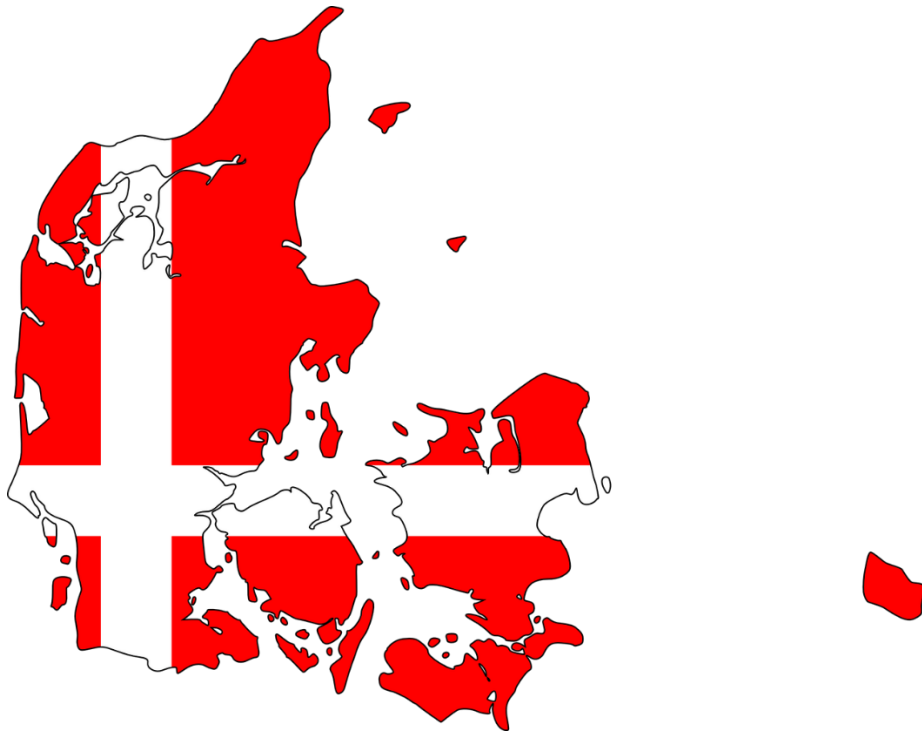


Denmark Physical Distancing Policies and Epidemiology from January - September 2020: A Case Report

Policy Frameworks and Epidemiology of COVID-19
Working Group

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Policy Frameworks and Epidemiology of COVID-19 – Denmark Case Report

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Conflicts of Interest

No conflicts of interest were reported.

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Links to supplementary materials

[Study proposal](#)

[Informed consent](#)

[Interview guide](#)

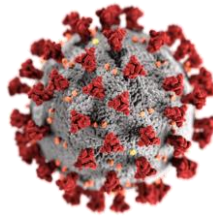
COVID-19 [Country characteristics database](#)



I. Introduction and project description

A new disease that spread around the world

On December 31, 2019, the World Health Organization (WHO) was notified of a cluster of individuals with pneumonia of unknown cause in Wuhan, China.(1) On January 12, 2020, China shared the genetic sequence of the novel coronavirus with other countries to help develop diagnostic tests.(1) Thailand reported the first known case of the novel coronavirus outside of China on January 13, 2020. WHO declared the novel coronavirus (2019-nCoV) outbreak a Public Health Emergency of International Concern on January 30, 2020 with 7,711 confirmed cases, 12,167 suspected cases, and 170 deaths in China and 83 cases in 18 countries outside of China.(1,2) The disease was later named COVID-19 for coronavirus disease 2019 and the virus referred to as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).(1) WHO declared COVID-19 a pandemic on March 11, 2020.(1)



Physical distancing policies and knowledge gaps

As an emerging infectious disease, there were originally no effective vaccines or preventative treatment for SARS-CoV-2. Therefore, governments have had to rely on the use of public policies to combat the spread of the virus.(1-4) Creating policies has been difficult due to the large amount of information and ongoing uncertainty around the characteristics of the virus and who it affects.(4) One of the most commonly used policies to mitigate (slow) the spread of the virus that causes COVID-19 centres on physical or social distancing, which relies on separating people to reduce the transmission of the virus.(5) However, it is still unclear when is the best time to institute such policies and what happens when distancing policies are eased. There are many aspects of distancing, such as recommendations for maintaining a physical distance in public, banning group gatherings, or complete lockdowns, that complicate their assessment.(5) There are also many factors that have been attributed to people acquiring or having a worse outcome from COVID-19.(6-11) However, there was no harmonized database available with all the policies, epidemiology and contextual information that was needed in order to perform comparative analyses useful to informing policy making.

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About this project

The Policy Frameworks and Epidemiology of COVID-19 Working Group was developed after a “CONVERGE Virtual Forum: COVID-19 Working Groups for Public Health and Social Sciences Research.” A group of international researchers convened to explore what physical distancing policies countries implemented and their effects on the epidemiology of COVID-19. The Working Group was further supported through an award from CONVERGE and the Social Science Extreme Events Research (SSEER) Network. CONVERGE is a [National Science Foundation](#)-funded initiative headquartered at the [Natural Hazards Center](#) at the [University of Colorado Boulder](#).

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II. Methods

Research design

A qualitative embedded multiple case study research design was used to compare countries (or subnational jurisdictions, such as provinces, states or territories). The suite of public policies and resulting changes in the epidemiology of COVID-19 are examined within their specific country setting. Our cases start in January 2020 and end in August 2020. (Please see full [study proposal](#)). Research ethics approval was obtained by the Hamilton Integrated Research Ethics Board (HIREB) (Project # 11243).

Data collection

For each country, the setting, such as health systems, political systems and demographics were described to help with interpretation of findings and potential transferability, or the degree to which findings are applicable to other sites or future research.

Publicly available data was first collected on the jurisdiction following a standardized data collection form. Epidemiological data was drawn from publicly available data. WHO, World Bank, Central Intelligence Agency and other publicly available sources were used for timelines and country characteristics, where possible. Other sources of information included governmental and non-governmental websites, news articles, government reports, and peer-reviewed journals.

Next, key informant interviews were conducted to fill in gaps, verify information found through the documentary searches, and identify further participants and documentary sources of relevant information. (See [informed consent](#) and [interview guide](#)) Key informant interviews were conducted with policymakers, health workers, researchers and other stakeholders as appropriate to fill in knowledge gaps.

Data analysis and presentation

Our [COVID-19 policies](#) and epidemiology databases harmonize data on setting characteristics, policies, demographic characteristics and epidemiological risk factors and outcome metrics. These will further be described in single country or jurisdiction case reports. Comparisons will be selected based on both literal and theoretical replication. Countries that have similarities in either policies or epidemiological trends can be considered literal comparisons, whereas countries that differ will be used as theoretical comparisons. These comparisons will be submitted to peer-reviewed journals for publication.



III. Findings

A. Setting characteristics

Geographic, environmental, social and economic contextual factors

Denmark is in the WHO European Region.(12) In 2019, the country had a population of 5,818,553.00 and a population density of 137.98 people per km².(13, 14) The population is heavily concentrated along coastal areas, particularly in the capital Copenhagen on the Zealand Island and Aarhus on Jutland Peninsula, as well as smaller cities along the country's coast.(15)

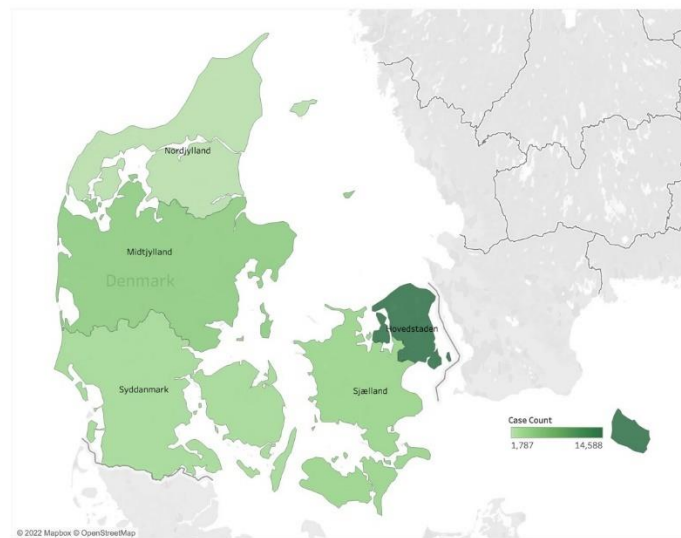


Figure 1. Map of Denmark with total COVID-19 cases, as of September 30, 2020 (16)

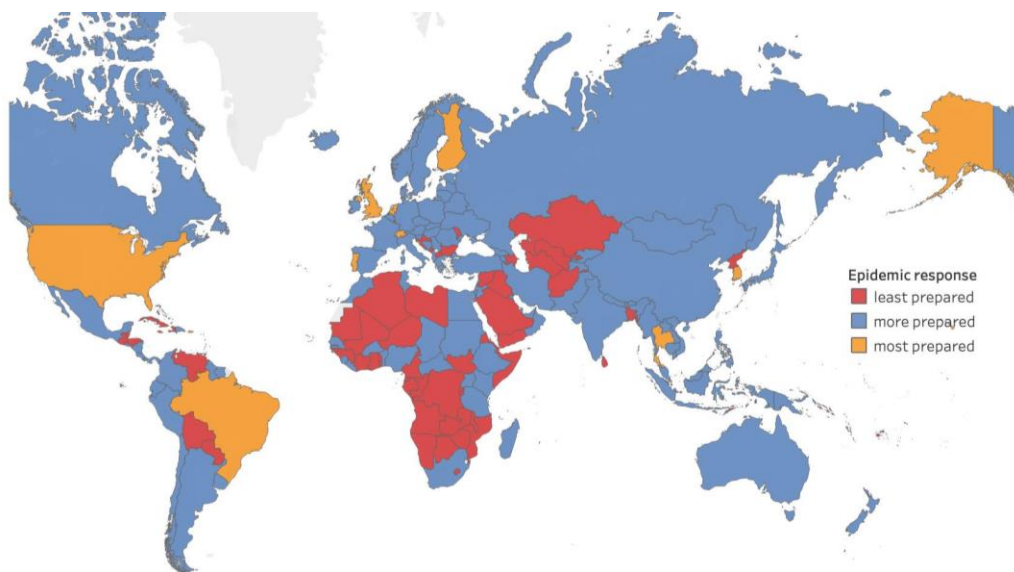


Figure 2. Global Health Security epidemic preparedness rank category (17)



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Table 1. COVID-19 relevant contextual factors for Denmark

Global Health Security, 2019 (Overall Index Score out of 100 and category) (17)	70.4 - More prepared
Global Health Security, 2019 (Epidemic Preparedness Index Score out of 100 and category) (17)	58.4 - More prepared
Particulate matter (PM2.5) air pollution, mean annual exposure, 2017 (micrograms per cubic meter) (18)	10.03
PM2.5 air pollution, population exposed to levels exceeding WHO guideline value, 2017 (% of total) (19)	56.91
International migrant stock, 2015 (% of population) (20)	10.1
Trust in national government, 2018 (% of population) (21)	70.05
Mobile cellular subscriptions, 2019 (per 100 people) (22)	125.5
Individuals using the internet, 2019 (% of population) (23)	98.05
Index of economic freedom, 2020 (Score and category) (24)	78.3 - Mostly free
World Bank classification, 2020 (25)	High
Gini Index, 2017 (26)	28.7
GDP per capita, PPP, 2019 (Current international \$) (27)	59.830.15
GNI per capita, PPP, 2019 (Current international \$) (28)	61,410
Current health expenditure, 2017 (%) (29)	10.1
Vulnerable employment, total, 2020 (% of total employment) (30)	4.87
Vulnerable employment, female, 2020 (% of female employment) (31)	3.56
Vulnerable employment, male, 2020 (% of male employment) (32)	6.05
Homelessness, 2019 (%) (33)	0.11
Adult literacy rate, 2018 (%) (34)	--
Literacy rate, adult female, 2018 (% of females 15 and above) (35)	--
Literacy rate, adult male, 2018 (% of males 15 and above) (36)	--
Primary school enrolment, 2017 (% net) (37)	98.54

GDP - gross domestic product; **GNI** - gross national income; **PPP** - purchasing power parity



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Population health characteristics

Life expectancy at birth in Denmark was 80.95 years in 2018.(38) For males, life expectancy at birth was 79.10 years, and for females it was 82.9 years.(39,40) Non-communicable diseases are believed to play a role in who develops severe symptoms of COVID-19. In Denmark, the proportional mortality in 2016 from cardiovascular diseases was 24%, cancers 32%, chronic respiratory diseases 9%, and diabetes 3%.(41) (See Figure 3.) The probability of dying between ages 30-70 from cardiovascular disease, cancer, diabetes, or chronic respiratory disease was 11.3% for all adults, and 13.1% and 9.5% for males and females, respectively.(42)

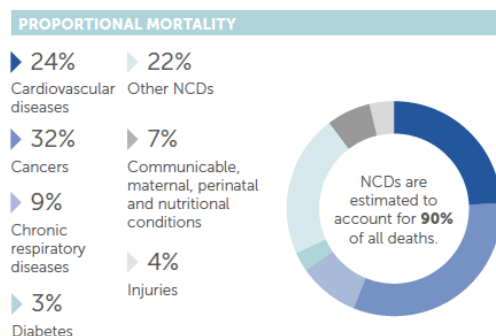


Figure 3. Proportional mortality from non-communicable diseases - Denmark, 2016 (41)

Table 2. Age and health characteristics for Denmark

	Male	Female	Total
Population ages 0-14, 2019 (% of total population) (43-46)	489,958 (8.42)	464,342 (7.98)	954,298 (16.40)
Population ages 15-64, (% of total population) (47-50)	1,867,005 (32.09)	1,835,557 (31.55)	3,702,565 (63.63)
Population ages 65 and above, (% of total population) (51-54)	535,915 (9.21)	625,776 (10.75)	1,161,689 (19.97)
Current tobacco use prevalence, 2018 (%) (55)	18.4	18.7	18.6
Raised blood pressure (Systolic blood pressure ≥ 140 or Diastolic Blood Pressure ≥ 90), ages 18+, 2015 (%) (56)	32.1	22.1	27
Raised fasting blood glucose (>7.0 mmol/L or on medication), ages 18+, 2014 (%) (57)	7.2	5	6.1
Prevalence of obesity among adults (Body Mass Index ≥ 30), 2016 (%) (58)	23.7	18.9	21.3
Prevalence of human immunodeficiency virus (HIV), 2019 (% of population ages 15-49) (59)			--
Bacillus Calmette-Guérin (BCG) Immunization coverage estimates (%) (60)			--
Prevalence of undernourishment, 2018 (% of population) (61)			2.5

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Governance and health systems

Denmark is a parliamentary democracy (parliamentary constitutional monarchy) with power for health delegated to the Ministry of Health, which is responsible for defining and regulating the overall structure of national healthcare with advice in the policy area from the Danish Health Authority.(62) The current governing party, the Social Democrats party (which is center-left), was elected June 5, 2019, and formed on June 27, 2019.(63) Public health in Denmark is divided across 3 political and administrative levels: the state, regions, and municipalities.(64) Public health and healthcare in Denmark are decentralized and characterized by uniform governance, funding and delivery structures. There are 5 health regions, governed by regional councils, responsible for organizing health services, including hospital care and health services provided by general practitioners in public and private sectors, in accordance with national regulatory frameworks.(65) The 5 health regions encompass 98 municipalities, or local administrative bodies, responsible for local health, disease prevention and health promotion, nursing homes, and school health services, among others. The Danish Health Authority is responsible for advising the Ministry of Health, the regions, and municipalities on health issues to ensure uniform healthcare services across Denmark.(66) Denmark has restructured and gradually centralized its health system since 2007 consolidating healthcare into bigger regions and fewer municipalities.(67) Health in Denmark is funded by the central government from tax revenues distributed to regions and municipalities with 16% of healthcare expenditures financed through patient co-payments. Healthcare is free at the point of service through public insurance. Residents can purchase supplemental insurance through private employers to cover additional services.

Table 3. Political and health system indicators for Denmark

Fragile States Index score, 2020 (maximum 120, lower is better) (68)	17.2
Fragile States Index rank, 2020 (out of 178 countries, higher is better) (68)	175
Global Freedom score and status, 2020 (69)	97 – Free
Internet Freedom score and status, 2020 (70)	--
World press freedom index, 2020, global score (0-100, lower is better) and rank (out of 180 countries, lower is better) (71)	8.13 – 3/180
Physician density, 2016 (physician/1,000 pop) (72)	4.01
Hospital bed density, 2015 (beds/1,000 pop) (73)	2.5



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Pandemic experience and preparedness

One of the most recent defining moments for infectious diseases in Denmark was with Type A H1N1 (Swine flu) in 2009, where there were estimated 274,000 individuals with clinical symptoms and an estimated number of deaths ranging from 30 to 312.(74) Denmark experienced three waves of H1N1 from 2009 to 2011 characterized by high incidence of hospitalizations and morbidity.(75) In 2006, Denmark reported the first case of the highly pathogenic H5N1 avian influenza that affected 44 wild birds mainly in regions near the Baltic Sea.(76) Denmark had two whooping cough epidemics in 2012 and 2016.(77) Foodborne infections and outbreaks are common. In 2018, Denmark reported 64 outbreaks of foodborne illness, including 4,546 *Campylobacter* and 1,168 *Salmonella* infections respectively.(78) There have been no cases of Middle East Respiratory Syndrome (MERS) or Ebola found in Denmark.(79)

Denmark is well equipped to address epidemics in the country. The Danish Health Authority, under the Ministry of Health has a national pandemic and other public health emergency response plan, built on the all hazards Danish Emergency Management Agency National Disaster Preparedness plan that is overseen by the Ministry of Defense.(80) The Danish Emergency Management Agency and the Danish Health Authority form part of the country's emergency preparedness. The emergency response plan is not publicly available, though the emergency plan (2013) for dealing with an influenza outbreak is available to the public.(81) The Statens Serum Institut is responsible for infectious disease surveillance and other biological threats.

Denmark's health emergency response plan has been updated several times in the last three years. The Danish Epidemics Act regulates the management of epidemics by 5 regional commissions. These commissions include representatives from health authorities, local politicians, police, and emergency management authorities. The law on epidemics (LBK nr. 1026) was revised in 2019 and again in early March, expanding measures against the spread of infectious diseases and the introduction of infectious diseases into the country, as well as centralizing power with the Minister of Health, with the Danish Health Authority sidelined to an advisory position.(82) The measures require anyone who is deemed to suffer from a potentially dangerous disease to be examined by a physician, undergo forced hospitalization if necessary, and undergo compulsory treatment/vaccination, among other measures. The Danish Preparedness Law (2017) requires the Ministry of Defense to update all hazards preparedness plans every 4 years and the Order of Planning for Health Emergency Response (2016) requires regions and municipalities to update their plans every 4 years.(83,84) The plan does not seem to include a course of action for vulnerable populations or particular groups. On March 12, 2020, the Parliament adopted emergency amendments to the Danish Epidemics Act transferring management of epidemics from the 5 regional commissions to the government (Minister of Health). The amended act allows the Minister of Health to mandate the medical treatment, quarantine, and hospital admission of an infected person, to limit the number of



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people that can congregate together, prohibit people from accessing public places, mandate risk groups to undergo vaccinations, and quarantine certain geographical areas.(85)

Denmark has a public and private laboratory system, including private and public university facilities and hospital laboratories.(86) Microbiology laboratories exist in all major hospitals in all five regions. At the beginning of the COVID-19 pandemic, testing capacity in Denmark was sufficient. The Danish Health Authority COVID-19 Intensive Task Force was responsible for coordinating regional tests, equipment, and staff capacity. There were delays in reporting during this time due to lack of protective equipment and test kits.(87,88) All testing was initially performed by the Statens Serum Institute. In February 25, 2020 testing was expanded to include hospitals with dedicated facilities to test for COVID-19 and in early March to other hospitals and universities.(89) In early March, testing was available outside of hospitals, in public parks, as well as in drive-through facilities.

B. Policies and epidemiology

Cases and physical distancing policies

Denmark's first case of COVID-19 was officially recorded on February 27, 2020, and it had 867 new confirmed cases on March 15, 2020.(90,91) No state of emergency was declared because the Danish Constitution does not define emergency situations. Instead, the Epidemics Act and other urgent acts related to the outbreak were used to manage the COVID-19 health crisis.(92) As of September 30, 2020, there were 27,998 cases and 650 deaths in Denmark.(93) Figure 4 shows the number of daily cases and deaths in Denmark and dates for each of the included policies from January to September 30, 2020.



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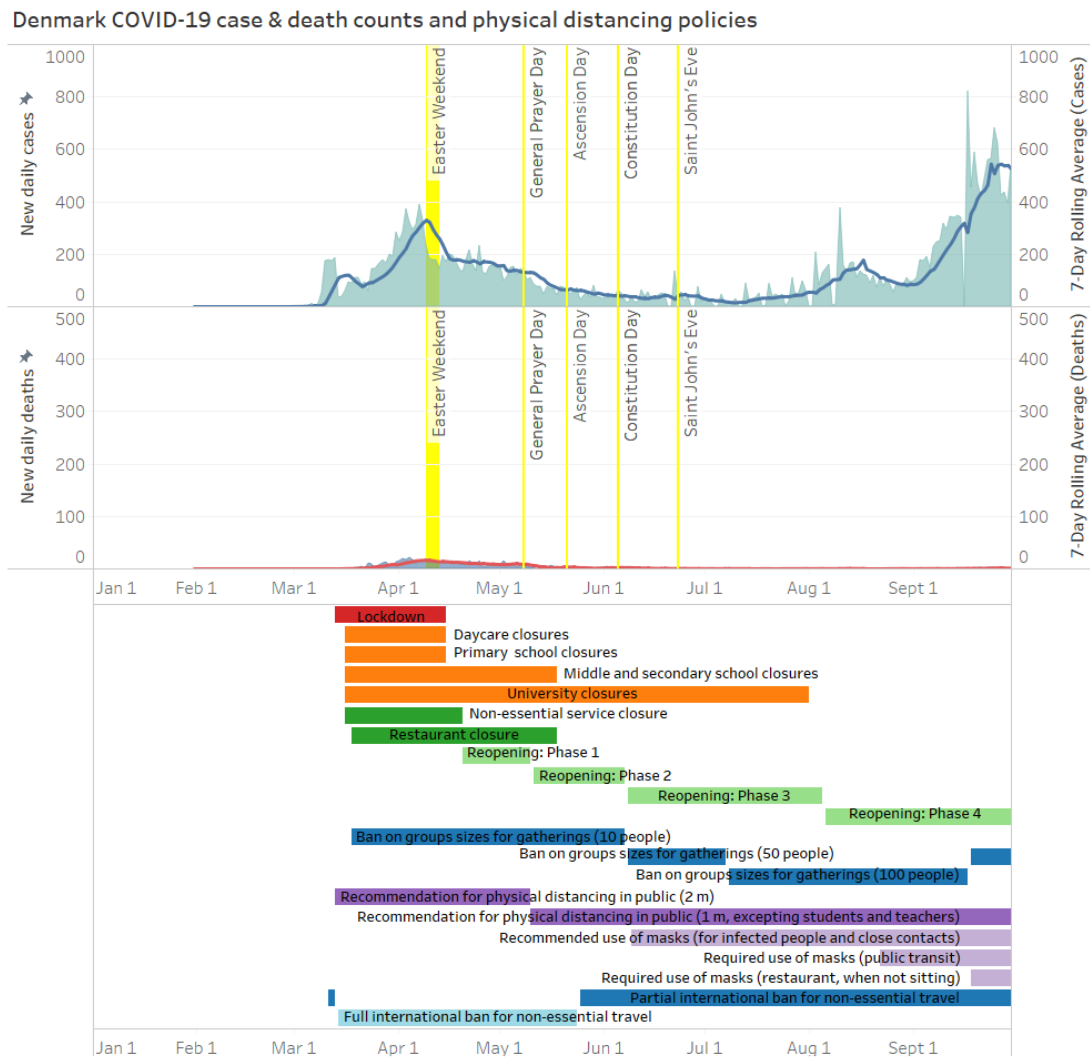


Figure 4. Number of reported COVID-19 cases and deaths in Denmark with select policies from January to September 30, 2020

Description of events in Denmark

The main spokesperson for Denmark’s COVID-19 response has been the Director General of the Danish Health Authority, Søren Brostrøm. The Prime Minister, the Minister of Health, the Director General of the Danish Health Authority, the Director of the National Board of Health, the Academic Director of Staten Serum Institut, Chief of Police, and the Director of the Ministry of Foreign Affairs, have provided updates on the COVID-19 situation and have led the creation of and informed the public about upcoming policies used to mitigate COVID-19.(94,95) At the federal level, the Minister of Health, Magnus Heunicke, proposed legislation and amendments to the Epidemics Act to contain the outbreak. Prime Minister Mette Frederiksen has taken a strong leadership role as well. Regions and municipalities and district health units have been tasked with implementing national regulatory framework to manage people with COVID-19.(96) The national health authorities, including the Ministry of Health, the Danish Health Authority,



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the Statens Serum Institut, the Danish Medicines Agency, among others, together with representatives of 5 regions, established a COVID-19 Intensive Task Force. The Task Force ensured coordination across all levels of government and uniform response and communication to the pandemic in all regions.(97)

From February 27, 2020, to March 10, 2020, the Danish government embarked on a containment strategy based on infection tracking and isolation. On March 11, 2020 (implemented on March 12, 2020), the Danish Health Authority transitioned its health emergency preparedness measures from a containment to a mitigation approach aimed at managing the rate of infections to prevent overwhelming intensive care units and hospitals.(98, 99) Messaging on this strategy was consistent and built around the concept of *samfundssind*, or community spirit. The Danish Health Authority issued advice on practicing proper hygiene, physical distancing, and prevention on their official website, national TV, and news radio, and in several languages such as English, Polish, German, Farsi, and Arabic, among others.(100) All citizens also received general guidance on COVID-19 prevention in the mail. The Danish Health Authority published daily updates on outbreak severity, weekly detailed reports on pandemic related developments, as well published flyers on reducing anxiety in adults and children.(101, 102) Denmark's health authorities also set up telephone hotlines to answer questions about COVID-19. Messaging was coordinated at the federal, state, and local levels. One source stated that Denmark's rapid response to the pandemic, coupled with free healthcare and high level of trust in government was effective in managing the crisis.(103) Many citizens followed sanitary and distancing guidelines. At the beginning of the pandemic, there was public support for federal and regional government actions.(104, 105)

First officially documented cases were travel-related and not many Danes were reported to be affected directly by COVID-19 until mid-March, when there were hospital and intensive care unit (ICU) cases and noted community transmission, but no deaths.(106, 107) A countrywide lockdown was announced on March 11, 2020 (initially for 2 weeks and extended until April 15, 2020) and implementation began on March 13, 2020 by Prime Minister Frederiksen.(108) This included the closing of all non-essential public sector businesses and institutions.(109) Private sector employees and businesses were encouraged to work from home. On March 16, 2020, all schools, universities, childcare centers, libraries, facilities providing indoor recreational programs, and other public institutions were closed. Restaurants and bars were first *encouraged* to stay closed.(110). Visits to nursing homes and hospitals were limited. Further restrictions came into effect on March 18, 2020, and the operation of all restaurants (except for those that had the capacity to facilitate pick-up orders), shopping malls, hairdressers, nightclubs, theaters, concert venues, and other indoor places where people normally congregate was banned. Supermarkets, pharmacies, and other essential businesses remained open. A few days after the March 13, 2020 lockdown, only non-critical elective medical procedures/surgeries were postponed, and when possible, other health services replaced with telemedicine.(111) All non-emergency dental procedures were suspended.

As of March 9, 2020 those traveling to Denmark from regions with high infection rate were picked up by buses directly from the plane and transported home or elsewhere where they



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could quarantine for 14 days.(112) On March 11, 2020 flights from high-risk countries were canceled. On March 13, 2020 Denmark announced the closure of its borders and travel restrictions were enforced beginning March 14, 2020 at noon.(113, 114) Borders were closed to all foreigners traveling by sea, air, or land, including EU citizens, and Danish authorities encouraged Danish citizens to return home. The Ministry of Foreign Affairs updated its travel guide according to red (discourages travel), orange (discourages all unnecessary travel), and yellow (be extra careful) designations. On May 25, 2020 Denmark opened its border to family members from Nordic countries and to those who work in Copenhagen but live in Sweden.(115) On June 10, 2020, commercial non-stop flights to the United States resumed.(116) On June 15, tourist travel resumed between Germany, Iceland, and Norway.(117) On June 20, 2020, entry from EU member states and non-EU countries in the Schengen area with low number of COVID-19 infections was allowed.(118) There were no restrictions on travel within Denmark. Public transportation was reduced to 50 percent capacity at the start of the lockdown, and additional train carriages added to promote physical distancing.

The Danish Health Authority recommended physical distancing in public (2 meter) from lockdown until May 10, 2020 when the distance was reduced to 1 meter following the World Health Organization recommendations, with the exception for persons considered to be higher risk groups.(119, 120) On June 19, 2020, physical distancing guidelines were amended for primary and secondary schools and 1 meter distance was recommended outside of classroom setting only, with continued mandatory focus on extra hygiene protocols.(121) Initially, masks in public were not recommended for two reasons. First, there was a shortage of personal protective equipment (PPE) for frontline workers and a shortage of masks generally.(122) Second, public use of face masks was discouraged due to lack of scientific evidence, at the time, that they worked.(123, 124, 125) On June 9, 2020 citizens were advised to wear masks if infected or in contact with an infected person. On June 15, 2020, airport passengers were required to wear a mask.(126) Beginning on August 11, 2020 face masks were required in public transportation in regions with high number of COVID-19 cases and on August 22, 2020, masks were made obligatory on all public transport, stops, and stations in Denmark for all passengers aged 12 and older.(127) On September 17, 2020, face masks were required in restaurants when not sitting.(128)

There was a ban on gathering of more than 10 people that began on March 18, 2020.(129) Violation of the ban was subject to a fine. The ban allowed no more than 10 people to be present in a supermarket, on public transport, or airport.(130) On June 8, 2020, the ban on the number of people that could congregate increased to 50, with some exceptions made for funerals, church gatherings, and political protests. On July 8, 2020, the number increased to 100 people, decreasing back to 50 on September 18, 2020. Bans were enforced through amendments made to the Epidemics Act.(131) Contact tracing continued on March 11, 2020. The strategy was based on three essential elements: testing, tracing, and isolation. Anyone with symptoms, or who had reason to believe they had been in contact with an infected person were required to immediately self-isolate and contact a GP for an assessment and test referral. On June 18, 2020, the Danish government launched the COVID-19 tracing app Smitte|Stop that allowed citizens to be notified if they were in close contact with an infected person.(132)



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Transition measures were implemented during phased re-opening in Denmark. Starting April 15, 2020, the first phase included reopening of daycares and primary schools from grades 1 to 5. Schools were mandated to follow strict guidelines on physical distancing, hygiene, and cleaning protocols.(133, 134) On April 20, 2020, hairdressers, spa clinics, beauty parlors, dental clinics, driving schools, and other similar businesses were reopened, and elective medical procedures/surgeries resumed .(135) Phase 2 reopening began on May 11, 2020 and included retail stores and shopping malls. On May 18, 2020, restaurants and cafes, grades 6 to 10, professional sports (without an audience), libraries for book loan and checkout only, church services, and zoos reopened.(136) Phase 3 reopening began on June 8, 2020 and included museums, movie theaters, botanical gardens, indoor sports facilities, indoor swimming pools, outdoor amusement parks, wedding and other venues.(137, 138) The ban on gathering was lifted from 10 to 50 people. Weddings or meetings with up to 500 people were allowed in restaurants and other facilities that could follow strict physical distancing and hygiene protocols. Regions with high infection rates implemented phase 3 reopening up to a week later. Phase 4 reopening began on August 6, 2020 and allowed restaurants and bars to stay open until 2 am. Universities reopened on August 1, 2020. Phase 4 reopening of nightclubs was halted with the rise of COVID-19 cases. On September 18, 2020 the Danish government enforced new restrictions on gatherings, including limiting public gatherings to 50 people and the early closure of bars and restaurants.(139)

Factors leading to good uptake of policy interventions at the beginning of the pandemic included a sense from the population that highlighted deep trust of the government that prevented the spread of conspiracy theories.(140) Physical distancing was generally practiced. Overall, key informants stated that the approach in Denmark was successful for mitigation and for “flattening the curve.”(141, 142) All interviewees felt that government handling of the pandemic, together with a Danish sense of social responsibility, worked well in preventing the spread of COVID-19.

Other challenges were highlighted. Some interviewees felt that revisions to the Epidemics Act were unconstitutional, although Danes generally supported the policies.(143) Some interviewees felt that bans on gatherings, compulsory hospitalization and isolation, contact tracing data collection, specific penalties for COVID-19 related crimes, police powers to prohibit entrance to public places, and especially the closure of borders could be interpreted as infringing on constitutional and human rights of Danish citizens. All interviewees felt that the closure of borders went against the World Health Organization recommendations, as well as the advice of Danish health authorities, and was politically motivated.(144) One interviewee felt that government’s decision not to encourage mask wearing until August 2020 was a mistake based on faulty scientific research that led to a spike in cases at the end of summer. Early shortages of protective equipment and test kits were quickly resolved. Although some breaches of regulations occurred, such as large gatherings in parks and beaches, these were rare and there were no major disagreements about policy between political parties.(145) The Danish Police began publishing a list of gathering hotspots to avoid on April 24, 2020.(146, 147)



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Physical distancing policies were supported through economic relief for individuals and businesses.(148) On March 15, 2020 Denmark passed an economic aid package aimed at “freezing its economy,” retroactively beginning on March 9, 2020.(149) The temporary compensation scheme, adopted by a broad coalition of political parties, was extended until August 29, 2020, and provided salaries to employees in private companies if these companies keep workers employed. Salary compensation for private entities covered 75 percent of gross monthly salary and no more than DKK 30,000 (USD 3,800) per month and 90 percent of wages for hourly workers up to DKK 23,000 (USD 3,300).(150) Companies listed in tax havens were not eligible to receive aid. On July 8, 2020, compensation for self-employed was increased to 90 percent. Workers able to perform their duties from home were entitled to full salary.(151) Small businesses at risk of losing 40 percent revenue received up to 80 percent of expenses (rent and energy, for example), with restaurants, hairdressers, and other businesses that were forced to close receiving aid to cover up to 100 percent of regular expenses.(152) The economic aid package also included state loan guarantees for businesses, tax deferrals, extensions for filing taxes, cash grants, refunds of sickness benefits if leave was COVID-19 related, access to sick leave and unemployment, and access of state loans to students.(153) Social enterprises were also eligible for relief package aid.

Several suggestions for future waves of the COVID-19 pandemic or future pandemics were provided by interviewees.

- It was highlighted that public trust in the government was key to the enactment of successful public health measures. Lack of conspiracy theories and agreement across political parties on the government response is representative of public trust.
- All interviewees said that clear and uniform public messaging was important. Two felt that conservative COVID-19 testing guidelines in March were resolved by April when sufficient number of tests were administered.
- Early start in testing led to decreased community transmission. The availability of temporary test facilities across the 5 regions, systematic testing of symptomatic and asymptomatic cases, and contact tracing were essential to “flattening the curve.”
- Messaging on good hygiene and physical distancing was adequate. Two interviewees felt that face masks should have been recommended earlier. One interviewee felt that the Danish authorities failed to protect immigrants, including undocumented migrants, and especially homeless migrants, who had no place to go.
- Preventive measures such as social distancing, remote work, when possible, and economic aid package, were seen to help mitigate COVID-19 cases. Some interviewees believed that lack of education among staff was the cause of outbreaks in nursing homes.



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- All interviewees felt that country homogeneity, community feeling, the culture of prioritizing society over personal interest, and belief that individuals are responsible for the whole community, was essential to limiting COVID-19 spread.
- It was noted by some of the interviewees that the decision to close borders was politically motivated and should have been avoided.
- All interviewees were certain that Denmark followed some World Health Organization recommendations on proper physical distancing and hygiene.
- Information technology (IT) was important for remote work, remote learning, and the sharing of information about COVID-19. Government safety net was essential to keep the economy going.

Disproportionately affected populations

There are certain groups that have been affected disproportionately in Denmark.

Long-Term Care Facility Residents and Staff

Overall, Denmark had a low mortality from COVID-19. At the same time, long-term care facility residents made up one third of COVID-19 related deaths by April 24, 2020.(154) Most elderly people are cared for at home, and those in nursing homes were most affected. Early in the pandemic, personal protective equipment was prioritized for health care workers and guidelines on use of PPE in long-term care facilities was inconsistent.

Prison Populations

On March 18, 2020, Denmark closed its doors to newly convicted prisoners and added visit restrictions, work release restrictions, and downsized staff.(155, 156). There were no pronounced outbreaks in prisons.

Healthcare Workers

Healthcare workers were more susceptible to being infected with COVID-19. Although healthcare workers experienced relatively low rates of infections in Denmark, studies found that those dedicated to treating COVID-19 had significantly higher seropositive results than the rest of population.(157)

Farm Workers

Meatpacking workers were susceptible to higher exposure. One reported outbreak occurred at a pork processing plant near Copenhagen in August where 150 workers tested positive for COVID-19.(158). The facility was closed until the outbreak resolved.



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Comparisons with other country responses

There are many concerns in trying to compare countries’ responses to COVID-19. This is shaped by limitations of the data itself and differences in contextual factors. A separate paper by this working group describes limitations of COVID-19 data. (159) Table 4 presents a list of countries and their use of different social distancing policies.

Table 4. Comparative responses to COVID-19 by country updated August 21, 2020 (filled in means policy was implemented)

Category	Policy	AUS	BGD	BRA	CAN	CHN	CUB	DNK	DJI	EGY	ENG	FRA	GHA	IND	IRN	IRE	KAZ	NDL	NZL	NIR	PAK	RUS	SCL	SLE	SGP	KOR	SRI	UAE	VN	WLS	
Government	State of emergency																														
Case Management	Recommended self-isolation after travel																														
	Recommended self-isolation for cases																														
	Recommended self-isolation for symptoms																														
	Recommended self-isolation for contacts																														
	Separation of cases or suspected cases within institutions																														
Closure	Non-essential service closure																														
	Closing restaurants																														
	Suspended elective medical/dental procedures																														
Detection	Surveillance systems																														
	Contact tracing																														
	Assessment centres																														
	Drive through testing centres																														
	Mass fever screening in public transportation																														
Economics	Economic relief policies for individuals/families																														
	Economic relief policies for businesses																														
	Housing economic relief																														
	Anti-hording																														
	Anti-price gouging																														
Education	School closure - daycare																														
	School closure - elementary school																														
	School closure - high school																														
	University closure																														
Health Workforce	Health workers allowed to only work at one site																														
	LTC Health workers allowed to only work at one site																														
Healthcare Resources	Audio/video telehealth																														
	Telehealth access to prescription medication																														
Physical Distancing	Physical distancing recommendation																														
	Ban on group size																														
	Quarantine orders after travel																														
	Quarantine orders for cases																														
	Quarantine orders for contacts																														
	Isolation for vulnerable populations																														
	Work from home/remote work																														
	Recommended use of masks/PPE for public																														
	Required use of masks/PPE for public																														
	Quarantine for "at risk" or priority neighbourhoods																														
Lockdown																															
Public Decontamination	Public decontamination transit																														
	Public decontamination streets																														
Travel bans	International bans for non-essential travel																														
	Screening at airports/borders																														
	Closing public transportation																														

AUS–Australia, **BGD**–Bangladesh, **BRA**–Brazil, **CAN**–Canada, **CHN**–China **CUB**–Cuba, **DNK**–Denmark, **DJI**–Djibouti, **EGY**–Egypt, **ENG**–England, **FRA**–France, **GHA**–Ghana, **IND**–India, **IRN**–Iran, **IRE**–Ireland, **KAZ**–Kazakhstan, **NDL**–Netherlands, **NZL**–New Zealand **NIR**–Northern Ireland, **PAK**–Pakistan, **RUS**–Russia, **SCL**–Scotland, **SLE**–Sierra Leone, **SGP**–Singapore, **KOR**–South Korea, **SRI**–Sri Lanka, **UAE**–United Arab Emirates, **VN**–Vietnam, **WLS**–Wales



IV. Discussion of main findings, limitations, and next steps

Denmark has a population of 5,818,553.00, with 27,998 cases and 650 deaths as of September 30, 2020. There is no doubt Denmark's quick response to the virus helped to "flatten the curve." Although there was delay in setting up testing at the beginning of the pandemic, and Denmark dealt with a lack of testing supplies and lack of PPE, this was quickly resolved. The Danish Health Authority's program of surveillance and monitoring of population in March was slow. On April 1, 2020, testing dramatically increased and included persons with chronic diseases, those in close contact with risk groups and infected individuals, as well as essential workers.(160) Guidelines on testing were updated regularly and free testing was available to all citizens. Tests were available in hospitals, medical clinics, testing centers away from hospitals, and drive-through clinics.

As businesses re-opened during the summer, Denmark saw a decrease in the number of cases. Denmark tightened nationwide restrictions in August due to a rise in cases. Danish health authorities recommended the use of face masks on public transportation and stricter rules were imposed on regions that had infection rates of more than 20 per 100,000 inhabitants. By early September, the rise in cases prompted the closure of certain parks, as well as restaurants and bars.(161) The implementation of emergency measures restricted many freedoms for Danish citizens. National borders were closed, and lockdown imposed. Nevertheless, most Danes supported drastic government measures.

Conclusions

In comparison with other nations, COVID-19 did not cause significant loss of life in Denmark. Nevertheless, long-term effects have yet to be fully understood. There are already restrictive measures being put in place due to the increase in numbers, such as mandatory wearing of masks, and restrictions on the group sizes allowed in public, as well as movement. However, further contextualized research needs to be conducted to determine which physical distancing policies are the most effective for specific settings. It is also imperative to improve surveillance and reporting systems locally and internationally to deal with this and future pandemics. Comparative work is being conducted by this Working Group to understand what policies work, where and why.



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