	0%	12.5%	13.5%	9.0%	18.2%	2.4%	0%
California		8.7%	2.7%	3.4%	N/A	24.9%	0.2%	0%	11.3%	9.3%	21.6%	3.7%	0%

2. The percentage of county level indicators, within the eight selected states, that have some degree of imputation

3. There is no county variation in the Governance pillar, so all counties within a state are given the state score.

ABOUT THE LEGATUM INSTITUTE

The Legatum Institute is a London-based think-tank with a bold vision to create a global movement of people committed to creating the pathways from poverty to prosperity and the transformation of society. We seek to fulfil our mission by raising up leaders of character, restoring an ethical vitality to all sectors of society, and developing the practical solutions and data tools that will help build inclusive and peaceful societies with open economies and empowered people. Our Centre for Metrics creates indexes and datasets to measure and explain how poverty and prosperity are changing. Our Research Programmes analyse the many complex drivers of poverty and prosperity at the local, national and global level. Our Practical Programmes identify the actions required to enable transformational change. For more information about the United States Prosperity Index or to speak to one of the Legatum Institute's experts, please email info@li.com.



CREATING THE PATHWAYS FROM POVERTY TO PROSPERITY

PROSPERITY INDEX

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