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COVID-19 pandemic in the Arctic and Subarctic

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1. Introduction

The Arctic region, located around the North Pole, is distinctive in the Earth's ecosystems. Even though exact coordinates of the Arctic region are available, demographic demarcation of that region with its southern boundary is challenging. The southern region from the Arctic is widely known as the Subarctic region, the demographic demarcation of which is also tough to establish. A circle of global landmasses and sizable islands encircles the frosty Arctic Ocean over the North Pole that includes the northern part of Asia (Siberian Region of Russia), Scandinavia of the European continent, and a part of Canada and the whole Alaska of North America along with large islands and other landmasses like Nova Zemlya (Russia), Spitsbergen (Norway), Iceland, Finland, Greenland (Denmark), and the Queen Elizabeth Islands (Canada). All these areas were the primary focus of this chapter. Except for the United States and Denmark, where Alaska and Greenland were considered, respectively, the complete demographics of all other countries in these areas, consisting of Canada, Finland, Iceland, Norway, Russia, and Sweden, were considered even though part of their area is within the Arctic and Subarctic regions. For this present study, the cut-off date was considered as December 12, 2020.

The Arctic and Subarctic regions are homelands of the northern Indigenous group of people, each group has its own cultural distinction. They survive the cold by wrapping themselves in thick fur and consuming primarily greasy seal flesh.

Eskimos are a distinct tribe of Siberia, the Arctic North American area, and Greenland, who live in an igloo made of solid snow, hunt the tundra, and fish the frozen Arctic seas in kayaks. The word Eskimo has come to symbolize an idealized picture of Eskimos as fur-clad hunters who dwell in igloos rather than a diverse set of polar civilizations who share their far-northern latitude. Today, native populations of Arctic Siberia and Alaska want to be referred to as “Indigenous,” meaning “the people.”

Apart from them, there are many other Subarctic Indigenous people groups, some of which include Dene, Cree, Ojibwa, Atikamekw, Innu, and Beothuk from Canada; Chukchi, Evens, Enets, Nganasan, Selkup, and Koryaks from Russia; Finns and Karelians from Finland; Icelanders from Iceland; Norwegians from Norway; Sami from Sweden; Inuit and Kalaallit from Greenland (Denmark); and Aleut, Cup’ik, Cup’ig, Central Alaskan Yup’ik, Alutiiq, and Yupik from Alaska (US).

Historical data state that different pandemics have seriously impacted this region in the past, and the mortality rates were relatively high as compared to the South Polar Region ([Arctic Council, 2020](#)). Arctic region also hosts huge, vulnerable elderly persons, and most of them suffer from diabetes ([Jørgensen, 2010](#)). Besides, the remote part of the Arctic region can only be accessed either by air or sea as surface transportation is relatively low and difficult. Moreover, unpredictable weather conditions result in low visibility, causing hindrance in transportation services like airplanes, ships, and even cars.

According to Arctic Athabaskan Council, both the physical, mental, and spiritual health of the inhabitants of the Arctic have been deviously affected due to the pandemic as they have been facing months of isolation, stress, and trauma ([Barry et al., 2020](#)).

Almost after 2 months of the birth of COVID-19, the first case of Coronavirus was recorded on February 21 in the Arctic region of Norway ([Petrov et al., 2020](#)). At the beginning of March, cases were registered in Iceland, Finland, and Alaska. By the third week of March, it spread over the Arctic region of Russia. According to research carried out by Petrov and his fellow researchers, the whole Arctic region had 53,056 confirmed COVID cases with 548 deaths till July 1, 2020.

Trends and dimensions of the Coronavirus in the Arctic have been decided with the help of accurate data. Iceland, Northern Finland, the Northern part of Norway, and the Faroe Islands experienced COVID cases in the initial phase, but it was eradicated early by imposing strict quarantine rules and other restrictions. On the other hand, northern parts of Sweden and Alaska succumbed to the recent onslaught of COVID and remained infected for a comparably longer duration.

In Arctic Russia, the pandemic stuck late but had a fetal effect with a high mortality rate. The Arctic region of Canada and Greenland had no such significant effect of Coronavirus ([Fig. 11.1](#)).

Arctic and Subarctic regions are focused in this study as these areas are much more challenging with minimum medical and transportation facilities. A significant number of the population are Indigenous and live in their old traditional way. The majority of Indigenous people live in small groups and are isolated from the mainstream. Their livelihoods are also very traditional, consisting of hunting, fishing, etc. Sometimes they are directly or indirectly dependent on tourism that has taken the biggest hit in this pandemic, which will increase their sufferings in time to come.

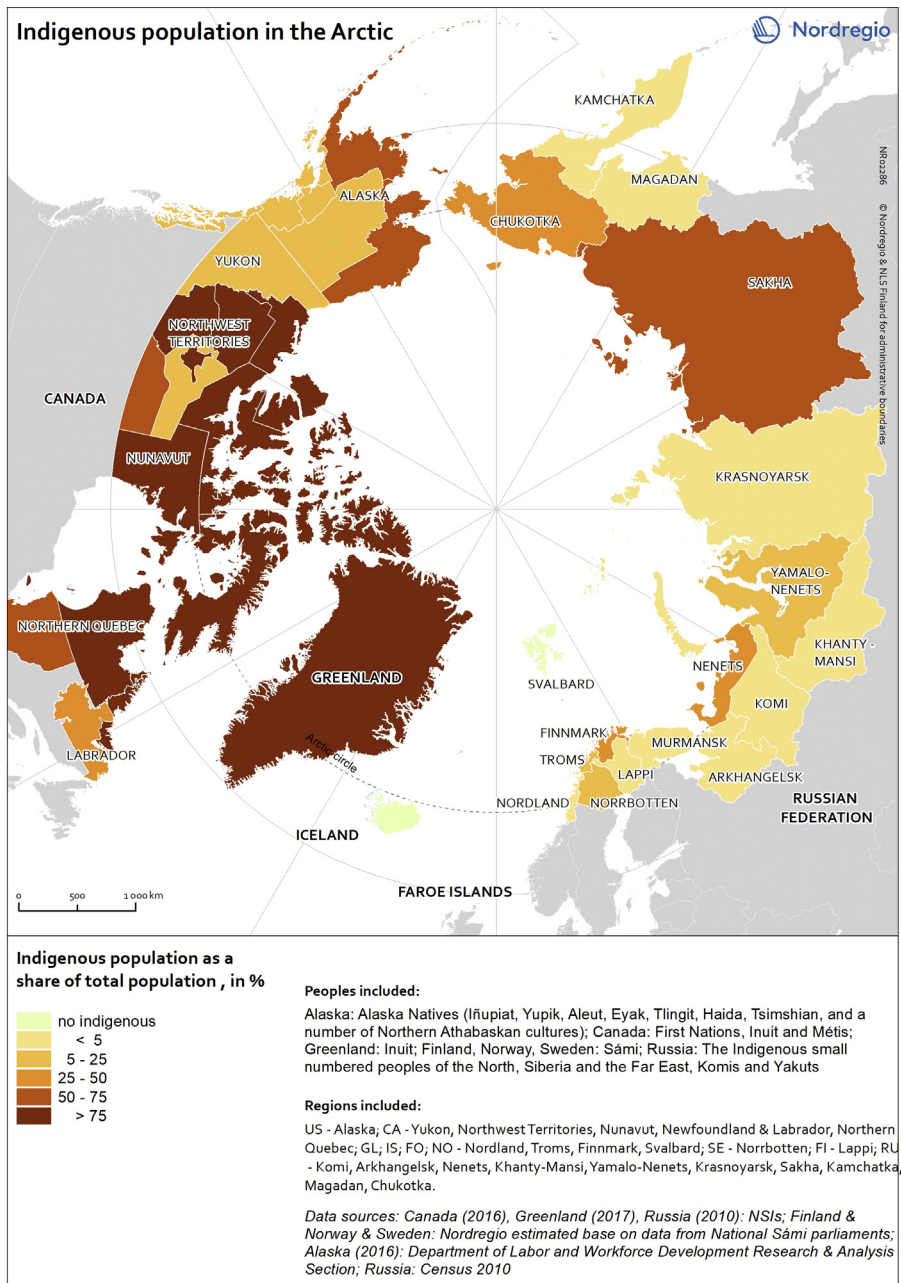


FIGURE 11.1 Map showing the distribution of Indigenous people throughout the Arctic and Subarctic regions.
 Map Source: Nordregio at archive.nordregio.se.

2. COVID-19 action plan

Since the start of the COVID-19 epidemic, many nations have responded differently by executing their unique action plans. Countries such as Iceland, Norway, Finland, Sweden, and Denmark followed the action plan regulated by the European Centre for Disease Prevention and Control (ECDC) and implemented measures to prevent and control COVID-19 while limiting the adverse effects of these measures, primarily lockdowns. This “monitoring and evaluation framework” was developed to provide strategic information to authorities, policy-makers, and implementers to assist them in decision-making and information on how to measure different indicators. Decision-makers should use the results of “monitoring and evaluation” to implement policies and monitor their impact (WHO, 2020).

Step I: Coordination, planning, and monitoring at the national level

Step II: Communication about risk and community involvement

Step III: Tracking, fast reaction teams, and case investigations are all in place

Step IV: Vaccine monitoring, including policy, coverage, safety, effectiveness, and acceptance

Step V: Strategy and procedure in testing (WHO component “national laboratories”)

Step VI: Infection prevention and control

Step VII: Case administration

Step VIII: Preserving critical health-care services and infrastructure

These eight main steps have many subcategories and branches to implement and fight this pandemic. A severe need to assess the impacts and results of the abovementioned precautionary measures on the hygiene-related situation of COVID-19 and identify gaps to improve further the response was perceived. International efforts are focusing on containing the epidemic and preventing it from spreading further. In the case of Canada, the scenario is quite similar to the EU (European Union) and EEA (European Economic Area) countries. The Public Health Agency of Canada has been working with provinces, territories, and international partners, including the World Health Organization, to actively monitor the situation. Despite the willingness to keep schools and childcare centers open, and avoid long and extended lockdowns, Canada is not able to ease restrictions much. Some of the measures are still getting enforced in Canada in the winter of 2020, including lockdown, extended school vacations, voluntary school attendance, with its priority of maintaining the capacity of health care and public health system, protect vulnerable populations, and provide additional support where possible. Canadian international borders and other transport systems are also not operating in their full capacity to date.

For the United States (Alaska), the situation is not similar to Canada as they opened the majority of businesses with fewer restrictions on many areas including on travel that resulted in more cases and fatalities.

Russia also implemented a variety of measures to control this pandemic. In addition to standard measures like lockdowns, restrictions, ban on the majority of events throughout the country that includes international athletic events as well, they also created a prize fund for standout doctors fighting the virus, canceled duties on imported medications and medical supplies, and increased coronavirus test kit production. They also created an online alert system for coronavirus updates.

Almost all of those countries implemented different types of economic measures based on their financial strength, starting from stimulus packages for unemployment, pensions, benefit advances to economic support packages for small businesses and corporate of badly impacted sectors.

3. Discussion

Among the countries considered in this study, Russia has the highest population, which is 1.85% of the total world population. They have 3.18% of the world's COVID cases to date. Canada is next with 0.48% of the world's total population and 0.71% of the world's COVID cases. Then in the third position is Sweden, with its number being 0.13% of the world's total population and 0.55% of cases (Fig. 11.2). Next in order are Finland, Norway, Alaska, Iceland, and Greenland, all their information mentioned in Table 11.1.

If the number of cases per population is a major key factor for measurement of how badly the present **COVID-19 situation** is, then the condition of Alaska is worse, followed by Sweden, Russia, and Iceland. Canada, Norway, and Finland are in comparatively better condition. Greenland is performing the best among them mainly because of its less and sparse population. Graph of this can be seen in Fig. 11.3.

It has been more than one and half years now since the Coronavirus pandemic has started to spread worldwide. During the initial spread that began worldwide early in 2020, experts predicted the second wave of this pandemic like other virus pandemics in history. This prediction has become a reality with almost all the countries discussed here are in the grip of a second virus wave after a first wave in and around the summer of 2020, followed by a flattening or plateauing of the curve for some period of time. Some regions are even experiencing higher peaks in the second wave compared to their first wave, probably a representation of complacency among people of those regions (Figs. 11.4 and 11.5).

In Alaska pandemic started relatively late during the month of June–July of 2020, with the first wave not being so severe. In August–September, the daily cases showed an improvement, indicating an improving situation. But after the month of September, the number of

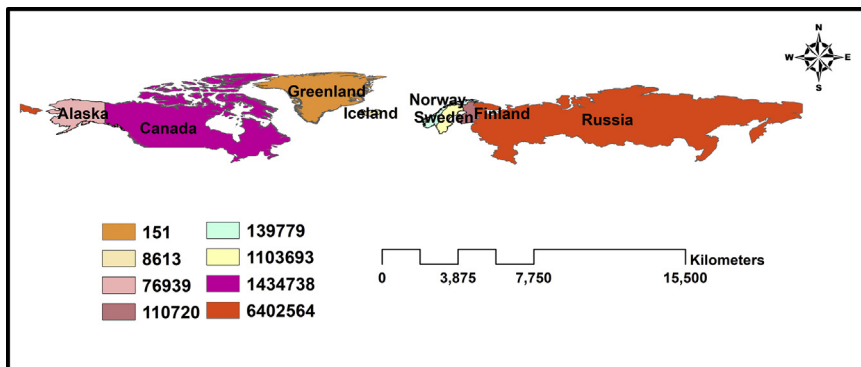


FIGURE 11.2 Map showing the countrywise total number of cases.

TABLE 11.1 Number of COVID-19 cases.

Country	Number of cases	Population	Worldwide population %	Worldwide case count %
Alaska, US	76,939	724,357	0.0092	0.0383
Canada	1,434,738	37,742,154	0.4787	0.7144
Iceland	8613	341,243	0.0043	0.0043
Norway	139,779	5,421,241	0.0688	0.0696
Finland	110,720	5,540,720	0.0703	0.0551
Russia	6,402,564	145,934,462	1.8509	3.1879
Sweden	1,103,693	10,099,265	0.1281	0.5495
Greenland, Denmark	151	56,770	0.0007	0.0001

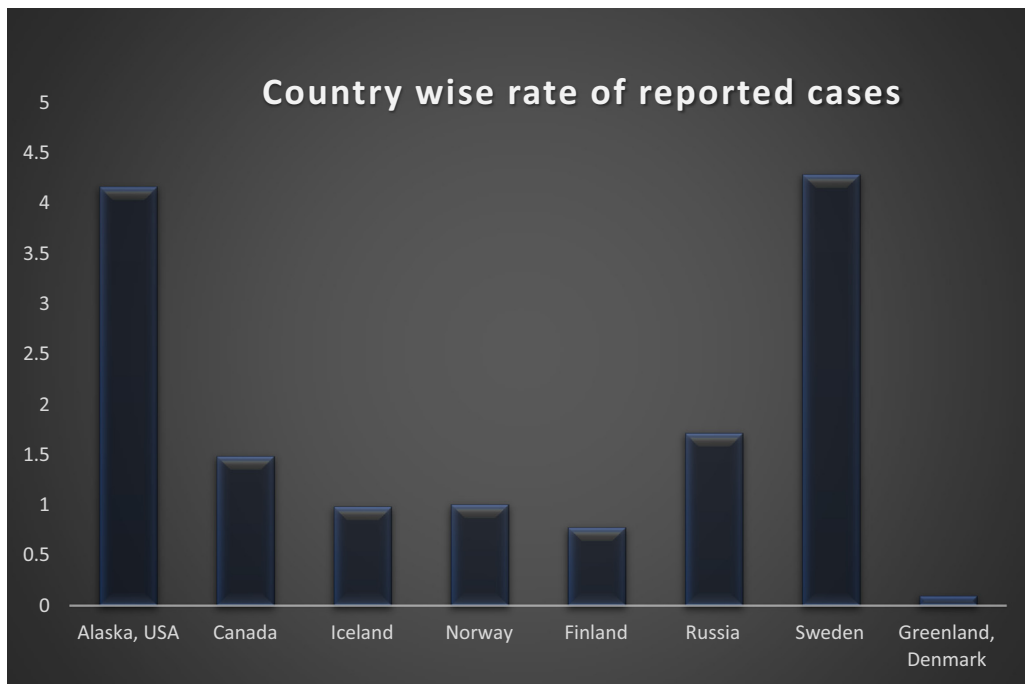


FIGURE 11.3 Graph showing a comparison of countrywise COVID-19 cases per population.

daily cases **was** starting to increase substantially, making the second wave deadly. To date, the number of daily cases is on the rise, resulting in a deteriorating situation.

In Sweden, the first wave was from April to June, followed by a flattened period from June to September. From October to date, there is a sharp increase in the graph, indicating a second wave that is much more severe than the first wave.

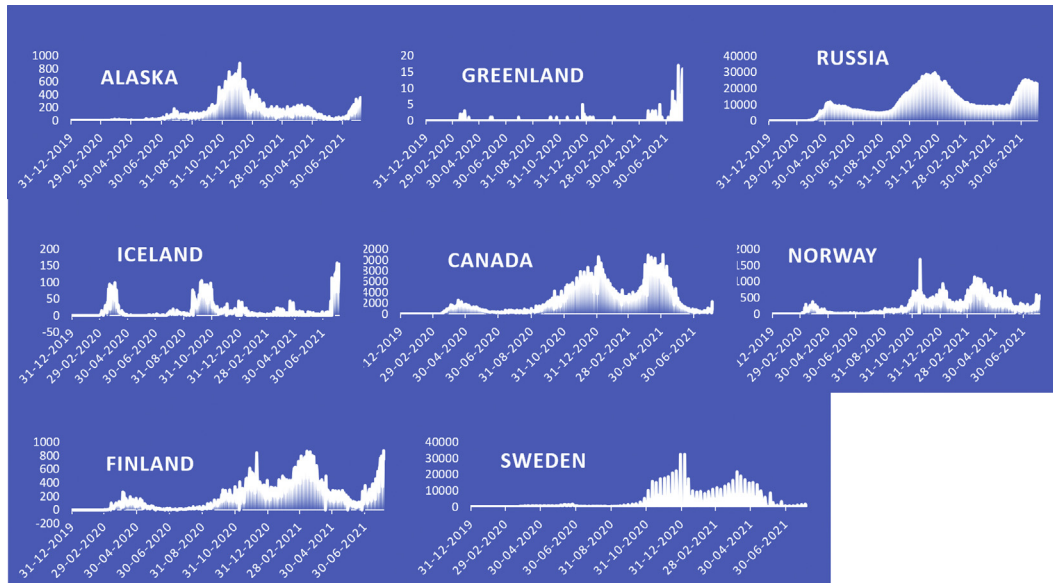


FIGURE 11.4 Countrywise daily number of cases.

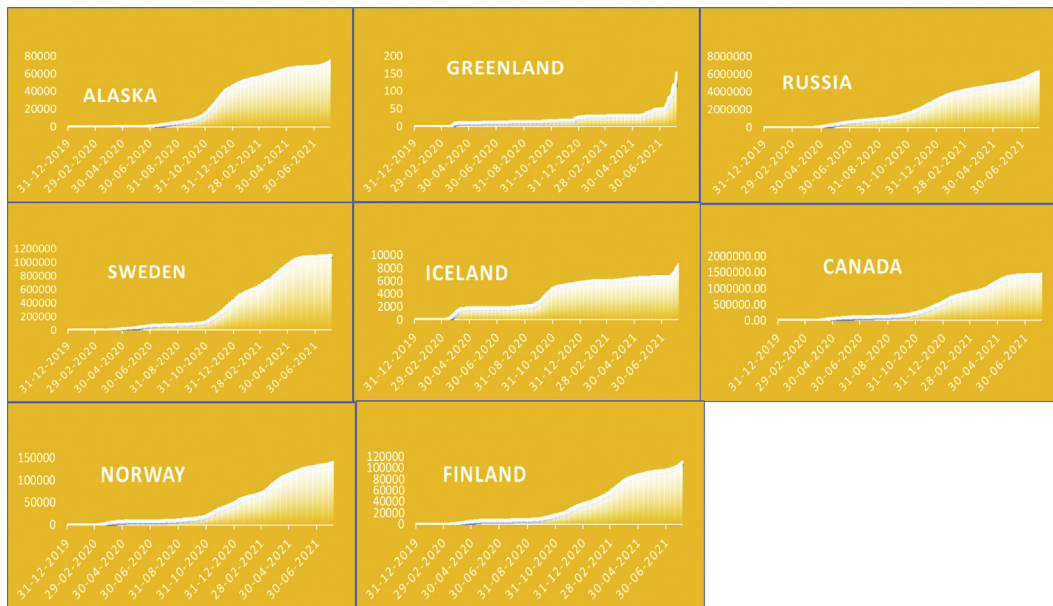


FIGURE 11.5 Countrywise cumulative number of cases.

In the case of Russia, after the first wave, there was a decrease in daily case count, indicating the number of infections was coming down. During October–November, the second wave started, which continues to date, resulting in the daily case count much higher than

their first wave peak. In the case of Iceland, both the first wave and second wave are similar in nature in terms of their daily case count. The first wave came in the month of March–April, followed by a second wave in September–November. In between these two waves, the cumulative case curve shows a near flattened line, indicating very minimum daily cases because of effective control measures. Even as of the date, the cumulative curve of COVID cases is showing a flattening tendency that can indicate a better situation ahead.

The second wave in Canada, Norway, and Finland is much more severe than the first wave. In those countries, the first wave was in March–April, while, from October onward, they entered the second wave that is much severe and deadly than the first. To date, the number of new cases has been increasing sharply and becoming more troublesome for both the administration and the general public.

As the number of cases is significantly low in Greenland (only 151), the graph didn't show any specific pattern for the first or second wave. The less and sparse population with good awareness and control are some of the main reasons for this situation in Greenland.

4. Impact of COVID-19 in the world and Arctic and Subarctic regions

Human civilization and the global economy are encountering a devastating storm as a result of the deadly pandemic called Coronavirus, which was initially reported in Wuhan city in China on December 31, 2019 (Sohrabi et al., 2020). Gradually, the most infectious virus has swallowed the entire world covering about 180 countries. COVID-19 belongs to the Nidovirus family (Gulyaeva & Gorbalenya, 2021). It is considered the fifth pandemic, which first broke out in the world in 1918 as the Spanish Flu (Martini et al., 2019). Novel Coronavirus (COV) is the newest form of the flu virus, spreading infection through human contact, like SARS (severe acute respiratory syndrome in 2003) (Twu et al., 2003) and MERS (Middle East respiratory syndrome in 2012) (Gastanaduy, 2013) have already shaken the world population with their calamitous effect. The virus infects the human body through the nose and mouth, and gradually inflames lungs, and causes acute pneumonia, which, in many cases, becomes fatal for those who are already suffering from preexisting medical conditions.

Medical research reveals that 80% of COVID-19 cases are asymptomatic and cured with very little medical intervention (Gautret et al., 2020), but in 20% of cases, it becomes severe and creates a life threat to death. As the symptoms of COVID-19 are very much similar to pneumonia, World Health Organization initially diagnosed the disease as “viral pneumonia” (Li & Xia, 2020) and had not given serious attention, which later caused severe damage to humanity as a most dangerous pandemic in the world history ever, and WHO declared it as a pandemic. According to WHO, the deadliest virus of the century has infected 68 million people causing a death toll of almost 1.5 million till the second week of December '2020 (Source: <https://covid19.who.int/>), covering all the continents. Within 4 months from its birth, COVID-19 rapidly spread across the globe and created a standstill situation, which was observed only during World Wars I and II. Both developed and developing countries have been facing a tremendous challenge to encounter it as no medicine worked out against it. Initially, the world had to compromise by restricting their activities and movement outside the home, and some new terms such as “social distancing” and “lockdown” were coined. For the first time, the human population saw partial or complete lockdown for a minimum of

14–21 days, which prolonged even further for few months in many countries for restricting the rapid growth rate of the infection (Paital et al., 2020). A spontaneous effort was made by scientists, researchers, and medical practitioners to invent a vaccine for the virus so that the smile can be given back to the world population, which is covered under a face mask. After a tremendous fight, some countries like the United Kingdom and the United States claimed that the vaccine is ready for use after a rigorous and successful human trial. AstraZeneca-Oxford first reported publishing the final-stage vaccine, which has a 70% success rate to the immune human body from Coronavirus (Source: www.ndtv.com).

Coronavirus has steered apparent damage to human life and extends unrivaled challenges to general health, education system, food chains, and work environment. Social and economic disordering created by deadly COVID-19 is disastrous. The whole world is likely to undergo a precarious situation, and the human population will suffer from severe poverty as it is slowing down the global economy day by day. The fatal pandemic is affecting people's lives every day and taking lives in millions. The region-wise exponential growth of the Coronavirus made them bound to be confined at home and allowing them to be “unsocial” for breaking the chain. Irrespective of developed or developing countries have enforced strict law and introduced quarantine systems to counter the spread of the highly communicable disease. COVID impacted our daily life in many ways. Initially, by stopping people's movement, it has destroyed world trade and commerce, manufacturing units, construction industry, aviation, tourism, and hospitality industry. The value of the education system is significantly changed, and the academic segment completely converted their mode of teaching from offline to online. In a single sentence, it can be stated that the pandemic knocked off the global economy (Fig. 11.6).

It has brought significant changes in the health-care industry also. The health facilities are becoming occupied in serving mostly corona patients, and a large number of medical staff, including doctors, are infected and even sacrificed their lives due to COVID infection. Patients who suffer from other diseases are getting neglected due to lack of infrastructure, broken supply chain, and fear of getting infected while visiting health-care centers and hospitals.

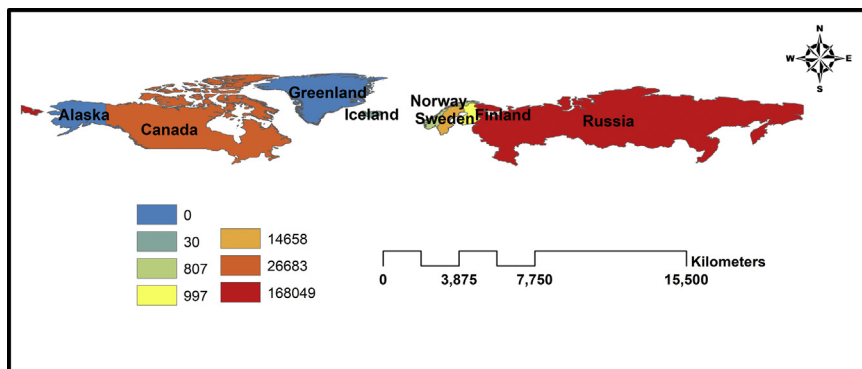


FIGURE 11.6 Map showing the countrywise total number of deaths.

Due to the stoppage of transportation, worldwide import and export came to a temporary end, incurring heavy losses in the national and international business. As the majority of the manufacturing units had to shut down temporarily, developing countries like India and Bangladesh had to face the migrant labor problem.

Partial or complete lockdown in different countries led to undue stress in the global population. As there were restrictions on social gatherings, people lost the source of entertainment such as visiting hotels, restaurants, pubs, shopping malls, gyms, and religious places. Asian people had to sacrifice attending some popular religious festivals like Dewali and Eid. The cancellation of the Olympics happened this year along with many other sports tournaments in Asia, Europe, and America. The tourism industry had the biggest hit due to this pandemic. To summarise, needless to mention that the health, education, social, and economic recession has spread in the whole world.

Arctic was not very severely impacted during the peak period of COVID but has a long post-COVID effect on its economy, food chain, and some more major income-generating sector such as tourism and research expeditions to the region. As the Arctic economy is highly dependent on the tourism and hospitality industry, global lockdown and imposed travel ban had restricted tourism in this region, preventing it from earning expected revenue this year.

Arctic and Subarctic regions have significant roles in researches related to the world's environments. Scientists, environmentalists, and researchers across the globe travel to the Arctic to carry out their research. This activity is significantly interrupted due to worldwide restrictions on air travel.

5. Analysis of Arctic tourism in the pandemic era

In a general word, "Arctic Tourism" is categorized as "Special Interest Tourism" (Maher et al., 2014) and "Polar Tourism" (Demiroglu & Hall, 2020). The journey to the "North Pole" by an American explorer, Frederick Albert Cook, in 1908 (Gibbons, 1954) started to begin tourism. In the last two decades, Arctic Tourism has come into the limelight due to the increasing demand among visitors. The spread of the Arctic Circle covers eight countries in North America and Europe (Johansson, 2005). The landmass of the Earth, which is located above 66.5° north of the equator, is considered as Arctic Circle (Zhang et al., 1999) that covers Alaska in the United States, Greenland in Denmark, Iceland, Northern Canada, Finland, a part of Norway, Sweden, and a vast region of Russia. Arctic Tourism is very rich in infrequent flora and aquatic mammals like a squirrel, wolf, fox, moose, caribou, reindeer, polar bear, musk ox, walrus, seal, and whale (Berger, 2018). The Arctic is a paradise for adventurers and nature lovers (Bremner, 2015).

The major summer activities that can be carried out by tourists are hot air ballooning at the polar region (Table 11.2), excursion by private boat to enjoy snow-capped mountains, experiencing icebergs, glaciers, and fjords—spotting the world largest land predator, polar bear, undertaking activities like driving sledge dog team in the polar region, exploring the ethnic culture in small island villages in Greenland, spending the night at igloo or ice hotel in Alaska, kayaking, or ocean cruising (Umbreit, 2009). The winter activities are focused on watching "Northern Lights" and are considered as one of the significant boosters for

TABLE 11.2 Major tourist spots.

Country	Major tourist spots
Alaska, US	Entire Alaska, including Fairbanks
Northern Canada	Mainly Yukon, Northwest Territories, Yellowknife, and Nunavut
Iceland	All locations especially Seltjarnarnes in Reykjavik, Vik, Látrabjarg, Westfjords, Eldborgahraun, and Djúpavík
Norway	Svalbard, Tromso, The Lofoten Islands, Harstad, Bodo, Alta, Andoya, and Lakselv
Finland	Entire Finland, including Kakslauttanen
Russia	Murmansk, Arkhangelsk, and Petrozavodsk
Sweden	Abisko, Tärendö, Jukkasjärvi, and Farnebofjarden National Park
Greenland, Denmark	South Greenland, including Ilulissat and Nuuk

promoting winter tourism in Arctic Circle (Saarinen & Varnajot, 2019), and the whole region enjoys summer for 3 months and winter with absolute darkness for about 9 (Cockell, 2004).

The deadly pandemic, COVID-19, has shaken Arctic Tourism. Though the first quarter of the year experienced little less hit as the tourist arrivals in the Arctic were reduced by about 50%, but the second quarter was devastating as most of the regions were undergone through either partial or complete lockdown to survive from the effect of the pandemic. The occupancy rate in different hotels had reduced to 10–15%, whereas those used to be in the “Sold Out” situation in the earlier year, i.e., 2019. The summer season falls in the Arctic from mid-May to mid-July, which is considered the peak touristic season (Forland et al., 2013). Alaskan and Norwegian Cruises are scheduled for tourists in the summer season only. They were non-operational because of the lack of international tourists from different parts of the world. Another reason was the closing of international border entry points due to the pandemic effect. Arctic Tourism receives about 25–30 million visitors every year, which has been drastically dropped in the first three quarters.

As Arctic winter enjoys an excellent inflow of tourists for activities like watching “Northern Lights,” and it is considered as one of the most expensive activities in the region. The season is also almost 9 months long and ends up by April 2021. Booking was initiated in most of the Arctic Regions with significant precautions such as a minimum quarantine of 14 days, an entry with a pre-COVID test certificate, isolation, and maintaining social distancing. But the expected response is still awaited as the significant tourists generating continents for the Arctic is Asia, North America, and Europe is under the second wave of COVID-19 (Grech & Cuschieri, 2020). Some of the European countries like the United Kingdom, France, and Germany again imposed a lockdown for a stipulated period. On the contrary, the global economic breakdown is another cause of nonresponsiveness to Arctic Tourism as the products are highly expensive and fall under niche tourism (Lasserre & Pelletier, 2011).

On the other hand, some research reveals that more than 70% of visitors agree to avoid crowded urban tourism spots and are likely to visit natural tourist spots with less population

density. Therefore, it is expected that the competent tourism authorities of Arctic countries will redesign and develop alternative, cost-effective tourism products that would create an opportunity for receiving a significant number of tourists from the global market.

6. Conclusion

The entire world has experienced the adverse effect of the pandemic, and it is felt most intensely by populations who are vulnerable, are isolated, and live remotely, facing a lot of climatic challenges along with the challenges of the pandemic. People of the Arctic and the Subarctic regions should be counted in such groups.

Autumn and winter (mainly winter) in the Northern Hemisphere means snowy weather in maximum areas of the Arctic and Subarctic regions when the majority of the people are confined at home. Besides, the winter includes significant holidays such as Christmas, and people are more inclined to outdoor activities to celebrate festivals.

They had already been facing humanitarian crises as there were more or less social gathering restrictions and lockdown except in the case of Sweden. Furthermore, severe travel restrictions on people's movements were implemented globally to control the virus's spread, restricting humanitarian access to vulnerable areas and reducing relief groups' ability to perform frequent monitoring and evaluations.

The deadly pandemic left a profound impact on the mind of the people of the Arctic region. Their life was in a standstill situation and undergone through misery and stress. They were confined to their home for a more extended period and faced different challenges related to the economy. As a result, they were frustrated and reluctant to adopt COVID appropriate behavior and become more and more complacent.

The factors mentioned above are the reasons for new surges and spikes in the Coronavirus infections in the Arctic and Subarctic regions. Both Government agencies and local people are on different opinions on the COVID appropriate behavior. Though many people obey the guidelines imposed by the government, a significant part is indifferent to it. It is also evident that the governments in different Arctic regions are bearing confusion about the restrictions, and they are unable to understand and predict the recent trends of COVID-19. As a result, the universal guidelines and mandates are partly ignored in different regions. Different medical researchers suggested that the COVID-19 is a highly infectious disease and mutated several times. The recent strains such as "Delta" and "Delta plus" variants have been seen in the United States and European continents, which may be a more significant threat to the Indigenous communities of the Arctic regions if the proper precautionary measures and actions are not taken immediately. People of Arctic regions are highly dependent on the extraction of oil and natural gases. Besides, the regions are affluent in mining. Tourism is another emerging activity in this region too. However, everything is highly affected due to the rapid, unpredictable spread of the pandemic and creating enormous pressure on the Arctic's economy. It is also evident that the Indigenous Arctic communities are very vulnerable and suffer from many diseases throughout the year due to extreme weather conditions. So, a balanced pathway is to be implemented for maintaining sustainability in the region. A firm and appropriate COVID-related guidelines and policy imposed by the government can lead the Arctic region into sustainable growth and parallelly can help restrict the transmission of the virus.

Therefore, there are some very general things to perform: firstly, must wait tolerantly to beat COVID-19 with science, solutions, and solidarity; secondly must not backside on critical health goals; and last but not least should be prepared for the next pandemic from now.

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