

September 2019



604-170 Laurier Ave. West  
Ottawa, Ontario  
K1P 5V5

613-233-8891  
csls@csls.ca

**A Prosperity Index  
for British Columbia:  
Technical Background**

Andrew Sharpe

Final Report

Research Prepared for the Business Council of British Columbia

September 2019



# **A Prosperity Index for British Columbia: Technical Background<sup>1</sup>**

The Business Council of British Columbia (BCBC) is committed to developing a “B.C. Prosperity Index” for release in 2019. The twin objectives of the index are to track the province’s performance on various socio- economic indicators, both individually and in the aggregate, related to prosperity, defined in terms of living standards and economic well-being, over time and to compare the level and growth rates of these indicators with other sub-national and national jurisdictions.

The purpose of this report is to present the estimates of the Prosperity Index for British Columbia with comparisons with three types of other jurisdictions (i.e. peer countries, Canadian provinces and Pacific U.S. states). The report has eight parts. The introduction reviews the rationale for such an Index and highlights the domains and indicators. The second section outlines the methodology for the Index. The third section discusses the selection of specific indicators for the Index. The fourth section discusses data sources and issues. The fifth section, the longest, presents the preliminary results, with both level and growth rate comparisons of British Columbia with other provinces, OECD countries and the three U.S. Pacific States, as well as an aggregate comparison putting the three types of jurisdictions together. The sixth section compares the B.C. Prosperity Index with other composite indexes that include B.C., such as the Index of Economic Well-being and the Human Development Index (HDI). The seventh section outlines an agenda for additional work on the Index. The eighth and final section concludes.

## **Introduction to the B.C. Prosperity Index: Background, Rational, Domains, and Indicators**

Prosperity is a key societal objective. There is no widely accepted definition of what exactly constitutes prosperity, but the notion is closely linked to the state of living standards and the economic well-being of the population. GDP per capita is part of this picture but is incomplete as it omits such considerations as income distribution, economic security, and environmental conditions. Many indicators can be used to assess what represents a prosperous economy and society and what determines prosperity. Both individuals and groups in society will have different views on what indicators are important. This report represents the perspective of the Business Council of British Columbia on what matters for a prosperous B.C.

In addition to identifying a number of indicators important for prosperity, this report goes a step further and produces a composite index that aggregates various indicators into a single number. Composite indexes are not without controversy. They are subjective in that the results

---

<sup>1</sup> This report was written by Dr. Andrew Sharpe, Executive Director of the Centre for the Study of Living Standards (CSLS). He thanks Jock Finlayson, Ken Peacock and Dr. David Williams at the BCBC for detailed comments. CSLS economists Sebastian Tansil and Simon Lapointe were responsible for the development of the database.

depend on the choice of indicators included in the index and the weights given the indicators to roll up to the composite index. But the Business Council of British Columbia believes that these features or characteristics of a composite index are more than offset by two major strengths or advantages.

The first is the ability of a composite index to produce a bottom line in relation to prosperity, both in terms of trends over time within a jurisdiction, and in terms of level comparisons of the prosperity of one jurisdiction with that of other jurisdictions. The second is the ability of a composite index, largely because of the bottom line it produces, to garner attention from media, policy makers, private sector stakeholders, and the general population. This attention can in turn lead to pressure on societal actors to do something, resulting in changes in public policy or private sector behavior and actions.

In many ways, the debate on the relative merits of a composite index versus a set of indicators, generally called a dashboard, is not particularly helpful. Both are important. Without accurate, relevant and meaningful indicators, a composite index cannot be constructed. Indeed, the first action often taken when a composite index is released is to disaggregate it to see what indicators are driving it. In turn, the bottom line produced by a composite index focuses attention on the indicators that are driving the results and if the results are poor, this can lead to action to improve the situation. There is room for both composite indexes and a set of indicators in the world of assessments of socio-economic performance. It is not an “either-or” situation.

The primary target audience for the B.C. Prosperity Index is the public through media coverage, although business leaders and policy makers at both the political and bureaucratic levels are also desired audiences. This means that the Index should be as simple and transparent as possible, especially regarding methodology. In addition, the indicators selected for inclusion should be considered relevant and important by the public.

## **Domains and Indicators**

The B.C. Prosperity Index consists of three domains and 12 indicators. The domains are the business environment, economic well-being, and societal well-being. Each domain includes four indicators, although the societal well-being domain has two sub-indicators for the environment variable. In total, there are 13 data series in the B.C. Prosperity Index, which are highlighted below by domain.

### Business Environment:

- labour productivity, as expressed by total economy GDP per hour worked, a proxy for an economy’s ability to generate increases in real income;
- investment, as defined as the share of non-residential investment in GDP;

- innovation, as proxied by the share of R&D expenditure in GDP;
- education, as represented by the share of the population 25 and over who have completed post-secondary education;

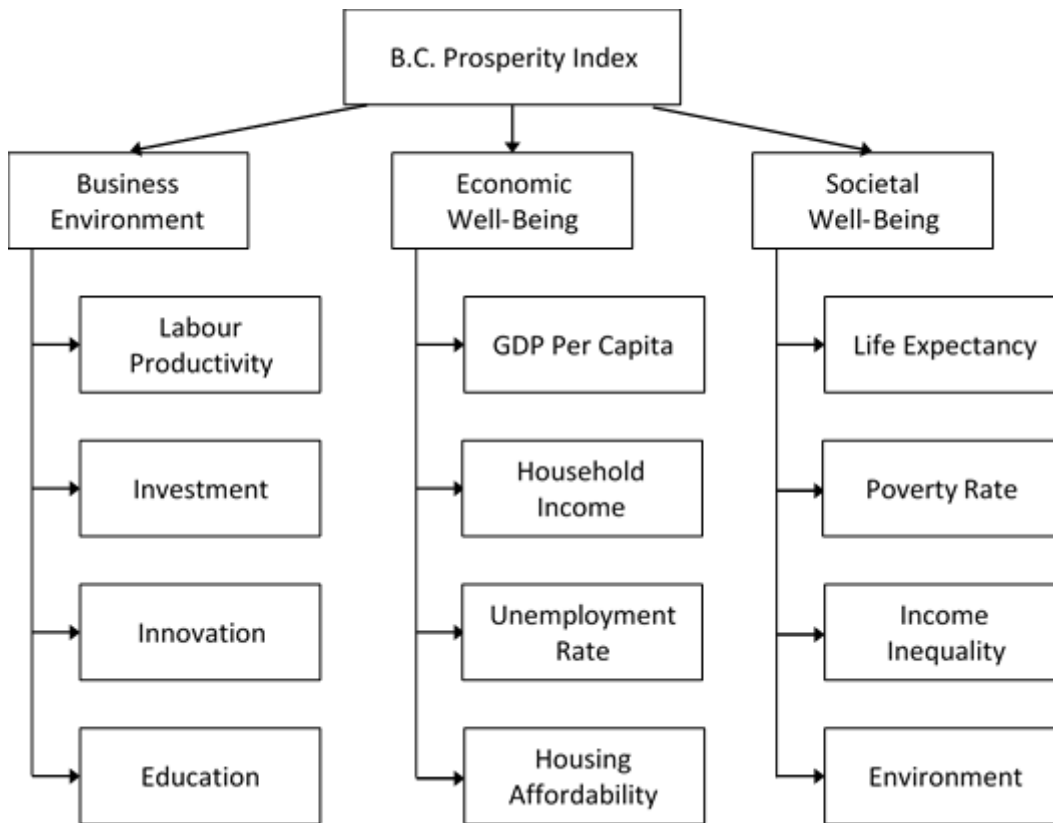
### Economic Well-Being

- real GDP per capita, a measure of an economy's ability to produce goods and services for the population;
- household income, represented by the purchasing power of households for goods and services after taxes and transfers, measured on a per person basis;
- the unemployment rate for persons 15 and over, which represents the ease or difficulty for a person to find employment;
- housing affordability, as expressed by the proportion of disposable income a household spends on housing;

### Societal Well-being

- life expectancy, measured by the number of years a person expects to live, measured at birth;
- the poverty rate for all persons, based on the market basket poverty measure, a measure of the share of the population not able to reach a socially acceptable minimum level of income;
- income inequality, as shown by the after-tax Gini coefficient, a measure of the concentration of income in a jurisdiction;
- environment: air pollution, as measured by PM 2.5 concentration;
- environment: per capita greenhouse gas emissions.

Exhibit 1: The B.C. Prosperity Index:



## Methodology for the B.C. Prosperity Index

### Overview of the Index

Simplicity is a strength of composite indexes as it enhances transparency. The B.C. Prosperity Index has been designed on this principle. As shown in Exhibit 1, the Index consists of three domains, each with four variables or indicators for a total of 12 variables or indicators. One of the indicators (for the environment) includes two sub-indicators or variables, so there are in fact 13 data series needed to construct the Index.

The three domains are the business environment, economic well-being, and societal well-being. The four indicators in the first domain relate to productivity, investment, innovation, and education. The four indicators in the second domain are GDP per capita, household income, unemployment and housing affordability. The four indicators in the third domain relate to life expectancy, poverty, income inequality, and the environment (with two sub-indicators used for the environment).

Time series for the absolute values of each indicator for the three types of jurisdictions (provinces, international and U.S. states) have been collected. Each observation is then divided by the value for British Columbia in 2017 to convert the actual time series values for all years into indexes. These indexes allow both calculation of growth rates for the indicator over time and comparisons in absolute terms of the indicators across jurisdictions. For example, an index value of 90 for a province in 2016 would mean that the level of that indicator was 10 per cent lower than the value of that same indicator in British Columbia in 2017. To compare with British Columbia in 2016, the index is divided by the B.C. value for 2016.

### **Composite Indexes versus Dashboards**

There has been an important debate in the well-being literature on the relative value of a composite index versus a dashboard of indicators. Those who oppose composite indexes feel that a dashboard or set of indicators is sufficient to monitor trends in well-being. Those supporting composite indexes make that case that a composite index provides additional value compared to a set of indicators. The debate boils down to whether the construction of composite indexes is a worthwhile exercise. The Business Council of British Columbia has chosen the composite index route.

There are a number of arguments in favour of composite indexes (OECD, 2008:13). First, composite indexes provide an assessment of overall trends or the bottom line for well-being, unlike a dashboard. Second, with a bottom line, a composite index can generate greater public and media interest than a set of indicators. Third, composite indexes can summarize complex multi-dimensional realities with a view of supporting good decision making. Fourth, composite indexes are easier to interpret than a battery of many separate indicators. Fifth, a composite index reduces the visible size of a set of indicators without dropping the underlying information. But this underlying information is not lost and therefore it can be used to drill down to explain the trends in the composite index.

There are also arguments against the use of composite indexes. Some say that composite indexes may send misleading policy messages if poorly constructed or misinterpreted and may invite simplistic conclusions. Composite indexes can also potentially be manipulated through choices related to methodology and weights if an index is constructed for promoting a particular policy or to provide evidence on some preconceived trend.

These criticisms can have validity. All tools can be misused. But such misuse does not in the BCBC's view undermine the case for composite indexes where there is transparency in construction and where the underlying values and intentions of the constructor are known.

It is unlikely there will ever be a consensus on whether the construction of composite indexes is a worthwhile exercise. Those who feel they are useful will go ahead and construct them, as they should in a world where researchers have freedom to choose the tools and methodologies they judge to be most appropriate.

Participants in the dashboard/composite index debate often fail to appreciate that what adds most value to the understanding of trends in well-being is the building of the comprehensive data base needed for the composite index, not the methodological choices for construction of the index or even the composite index itself. This task is often much more time consuming than the actual construction of a composite index from an underlying data set. The construction of a composite index is just a final step in the representation of the data in the dashboard.

### **Data Normalization**

Composite index construction generally involves some type of normalization of the data. One can in principle avoid normalization by calculating indexes (base year equals 100 or 1.0) for the time series of all indicators from the raw data, and then weighting the indexes into a composite index. A significant advantage of not normalizing the data is that transparency is maintained. Because the BCBC puts a high value on simplicity and transparency, it has decided to avoid the normalization approach and to use indexes based on the actual data,

BCBC recognizes that there are two drawbacks with such an approach. First, the variance of time series indicators can vary greatly. Without normalization, one will be implicitly giving much greater weight to indicators whose time series exhibit large per cent changes or greater variance (e.g. the unemployment rate), compared to indicators whose time series exhibit small per cent changes or less variance (e.g. the Gini coefficient). This may or may not be perceived as a problem. If it is considered a problem, it can be remedied by standardization through z-scores which converts indicators to a common scale with a mean of 0 and a standard deviation of one.

Second, the use of non-normalized data leads to problems with indicators where an increase is negative for well-being and a decrease is positive (the directionality issue), such as the unemployment rate. One cannot simply index the unemployment to 1 in the initial year and then combine the resulting time series with time series where an increase from the base year is positive and a decrease negative. One way to deal with this issue is to use the reciprocal of the index value of time for aggregation. This works but it is not a linear transformation of the data and can bias the resulting composite index. Another approach is to use the Min-Max normalization technique, which subtracts the minimum value and divides by the range of indicators, giving values from 0 to 1. Again, for the sake of transparency, BCBC has chosen to use the reciprocal of the index value when an increase in the index represents a negative development from the perspective of prosperity.



## **Weighting of Indicators<sup>2</sup>**

Once indicators have been selected, they must be aggregated into a composite index through a weighting scheme. The weighting issue is a difficult one. One approach is to use statistical techniques such as principal component analysis, factor analysis or cluster analysis that make use of the relationship between indicators to identify which indicators are the most important (have the largest variance). Another approach is to use opinion or values surveys and/or focus groups to identify public perceptions on the relative importance of the indicators. Expert opinion, either of the builders of the index or other experts, can also be used to weight the indicators. Finally, indicators can be equally weighted. This latter approach is the simplest and most transparent. It is also an approach that is less subject to criticism of bias. Equal weights give the appearance of being objective, balanced, reasonable and unbiased. Of course, they assume that all indicators are of equal importance, which may not be true.

BCBC has chosen to use an equal weighting scheme for the B.C. Prosperity Index, both for calculation of the domain index based on the indicators in each domain and for the overall index based on the index values for the three domains.

## **Comparator Jurisdictions**

The choice of comparator jurisdictions for a composite index is also important as this determines the ranking of the overall index. Again, one can consciously or unconsciously manipulate the ranking of an index by selecting jurisdictions whose indicators tend to be higher or lower than the reference jurisdiction.

In relation to the B.C. Prosperity Index, the key criterion for the selection of the comparator jurisdictions is the perceived relevance or importance of the jurisdiction to the people of British Columbia for both level and growth rate comparisons related to B.C.'s prosperity. Since British Columbia is a sub-national jurisdiction, obvious comparators would be the other provinces of Canada and individual U.S. states, notably those along the West coast. It was also considered important to compare British Columbia with the Canadian average and with selected OECD countries that share strong similarities in institutions, education levels, and their stage of economic development.

The 21 jurisdictional units included in the B.C. Prosperity Index are the 10 Canadian provinces, the three Pacific U.S. states (California, Oregon, and Washington) and eight OECD countries (Canada, United States, France, UK, Germany, Japan, Australia and New Zealand).

---

<sup>2</sup> For an assessment of weighing methodologies for composite indicators and an application to the Index of Economic Well-being, see Sharpe and Andrews (2012).

## Choice of Specific Indicators

### Criteria for the Choice of Domains and Indicators

The choice of domains and specific indicators for a composite index is very important as this determines the path of the overall index.<sup>3</sup> Indeed, one can consciously or unconsciously manipulate the trend in an index by selecting variables that exhibit a strong upward or downward bias.

In relation to the B.C. Prosperity Index, the key criterion for inclusion has been the perceived importance of the indicators or variables from the perspective of B.C.'s prosperity, mainly based on an assessment by BCBC with advice provided by CSLS.

Once decisions were made on what is important and a number of potential indicators had been identified, these indicators were in turn assessed on a few criteria: measurability, ability to be understood or simplicity, availability of data, and data timeliness. These criteria are discussed below.

An obvious criterion for inclusion of an indicator in a composite index is that the indicator can be measured or made quantifiable, that it is captured quantitatively, preferably by a statistical office. Abstract concepts to which a number cannot be applied are inappropriate for a composite index.

An additional criterion is simplicity. It is important that the target audience for a composite index can relate to the indicators included in the index. When the target audience includes the general public, as is the case for the B.C. Prosperity Index, this means that the indicators must be relatively simple, easy to understand, and transparent.

It makes no sense to consider an indicator for a composite index if no data are available for the indicator. Fortunately, Canada has high quality official statistics for many key indicators. This greatly facilitates the construction of the composite index in this report.

In addition to data availability, it is important that indicators be timely. This means they need to be produced on a frequent basis, which means at least annually. Census data, which are only produced every five years, and with a considerable lag from the reference day of the census, consequently cannot be used in a composite index whose objective is to capture current or fairly recent developments.

---

<sup>3</sup>Hagerty *et al.* (2001) develop 14 criteria for determining the validity and usefulness of quality of life (QOL) indexes and use these criteria to evaluate 22 QOL indexes. These criteria include the following: that the index has a clear practical purpose; is relevant for public policy; is based on time series for monitoring; contains indicators that are reliable, valid and sensitive; is grounded in well-established theory; can be reported as a single number, but can be broken down into components; indicators can be measured in both objective and subjective dimensions; and indicators must be relevant for all people.

## **Indicator Selection**

The B.C. Prosperity Index reflects the choices made on what indicators comprise the index. This section explains the choices for the 12 indicators (13 data series) selected for inclusion and gives details on the specific indicator used to capture the general indicator.

## **Business Environment Domain**

The four indicators in this domain are labour productivity, investment, innovation, and education (or human capital).

### Labour Productivity

Productivity is defined as the relationship between output and inputs. In the long run, the key determinant of growth in the living standards of a population is the rate of productivity growth. For this reason, the BCBC believes that a prosperity index should in principle include a productivity measure, given the importance of the link between income and productivity.

There are numerous types and definitions of productivity, including partial productivity measures such as labour productivity versus total factor productivity measures, total economy versus business sector measures, persons employed versus hours worked measures, and productivity growth rates versus productivity levels, each with advantages and disadvantages. (Smith, 2004). Because of the complex and somewhat abstract nature of productivity definitions and measurement, and the need for transparency in a composite index, it is important that any productivity measure chosen for a composite index be relatively simple. In this regard, the BCBC believes that most appropriate productivity indicator is total economy real GDP per hour worked.

In the standard growth accounting framework, labour productivity is determined by physical investment, human capital or labour quality, and innovation or technological change. The BCBC has selected these variables to be the three remaining indicators for the business environment domain.

### Investment

As noted, investment is a key driver of productivity growth. Through investment in machinery and equipment, new technologies are introduced into production processes. Through investment in plant and structures, the capacity to produce is augmented. Indeed, increased capital per worker, or capital intensity, accounts for around one third of labour productivity growth in Canada over the 2000-2016 period (Statistics Canada). Given the importance of investment for a healthy business environment, BCBC has selected the share of non-residential investment in GDP as an indicator.

## Innovation

Innovation, or technological change, whether embodied in new capital equipment or disembodied in the form organizational innovation, is the most important driver of labour productivity growth in the long run. The standard growth accounting framework identifies total factor productivity (TFP) growth as a proxy for innovation or technical change. But since TFP is calculated as a residual, it captures the influence of many factors such as measurement error, economies of scale, imperfect competition, and capacity utilization, that do not directly pertain to innovation or technological change. For this reason, as well as data availability issues, TFP has not been selected as the innovation indicator. BCBC believes that research and development spending, a key input into the innovation effort, is a more appropriate indicator for innovation and has selected R&D intensity, defined as the R&D/GDP ratio, as the innovation indicator for the business environment domain.

## Education

Human capital is crucial for productivity advances as a qualified work force is needed to make effective use of new technologies and of a larger and/or more modern capital stock. Indeed, Statistics Canada estimates that higher labour quality accounted for 10 per cent of labour productivity growth in the 2000-2016 period in Canada. In addition, higher levels of education in a population have many other positive effects for society and the economy, including higher wages, a lower unemployment rate, higher employment rates, less crime, more civic participation (including voting), better health outcomes, higher marriage rates, and less family breakdown. From this perspective, educational attainment can be a useful indicator of both the state of and trends in the business environment as well as overall societal well-being. For this reason, BCBC has selected a measure of education attainment for inclusion in the business environment domain, namely the proportion of the population 25 and over with post-secondary education.

## **Economic Well-Being Domain.**

The four indicators for this domain are two income measures (GDP per capita and household income), along with the unemployment rate and housing affordability.

### GDP per capita and household income

Income, especially when expressed in real or inflation adjusted terms, is very important for living standards and economic well-being. There are many potential income indicators, all with strengths and weaknesses from the perspective of a broad prosperity index. Income measures can be based on different data sources (e.g. national accounts data, tax records, household surveys), different definitions of income (post-tax income, total income with transfers, market income, employment income). They can also be considered in absolute terms or for a unit of population (individuals or per capita, families, unattached individuals, households) and can include or exclude economics of scale in consumption through an equivalence scale.

The best-known aggregate income measure is Gross Domestic Product (GDP), which is defined as the sum of all incomes earned in the economy.<sup>4</sup> Indeed, real GDP growth is considered a manifestation of the dynamism of an economy, and real GDP per capita is considered by many to be the best single proxy for living standards. Other important national accounts aggregate income measures are personal income, which excludes profits and includes government transfer payments, and disposable or after-tax personal income. These national accounts-based income measures may lack transparency, as they include imputations such as imputed rent for owner-occupied dwellings. They also include, in the definition of the household sector, entities such as universities. Another limitation of national accounts-based income measures is that they cannot be disaggregated by income group or household type.

Statistics Canada produces a number of household income measures based primarily on tax data, with the median now the preferred metric. The most widely reported measure is median after-tax income for economic families and unattached individuals. After-tax income is comprised of income from market sources and government transfers. Market income includes employment income, retirement income and income from investments, while government transfers include benefits to seniors, child benefits, Employment Insurance benefits, social assistance and other benefits.

Given the close relationship between income and prosperity, BCBC has included two income measures in the economic well-being domain of the B.C. Prosperity Index: real GDP per capita and average household income,

### Unemployment Rate

The unemployment rate is another important and often-cited metric of economic and social performance. A high unemployment rate is inconsistent with broadly-based prosperity. The unemployment rate is defined as the number of unemployed persons over the labour force, where the latter is the number of employed persons plus persons looking and available for work. The unemployment rate's strength is that it captures the degree of unemployed resources in the economy, defined as the difference between the actual unemployment rate and some definition of the full employment unemployment rate. The unemployment rate, especially the long-term unemployment rate, also serves as a hardship indicator, especially for certain groups such as heads of household. Given the importance of work for social connections, a sense of purpose in life, and self-respect, not to mention income, the unemployment rate is closely related to

---

<sup>4</sup> There are eight aggregate measures of income and product (gross domestic product (GDP), gross domestic income (GDI), gross national product (GNP), gross national income (GNI), net domestic product (NDP), net domestic income (NDI), net national product (NNP) and net national income (NNI)). Ross and Murray (2010) discuss the implications of the eight measures for productivity and living standards analysis. They conclude that GDP and NDP are the most appropriate measures of output for productivity analysis, while NNI is the most appropriate measure of income for the analysis of living standards because it captures the impact on real income of terms of trade changes, net income received from abroad, and the sustainability of the capital stock.

happiness. The unemployed are generally less happy than the employed.<sup>5</sup>One recognized weakness of the official unemployment rate is that it does not capture all types of under-utilization of labour, such as discouraged workers and involuntary part-time workers.

Given the close linkages between unemployment and prosperity, its simplicity, and because it is widely-understood, BCBC has selected the official unemployment rate to be part of the economic well-being domain of the B.C. Prosperity Index.

### Housing affordability

A sense of prosperity can be greatly affected by the affordability of shelter. Even in areas where employment opportunities are ample and wages high, if reasonably priced shelter is not available, living standard and economic well-being suffer. This is particularly the case in large cities like Vancouver and Toronto where rents and housing prices are very high.

There are at least three well-known types of housing affordability indicators: the proportion of the population that spends above a certain proportion (30 per cent is the standard threshold) of their income on shelter costs, the ratio of average (or median) rent or housing prices to average (or median) household income, and the per cent of disposable income a household spends on housing.

While the house price to income ratio is attractive for its simplicity, its relationship with prosperity is ambiguous. It could be viewed as negative or positive. Housing is an asset *and* a consumption item. A rise in house prices negatively affects the budgets of all households, by putting upward pressure on market and imputed shelter costs. Renters and young households (i.e. those with no housing equity) aspiring to become home-owners are especially worse off, because they need to sacrifice more current income to save for a larger mortgage down-payment. At the same time, for the roughly two-thirds of Canadians who are already home-owners, rising house prices make them wealthier. Another benefit for home-owners when house prices rise is that they can leverage the unrealized capital gains in their property as collateral for residentially-secured revolving lines of credit (“home-equity loans”). Home-owners can parlay their windfall gain in borrowing power and extend their balance sheets for home renovations, purchases of secondary or rental properties, or current consumption.<sup>6</sup>

Given these conceptual difficulties and the availability of data for the three types of jurisdictions, BCBC has chosen the proportion of disposable income a household spends on

---

<sup>5</sup> A CSLS report (Sharpe et al, 2011) found that in 2007-2008 in Canada the average happiness of the unemployed was 4.01 on a five-point life satisfaction scale, compared to 4.30 for the employed.

<sup>6</sup> The house price to rent ratio is also complicated by the lack of good data for the denominator. In principle, it should comprise the imputed shelter costs faced by the roughly two-thirds of households who live in dwellings they also own, and the market rents faced by the roughly one-third of households who explicitly transact with a landlord. Rental dwellings tend to differ in quality, type and location from owner-occupied dwellings, so market rents tend not to be good proxies for imputed rent.

housing as the housing affordability measure in the economic well-being domain of the B.C. Prosperity Index.

### **Societal Well-being Domain.**

The four general variables for this domain are life expectancy, poverty rate, income inequality, and the environment. In contrast to all of the other variables or indicators, the environment has two sub-indicators so there are actually five data series for this domain.

#### Life expectancy

An individual's health status is a very important determinant of his or her well-being. Persons with poor health status, especially mental health status, report lower levels of life satisfaction. There are both subjective and objective summary indicators of health status. The best objective aggregate indicator of the level of, and trends, in a population's health status is life expectancy, especially when life expectancy is measured in terms of disability-free years of life. The best subjective measure of health status is self-reported health status, which can range from excellent to extremely poor. However, such data is not available for all jurisdictions. Thus, BCBC has chosen life expectancy at birth as a simple, objective and widely available metric for health in the societal well-being domain of the B.C. Prosperity Index.

#### Poverty rate

Poverty measures are of course based on income statistics. Poverty can be defined on an absolute basis, such as the Low-income Cutoff (LICO) measure or the Market Basket Measure (MBM) measure, or in relative terms by the Low-Income Measure (LIM) -- defined as proportion of the population below one-half median income. There are strengths and weaknesses to both approaches. If the real income of all households doubled, absolute poverty would fall, but relative poverty would be unchanged. On the other hand, the concept of poverty may include social norms for consumption that evolve over time, and persons who cannot afford certain consumer products can be considered relatively deprived.

In August 2018 the Government of Canada (ESDC, 2018) unveiled a national poverty reduction strategy that included, for the first time, an official measure of poverty,<sup>7</sup> namely the Market Basket Measure, which is based on "the cost of a basket of goods and services that individuals and families require to meet their basic needs and achieve a modest standard of living in communities across the country." A great advantage of this measure is that it is calculated at the community level and captures the true cost of living for members in that community, including housing costs. Unfortunately, the MBM poverty measure is only available for Canada so cannot be included in the B.C. Prosperity Index which includes OECD countries and U.S.

---

<sup>7</sup> For the first time, the Government of Canada has set ambitious and concrete poverty reduction targets: a 20 per cent reduction in the MBM poverty rate to 10 per cent by 2020 from 12 per cent in 2015 and a 50 per cent reduction in poverty by 2030 to 6 per cent.

states. Only the LIM measure is available for these other jurisdictions. Consequently, BCBC has chosen the after-tax low-income measure as the metric for poverty in the societal well-being domain of the B.C. Prosperity Index.

### Income inequality

The level of income inequality in a society can affect sense of societal well-being. If one group has extreme levels of income and consumption, even if others are not suffering poverty and are experiencing some increases in real income, many will feel a sense of relative deprivation as they are not fully sharing in the overall prosperity.

There are a number of measures of income inequality. The best known, but likely the least transparent income inequality metric is the Gini Coefficient, which is a summary statistic that captures the overall distribution of income across a population and ranges. The value of the Gini Coefficient can in principle range from 0 to 1, where 0 means that all households have the same income and 1 means that all income goes to one household.

In the U.S. in recent years, the income share of the top 1 per cent of American households has emerged as the most widely discussed measure of income inequality. It focuses on only a small but extremely important part of the population and ignores income distribution developments within the bottom 99 per cent. Ratios of the average or median income of different income quartiles or deciles, such as the top quartile/decile to the bottom quartile/deciles, can be constructed and used to track trends in income inequality.

Because it is such a well-known and widely available statistic, BCBC has chosen the Gini Coefficient for income inequality in the societal well-being domain of the B.C. Prosperity Index.

### Environment

The state of the environment is a major concern to the citizens of British Columbia for their quality of life. Most environmental indicators, such as air and water quality, have been improving over time. However, given the threat posed by climate change, as highlighted by a recent UN report on the topic (IPCC, 2018),<sup>8</sup> the environmental indicator which receives by far the greatest public attention these days is carbon dioxide (CO<sub>2</sub>) emissions.

For a number of reasons, including the implementation of a carbon tax by the B.C. government in 2008, greenhouse gas emissions in British Columbia are falling, which is not the case in many other jurisdictions. A time series index of emissions is one way to show how well British Columbia is doing in addressing the climate change issue. However, given the trans-

---

<sup>8</sup>The report found that the world's most stringent climate-change goals will not be met by 2030 unless aggressive action is taken in the next decade. To mitigate the effects of climate change on the environment, the report found that global net emissions of carbon dioxide would need to fall by 45 per cent from 2010 levels by 2030 and reach net zero to keep warming within the 1.5 C range. Canada's contributes around 1.6% to global GHG emissions, well behind China and the U.S.



border nature of greenhouse gas emissions, the future climate of the province will not be determined by provincial emissions, but rather by global emissions, including from many other jurisdictions, such as China and India, over which British Columbia has no control.

BCBC has chosen two sub-indicators to capture environmental performance in the societal well-being domain of the B.C. Prosperity Index, air pollution (as measured by PM 2.5 concentration); and per capita GHG emissions.

## **Data Sources and Issues**

The construction of the B.C. Prosperity Index has encountered many challenges of a data availability nature. Many of these challenges relate to the decision to include three types of jurisdictions in the index, namely Canadian provinces, some other OECD countries and a handful of U.S. states. The statistics are produced by the statistical authorities in these three types of jurisdictions (Statistics Canada, OECD, U.S. national statistical offices such as the Bureau of Labor Statistics and the U.S. Bureau of Economic Analysis), based on definitions and statistical priorities of the relevant jurisdictions. For some indicators, there are internationally accepted definitions, but for many others there are not. The decision to include different types of jurisdictions in the index leads to three specific problems with the 12 indicators, namely basic data availability, length of the time series available, and data comparability across jurisdictions.

### **Basic Data Availability**

The B.C. Prosperity Index in principle requires data series for 13 indicators/sub-indicators for three types of jurisdictions, or a total of 39 data series. The availability of a data series for an indicator was certainly a consideration for selection of that indicator. The lack of a data series for one type of jurisdiction meant that a metric could not be adopted, even though it might have been the most appropriate metric for a given indicator. In one instance, however, BCBC decided that investment was needed as an indicator in the business environment domain. But estimates for investment are not produced by the U.S. Bureau of Economic Analysis at the state level, as is the case for Canadian provinces.

The decision to include investment as one of the four indicators in the business environment domain even though such data are unavailable for U.S. states introduces a major incomparability into the index. The business environment domains for the provinces and OECD countries are calculated with four indicators, while those for the U.S. states have only three indicators. This means that the index for the business environment domain is not comparable between the provinces and OECD countries and U.S. states, (although the index for the other three indicators where there are data for all three types of jurisdictions are still comparable). The incomparability extends to the overall Prosperity Index based on the three domains, given the inclusion in the index of the incomparable business environment domain in the Prosperity Index. It is now no longer possible to compare the Prosperity Index between British Columbia and the

three U.S. Pacific States, although comparisons can be made with the states for 12 of the 13 indicators/sub-indicators.

There is a similar problem with the housing affordability indicator, defined here as the proportion of disposable income spent on housing. This metric does not appear to be available for individual U.S. states, although it is available for major cities in the United States. A proxy variable has been created for the three Pacific states, based on data for the major cities.

### **Length of the Time Series**

For analysis of trends, it is desirable to construct as long a time series for the B.C. Prosperity Index as possible. But the need for long-term data for 13 indicators/sub-indicators for three types of jurisdictions poses major challenges, as certain time series are not available for long periods. Since all indicators are needed to construct the overall index, this means that the length of the time series for the B.C. Prosperity Index faces a “lowest common denominator” problem: it can only be as long as the shortest available time series.

Exhibit 2 shows the length of the time series available for the 13 indicators/sub-indicators for the three types of jurisdictions. The good news is that there are time series of at least 20 years in duration for at least 21 indicator-jurisdiction combinations. The bad news is that at least one indicator-jurisdiction combination only has data for four years, the 2013-2017 period. Unless one is willing to drop this indicator from the Index, or drop this type of jurisdiction from the Index, in this case the U.S. states which have by far the most data issues, or develop estimates for earlier years for the missing indicator through backward extrapolation or another method, one is stuck with a fairly short time series for the B.C. Prosperity Index. The BCBC decided to live with the short time series for the B.C. Prosperity Index, as level comparisons of prosperity across jurisdictions are a higher priority than trend analysis at this time.

A related issue is the final year for the time series of the B.C. Prosperity Index. In principle, the more recent the final year, the better. For the 38 indicator-jurisdiction combinations for which we have data (Exhibit 2), 28 go to 2017 or later (one goes to 2018), and 10 go to only 2016 or earlier (8 to 2016, 1 to 2015 and 1 to 2014). One could use 2017 as the final year if one is willing to develop estimates for 2017 for the 10 indicator-jurisdiction combinations before that year. This can be done by a linear extrapolation of past trends (say five years), or in cases where there is no clear trend, the assumption that the 2017 value is unchanged from that of the most recent years for which there is a value. This would mean that slightly more than one quarter (10/38) of the indicator values for 2017 would not be based on real data. By contrast, if 2016 were the terminal date for the time series, then less than 7 per cent (2/38) of the indicator values for 2016 would not be real data.

Because of the importance of having indicators as current as possible, the BCBC has decided to go with 2017 as the terminal date. It was felt that the benefit of being one year closer

to 2019 exceeded the cost of any potential inaccuracies from having to estimate values for 10 indicators for 2017.

**Exhibit 2: Data Sources and Years of Availability**

	a) Provinces	b) International	c) USA
<u>Domain 1: Business Environment</u>			
Labour productivity	1997-2017	1997-2017	2005-2017
Non-residential investment as share of GDP	1997-2017	1997-2017	N/A
Innovation: R&D Expenditure as share of GDP	1997-2017	1997-2017	2005-2015
Education (age 25-64) - percentage attained post-secondary education	1997-2018	1997-2017	2005-2016
<u>Domain 2: Economic well-being</u>			
Real per capita GDP	1997-2017	1997-2017	1997-2017
Household Disposable Income Per Capita	2000-2016	2000-2016	2000-2016
Unemployment rate for persons 15 and over	1990-2018	1997-2017	1976-2017
Housing Affordability - Percent of disposable Income	2010-2016	2013-2017	2005-2017
<u>Domain 3: Societal well-being</u>			
Life Expectancy at Birth (in years)	1997-2017	2000-2017	2000-2014
Poverty rate (Low Income Measure)	1976-2016	2004-2017 <sup>a</sup>	2005-2017
Income distribution (after-tax Gini coefficient)	1976-2017	2004-2017 <sup>a</sup>	2006-2017
Air pollution (PM 2.5 concentration)	2000-2017 <sup>b</sup>	1990-2017 <sup>b</sup>	1990-2017 <sup>b</sup>
Per capita GHG emissions	2009-2016	1990-2014	2000-2015

Notes: a) Countries have different time periods available. b) Only select years available pre-2000

## Data Comparability Across Jurisdictions

Estimates for Canada and the United States are available from both the OECD and the national statistical offices (NSO), Statistics Canada and the BLS and BEA for the U.S. But because of definitional differences, the estimates for a number of indicators for the two countries can differ significantly between the OECD and national statistical offices. Sub-national estimates for the two countries are generally consistent with estimates from the national statistical offices, not with those of the OECD. This means that for sub-national estimates to be consistent with OECD estimates, which are the benchmark for the comparison of the three types of jurisdictions, they must be adjusted by the OECD/NSO ratio for the national estimates.

Table 1 shows the Statistics and OECD values for Canada for 2016 for 3 indicators and for the United States for 12 indicators where these are estimates for the states in the B.C. Prosperity Index. For Canada, four of the 13 indicators/sub-indicators have identical values from the two sources, while nine have different values. For the United States, three have identical values out of the 12 indicators/sub-indicators while nine have different values.

For Canada, the discrepancies between the Statistics Canada and OECD estimates are relatively small, the highest being 15.9 per cent for educational attainment. For the United States, the discrepancies are larger, with six indicators showing 18 per cent or more. The largest is labour productivity at 37.0 per cent. The discrepancy is also large for greenhouse gas emissions. The OECD definition is 26.3 per cent larger because it includes all greenhouse gases while the U.S. government definition includes only CO2 emissions.

The discrepancies are used to adjust the estimates from the national statistical offices to make them comparable with the OECD estimates for the country. These adjustment factors are applied to the sub-national estimates to ensure comparability with the country estimates produced by the OECD. The excel database for this report provides all of the raw estimates.

Table 1: Comparison of Data Sources - OECD vs NSOs, 2016 Figures for Canada and the United States

Source:	Canada			United States		
	Canada	OECD	Diff. %	US	OECD	Diff. %
	A	B	$(A - B)/A * 100$	A	B	$(A - B)/A * 100$
Labour productivity	46.50	48.92	-5.20	46.325	63.467	-37.01
Non-residential investment as share of GDP	15.25	14.31	6.17	n.a.	n.a.	n.a.
Innovation: R&D Expenditure as share of GDP	1.70	1.60	5.49	2.740	2.744	-0.15
Educational attainment (age 25-64) - percentage attained post-secondary education	66.89	56.27	15.89	38.492	45.666	-18.64
Real per capita GDP	44,819	44,819	0.00	57,845	57,797	0.08
Household Disposable Income Per Capita	22,499	22,499	0.00	40,045	40,045	0.00
Unemployment rate for persons 15 and over	7.00	6.99	0.12	4.93	4.87	1.35
Housing Affordability - Percent of disposable Income	22.00	21.00	4.55	25.75	19.00	26.23
Life Expectancy at Birth (in years)	81.90	81.90	0.00	78.60	78.60	0.00
Poverty rate (Low Income Measure)	13.00	12.40	4.62	15.10	17.80	-17.88
Income distribution (after-tax Gini coefficient)	0.31	0.31	-0.33	0.48	0.39	18.95
Air pollution (PM 2.5 concentration)	6.48	6.48	0.00	7.38	7.38	0.00
Per capita GHG emissions	20.59	19.40	5.77	15.96	20.21	-26.64

## Results for the B.C. Prosperity Index

This section of the report presents the results for the B.C. Prosperity Index by indicator and by domain, comparing the results for British Columbia with those for the three types of jurisdictions, provinces, international and U.S. states. The B.C. Prosperity Index has been compiled for 21 jurisdictional units: ten Canadian provinces, eight OECD countries (New Zealand, Japan, UK, United States, Australia, France, and Germany) and three U.S. states (California, Oregon and Washington). The focus of this report is on the situation in 2017, the most recent year for which estimates are compiled. Time trends are also briefly discussed.

## **Business Environment**

The business environment domain consists of four indicators, labour productivity, investment, innovation as proxied by R&D spending, and education.

### Labour productivity

Labour productivity is defined as real GDP per hour worked for the aggregate or total economy, measured in 2010 U.S. dollars at purchasing power parity exchange rates. In British Columbia in 2017, this figure was \$48.41 per hour (Appendix Table 5). As Chart 1 shows, British Columbia ranked 5<sup>th</sup> among the 10 provinces, and would place 7<sup>th</sup> among the eight OECD countries and last among the three U.S. Pacific states, on this indicator. Out of the 21 jurisdictions, B.C. ranked 14<sup>th</sup>.

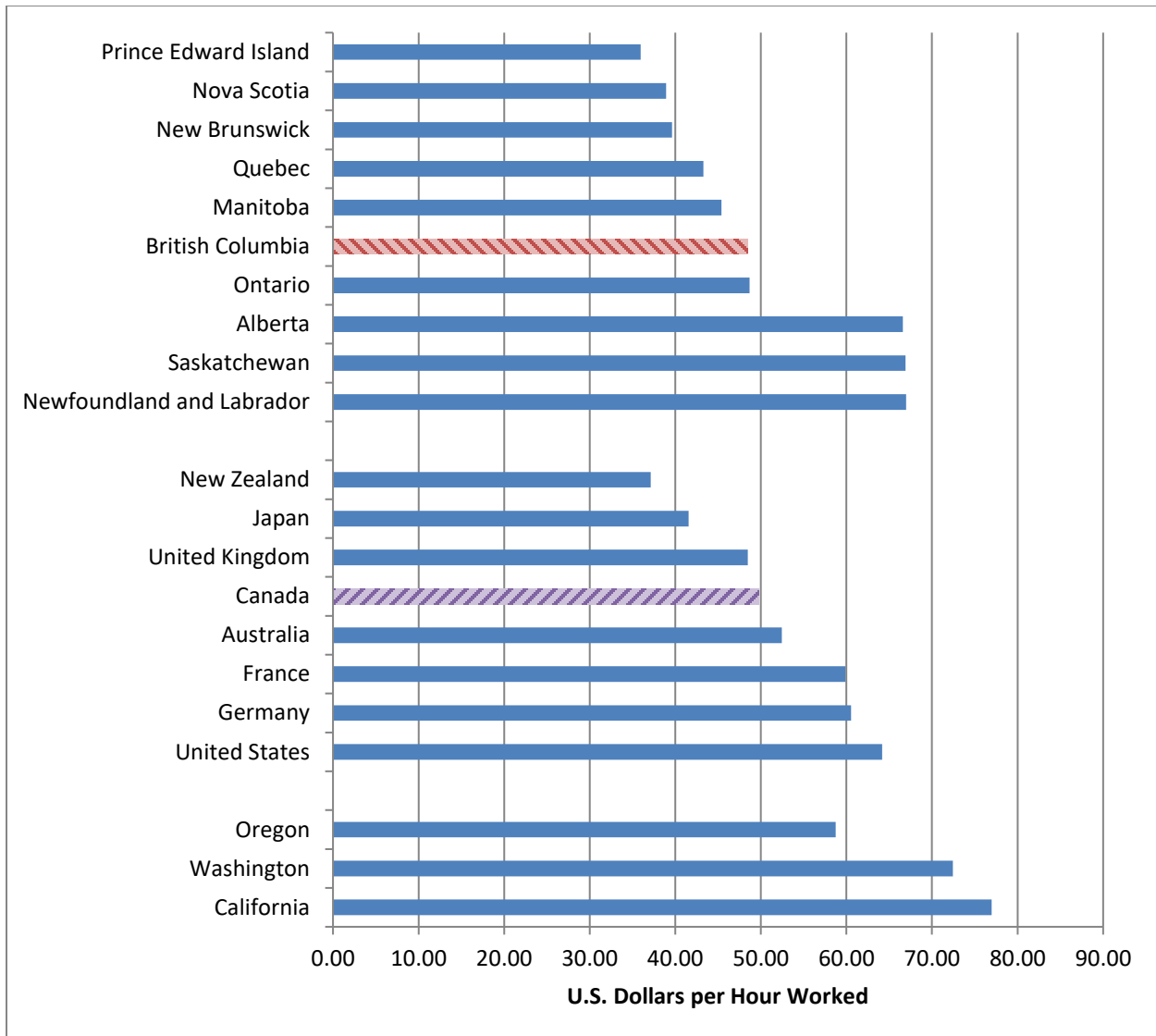
In terms of the Canadian provinces, British Columbia's productivity level was well below that of the three oil-producing provinces, Alberta, Newfoundland and Labrador and Saskatchewan, due to the very high value-added per hour levels in the oil and gas sector. British Columbia had a similar labour productivity as Ontario.

In terms of the eight OECD countries, only New Zealand and Japan had a lower level of labour productivity than B.C. in 2017.

The three U.S. Pacific states greatly out-performed British Columbia in terms of labour productivity levels. Output per hour in California in 2017 was 60.0 per cent higher than in British Columbia in 2017, while it was 49.6 per cent higher in Washington and 21.3 per cent higher in Oregon.

Data on labour productivity are available for the 2005-2017 period for all three types of jurisdictions. Over this period, output per hour increased 16.4 per cent in British Columbia. This was the 10<sup>th</sup> fastest growth rate among the 21 jurisdictions (Appendix Table 5).

Chart 1: Labour Productivity, GDP per Hour Worked, 2017 (2010 U.S. Dollars at PPP)



### Investment

The indicator for investment performance in the Index is non-residential investment, including both business and government, as a share of nominal GDP. In British Columbia in 2017, this figure was 14.07 per cent (Appendix Table 6). As Chart 2 shows, British Columbia ranked 5<sup>th</sup> among the 10 provinces and would place 7<sup>th</sup> among the eight OECD countries. Unfortunately, the U.S. Bureau of Economic Statistics, unlike Statistics Canada, does not produce estimates on investment by state. Out of the 18 jurisdictions for which data are available, B.C. ranked 11<sup>th</sup>.

In terms of the Canadian provinces, British Columbia's non-residential investment/GDP share was again well below that of the three oil-producing provinces, Alberta, Newfoundland and Labrador and Saskatchewan, due to their capital-intensive energy sectors.

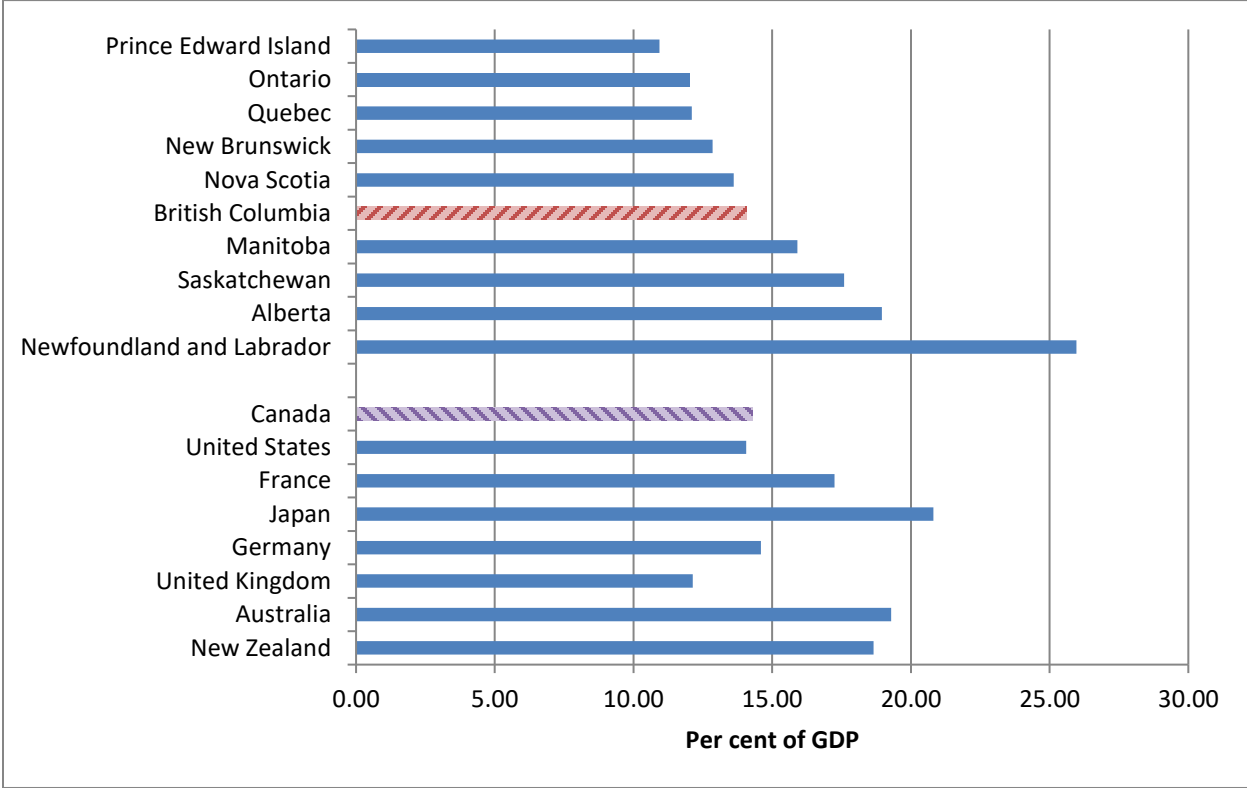
In terms of the eight OECD countries, only Canada and the United States had a lower non-residential investment/GDP share in 2017 than British Columbia.

As noted, no data on investment are available for the three U.S. Pacific states.

Data on investment are available for the 1981-2017 period for the two types of jurisdictions. Over this period, the non-residential/GDP share in British Columbia fluctuated considerably and showed no overall trend. This was also the case in the other jurisdictions (Appendix Table 6).

The industry composition of a province affects the investment share, because energy-intensive provinces tend to have higher investment/GDP shares. A comparison of machinery and equipment investment shares would be less affected by industry structure. Unfortunately, comparable data for OECD countries for this indicator could not be found.

Chart 2: Non-Residential Investment as a Share of GDP, 2017 (Per Cent)



Innovation

Innovation is proxied by R&D intensity, defined as total R&D expenditures as a share of nominal GDP. In British Columbia in 2017 this figure was 1.37 per cent (Appendix Table 7). As Chart 3 shows, British Columbia ranked 3rd among the 10 provinces (tied with Nova Scotia) and would place 7<sup>th</sup> among the eight OECD countries and last measured against the three U.S. Pacific states. Out of the 21 jurisdictions, B.C. ranked 13<sup>th</sup>.



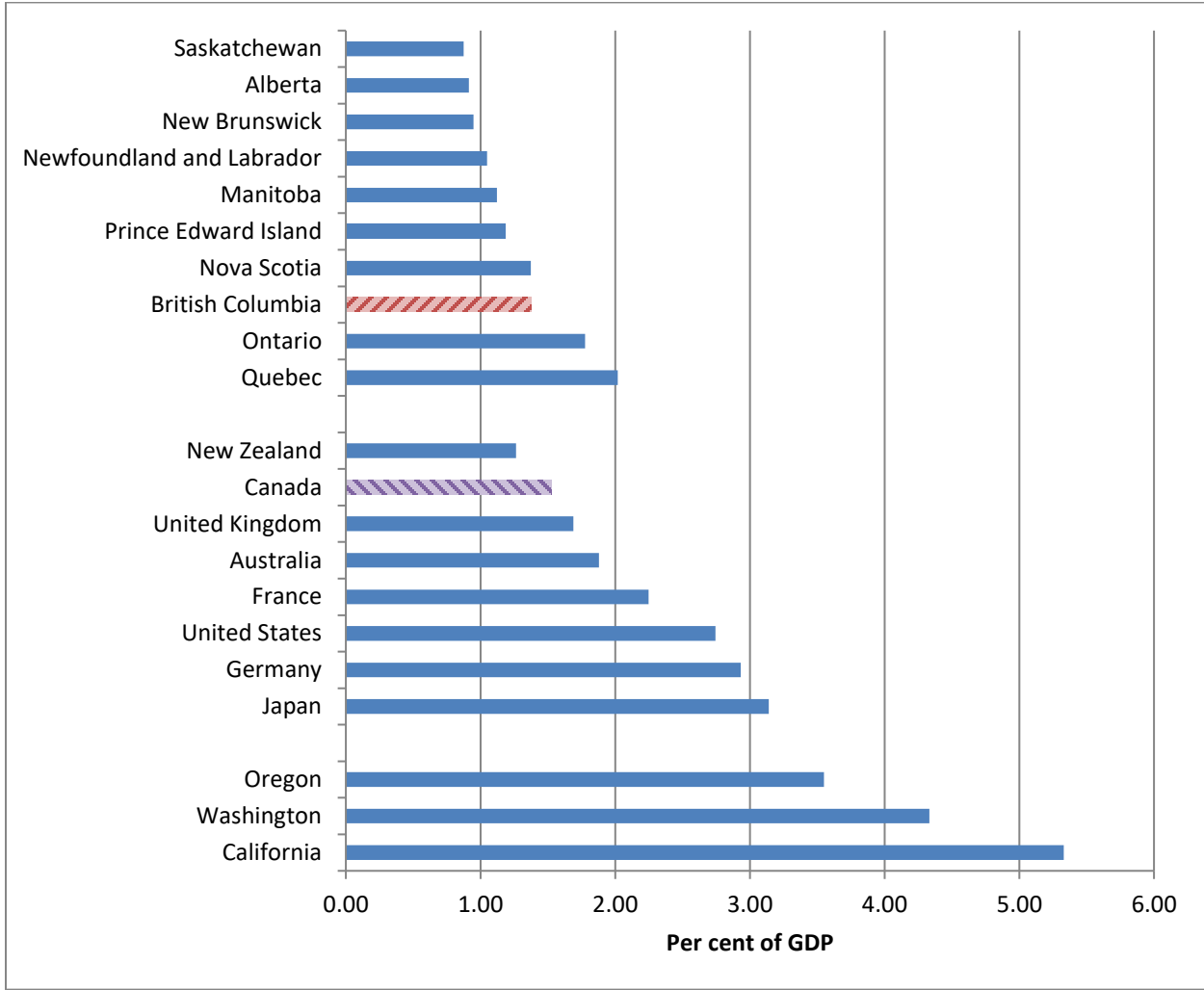
In terms of the Canadian provinces, British Columbia’s R&D intensity was only exceeded by Quebec (2.02 per cent) and Ontario (1.72 per cent).

In terms of the eight OECD countries, only New Zealand had a lower level of R&D intensity than B.C.

The three U.S. Pacific states again greatly out-performed British Columbia in R&D intensity. R&D as a share of GDP in California in 2017 was 5.3 per cent, nearly four times that of British Columbia. Washington’s R&D intensity, at 4.3 per cent, was three times that of B.C. while Oregon R&D intensity at 3.5 per cent was two- and one-half times that of B.C.

Data on R&D intensity are available for the 2006-2017 period for all three types of jurisdictions. Over this period, R&D intensity was relatively stable in B.C. (1.29 per cent in 2006). The trend was mixed in the other jurisdictions, with large falls in Quebec and Ontario and significant increases in Germany, California and Oregon (Appendix Table 7).

Chart 3: Gross Domestic Spending on R&D as a Percentage of GDP, 2017 (Per Cent)



## Education

Education is captured by the share of the population aged 25 and over who have attained tertiary education, commonly known as post-secondary education. In British Columbia in 2017, this figure was 56.2 per cent (Appendix Table 8). As Chart 4 shows, British Columbia ranked 3rd among the 10 provinces, and would place 2nd among the eight OECD countries and first if measured along with the three U.S. Pacific states. Out of the 21 jurisdictions, B.C. ranked 4<sup>th</sup> -- a strong showing.

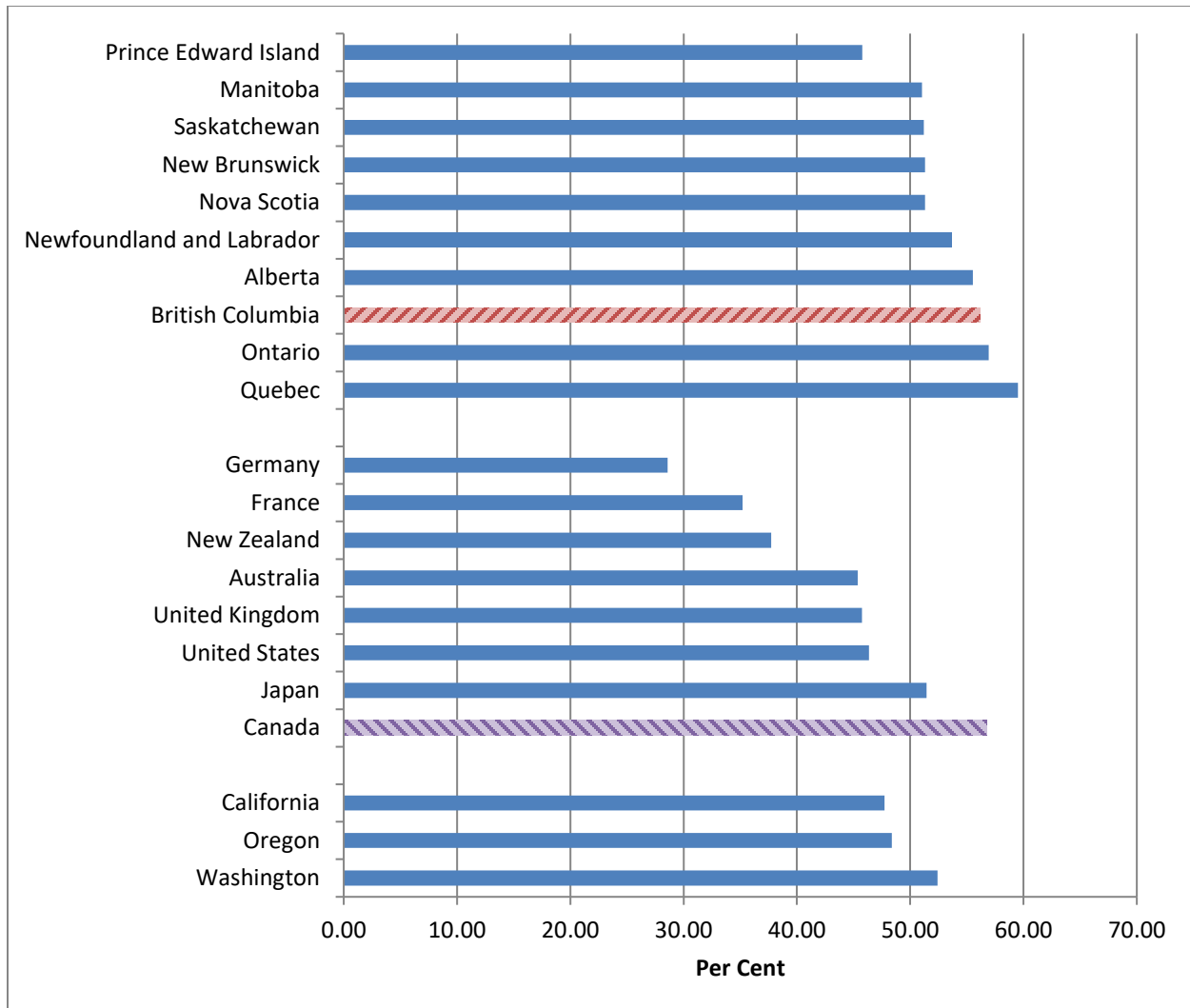
In terms of the Canadian provinces, in B.C. the share of the population with tertiary education was only exceeded by Quebec (59.2 per cent) and Ontario (56.9 per cent).

In terms of the eight OECD countries, only Canada has a higher share of the population with tertiary education than B.C., at 56.7 per cent.

British Columbia outperformed the three U.S. Pacific states on educational attainment, with California having 47.7 per cent of its 25 and older population with tertiary education, Oregon at 48.3 per cent and Washington 52.4 per cent.

Data on educational attainment exists for the 2005-2017 period for all three types of jurisdictions. Over this period, the share of the 25 and older population with tertiary education increased 10 percentage points in B.C., going from 45.5 per cent in 2005 to 56.2 per cent in 2017. All provinces in Canada except Prince Edward Island experienced similar increases, as did the three U.S. Pacific states and the eight OECD countries except Germany (Appendix Table 8).

Chart 4: Educational Attainment, Share of Population that Completed Tertiary Education, 2017 (Per Cent)



### Overall Business Environment Domain

The actual values for the indicators for the business environment can be expressed as indexes (Appendix Table 2) and the indices then weighted to produce an overall index value for the business environment domain. The indicators are equally weighted. A major problem for this domain is that data are not available on investment for the three U.S. states. This means that investment must be excluded from the calculation of the overall domain value to preserve comparability between U.S. states and the two other types of jurisdictions.

In British Columbia in 2017, the overall index for the business environment based on the four indicators is given a value of 1 (Appendix Table 2). As Chart 5 shows, British Columbia ranked 6<sup>th</sup> among the 10 provinces and would place 7<sup>th</sup> among the eight OECD countries. Out of the 18 jurisdictions for which data are available for all four indicators, B.C. ranked 11<sup>th</sup>. A

business environment index based on only three indicators (excluding investment) shows that B.C. ranks well behind for the three U.S. states (Appendix Table 2).

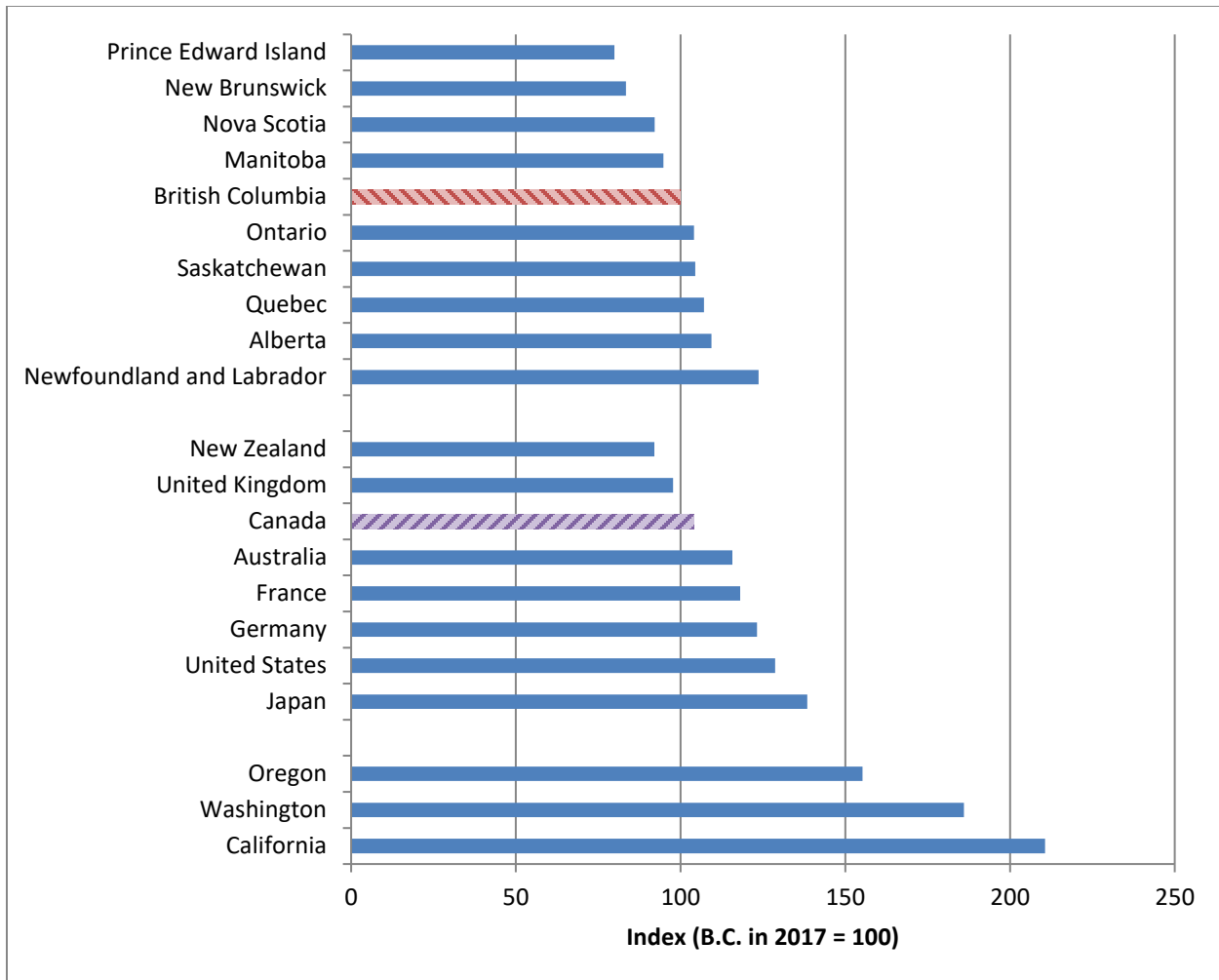
In terms of the Canadian provinces, B.C. had a lower index value for the business environment domain than Newfoundland and Labrador (123.7), Alberta (109.4), Quebec (107.1), Saskatchewan (104.5) and Ontario (104.1).

In terms of the eight OECD countries, only New Zealand (92.1) and the UK (97.70) had a lower value for the business environment domain in 2017 than British Columbia.

As noted, no data on the investment indicator used in the Index are available for the three U.S. Pacific states.

Data on the index value for the business environment domain are available for the 1997-2017 period for the two types of jurisdictions for which values exist for all four indicators. B.C. recorded the largest increase among the ten provinces and of all eight OECD countries. (Appendix Table 2).

Chart 5: Business Environment Index, 2017 (B.C. in 2017 = 100)



## Economic Well-Being

The economic well-being domain consists of four indicators: GDP per capita, household income per capita, the official unemployment rate, and a measure of housing affordability.

### GDP per capita

Real GDP per capita is measured in 2010 U.S. dollars at purchasing power parity exchange rates. In British Columbia in 2017, this figure was \$46,988 (Table 9 in the Appendix). As Chart 6 shows, British Columbia ranked 4<sup>th</sup> among the 10 provinces, and it would place 4<sup>th</sup> among the eight OECD countries and last among the three U.S. Pacific states. Out of the 21 jurisdictions, B.C. ranked 11<sup>th</sup>.

In terms of the Canadian provinces, British Columbia's level of real GDP per capita was well below that of the three oil-producing provinces, Alberta, Newfoundland and Labrador and

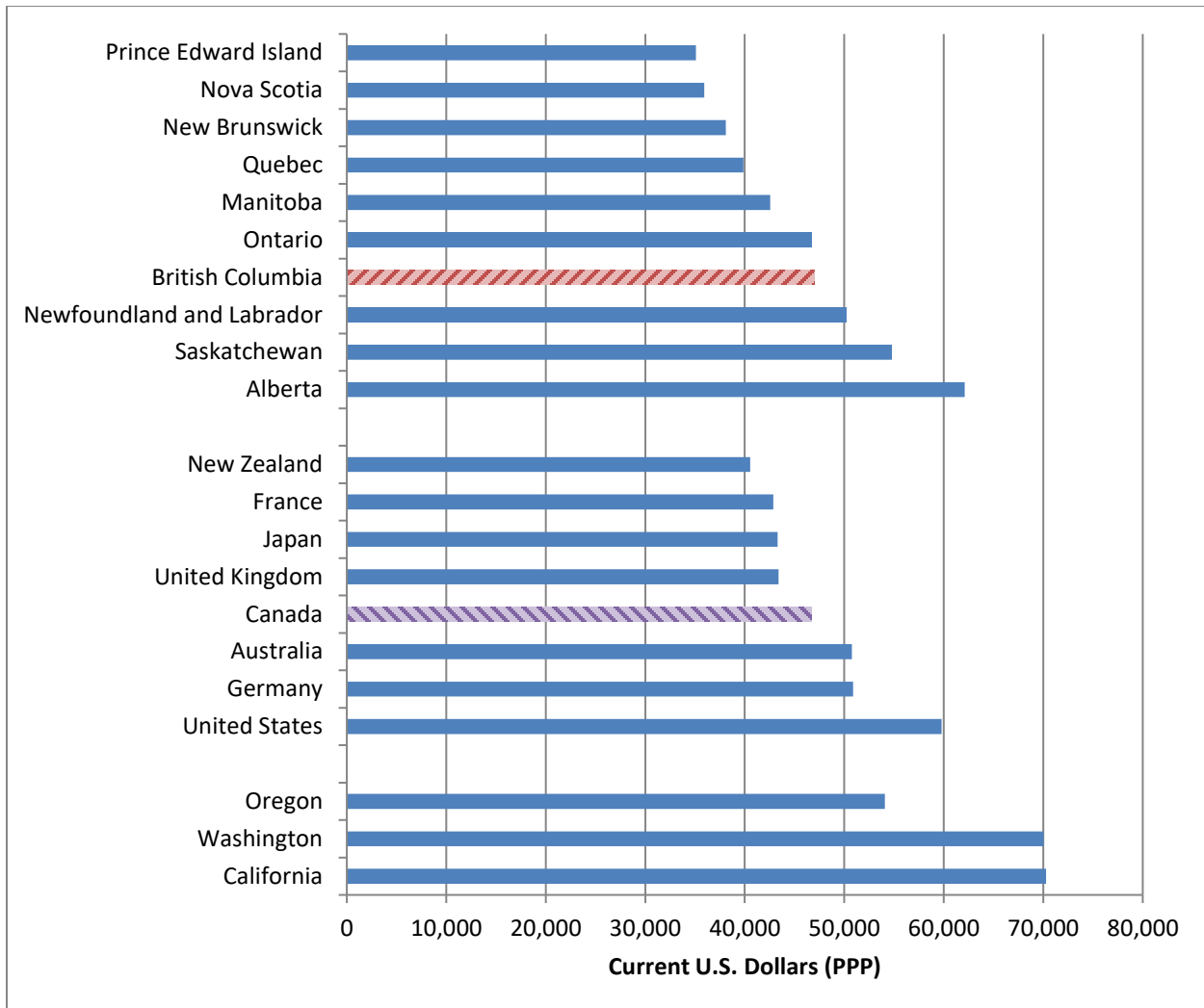
Saskatchewan, due to the very high GDP per capita levels in the oil and gas sector. British Columbia had a slightly higher level of GDP per capita than Ontario.

In terms of the eight OECD countries, only the United States, Germany and Australia had a higher level of GDP per capita.

The three U.S. Pacific states greatly out-performed British Columbia in terms of per capita income. Real GDP per capita in California in 2017 was 49.6 per cent higher than in British Columbia, while it was 49.1 per cent higher in Washington, and 21.3 per cent higher in Oregon.

Data on real GDP per capita are available for the 1997-2017 period for all three types of jurisdictions. Over this period, output per hour increased 90.3 per cent in British Columbia. This was the third slowest growth rate among the 10 provinces, with only Quebec and Ontario slower. Among the eight OECD countries, four countries had slower growth rates (Canada, United States, Japan and the UK) and four higher. Over the 2005-2017 period all three U.S. Pacific states experienced faster real GDP per capita growth than B.C. Out of the 21 jurisdictions, B.C. had the fifth slowest growth rate (Appendix Table 9).

Chart 6: Real GDP per Capita, 2017 (Current U.S. Dollars at PPP)



### Household income

Household disposable income per capita is measured in 2010 U.S. dollars at purchasing power parity exchange rates and comes from the Regional Economy section of OECD Stat for all three types of jurisdictions. In British Columbia in 2017, this figure was \$24,976 (Table 10 in the Appendix). As Chart 7 shows, British Columbia ranked second among the 10 provinces on this indicator, and it would place third among the eight OECD countries and last among the three U.S. Pacific states. Out of the 21 jurisdictions, B.C. ranked seventh.

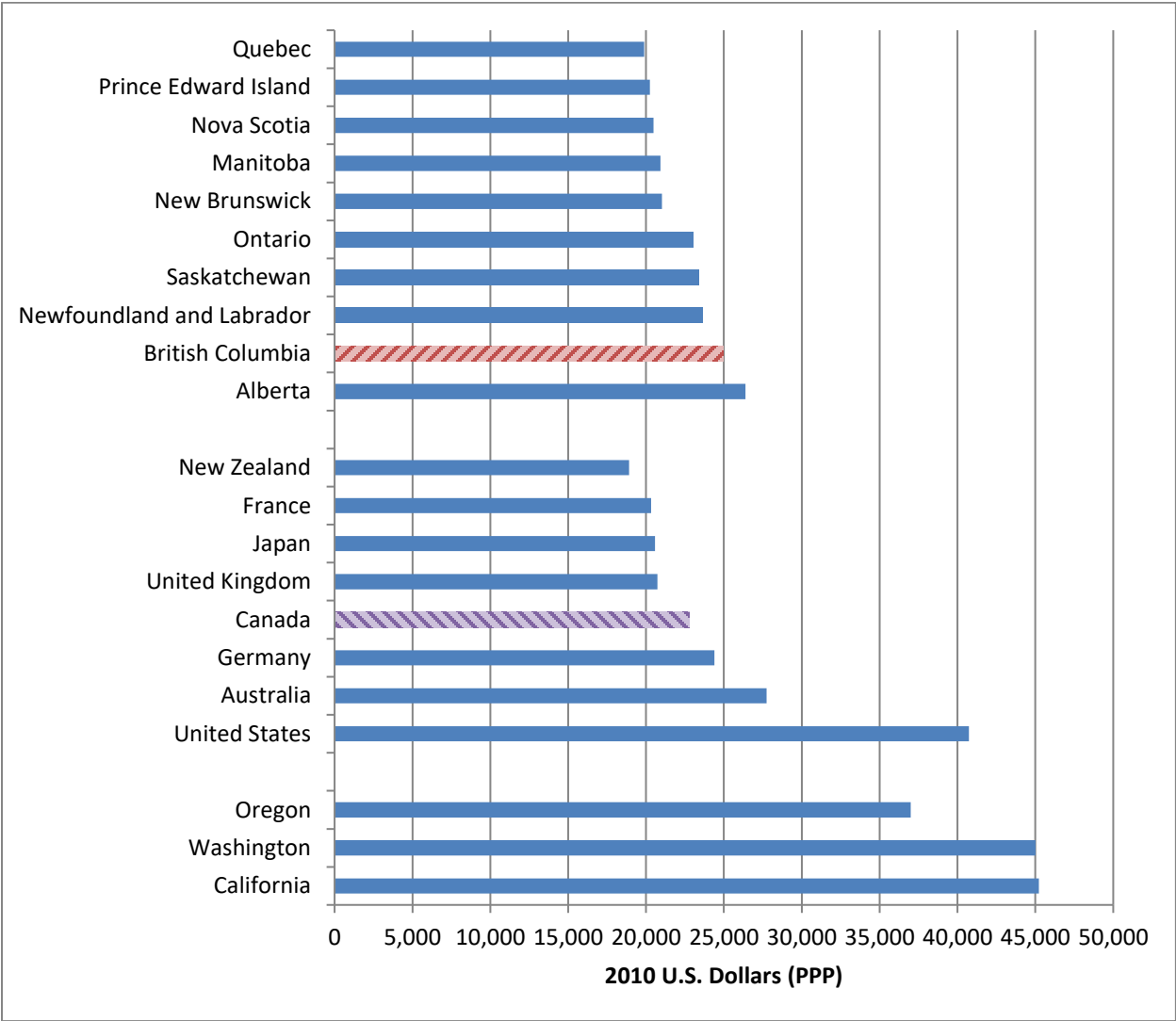
In terms of the Canadian provinces, British Columbia’s level of disposable household per capita income was only exceeded by that of Alberta

In terms of the eight OECD countries, only the United States and Australia had higher household disposable incomes per capita. Disposable household income per capita in the United States is significantly higher (63.1 per cent) due to higher money incomes and lower taxes.

Given the higher disposable income in the United States, the three Pacific states not surprisingly have much higher after-tax incomes than B.C. Disposable income per capita in California in 2017 was 81.1 per cent higher than in British Columbia, while it was 80.2 per cent higher in Washington, and 40.2 per cent higher in Oregon.

Data on real disposable household income per capita are available for the 2020-2017 period for all three types of jurisdictions. Over this period, it increased 52.0 per cent in British Columbia. This was the third fastest growth rate among the 10 provinces, with only Saskatchewan and Newfoundland and Labrador seeing bigger gains. Among the eight OECD countries, B.C. had the fastest growth. Over the 2005-2017 period B.C. had faster disposable income growth than all the U.S. Pacific states. Out of the 21 jurisdictions, B.C. had the third slowest disposable income per capita growth rate (Appendix Table 10).

Chart 7: Per Capita Household Disposable Income, 2017 (2010 U.S. Dollars at PPP)





## Unemployment rate

Unemployment is measured by the official unemployment rate for persons 15 and over. In British Columbia in 2017, this figure was 5.1 per cent (Appendix Table 11). As Chart 8 shows, British Columbia had the lowest unemployment rate among the 10 provinces, and it would place sixth among the eight OECD countries and last among the three U.S. Pacific states. Out of the 21 jurisdictions, B.C. ranked ninth in the unemployment rate.

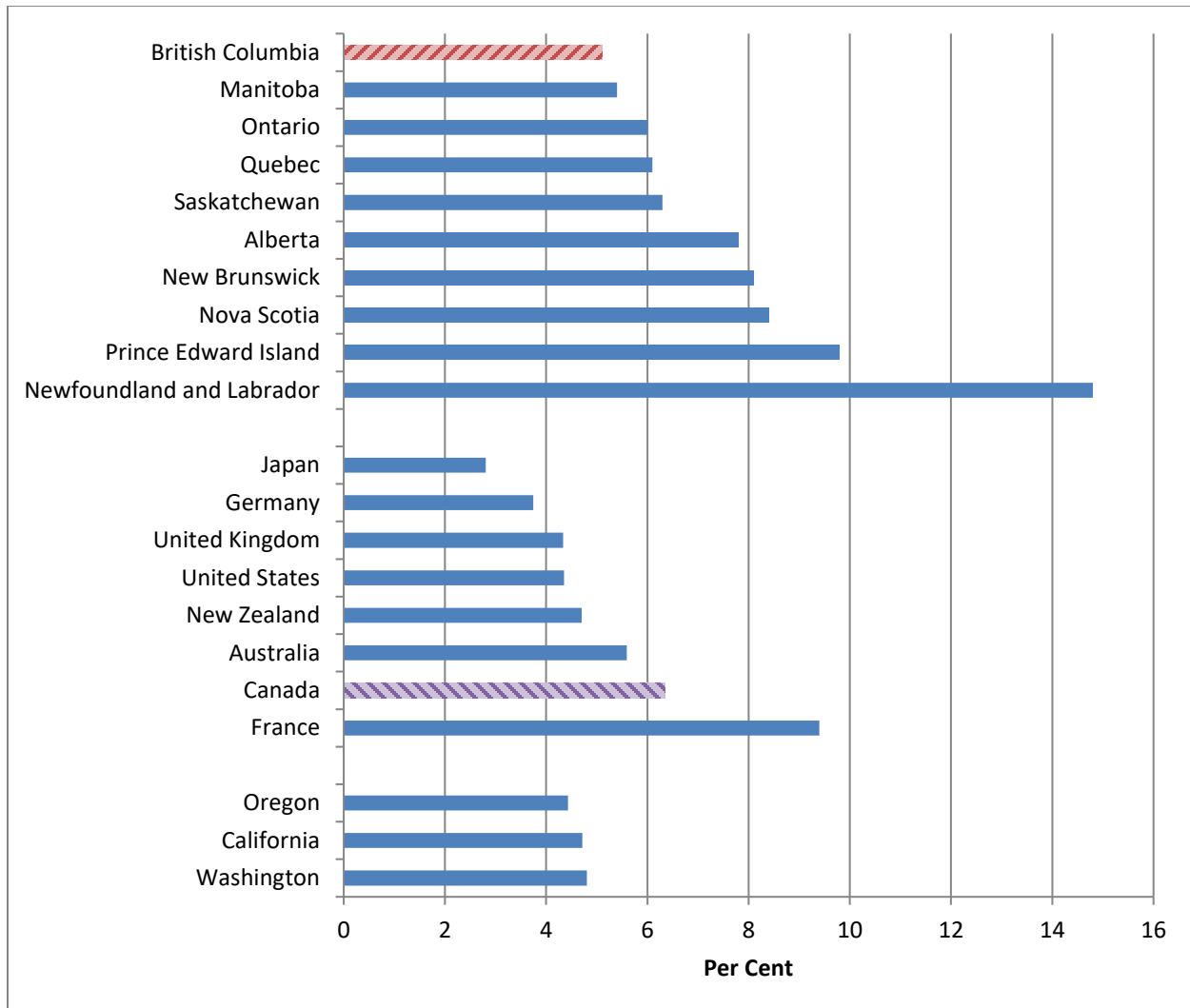
In terms of the Canadian provinces, British Columbia's unemployment rate was at least one percentage lower than all the other provinces except Manitoba (5.4 per cent) in 2017.

In terms of the eight OECD countries, the United States, Germany, the UK, Japan and New Zealand all had a lower unemployment rate.

The three U.S. Pacific states also had lower unemployment rates than British Columbia, although roughly equal to the U.S. figure: California (4.7 per cent), Washington (4.8 per cent), and Oregon (4.4 per cent).

Data on the official unemployment rate are available for the 1997-2017 period for all three types of jurisdictions. Over this period, unemployment fell 3.4 percentage points in B.C. from 8.5 per cent in 1997. Only the three Maritime provinces and Quebec enjoyed larger falls in the unemployment rate. Among OECD countries only Germany experienced a larger fall in unemployment. The fall in the unemployment rate in B.C. was much larger than in the three U.S. Pacific states. Out of the 21 jurisdictions, B.C. had the fifth largest decline in the unemployment rate (Appendix Table 11).

Chart 8: Unemployment Rate, 2017 (Per Cent)



### Housing Affordability

Housing affordability is measured by the share of disposable income spent on housing. In British Columbia in 2017, this figure was 22.7 per cent (Appendix Table 12). As Chart 9 shows, British Columbia had the second worst housing affordability (i.e., the second highest income share spent on housing) among the 10 provinces, and it would place third lowest in terms of housing affordability among the eight OECD countries and last among the three Pacific states. Out of the 21 jurisdictions, B.C. was the fourth least affordable in terms of housing.

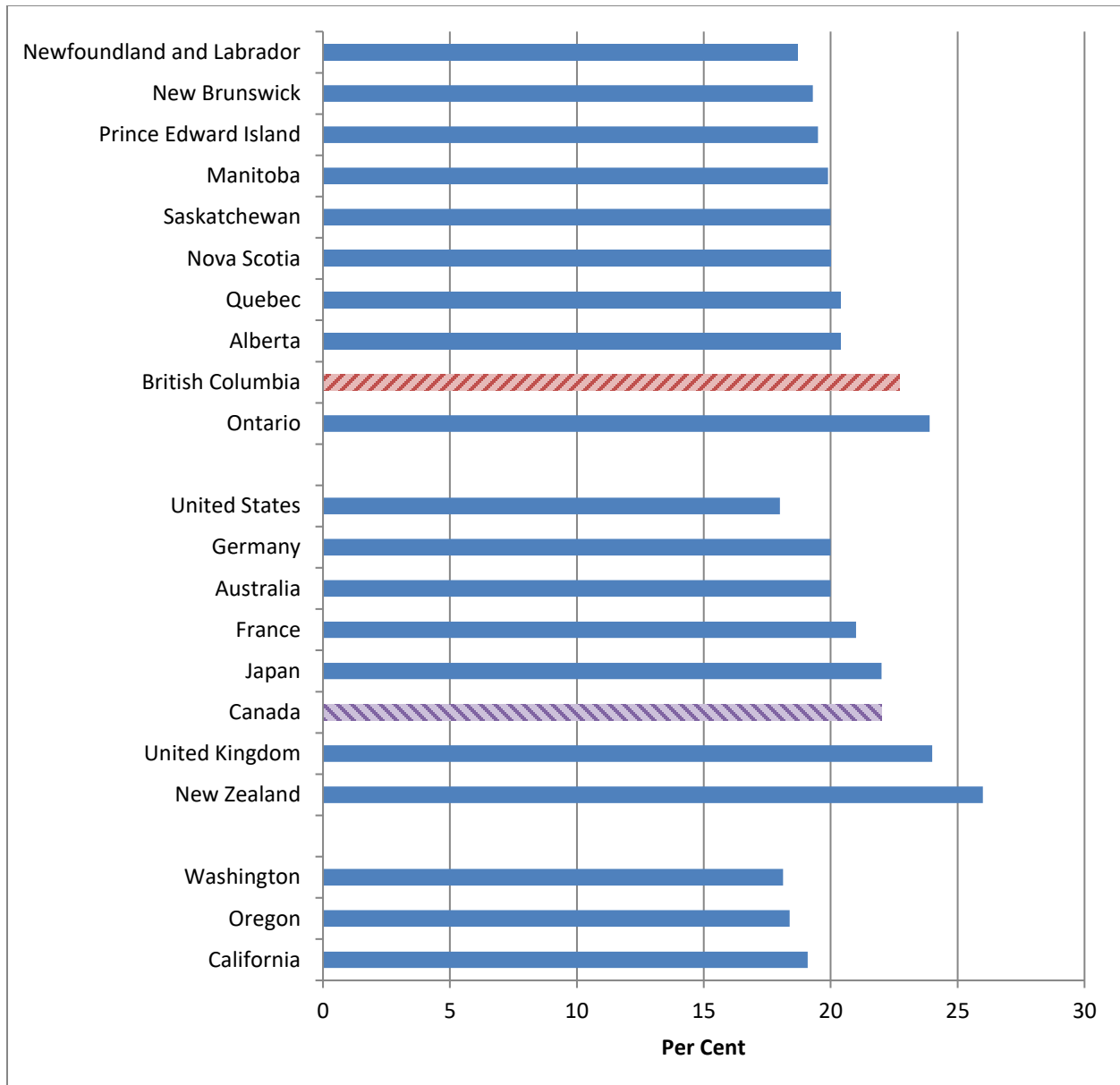
Among the Canadian provinces, only residents of Ontario spent a larger proportion of their disposable income on housing (23.9 per cent).

In terms of the eight OECD countries, only households in New Zealand and the UK spent more on housing than households in B.C.

Perhaps surprisingly, the three U.S. Pacific states also had considerably greater housing affordability than British Columbia, with 19.1 per cent of disposable income going to housing in California, 18.4 per cent in Oregon and 18.1 per cent in Washington.

Data on housing affordability are only available for the 2013-2017 period for all three types of jurisdictions. Over this period, housing affordability improved in B.C., with the income share devoted to housing falling slightly by 2.0 points. No other province, none of the eight OECD countries and none of the three U.S. Pacific states experienced an improvement of this magnitude (Appendix Table 12). However, this short-term development should not obscure the more fundamental point that B.C. has expensive housing relative to incomes when compared to most other advanced economy jurisdictions.

Chart 9: Housing Affordability, Percentage of Household Disposable Income Spent on Housing, 2017 (Per Cent)



Overall Economic Well-Being Domain

The actual values for the indicators of the economic well-being domain can be expressed as indexes (Appendix Table 3), and the indices then weighted to produce an overall index value for the domain. The indicators are equally weighted.

In British Columbia in 2017, the overall index for the economic well-being domain, based on the four indicators, is given a value of 100.0 (Table 3 in the Appendix). As Chart 10 shows, British Columbia ranked fourth among the 10 provinces and would place fifth among the

eight OECD countries and last among the three U.S. Pacific states on overall economic well-being, as computed for the Index. Out of the 21 jurisdictions, B.C. ranked 11<sup>th</sup>.

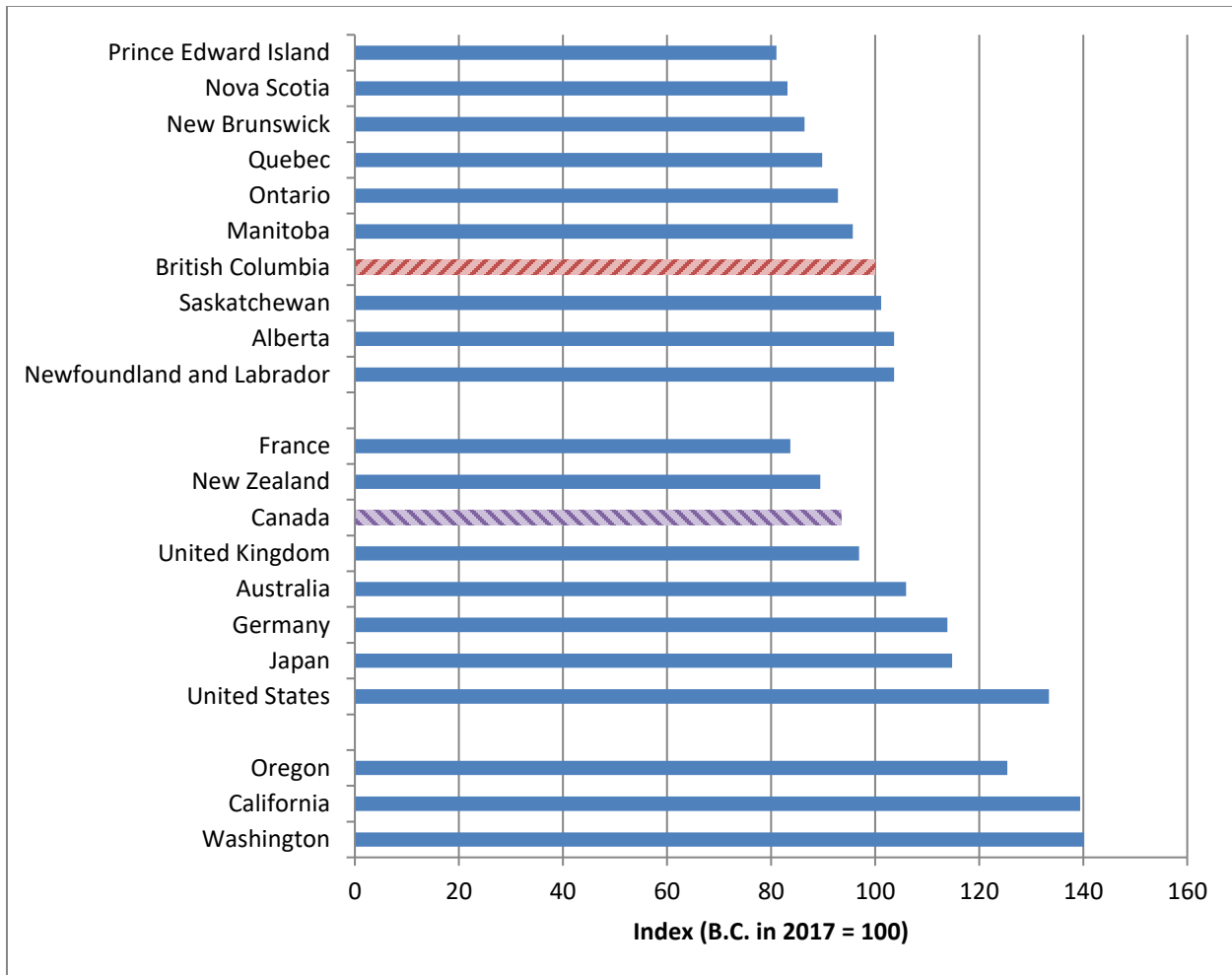
In terms of the Canadian provinces, B.C. had a lower index value for the economic well-being domain than Newfoundland and Labrador, Alberta, and Saskatchewan.

In terms of the eight OECD countries, Germany, Japan, Australia and the United States had a higher value for the economic well-being domain in 2017 than British Columbia.

The three U.S. Pacific states had much higher values for economic well-being than B.C., with Washington 40.2 per cent higher, California 39.4 per cent higher and Oregon 25.4 per cent higher.

Data on the index value for the economic well-being domain are available for the 2013-2017 period for the three types of jurisdictions. B.C. enjoyed the largest increase among the ten provinces during this relatively short period; only three OECD countries did better than B.C. (United States and UK and perhaps surprisingly Japan), as did all three Pacific states. Out of 21 jurisdictions, B.C. had the seventh biggest increase in economic well-being. (Appendix Table 3).

Chart 10: Economic Well-Being Index (B.C. in 2017 = 100)



### Societal Well-Being Domain

The societal well-being domain consists of four indicators: life expectancy, the poverty rate, income inequality, and environment. The environment indicator is composed of two sub-indicators: air quality and per capita greenhouse gas emissions.

#### Life expectancy

Life expectancy is measured in years of expected lifetime at birth. In British Columbia in 2017, this figure was 82.3 years (Table 13 in the Appendix). As Chart 11 shows, British Columbia ranked 3<sup>rd</sup> among the 10 provinces on life expectancy, and it would place 4<sup>th</sup> among the eight OECD countries and first among the three U.S. Pacific states. Out of the 21 jurisdictions, B.C. ranked 6<sup>th</sup>.

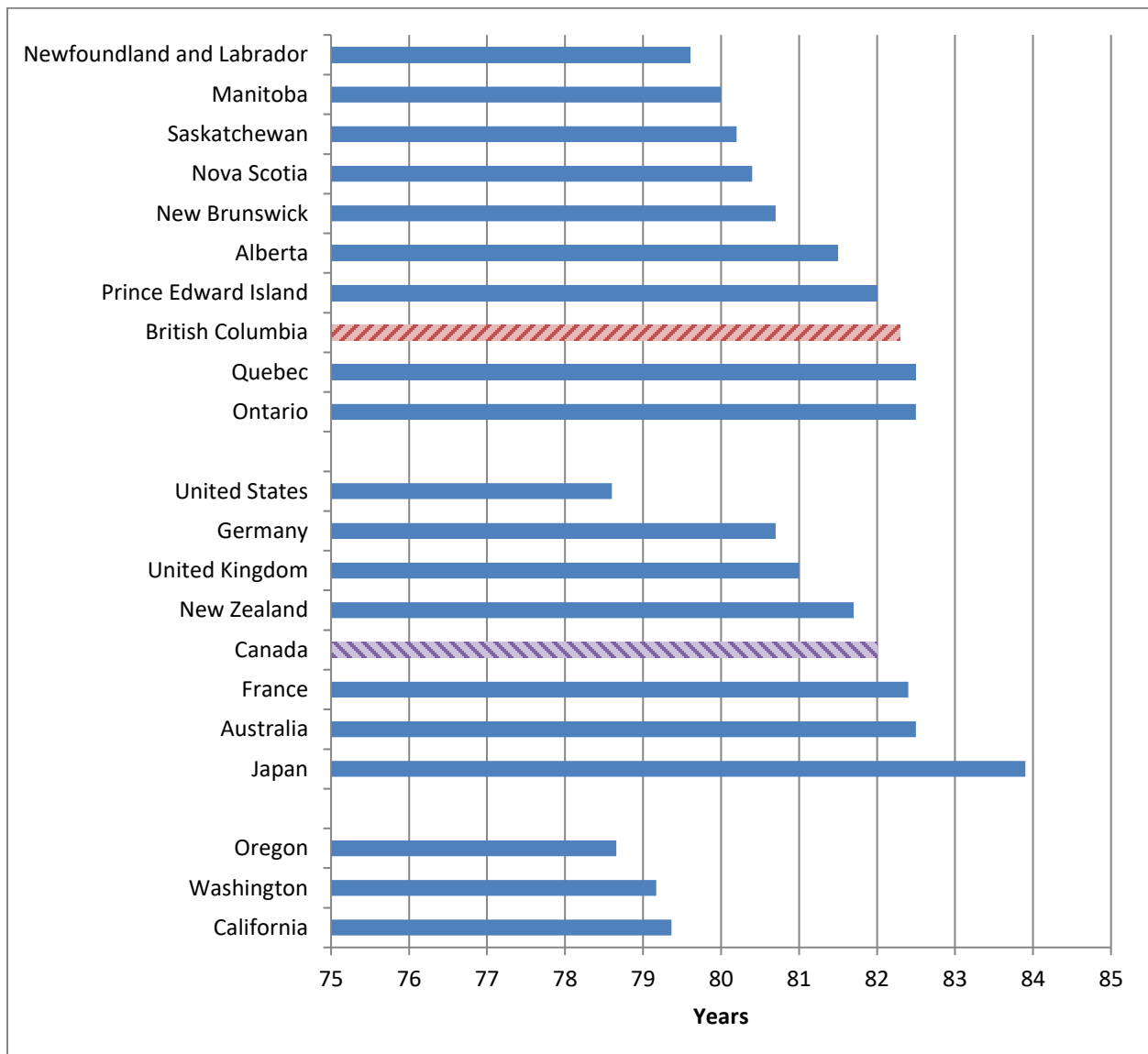
In terms of the Canadian provinces, British Columbia’s life expectancy was well above that of the Western Canadian provinces. British Columbia had only a slightly lower life expectancy than Ontario and Quebec.

In terms of the eight OECD countries, Japan had a much higher life expectancy than British Columbia and the other seven countries. France and Australia had a life expectancy slightly above that of B.C.

British Columbia handily outperformed the three Pacific states in average life expectancy. Life expectancy in California in 2017 was 2.9 years lower than in British Columbia, while it was 3.1 years lower in Washington, and 3.6 years lower in Oregon.

Data on life expectancy are available for the 2005-2017 period for all three types of jurisdictions. Over this period, life expectancy increased 2.1 per cent in British Columbia. This was the 9<sup>th</sup> best showing among the 21 jurisdictions (Appendix Table 13).

Chart 11: Life Expectancy at Birth, 2017 (Years)



## Poverty rate

The poverty rate is measured in the Index as the share of the population in low income. The threshold for low-income status differs in different data sources, so the numbers are adjusted to the level of the OECD data. In British Columbia in 2017, this figure was 11.9 per cent (Appendix Table 14). As Chart 12 shows, British Columbia ranked 3<sup>rd</sup> among the 10 provinces in the incidence of poverty, and it would place 5<sup>th</sup> among the eight OECD countries and first among the three U.S. Pacific states. Out of the 21 jurisdictions, B.C. ranked 6<sup>th</sup>.

In terms of the Canadian provinces, British Columbia's poverty rate was 4.3 percentage points higher than that in its neighbour, Alberta. It was slightly above Saskatchewan's rate (0.9 percentage points), and slightly below that of Manitoba (0.6 percentage points). Ontario and Quebec both had higher poverty rates, as did the Atlantic provinces.

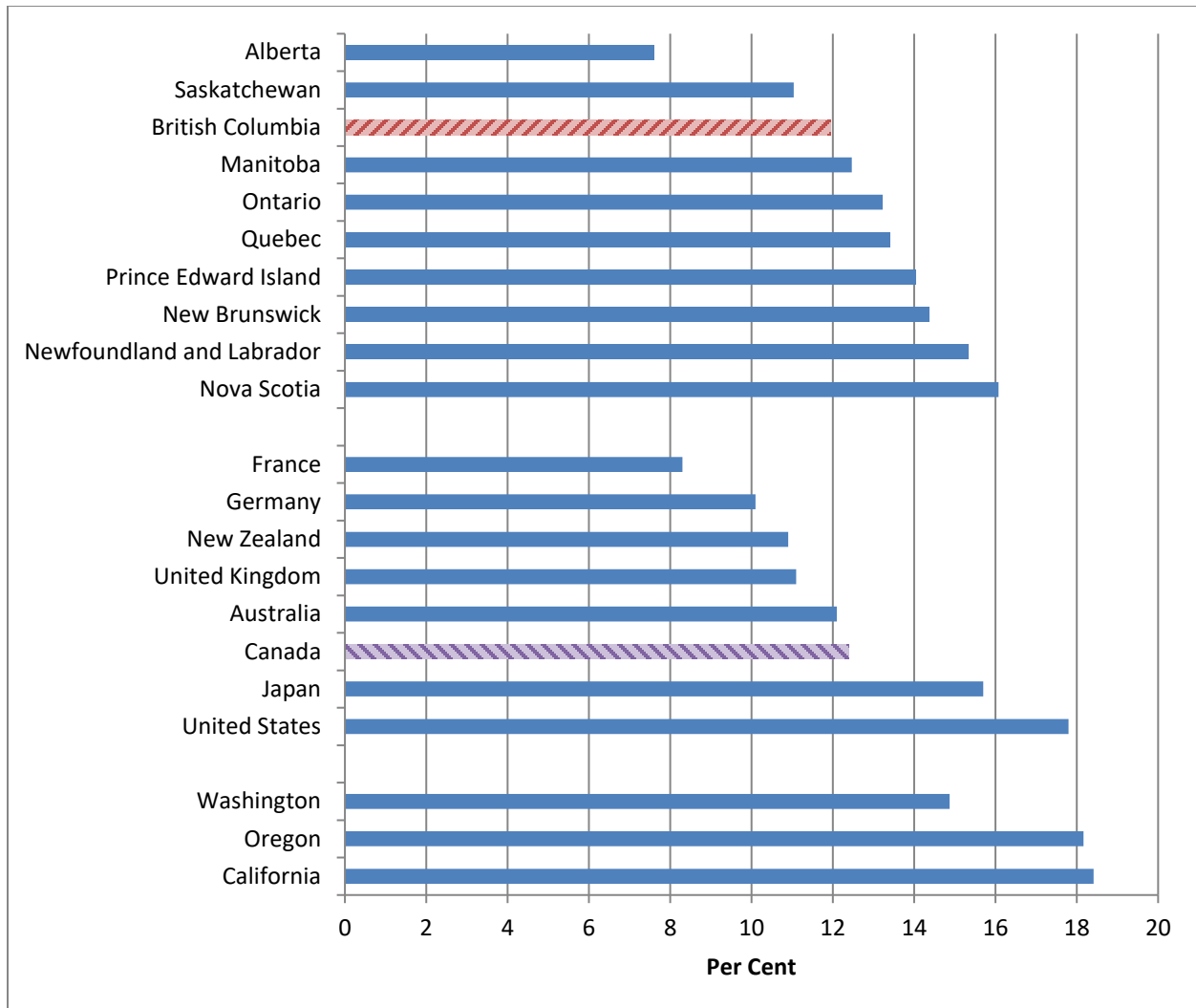
In terms of the eight OECD countries, France had a significantly lower poverty rate than British Columbia. Germany, New Zealand, and the United Kingdom also had lower poverty rates. The poverty rates in Japan and the United States were significantly higher than in BC.

British Columbia easily outperformed the three U.S. Pacific states in the incidence of poverty. The poverty rate in California in 2017 was 6.5 percentage points higher than in British Columbia, while it was 6.3 percentage points higher in Washington and 3.0 percentage points higher in Oregon.

Data on poverty rates are available for the 2013-2017 period for all three types of jurisdictions. Over this relatively brief period, the poverty rate decreased by 15.2 per cent in British Columbia. This was the largest decline among the 21 jurisdictions (Appendix Table 14).



Chart 12: Poverty Rate, Per Cent of Population Living Under Poverty Line, 2017 (Per Cent)



### Income Inequality

Income inequality is measured in the Index using the Gini coefficient. It is usually expressed as an index ranging from 0 to 1, where a value of 1 would indicate maximal inequality (i.e., one individual has all the income or wealth). In British Columbia in 2017, this figure was 0.300 (Appendix Table 15). As Chart 13 shows, British Columbia ranked 6<sup>th</sup> among the 10 provinces, and would place 3<sup>rd</sup> among the eight OECD countries and first among the three U.S. Pacific states. Out of the 21 jurisdictions, BC ranked 8<sup>th</sup>.

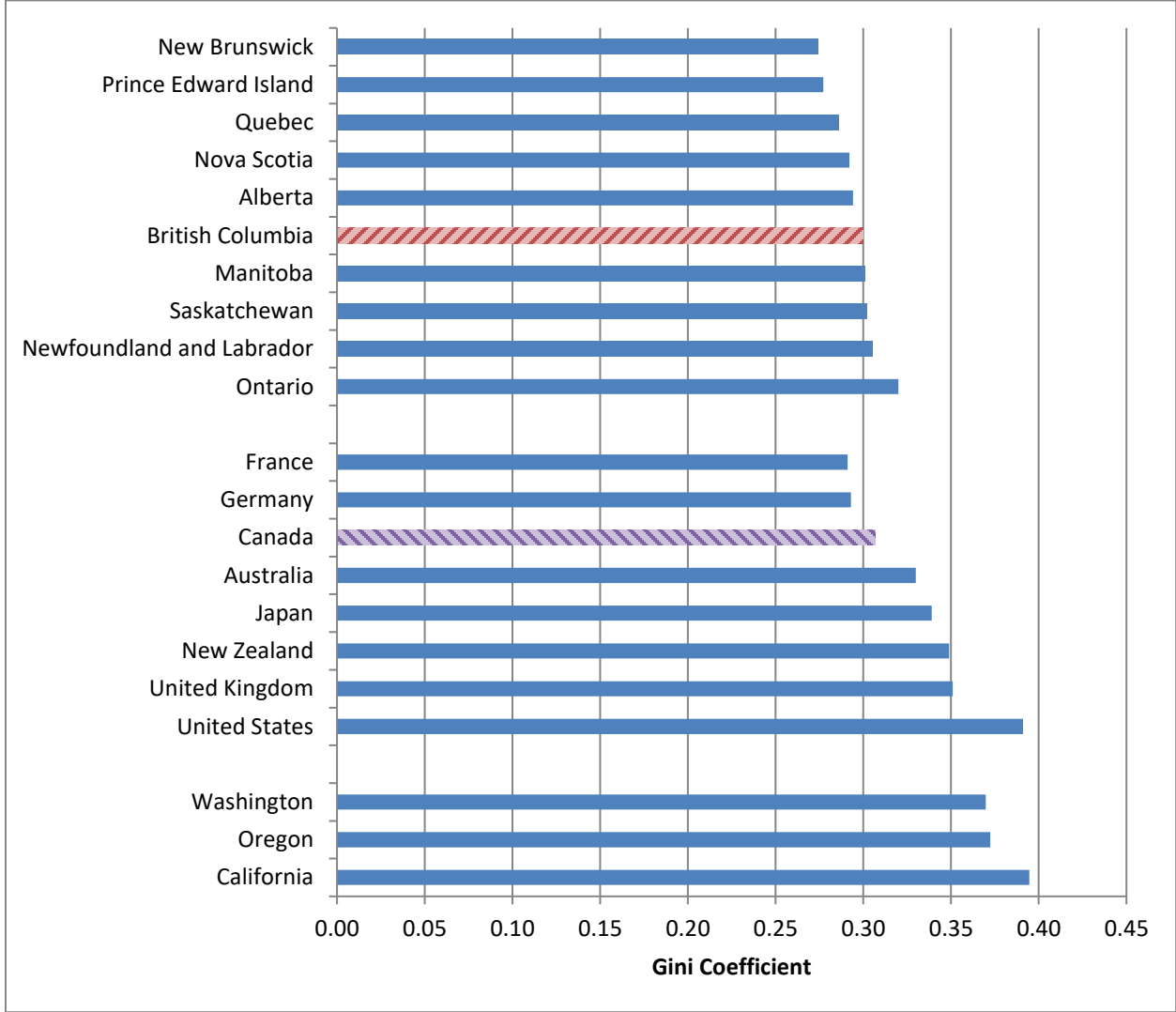
In terms of the Canadian provinces, British Columbia's Gini coefficient was similar to those for the other Western provinces. The Gini coefficient was higher in Ontario (0.320). The lowest Gini coefficients in Canada were found in New Brunswick (0.274), Prince Edward Island (0.277), and Quebec (0.286).

In terms of the eight OECD countries, France and Germany had a lower Gini coefficient than British Columbia (0.291 and 0.293, respectively). The Gini coefficient was much higher in the United States, at 0.391.

British Columbia greatly outperformed the three U.S. Pacific states in terms of income inequality. The Gini coefficient in California in 2017 was 0.095 points higher than in British Columbia in 2017, while it was 0.072 points higher in Oregon, and 0.070 percentage points higher in Washington.

Data on Gini coefficients are available for the 2013-2017 period for all three types of jurisdictions. Over this period, the Gini coefficient decreased by 6.2 per cent in British Columbia. This was the second-largest decline among the 21 jurisdictions, surpassed only by Alberta (Appendix Table 15).

Chart 13: Gini Coefficient, 2017



## Air Quality

Air pollution in the Index is measured using the mean population exposure to fine particles with a diameter of 2.5 micrometers or less (PM2.5 particles), expressed in micrograms per cubic meter. In British Columbia in 2017, this figure was 5.94 micrograms per cubic meter (Table 16 in the Appendix). As Chart 14 shows, British Columbia ranked 6<sup>th</sup> among the 10 provinces on this measure, and it would place first among the eight OECD countries and third among the three U.S. Pacific states. Out of the 21 jurisdictions, BC ranked 8<sup>th</sup>.

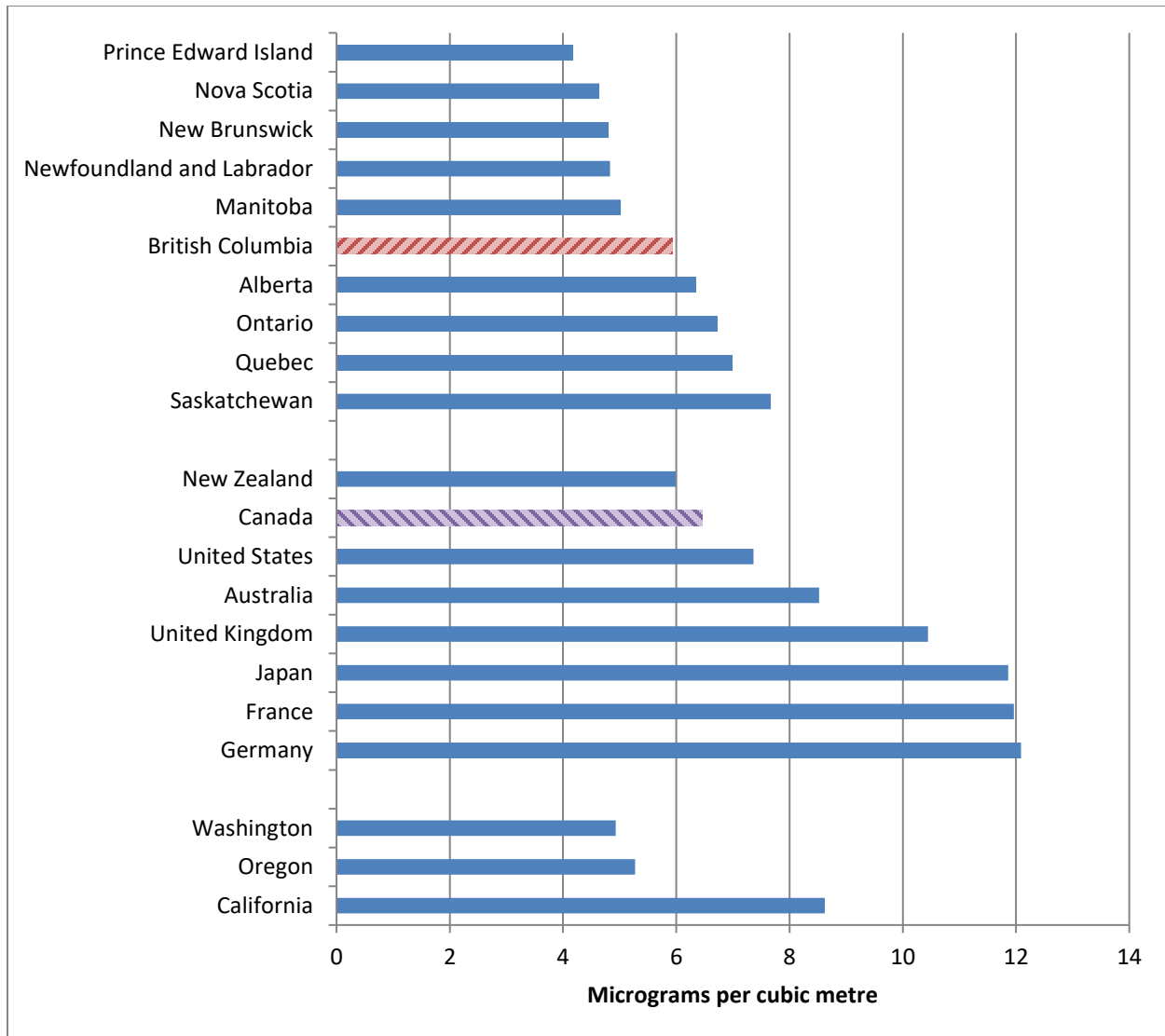
In terms of the Canadian provinces, British Columbia's population exposure to PM2.5 was 6.8 per cent lower than in neighbouring Alberta. It was also lower than in Saskatchewan (29.2 per cent), but higher than in Manitoba (15.5 per cent). Finally, the exposure to PM2.5 was also lower in B.C. compared to both Ontario and Quebec.

In terms of the eight OECD countries, all had higher population exposure to PM2.5 than B.C. The difference was most marked with Germany, France, and Japan, which had rates about twice the rate in BC. The figure for the United States was 24.0 per cent higher than in B.C.

Compared to the three Pacific states, British Columbia had higher population exposure to PM2.5 than Washington and Oregon. However, it had lower exposure than in California.

Data on air pollution are available for the 2000-2017 period for all three types of jurisdictions. Over this period, exposure to PM2.5 decreased by 20.5 per cent in British Columbia. This was the 13<sup>th</sup> largest decline among the 21 jurisdictions (Appendix Table 16).

Chart 14: Mean Population Exposure to PM2.5, 2017 (Micrograms per Cubic Metre)



### Greenhouse Gas Emissions

Another indicator related to the environment is emissions of greenhouse gases (GHG). It is measured here in per capita terms, expressed in tonnes per capita. In British Columbia in 2017, this figure was 14.6 kilotonnes per capita (Appendix Table 17). As Chart 15 shows, British Columbia ranked 4<sup>th</sup> among the 10 provinces, and it would place 5<sup>th</sup> among the eight OECD countries and 4<sup>th</sup> among the three U.S. Pacific states. Out of the 21 jurisdictions, B.C. ranked 11<sup>th</sup> in per capita GHG emissions.

In terms of the Canadian provinces, British Columbia's GHG emissions per capita were much lower (about four times lower) than in Alberta and Saskatchewan, due to the impact of the oil and gas industries on overall GHG emissions in those provinces. Emissions were similar in

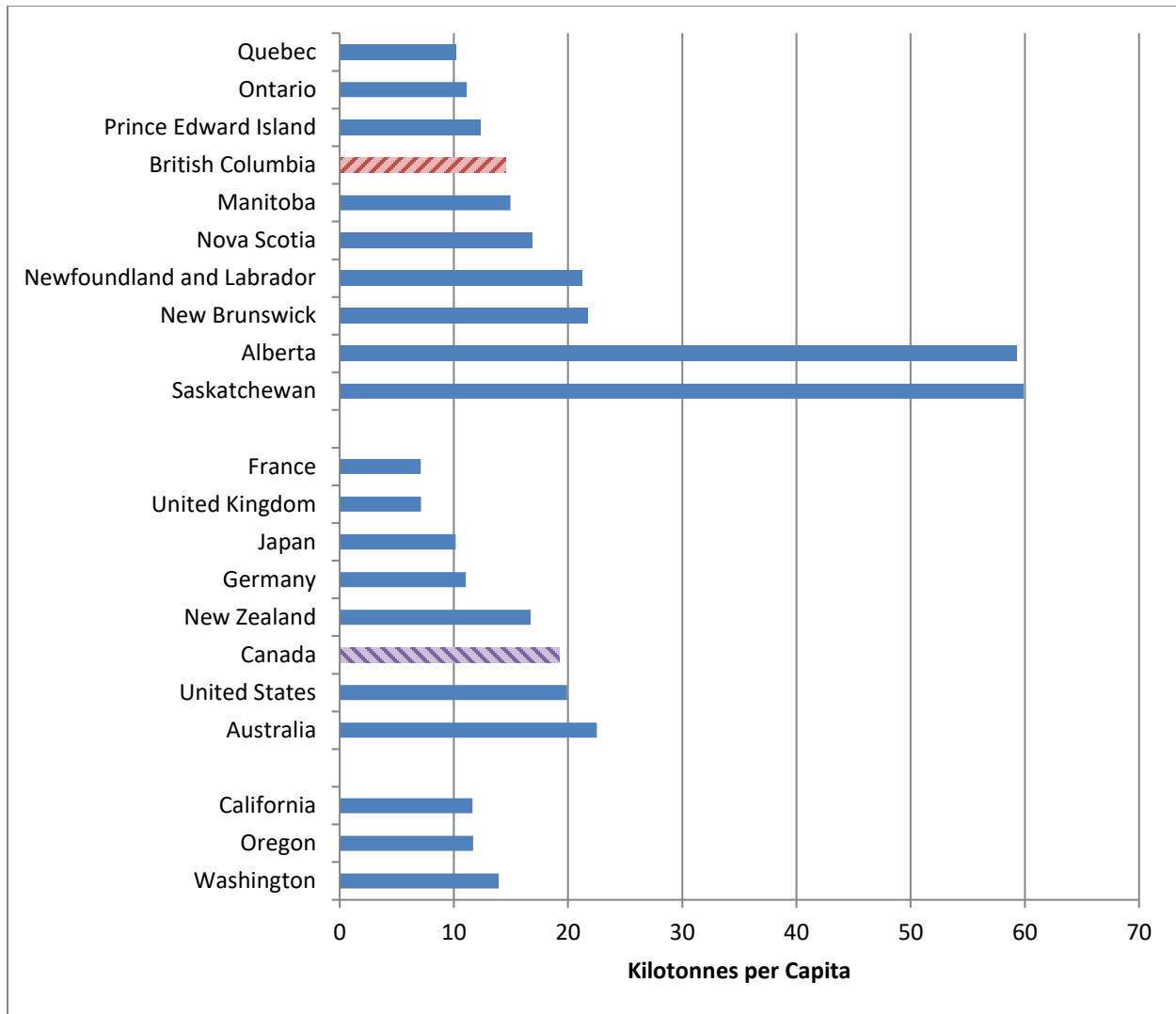
Manitoba (14.9 kilotonnes per capita). Emissions were lower than in B.C. in three provinces: Quebec, Ontario, and Prince Edward Island.

In terms of the eight OECD countries, emissions were lower in 2017 in France, the United Kingdom, Japan, and Germany. The figure for the United States was 36.7 per cent higher than in B.C.

Compared to the three U.S. Pacific states, British Columbia had higher GHG emissions per capita than all three.

Data on GHG emissions are available for the 2009-2017 period for all three types of jurisdictions. Over this period, emissions decreased by 1.7 per cent in British Columbia. This was the 17<sup>th</sup> largest decline among the 21 jurisdictions (Appendix Table 17). In three of the 21 jurisdictions, GHG emissions per capita increased over the period (Newfoundland and Labrador, Washington, and Japan).

Chart 15: Per Capita GHG Emissions, 2017 (Kilotonnes per Capita)



Overall Societal Well-being Domain

The actual values for the indicators of the societal well-being domain can be indexed and the indices then weighted to produce an overall index value for the societal well-being domain (Appendix Table 4). The indicators are equally weighted.

In British Columbia in 2017, the overall index for the societal well-being domain based on the five indicators/sub-indicators is given a value of 100.0. As Chart 16 shows, British Columbia ranked fifth among the 10 provinces, and it would place third among the eight OECD countries and first among the three U.S. Pacific states in societal well-being. Out of the 21 jurisdictions, BC ranked 7<sup>th</sup>.

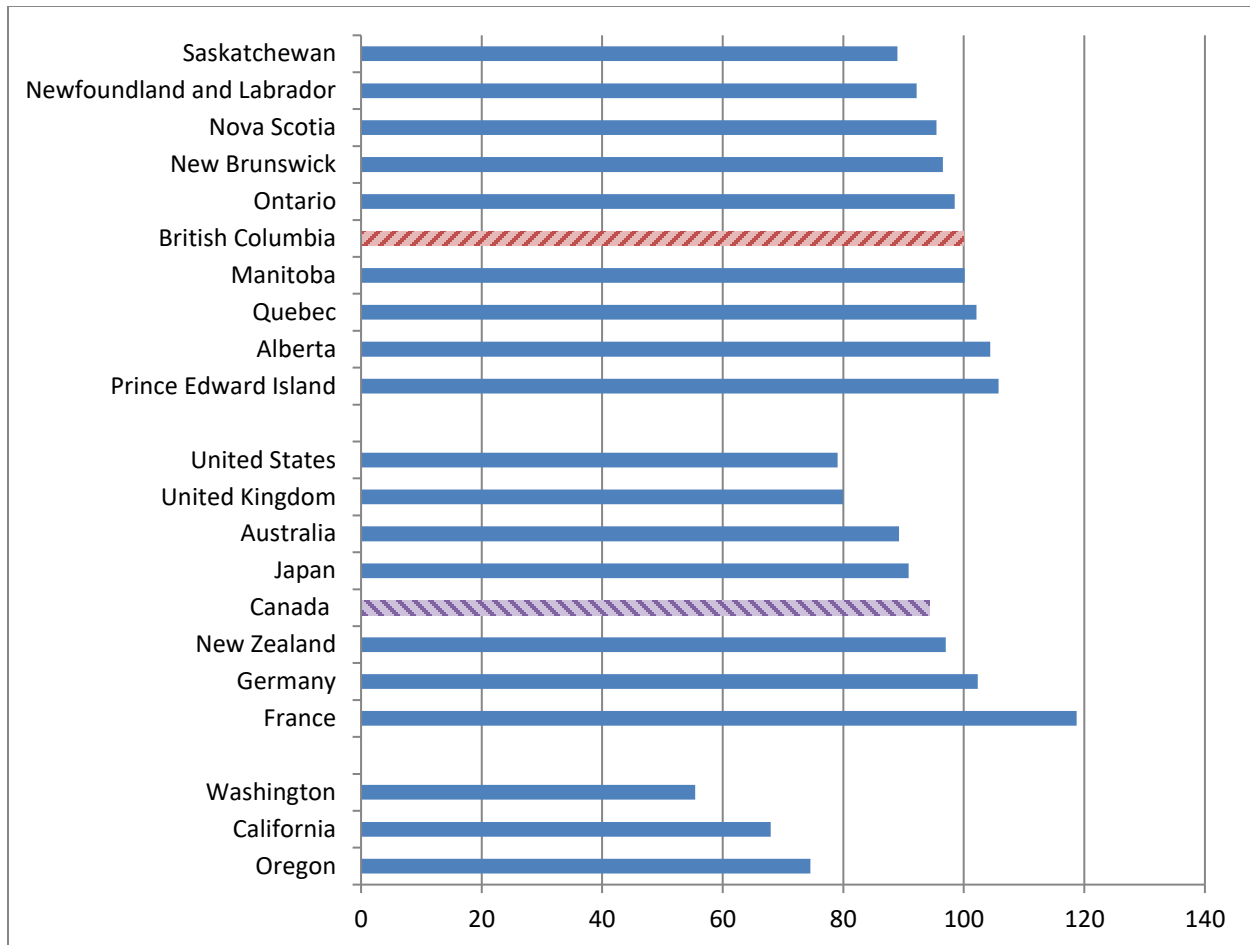
In terms of the Canadian provinces, B.C. had a lower index value for the societal well-being domain than Prince Edward Island, Alberta, Quebec and Manitoba.

Compared to the eight OECD countries, only Germany and France had a higher value for the societal well-being domain in 2017 than British Columbia.

The three Pacific states had much lower values for societal well-being than B.C., with Washington 44.6 per cent lower, California 32.1 per cent lower, and Oregon 25.5 per cent lower.

Data on the index value for the societal well-being domain are available for the 2013-2017 period for the three types of jurisdictions. B.C. enjoyed the largest increase – i.e., the biggest improvement in societal well-being as measured in the Index – among the ten provinces, among all eight OECD countries and among all three U.S. Pacific states. Out of 21 jurisdictions, B.C. recorded the greatest increase in societal well-being during the 2013-2017 period. (Appendix Table 4).

Chart 16: Societal Well-Being Index (B.C. in 2017 = 100)



### Overall B.C. Prosperity Index

The actual values for the indicators of for the three domains (business environment, economic well-being and societal well-being) can be expressed in indexes (Appendix Table 2-4), and the indices then weighted to produce an overall index value. The indicators are equally weighted. A major problem for the business environment domain is that data are not available on investment for the three U.S. states. This means that investment must be excluded from the calculation of the overall B.C. Prosperity Index for the three U.S. states, affecting the comparability of the Index between U.S. states and the two other types of jurisdictions.<sup>9</sup>

In British Columbia in 2017, the overall value for B.C. in the Prosperity Index based on the 12 indicators is given a value of 1 or 100.0 (Appendix Table 1). As Chart 17 shows, British Columbia ranked third among the 10 provinces and would place sixth among the eight OECD

<sup>9</sup> A B.C. Prosperity index based on only 11 indicators (excluding investment) shows that B.C. ranks well behind the U.S. states (Appendix Table 1a).



countries. Out of the 18 jurisdictions for which data are available for all 12 indicators, B.C. ranked eighth in 2017.

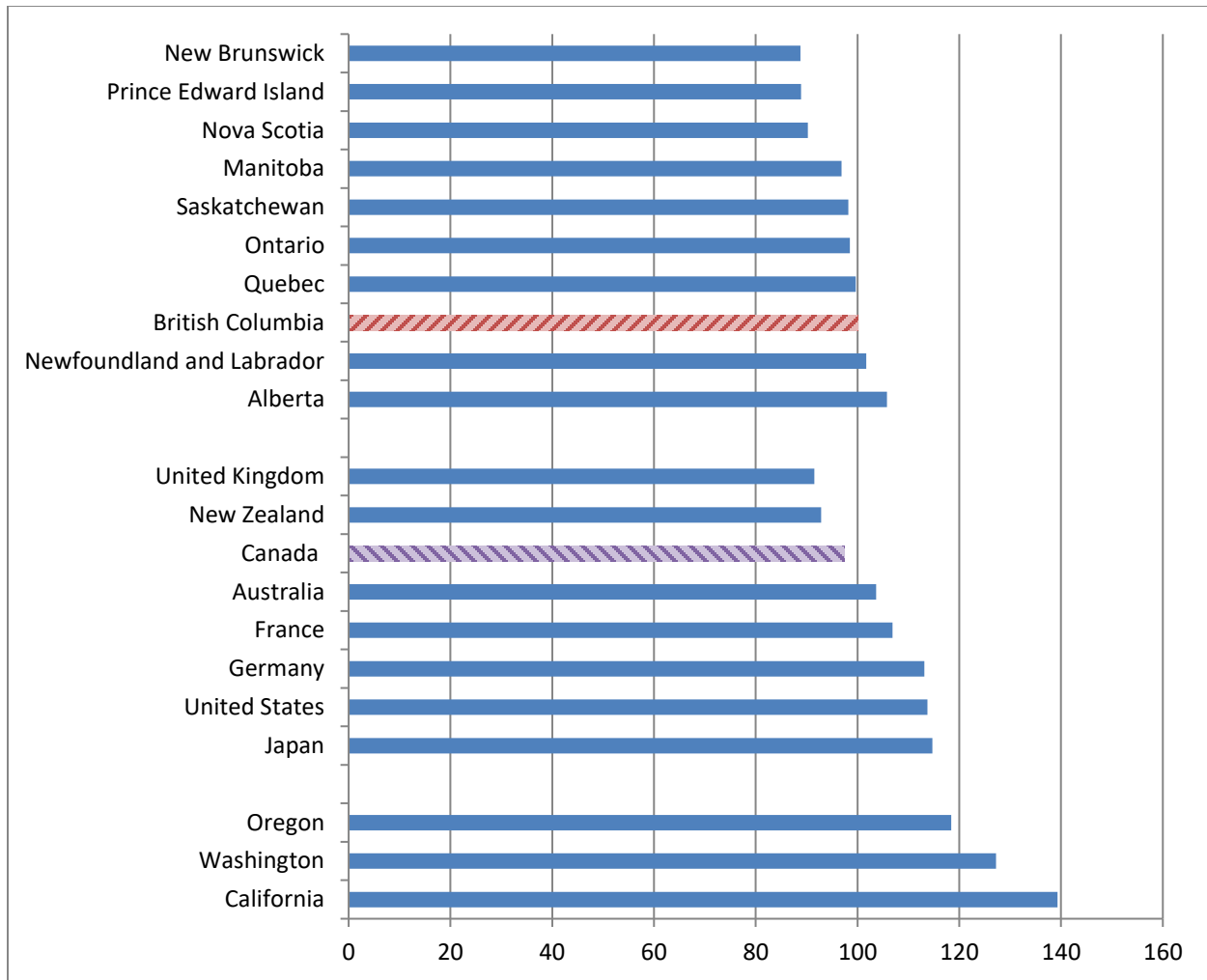
In terms of the Canadian provinces, B.C. had a lower index value for the overall Index than Newfoundland and Labrador (101.7) and Alberta (105.8).

In terms of the eight OECD countries, B.C. did better than only three countries, Canada, New Zealand and the UK.

As noted, since no data on investment are available for the three U.S. Pacific states, a consistent Prosperity Index comparing B.C. and the three Pacific states on the 12 indicators is not possible. Based on 11 indicators for these states and the 12 for B.C. however, California appears to be around 40 per cent more prosperous, Washington 30 per cent more prosperous and Oregon 18 per cent more prosperous than B.C., based on the measures captured by the Index.

Data on the index value for the overall index are available for the 2013-2017 period for the two types of jurisdictions for which values for all 12 indicators exist. During this period B.C. enjoyed the largest increase/improvement in performance among the ten provinces, and only one OECD country did better: the United States. Out the 18 jurisdictions, B.C. performed second best, an impressive showing.

Chart 17: Overall B.C. Prosperity Index, 2017 (B.C. in 2017 = 100)



## Comparison of the BC Prosperity Index with other Provincial Indexes of Well-being

Several other indexes of well-being have been developed in Canada and elsewhere. These are the UNDP Human Development Index (HDI), the CSLS Index of Economic Well-being (IEWB) and the OECD’s How’s Life Index. For an overview of these indexes, see Sharpe (2018). This section of the report compared the results of the B.C. Prosperity Index for British Columbia with the B.C. numbers (where available) from the other indexes.

### UNDP Human Development Index

The best known international composite well-being index is the Human Development Index (HDI) produced by the United National Development Program. The HDI consists of three sub-indexes for income (GNI per capita), health (life expectancy) and education (expected and mean years of schooling).

Estimates for the Canadian provinces and territories are produced on a regular basis by the Centre for the Study of Living Standards. Estimates for the 1990-2015 period are found in Ugucioni *et al.* (2017). British Columbia ranked third of the 13 jurisdictions for the overall HDI in Canada in 2015, placing first in life expectancy, second in educational attainment, fourth in expected schooling, and eighth in income. This is consistent with B.C.'s third place ranking out of the 10 provinces for the B.C. Prosperity Index for 2017.

### **OECD Better Life Initiative How's Life Index**

The second best known international composite index of well-being is likely the OECD How's Life Index produced by the OECD Better Lives Initiative. The index consists of indicators in 11 areas: access to services, civic engagement, education, jobs, community, environment, income, health, safety, housing, and life satisfaction.

Regional or sub-national estimates of the index for OECD countries are now produced by the OECD and are available for the Canadian provinces and territories.<sup>10</sup> In 2017, British Columbia ranked first among the provinces and territories in education (share of the labour force with at least secondary education) and community (perceived social support network); second in access to services (household broadband access) and health (life expectancy and mortality rate); third in life satisfaction; fourth in jobs (employment and unemployment rates) and income (disposable income per capita); fifth for civic engagement (voter turnout); seventh in safety (homicide rate) and housing (number of rooms per person); and eighth in environment (average level of PM2). In terms of the overall index with equal weighting of all 12 indicators, B.C. ranked fourth. Again, this is generally consistent with the third-place ranking for the province in the B.C. Prosperity Index.

### **CSLS Index of Economic Well-being**

The Centre for the Study of Living Standards (CSLS) developed a composite measure of economic well-being in the late 1990s and early 2000s (Osberg and Sharpe, 2002) and has been updating the index on a regular basis. The original Index of Economic Well-being (IEWB) was for selected OECD countries. The index contains four domains (consumption, stocks of wealth, inequality and economic security) and 28 specific indicators.

The IEWB has been expanded to the Canadian provinces. Estimates for the 1990-2014 period are found in Thomas and Ugucioni (2016a). In 2014, British Columbia ranked third among the provinces in the overall IEWB. Again, this is consistent with the third-place ranking for the province in the B.C. Prosperity Index. B.C. was fourth for consumption, third for stocks of wealth, sixth for income inequality, and seventh for economic security in the IEWB.

---

<sup>10</sup><https://www.oecdregionalwellbeing.org/CA59.html>.

## **Agenda for Future Work on the B.C. Prosperity Index**

Many extensions of the B.C. Prosperity Index are possible. This section briefly discusses several extensions, namely, the disaggregation of the index to socio-economic groups, sub-provincial estimates, expansion of the number of indicators, and expansion of the number of comparator jurisdictions.

### **Disaggregation of the B.C. Prosperity Index by Socio-Economic Group**

The B.C. Prosperity Index applies to the overall population of the province, but the gains from economic growth and prosperity may not be shared equally by all British Columbians. Consequently, it may be important to track economic performance and social progress by constructing a sub-index of the B.C. Prosperity Index for different demographic and socio-economic groups. Many of the 13 indicators that comprise the Prosperity Index apply at a territorial level, such as air pollution, and cannot be broken down on an individual or group basis. But at least six of the indicators could be broken down, namely educational attainment, household income, the unemployment rate, housing affordability, life expectancy, and the poverty rate. These indicators could be disaggregated into at least five types of groups: age, gender, level of education, immigrant/non-immigrant status, and Indigenous/non-Indigenous status.

### **Development of Sub-Provincial Estimates of the B.C. Prosperity Index**

Just as all groups in British Columbia may not share equally in prosperity, not all regions of the province may fairly benefit from economic growth or improvements in well-being. Again, sub-provincial or regional estimates of the B.C. Prosperity Index may be desirable to shed light on the uneven economic performance and social progress throughout the province. Such disaggregation could be based on sub-provincial breakdowns or jurisdictions such as Lower Mainland versus rest of province, economic regions as defined for Employment Insurance benefits, or census metropolitan areas (CMAs) and census areas (Cas). In principle, data can be found or developed at the sub-provincial level for all or almost all the 12 indicators in the B.C. Prosperity Index, even for productivity, but such an exercise would likely be more difficult than disaggregation by socio-economic groups because of less readily available and easily accessible data.

### **Expansion of the Indicators in the B.C. Prosperity Index**

The B.C. Prosperity Index only includes 12 indicators. If the Index is well received, expanding the index by adding additional domains and indicators could be considered, such as the incidence of low-wage employment and a measure of life satisfaction.

## **Expansion of the Number of Comparator Jurisdictions**

The B.C. Prosperity Index currently includes 21 jurisdictional units from three types of jurisdictions: 10 Canadian provinces; three U.S. states and eight OECD countries. The Index could be expanded to include the three Canadian territories, additional U.S. states, and additional OECD countries (up to 33).

## **Conclusion**

In this report, the Business Council of British Columbia has constructed the B.C. Prosperity Index to assess the province's performance on a number of indicators related to prosperity and well-being, and then compared this performance with that of 20 other jurisdictions – nine provinces, eight OECD countries, and three U.S. states. Level comparisons are made with all jurisdictions for the year 2017, the terminal year for the Index. Growth rate comparisons across jurisdictions are made for the 2013-2017 period, as a number of indicators are only available for this short period even though most indicators have longer time series.

Table 2 gives the ranking for B.C. in 2017 for all 13 indicators/sub-indicators for each of the three types of jurisdictions (provinces, OECD countries, U.S. states), and the overall ranking for all 21 jurisdictions for the 13 indicators/sub-indicators, the three domains (business environment, economic well-being, and societal well-being), and the overall Prosperity index. B.C. does well compared to the other provinces, ranking third overall. B.C.'s performance relative to the eight OECD countries is not as strong relative to the provinces. B.C. would rank sixth out of eight if it were an OECD country. It is only relative to the three U.S. Pacific states that B.C. does poorly, ranking behind all three in the overall Prosperity Index.

For all 21 jurisdictions, B.C. ranked 11th in the Prosperity Index in 2017. It ranked 12<sup>th</sup> for the business environment, tenth for economic well-being and seventh for societal well-being. It did particularly well on education attainment, per capita disposable income, life expectancy and poverty.

While B.C.'s 11<sup>th</sup> place in the level of the Prosperity Index in 2017 is average, the improvement in its performance over the last five years has been considerably more impressive. Table 3 gives the ranking for B.C. for its growth (or improvement) rate for the 2013-2017 period for all 13 indicators/sub-indicators, for each of the three types of jurisdictions (provinces, OECD countries, U.S. states), as well as the overall ranking for all 21 jurisdictions for the 13 indicators/sub-indicators, and the three domains (business environment, economic well-being, and societal well-being). B.C. does very well in improving its performance on the Prosperity Index compared to the other types of jurisdictions, ranking first among the provinces, second among OECD countries and third among the U.S. states.

For all 21 jurisdictions BC ranked fourth in growth/improvement over the 2013-2017 period in the Prosperity Index in 2017. It ranked tenth for improvement in the business

environment domain, seventh for the economic well-being domain, and first for the societal well-being domain.

To conclude, British Columbians can be quite proud of their economic performance, both the recent state of the economy and the improvement recorded over the five years ending in 2017. Their efforts have resulted in a prosperous province, particularly compared to the other Canadian provinces, although less so compared to the U.S. states to the south, especially California and Washington. B.C.'s poor performance relative to three Pacific states largely reflects their higher levels of income and GDP per person.

One limitation of the B.C. Prosperity Index is that it does not include many indicators that contribute to the broader quality of life of the population. A considerable number of these indicators are better in Canada than the in the United States. Indeed, compared to Canada, the United States has a high cost and lack of universality of health care, a higher incarceration rate, higher university tuition costs, a higher rate of gun violence and crime, and of course a more divisive political climate.

Table 2: B.C.'s Ranking on the B.C. Prosperity Index, Its Domains, and Their Components, 2017

Indicator	Provincial Ranking	OECD Ranking	State Ranking	Overall Ranking
<b>Business Environment</b>				
Labour Productivity	5	7	4	14
Non-Residential Investment	5	7	N/A	11 <sup>a</sup>
Innovation (R&D Expenditures as share of nominal GDP)	3	8	4	13
Education	3	2	1	4
Overall Business Environment Domain	6	7	N/A	12 <sup>a</sup>
<b>Economic Well-Being</b>				
Real GDP per Capita	4	4	4	10
Per Capita Disposable Household Income	2	3	4	7
Unemployment	1	6	4	9
Housing Affordability	9	7	4	18
Overall Economic Well-Being Domain	3	5	4	10
<b>Societal Well-Being</b>				
Life Expectancy	3	4	1	6
Poverty Rate	3	5	1	7
Income Inequality	6	3	1	8
Air Pollution	6	1	3	8
Greenhouse Gas Emissions	4	5	4	11
Overall Societal Well-Being Domain	5	3	1	7
<b>Overall B.C. Prosperity Index</b>	<b>3</b>	<b>6</b>	<b>4<sup>b</sup></b>	<b>11<sup>b</sup></b>

Notes: a) Out of 18 jurisdictions, excluding the three U.S. states.

b) This ranking includes the three U.S. states, even though numbers for the states are not directly comparable due to the exclusion of one variable (non-residential investment).

Table 3: B.C.'s Ranking for 2013-2017 Growth Rates of the B.C. Prosperity Index, Its Domains, and Their Components

<u>Indicator</u>	<u>Provincial Ranking</u>	<u>OECD Ranking</u>	<u>State Ranking</u>	<u>Overall Ranking</u>
<b>Business Environment</b>				
Labour Productivity	7	1	3	9
Non-Residential Investment	5	7	N/A	11 <sup>a</sup>
Innovation (R&D Expenditures as share of nominal GDP)	6	6	4	14
Education	6	5	1	10
Overall Business Environment Domain	5	6	N/A	10 <sup>a</sup>
<b>Economic Well-Being</b>				
Real GDP per Capita	1	1	4	4
Per Capita Disposable Household Income	1	2	4	5
Unemployment	1	5	4	8
Housing Affordability	1	1	1	1
Overall Economic Well-Being Domain	1	4	4	7
<b>Societal Well-Being</b>				
Life Expectancy	9	8	1	16
Poverty Rate <sup>c</sup>	1	1	1	1
Income Inequality <sup>c</sup>	2	1	1	2
Air Pollution <sup>c</sup>	8	2	1	9
Greenhouse Gas Emissions <sup>c</sup>	6	8	2	14
Overall Societal Well-Being Domain	1	1	1	1
<b>Overall B.C. Prosperity Index</b>	<b>1</b>	<b>2</b>	<b>3<sup>b</sup></b>	<b>4<sup>b</sup></b>

Notes: a) Out of 18 jurisdictions, excluding the three U.S. states.

b) This ranking includes the three U.S. states, even though numbers for the states are not directly comparable due to the exclusion of one variable (non-residential investment).

c) For some indicators, lowest growth ranks first. For example, the best-performing jurisdictions in terms of growth in GHG emissions would have the lowest growth rate in that indicator.



## References

- British Columbia Council on International Cooperation (2017) “Where Canada Stands: A Sustainable Development Goals Progress Report,” <https://bccic.ca/wp-content/uploads/2017/07/HLPF-Report-Online-Version-v1-07072017.pdf>
- British Columbia Council on International Cooperation (no date) “Keeping Score: the United Nations Sustainable Development Goals,” [https://bccic.ca/wp-content/uploads/2015/09/SDG\\_Report\\_FINAL\\_WEB\\_v6-1.pdf](https://bccic.ca/wp-content/uploads/2015/09/SDG_Report_FINAL_WEB_v6-1.pdf)
- Canadian Index of Well-being (2016) “The 2016 National Index Report: How Are Canadians Really Doing?” November <https://uwaterloo.ca/canadian-index-wellbeing/reports/2016-canadian-index-wellbeing-national-report>
- Centre for the Study of Living Standards (2015) “Canada 2030: An Agenda for Sustainable Development,” CSLS Research Report 2015-02, February <http://www.csls.ca/reports/csls2015-02.pdf>
- Employment and Social Development Canada (2018) “Opportunity for All: Canada’s First Poverty Reduction Strategy,” August [file:///C:/Users/Andrew/Downloads/Canada's\\_1st\\_PRS\\_-\\_EN.pdf](file:///C:/Users/Andrew/Downloads/Canada's_1st_PRS_-_EN.pdf)
- Hagerty, Michael, Robert Cummins, Abbott Ferris, Ken Land, Alex Michalos, Mark Peterson, Andrew Sharpe, Joseph Sirgy and Joachim Vogel (2001) “Quality of Life Indexes for National Policy: Review and Agenda for Research,” *Social Indicators Research*, Vol, 55, pp 1-96, <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.462.1113&rep=rep1&type=pdf>
- Inter-Governmental Panel on Climate Change (2018) “Global Warming of 1.5 C,” October, [http://report.ipcc.ch/sr15/pdf/sr15\\_spm\\_final.pdf](http://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf)
- Klasen, Stephan (2018) “Human Development Indices and Indicators: A Critical Evaluation,” UNDP Human Development Report Office, Background paper [http://hdr.undp.org/sites/default/files/klasenspm\\_final.pdf](http://hdr.undp.org/sites/default/files/klasenspm_final.pdf)
- OECD (2008) “Handbook on Constructing Composite Indicators: Methodology and User Guide,” <http://www.oecd.org/sdd/42495745.pdf>
- OECD (2011) *How’s Life: Measuring Well-being*, October. <http://www.oecd.org/statistics/howslifemeasuringwell-being.htm>
- OECD (2017) *How’s Life: Measuring Well-being, 2017* November <http://www.oecd.org/social/how-s-life-23089679.htm>

Osberg, Lars and Andrew Sharpe (2002) “An Index of Economic Well-being for Selected OECD Countries,” *Review of Income and Wealth*, 48 (3), September, pp. 291-316. <http://www.roiw.org/2002/291.pdf>

Ross, Christopher and Alexander Murray (2010) “Aggregate Measures of Income and Output in Canada and the United States: Implications for Productivity and Living Standards,” *International Productivity Monitor*, Number 19, Spring <http://www.csls.ca/ipm/19/IPM-19-ross-murray.pdf>

Salzman, Julia (2003) “Methodological Choices Encountered in the Construction of Composite Indexes of Economic and Social Well-being,” Centre for the Study of Living Standards March <http://www.csls.ca/events/cea2003/salzman-typol-cea2003.pdf>

Sharpe, Andrew (1999) “A Survey of Indicators of Economic and Social Well-being,” July, CSLS Research Report <http://www.csls.ca/reports/paper3a.pdf>

Sharpe, Andrew (2004) “Literature Review of Frameworks for Macro-indicators,” CSLS Research Report 2004-03, February <http://www.csls.ca/reports/csls2004-03.pdf>

Sharpe, Andrew (2018) “A Prosperity Index for British Columbia: A Proposal,” report prepared by the Centre for the Study of Living Standards for the Business Council of British Columbia, October

Sharpe, Andrew and Jeremy Smith (2005) “Measuring the Impact of Research on Well-being: A Survey of Indicators of Well-being,” CSLS Research Report 2005-02, February <http://www.csls.ca/reports/csls2005-02.pdf>

Sharpe, Andrew and Jean-Francois Arsenault (2009) “The Living Standards Domain of the Canadian Index of Well-being,” CSLS Research Report 2009-04, June <http://www.csls.ca/reports/csls2009-4.pdf>

Sharpe, Andrew, Ali Ghanghro, Erik Johnson and Anan Kidwai (2010) “Does Money Matter?” CSLS Research Report, 2010-09, November <http://www.csls.ca/reports/csls2010-09.pdf>

Sharpe, Andrew and Brendon Andrews (2012) “An Assessment of Weighting Methodologies for Composite Indicators: The Case of the Index of Economic Well-being,” CSLS Research Report, 2012-10, December <http://www.csls.ca/reports/csls2012-10.pdf>

Sharpe, Andrew and Evan Capeluck (2012) “Canadians Are Happy and Getting Happier: An Overview of Life Satisfaction in Canada,” CSLS Research Note 2012-03, September, <http://www.csls.ca/notes/Note2012-3.pdf>

Smith, Jeffrey (2004) “Aggregate Labour Productivity Growth in Canada and the United States: Definitions, Trends and Measurement Issues,” CSLS Research Report 2004-04, September, <http://www.csls.ca/reports/csls2004-04-corrected.pdf>

- Thomas, Jasmin (2016) “Trends in Low-Wage Employment in Canada: Incidence, Gap and Intensity, 1997-2014,” CSLS Research Report 2016-10, July  
<http://www.csls.ca/reports/csls2016-10.pdf>
- Thomas, Jasmin and James Ugucioni (2016a) “A Tepid Recovery: The Index of Economic Well-being for Canada and the Provinces, 1981-2014,” CSLS Research Report 2016-05, June  
<http://www.csls.ca/reports/csls2016-05.pdf>
- Thomas, Jasmin and James Ugucioni (2016b) “Economic Security Takes A Hit: The Index of Economic Well-being for Selected OECD Countries, 1980-2014,” CSLS Research Report 2016-06, June <http://www.csls.ca/reports/csls2016-06.pdf>
- Ugucione, James (2016) “Explaining the Gap between Productivity and Median Wage Growth in Canada,” *International Productivity Monitor*, No. 31, Fall,  
<http://www.csls.ca/ipm/31/ugucioni.pdf>
- Ugucioni, James, Andrew Sharpe and Richard Beard (2017) “The Human Development Index in Canada: Ranking the Provinces and Territories Internationally, 2000-2015: An Update” CSLS Research Report 2017-06, <http://www.csls.ca/reports/csls2017-06.pdf>
- United Nations (2015) “Transforming Our World: the 2030 Agenda for Sustainable Development,” Resolution adopted by the UN General Assembly, September 25  
[http://www.un.org/ga/search/view\\_doc.asp?symbol=A/RES/70/1&Lang=E](http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E)
- United Nations (2018) *The Sustainable Development Goals Report, 2018*, <https://unstats.un.org/sdgs/files/report/2018/thesustainabledevelopmentgoalsreport2018.pdf>
- United Nations (no date) “E-Handbook on Sustainable Development Goals Indicators,”  
<https://unstats.un.org/wiki/display/SDGeHandbook/Goal+1>
- United Nations Development Program (2018) *Human Development Indices and Indicators: 2018 Statistical Update*, September  
[http://hdr.undp.org/sites/default/files/2018\\_human\\_development\\_statistical\\_update.pdf](http://hdr.undp.org/sites/default/files/2018_human_development_statistical_update.pdf)