

Social Progress Index: Orange County

Methodological Note

Introduction

The Social Progress Index is a well-established framework, published since 2013, that is designed to catalyze improvement and drive action by presenting social outcome data in a useful and reliable way. Composed of multiple dimensions, the Social Progress Index can be used to benchmark success and provide a holistic, transparent, outcome-based measure of wellbeing that is independent of economic indicators.

The Social Progress Index for Orange County measures each of the county's census tracts' levels of social progress using a detailed framework of indicators. Each census tract is designed by the US Census Bureau to reflect neighborhood characteristics and to have a population range of 2,500 to 8,000 individuals with an average population size of 4,000. Census tracts are unique among geographic units in the United States in that they are explicitly designed for statistical comparison and analysis.

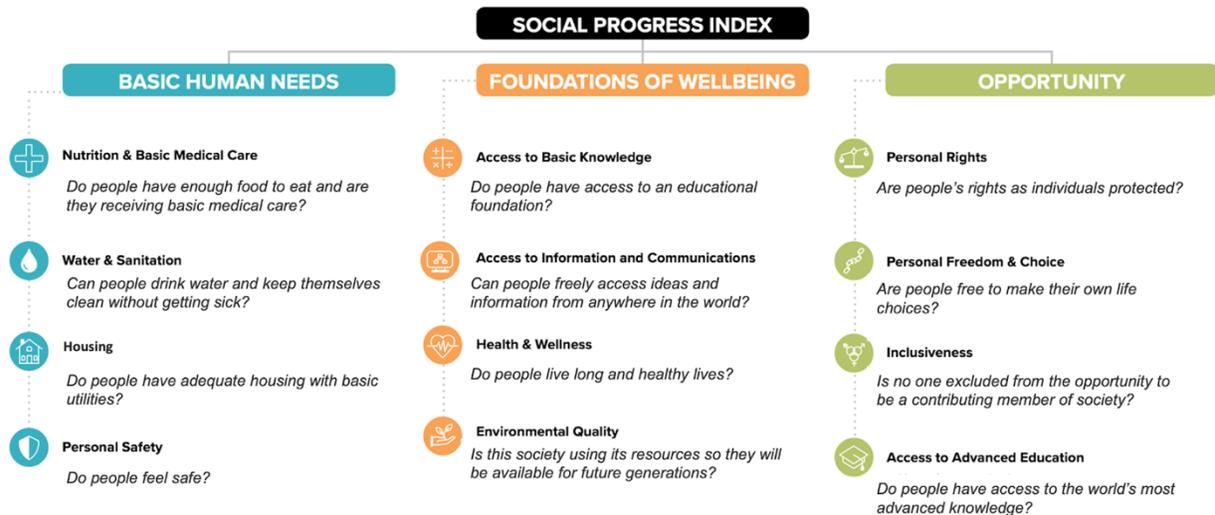
Policymakers, businesses, organizations and citizens can use the index to compare their census tract against others on different facets of social progress, allowing the identification of specific areas of strength or weakness. We combine 50 social and environmental outcome indicators to calculate an overall score for these tracts, based on tiered levels of scoring that include measures in health, safety, education, technology, rights, and more.

Social Progress Principles

We define 'social progress' 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. This definition, established in consultation with a group of academic and policy experts, drives the framework of the Social Progress Index. It alludes to three broad elements of social progress, which we refer to as dimensions: Basic Human Needs, Foundations of Wellbeing, and Opportunity. Under each dimension are four components whose underlying concepts relate and

are guided by questions we seek to answer with available data (see Figure 1). Each component is further defined by a set of outcome indicators that respond to the conceptual questions posed.

Figure 1 - Social Progress Index Component-Level Framework



Every component within a dimension is designed to highlight a separate aspect of the overall set of outcomes which make up a dimension, building on both the academic and policy literature. Together, the four components in each dimension, offer a conceptually coherent way of capturing how societies can empower (or limit) an individual’s autonomy, freedom, and ability to progress.

The multi-dimensional construction of the Social Progress Index should not be interpreted as a step-by-step movement toward progress from one dimension to the next. Rather, the three dimensions are interrelated. While we distinguish between these three aspects of social progress, many issues they encompass interact with one another to drive more meaningful change.

Dimensions of Social Progress

At the topmost level of the framework, we synthesize three distinct though related questions that, taken together offer insight into the level of social progress:

1. Are people’s most essential needs being met?
2. Are the building blocks in place for individuals and communities to enhance and sustain wellbeing?
3. Is there opportunity for all individuals to reach their full potential?

Each of these questions describes a dimension of social progress, respectively: Basic Human Needs, Foundations of Wellbeing and Opportunity. The first dimension, Basic Human Needs, assesses a population's capacity to survive with adequate nourishment and basic medical care, clean water, sanitation, adequate shelter, and personal safety.

Basic needs have been the predominant focus of research in development economics, but the second dimension of social progress, Foundations of Wellbeing, deserves equal attention. It highlights the extent to which citizens can gain a basic education, obtain information and communicate freely, benefit from a modern healthcare system, and live in a healthy environment conducive to a long life.

Finally, any discussion of social progress must also include whether the population has the freedom and opportunity to make their own choices and pursue higher education. Personal rights, personal freedom and choice, inclusiveness, and access to advanced education all contribute to the level of opportunity within a given society. This dimension of the Social Progress Index is perhaps the most controversial and most difficult to measure. Nonetheless, it is important to highlight that societies, high-income or low-income, still struggle to meet the moral imperative to guarantee the equality of opportunity for all citizens.

Components of Social Progress

Under each dimension are four components. Components, like dimensions, are categories of outcomes, rather than specific outcomes themselves. For example, the Opportunity dimension includes the components Personal Rights, Personal Freedom and Choice, Inclusiveness, and Access to Advanced Education. Each of these components describes a related, but distinct aspect of what it means for a society to guarantee opportunity among its population. The Personal Rights and Access to Advanced Education components describe the extent to which individuals can pursue their own objectives to the best of their ability. Personal Freedom and Choice and Inclusiveness, on the other hand, describe the extent of limits on individuals.

The twelve components represent what we believe to be the most complete set of outcome categories given our current understanding of social progress from diverse literature and given the current availability of data. The Social Progress Imperative Advisory Board provided input into selecting the dimensions and the elaboration of the components within each dimension, along with an iterative review of relevant literature. The framework was established in 2013, and we continue to ensure its relevance each year. We consult extensively with experts across disciplines on the twelve-component structure of the Social Progress Index on an ongoing basis, ensuring it continues to capture the principal aspects of human wellbeing and that the issues measured are comprehensive and apply to all societies, regardless of their level of economic development or geography.

Key Design Principles

1. *Exclusively social and environmental indicators*

Our aim is to measure social progress directly, rather than utilize economic proxies and the Social Progress Index is the first measurement to do this. By excluding economic indicators, we can rigorously and systematically analyze the relationship between economic development (measured for example by GDP per capita or median household income) and social development. Prior efforts to move “beyond GDP” have commingled social and economic indicators, making it difficult to disentangle cause and effect.

2. *Measuring outcomes vs. inputs*

Our aim is to measure the outcomes that matter to the lives of real people, not the inputs. For example, we want to measure a country’s health and wellness achieved, not how much effort is expended nor how much the country spends on healthcare.

3. *Holistic and relevant to all people*

Our aim is to create a holistic measure of social progress that encompasses the many aspects of the health of societies. Most previous efforts have focused in on subsets of populations, like the poorest countries, for understandable reasons. But knowing what constitutes a healthy society for any given community, region, city or state, regardless of income, is indispensable in charting a course for less-prosperous populations to get there.

4. *Actionable*

The index aims to be a practical tool that helps leaders and practitioners in government, business and civil society to implement policies and programs that will drive faster social progress. To achieve that goal, we measure outcomes in a granular way that focuses on specific areas that can be implemented directly. The framework allows us to provide not only an aggregate score and ranking, but also granular analyses of specific areas of strength and weakness which allow change-makers to identify and act upon the most pressing issues in their societies.

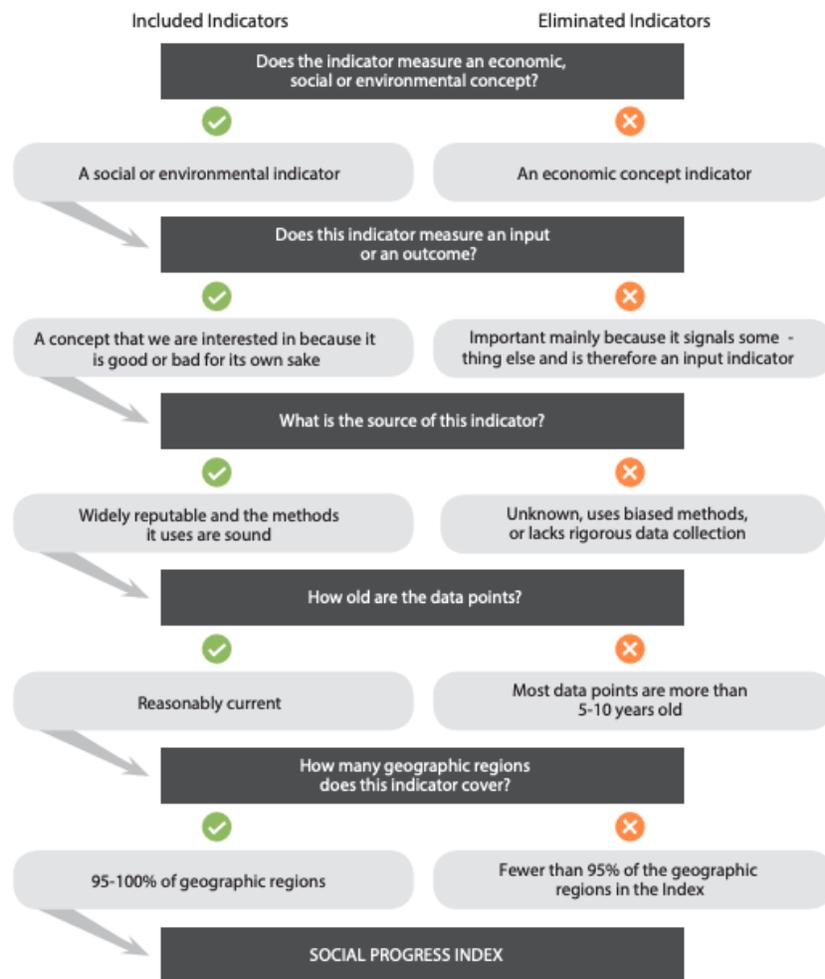
Indicator Selection

At the most granular level of the Social Progress Index framework, we identify multiple independent outcome measures – indicators – related to each component. Each set of indicators,

grouped by component, define and measure the same aspect of social progress. The Social Progress Index for Orange County includes 50 indicators, with 3-5 indicators per component.

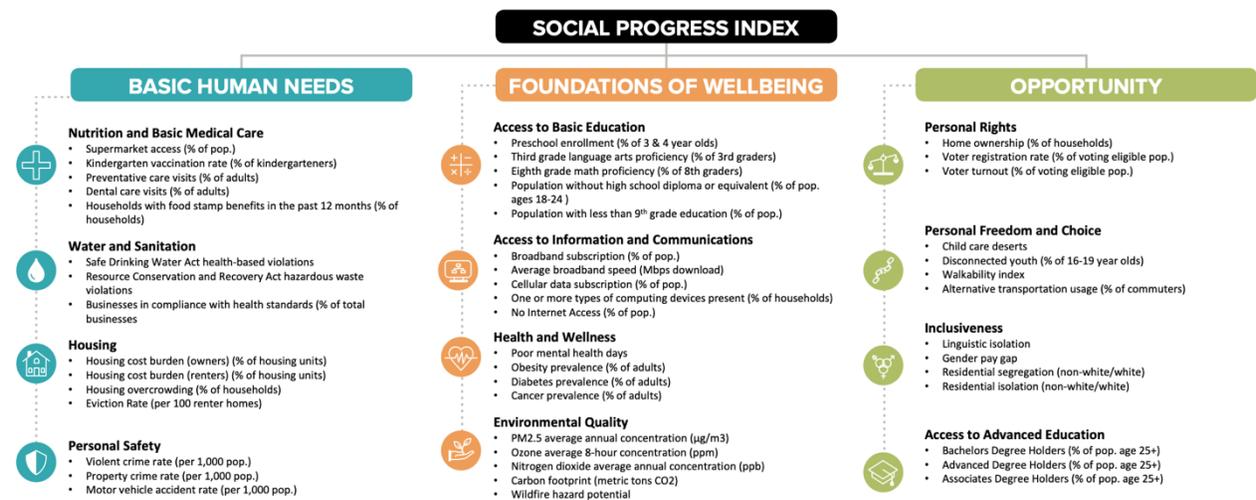
We only include indicators that are measured well, with consistent methodology, by the same organization and across all (or essentially all) of the census tracts in our sample. We use the most current available data for each indicator; however, data lags do exist in almost all indicators and appropriate caution should be taken when interpreting the scores. We evaluate each indicator to ensure that the procedures used to produce the measure are sound and that it captures what it purports to capture.

Figure 2 – Indicator Selection Tree



Data for each indicator must come from the same source to ensure consistency in measurement across tracts. Data sources range from government institutions like the American Community Survey to academic research databases such as Princeton’s University Eviction Lab. For each indicator, we evaluate the data sources available and consider tradeoffs between the quality and precision of a social indicator and the comprehensiveness of its geographic coverage. For a complete list of indicators of the Social Progress Index for Orange County, please see Figure 3 below.

Figure 3 – Social Progress Index for Orange County indicator-level framework



Index Development

Prior to aggregating the indicator data for indexing, each indicator is processed to handle any missing values and outliers in the raw data. Data points that fall outside of the 99th or 1st percentiles for each indicator are replaced with the 99th or 1st percentile values, respectively, in a process known as “winsorization”. Indicators are selected to minimize the presence of missing values, but any missing values in the data are imputed using a regression imputation process whereby all indicators without missing values act as predictors for each indicator with missing values in the regression model.

The next step involves calibrating and scaling each indicator. Indicators are scaled from zero to 100 using benchmarks, which are defined from theoretical boundaries drawn from indicator definitions or from reasonable limits above and below the maximum and minimum values, respectively. In the absence of a strong theoretical or practical boundary, we set top and bottom

benchmarks at 15% above the maximum value and 15% below the minimum value. Indicators for which increasing values correspond to worse outcomes are inverted before index calculations.

For each indicator, a statistical test for normality is performed and those indicators which fail the test statistically are transformed to a Gaussian distribution using Box-Cox power transformations. This process, also known as feature engineering, improves the application of Principal Components Analysis (PCA) in the next step by allowing the indicators to follow distributions that can be described by their mean and variance alone, a key assumption for valid application of PCA.

Within each of the twelve framework components, we then standardize (z-score) the indicators and apply PCA to uncover any number less than or equal to the number of indicators of underlying, uncorrelated principal components that describe the variance structure of the indicators. These principal components are then reduced to a single score by weighting each principal component by the percentage of total variance in the data it explains. Dimensions are calculated as the geometric average of the four framework components that comprise them, and the Social Progress Index score is the geometric average of the three dimension's scores.

Component Scores

To calculate component scores, we aggregate the set of indicators within each component into a factor using PCA. PCA essentially assigns each indicator a weight, a method we select over equal weighting to ensure that indicators are meaningfully contributing to a component score, while accounting for similarities between them. The formula below reflects indicator aggregation into a principal component, where c =Social Progress Index component and i =indicator.

Formula 1

$$\text{Component value}_c = \sum_i (w_i * \text{indicator}_i)$$

To convert each principal component into a component score on a scale of 0 to 100, we use a simple min-max formula, where X =component value and j =census tract.

Formula 2

$$\text{Component score}_c = \frac{(X_j - \text{Worst Case})}{(\text{Best Case} - \text{Worst Case})} \times 100$$

SPI Scores and Scorecards

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 census tract against the best and worst-possible scenarios in terms of social progress performance. However, it is also useful to consider relative performance, comparing the level of social progress among census tracts of similar levels of economic development. We perform a relative analysis of strengths and weaknesses comparing each census tract's performance in relation to other peer tracts based on median household income.

Once the census tract comparator group is established, the tract's performance is compared to the median performance of tracts in the group. The median is used rather than the mean to minimize the influence of outliers. If the tract'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. Results of this analysis are presented in the form of a "Scorecard".

The scorecard is a visual form of the data where SPI dimensions, components and indicators are color-coded according to relative results. Blue indicates that the tract performs much better than the rest of its peers, yellow indicates that the performance is typical or neutral, while red indicates that the performance is below the typical results of peer tracts. This analytical tool helps decision-makers identify relative strengths and weaknesses in their community's Social Progress in relation to similar economies, to prioritize potential investments and critical areas of action.

Conclusion

The Social Progress Index provides a benchmark by which a county, examined through the lens of granular geographies such as census tracts, can compare themselves to each other and identify specific areas of current strength or weakness. Additionally, scoring on a 0–100 scale gives census tracts a realistic benchmark rather than an abstract measure. This scale allows us to track absolute, not just relative, performance of tracts over time on each component, dimension, and the overall model. Furthermore, presenting the information in the form of a scorecard provides important insight and actionable information to those seeking to increase social progress in specific areas. We continue to test our process and methodology at the census tract level, replicating the steps outlined in this report to produce meaningful results in different geographical areas of the world.