The share of the island populations that are urban versus rural varies significantly. As a city-state, Singapore, pictured here, is 100 percent urban.

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The state of island economies and development in 2020

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This chapter presents and describes the fourth iteration of data for a select group of island states and territories. As has been the case with the three earlier volumes, the variables have been selected to reflect various aspects of island economies and development. Since the theme of this volume is development and resilience in the context of island public health, several new variables have been added. These include causes of death and hospital beds per 1,000 people (Table 1.13), as well as government spending on health and the prevalence of obesity and diabetes (Table 1.12). Ideally, we would have liked to provide data on the COVID-19 pandemic for these islands. Unfortunately, at the time of this writing, COVID-related data are either unavailable or not standardized.

As has been the case in previous years, this chapter is divided into two broad sections, each addressing politically distinct groups of islands. The first group, island states, is described below, followed by a discussion of subnational island jurisdictions (SNIJs).

SECTION 1: ISLAND STATES

The aggregate changes in population depicted in Table 1.1 consist of natural population change (i.e., births minus deaths) as well as net migration (i.e., immigration minus emigration), variables that we will be looking at in more detail later in this chapter. Many of the population trends that have been taking place over the past four years have continued this year. The Japanese population continues to decline. Other islands in the European and Caribbean regions have also seen their populations remain about the same as in previous years. Perhaps surprisingly, several of the islands in Oceania, such as the Cook Islands, the Federated States of Micronesia, and Tonga, also continue to experience population declines. Those islands seeing the greatest population increases are generally also in the lower income categories, such as Timor-Leste and Madagascar. Higher population growth also occurs in places that have a less equal distribution of income, such as in Bahrain.

TABLE 1.1: Population, Population Density, and Average Annual Population Growth Rate, 2010 to 2020

Continent	Island Country	Population (people) July 2020	Population density (people/km²) 2018	Growth Rate % 2019- 2020
Asia	Japan	125,507,472	347	-0.27
	Singapore	6,209,660	7953	1.73
	Indonesia	267,026,366	148	0.79
	Timor-Leste	1,383,723	85	2.27
	Brunei Darussalam	464,478	81	1.51
	Philippines	109,180,815	358	1.52
	Sri Lanka	22,889,201	346	0.67
	Maldives	391,904	1719	-0.06
	Bahrain	1,505,003	2017	2.08
Europe	Cyprus	1,266,676	129	1.15
	Iceland	350,734	4	1.02
	United Kingdom	65,761,117	275	0.51
	Ireland	5,176,569	70	1.04
	Malta	457,267	1511	0.87
Africa	Cabo Verde	583,255	135	1.32
	Madagascar	26,955,737	45	2.39
	Seychelles	95,981	210	0.74
	Mauritius	1,379,365	623	0.54
	Comoros	846,281	447	1.47
	São Tomé and Príncipe	211,122	220	1.58
Oceania	New Zealand	4,925,477	19	1.44
	Papua New Guinea	7,259,456	19	1.6

Continent	Island Country	Population (people) July 2020	Population density (people/km²) 2018	Growth Rate % 2019- 2020
	Solomon Islands	685,097	23	1.84
	Vanuatu	298,333	24	1.73
	Fiji	935,974	48	0.5
	Tonga	106,095	143	-0.16
	Samoa	203,774	69	0.61
	Nauru	11,000	635	0.46
	Micronesia, Fed. States	102,436	161	-0.55
	Marshall Islands	77,917	325	1.43
	Kiribati	111,796	143	1.12
	Tuvalu	11,342	384	0.86
	Palau	21,685	39	0.4
	Cook Islands	8,574	–	-2.59
	Niue	2,000 (2019)	–	-0.03 (2014)
Caribbean/	Cuba	11,059,062	109	-0.27
Americas	Haiti	11,067,777	404	1.31
	Dominican Republic	10,499,707	220	0.99
	Jamaica	2,808,570	271	-0.07
	Bahamas, The	337,721	39	0.79
	St. Kitts and Nevis	53,821	202	0.7
	Antigua and Barbuda	98,179	219	1.2
	St. Vincent and the Grenadines	101,390	283	-0.23
	St. Lucia	166,487	298	0.31
	Grenada	113,094	328	0.42
	Barbados	294,560	667	0.2
	Trinidad and Tobago	1,208,789	271	-0.3
	Dominica	74,243	96	0.13

Table 1.2 (next page) provides more detailed birth and death rates for the islands highlighted in this report, as well as average life expectancies. At first glance, it may be somewhat surprising to find that developed island countries such as the United Kingdom and Japan have relatively high death rates, at 9.5/1,000 and 10.2/1,000 respectively, compared to lesser developed islands such as Haiti (7.4), the Solomon Islands (3.8), and Bahrain (2.8). Part of the explanation for this result is the age profile of these places. The median population age in Japan and the UK is 48.6 and 40.6 respectively, while in Haiti it is 24.1 and in the Solomon Islands it is 23.5 years of age. All other things being equal, an older population will have a higher death rate. The more important feature for population change is the gap between the birth and death rates. In the UK, the gap is only 2.4/1,000 (births over deaths), while in the Solomon Islands, that gap is 19.8/1,000, suggesting that the population is continuing to grow rapidly. Despite these

higher population growth rates, there are signs that the rate of growth in places such as the Solomon Islands is slowing (McMurray, 2019). In almost all of the islands in Table 1.2, birth rates are declining when compared to the birth rates in the 2019 Annual Report (Randall & Brimacombe, 2020), and are declining at a faster rate than the death rates. Unfortunately, these population changes are very uneven, with higher levels of population growth most apparent in the outlying areas of archipelagos where a subsistence lifestyle is more common and where there are fewer employment opportunities (McMurray, 2018). The demographic transition suggests that other related indicators of well-being will improve as places move to lower birth and death rates. However, negative natural rates of population growth and aging populations come with their own challenges, including difficulty in filling jobs in the labour market and a loss of productivity (Murray et al., 2020).

TABLE 1.2: **Crude Birth Rate, Crude Death Rate, and Life Expectancy at Birth, 2020**

Continent	Island Country	Crude Birth Rate/1000	Crude Death Rate/1000	Life Expectancy at Birth
Asia	Japan	7.3	10.2	86.0
	Singapore	8.9	3.6	86.0
	Indonesia	15.4	6.6	73.7
	Timor-Leste	32.0	5.7	69.3
	Philippines	22.9	6.0	70.0
	Sri Lanka	14.2	6.5	77.5
	Maldives	16.0	4.1	76.4
	Bahrain	12.7	2.8	79.4
Europe	Cyprus	10.9	7.0	79.3
	Iceland	13.3	6.6	83.3
	United Kingdom	11.9	9.5	81.1
	Ireland	13.0	6.8	81.2
	Malta	9.9	8.3	82.8
Africa	Cabo Verde	19.1	5.9	73.2
	Madagascar	29.9	6.2	67.3
	Seychelles	12.8	7.1	75.6
	Mauritius	12.6	7.3	76.5
	Comoros	23.6	6.9	65.7
	São Tomé and Príncipe	29.7	6.3	66.3
Oceania	New Zealand	12.8	6.9	82.1
	Papua New Guinea	22.5	6.7	67.8
	Solomon Islands	23.6	3.8	76.2
	Vanuatu	22.4	4.0	74.6
	Fiji	17.4	6.3	73.7

Continent	Island Country	Crude Birth Rate/1000	Crude Death Rate/1000	Life Expectancy at Birth
	Tonga	21.0	4.9	77.0
	Samoa	19.6	5.4	74.7
	Nauru	21.9	6.0	68.4
	Micronesia, Fed. States	18.9	4.3	73.9
	Marshall Islands	22.8	4.3	74.1
	Kiribati	20.5	6.9	67.5
	Tuvalu	23.4	8.2	67.9
	Palau	11.3	8.3	74.1
	Cook Islands	13.3	9.0	76.6
	Niue	–	–	–
Caribbean/	Cuba	10.4	9.1	79.2
Americas	Haiti	21.7	7.4	65.3
	Dominican Republic	18.5	6.3	72.0
	Jamaica	16.1	7.5	75.2
	Bahamas, The	14.8	7.4	73.3
	St. Kitts and Nevis	12.6	7.3	76.6
	Antigua and Barbuda	15.4	5.8	77.3
	St. Vincent and the Grenadines	12.6	7.6	76.2
	St. Lucia	12.5	8.1	78.5
	Grenada	14.6	8.3	75.2
	Barbados	11.3	8.8	76.0
	Trinidad and Tobago	11.4	9.1	73.9
	Dominica	14.5	8.0	77.7

Average life expectancy is a good surrogate measure of the state of development of a jurisdiction, in that it often corresponds closely with economic, social, and environmental health. In comparing the life expectancy column in Table 1.2 to the same values presented in last year's Annual Report (Randall & Brimacombe, 2020, pp. 18-19), life expectancy increased in all 47 island states profiled. In most cases these gains were marginal, as one might expect given the short time period. However, it is the consistency of the direction of change that is striking and hopeful. Despite overall increases, wide variations in life expectancy persist across the 47 island states, even among those islands within the same region (The Lancet, 2019). For example, residents of Kiribati and Papua New Guinea (PNG) have life expectancies of less than 68 years while those in Tonga and the Solomon Islands live an average of 76 years. A hopeful sign may be suggested from the work of Wang et al. (2020) who, in a global longitudinal study of various health indicators over almost seventy years (1950-2019), showed that countries in Oceania and the Caribbean saw consistent convergence in life expectancy in relation to the high-income countries of the world.

TABLE 1.3: Percentage of Rural and Urban Populations, 2015 and 2020

Continent	Island Country	RURAL POPULATION (%)		URBAN POPULATION (%)	
		2015	2020	2015	2020
Asia	Japan	6.5	8.2	93.5	91.8
	Singapore	0.0	0.0	100.0	100.0
	Indonesia	46.3	43.4	53.7	56.6
	Timor-Leste	67.2	68.7	32.8	31.3
	Brunei Darussalam	22.8	21.7	77.2	78.3
	Philippines	55.6	52.6	44.4	47.4
	Sri Lanka	81.6	81.3	18.4	18.7
	Maldives	54.5	59.3	45.5	40.7
	Bahrain	11.2	10.5	88.8	89.5
Europe	Cyprus	33.1	33.2	66.9	66.8
	Iceland	5.9	6.1	94.1	93.9
	United Kingdom	17.4	16.1	82.6	83.9
	Ireland	36.8	36.3	63.2	63.7
	Malta	4.6	5.3	95.4	94.7
Africa	Cabo Verde	34.5	33.3	65.5	66.7
	Madagascar	64.9	61.5	35.1	38.5
	Seychelles	46.1	42.5	53.9	57.5
	Mauritius	60.3	59.2	39.7	40.8
	Comoros	71.7	70.6	28.3	29.4
	São Tomé and Príncipe	34.9	25.6	65.1	74.4
Oceania	New Zealand	13.7	13.3	86.3	86.7
	Papua New Guinea	87.0	86.7	13.0	13.3
	Solomon Islands	77.7	75.3	22.3	24.7
	Vanuatu	73.9	74.5	26.1	25.5
	Fiji	46.3	42.8	53.7	57.2
	Tonga	76.3	76.9	23.7	23.1
	Samoa	80.9	82.1	19.1	17.9
	Nauru	0.0	0.0	100.0	100.0
	Micronesia, Fed. Sts.	77.6	77.1	22.4	22.9
	Marshall Islands	27.3	22.2	72.7	77.8
	Kiribati	55.7	44.4	44.3	55.6
	Tuvalu	40.3	36.0	59.7	64.0
	Palau	12.9	19.0	87.1	81.0
	Cook Islands	25.0 (2014)	24.5	75.0 (2014)	75.5
	Niue	62.0 (2014)	53.8	38.0 (2014)	46.2

Continent	Island Country	RURAL POPULATION (%)		URBAN POPULATION (%)	
		2015	2020	2015	2020
Caribbean/	Cuba	22.9	22.8	77.1	77.2
Americas	Haiti	41.3	42.9	58.7	57.1
	Dominican Republic	21.1	17.5	78.9	82.5
	Jamaica	45.2	43.7	54.8	56.3
	Bahamas, The	17.1	16.8	82.9	83.2
	St. Kitts and Nevis	67.9	69.2	32.1	30.8
	Antigua and Barbuda	76.2	75.6	23.8	24.4
	St. Vincent and Grenadines	49.4	47.0	50.6	53.0
	St. Lucia	81.5	81.2	18.5	18.8
	Grenada	64.4	63.5	35.6	36.5
	Barbados	68.4	68.8	31.6	31.2
	Trinidad and Tobago	91.5	46.8	8.5	53.2
	Dominica	30.5	28.9	69.5	71.1

The share of the island populations that are urban versus rural varies significantly (see Table 1.3). As a city-state, Singapore is 100 percent urban. The same holds true for Nauru (100%), followed closely by Malta (94.7%), Iceland (93.9%), and Japan (91.8%). At the other extreme, only 13.3% of PNG's population lives in urban areas. Almost all of the island states have seen a small increase compared to 2019 in the share of their populations living in urban places. The traditional model of development suggests that the level of urbanization is linked closely to development. As the level of urbanization increases, average income also increases, as does access to social amenities such as education and health services. Infrastructure providing clean water and waste disposal also improves. The example of the Solomon Islands with respect to water is useful in showing these differences. According to Anthonj et al. (2020), 92% of urban residents have access to basic drinking water service, as compared to only 55% of rural households. However, we should be cautious in the degree to which we generalize this relationship. A subsistence lifestyle in rural areas or outlying islands has many advantages for the well-being of their residents. Likewise, rapid urban growth may overwhelm the ability of cities to provide basic services and employment opportunities to rural immigrants. For example, despite a gradual process of urbanization, the region that includes the small islands of Oceania has among the greatest challenges in terms of water scarcity (McNabb, 2019).

TABLE 1.4: Gross Domestic Product (GDP) and Change in GDP; Per Capita GDP and Change in GDP/capita, 2019

Continent	Island Country	GDP 2019 In millions of USD (World Bank)	Growth Rate of GDP % 2018- 2019 (World Bank)	GDP per capita 2019 in USD (World Bank)	Growth Rate of GDP per capita % 2018- 2019 (World Bank)
Asia	Japan	5,081,770	0.7	40,247	0.9
	Singapore	372,063	1.0	65,233	-0.4
	Indonesia	1,119,191	5.0	4,136	3.9
	Timor-Leste	1,674	3.4	1,294	1.4
	Brunei Darussalam	13,469	3.9	31,087	2.8
	Philippines	376,796	6.0	3,485	4.6
	Sri Lanka	84,009	2.3	3,853	1.7
	Maldives	5,729	5.2	10,791	2.2
	Bahrain	38,574	1.8	23,504	-2.6
Europe	Cyprus	24,565	3.2	27,858	1.9
	Iceland	24188	1.9	66,945	-0.5
	United Kingdom	2,827,113	1.4	42,300	0.8
	Ireland	388,699	5.5	78,661	4.0
	Malta	14,786	4.4	29,416	0.6
Africa	Cabo Verde	1,982	5.7	3,604	4.5
	Madagascar	14,084	4.8	522	2.1
	Seychelles	1,699	4.7	17,402	3.8
	Mauritius	14,180	3.6	11,204	3.5
	Comoros	1186	2.7	1,394	0.5
	São Tomé and Príncipe	429	2.4	1,995	0.5
Oceania	New Zealand	206,929	2.2	42,084	0.9
	Papua New Guinea	24,970	5.6	2,845	3.6
	Solomon Islands	1,425	2.7	2,128	0.1
	Vanuatu	917	2.9	3,058	0.4
	Fiji	5,536	1.1	6,220	0.3
	Tonga	450 (2018)	0.3 (2017-18)	4,364 (2018)	0.9 (2017-18)
	Samoa	851	3.5	4,316	3.0
	Nauru	118	6.1 (2017-18)	9,397	1.0
	Micronesia, Fed. Sts.	402 (2018)	0.2 (2017-18)	3,568	-0.8 (2017-18)
	Marshall Islands	221 (2018)	3.6 (2017-18)	3,788 (2018)	3.0 (2017-18)

Continent	Island Country	GDP 2019 in millions of USD (World Bank)	Growth Rate of GDP % 2018- 2019 (World Bank)	GDP per capita 2019 in USD (World Bank)	Growth Rate of GDP per capita % 2018- 2019 (World Bank)
	Kiribati	195	2.2	1,655	0.7
	Tuvalu	47.27	9.8	4,059	8.5
	Palau	284 (2018)	1.7 (2017-18)	15,859 (2018)	1.1 (2017-18)
	Cook Islands	300 (2016, CIA)	–	16,700 (2016, CIA)	–
	Niue	–	–	–	–
Caribbean/	Cuba	100,023 (2018)	2.2 (2017-18)	8,821 (2018)	2.3 (2017-18)
Americas	Haiti	8,499	-0.9	755	-2.2
	Dominican Republic	88,941	5.1	8,282	4
	Jamaica	16,458	0.7	5,582	0.2
	Bahamas, The	12,827	1.8	23,504	0.8
	St. Kitts and Nevis	1,051	2.5	19,897	1.8
	Antigua and Barbuda	1,728	4.7	17,790	3.8
	St. Vincent and the Grenadines	825	0.3	7,464	0.0
	St. Lucia	2,122	1.7	11,611	1.2
	Grenada	1,228	3.1	10,966	2.6
	Barbados	5,209	-0.1	18,148	-0.2
	Trinidad and Tobago	24,100	0.0	17,277	-0.4
	Dominica	596	5.7	8,300	5.4

As Table 1.4 shows, almost all of the economies of small island states represented in this section grew consistently from 2018 to 2019, at least as reflected in the change in their Gross Domestic Product (GDP). Not surprisingly, smaller islands experience greater variability in their growth rates. For example, even within the same region of the Caribbean, the Dominican Republic and Dominica grew by more than five percent, while the economies of Haiti and the Barbados actually contracted over this time period. Unfortunately, growth rates may not necessarily reflect a true measure of the change in well-being of islanders. This table does allow us to take a cursory look at whether the average person is better off in terms of GDP. If the change in GDP per capita (the far right-hand column in Table 1.4) exceeds the change in GDP column, it implies that greater production is not being eaten up by greater population growth. Unfortunately, in almost every case in Table 1.4 (with the only two exceptions being

Despite being known as the "world's happiest nation," daily life on Vanuatu has become more difficult, with large amounts of land being sold and controlled by expatriates. BBC News photo

Japan and Cuba), the change in the GDP growth rate per capita was less than the general GDP per capita change.

Although these GDP figures are mostly positive, they do not necessarily tell us the complete story. First, for many reasons, GDP may not be the best indicator of quality-of-life, especially on small islands. A case in point is Vanuatu. Despite consistent increases in GDP and a label as the "world's happiest nation," (Wittersheim, 2011, p. 323) the daily life of Vanuatuans has become more difficult, with large amounts of land in this agrarian society being sold and controlled by expatriates (Wittersheim, 2011). In other places, such as on Papua New Guinea, the informal economy is a major source of economic well-being for households and communities (Conroy, 2010). Official economic measures such as the GDP do not account for this informal production and trade.

Since these economic statistics extend only to 2019, they also do not reflect the current COVID-19 pandemic reality facing all nations at this time. Although it is too early to provide a comprehensive analysis of the impacts of this pandemic on island economies, peer-reviewed research is already emerging on the impacts on individual islands. Based on an analysis of the dependence on international tourism, Gaffney and Eeckels (2020) predict that all of the countries in the Caribbean, except for Haiti and

Fresh bread out of the traditional oven in Castara, Tobago. Trinidad and Tobago are less dependent on international tourism than other Caribbean countries.
VisitTobago tourism photo

Trinidad & Tobago, and most of the countries in the Pacific are in the highest risk category. Economic risk is even greater if the island's tourism industry was more dependent on cruise ships. Maritime trade has also been adversely affected. Verschuur, Koks, and Hall (2020) suggest that in the first eight months of 2020, total global maritime trade declined by between 7.0 and 9.6 percent, or 225-412 billion USD in value losses. Small islands suffered some of the greatest losses in maritime trade.

TABLE 1.5: Gross National Income (GNI) per Capita, 2019

Continent	Island Country	Gross National Income per capita, Purchasing Power Parity (international $) (World Bank)
Asia	Japan	44,780
	Singapore	92,020
	Indonesia	11,930
	Timor-Leste	4,730
	Brunei Darussalam	66,410
	Philippines	10,200
	Sri Lanka	13,230
	Maldives	17,880
	Bahrain	44,140
Europe	Cyprus	39,830
	Iceland	61,170
	United Kingdom	48,040
	Ireland	68,050
	Malta	41,690
Africa	Cabo Verde	7,310
	Madagascar	1,660
	Seychelles	29,300
	Mauritius	26,410
	Comoros	3,220
	São Tomé and Príncipe	4,090
Oceania	New Zealand	42,710
	Papua New Guinea	4,470
	Solomon Islands	2,350
	Vanuatu	3,310
	Fiji	13,260
	Tonga	6,510
	Samoa	6,490
	Nauru	17,790
	Micronesia, Fed. Sts.	3,640
	Marshall Islands	5,090 (2018)
	Kiribati	4,650
	Tuvalu	6,170
	Palau	19,500 (2018)
	Cook Islands	not available
	Niue	not available

Continent	Island Country	Gross National Income per capita, Purchasing Power Parity (international $) (World Bank)
Caribbean/ Americas	Cuba	not available
	Haiti	1,790
	Dominican Republic	18,280
	Jamaica	9,770
	Bahamas, The	35,760
	St. Kitts and Nevis	25,920
	Antigua and Barbuda	21,500
	St. Vincent and the Grenadines	12,880
	St. Lucia	15,140
	Grenada	16,250
	Barbados	15,730
	Trinidad and Tobago	26,950
	Dominica	12,460

Gross national income (GNI) per capita is another useful indicator of the economic health of islands. Table 1.5 shows that this varies from a high of over Int$92,000 (International dollar) in Singapore to a low of less than Int$2,000 in Madagascar and Haiti. Although the GNI per capita has increased for most islands surveyed, the absolute gap between the wealthiest and the poorest islands has remained the same. The GNI is often regarded as one of the better measures of a jurisdiction's standard of living (Capelli & Vaggi, 2013). Unfortunately, it does not include revenue such as remittances, something that is very important to the economy of many islands.

TABLE 1.6: Labour Force, Participation Rate, and Unemployment Rate, 2019-2020

Continent	Island Country	Labour Force est. (2020)	Labour Force Participation Rate % (2019) (World Bank)	Unemployment Rate % est. (2019)
Asia	Japan	67,802,080	62	2.4
	Singapore	3,549,470	68	3.1
	Indonesia	136,694,230	68	3.6
	Timor-Leste	560,220	67	4.7 (2016)
	Philippines	45,731,520	59	2.2
	Sri Lanka	8,971,000	52	4.8
	Maldives	306,070	58 (2016)	6.1 (2016)
	Bahrain	1,022,530	72 (2015)	1.2 (2012)
Europe	Cyprus	632,970	63	7.1
	Iceland	219,020	81	3.5
	United Kingdom	34,699,630	63	3.7
	Ireland	2,440,260	62	4.9
	Malta	242,770	62	3.4
Africa	Cabo Verde	242,400	57	11.3
	Madagascar	14,307,140	86 (2015)	1.8 (2015)
	Seychelles	52,700	67	3.0
	Mauritius	613,290	59 (2018)	6.4 (2018)
	Comoros	230,000	45 (2014)	8.1 (2014)
	São Tomé and Príncipe	73,410	35 (2006)	13.6 (2012)
Oceania	New Zealand	2,786,380	70	4.1
	Papua New Guinea	2,727,000	48 (2010)	2.6 (2011)
	Solomon Islands	345,280	86 (2013)	0.7 (2013)
	Vanuatu	131,940	64 (2010)	1.8 (2010)
	Fiji	366,200	58 (2016)	4.3 (2016)
	Tonga	41,410	47 (2018)	3.1 (2018)
	Samoa	54,360	43 (2017)	14.5 (2017)
	Cook Islands	7,554 (2011)	71 (2011)	8.2 (2011)
	Niue	785 (2017)	69 (2017)	1.0 (2017)
	Nauru	no data available	–	–
	Micronesia, Fed. Sts.	no data available	–	–
	Marshall Islands	no data available	–	–
	Kiribati	no data available	–	–
	Tuvalu	no data available	–	–
	Palau	no data available	–	–

Continent	Island Country	Labour Force est. (2020)	Labour Force Participation Rate % (2019) (World Bank)	Unemployment Rate % est. (2019)
Caribbean	Cuba	5,087,760	73 (2013)	1.7 (2018)
Americas	Haiti	5,186,570	57 (2012)	14.1 (2012)
	Dominican Republic	5,067,910	65	6.4
	Jamaica	1,502,400	65	7.7
	Bahamas, The	229,390	73 (2013)	10.0 (2018)
	St. Kitts and Nevis	–	69 (2001)	5.1 (2001)
	Antigua and Barbuda	71,993 (2018)	72.1 (2018)	8.7 (2018)
	St. Vincent and the Grenadines	57,280	64.7 (2008)	18.8 (2008)
	St. Lucia	101,400	69	15.6
	Grenada	–	71 (2015)	22.9 (2015)
	Barbados	155,110	66 (2016)	9.7 (2016)
	Trinidad and Tobago	666,100	59 (2016)	3.2 (2016)
	Dominica	31,222 (2011)	58.6 (2011)	11.1 (2011

Generally, the unemployment rate on these islands has decreased from the previous year. For example, Jamaica's unemployment rate has decreased from 12.2 to 7.7 percent and Cyprus's unemployment has declined from 11.1 to 7.1 percent (see Table 1.6). Unfortunately, the data for many of the smallest islands is not current. In some cases, we are still forced to rely on data that is more than ten years old, making it virtually meaningless as an indicator of the current health of these islands. As was pointed out in last year's Annual Report (Randall & Brimacombe, 2020), labour force participation and unemployment in the Caribbean islands is especially problematic and remains so in 2019. Although some of this is attributable to the impact of episodic events such as hurricanes, the collapse of the plantation economy, and the global financial crisis, James et al. (2019) suggest that these higher unemployment rates have persisted for decades and are explained at least partly by broader structural characteristics such as a rigid wage setting that is inherent in the labour force institutions of many of the Eastern Caribbean countries they studied. As has been pointed out previously, one should be cautious about the relevance of these official labour force statistics to the well-being of some households. The informal economy is particularly important in the developing world, including on Small Island Developing States (SIDS), and the value of informal production and exchange is not captured in official labour force data (Baldacchino, 2020). Although it also has a tendency to be vulnerable to external events, informal economic production can be especially important in aiding recovery after natural disasters (Le Dé et al., 2018).

TABLE 1.7: **Human Development Index, 2019**

Island Country	Island Ranking	World Ranking	HDI
Ireland	1	2	0.955
Iceland	2	6	0.949
Singapore	3	11	0.938
United Kingdom	4	13	0.932
New Zealand	5	14	0.931
Japan	6	19	0.919
Malta	7	28	0.895
Cyprus	8	33	0.887
Bahrain	9	42	0.852
Brunei Darussalam	10	47	0.838
Palau	11	50	0.826
Barbados	12/13 (tied)	58 (tied)	0.814
Bahamas	12/13 (tied)	58 (tied)	0.814
Mauritius	14	66	0.804
Seychelles	15/16 (tied)	67 (tied)	0.796
Trinidad and Tobago	15/16 (tied)	67 (tied)	0.796
Cuba	17	70	0.783
Sri Lanka	18	72	0.782
Grenada	19/20 (tied)	74 (tied)	0.779
St. Kitts and Nevis	19/20 (tied)	74 (tied)	0.779
Antigua and Barbuda	21	78	0.778
St. Lucia	22	86	0.759
Dominican Republic	23	88	0.756
Fiji	24	93	0.743
Dominica	25	94	0.742
Maldives	26	95	0.740
St. Vincent and the Grenadines	27	97	0.738
Jamaica	28	101	0.734
Tonga	29	104	0.725
Philippines	30/31 (tied)	107 (tied)	0.718
Indonesia	30/31 (tied)	107 (tied)	0.718
Samoa	32	111	0.715
Marshall Islands	33	117	0.704

Island Country	Island Ranking	World Ranking	HDI
Cabo Verde	34	126	0.665
Kiribati	35	134	0.630
São Tomé and Príncipe	36	135	0.625
Micronesia, Fed. States	37	136	0.620
Vanuatu	38	140	0.609
Timor-Leste	39	141	0.606
Solomon Islands	40	151	0.567
Papua New Guinea	41	155	0.555
Comoros	42	156	0.554
Madagascar	43	164	0.528
Haiti	44	170	0.510

In comparison to last year's values, islands have performed relatively better according to the Human Development Index (HDI). Table 1.7 shows that only 2 of the 46 islands in this analysis (Madagascar and Haiti) are in the Low HDI category, a group where the 2019 HDI values are less than 0.550. Ireland has the highest HDI of this group and also has the second highest HDI of all world countries. This has been consistent for as long as the HDI has been used. For example, using the 2003 HDI data, McGillivray, Noorbakhsh, and Gwynne (2008) found that 20 of the 32 SIDS in their study had HDI values above the world average.

As expected, there is a strong relationship between development and HDI rank. Democratic, capitalist, developed island countries occupy the top ten ranked positions in Table 1.7. In an analysis of all SIDS, Fosu and Gafa (2020) show that despite the inherent vulnerabilities associated with small islands — including insularity, geographical location, small population size, and remoteness — many of them have performed quite well in terms of their economic and overall development, defying predictions. The diversity of SIDS might mean that a "one size fits all" development approach is not warranted. However, fundamentals such as openness to trade and export diversity, foreign direct investment, strong institutional capabilities and social cohesion, using physical and human capabilities to advantage, and a balance of public-private partnerships are often synonymous with positive economic and social development. McGillivray et al. (2008) also suggest that to overcome some of the methodological problems associated with the HDI, it should be accompanied by more subjective indicators of well-being.

TABLE 1.8: Consumer Price Index, Compared to Base Year of 2010

Continent	Island Country	2010	2015	2016	2017	2018	2019
Asia	Japan	100	104	104	104	105	106
	Singapore	100	113	113	113	114	114
	Indonesia	100	132	137	142	147	151
	Timor-Leste	100	143	141	142	142	146
	Brunei Darussalam	100	100	102	99	99	99
	Philippines	100	116	120	120	127	130
	Sri Lanka	100	131	134	147	150	156
	Maldives	100	132	135	136	136	136
	Bahrain	100	111	114	115	118	118
Europe	Cyprus	100	102	100	101	102	103
	Iceland	100	118	120	122	125	129
	United Kingdom	100	112	113	116	118	120
	Ireland	100	105	105	105	106	107
	Malta	100	108	109	110	112	114
Africa	Cabo Verde	100	109	107	108	109	111
	Madagascar	100	140	–	–	–	184
	Seychelles	100	121	120	123	128	130
	Mauritius	100	120	121	125	129	130
	Comoros	100	98	–	–	–	–
	São Tomé and Príncipe	100	154	162	172	185	-
Oceania	New Zealand	100	108	109	111	112	114
	Papua New Guinea	100	128	136	144	–	156
	Solomon Islands	100	125	126	127	–	133
	Vanuatu	100	107	108	111	–	117
	Fiji	100	116	121	125	130	132
	Tonga	100	110	113	121	–	–
	Samoa	100	108	110	112	116	118
	Nauru	–	–	–	–	–	–
	Micronesia, Fed. Sts.	–	–	–	112	–	–
	Marshall Islands	–	–	–	–	–	–
	Kiribati	–	99.5	–	–	–	–
	Tuvalu	–	–	–	–	–	–
	Palau	–	–	–	118	–	–
	Cook Islands	–	–	–	–	–	–
	Niue	–	–	–	–	–	–

Continent	Island Country	2010	2015	2016	2017	2018	2019
Caribbean/	Haiti	100	139	158	181	179	213
Americas	Dominican Republic	100	123	124	129	133	136
	Jamaica	100	141	144	151	156	163
	Bahamas, The	100	110	109	111	113	116
	St. Kitts and Nevis	100	106	105	106	105	–
	Antigua and Barbuda	100	110	110	112	114	–
	St. Vincent and the Grenadines	100	105	105	107	110	–
	St. Lucia	100	111	108	108	110	–
	Grenada	100	104	106	107	107	–
	Barbados	100	117	119	124	–	134
	Trinidad and Tobago	100	134	138	140	142	–
	Dominica	100	103	103	103	104	–

There remains a distinct divide between those islands facing low inflationary pressures and those that continue to experience substantial increases in the price of goods and services. As shown in the Consumer Price Index (CPI) on Table 1.8, most of the more developed islands have seen a modest (less than two percent) increase in their CPI from the previous year. Others, such as Indonesia, Timor-Leste, and Sri Lanka, have experienced about four to five percent inflation between 2018 and 2019. As is often the case with these economic development statistics, Haiti is once again an unfortunate outlier. The cost of a typical basket of goods and services in Haiti increased by almost 19 percent (from a base value of 179 to 213) in only one year. Extreme poverty, corruption, and the long-term consequences of earthquakes and hurricanes continue to plague Haiti. It has been estimated that one-third of Haiti's GDP is from remittances (Goonatilake & Reyes, 2019; United States Congressional Research Service, 2020). Haiti is among the lowest ranked states across a range of indicators, including governance, the perception of corruption, the HDI, gross domestic product per capita, and environmental performance, and most of this poor performance is attributable to ill-governance and corruption (Mombeuil, 2020).

TABLE 1.9: **Foreign Direct Investment, Net Current, 2019 (in 100 million USD)**

Continent	Island Country	2019 FDI Inflows	2019 FDI Outflows	Total FDI
Asia	Japan	14,552	226,648	241,200
	Singapore	92,081	33,283	125,364
	Indonesia	23,429	3,380	26,809
	Timor-Leste	75	–	–
	Philippines	4,996	658	5,654
	Sri Lanka	758	77	836
	Bahrain	942	-197	745
Europe	Cyprus	24,248	14,053	38,301
	Iceland	-241	513	272
	United Kingdom	59,137	31,480	90,617
	Ireland	78,234	18,103	96,337
	Malta	3,573	-7,163	-3,590
Africa	Cabo Verde	104	-21	83
	Madagascar	227	215	442
	Seychelles	126	8	134
	Mauritius	274	59	333
	Comoros	8	–	–
	São Tomé and Príncipe	57	-1	56
Oceania	New Zealand	5,427	-183	5,244
	Papua New Guinea	334	-484	-150
	Solomon Islands	30	5	35
	Vanuatu	41	1	42
	Fiji	321	-36	285
	Tonga	13	1	14
	Samoa	1	5	6
	Micronesia, Fed. Sts.	–	–	–
	Marshall Islands	4	0	4
	Kiribati	0	0	1
	Tuvalu	0.3	–	–
	Palau	22	–	–
	Cook Islands	8	0	8
Caribbean/	Haiti	75	0	75
Americas	Dominican Republic	2,825	-188	2,636
	Jamaica	665	446	1111
	Bahamas, The	637	148	785
	St. Kitts and Nevis	92	0	92

Continent	Island Country	2019 FDI Inflows	2019 FDI Outflows	Total FDI
	Antigua and Barbuda	139	11	151
	St. Vincent and Grenadines	113	-6	107
	St. Lucia	31	8	39
	Grenada	131	10	141
	Barbados	215	28	243
	Trinidad and Tobago	230	306	536
	Dominica	33	–	–

Foreign Direct Investment (FDI) is often used as an indicator of the economic health of a jurisdiction. However, it can be interpreted in many different ways. For instance, if the net FDI outflows are large, it implies that there are significant monies being generated internally and invested abroad, something that is an asset to that place. A large net inflow of capital implies that there may not be sufficient funds available within the jurisdiction to invest in projects, so capital has to be acquired from abroad, and is therefore a liability to that place. This is often the case in small islands heavily dependent on mass tourism. At the same time, a place that is able to attract FDI from abroad, for example to build up the tourist infrastructure, shows others that there is much less risk associated with investing in that place. Unlike previous versions of the Annual Reports on Global Islands, the Total FDI in this version of the Report is calculated differently (see Table 1.9). Since FDI Inflows are being treated as a liability, they are subtracted from the FDI Outflows (assets) to produce a Total FDI column. Therefore, in places like Japan, there is much more money leaving the island than coming into the island, while in Singapore there is much more foreign investment arriving than there is Singaporean money being invested abroad.

It is not surprising to see that in many of the tourism-dependent Caribbean islands listed in Table 1.9, FDI Inflows greatly exceed FDI Outflows. Looking at 17 islands between 1995 and 2018, Fauzel (2020) found that there was a strong correlation between the rate of FDI and tourist arrivals. This speaks to the importance of FDI for the economic development of islands. Indeed, in general the net inflows of FDI as a percentage of GDP are higher in SIDS than in other jurisdictions (Madhoo, 2021). This finding is consistent across other analyses of the positive impact of tourist-related FDI on small island economies (Roudi et al., 2019). At the same time, we need to be cautious about the long-term consequences of FDI on small island economies. For example, Minnis, Rolle, and Bethel-Bennett (2020) note that the Bahamas has always assumed that a model of FDI would answer all of the needs of the local communities, only to

TABLE 1.10: Rankings and Scores of Globalization Index, 2016

Island Country	Globalization Index				Economic globalization	Social globalization	Political globalization
	Island country ranking	World ranking	Score	Change in World ranking 2015-16			
United Kingdom	1	5	89.84	3	81.47	90.15	97.90
Ireland	2	17	84.47	-4	87.97	88.50	76.94
Singapore	3	20	83.62	3	94.00	88.42	68.43
Cyprus	4	35	79.14	3	84.28	86.45	66.69
Japan	5	37	78.59	-2	66.65	80.39	88.73
New Zealand	6	38	78.34	-6	70.28	86.89	77.85
Malta	7	39	77.79	-5	86.50	84.71	62.15
Mauritius	8	50	72.47	2	82.16	79.17	56.09
Iceland	9	53	72.34	-5	69.20	86.12	61.68
Bahrain	10	63	69.30	4	82.54	73.51	52.03
Philippines	11	72	67.41	2	57.48	61.79	82.96
Dominican Republic	12	73	67.35	13	56.91	71.76	73.37
Jamaica	13	77	66.21	-5	62.92	70.05	65.67
Trinidad and Tobago	14	79	65.69	-4	66.47	72.90	57.70
Brunei Darussalam	15	90	62.55	-8	66.80	71.22	50.30
Seychelles	16	91	62.50	-14	74.82	74.58	39.45
Indonesia	17	92	62.47	-9	48.10	52.02	87.28
Barbados	18	93	62.35	0	61.11	79.29	46.63
Cuba	19	94	62.15	4	–	49.25	79.43
Antigua and Barbuda	20	100	60.56	5	68.57	80.91	35.33
Sri Lanka	21	102	59.51	10	42.43	58.00	78.03
Fiji	22	107	58.13	-5	53.56	68.57	52.80
St. Lucia	23	108	57.16	7	65.29	74.37	37.58
Dominica	24	111	56.90	16	63.38	76.53	34.36
Cape Verde	25	112	56.78	25	57.43	66.71	47.52
Grenada	26	117	55.59	2	64.39	71.47	33.89
Bahamas	27	118	55.51	27	51.26	84.93	32.01
Samoa	28	134	52.98	-2	53.14	73.30	35.02
St. Vincent and the Grenadines	29	138	52.19	3	59.26	70.74	31.62
Papua New Guinea	30	140	51.94	-24	56.24	42.01	56.89
St. Kitts and Nevis	31	141	51.88	20	60.80	82.16	20.37
Vanuatu	32	148	50.70	-9	63.69	62.32	31.02
Tonga	33	149	50.52	2	59.38	71.85	25.85
Maldives	34	151	50.19	-13	62.25	70.25	21.90

Island Country	Globalization Index				Economic globalization	Social globalization	Political globalization
	Island country ranking	World ranking	Score	Change in World ranking 2015-16			
Madagascar	35	152	50.03	1	49.42	38.26	62.40
Micronesia, Fed. Sts.	36	157	47.73	-4	72.25	66,45	14.14
Timor-Leste	37	162	47.50	-37	56.27	52.41	35.74
Kiribati	38	167	46.57	-2	69.24	61.77	15.43
Palau	39	168	46.35	-19	57.52	80.00	12.61
Haiti	40	169	46.24	-19	49.22	41.37	48.30
Marshall Islands	41	173	45.53	-17	66.33	72.84	13.29
Solomon Islands	42	178	44.60	-1	52.20	53.01	31.25
São Tomé and Príncipe	43	184	41.99	21	49.78	54.32	24.38
Comoros	44	193	36.91	-14	29.55	45.21	35.03

see large companies take advantage of tax incentives and then leave once those tax holidays had ended. Moreover, and especially when recovering from natural disasters, Zhang and Managi (2020) found that internal financial investment policies were actually much more important in rebuilding Pacific small island economies than financial investment from external sources. In an analysis of the importance of tourism in assessing quality-of-life in the Caribbean islands, Puig-Cabrera and Foronda-Robles (2019) suggest that government investment in the tourism sector was four times more important than private investment.

Unfortunately, the data on globalization scores in Table 1.10 have not been updated since last year's version of the Annual Report. The description of these results (Randall & Brimacombe, 2020) and the longer discussion of the complexity associated with the impacts of globalization and innovation for islands need not be repeated here. Beyond that which is presented in the data and in last year's narrative description, there is growing evidence that globalization is leading to increased environmental degradation, something not addressed in this table (Didorally & Fauzel, 2020; Seetanah et al., 2019). For example, using a sample of 12 SIDS, Seetanah et al. (2019) found that increasing GDP per capita, something often associated with economic development and an open, global economy, has a significant negative impact on the level of CO_2 emissions. Globalization is also cited as a culprit in the growing problem of small island food insecurity, as urbanization, migration, and changes in trading patterns have distanced islanders from their self-sustaining agricultural systems and decreased the nutritional value of their food (Connell et al., 2019).

TABLE 1.11: Global Innovation Index, 2020

Island Country	Global Innovation Index				Innovation output Sub-Index		Innovation Input Sub-Index		Efficiency Ratio (2020)	
	Island Country Ranking	World Ranking	Score	Change in World Ranking, 2019-2020	World Ranking	Score	World Ranking	Score	World ranking	Score
United Kingdom	1	4	59.80	1	3	53.60	6	66.00	4	0.80
Singapore	2	8	56.6	0	15	43.00	1	70.20	44	0.60
Ireland	3	15	53.00	-3	11	46.40	20	59.70	9	0.80
Japan	4	16	52.70	-1	18	41.80	12	63.60	33	0.70
Iceland	5	21	49.20	-1	19	41.2	23	57.30	24	0.70
New Zealand	6	26	47	-1	33	33.1	19	61	58	0.5
Malta	7	27	46.4	-1	21	40.10	31	52.60	12	0.80
Cyprus	8	29	45.70	-1	26	38.20	30	53.20	25	0.70
Philippines	9	50	35.20	4	41	29.60	70	40.80	20	0.70
Mauritius	10	52	34.40	30	60	22.90	47	45.80	70	0.50
Brunei Darussalam	11	71	29.80	–	113	11.50	39	48.20	130	0.20
Jamaica	12	72	29.1	9	62	21	86	37.2	56	0.6
Bahrain	13	79	28.40	-1	89	14.70	63	42.10	112	0.30
Indonesia	14	85	26.5	–	76	17.80	91	35.10	69	0.50
Dominican Republic	15	90	25.10	-3	85	15.4	94	34.70	86	0.40
Sri Lanka	16	101	23.80	-12	83	16.30	107	31.30	64	0.50
Madagascar	17	115	20.40	6	100	13.40	125	27.40	72	0.50

Islands have traditionally been viewed as innovation deficient, largely because of their small size and isolation. However, as has been conveyed frequently over the past decade, the ability of island companies and entrepreneurs to be flexible or nimble, as well as being well-connected with the rest of the world, has allowed for a fairly high quality-of-life on many islands as measured by a range of indicators. For example, Sammut et al. (2020) found that on Malta there was a weak understanding of the concepts of social innovation and corporate social responsibility. However, when these concepts were explained, it became clear that most of those interviewed were already incorporating many aspects of these practices into their businesses. Social innovation is also apparent in the evolution of the tourism sector on small islands. Given the importance of this sector on many small islands, it should not be surprising to find that most of the research contributions on innovation as they pertain to small islands are focused on this sector. This innovation centres around the increasing role of local communities in leading the development of tourism and focusing on sustainability as both product and process to appeal to international tourists (Hampton & Jeyacheya, 2020).

Several islands in this group have made considerable improvements in their world Global Innovation ranking between 2019 and 2020. For example, Mauritius improved its ranking by 30 places, from 82nd to 52nd. Jamaica also improved compared to other world states, climbing nine places from 81st to 72nd place. Mauritius is an interesting example of an island that

has transformed itself over the past half century from being largely an exporter of raw materials to being a more diversified, trade-based economy with contributions from agriculture, manufacturing, financial services, tourism, and information technology (Seetanah et al., 2020; Sithanen, 2020; Tang et al., 2018). Looking forward, many researchers are using the framework of the Blue or Oceans Economy to encourage future sustainable development of Mauritius (Cervigni & Scandizzo, 2017; Mukhopadhyay et al., 2020; Scandizzo et al., 2018). That being said, the recent cargo ship oil spill off the southeastern tip of the island represents yet another example of the vulnerability of small islands to unanticipated events and their best intentions to manage the marine ecosystem to become more sustainable.

Tables 1.12 and 1.13 have been added to this year's version of the Annual Report to reflect the theme of public health on small islands. It is too early to assess the long-term ramifications of the COVID-19 pandemic on the development futures of small islands, although several of the chapters in this volume do address this topic specifically as well as the health of islanders more broadly. I would encourage the reader to explore the *COVID-19 Island Insights Series* page on the University of Prince Edward Island's Institute of Island Studies website (islandstudies.com/island-insights-series) to get a better picture of how islands have experienced the pandemic, and how governments have responded to the crisis given their islands' unique contexts.

The proportion of spending by governments on health services may be a surrogate indicator of the importance they place on public health. Table 1.12 (next page) shows that, for this subgroup, this figure ranges from highs of 23.6% in Japan and 20.0% in Ireland to a low of 3.4% in the Comoros Islands. As with other indicators of social and economic health, developed countries tend to spend a higher share of expenditures on health services while the least developed countries spend relatively less on health. However, this is not always the case. For example, Singapore spends only 12.6% on health services, while Palau and the Dominican Republic spend 17.4% and 15.6% respectively. One of the challenges of providing and accessing health services on small island states is the inability to take advantage of economies of scale. In effect, small populations and relative isolation mean that it is cost-prohibitive to offer higher level, more expensive health infrastructure, as measured in terms of facilities and skilled health professionals (Suzana et al., 2018). They also have limited absolute resources to respond to health crises, including those caused by pandemics (Murphy et al., 2020) and hurricanes (Shultz et al., 2019). Gratzer (2019) suggests that Pacific Island SIDS face a triple public health threat: the continuing persistence of high levels of communicable diseases, rising rates of non-communicable diseases, and health problems brought on by climate change. Where government health expenditures do take place, it is not uncommon for these extra resources to be oriented more towards curative care and less so on primary care such as immunization programs and efforts to decrease infant mortality rates (Purohit, 2021).

Pacific island countries have long been known to have the highest rates of obesity globally (Davis et al., 2004; Dillinger, 2021; Randall, 2020a). As seen in Table 1.12, adult obesity in this region often afflicts more than half of the population, while childhood obesity is a characteristic shared by between 20 to 30 percent of the youth in most Pacific

TABLE 1.12: Indicators of Public Health, various years

Continent	Island Country	Government Health Expenditures as % of Total Government Expenditures (%), 2017	Prevalence of Obesity among Children 5-19 yrs. (%) 2016	Prevalence of Obesity among Adults (%) 2016	Diabetes Prevalence (%) of Popn. aged 20-79 yrs. 2019
Asia	Japan	23.6	3.3	4.3	5.6
	Singapore	12.6	6.8	6.1	5.5
	Indonesia	8.7	6.1	6.9	6.3
	Timor-Leste	5.2	4.2	3.8	6.7
	Brunei Darussalam	6.2	14.1	14.1	13.3
	Phillippines	7.1	4.3	6.4	7.1
	Sri Lanka	8.5	4.8	5.2	10.7
	Maldives	21.8	7.4	8.6	–
	Bahrain	8.5	17.2	29.8	15.6
Europe	Cyprus	7.6	12.2	21.8	9.0
	Iceland	15.7	9.9	21.9	5.8
	United Kingdom	18.7	10.2	27.8	3.9
	Ireland	20.0	9.8	25.3	3.2
	Malta	16.5	13.4	28.9	8.3
Africa	Cape Verde	9.9	3.1	11.8	2.4
	Madagascar	15.0	1.8	5.3	4.5
	Seychelles	10.1	10.8	14.0	–
	Mauritius	10.0	4.4	10.8	22.0
	Comoros	3.4	2.8	7.8	12.3
	São Tomé and Príncipe	10.8	3.5	12.4	–
Oceania	New Zealand	19.3	13.6	30.8	6.2
	Papua New Guinea	9.2	9.8	21.3	–
	Solomon Islands	7.2	4.3	22.5	19
	Vanuatu	5.3	8.3	25.2	–
	Fiji	7.2	11.5	30.2	14.7
	Tonga	7.4	26.7	48.2	15.7
	Samoa	11.6	21.7	47.3	9.2
	Nauru	5.6	33.2	61.0	12
	Micronesia, Fed. Sts.	4.9	20.7	45.8	11.9
	Marshall Islands	9.5	26.6	52.9	30.5
	Kiribati	6.9	23.0	46.0	–
	Tuvalu	10	27.2	51.6	–
	Palau	17.4	31.4	55.3	–
	Cook Islands	5.7	32.2	55.9	–

Continent	Island Country	Government Health Expenditures as % of Total Government Expenditures (%), 2017	Prevalence of Obesity among Children 5-19 yrs. (%) 2016	Prevalence of Obesity among Adults (%) 2016	Diabetes Prevalence (%) of Popn. aged 20-79 yrs. 2019
	Niue	5.2	29.5	50.0	–
Caribbean/	Haiti	5.2	10.9	22.7	–
Americas	Dominican Republic	15.6	15.0	27.6	8.6
	Jamaica	13.3	13	24.7	11.3
	Bahamas, The	11.3	17.3	31.6	8.8
	St. Kitts and Nevis	8.2	12.3	22.9	13.3
	Antigua and Barbuda	9.5	11.5	18.9	13.1
	St. Vincent and the Grenadines	9.5	12.4	23.7	11.6
	St. Lucia	8.9	8.8	19.7	–
	Grenada	9	10.7	21.3	10.7
	Barbados	9.1	12.3	23.1	13.4
	Trinidad and Tobago	11.2	11.1	18.6	11.0
	Dominica	7.3	15.0	27.9	11.6

islands. Obesity leads directly and indirectly to many other health problems, including diabetes, cardiovascular problems, and hypertension (Hawley & McGarvey, 2015; World Health Organization, Regional Office for South-East Asia, 2008). It has been estimated that more than 138 million people in the western Pacific are living with diabetes (Nanditha et al., 2016) and, although the data are not complete, Table 1.12 shows that almost one-third of all adults in the Marshall Islands have diabetes. Although not all health problems are related to obesity, adverse health outcomes from obesity are particularly severe in children and pregnant women suffering from iodine deficiencies and anemia, an iron deficiency that leads to fatigue and higher levels of maternal death and cognitive problems in children. Hughes and Marks (2009) and the World Health Organization (WHO; World Health Organization, Regional Office for South-East Asia, 2008) found higher levels of vitamin A deficiencies on many of these islands, leading to higher rates of death from malaria, measles, and diarrhea, as well as maternal deaths.

The high level of obesity among islanders is the result of a complex set of factors. In the past century, the lifestyles of islanders, and especially those in the Pacific, have evolved from subsistence farming and fishing and a diet consisting largely of traditional root crops, vegetables, fruits, and seafood. Following greater contact after World War II, islanders in the Pacific adopted diets of refined or processed foods that were high in fats and sodium, such as rice, sugar, flour, soda, beer, and fast-food, initially brought to the islands by the military (Cassels, 2006; Cheng, 2010; Davis et al., 2004).

TABLE 1.13: Health Indicators (various dates) and Net Migration (2017)

Continent	Island Country	Cause of Death by Communicable Diseases, Maternal, Prenatal, or Nutrition Conditions (% of total deaths) 2016	Net Migration 2017	Hospital Beds (per 1,000 people)
Asia	Japan	13	357,800	13.4 (2012)
	Singapore	23	135,142	2.4 (2015)
	Indonesia	21	-494,777	1.2 (2015)
	Timor-Leste	46	-26,924	5.9 (2010)
	Brunei Darussalam	8	-901	2.7 (2015)
	Philippines	25	-335,758	1.0 (2011)
	Sri Lanka	8	-489,932	3.6 (2012)
	Maldives	8	56,851	4.3 (2009)
	Bahrain	7	239,000	2.0 (2014)
Europe	Cyprus	4	25,000	3.4 (2013)
	Iceland	4	1,900	3.2 (2014)
	United Kingdom	8	1,303,250	2.8 (2013)
	Ireland	5	118,020	2.8 (2013)
	Malta	6	4,501	4.7 (2014)
Africa	Cape Verde	20	-6,709	2.1 (2010)
	Madagascar	46	-7,500	0.2 (2010)
	Seychelles	12	-1,000	3.6 (2011)
	Mauritius	7	-12,079 (2012)	3.4 (2011)
	Comoros	47	-10,000	2.2 (2010)
	São Tomé and Príncipe	34	-8,401	2.9 (2011)
Oceania	New Zealand	5	74,403	2.8 (2013)
	Papua New Guinea	36	-3,999	4.0 (1990)
	Solomon Islands	22	-7,998	1.4 (2012)
	Vanuatu	19	600	1.7 (2008)
	Fiji	10	-31,008	2.3 (2011)
	Tonga	12	-3,999	2.6 (2010)
	Samoa	12	-14,013	1.0 (2005)
	Palau	–	–	4.8 (2010)
	Kiribati	29	-3,999	1.9 (2015)
	Nauru	–	–	5.0 (2010)

Continent	Island Country	Cause of Death by Communicable Diseases, Maternal, Prenatal, or Nutrition Conditions (% of total deaths) 2016	Net Migration 2017	Hospital Beds (per 1,000 people)
	Micronesia, Fed. Sts.	19	-2,999	3.2 (2009)
	Marshall Islands	–	–	2.7 (2010)
	Tuvalu	–	–	5.6 (2001)
	Cook Islands	–	–	–
	Niue	–	–	–
Caribbean/	Haiti	30	-175,000	0.7 (2013)
Americas	Dominican Republic	16	-150,000	1.6 (2014)
	Jamaica	11	-56,658	1.7 (2013)
	Bahamas, The	17	4,999	2.9 (2013)
	St. Kitts and Nevis	–	–	2.3 (2012)
	Antigua and Barbuda	12	943 (2012)	3.8 (2014)
	St. Vincent and the Grenadines	13	-1,000	2.6 (2016)
	St. Lucia	10	4,360	1.3 (2013)
	Grenada	12	-1,000	3.7 (2014)
	Barbados	13	-397	5.8 (2014)
	Trinidad and Tobago	9	-3,999 (2016)	3.0 (2014)
	Dominica	–	–	3.8 (2012)

As shown in Table 1.13, several of the smaller and least developed islands have the highest rates of death by communicable disease and poor nutrition. Almost one-half of the deaths in Madagascar, Timor-Leste, and the Comoros are as a result of these causes, while the rate in European islands never exceeds 10 percent of all deaths. Infectious diseases such as cholera, tuberculosis, and gastroenteritis represent substantial problems for many small islands (Roberts et al., 2021). As a result of their relative isolation and manageable access points, some of these islands may initially be protected from infectious diseases, including from SARS-CoV-2, the virus that causes the disease we know as COVID-19. However, once communicable diseases do reach the islands, outbreaks may be more severe because of an absence of trained health professionals and facilities (WHO, 2017). In other words, these underlying health problems

Atauro Island in Timor-Leste. Smaller and less developed islands have the highest rates of death by communicable disease and poor nutrition. Almost one half of the deaths in Timor-Leste are a result of these causes. Atauro Island tourism photo

combined with poorer access to respiratory health care means that the potential outcomes may eventually be bleaker than elsewhere.

It has also been noted that health outcomes are closely linked to climate change and extreme weather events. For example, saltwater intrusion in the water table affects the local food supply, and the damage to public infrastructure from hurricanes and earthquakes increases the likelihood of contracting communicable and non-communicable diseases (Savage et al., 2020; Shultz et al., 2019). Given what we have just discussed, we should expect to find that the number of hospital beds, standardized by population, tends to be lower on the smallest, most vulnerable, islands (see Table 1.13). However, this is not the case. Although Japan stands out from all of the other islands here as having the highest number of hospital beds per 1,000 people, there is no clear pattern linked to development or size among the other islands on this list. In fact, Timor-Leste, a country that often has among the poorest health outcomes across a range of indicators, has the second greatest number of hospital beds per 1,000 people.

Although not directly related to public health, net migration is another indicator of the structural changes taking place on islands. Some countries, such as Japan, the United Kingdom, and New Zealand, are facing an aging labour force and the need to replace this labour through international immigration. Those countries that have a rapidly growing younger population, including Indonesia, the Philippines, and Sri

Japan stands out from all of the other islands as having the highest number of hospital beds per 1,000 people. However, the majority of hospitals in Japan are private hospitals, and most do not have the staff and equipment to treat COVID-19 patients. Reuters

Lanka, use emigration as a labour market and political "safety valve". The absence of employment opportunities in these countries forces young people to seek jobs elsewhere. Additionally, in 2017, several island countries on this list faced extreme weather events that have prompted out-migration. Several Caribbean islands in particular (e.g., Haiti, Dominican Republic), experiencing significant damage from hurricanes, saw a mass exodus of people.

THOSE COUNTRIES THAT HAVE a rapidly growing younger population, including Indonesia, the Philippines, and Sri Lanka, use emigration as a labour market and political "safety valve". The absence of employment opportunities in these countries forces young people to seek jobs elsewhere.

TABLE 1.14: **Trade (% of GDP) in 2010, 2019**

Continent	Island Country	2010	2019
Asia	Japan	28.6	37.0 (2018)
	Singapore	369.7	319.0
	Indonesia	46.7	37.0
	Timor Leste	150.9	63.0 (2018)
	Brunei Darussalam	95.4	109.0
	Philippines	71.4	69.0
	Sri Lanka	46.4	52.0
	Maldives	143.0	136.0
	Bahrain	120.5	151.0 (2018)
Europe	Cyprus	109.1	143.0
	Iceland	94.1	86.0
	United Kingdom	58.6	64.0
	Ireland	189.4	239.0
	Malta	307.4	231.0
Africa	Cape Verde	94.4	-
	Madagascar	57.9	60.0
	Seychelles	201.9	155.0
	Mauritius	113.5	93.0
	Comoros	39.6	43.0 (2018)
	São Tomé and Príncipe	–	-
Oceania	New Zealand	58.2	56.0 (2018)
	Papua New Guinea	–	-
	Solomon Islands	130.5	98.0 (2015)
	Vanuatu	99.4	98.0 (2014)
	Fiji	121.7	-
	Tonga	72.7	98.0 (2018)
	Samoa	80.6	91.0
	Palau	127.1	123.0 (2018)
	Kiribati	91.5	98.0 (2018)
	Nauru	99.0	123.0 (2018)
	Micronesia, Fed. Sts.	-	101 (2018)
	Marshall Islands	-	126 (2018)

Continent	Island Country	2010	2019
	Tuvalu	-	-
	Cook Islands	-	-
	Niue	-	-
Caribbean/	Haiti	–	74.0
Americas	Dominican Republic	56.0	53.0
	Jamaica	80.9	89.0
	Bahamas, The	78.7	77.0 (2018)
	St. Kitts and Nevis	76.2	123.0
	Antigua and Barbuda	104.7	90.0 (2016)
	St. Vincent and the Grenadines	84.0	85.0 (2012)
	St. Lucia	99.8	-
	Grenada	73.1	110.0
	Barbados	95.9	84.0
	Trinidad and Tobago	85.8	-
	Dominica	88.1	140.0

Last year's Annual Report (Randall, 2020b) articulated the significance of trade in goods, services, and people (e.g., tourism) to the economy of island nations. All other things being equal, smaller political jurisdictions tend to rely on trade to a greater degree than larger entities. This is primarily a result of the greater degree of economic specialization and truncation of domestic supply linkages. In other words, on smaller islands, producers and consumers are more likely to import goods and services because they are not able to find them locally. So, for example, the value of imports and exports in Singapore is more than three times (319%) the total Gross Domestic Product of this city state that specializes in financial services, while Japan's trade is only 37% of its GDP. In fact, despite its reputation as a major world exporter of electronics, automobiles, and services, Japan is the most closed economy — at least according to this indicator — from among the group of islands listed in Table 1.14.

SECTION 2: SUBNATIONAL ISLAND JURISDICTIONS

Those who have followed the political dimension of island studies will be well aware of the significance of subnational island jurisdictions (SNIJs) as well as their relative lack of attention in most discussions of international relations and global diplomacy. In international forums, mainland nations rarely speak from the perspective of the needs and interests of their coastal or inland (fresh water) islands. Therefore, the voices of islanders are more difficult to be heard, both domestically and internationally. Contributing to this absence on the international platform, it is extremely difficult to find comparable statistics on SNIJs. Despite these limitations, this section of the chapter shines a light on a small group of thirteen of these islands. I would strongly encourage the reader to explore the work of Stuart (2009) and Watts (2009) as primers to develop a better understanding of the characteristics and diverse nature of the thousands of SNIJs that exist worldwide.

TABLE 1.15: **Area of island, in km² (Subnational)**

Bali, Indonesia	5,780
Gotland, Sweden	3,184
Greenland, Denmark	2,166,086
Hainan Island, China	35,354
Hawai'i, USA	28,311
Java, Indonesia	138,794
Jeju, South Korea	1,826
Luzon, Philippines	104,688
Okinawa, Japan	2,281
Phuket, Thailand	576
Prince Edward Island, Canada	5,660
Taiwan, China	36,197
Tasmania, Australia	68,401

Table 1.15 lists the land areas of these thirteen SNIJs. Unlike island states, the marine jurisdictions of these islands may be subsumed within federal boundaries, especially if these are near the coasts of their mainland political metropoles. The marine jurisdictions of islands and archipelagos that are far from their mainlands may take on greater importance in providing these nations with larger areas of strategic and economic importance. For example, the island archipelago of Hawai'i may only be 28,311 square kilometres in land area but, when the state's marine Exclusive Economic Zone (EEZ) is added, the total area of this American state is almost 1.6 million sq. km., or more than twice the size of the American state of Texas.

TABLE 1.16: Most Recent Population Characteristics (Subnational islands)

	Year	Population	Population Density (people/km²) 2019	Population Growth Rate % over Previous Year
Bali, Indonesia	2020	4,380,800	750	1.21 (2016)
Gotland, Sweden	2019	59,686	19.0	0.99
Greenland, Denmark	2019	56,225	0.14	0.40
Hainan Island, China	2018	9,340,000	270.2 (2017)	1.17
Hawai'i, USA	2019	1,415,872	211.8 (2010)	0.40
Java, Indonesia	2019	136,279,700	1,153	1.24
Jeju, South Korea	2016	661,190	357.6	3.02
Luzon, Philippines	2015	11,218,177	480	1.95
Okinawa, Japan	2019	1,455,799	1,206.2 (2015)	3 (2015)
Phuket, Thailand	2019	540,200	994.8	0.31
Prince Edward Island, Canada	2020	159,625	25.1 (2016)	1.50
Taiwan, China	2020	23,831,767	673	0.18
Tasmania, Australia	2020	524,170	7.24	0.29

The other feature that must be taken into consideration when comparing land areas of jurisdictions is their respective carrying capacities. From an ecological perspective, carrying capacity is "the population of a given species that can be supported indefinitely in a given habitat without permanently damaging the ecosystem upon which it depends" (Rees, 1992, p. 125). When applied to the human environment, this definition becomes messier. Islands that come closest to the ecological definition of carrying capacity would practice a self-sufficient agricultural lifestyle incorporating little trade with the rest of the world. Some small islands, such as Java and Bali in Indonesia, appear to have incredibly high carrying capacities, with large populations densely living in a small land area. However, because they require goods and services that are produced elsewhere and imported to these islands, their true "ecological footprint" is much greater than the small land area of these islands. At the other extreme, Greenland's small population of just over 56,000 depends primarily on the livelihood that can be earned from the nearby fisheries as well as transfer payments from Denmark. Most of the interior of Greenland is not able to support a large, self-sufficient population.

TABLE 1.17: Birth and Death Rates, various dates (Subnational islands)

	Year	Crude Birth X / 1,000 people	Crude Death X / 1,000 people	Fertility Rate X / 1,000 people
Bali, Indonesia	2017	18.42	7.17 (2015)	2.10
Gotland, Sweden	2018	11.00	9.00	1.85 (2017)
Greenland, Denmark	2018	15.00	9.00	2.00
Hainan Island, China	2017	14.73	6.01	1.50
Hawai'i, USA	2019	11.90	9.00	1.8 (2018)
Java, Indonesia	2019	17.75	6.51	2.34 (2017)
Jeju, South Korea	2013	9.10	5.70	1.43
Luzon, Philippines	2018	20.55	5.90	2.58
Okinawa, Japan	2013	–	1.96	1.82 (2019)
Phuket, Thailand	2016	17.38	5.54	–
Prince Edward Island, Canada	2019	8.40	8.90	1.47
Taiwan, China	2018	7.7	7.33	1.15
Tasmania, Australia	2019	10.92	8.71	1.78 (2018)

Compared with last year's Annual Report, the birth and death rates of many of these island territories or states is narrowing (see Table 1.17). Prince Edward Island in Canada is the only island on this list that has a negative natural growth rate (i.e., where the death rate exceeds the birth rate) but several others, including Taiwan and Gotland, Sweden, are approaching that demographic tipping point. Of course, because this does not include migration, the figures in this table should not be used to suggest that the overall populations of these jurisdictions are decreasing or growing more slowly.

As is the case in many parts of the world, life expectancies for both males and females continue to increase, although the trend is slowing and is lower for SIDS than it is for other mainland jurisdictions (WHO, 2017). Table 1.18 suggests that the longest life expectancies are in the most industrialized and urbanized islands. The differences in life expectancies among these islands and those in the more rural, agriculture-oriented islands are striking. For example, there is an approximately ten year difference in life expectancies (for both males and females) between a group which includes Gotland, Okinawa, and Prince Edward Island, and islands such as Java and Luzon, Philippines. According to Day, Pearce, and Dorling (2008), the primary explanations for the variations across country groupings are health spending per capita, the availability of hospital beds, and access to affordable medicines (including measles

TABLE 1.18: **Life Expectancy, by Gender (Subnational islands)**

	Year	Life Expectancy (females, in years)	Life Expectancy (males, in years)
Bali, Indonesia	2019	76.5	74.4
Gotland, Sweden	2018	84.0	81.0
Greenland, Denmark	2020	76.3	70.7
Hainan Island, China	2018	79.0	75.0
Hawai'i, USA	2014	83.9	78.4
Java, Indonesia	2019	74	70.5
Jeju, South Korea	2013	86.6	78.6
Luzon, Philippines	2010	75.4	68.7
Okinawa, Japan	2015	87.4	80.3
Phuket, Thailand	2018	81	73.0
Prince Edward Island, Canada	2018	83.7	79.8
Taiwan, China	2020	83.9	77.5
Tasmania, Australia	2019	83.6	79.5

vaccination for infants). Connell and Aldrich (2020) suggest that interpreting fertility, mortality, and, by extension, life expectancy rates is less important than migration, and overseas island territories that have been experiencing the highest levels of out-migration are doing so because the islanders are seeking better health care, education, and economic opportunities. They also note that across most health indicators, these semi-autonomous states have better health outcomes than independent island states but poorer health outcomes than their mainland metropoles (Connell & Aldrich, 2020).

TABLE 1.19: **Rural and Urban Share of Population, various dates (Subnational islands)**

	Year	Rural %	Urban %
Bali, Indonesia	2020	39.8	70.2
Gotland, Sweden	2019	58.6	41.4
Greenland, Denmark	2019	13.0	87.0
Hainan Island, China	2017	42.0	58.0
Hawai'i, USA	2019	19.4	80.6
Java, Indonesia	2019	44.0	56.0
Jeju, South Korea	2019	0.0	100.0
Luzon, Philippines	2019	53.0	47.0
Okinawa, Japan	2018	12.2	87.8
Phuket, Thailand	2019	67.9	32.1
Prince Edward Island, Canada	2016	60.0	40.0
Taiwan, China	2020	21.5	78.5
Tasmania, Australia	2016	31.9	68.1

It is not uncommon for islands to have very high rates of urbanization. Several islands and archipelagos in this grouping (e.g., Jeju, Okinawa, Greenland, and Hawai'i) have more than eighty percent of their population living in urban areas. Others have experienced rapid urbanization in a short period of time. For example, in 2010, Hainan's population was split almost evenly between urban and rural. By 2017, the urban population was 58% of the total. In the case of Phuket, Thailand, although still a very rural island, rapid growth in tourism has contributed to coastal urbanization over the past decade (Wongsai et al., 2018). In the Malay Peninsula, including Java and Bali in particular, it appears that the islands are more densely populated and urban than the surrounding Indonesian mainland (Rimmer & Dick, 2018). Much of this urbanization can be explained by easier access to the international shipping lines and the gateway role of these centres. Those islands whose economies are more dependent on agricultural activities would naturally have a higher rural population. As with the other data for SNIJs, we need to be cautious in comparing this measure across islands. Some sites define urban centres as including cities and towns, while others have a much higher minimum population threshold level for urban.

TABLE 1.20: Labour Force Characteristics, various dates (Subnational)

	Year	Labour Force	Labour Force Participation Rate %	Unemployment Rate %
Bali, Indonesia	2018	–	98.6	–
Gotland, Sweden	2016	27,000	63.3	6.4
Greenland, Denmark	2015	26,840	74.1	9.1
Hainan Island, China	2016	5,581,400	61.00	2.3 (2018)
Hawai'i, USA	2019	665,000	97.3	2.7
Java, Indonesia	2018	–	94.2	–
Jeju, South Korea	2019	560,000	69.3	2.1
Luzon, Philippines	–	–	–	–
Okinawa, Japan	2015	629,394	93.7	4.4 (2016)
Phuket, Thailand	2013	167,883	99.5	0.5
Prince Edward Island, Canada	2019	85,500	66.5	8.8
Taiwan, China	2019	11,946,000	59.2	3.7
Tasmania, Australia	2019	268,400	56.9	6.7

Labour force statistics, and, in particular, unemployment rates, have become critically important as indicators of the economic well-being of jurisdictions and families. In particular, measures such as the GDP may be simpler to use and more important to gauge macroeconomic change, as well as for business and government, but are less relevant to the day-to-day lives of residents. However, the state of being unemployed directly touches the lives of individuals. Table 1.20 provides two linked labour force characteristics for SNIJs: the participation rate and the unemployment rate. In general, for those places that have provided recent statistics, unemployment rates are relatively low, with the highest rates being on Prince Edward Island and Greenland. Unfortunately, as is the case with many other basic indicators associated with semi-autonomous islands, data are often missing or so outdated as to be irrelevant. Although more recent data may be available within local or regional government offices, differences in how these are calculated makes these exceptionally difficult to compare. In addition, as was noted earlier, the informal economy is often critically important at the level of the household on many islands, and particularly on those that are still developing. Official labour force statistics rarely incorporate those working in the informal economy as part of the officially reported labour force.

TABLE 1.21: **Gross Domestic Product, various dates (Subnational)**

	Year	Gross Domestic Product (GDP) in USD	GDP per capita in USD
Bali, Indonesia	2020 Q3	3,907,600,000	2,650
Gotland, Sweden	2016	2,371,259,730	40,853
Greenland, Denmark	2018	3,051,626,390	54,471
Hainan Island, China	2017	66,801,652,000	7,236
Hawai'i, USA	2019	83,510,000,000	58,981
Java, Indonesia	2010	94,956,634,949	1,149
Jeju, South Korea	2013	11,710,628,500	39,813
Luzon, Philippines	–	–	–
Okinawa, Japan	2011	36,006,697,656	25,700
Phuket, Thailand	2009	591,930,556	1,762
Prince Edward Island, Canada	2019	6,076,800,000	33,719
Taiwan, China	2019	610,690,000,000	25,873
Tasmania, Australia	2019	225,441,647,200	41,979

Despite all of the recognized shortcomings of the use of the Gross Domestic Product (GDP) as an indicator of the developmental health of a place, these values in Table 1.21 are still effective surrogate indicators of the absolute size of island economies. According to the total GDPs in Table 1.21, several of the SNIJs are among the largest economies in the world; often larger than the value of production for the island countries listed in Table 1.4. Perhaps more meaningful in gauging the economic wealth of these islands is their GDP per capita. For example, although Bali produced approximately 3.9 billion USD in goods and services in 2020 compared to just over 3 billion USD in Greenland, the GDP per capita in Bali is only 1/20th of the GDP per capita in Greenland (i.e., $2,650 versus $54,471). Of course, more important than this is the income earned per household and the purchasing power of that income.

If we take this argument even further and are truly interested in pursuing island and global sustainability, we need to critically question the use of GDP. Pursuing limitless economic growth without also understanding the need for meaningful employment and equity in a world of finite resources, a climate crisis, and a global pandemic is short-sighted and unlikely to allow us to meet many of the other economic, social, and environmental ambitions associated with the Sustainable Development Goals (SDGs) (Coscieme et al., 2020).

SOURCES AND NOTES FOR TABLES

Table 1.1:
Population and Population Growth Rates from the CIA World Factbook; Population Density from the World Bank (http://data.worldbank.org/indicator/en.PoP.dnst). A dashed line in a cell (–) indicates missing values.

Table 1.2:
From the CIA World Factbook, various links (www.cia.gov/library/publications/the-world-factbook).
No information was available for Niue.

Table 1.3:
From the CIA World Factbook.

Table 1.4:
From the World Bank (http://data.worldbank.org).

Table 1.5:
From the World Bank (http://data.worldbank.org).

Table 1.6:
Data on the Labour Force and Participation Rate are from the World Bank.
Unemployment rates are from the CIA World Factbook. Note: Values listed may not necessarily correspond to the data from these sources because the latter are updated when new information is available.
Data for Antigua and Barbuda is from the Ministry of Finance and Corporate Governance, Government of Antigua and Barbuda, *2018 Labour Force Survey* (https://statistics.gov.ag/wp-content/uploads/2020/03/2018-Labour-Force-Survey-Bulletin.pdf).
Data for the Cook Islands is from the Ministry of Finance & Economic Management, Government of the Cook Islands, *Economic Activity and Labour Force 2015* (http://www.mfem.gov.ck/statistics/census-and-surveys/economic-activity-and-labour-force).
Data for Dominica is from Central Statistics Office, Government of the Commonwealth of Dominica (https://stats.gov.dm/subjects/labour-force).
Data for Niue is from Statistics and Immigration Office, Ministry of Finance and Planning, Government of Niue, *Household and Population Census 2017* (https://niue.prism.spc.int/download/35/census/1460/2019-niue-pophh-census-2-0.pdf).
Data for Seychelles is from National Bureau of Statistics, Seychelles (https://www.nbs.gov.sc/downloads/economic-statistics/employment-earnings).

Table 1.7:
From the United Nations Development Program (UNDP)
(http://www.hdr.undp.org/en/content/latest-human-development-index-ranking).

Table 1.8:
From the World Bank. A dashed line in a cell (–) indicates that the values have not been updated since 2015.
Data for the Maldives from National Bureau of Statistics, Republic of Maldives, *Consumer Price Index, Annual 2019* (http://statisticsmaldives.gov.mv/nbs/wp-content/uploads/2020/02/CPI-Annual-2019.pdf).

Table 1.9:
From the United Nations Conference on Trade and Development (UNCTAD), *World Investment Report 2019* (https://unctad.org/en/PublicationsLibrary/wir2020_en.pdf).
Note: In previous editions of this report, FDI has been calculated as cumulative outflows and inflows. However, in this edition, net current FDI is calculated as the difference between outflows and inflows as per the approach of the of the United Nations (outlined at https://www.un.org/esa/sustdev/natlinfo/indicators/methodology_sheets/global_econ_partnership/fdi.pdf).

Table 1.10:
From the KOF Swiss Economic Institute (http://globalization.kof.ethz.ch).
Note: No updated data available in 2020.

Table 1.11:
Global Innovation Index and Innovation Efficiency Ratio indicators from http://www.globalinnovationindex.org/analysis-indicator.
Innovation input and output ratios taken from 'Ranking' section of the *Global Innovation Index 2020 Report* (http://www.globalinnovationindex.org/gii-2020-report).

Table 1.12:
Government Health Expenditures, Prevalence of Obesity among Children, and Prevalence of Obesity among Adults from the World Health Organization (WHO) *World Health Statistics 2020* report (http://apps.who.int/iris/bitstream/handle/10665/332070/9789240005105-eng.pdf).
Diabetes Prevalence data from the World Bank (http://data.worldbank.org/indicator/SH.STA.DIAB.ZS).

Table 1.13:
From the World Bank (http://data.worldbank.org/topic/8 and http://data.worldbank.org/indicator/SH.DTH.COMM.ZS).

Table 1.14:
From the World Bank (http://data.worldbank.org/indicator/NE.TRD.GNFS.ZS).

Table 1.15:
From individual island pages in Wikipedia. Note: Table data was not updated in this edition.

Table 1.16:
Population data in this table are from the following sources:
Bali: http://www.knoema.com
Gotland: http://www.gotland.se/86116 and http://www.citypopulation.de/php/sweden-gotland.php?adm2id=0980
Greenland: http://data.worldbank.org and http://www.tradingeconomics.com/greenland/population-density-people-per-sq-km-wb-data.html
Hainan: http://www.statista.com/statistics/279013/population-in-china-by-region
Hawai'i: http://census.hawaii.gov/home/population-estimate and http://files.hawaii.gov/dbedt/census/popestimate/2018_county_char_hi_file/Pop_char_hi_2018_final.pdf
Java: http://www.citypopulation.de/indonesia-mU.html
Jeju: http://www.knoema.com
Luzon: https://psa.gov.ph/content/population-region-iii-central-luzon-based-2015-census-population
Okinawa: http://www.pref.okinawa.jp/toukeika/estimates/estidata.html#2019
Phuket: http://www.citypopulation.de/php/thailand-prov-admin.php?adm2id=83
Prince Edward Island: http://www.princeedwardisland.ca/sites/default/files/publications/pt_pop_rep_1.pdf and http://www12.statcan.gc.ca/census-recensement/2016/as-sa/fogs-spg/Facts-pr-eng.cfm?Lang=Eng&GK=PR&GC=11&TOPIC=1
Taiwan: http://www.worldometers.info/world-population/taiwan-population
Tasmania: http://stat.abs.gov.au/itt/r.jsp?databyregion and http://www.population.net.au/population-of-tasmania

Table 1.17:
Data for Bali and Phuket from http://www.knoema.com
Data for Greenland from the World Bank.
Data for Gotland (Sweden), Java (Indonesia), and Luzon (Philippines) are national statistics from http://www.knoema.com and the World Bank.
Data for Okinawa from Asahi (Fertility rate: http://www.asahi.com/ajw/articles/13436216) and Knoema (Death rate: http://knoema.com/atlas/Japan/Okinawa/topics/Demography/Population/Live-births).
Data for Jeju was carried forward from previous 2013 data.
Data for Hawai'i from Knoema (Birth and Death rates: http://www.knoema.com) and Centers for Disease Control and Prevention (CDC), USA (Fertility rate: https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68_13-508.pdf).
Data for Prince Edward Island from Statistics Canada (http://www.statcan.gc.ca/pub/84f0210x/2009000/t005-eng.htm; Crude Death Rate: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1310070801).
Data from Taiwan from Statista (Birth and Death rates: http://www.statista.com) and MacroTrends (Fertility rate: http://www.macrotrends.net/countries/TWN/taiwan/fertility-rate).
Data from Tasmania from Statista (Fertility rate: http://www.statista.com/statistics/612607/australia-tasmania-fertility-rate), and Birth and Death rates were calculated based on data from the Tasmanian Registry of Births, Deaths and Marriages, Government of Tasmania (https://www.justice.tas.gov.au/bdm/statistics).

Table 1.18:
Data in this table are from the following sources:
Bali: http://www.healthdata.org/indonesia-bali
Gotland: Based on country data (Sweden) from the World Bank.
Greenland: CIA World Factbook.
Hainan: Based on country data (China) from the World Bank.
Hawai'i: http://vizhub.healthdata.org/subnational/usa
Java: http://www.healthdata.org/indonesia-west-java
Jeju: http://www.knoema.com

Luzon: Based on country data (Philippines), carried forward from last edition (Randall & Brimacombe, 2020).
Okinawa: http://stats-japan.com/t/tdfk/okinawa
Phuket: Based on country data (Thailand) from the World Bank.
Prince Edward Island: Statistics Canada
(https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1310014001&pickMembers%5B0%5D=1.1&pickMembers%5B1%5D=3.3&pickMembers%5B2%5D=4.8&cubeTimeFrame.startYear=2012+%2F+2014&cubeTimeFrame.endYear=2016+%2F+2018&referencePeriods=20120101%2C20160101).
Taiwan: CIA World Factbook.
Tasmania: From the Australian Bureau of Statistics.

Table 1.19:
Data on this table are from the following sources:
Bali: http://www.bps.go.id/statictable/2014/02/18/1276/persentase-penduduk-daerah-perkotaan-hasil-proyeksi-penduduk-menurut-provinsi-2015---2035.html
Gotland: http://www.citypopulation.de/en/sweden/gotland
Greenland: The World Bank.
Hainan: http://www.stats.hainan.gov.cn and http://documents1.worldbank.org/curated/en/611801579691592298/pdf/Revised-Rapid-Poverty-and-Social-Impact-Assessment-Hainan-Health-Sector-Reform-Project-P171064.pdf
Hawai'i: http://data.ers.usda.gov/reports.aspx?StateFIPS=15&StateName=Hawaii&ID=17854
Java: Based on country data (Indonesia) from the World Bank
(http://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS?locations=ID).
Jeju: http://www.citypopulation.de/en/southkorea/admin/39__jeju_do/
Luzon: Based on country data (Philippines) from the World Bank
(https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS?locations=PH).
Okinawa: http://www.citypopulation.de/en/japan/okinawa/
Phuket: Calculated from list of 'urban areas' at http://www.citypopulation.de/en/thailand/southern/83__phuket
Prince Edward Island: http://www12.statcan.gc.ca/census-recensement/2016/as-sa/fogs-spg/Facts-pr-eng.cfm?Lang=Eng&GK=PR&GC=11&TOPIC=1
Taiwan: http://www.worldometers.info/demographics/taiwan-demographics
Tasmania: http://www.citypopulation.de/en/australia/tasmania/

Table 1.20
Data on this table are from the following sources:
Bali: https://www.ceicdata.com/en/indonesia/employment-rate-by-province/employment-rate-bali
Gotland: http://www.gotland.se/104323
Greenland: http://www.indexmundi.com/greenland/labor_force.html
Hainan: http://www.stats.hainan.gov.cn/2017nj/indexeh.htm and http://www.knoema.com
Hawai'i: http://dbedt.hawaii.gov/economic/qser/labor-force/
Java: https://www.ceicdata.com/en/indonesia/employment-rate-by-province/employment-rate-java and
http://www.hiwi.org/gsipub/index.asp?docid=417
Jeju: From Statista: Labor force (http://www.statista.com/statistics/1065262/south-korea-labor-force-participation-rate-by-province), Unemployment (http://www.statista.com/statistics/973984/south-korea-unemployment-by-province), and Working age population (http://www.statista.com/statistics/1065234/south-korea-working-age-population-by-province).
Okinawa: http://knoema.com/atlas/Japan/Okinawa/topics/Labor
Phuket: http://knoema.com/atlas/Thailand/Phuket-Province
Prince Edward Island: http://www.princeedwardisland.ca/sites/default/files/publications/fin_statcan_labo_1.pdf
Taiwan: http://eng.stat.gov.tw
Tasmania: http://www.knoema.com

Table 1.21:
Data for Bali, Gotland, Hainan, Java, Jeju, Luzon, Okinawa, Phuket, and Taiwan are from http://www.knoema.com
Other SNIJ data are from the following sources:
Greenland: https://data.worldbank.org
Hawai'i: https://www.statista.com/statistics/248023/us-gross-domestic-product-gdp-by-state/
Prince Edward Island:
http://www.princeedwardisland.ca/en/information/finance/gross-domestic-product-gdp-income-and-expenditure
Tasmania: http://www.treasury.tas.gov.au/documents/state-accounts.pdf

REFERENCES

Anthonj, C., Tracy, J. W., Fleming, L., Shields, K. F., Tikoisuva, W. M., Kelly, E., Thakker, M., Cronk, R., Overmars, M., & Bartram, J. (2020). Geographical inequalities in drinking water in the Solomon Islands. *Science of the Total Environment, 712,* 135241.

Baldacchino, G. (2020). Small states: Challenges of political economy. In G. Baldacchino & A. Wivel (Eds.), *Handbook on the politics of small states* (pp. 70-82). Edward Elgar.

Capelli, C., & Vaggi, G. (2013). *A better indicator of standards of living: The Gross National Disposable Income* (DEM Working paper no. 062). Department of Economics and Management, University of Pavia, Berlin, Germany. http://economiaweb.unipv.it/wp-content/uploads/2017/06/DEMWP0062.pdf

Cassels, S. (2006). Overweight in the Pacific: Links between foreign dependence, global food trade, and obesity in the Federated States of Micronesia. *Globalization and Health, 2*, 10. https://doi.org/10.1186/1744-8603-2-10

Cervigni, R., & Scandizzo, P. L. (2017). *The ocean economy in Mauritius: Making it happen, making it last*. World Bank.

Cheng, M. H. (2010). Asia-Pacific faces diabetes challenge. *The Lancet, 375*(9733), 2207-2210.

Connell, J., & Aldrich, R. (2020). Migration: Holding on to home? In J. Connell & R. Aldrich (Eds.), *The ends of empire* (pp. 291-320). Palgrave Macmillan.

Connell, J., Lowitt, K., Saint Ville, A., & Hickey, G. M. (2019). Food security and sovereignty in small island developing states: Contemporary crises and challenges. In J. Connell & K. Lowill (Eds.), *Food security in small island states* (pp. 1-24). Springer.

Conroy, J. D. (2010). A national policy for the informal economy in Papua New Guinea. *Pacific Economic Bulletin, 25*(1), 189-204.

Coscieme, L., Mortensen, L. F., Anderson, S., Ward, J., Donohue, I., & Sutton, P. C. (2020). Going beyond gross domestic product as an indicator to bring coherence to the Sustainable Development Goals. *Journal of Cleaner Production, 248*, 119232.

Davis, J., Busch, J., Hammatt, Z., Novotny, R., Harrigan, R., Grandinetti, A., & Easa, D. (2004). The relationship between ethnicity and obesity in Asian and Pacific islander populations: A literature review. *Ethnicity & Disease, 14*(1), 111-118.

Day, P., Pearce, J., & Dorling, D. (2008). Twelve worlds: A geo-demographic comparison of global inequalities in mortality. *Journal of Epidemiology & Community Health, 62*(11), 1002-1010.

Didorally, Z., & Fauzel, S. (2020, September 25-27). *The impact of foreign direct investment on environmental degradation: A case study for Mauritius* [Conference presentation]. Second international conference on applied research in business, management and economics (BMECONF), Berlin, Germany (Virtual conference). https://www.dpublication.com/wp-content/uploads/2019/09/60022.pdf

Dillinger, J. (2021). *The most obese countries in the world*. World Atlas. Retrieved February 9, 2021, from http://www.worldatlas.com/articles/29-most-obese-countries-in-the-world.html

Fauzel, S. (2020). FDI and tourism futures: A dynamic investigation for a panel of small island economies. *Journal of Tourism Futures,* Advance online publication. https://doi.org/10.1108/JTF-05-2018-0026

Fosu, A. K., & Gafa, D. W. (2020). *Development strategies for the vulnerable Small Island Developing States (SIDS)* [Working paper no. 202073]. Department of Economics, University of Pretoria, South Africa.

Gaffney, C., & Eeckels, B. (2020). COVID-19 and tourism risk in the Americas. *Journal of Latin American Geography, 19*(3), 308-313.

Goonatilake, R., & Reyes, O. D. (2019). Sustainability of economy: Inflation vs interest rates. *Journal of Business & Economic Policy, 6*(4), 1-12. http://doi.org/10.30845/jbep.v6n4a1

Hampton, M. P., & Jeyacheya, J. (2020). Tourism-dependent small islands, inclusive growth, and the Blue Economy. *One Earth, 2*(1), 8-10.

Hawley, N. L., & McGarvey, S. T. (2015). Obesity and diabetes in Pacific Islanders: The current burden and the need for urgent action. *Current Diabetes Reports, 15*(5), 29.

Hughes, R. G., & Marks, G. (2009). Against the tide of change: Diet and health in the Pacific islands. *Journal of the American Dietetic Association, 109*(10), 1701-1703.

James, R., Lafeuillee, J., Li, M. X., Salinas, M. G., & Savchenko, Y. (2019). *Explaining high unemployment in ECCU Countries* (Working paper no. WP/19/144). International Monetary Fund.

Le Dé, L., Rey, T., Leone, F., & Gilbert, D. (2018). Sustainable livelihoods and effectiveness of disaster responses: A case study of tropical cyclone Pam in Vanuatu. *Natural Hazards, 91*(3), 1203-1221.

Madhoo, Y. N. (2021). Saving small islands: Does institutional quality matter? In J. L. Roberts, S. Nath, S. Paul, & Y. N. Madhoo (Eds.), *Shaping the future of small islands: Roadmap for sustainable development* (pp. 361-386). Palgrave Macmillan.

McGillivray, M., Noorbakhsh, F., & Gwynne, B. (2008). Methodological issues in the construction of composite indices: A case study of the human development index. In L. Briguglio, G. Cordina, N. Farrugia, & C. Vigilance (Eds.), *Small states and the pillars of economic resilience* (pp. 385-401). Islands and Small States Institute, University of Malta & The Commonwealth Secretariat.

McMurray, C. (2019). Population growth in Solomon Islands: Signs of slowing? *Pacific Economic Bulletin, 4*(2), 39-46.

McMurray, C. (2018). Pacific population: Sustained growth and increasing pressure. In P. Thomas (Ed.), *Development Bulletin no. 80: Pacific reflections: Personal perceptions of aid and development* (pp.119-123). Development Studies Network, Australian National University.

McNabb, D. E. (2019). The population growth barrier. In D. E. McNabb (Ed.), *Global pathways to water sustainability.* Palgrave Macmillan.

Minnis, J., Rolle, S., & Bethell-Bennett, I. (2020). The impact of tourism development on small island communities in The Bahamas. In J. Minnis, S. Rolle, & I. Bethell-Bennett (Eds.), *Tourism development, governance and sustainability in The Bahamas*. Routledge. http://doi.org/10.4324/9781003032311-4

Mombeuil, C. (2020). Institutional conditions, sustainable energy, and the UN sustainable development discourse: A focus on Haiti. *Journal of Cleaner Production, 254,* 120153.

Mukhopadhyay, R., Loveson, V. J., Iyer, S. D., & Sudarsan, P. K. (2020). *Blue Economy of the Indian Ocean: Resource economics, strategic vision, and ethical governance*. CRC Press.

Murphy, M. M., Jeyaseelan, S. M., Howitt, C., Greaves, N., Harewood, H., Quimby, K. R., Sobers, N., Landis, R. C., Rocke, K. D., & Hambleton, I. R. (2020). COVID-19 containment in the Caribbean: The experience of small island developing states. *Research in Globalization, 2,* 100019.

Murray, C. J., Abbafati, C., Abbas, K. M., Abbasi, M., Abbasi-Kangevari, M., Abd-Allah, F., Abdollahi, M., Abedi, P., Abedi, A., Abolhassani, H., Aboyans, V., Abreu, L. G., et al. (2020). Five insights from the Global Burden of Disease Study 2019. *The Lancet, 396*(10258), 1135-1159. https://doi.org/10.1016/S0140-6736(20)31404-5

Nanditha, A., Ma, R. C. W., Ramachandran, A., Snehalatha, C., Chan, J. C. N., Chia, K. S., Shaw, J. E., & Zimmet, P. Z. (2016). Diabetes in Asia and the Pacific: Implications for the global epidemic. *Diabetes Care, 39*(3), 472-485.

Puig-Cabrera, M., & Foronda-Robles, C. (2019). Tourism, smallness and insularity: A suitable combination for quality of life in small island developing states (SIDS)? *Island Studies Journal, 14*(2), 61-80.

Purohit, B. C. (2021). Disease, environment and health policy response. In J. L. Roberts, S. Nath, S. Paul, & Y. N. Madhoo (Eds.), *Shaping the future of small islands: Roadmap for sustainable development* (pp. 155-181). Palgrave Macmillan.

Randall, J. E. (2020a). *An introduction to Island Studies*. Island Studies Press and Rowman & Littlefield.

Randall, J. E. (Ed.). (2020b). *The 21st Century Maritime Silk Road. Islands Economic Cooperation Forum: Annual report on global islands 2019*. Foreign Affairs Office of Hainan Province, P.R. China, & Island Studies Press.

Randall, J. E., & Brimacombe, A. (2020). The state of island economies and development in 2019. In J. E. Randall (Ed.), *The 21st Century Maritime Silk Road. Islands Economic Cooperation Forum: Annual report on global islands 2019* (pp. 15-55). Foreign Affairs Office of Hainan Province, P.R. China, & Island Studies Press.

Rimmer, P., & Dick, H. (2018). Gateways, corridors and peripheries. In R. Padawangi (Ed.), *Routledge handbook of urbanization in Southeast Asia* (pp. 9-30). Routledge.

Roberts, J. L., Nath, S., Paul, S., & Madhoo, Y. N. (2021). Overview, emerging issues and a roadmap for SIDS. In J. L. Roberts, S. Nath, S. Paul, & Y. N. Madhoo (Eds.), *Shaping the future of small islands: Roadmap for sustainable development* (pp. 405-416). Palgrave Macmillan.

Roudi, S., Arasli, H., & Akadiri, S. S. (2019). New insights into an old issue — Examining the influence of tourism on economic growth: Evidence from selected small island developing states. *Current Issues in Tourism, 22*(11), 1280-1300.

Sammut, N., Spiteri, D., Sammut, J. P., Coppola, I., Lepre, R., & Lebrun, B. (2020). The status of sustainable social innovation in Malta. *Sustainability, 12*(10), 4238.

Savage, A., McIver, L., & Schubert, L. (2020). The nexus of climate change, food and nutrition security and diet-related non-communicable diseases in Pacific island countries and territories. *Climate and Development, 12*(2), 120-133.

Scandizzo, P. L., Cervigni, R., & Ferrarese, C. (2018). A CGE model for Mauritius ocean economy. In F. Perali & P. Scandizzo (Eds.), *The new generation of computable general equilibrium models* (pp. 173-203). Springer.

Seetanah, B., Sannassee, R. V., & Nunkoo, R. (Eds.). (2020). *Mauritius: A successful small island developing state*. Routledge.

Seetanah, B., Sannassee, R. V., Fauzel, S., Soobaruth, Y., Giudici, G., & Nguyen, A. P. H. (2019). Impact of economic and financial development on environmental degradation: Evidence from small island developing states (SIDS). *Emerging Markets Finance and Trade, 55*(2), 308-322.

Shultz, J. M., Kossin, J. P., Shepherd, J. M., Ransdell, J. M., Walshe, R., Kelman, I., & Galea, S. (2019). Risks, health consequences, and response challenges for small-island-based populations: Observations from the 2017 Atlantic hurricane season. *Disaster Medicine and Public Health Preparedness, 13*(S1), 5-17.

Sithanen, R. (2020). Running the next development lap in Mauritius. In B. Seetanah, R. V. Sannassee, & R. Nunkoo (Eds.), *Mauritius: A successful small island developing state* (pp. 179-194). Routledge.

Stuart, K. (2009). A listing of the World's sub-national island jurisdictions, In G. Baldacchino & D. Milne (Eds.), *The case for non-sovereignty: Lessons from sub-national island jurisdictions* (pp. 11-20). Routledge.

Suzana, M., Walls, H., Smith, R., & Hanefeld, J. (2018). Achieving universal health coverage in small island states: Could importing health services provide a solution? *BMJ Global Health, 3*(1), e000612.

Tang, V. T., Shaw, T. M., & Holden, M. G. (Eds.). (2018). *Development and sustainable growth of Mauritius*. Palgrave MacMillan.

United States Congressional Research Service. (2020). *Haiti's political and economic conditions* [Report no. R45034]. https://crsreports.congress.gov/product/pdf/R/R45034

Verschuur, J., Koks, E., & Hall, J. (2020). *The implications of large-scale containment policies on global maritime trade during the COVID-19 pandemic*. arXiv.org: Economics. https://arxiv.org/abs/2010.15907

Wang, H., Abbas, K. M., Abbasifard, M., Abbasi-Kangevari, M., Abbastabar, H., Abd-Allah, F., Ahmed, A., Abolhassani, H., Abreu, L. G., Abrigo, M. R. M., Abushouk, A. I., Adabi, M., et al. (2020). Global age-sex-specific fertility, mortality, healthy life expectancy (HALE), and population estimates in 204 countries and territories, 1950–2019: A comprehensive demographic analysis for the Global Burden of Disease Study 2019. *The Lancet, 396*(10258), 1160-1203. https://doi.org/10.1016/S0140-6736(20)30977-6

Watts, R. (2009). Island jurisdictions in comparative constitutional perspective. In G. Baldacchino & D. Milne (Eds.), *The case for non-sovereignty: Lessons from sub-national island jurisdictions* (pp. 21-39). Routledge.

Wittersheim, E. (2011). Paradise for sale. The sweet illusions of economic growth in Vanuatu. *Journal de la Société des Océanistes, 133*, 323-332.

Wongsai, S., Keson, J., & Wongsai, N. (2018). Land use change monitoring and urban expansion of Phuket. *VRU Research and Development Journal Science and Technology, 13*(3), 65-74.

World Health Organization. (2017). *Small island developing states: Health and WHO: Country presence profile* (WHO doc. no. WHO/CCU/17.08). World Health Organization. https://apps.who.int/iris/handle/10665/255804

World Health Organization, Regional Office for South-East Asia. (2008). *Health in Asia and the Pacific*. https://apps.who.int/iris/handle/10665/205227

Zhang, D., & Managi, S. (2020). Financial development, natural disasters, and economics of the Pacific small island states. *Economic Analysis and Policy, 66*, 168-181.