METHODOLOGY REPORT

Social Progress Index City of Leeds

Leeds CITY COUNCIL

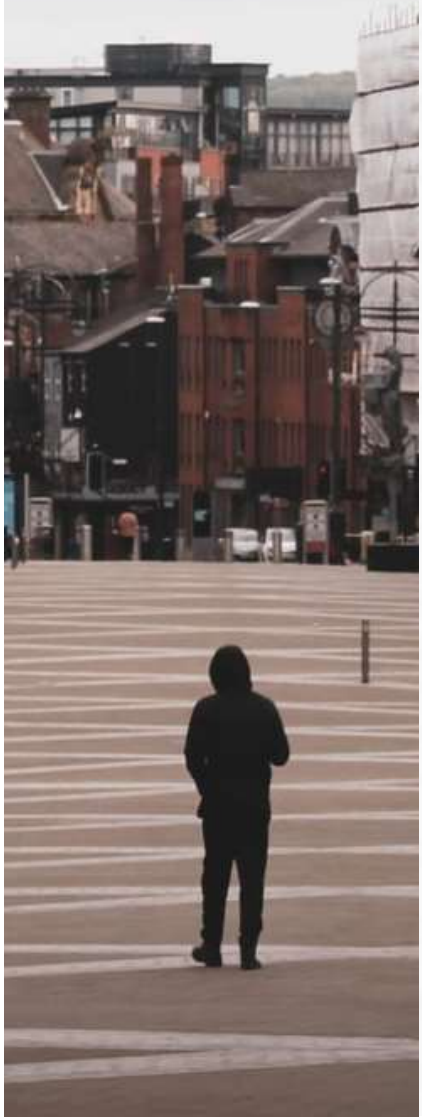
SOCIAL PROGRESS IMPERATIVE

LEEDS

Situated in the heart of the UK, Leeds is the third largest and one of the fastest growing, greenest cities in the country. Leeds continues to be the main driver of economic growth for the Leeds City Region - driving growth across the Northern Powerhouse, Yorkshire and the national economy.

Our ambition for Leeds is to have a strong economy within a compassionate city. The Leeds Inclusive Growth Strategy sets out how Leeds City Council, the private sector, universities, colleges and schools, and social enterprises in the city will work together to grow the Leeds economy ensuring that everyone in the city contributes to, and benefits from, growth to their full potential. We aim for Leeds to become the best city in the UK – distinctive, sustainable, progressive, fun and creative for all. But most of all, we want people to experience our home as a compassionate, caring and safe place to live and work.

Leeds is a city rich in culture and heritage, home to more than 790,000 people, and employing almost 470,000 in some 32,000 businesses. Leeds was named as Britain's most vibrant city in 2022, with award-winning national theatre and dance companies, a world-class arena, and a thriving independent food scene. Leeds is a top five UK retail and tourism destination.



We are a city that's full of energy, with a rich arts and cultural sector, a strong sporting legacy and a reputation for organising and hosting exceptional events. 2023 is set to be our landmark year of culture for Leeds and our wider region – a year-long programme of experiences showcasing creativity of all shapes and forms.

We have a resilient and broad-based economy that is performing well - with strengths in healthcare, creative and digital, financial and professional services and manufacturing. Leeds has experienced strong private sector jobs growth since 2010, above the national average. Leeds has one of the highest rates of business start-ups and scale-ups amongst UK cities. We are a smart city: with a high proportion of knowledge intensive jobs; the University of Leeds spins out more listed companies than any other UK university, and the city experiences a "brain gain" with more undergraduates and graduates moving into the city than leaving.

However not everyone is benefiting fully from this economic success. There remain significant issues of poverty, deprivation and health inequalities in the city. Low pay is an increasing problem, with people caught in a trap of low pay and low skills, with limited opportunities for career progression. Our education and skills system does not work for everyone, and we need to continue to make progress in improving our schools so that they are equipping young people with the education, attributes and awareness of opportunities they will need to succeed in life.

SOCIAL PROGRESS IMPERATIVE

The Social Progress Imperative's mission is to improve the lives of people around the world, particularly the least well off, by advancing global social progress by: providing a robust, holistic and innovative measurement tool—the Social Progress Index; fostering research and knowledge-sharing on social progress; and equipping leaders and change-makers in business, government and civil society with new tools to guide policies and programs.

From the EU to India to Brazil and beyond, the Social Progress Imperative brings together government, business, academia and civil society organizations committed to transforming societies and improving lives through the use of the Social Progress Index.

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INTRODUCTION

The inclusive growth strategy has substantial congruence with a heavy presence of inclusive and human centred components that are represented in the SPI model. Through delivery of the Leeds inclusive Growth strategy, we aim to;

1. Ensure all people and communities can contribute towards and benefit from our economy
2. Tackle inequality – through low pay, in-work progression, improving skills and opportunities and supporting all sections of our society into better jobs
3. Support people to live healthy and active lives, through good housing, social values, green and transport infrastructure, regenerating neighborhoods, low carbon initiatives and involvement in sport
4. Raise skills levels and increasing productivity
5. Improve the health of the poorest the fastest

We want to understand the difference we are making for people as we deliver the Leeds Inclusive Growth Strategy and the City Ambition.

Place matters and this helps us to understand our impact in places in Leeds. As there isn't one way agreed way of measuring inclusive growth that will inform us if we're growing the economy and leaving people behind, we needed to consider how we weigh economic, social and environmental elements in a way that helps us focus on the inequalities we have in the city, how these change over time, and how we can produce policy and actions that can address any issues that we find. Leeds will struggle to develop more inclusive economies if we only place value on the measure of the volume of productivity and employment.

This first Leeds Social Progress Index at a ward level allows us to understand the social wellbeing of our residents who live in different parts of Leeds. It informs the way we work, and it targets our efforts on those areas and those challenges that will have the greatest positive impact on our community.

The Social Progress Index allows us to stop guessing and to start knowing, so that we can work faster and more efficiently delivering inclusive growth and ensuring that no-one is left behind. The Leeds SPI will provide a comprehensive measure of the real quality of life that complements what we know from economic measures such as GVA – and provides us with a practical tool that gives us the ability to make decisions about targeting our activity and resources. The Leeds SPI enables us to build further understanding of what's happening at the ward level over time, so we can start conversations with communities about what is making a difference to people's lives.

WHAT IS THE SOCIAL PROGRESS INDEX

The Social Progress Index is a composite index which represents the first comprehensive framework for measuring social progress that is independent of traditional economic indicators, but complementary to them.

> The Index focuses on what matters to societies and people by giving them the tools to better understand and seize opportunities and building blocks to enhance and sustain the quality of their lives, as well as create the conditions to reach their full potential.

Developed in collaboration with a team of scholars led by Professor Michael E. Porter of Harvard Business School, the index is used by national and city leaders in 45 countries across the world to help set policy, make investment decisions, mobilize resources and measure impact.

The Index presents a granular, actionable picture of what matters most to people regardless of their wealth. It creates a common understanding of how well a community performs on the things that matter to all societies, rich or poor. As a complement to traditional measures of economic performance, such as income, the Social Progress Index provides better understanding of the bi-directional relationship between economic gain and social progress.

Its unique framework offers a systematic, empirical foundation for governments, businesses, civil society and communities to prioritise social and environmental issues, and benchmark performance against other countries, regions, cities and communities to inform and drive public policies, investments, and business and community decisions.

Guided by a group of academic and policy experts, the Social Progress Index follows a conceptual framework that defines social progress as well as its key elements. In this context, social progress is defined as the

> capacity of a society to meet the basic human needs of its citizens, establish the building blocks that allow citizens and communities to enhance and sustain the quality of their lives, and create the conditions for all individuals to reach their full potential.

The Social Progress Index is built around a framework that comprises three architectural elements:

DIMENSIONS
COMPONENTS
INDICATORS

Leeds CITY COUNCIL SOCIAL PROGRESS IMPERATIVE

The Social Progress Index is built around a framework that comprises three architectural elements: dimensions, components, and indicators.

Dimensions represent the broad conceptual categories that define social progress:

1 Basic Human Needs

Considers citizens' ability to survive with adequate nourishment and basic medical care, clean water, sanitation, adequate shelter, and personal safety. These needs are still not met in many disparate countries and are often incomplete in more prosperous countries.

2 Foundations of Wellbeing

Captures whether a society offers building blocks for citizens to improve their lives, such as gaining a basic education, obtaining information, and access communications, benefiting from a modern healthcare system and live in a healthy environment.

3 Opportunity

Captures whether citizens have the freedom and opportunity to make their own choices. Personal rights, personal freedom and choice, tolerance and inclusion, and access to advanced education all contribute to the level of opportunity within a given society.

Each dimension comprises four components – distinct but related concepts that together make up the Social Progress Index Framework (Figure 1).

Figure 1: Social Progress Index Framework

Basic Human Needs	Foundations of Wellbeing	Opportunity
Nutrition and Basic Medical Care	Access to Basic Knowledge	Personal Rights
Water and Sanitation	Access to Information and Communications	Personal Freedom and Choice
Shelter	Health and Wellness	Inclusiveness
Personal Safety	Environmental Quality	Access to Advanced Education

Source: Social Progress Imperative (2021)

- Each component is composed of indicators that measure as many valid aspects of the component as possible.

Together, this interrelated set of factors represents the primary elements that combine to produce a given level of Social Progress Index. The methodology allows measurement of each component and each dimension and yields an overall score and ranking.

The three dimensions and twelve components of the Social Progress Framework provide the backbone of the Social Progress Index. The twelve-component structure provides the guidelines, while the questions below provide a first guide for interpreting each component and help to identify locally relevant data to define it. To help guide this process, the following guiding questions (Figure 2) are used for selecting contextually appropriate indicators for each of the twelve components.

Figure 2: Social Progress Index Guiding Questions

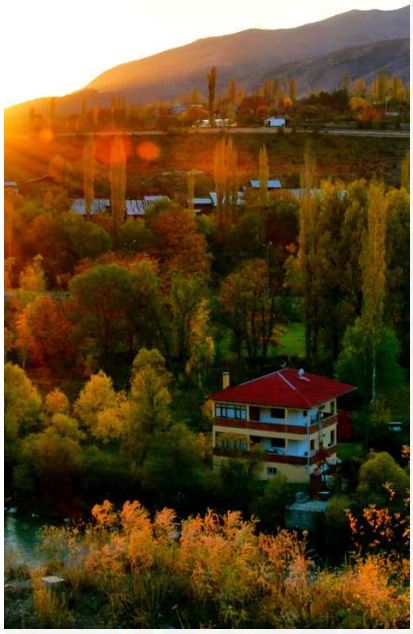
Source: Social Progress Imperative (2021)

The Index is explicitly focused on non-economic aspects of performance. Unlike most other measurement efforts, the index treats social progress as distinct though associated with traditional economic measures such as income per capita. In contrast, other indices such as the UNDP's Human Development Index or the OECD's Better Life Index combine economic and social indicators.

The SPI objective is to utilize a clear yet rigorous methodology that isolates the non-economic dimensions of social performance.

PRINCIPLES

The Index applies a set of unique design principles that allow an exclusive analysis of social progress and help the Index stand out from other indices:



Social and environmental indicators only

While economic development is generally beneficial for social progress, it is not sufficient to fully capture the wellbeing of societies, and certain kinds of economic development can reduce social progress. The relationship is complex: social progress can drive as well as be driven by economic progress.

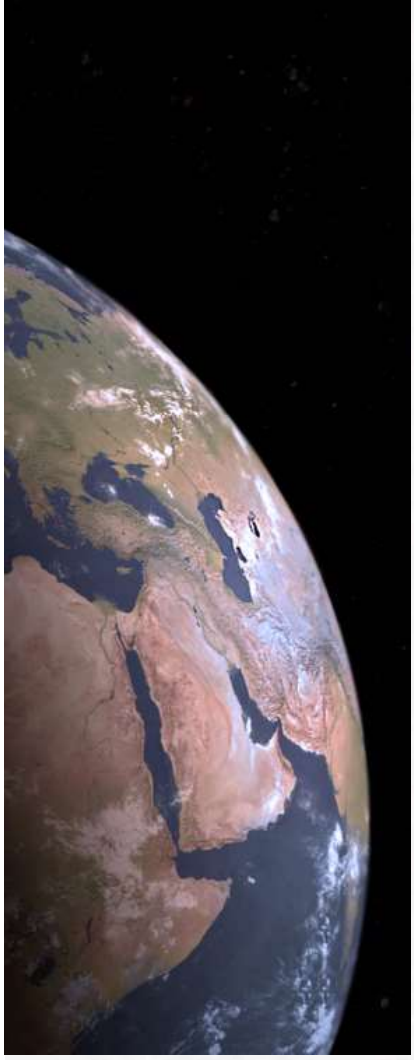
Consequently, social progress needs to be measured directly, without combining economic performance. Measuring social progress exclusively and directly, rather than utilizing economic proxies or combining economic and social variables is therefore the key principle of any Social Progress Index.

Outcomes, not inputs

There are two broad categories of conceptually coherent methodologies for index construction: input indices and outcome indices. Both can help countries to benchmark their progress, but in very different ways.

Input indices measure a country's policy choices or investments believed or known to lead to an important outcome. In competitiveness, for example, an input index might measure investments in human capital or basic research. Outcome indices directly measure the outcomes of investments.

The Social Progress Index has been designed as an outcome index. The Index measures the lived experience of real people, regardless of effort spent or the capacity to impart change. Given that there are multiple distinct aspects of social progress each measurable in different ways, the Social Progress Index has been designed to aggregate and synthesize multiple outcome measures in a conceptually consistent and transparent way that will also be salient to benchmarking progress for decision-makers.



Holistic and relevant to all communities

A multidimensional measure of social progress that encompasses the many inter-related aspects of thriving societies everywhere. The Social Progress Index aims to be a practical tool for decision makers in any given country regardless of its level of development.

At the national level, the Social Progress Index fulfills this value proposition by deepening our understanding on the relationship between social progress and economic growth and by designing a very relevant tool to highlight strength and weakness at the component and indicator levels, using GDP comparator groups. Nevertheless, what matters at the national level to compare countries among themselves may not be what matters for the policy debate in a given country. For example, tuberculosis is not an issue in the Amazon region, but Malaria is. These examples illustrate how building subnational indices by preserving the 12-components structure of the Social Progress Index and by customizing the indicators to be monitored and targeted, can increase the capacity of the Social Progress Framework to boost relevant and timely policy-debates in every country at every stage of development.

Actionable

The Index aims to be a practical tool with sufficient specificity to help leaders and practitioners in government, business, and civil society to benchmark performance and implement policies and programs that will drive faster social progress. At the national level, the Social Progress Index fulfills this value proposition by focusing on the granularity of the model. Every component supposes an essential area for human wellbeing. And every indicator implies a potential “entry-point” and an “explicit target” for public policy.

Building subnational indices with local networks will strength the actionability of the social progress framework, if the process of disaggregating and customizing the index is also supported by strong political buy-in around socially legitimate targets. A practical tool that will help leaders and decision-makers in government, business and civil society to implement policies and programs that will drive faster social progress.

The successes of the Global Social Progress Index has resulted in an increased demand for subnational indices to address the need for greater actionability; the need to make the index relevant for all countries at all levels of development and at any level of geography; and a need to build common languages and to align interventions.

As a result, local stakeholders around the world have developed innovative initiatives to build relevant and consistent social progress indices at the macro (national), meso (regional, municipal) and micro (community, organizational) levels, to influence the policy decision-making process and move the needle of social progress around the world.

SOCIAL PROGRESS INDEX FOR THE WARDS OF THE CITY OF LEEDS

The Social Progress Index for the City of Leeds follows the Social Progress Index rationale as well as its key principles and methodology. As such, it adopts the same dimension and component level framework as the global Social Progress Index and an effort has been made to mirror the indicators where possible. However, conducting a sub-national SPI offers the opportunity to customise the indicators beyond what the global index offers, whilst still keeping within the boundaries of the SPI framework. Therefore, locally relevant and appropriate indicators have been included. The resulting Social Progress Index Framework for Leeds includes 45 indicators as shown in Figure 3.

Figure 3: Social Progress Index: City of Leeds

Basic Human Needs

Nutrition and Basic Medical Care
- Premature Death
- Free School Meals
- Child Healthy Weight
- Immunisation Rates
- Adult Obesity

Water and Sanitation
- Decent Homes
- HMO
- Food Hygiene Ratings

Shelter
- Housing Affordability
- Households in Fuel Poverty
- Empty Homes – Long Term Voids
- Housing Sustainability

Personal Safety
- Crime Rates
- People Killed or Seriously Injured in an RTA
- Anti-Social Behaviour
- Domestic Abuse

Foundations of Wellbeing

Access to Basic Knowledge
- KS2 Attainment in Reading, Writing and Maths
- KS4 Attainment 8
- Schools Judged as Good / Outstanding
- Persistent Absentees
- EYFSP Good Level of Development

Access to Information and Communications
- Broadband under Universal Service Obligation
- Average Broadband Speed
- Skills Improvement

Health and Wellness
- Life Expectancy
- Diabetes
- Mortality
- Severe Mental Health
- Smoking Related COPD
- Frailty

Environmental Quality
- Fly-Tipping
- Noise Complaints
- Pest and Vermin Control Requests

Opportunity

Personal Rights
- Hate Crime
- Voter Turnout
- Housing Benefit Claimants

Personal Freedom and Choice
- Early Years Placements
- Pension Credit Claimants
- Long Term Unemployment

Inclusiveness
- Gender Gap in Unemployment
- Racist Hate Crime
- Adults with Learning Disabilities in Employment

Access to Advanced Education
- 16-24 Education Access
- NEET
- 25+ Education Access

Source: Authors.

GEOGRAPHIC AND TIME COVERAGE

Leeds City Council is the local authority of the Leeds district. The council is composed of 99 councillors, three for each of the city's 33 wards. Elections are held three years out of four, on the first Thursday of May. One third of the councillors are elected, for a four-year term, in each election. The index is calculated for the 33 electoral wards of Leeds (see Table 1).

Table 1: Wards of Leeds

Adel & Wharfedale	Garforth & Swillington	Middleton Park
Alwoodley	Gipton & Harehills	Moortown
Ardsley & Robin Hood	Guiseley & Rawdon	Morley North
Armley	Harewood	Morley South
Beeston & Holbeck	Headingley &Hyde Park	Otley & Yeadon
Bramley & Stanningley	Horsforth	Pudsey
Burmantofts & Richmond Hill	Hunslet & Riverside	Rothwell
Calverley & Farsley	Killingbeck & Seacroft	Roundhay
Chapel Allerton	Kippax & Methley	Temple Newsman
Cross Gates & Whinmoor	Kirkstall	Weetwood
Farnley & Wortley	Little London & Woodhouse	Wetherby

The Index for the Leeds wards is calculated for three recent years between 2018-2020, based on the availability of data for the various indicators Leeds City Council plans to update the index on an annual basis.

INDEX CALCULATION

Calculating the Social Progress Index involves the following multistage process:

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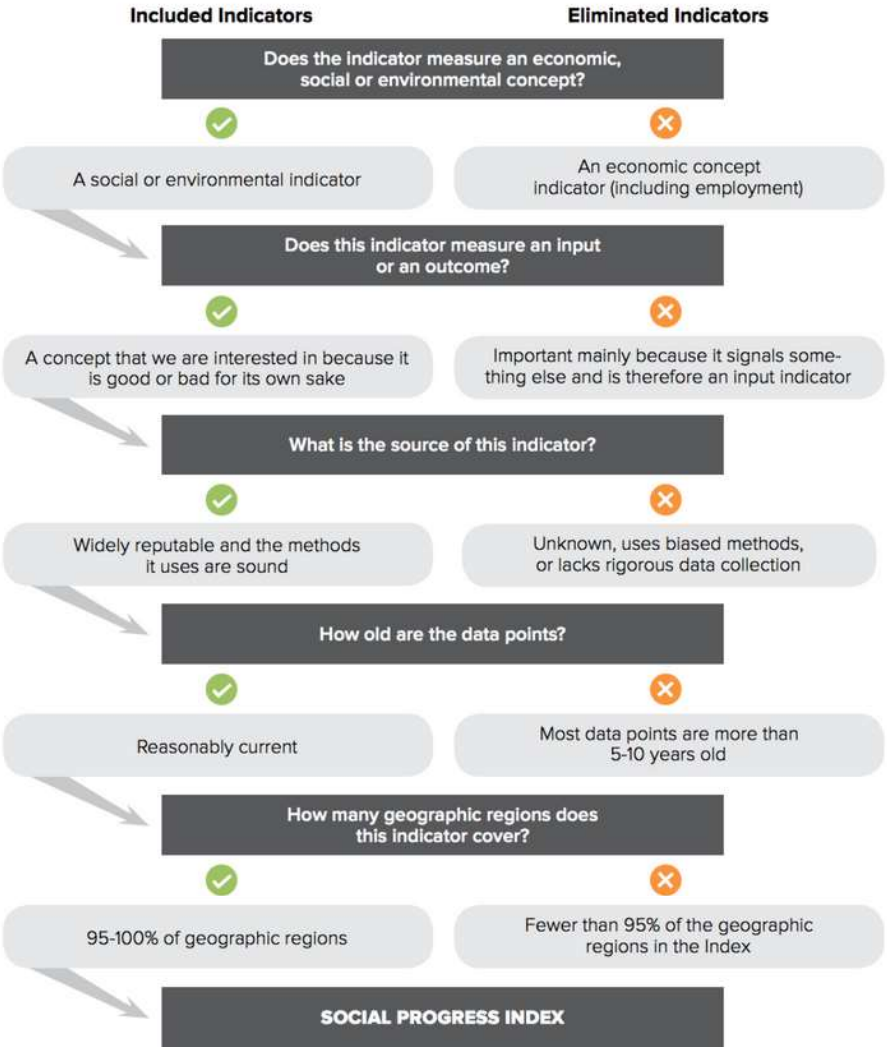
1) Indicator Selection and Data Collection

It has been the aim of the researchers to include the most appropriate and relevant indicators reflecting the real lived experience of Leeds residents. The Indicators for Leeds were selected following SPI general design principles: non-economic, outcome oriented, relevant to all units of observation and actionable. Furthermore, indicators were reviewed to ensure their timeliness, relevance and technical robustness. The process of indicator selection followed the Social Progress Index indicator selection tree as outlined in Figure 4. A list of indicators that were taken into consideration but are not included in the final index is presented in Appendix B. Detailed information on individual indicators included in the Index is presented in Appendix A.

Figure 4: Indicator selection tree



All indicators included in Leeds SPI were compiled from government sources, or from other official sources. Therefore, only credible sources were used.

2) Dealing with Missing Values

Based on the data availability of selected indicators, it was decided to calculate the index for three years from 2018 to 2020. In the first step, all indicators were aligned so that their final year was 2020. That meant that for twelve indicators, their entire times series was shifted by one year forward (i.e.,from 2017-2019 to 2018-2020). While this is not an ideal approach, it is a standard procedure carried out in the calculation procedure for the global Social Progress Index. For four indicators, only two years of data were available – in all cases, the first year in their time series was missing. To solve this, the following year's data were used to impute the year that was missing.

3) Data Transformations

Firstly, some indicators had outliers that skewed distributions of data significantly. Therefore, eleven indicators were capped to address this issue. These indicators, together with the values at which they were capped, are provided in Table 2.

Table 2: Capped Indicators

Component	Indicator	Cap
NBMC	Adult obesity	15.00 (bottom)
WS	HMO	0.05
PS	Crime rates	294.97
AIC	Average broadband speed	30.00 (bottom)
AIC	Broadband under Universal Service Obligation	0.04
AIC	Skills improvement	35.0296
HW	Diabetes	10066.40
EQ	Fly-Tipping	49.95922
PFC	Long Term Unemployment	30.47521
PFC	Early Years Placements	121.57893
INCL	Racist Hate Crime	7.604457

Source: Authors.

Secondly, many of the indicators used in the final framework needed to be recorded as a rate per population of wards, so that the data were comparable across wards. Thirdly, as all the indicators are measured in different units, it is important to standardize them so that they become comparable. Otherwise, a variable that has less variation relatively but is measured on a larger scale compared to other variables may appear to have much greater variation than it actually does. Standardization helps solving the problem by making indicators unitless as it rescales them with a mean of zero and standard deviation of one (this is called a z-score standardization).

4) Aggregation and Scaling

The Social Progress Index uses the Principal Component Analysis (PCA) for calculating the weights of indicators within a component to aggregate indicators' values into the component values (first level aggregation).[1] 1 This method has been adopted also for the calculation of scores for components of the index for Leeds. A list of weights for all indicators within each component is presented in Appendix C. The component values are calculated by summing the weighted scores using the following formula:

$$\text{Component}_s = \sum (w_i * \text{indicator})$$

To calculate component scores, the indicators values are transformed onto 0 to 100 scale. This is done by calculating scores using best- and worst-case scenario which are defined at the indicator level according to desirable or theoretically possible upper and lower bounds. See Appendix D for the worst and best-case scenario.
This method enhances comparability as well as comprehensiveness across the dataset. The calculation is done using the following formula:

$$\frac{\text{Xj-Worst Case}}{\text{Best Case-Worst Case}}$$

Where X_j represents the raw values of an indicator.

For the City of Leeds SPI, the arithmetic mean (i.e. simple average) was adopted as the approach to the second level aggregation. This means that the arithmetic mean was applied to aggregate the scores of the four components within each dimension into a dimension score. Similarly, the overall Index score was calculated as the arithmetic average of the three dimensions.

5) Evaluating the Fit

The indicator selection process entails including the indicators that describe the concept of the component in the best possible way and are conceptually linked to each other. The rigor of the Social Progress Index methodology is strengthened by assessing multiple aspects of fit between those. First, correlation analysis and exploratory factor analysis are used to test the associations and underlying factors among the set of selected indicators in each component. In this process, the indicators that are statistically incompatible are removed.

[1]Principal Component Analysis is a multivariate technique which was developed in early 20th century for the purpose of aggregating information. Calculations were done in STATA, using "factor, pcf" command.

Furthermore, the Social Progress Index methodology involves evaluating the fit between the individual indicators by calculating Cronbach's Alpha for each component. Alpha was developed by Lee Cronbach in 1951 to provide a measure of the internal consistency; it is expressed as a number between 0 and 1 (Tavakol & Dennick 2011). Internal consistency describes the extent to which all the items in a test measure the same concept or construct and hence it is connected to the inter- relatedness of the items within the test. An applied practitioner's rule of thumb is that the alpha value should be above 0.7 for any logical grouping of variables (Cortina, 1993). The alpha values are presented in Table 3.

Table 3: Alpha Values

	Component	Cronbach's Alpha
Basic Human Needs	Nutrition and Basic Medical Care	0.86
	Water and Sanitation	0.64
	Shelter	0.60
	Personal Safety	0.80
Foundations of Wellbeing	Access to Basic Knowledge	0.91
	Access to Information and Communications	0.57
	Health and Wellness	0.89
	Environmental Quality	0.80
Opportunity	Personal Rights	0.82
	Personal Freedom and Choice	0.77
	Inclusiveness	0.70
	Access to Advanced Education	0.45

Source: Authors.

The Cronbach's alpha value is lower than 0.70 for four components – Water and Sanitation, Shelter, Access to Information and Communications and Access to Advanced Education. We acknowledge this shortcoming, but despite various attempts we could not improve the component performance due to lack of indicators and data unavailability.

After calculating each component, the goodness of fit is evaluated using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. The measure reflects the proportion of variance among variables that might be common variance. The KMO index ranges from 0 to 1, as a rule of thumb, KMO scores should be above 0.5 (Williams, Onsman, & Brown 2010). The results of this analysis are shown in Table 4 – KMO values are above 0.5 for all components.

Table 4: KMO values

	Component	Mean KMO
Basic Human Needs	Nutrition and Basic Medical Care	0.86
	Water and Sanitation	0.64
	Shelter	0.60
	Personal Safety	0.80
Foundations of Wellbeing	Access to Basic Knowledge	0.91
	Access to Information and Communications	0.57
	Health and Wellness	0.89
	Environmental Quality	0.80
Opportunity	Personal Rights	0.82
	Personal Freedom and Choice	0.77
	Inclusiveness	0.70
	Access to Advanced Education	0.45

Source: Authors.

SCORECARDS: RELATIVE PERFORMANCE OF WARDS

The absolute scores do not distinguish wards on the basis of economic development. In some cases, it is more illuminating to compare a ward's performance with its economic peers. For instance, a ward may score low on certain aspects of the social progress, but its performance could exceed the scores for wards with similar economic performances. Conversely, a high-income ward may have a high absolute score on a component, but still fall short of what is typical for comparably wealthy wards.

For this reason, the Social Progress Imperative developed a methodology to assess ward's strengths and weaknesses on a relative, rather than absolute basis.

Scorecards are used to depict the relative results. The ward-level scorecards portray a ward's detailed absolute and relative analysis. The scorecards are colour-coded to highlight relative strengths and weaknesses.

The component, dimension, and overall Social Progress Index scores are scaled from 0 to 100 to provide an intuitive scale for the interpretation of absolute performance, benchmarking a ward against the best and worst-possible scenarios in terms of social progress performance We define the group of a ward's economic peers as the 4 wards closest in median household income (MHI). Each ward's MHI is compared to every other ward for which there is full Index data, and the 4 wards with the smallest difference on an absolute value basis are selected for the comparator group.

Once the group of comparator wards is established, the ward's performance is compared to the median performance of wards in the group. The median is used rather than the mean to minimize the influence of outliers. If the ward's score is greater than (or less than) the average absolute deviation from the median of the comparator group, it is considered a strength (or weakness). Scores that are within one average absolute deviation are within the range of expected scores and are considered neither strengths nor weaknesses. A floor is established so the thresholds are no less than those for poorer wards and the minimum distance from median to strength or median to weakness is 1 point.

CONCLUSION

Building the Social Progress Index for the City of Leeds's Wards was a long-term endeavor led by the Leeds City Council team, supported by the Social Progress Imperative.

Throughout the process, the team constructed and tested several iterations of the index, and consulted many colleagues across the city and beyond. Despite numerous challenges, such as the lack of appropriate data, or the fit of indicators, the authors are confident that the presented Social Progress Index for Leeds is a robust and credible assessment of social progress.

The Index will provide a benchmark by which the wards of the city can compare themselves to others and can identify priorities that need addressing in order to advance social progress.

The Index is a unifying tool, which brings a common language and understanding of what social progress means to the City of Leeds's Inclusive Growth Strategy, as well as additional public and private actors and residents experiencing real-life wellbeing in Leeds.

References

Annoni, P. Dijkstra, L. and Hellman, T. (2016) The EU regional SPI: A measure of social progress in the EU regions, retrieved from http://ec.europa.eu/regional_policy/sources/information/maps/methodological_note_eu_spi_2016.pdf

Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. Journal of applied psychology, 78(1), 98.

Social Progress Imperative (2021). Social Progress Index 2021. Retrieved from www.socialprogress.org

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. International journal of medical education, 2, 53.

Williams, B., Onsman, A. & Brown, T. 2010. Exploratory factor analysis: A five-step guide for novices. Australasian Journal of Paramedicine 8 (3), 1–13. DOI: 10.33151/ajp.8.3.93

Appendix A: Indicator definitions and sources

Dimension/component	Indicator Name	Definition	Source
Basic Human Needs			
Nutrition and Basic Medical Care	Premature Death from Preventable Causes	DSR Preventable Mortality under 75s rate	Public Health Intelligence – LCC calculated
	Free School Meals	% of pupils that have been eligible for free school meals	School Census - CHS Performance and Intelligence Team
	Child Healthy Weight	Year 6 Healthy Weight	National Child Measurement Programme (NCMP) via Public Health Intelligence
	Immunisation Rates	MMR Uptake - Children aged over 1 but no older than 5, who have had their 1st MMR jab in that time frame, as a proportion of all children aged over 1 but less than 5	Leeds GP data via PH Intelligence
	Adult Obesity	Adult obesity rates (where BMI>30) GP recorded	Leeds GP data via PH Intelligence
Water and Sanitation	Decent Homes	Decent Homes as % age of overall stock	LCC Housing
	Housing in Multiple Occupation (HMO)	Number of Properties that have now or previously held an HMO license.	LCC Housing
	Food Hygiene Ratings	Percentage of food businesses whose most recent food hygiene inspection rating was rated good (4) or above as % of overall snapshot	Food Standards Agency
Shelter	Housing Affordability	Median House Price / Total Income by MSOA averaged ONS small area income as a ratio	ONS
	Households in Fuel Poverty	Proportion of households living in fuel poverty using the Low Income High Costs indicator.	BEIS
	Empty Homes	Long Term Voids as % age of overall stock	LCC Gazetteer
	Housing Sustainability	Average LCC Sustainability Score	LCC Housing
Personal Safety	Crime Rates	Rate of all crimes per 1000 population	LCC – Safer Leeds
	People Killed or Seriously Injured in RTA	People killed or seriously injured in a Road Traffic Accident (RTA - KSI)	LCC
	Anti-Social Behaviour	Anti Social Behaviour reports - Excluding Noise Complaint	LCC – Safer Leeds
	Domestic Abuse	Primary Domestic Abuse Cases	LCC – Safer Leeds
Foundations of Wellbeing			
Access to Basic Knowledge	Key Stage 2 Attainment in Reading, Writing and Math	% of pupils reached the expected standard in all of reading, writing and maths (combined)	DfE
	Key Stage 4 Attainment 8	Attainment 8 measures the average achievement of pupils in up to 8 qualifications including English (double weighted if both language and literature are taken), maths (double weighted)	DfE
	Schools Judged as Good or Outstanding	Schools reported good or outstanding at the latest Ofsted Inspection	DfE – LCC calculated
	Persistent Absentees	Count of Persistent absence is when a pupil enrolment's overall absence equates to 10 per cent or more of their possible sessions	LCC calculated DfE
	Early Years Foundation Stage Profile	Percentage of children achieving a good level of development from birth to 5 years old	LCC
Access to Information and Communications	Broadband Under USO	Number of premises that do not have access to download speeds at or above 10Mbit/s and upload speeds at or above 1Mbit/s including non-matched records and zero predicted speeds	Ofcom - Connected Nations
	Average Broadband Speed	Average download speed (in Mbit/s) of all connections	Ofcom – Connected Nations
	Skills Improvers on Employment and Skills Programmes	Number of Skills Improvers on the Employment and Skills Programmes per 1000 WAPOP	LCC – Employment and
Health and Wellness	Life Expectancy	Life Expectancy from Birth	PH Intel, LCC calculations
	Diabetes	DSR reported Diabetes for all ages	PH Intel, LCC calculations
	Mortality Rate	DSR all ages all causes of death per 100,000 (DSR Neoplasm per 100,000) (All respiratory disease xcept oneumonia and influenza - DSR per 100,000)(all cnacers DSR per 100,000)(circulatory diseases per 100,000)	PH Intel, LCC calculations
	Severe Mental Health	Severe MH 18+ DSR reported	PH Intel, LCC calculations
	Smoking Related Chronic Obstructive Pulmonary Disease (COPD)	16+ Smoking Related Chronic Obstructive Pulmonary Disease DSR reported	PH Intel, LCC calculations
	Frailty	DSR reported frailty	PH Intel, LCC calculations
Environmental Quality	Fly-Tipping	Count of Fly Tipping Incidence	LCC – Environmental Quality

	Noise Complaints	Count of Anti Social Behaviour Noise Complaints	LCC – Environmental Quality
	Pest & Vermin Control Requests	Count and % age of households in the ward that have made pest / vermin control requests	LCC - Environmental Quality
Opportunity			
Personal Rights	Hate Crime	Police Reported Hate Crime	West Yorkshire Police
	Local Election Voter Turnout	Voter Turnout as % of Electorate in 2018-2019 Local Elections	LCC
	Housing Benefit	DWP Housing Benefit Claimants as a proportion of 16-64 year WAPOP	DWP Stat-Xplore
Personal Freedom and Choice	Long Term Unemployment	Universal credit claimants who are not in employment claiming for over 12 months plus Job Seekers Allowance claimants claiming for over 12 months per 1000 population aged 16-64	DWP Stat-Xplore
	Public Transport Accessibility	Percentage of the population living within 400 m of a frequent bus stop	West Yorkshire Combined Authority
	Early Years Placements	% of 2 year old place take up in early years setting	LCC
	Pension Credit Claimants	Pension Credit claimants per 1,000 population aged 65 +	DWP Stat Xplore
Inclusiveness	Gender Gap in Employment	Gender Gap in unemployment (JSA 1+ yrs and UC 1+ year not in employment) as a proportion of 16-64 m/f population	DWP Stat Xplore
	Racist Hate Crime	Count of Race Hate Crime per Capita	LCC – Safer Leeds
	Adults with Learning Disabilities in Employment	16-64 with Learning Difficulties in Employment as % of known cohort	LCC – Employment and Skills
Access to Advanced Education	16-24 yrs Education Access	Count of 16-24 Starts to Higher Level Learning excluding University and Degree+	DfE Data Cube
	25+ Education Access	25 years + Starts on higher level qualification excluding degree and universities. Provided as count and ratio per 1000 25+ years residents	DfE Data Cube
	Not in Education Employment or Training (NEET)	Young People Not in Education, Employment or Training or Not Known	LCC
	Higher Level Education Starts	ALL higher level starts excl University - as count and ratio of 16-64 population	DfE Data Cube

Source: Authors

Appendix B: Other wanted indicators but could not source

Basic Human Needs	Foundations of Wellbeing	Opportunity
Nutrition and Basic Medical Care	**Access to Basic Knowledge**	**Personal Rights**
Food Deserts	ESOL	Youth Election / Voice
Foodbank Users	Digital Exclusion	WYCA Travel - Aged use / Concessionary Use
A & E visits	Access to Study Space	Registrar Services
Dental Extractions	Non-Crowded Classrooms	Refugee and Asylum – Service Access
Carers (paid / unpaid)	SEN provision	
Water and Sanitation	**Access to Information and Communications**	**Personal Freedom and Choice**
Water Meter Conversions	Registered Library Users	Personal Debt Levels
Water Leakage / Wastage (YW)	Access to Free / Public Wi-Fi	Teenage Pregnancy
Consumption per Capita (YW)	Free Legal Aid / Citizens Advice Visits	Exploitation
Drinking Water Quality	Request for Services from Contact Centre	Mobility – Access to Buildings
Consumption (less)	My Account on Leeds.gov.uk sign ups	
Quality of Sewage System		
Bin Collection		
Period Poverty		
Shelter	**Health and Wellness**	**Inclusiveness**
Housing SAP	Anxiety and Depression	Volunteering Residents
Homelessness / Street Sleepers	Access to Public Space and Parks	Gender Gap in Employment
Aged and DDR compliant housing	Nutrition and Healthy Eating Education	Social Isolation
Energy Efficiency Housing / Rating		
Availability / Time waiting of Social Housing		
Eviction / Repossession Rates		
Personal Safety	**Environmental Quality**	**Access to Advanced Education**
Feeling Safe - Fear of Crime	Flood Risk	Sustained Education post kS4
Human Trafficking / Modern Slavery	NO2 concentration	Destination of School Leavers 6+ months
Domestic Violence with Injury	PM2.5 concentration	19 years L2+
Serious Youth Violence Victims	Air pollution - PM10 exposure	Widening Participation
	Household Waste	
	Derelict Buildings	
	Electric Charging Infrastructure	
	Access to Cycling Routes	
	Yearly Trees Planted	
	Access to Private Outdoor Space	

Source: Authors

Appendix C: Weights of indicators

Dimension/Component	Indicator	Weight	Scaled Weight
Basic Human Needs			
Nutrition and Basic Medical Care	Premature Death from Preventable Causes	0.28	0.24
	Free School Meals	0.28	0.24
	Child Healthy Weight	0.27	0.23
	Immunisation Rates	0.24	0.20
	Adult Obesity	0.12	0.10
Water and Sanitation	Decent Homes	0.47	0.36
	Food Hygiene Ratings	0.34	0.27
	Housing in Multiple Occupation (HMO)	0.48	0.37
Shelter	Housing Affordability	0.37	0.25
	Households in Fuel Poverty	0.38	0.26
	Empty Homes	0.27	0.19
	Housing Sustainability	0.43	0.30
Personal Safety	Crime Rates	0.34	0.29
	People Killed or Seriously Injured in RTA	0.16	0.13
	Anti-Social Behaviour	0.34	0.28
	Domestic Abuse	0.36	0.30
Foundations of Wellbeing			
Access to Basic Knowledge	Key Stage 2 Attainment in Reading, Writing and Math	0.24	0.22
	Early Years Foundation Stage Profile	0.25	0.22
	Schools Judged as Good or Outstanding	0.14	0.12
	Key Stage 4 Attainment 8	0.24	0.22
	Persistent Absentees	0.25	0.22
Access to Information and Communications	Average Broadband Speed	0.53	0.41
	Broadband Under USO	0.50	0.39
	Skills Improvers on Employment and Skills Programmes	0.27	0.21
Health and Wellness	Diabetes	0.22	0.19
	Mortality Rate	0.22	0.19
	Severe Mental Health	0.19	0.16
	Smoking Related Chronic Obstructive Pulmonary Disease (COPD)	0.22	0.19
	Life Expectancy	0.22	0.19
	Frailty	0.10	0.09
Environmental Quality	Pest & Vermin Control Requests	0.39	0.33
	Noise Complaints	0.38	0.32
	Fly-Tipping	0.41	0.34
Opportunity			
Personal Rights	Housing Benefit	0.37	0.32
	Hate Crime	0.40	0.35
	Local Election Voter Turnout	0.39	0.34
Personal Freedom and Choice	Long Term Unemployment	0.42	0.35
	Early Years Placements	0.35	0.30

	Pension Credit Claimants	0.43	0.36
Inclusiveness	Adults with Learning Disabilities in Employment	0.36	0.29
	Racist Hate Crime	0.46	0.37
	Gender Gap in Employment	0.44	0.35
Access to Advanced Education	Not in Education Employment or Training (NEET)	0.55	0.42
	16-24 yrs Education Access	0.57	0.43
	25+ Education Access	0.21	0.16

Source: Authors

Appendix D: Best and Worst Case Scenarios

Dimension/Component	Indicator	Best Case	Worst Case
Basic Human Needs			
Nutrition and Basic Medical Care	Premature Death from Preventable Causes	80.00	367.95
	Free School Meals	0.00	0.50
	Child Healthy Weight	0.85	0.45
	Immunisation Rates	0.98	0.72
	Adult Obesity	15.00	35.00
Water and Sanitation	Decent Homes	100.00	60.00
	Food Hygiene Ratings	0.80	0.34
	Housing in Multiple Occupation (HMO)	0.00	0.05
Shelter	Housing Affordability	1.00	12.04
	Households in Fuel Poverty	5.00	29.80
	Empty Homes	0.00	0.05
	Housing Sustainability	180.00	757.30
Personal Safety	Crime Rates	30.00	294.97
	People Killed or Seriously Injured in RTA Anti-	0.02	1.37
	Social Behaviour	0.60	13.00
	Domestic Abuse	0.00	60.00
Foundations of Wellbeing			
Access to Basic Knowledge	Key Stage 2 Attainment in Reading, Writing and Math	90.00	35.00
	Early Years Foundation Stage Profile	90.00	45.00
	Schools Judged as Good or Outstanding	1.00	0.35
	Key Stage 4 Attainment 8	70.00	30.00
	Persistent Absentees	3.00	25.00
Access to Information and Communications	Average Broadband Speed	119.56	30.00
	Broadband Under USO	0.00	0.04
	Skills Improvers on Employment and Skills Programmes	35.03	1.00
Health and Wellness	Diabetes	3381.37	10066.40
	Mortality Rate	86.38	248.10
	Severe Mental Health	464.83	2805.09
	Smoking Related Chronic Obstructive Pulmonary Disease (COPD)	1134.13	6503.96
	Life Expectancy	87.00	68.00
	Frailty	0.04	0.15
Environmental Quality	Pest & Vermin Control Requests	0.00	0.03
	Noise Complaints	0.00	12.36
	Fly-Tipping	2.56	49.96
Opportunity			
Personal Rights	Housing Benefit	0.02	0.30
	Hate Crime	0.49	12.53
	Local Election Voter Turnout	50.00	15.00
Personal Freedom and Choice	Long Term Unemployment	1.00	30.48
	Early Years Placements	121.58	38.50

	Pension Credit Claimants	39.27	450.06
Inclusiveness	Adults with Learning Disabilities in Employment	0.20	0.00
	Racist Hate Crime	0.00	7.60
	Gender Gap in Employment	0.01	1.48
Access to Advanced Education	Not in Education Employment or Training (NEET)	0.00	25.00
	16-24 yrs Education Access	20.00	0.00
	25+ Education Access	5.00	0.00

Source: Authors

Appendix E: Peer Groups

W ard	Peers
Adel & Wharfedale	Harewood, Horsforth, Roundhay, Wetherby
Alwoodley	Guiseley & Rawdon, Wetherby, Moortown, Calverley & Farsley
Ardsley & Robin Hood	Weetwood, Rothwell, Morley North, Calverley & Farsley
Armley	Farnley & Wortley, Little London & Woodhouse, Beeston & Holbeck, Bramley & Stanningley
Beeston & Holbeck	Little London & Woodhouse, Armley, Farnley & Wortley, Bramley & Stanningley
Bramley & Stanningley	Cross Gates & Whinmoor, Headingley & Hyde Park, Farnley & Wortley, Armley
Burmantofts & Richmond Hill	Gipton & Harehills, Hunslet & Riverside, Middleton Park, Killingbeck & Seacroft
Calverley & Farsley	Moortown, Weetwood, Ardsley & Robin Hood, Alwoodley
Chapel Allerton	Temple Newsam, Kippax & Methley, Pudsey, Otley & Yeadon
Cross Gates & Whinmoor	Bramley & Stanningley, Headingley & Hyde Park, Farnley & Wortley, Armley
Farnley & Wortley	Armley, Bramley & Stanningley, Cross Gates & Whinmoor, Headingley & Hyde Park
Garforth & Swillington	Otley & Yeadon, Morley North, Kippax & Methley, Rothwell
Gipton & Harehills	Burmantofts & Richmond Hill, Hunslet & Riverside, Middleton Park, Killingbeck & Seacroft
Guiseley & Rawdon	Wetherby, Alwoodley, Moortown, Calverley & Farsley
Harewood	Adel & Wharfedale, Horsforth, Roundhay, Wetherby
Headingley & Hyde Park	Cross Gates & Whinmoor, Bramley & Stanningley, Farnley & Wortley, Kirkstall
Horsforth	Roundhay, Adel & Wharfedale, Harewood, Wetherby
Hunslet & Riverside	Middleton Park, Killingbeck & Seacroft, Burmantofts & Richmond Hill, Gipton & Harehills
Killingbeck & Seacroft	Middleton Park, Killingbeck & Seacroft, Burmantofts & Richmond Hill, Gipton & Harehills
Kippax & Methley	Chapel Allerton, Otley & Yeadon, Temple Newsam, Pudsey
Kirkstall	Headingley & Hyde Park, Cross Gates & Whinmoor, Morley South, Bramley & Stanningley
Little London & Woodhouse	Beeston & Holbeck, Armley, Farnley & Wortley, Bramley & Stanningley
Middleton Park	Killingbeck & Seacroft, Hunslet & Riverside, Burmantofts & Richmond Hill, Gipton & Harehills
Moortown	Calverley & Farsley, Weetwood, Ardsley & Robin Hood, Alwoodley
Morley North	Rothwell, Garforth & Swillington, Otley & Yeadon, Ardsley & Robin Hood
Morley South	Pudsey, Temple Newsam, Chapel Allerton, Kippax & Methley
Otley & Yeadon	Kippax & Methley, Garforth & Swillington, Chapel Allerton, Temple Newsam
Pudsey	Morley South, Temple Newsam, Chapel Allerton, Kippax & Methley
Rothwell	Morley North, Ardsley & Robin Hood, Garforth & Swillington, Otley & Yeadon
Roundhay	Horsforth, Adel & Wharfedale, Harewood, Wetherby
Temple Newsam	Chapel Allerton, Pudsey, Kippax & Methley, Morley South
Weetwood	Ardsley & Robin Hood, Calverley & Farsley, Moortown, Rothwell
Wetherby	Guiseley & Rawdon, Alwoodley, Moortown, Calverley & Farsley