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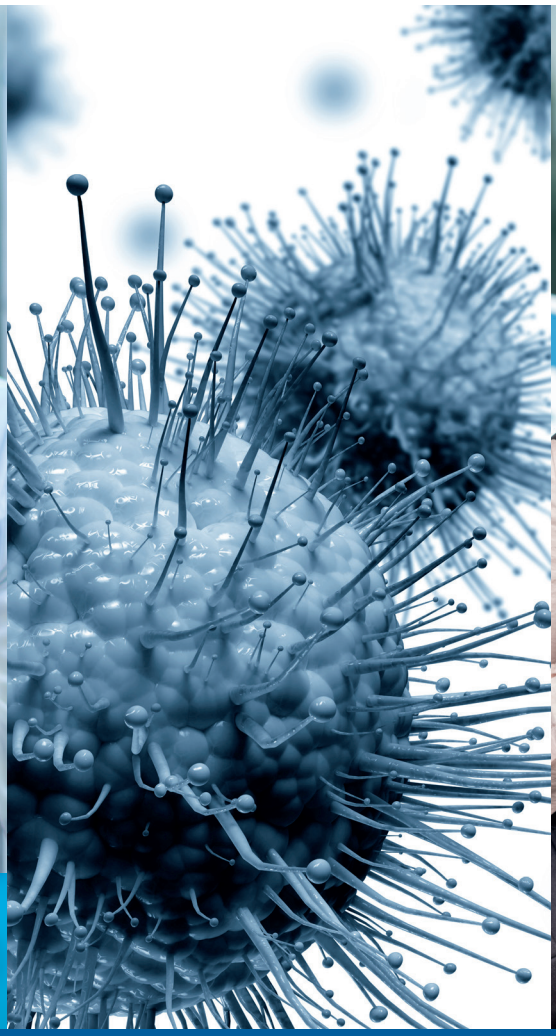

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FOR A STRONG AND RESILIENT POST-COVID HEALTH CARE SYSTEM

REFORMS TO EXPAND SURGE CAPACITY

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Reforms to Expand Surge Capacity

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December 2020

MEI Ideas for a More Prosperous Society

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HIGHLIGHTS

The COVID-19 pandemic has strongly amplified the sense of crisis regarding Canada's health care capacity, which remains mediocre despite consistently high spending over the years. This lack of capacity has pushed policy-makers into a corner, forcing them to take risky gambles that dramatically worsened the toll in Canada, in terms of economic devastation and, ultimately, in terms of actual deaths. Case studies from other countries suggest that Canada could quickly ramp up surge capacity with institutional reforms that would not require long-term investments. However, time is of the essence.

Part One – Keeping Cases Low to Avoid the Lockdown Dilemma

- Taiwan, South Korea, Japan, and Hong Kong have kept cases low by using traditional public health tools in a focused and competent manner, while avoiding the generalized lockdowns that have caused Depression-level unemployment and social disruption in Europe and North America.
- Very early in the pandemic, Taiwan began screening, and then quarantining, travellers. All arriving passengers had their temperature checked at the airport or, in the case of high-risk origins, by officials boarding planes.
- All international visitors, Taiwanese or foreign, were banned from taking public transportation, instead having to take "epidemic-prevention taxis" to get from the airport to their quarantine location.
- Before having confirmed even a single domestic case, Taiwan was already requiring hospitals to test anybody with symptoms. Health officials then traced and isolated people with whom the patient had come into physical contact and quarantined them, under penalty of a large fine.
- Taiwan's domestic mask production was quickly increased to 5 million masks per day, and eventually to 20 million, for a country of 24 million, to the point that it began to donate millions of masks to other countries.
- Industrialized Asian countries did not close schools, and even left restaurants and bars open, with adjustments to limit risk. A tailored policy meant that the vast majority of students could continue their studies, and their parents could go to work, with the flexibility to stop individual outbreaks.
- Cross-country comparisons suggest that no Western country was even remotely well prepared for the pandemic. The consequences of lockdowns have been economically catastrophic, throwing millions into unemployment and bankruptcy, in addition to increased instances of depression and suicide, and the health effects of delayed non-COVID-19 medical care.
- If effective and relatively straightforward tactics had been used in Canada, Europe, and the United States to control the pandemic when it first started to spread, devastating lockdowns would likely never even have been considered.

Part Two – Expanding Surge Capacity

- The next line of defence before turning to economically catastrophic lockdowns is expanding the capacity of the health care system in a crisis, quickly increasing staff, space, equipment, and funds.
- For example, Singapore gave authority to individual hospital administrators to flexibly deploy resources for rapid response, and despite an enormous caseload, its death rate from COVID-19 was just 5 per million, nearly as low as Taiwan's and less than 1/100 of Quebec's.
- Ultimately in Singapore, 18,000 beds were created for the isolation and care of COVID-19 patients, with preparations for another 23,000, in a country of under 6 million people.
- In contrast, Canada has performed quite poorly during the pandemic, not only displaying an unremarkable ability to expand capacity, but also severe bureaucratic inertia when it comes to repurposing the resources that already exist within the system.
- Far from a well-established 85% international benchmark for occupancy, Canadian hospitals routinely exceeded 100% capacity before the pandemic, and Canada has one of the lowest rates of hospital bed availability in the OECD, at 2.5 beds per 1,000 population.
- This lack of capacity led to the disastrous policy of clearing out hospitals, notably by transferring COVID-infected and vulnerable patients into similarly overburdened elderly homes. This in turn contributed to

81% of Canada's COVID-19 deaths occurring in long-term care centres, almost double the OECD average.

- As another consequence of this lack of capacity in the face of extreme projections by health experts, thousands of scheduled surgeries were shelved at the end of March.
- Beyond the horrific death toll, the second major category of collateral damage from fears about capacity has been the lockdowns themselves, as the entirety of Quebec society, from jobs and livelihoods to children's educations, became an afterthought to health care capacity.
- It is important to note that Canada's lacklustre surge capacity is not the result of budgetary cuts. Health care spending in Canada is one of the highest among universal systems, and nearly 30% more per capita than the OECD average.
- Moreover, spending has risen substantially in recent decades, growing faster than the economy. The CIHI estimated 2019 health care spending at 11.6% of Canada's GDP, up from around 10% in the early 2000s, and just 7% in the 1970s.
- Public health costs have grown to fully 37% of provincial budgets in 2016—up from approximately 33% in 1993—and have been projected to climb as high as 42% by 2030.
- These figures suggest that spending is not the issue, and that structural reforms are required to address Canada's weak surge capacity.

Reform 1: Activity-Based Funding

- A key feature of Canada's health care system, and one of the sources of its problems, is the use of the "global budget" funding mechanism based on historical budgets, or worse, political lobbying.
- The main alternative to global budgets for universal systems is activity-based funding (ABF), which means the funds follow the patient and hospitals have a built-in incentive to do what they're supposed to do: treat as many patients as they can, at a level of quality that maintains their good reputation.
- By increasing efficiency, ABF reduces waiting lists, increases quality of hospital stays, and enhances the transparency of hospital activity as hospitals seek to attract more patients.

Reform 2: Decentralization and Liberalization

- During the COVID-19 crisis, inflexible rules and irrational regulations conspired to tie administrators' hands such that they had difficulty allocating resources, including even just hiring the staff they needed.
- Staffing shortages became especially problematic during the worst months of the crisis. At one point in early May, some 11,600 workers were absent from Quebec's already short-staffed health care system.
- Ontario unions called for work stoppages amid the worst of the pandemic in order to fight emergency liberalization allowing staffing decisions based on patient need rather than seniority.
- Administrative flexibility across the board, based on decentralization and liberalization, is essential going forward for Canada to be far more agile in the smart use of its health care resources in future crises.

Reform 3: Expanded Use of Existing Resources

- The two largest groups of underused health care professionals in Canada are nurses and pharmacists, while the single largest underused technology is telemedicine.
- Not only should COVID-related deregulations be made permanent, but a proper review should be made of which conditions nurses of varying levels, as well as pharmacists, are perfectly qualified to diagnose, prescribe for, and treat.
- Beyond COVID-19, the current liberalization of telemedicine should be maintained so that Canadians continue to have improved access to general practitioners and specialists without having to languish so long on waiting lists.

Reform 4: Entrepreneurial Health Care

- Given historic public deficits as a result of COVID-induced lockdowns, there is even greater reason to look to the private sector to lend a hand by allowing more entrepreneurial participation in health care.
- Opinion polls have found that a substantial majority of Canadians favour more private provision of medical services, as long as medically necessary care is paid for by the government.

- Privately managed care that is free to the patient when medically necessary is increasingly the standard across high-performing universal health care systems in Europe and elsewhere.

These four reforms are notable in that they do not require tens of billions of dollars in new government spending. Rather, these are commonsensical administrative reforms that simply involve standing up to special interests that have long alienated Canada's health care systems from the patients they are meant to serve. Without reforming management and adding flexibility, we will not have fundamentally transformed our ability to respond to the next crisis.

There is a large gap between what Canadians expect from their governments and their health care systems, on the one hand, and how these have performed in the face of the COVID-19 pandemic, on the other. We will never know how many lives could have been saved with more flexible and efficient health care, but we can certainly improve our preparation for the next crisis.

European experience has demonstrated that the health care reforms described in this study are consistent with a universal and publicly financed health care system. Moreover, such reforms are popular among Canadians. It is high time to fundamentally repair the dysfunctional health care system that failed to protect many of our most vulnerable despite the very best efforts of our heroic medical professionals.

INTRODUCTION

During this year's COVID-19 crisis, a persistent concern for Canadian policy-makers has been the ability of the long-overburdened Canadian health care system to handle the pandemic. This fear has led to policies that dramatically worsened cases, deaths, and economic carnage from COVID-19. Fixing this should be among the top priorities of policy-makers across Canada, and especially in Quebec.

What follows is based on events and data current as of August 2020. The situation, and even the data related to COVID-19, is in constant flux. For example, six months into the pandemic, the UK revised death estimates downward by 11% due to a change in how deaths are coded,[1] while New Zealand announced a new outbreak after roughly 100 days without a single case.[2] COVID-19 is an evolving pandemic and the response has involved novel policy tools, and so there can be no doubt that the data will change over time, possibly substantially. The best we can do is to draw lessons from the data as it stands, and continue to assess new data going forward.

Since the start of the pandemic, the single most salient feature of Canada's COVID-19 crisis has been that, for many years, hospitals and clinics across Canada have experienced shortages, perennially packed to or beyond capacity. This has led to waiting times stretching to many months while patients suffer, or pay out of pocket for treatment abroad in desperation. Sadly, this situation has been the reality for decades. This state of affairs is inconceivable in European universal systems with more tolerant attitudes toward entrepreneurial providers and insurers.

The pandemic has strongly amplified the sense of crisis regarding Canada's health care capacity, which remains mediocre despite consistently high spending over the years. Indeed, we believe this lack of capacity has pushed policy-makers into a corner, forcing them to take risky gambles that dramatically worsened the toll in Canada, in terms of economic devastation and, ultimately, in terms of actual deaths. The lack of capacity not only pushed governments to maintain lockdowns longer than was necessary, but the sense of panic also gave rise to a disastrous policy that consisted of clearing out the hospitals, notably by transferring COVID-infected and vulnerable patients into similarly overburdened elderly homes. This has contributed to a greater rate of COVID-19 deaths in Quebec than in the rest of Canada, indeed a death rate per million that, were Quebec a country, would be among the highest in the entire world.[3]

Part One of this paper will begin by profiling countries that kept cases low. Particular emphasis is focused on Taiwan, at this point world-renowned for its thorough and competent policies to minimize COVID-19 cases.[4] With a population of 24 million, of whom over one million live in China (including Wuhan) and travel back and forth between the countries, Taiwan nevertheless managed, through an energetic and innovative basket of over 100 policies, to limit the disease to just 481 cases and seven deaths as of August 12.[5] Meanwhile, Canada, with just 60% more people, suffered 120,000 cases and nearly 9,000 deaths in the same period.[6]

The pandemic has strongly amplified the sense of crisis regarding Canada's health care capacity, which remains mediocre despite consistently high spending over the years.

South Korea and Japan enacted similar policies to Taiwan's, also achieving results that were very impressive, although Taiwan has become the gold standard in terms of outcomes. Notably, none of the above-mentioned countries enacted generalized economic lockdowns such as those that were popular in the West, including in the US and Canada. Taiwan, South Korea, and Japan kept schools and restaurants open, even bars and major league sports. Each country carefully tailored mandates and regulations to their specific risks, achieving through this "surgical" approach far superior outcomes without the Depression-level economic devastation the West has inflicted upon itself.

1. Author's calculations. Michael Le Page *et al.*, "Covid-19 news: US president Trump has covid-19, Biden tests negative," *New Scientist*, October 2, 2020.

2. Nick Perry, "New Zealand extends Auckland lockdown as virus cluster grows," The Associated Press, August 13, 2020.

3. Author's calculations. Government of Canada, *Canada COVID-19 Weekly Epidemiology Report (16 August to 22 August 2020)*, August 28, 2020, p. 28; World Health Organization, "Coronavirus disease (COVID-19): Weekly Epidemiological Update" August 30, 2020, pp. 11-19.

4. Ryan Hass, "The COVID-19 crisis has revealed Taiwan's resilience," Brookings Institution, June 15, 2020.

5. European Centre for Disease Prevention and Control, Coronavirus, Data, Download the daily number of new reported cases of COVID-19 by country worldwide, consulted August 12, 2020.

6. *Idem.*

Unfortunately, no developed Western country has come close to these results. Australia and New Zealand have gotten attention and plaudits for their low case numbers, yet their policies have not stood out in any particular way except for early and strict travel bans. Indeed, increasingly it appears that the modest COVID-19 numbers in those regions may have simply been due to those travel restrictions, suggesting limited relevance for countries like Canada that are not islands. The rest of the West has, to a degree that surprised many experts, had similar case numbers whether or not lockdowns were enacted. We will review academic studies on this subject, and explore implications for future "waves."

In the context of perennial health care shortages, this mediocrity has proven catastrophic, bringing the cost of capacity shortages very clearly, and very tragically, into focus.

In Part Two, we examine surge capacity as the single most urgent reform needed for Canada's health care system. Surge capacity refers to the ability of a health care system to rapidly increase staff, space, and medical resources to respond to temporary needs. Every country has some degree of surge capacity, often optimized for natural disasters or terror incidents, but Canada's ability to surge during this pandemic has been very mediocre. In the context of perennial health care shortages, this mediocrity has proven catastrophic, bringing the cost of capacity shortages very clearly, and very tragically, into focus.

The good news is that case studies from other countries suggest that Canada, and Quebec in particular, could quickly ramp up surge capacity with institutional reforms that would not require long-term investments. The bad news is that we may have a very small window of opportunity given the second wave that has now begun, and indeed, the possibility of subsequent waves of COVID-19 accompanying the influenza season.

PART ONE

Keeping Cases Low to Avoid the Lockdown Dilemma

One of the core activities of a government, along with national defense, is responding to nationwide crises, from natural disasters to mass casualty events to pandemics. Alas, governments have varied immensely in the intensity and competence of their responses to the COVID-19 pandemic.

Among industrialized countries, by far the best results have come from Asia (see Table 1-1). In particular, Taiwan, South Korea, Japan, and Hong Kong have kept cases low while avoiding the generalized lockdowns that have caused Depression-level unemployment and social disruption in Europe and North America. The one exception, Singapore, has had to deal with a widespread outbreak among its large population of migrant workers, while limiting damage to the general population. Indeed, Singapore's experience is one of the case studies we will examine in Part Two on surge capacity.

One explanation for the effective responses of industrialized countries in Asia is their experience with SARS and MERS outbreaks. In March, Nils Gilman of the Berggruen Institute praised Asian countries for their proactive planning and fast response, with *Bloomberg*'s Justin Fox concluding, "The disease seems to have been largely eliminated (for now) from Hong Kong, Singapore and Taiwan. It has gained only a limited foothold in Vietnam, and is on the decline in China and Korea."[7]

What these preparations have shown is that ultimately, it is far less expensive, and far less deadly, to be prepared for an epidemic than it is to improvise solutions. The key theme in these preparations has been a rapid and competent response from governments, acting with a flexibility and sense of urgency that was generally not seen from public servants and public-sector unions in Western countries.

While each of the industrialized countries of Asia differed somewhat in its response, the best results in terms of mild social and economic disruption have certainly come from Taiwan. We shall thus explore Taiwan's results in depth in the following sections.

7. Justin Fox, "What Prepares a Country for a Pandemic? An Epidemic Helps," *Bloomberg*, March 18, 2020.

1.1. Case Study: Taiwan

It was widely understood from early on in the crisis that Taiwan's geography and extensive social, business, commercial, and tourism ties with China put it in a very vulnerable position. Roughly one million Taiwanese live permanently in China, out of a population of just 24 million, with many frequently making the short flight home for business or social visits. As a result, one paper estimated that Taiwan had the second-highest importation risk in the world for COVID-19,[8] while a Wharton School case study concluded that Taiwan was, early on, expected to be the next country to be most affected after China.[9]

Taiwan, South Korea, Japan, and Hong Kong have kept cases low while avoiding the generalized lockdowns that have caused Depression-level unemployment and social disruption in Europe and North America.

A variety of explanations of Taiwan's exceptional COVID-19 performance have been offered. According to the Wharton School study, "The worldwide news media have noted Taiwan's initial success story, attributing it to Taiwan's resilience, pervasive national health system, central command structure, rapid medical equipment build up, early prevention and transparent information sharing."[10]

Another source ascribes credit to the following measures: universal mask-wearing; strict quarantining of international travellers starting the first week of January; free and rapid testing; competent and effective isolation and contact tracing; and real-time monitoring of patients' health records, cross-tabbed with patient visits and travel history.[11]

Notably, all of these measures are similar to those taken in previous outbreaks such as SARS and MERS, and

8. C. Jason Wang, Chun Y. Ng, and Robert H. Brook, "Response to COVID-19 in Taiwan: Big Data Analytics, New Technology, and Proactive Testing," *JAMA*, Vol. 323, No. 14, March 2020, p. 2.

9. Wharton School, "Taiwan's Tech-savvy Citizens Helped Flatten Its COVID-19 Curve," University of Pennsylvania, July 27, 2020.

10. *Idem.*

11. Mike Moffitt, "How Taiwan's COVID-19 response saved lives without wrecking the economy," *SFGATE*, July 22, 2020.

Table 1-1

COVID-19 cases and deaths, Canada/Quebec breakdown and select countries, July 2020

	Tests per million	Cases per million	% test positive	Deaths per million	Deaths/case
Canada	93,656	2,971	3.2%	235.0	8%
Quebec	86,875	6,800	7.8%	665.6	10%
Rest-of-Canada	95,935	1,859	1.9%	110.1	6%
Taiwan	3,319	19	0.6%	0.3	2%
Japan	4,880	186	3.8%	8.0	4%
Australia	133,809	448	0.3%	5.0	1%
NZ	88,188	310	0.4%	4.0	1%
Sweden	67,492	7,650	11.3%	556.0	7%
UK	193,111	4,331	2.2%	667.0	15%
US	142,718	11,516	8.1%	431.0	4%
France	40,115	2,676	6.7%	462.0	17%
Germany	82,159	2,417	2.9%	109.0	5%
Italy	102,593	4,039	3.9%	580.0	14%

Note: Author's calculations. Data retrieved July 18, 2020.
Sources: European Centre for Disease Prevention and Control, Coronavirus, Data, Download the daily number of new reported cases of COVID-19 by country worldwide, consulted July 18, 2020; Worldometer, View by Country, consulted July 18, 2020; Government of Canada, *Canada COVID-19 Weekly Epidemiology Update (15-21 July 2020)*, July 24, 2020, pp. 3, 17, and 21.

largely involve powers and responsibilities that governments already had. With the exception of contact tracing, measures taken in Taiwan were less intrusive and maintained peoples' rights to a far larger degree than was the case in Europe, the US, or Canada, where people had to obey more draconian rules or face stiff penalties such as a $2,000 fine for a father walking with his daughter in a public park.[12] In other words, it is not a case of authoritarian Asia vs. the freedom-loving West; rather, it is a matter of choosing minimal impositions that actually combat the pandemic vs. scattershot approaches that restrict liberties to a far greater degree without adequately protecting people.

Moreover, these simple "good housekeeping" measures that Taiwan enacted were similar across industrialized Asia. This is important to highlight: The best containment of COVID-19 came from governments using traditional public health tools in a focused and competent manner, rather than the kind of extreme lockdowns seen in China and then the West.

With that background, we will detail four specific policy areas in Taiwan's anti-COVID-19 efforts: travel screening, testing and discovering cases, distributing masks and PPE in large quantities, and quarantines. We will then discuss the elephant in the room: the fact that industrialized Asian countries never locked down their economies, yet experienced fewer COVID-19 deaths than the West did. We will also discuss what measures were taken to make stores and workplaces, as it turns out, almost completely safe.

12. Colin Perkel, "Majority of Canada's $13M in pandemic fines were issued in Quebec, report finds," CBC News, June 24, 2020.

1.2. Overseas Transmission: Travel Screening and Restrictions

Very early in the pandemic, Taiwan began screening, and then quarantining, travellers. The very day Beijing first warned the World Health Organization (WHO) about the outbreak, "Taiwanese officials began to board planes and assess passengers on direct flights from Wuhan for fever and pneumonia symptoms before passengers could deplane."[13] Within the week, "notification was expanded to include any individual who had traveled to Wuhan in the past fourteen days and had a fever or symptoms of upper respiratory tract infection at the point of entry; suspected cases were screened for 26 viruses including SARS and Middle East respiratory syndrome (MERS). Passengers displaying symptoms of fever and coughing were quarantined at home and assessed whether medical attention at a hospital was necessary."[14]

Taiwan's next step was to integrate overseas travel information with health records, so that all clinics, pharmacies, and hospitals in the country would have access to patients' overseas travel records. This was achieved in a single day, since both immigration and health records were already fully digitized, and Taiwan has a universal health system covering all citizens and residents. This integration allowed travel records to be cross-checked with patients seeking medical treatment for COVID-19 symptoms, allowing officials to quickly identify possible cases.[15]

Several days after the integrated system was launched, it was expanded to cover not just people flying in from affected parts of China, but anybody with fourteen-day travel histories to anywhere in China, as well as Hong Kong and neighbouring Macau. On February 14, an online system was launched so that travellers could, before even beginning their trip, scan a QR code leading to an online health declaration. This allowed for faster immigration clearance for people not coming from affected regions such as China nor displaying symptoms of COVID-19, and allowed immigration officers to give greater scrutiny to those coming from affected regions.[16]

By mid-February, most flights from China were suspended until April 29, and all visitors who had been to China in the previous fourteen days were required to self-quarantine.[17] Anybody who violated these quarantines, such as a man who returned from Wuhan feeling sick and then went to a dance club, could be fined up to the equivalent of some C$13,000.[18] Restrictions were further toughened so that non-Taiwanese citizens with travel histories to China, Hong Kong, or Macau in the previous fourteen days were not allowed entry into the country. Particular care was taken with cruise ships, given their ability to incubate infectious diseases even in normal times. The integrated system tracked cruise ship patients and sought out correlated clusters of cases, with particular codes for pneumonia cases that had not improved after three days, as a marker for possible COVID-19 infection.[19]

All such arriving passengers had their temperature checked at the airport or, in the case of high-risk origins, by officials boarding planes.

Of course, unlike Canada, the vast majority of visitors to Taiwan come by air. All such arriving passengers had their temperature checked at the airport or, in the case of high-risk origins, by officials boarding planes. Meanwhile, all arriving overseas passengers were required to turn over their mobile phone so that its GPS signal could be integrated with the health tracking system. People who were identified as at-risk, based on travel history and symptoms, were required to remain under home quarantine, again under penalty of stiff fines, and were monitored through their mobile phones.[20]

This phone monitoring was achieved by registering the phone's GPS location to the place of quarantine, and automatic alarms if the phone moved away from the place of quarantine, while local officials were required to call the person randomly twice a day to ensure they were where their phone said they were.[21] If the reception was poor or the phone battery was dead, police were dispatched and would "show up within minutes." This system offered several important benefits, including

13. C. Jason Wang, Chun Y. Ng, and Robert H. Brook, *op. cit.*, footnote 8, p. 1.

14. *Idem.*

15. *Ibid.*, p. 2.

16. *Idem.*

17. C. Jason Wang, Chun Y. Ng, and Robert H. Brook, Supplementary online content to "Response to COVID-19 in Taiwan: Big Data Analytics, New Technology, and Proactive Testing," *JAMA*, March 2020, pp. 3-4.

18. Author's calculations. *Ibid.*, p. 3; Cindy Sui, "What Taiwan can teach the world on fighting the coronavirus," NBC News, March 10, 2020.

19. C. Jason Wang, Chun Y. Ng, and Robert H. Brook, *op. cit.*, footnote 17.

20. *Idem.* Author's calculations.

21. Cindy Sui, "In Taiwan, the coronavirus pandemic is playing out very differently. What does life without a lockdown look like?" NBC News, April 23, 2020.

allowing officials to geographically pinpoint likely outbreaks and prepare local health resources.[22] Meanwhile, the check-up calls from local officials allowed quarantined individuals to share any problems or symptoms they might have, so that health resources could be dispatched to the individual with proper precautions. The local officials additionally arranged for food and other supplies to be delivered to the quarantined individuals, so that they would not suffer or need to leave quarantine.[23]

In terms of domestic travel, all international visitors, Taiwanese or foreign, were banned from taking public transportation, even from the airport. Instead, they were required to take "epidemic-prevention taxis" to get from the airport to their quarantine location. They were also required to use these special taxis to travel from quarantine to a hospital if they needed to see a doctor. These special taxis were provided by regular taxi drivers who volunteered for extra pay. The taxis were disinfected after every trip, were not allowed to take regular customers, and after a month the drivers themselves, along with their taxis, were required to quarantine for fourteen days. These taxis were fitted with GPS devices to ensure they were not cruising for normal passengers or taking quarantined persons on regular trips.[24]

While differing in some details, South Korea implemented a similar package of precautions for travel monitoring, restrictions, and quarantine enforcement, including using geolocation data from phones and warrantless access to all CCTV footage for health authorities.[25] As mentioned above, South Korea's outcomes were similarly impressive.

1.3. Community Transmission: Identifying Domestic Cases

While monitoring incoming travellers targeted overseas transmission, the second pillar of Taiwan's COVID-19 response focused on community transmission, via targeted testing and surveillance by health authorities.

Indeed, before having confirmed even a single domestic case, Taiwan was already requiring hospitals to test anybody with symptoms. Testing kits were available and widely used, even retesting at-risk patients to ensure they remained uninfected. Health officials then traced and isolated people with whom the patient had come into physical contact, and quarantined these people, again under penalty of a large fine.[26]

This testing capacity allowed for widespread contact-tracing, which would be relatively useless without the ability to test the traced persons. In one episode, 21 navy sailors tested positive following a visit to the small Pacific nation of Palau. The sailors were interviewed, their movements and contacts traced, then a total of 200,000 possible contacted persons all received text messages informing them of the potential contact and inviting them to report symptoms.[27]

The second pillar of Taiwan's response focused on community transmission, via targeted testing and surveillance.

The early testing capacity furthermore allowed for the testing of patients who had previously experienced flu symptoms. Again, using the existing digitized and integrated health system databases, patients who had tested negative in the past for influenza were re-tested; one out of 113 was indeed found to be COVID-positive[28] and was quarantined and contact-traced.

Beyond testing, domestic symptom surveillance measures were established with similar urgency to travel monitoring, and similarly early. On January 20, after just a few sporadic cases were reported from China, Taiwan's Centers for Disease Control (CDC) officially activated the Central Epidemic Command Center (CECC), authorized to enlist various ministries, including the ministries of transportation, economics, labour, and education, in a coordinated effort. The Command Center activated protocols for infectious pneumonia, with the minister of health and welfare as a designated "commander." This centre quickly ramped up testing to 1,300 samples per day. Domestic mask production, another priority for the CECC, was quickly increased to 5 million masks per day for a country of 24 million.[29]

Meanwhile, temperature monitoring was conducted widely at the level of businesses, workplaces, and

22. C. Jason Wang, Chun Y. Ng, and Robert H. Brook, *op. cit.*, footnote 8, p. 1.

23. *Idem.*

24. Cindy Sui, *op. cit.*, footnote 21.

25. Derek Thompson, "What's Behind South Korea's COVID-19 Exceptionalism?" *The Atlantic,* May 6, 2020.

26. Isaac Scher, "Taiwan has only 77 coronavirus cases. Its response to the crisis shows that swift action and widespread healthcare can prevent an outbreak," *Business Insider,* March 17, 2020.

27. Mary Hui, "Taiwan hasn't needed lockdowns to fight the coronavirus, but it simulated one anyway," *Quartz,* April 20, 2020.

28. C. Jason Wang, Chun Y. Ng, and Robert H. Brook, *op. cit.*, footnote 8, p. 1.

29. C. Jason Wang, Chun Y. Ng, and Robert H. Brook, *op. cit.*, footnote 17, p. 5.

schools. Temperature checks were installed in large office buildings and public venues, with managers instructed to notify public health officials of any people with a fever. Sports complexes were required to list the names and phone numbers of visitors, as well as noting which part of the complex they visited to expedite contact tracing should an outbreak occur. Schools asked parents to check students' temperatures daily before sending them to school, and teachers would double-check at the school gate. Anybody who did have a fever was required to stay home and call a hospital. Notably, these measures were widely obeyed,[30] possibly because the government was seen as competent and the measures worthwhile.[31]

1.4. Rapid Provision of Protective Equipment

A third pillar of Taiwan's COVID-19 response has been rapidly increasing the production and distribution of protective equipment, particularly medical-grade protective face-masks. While the effectiveness of masks to protect against COVID-19 has become controversial, the way in which Taiwan quickly built up production and distribution is instructive for how Canada could handle personal protective equipment (PPE) for patients or health care providers, a topic that has indeed been problematic during Canada's COVID-19 response.

Broadly, Taiwan quickly built up a public stockpile of masks that were shipped to pharmacies and convenience stores across the country and sold at a subsidized price below one dollar.[32] In order to prevent hoarding, each person could buy three subsidized masks per

30. Cindy Sui, *op. cit.*, footnote 21.

31. Kathrin Hille, "Taiwan's pride in Covid-19 response spurs hopes of political Change," *Financial Times*, May 27, 2020.

32. Author's calculations. Cindy Sui, *op. cit.*, footnote 18.

week, using an ID card.[33] The subsidized masks were additionally sold online to meet demand and ensure that all Taiwan residents had a sufficient supply of masks amid the outbreak.[34]

Incidentally, this policy of subsidized masks with identification allowed automatic tracking of potentially sick people, who might buy more masks, in order to better understand where tests were most needed and which local hospitals should be prepared for possible outbreaks.[35]

Meanwhile, in order to alleviate mask shortages, Taiwan's newly created "Digital Ministry" quickly crowdsourced an app so people could see in real time which pharmacies had stocks of masks available to buy at the subsidized price, and which were out of stock.[36] In fact, this crowdsourced initiative was quickly profiled by a team at the University of Pennsylvania as a model strategy[37] for solving public health challenges with the help of the private sector and entrepreneurs.

Taiwan's manufacturing effort was eventually producing 20 million surgical masks per day, to the point that it began to donate millions of masks to other countries.

Moving to the next step in the supply chain, approximately 3,000 of Taiwan's 7,000 public postal service employees were enlisted to take over the logistics of mask distribution to 6,515 pharmacies and 52 health centres nationwide. Each location received 200 adult face masks and 50 children's face masks every day, with sales logged by the above-mentioned app so that customers could easily find available masks.[38]

Finally, perhaps the most important link in the supply chain was actual mask production. Before the crisis, Taiwan did not have sufficient domestic production of masks, and it had trouble sourcing protective equipment from China, as did Canada and other countries. In response to this, local mask production was quickly ramped up, and soldiers were mobilized to man newly built mask production lines. Sixty additional surgical mask production lines were installed, representing a capacity of 10 million masks per day.[39]

Normally, this might have taken four to six months to activate, but it was achieved in a single month, at an expense of roughly C$10 million and using 1,800 army reservists dispatched to 28 individual manufacturers with expertise in manufacturing fabrics and related products.[40] It is worth noting that both the cost and the labour involved in such an undertaking would have been very manageable for even a provincial government in Canada, and certainly for the federal government. Taiwan's manufacturing effort was eventually producing 20 million surgical masks per day, [41] to the point that it began to donate millions of masks to other countries suffering shortages.[42]

1.5. Economic Lockdowns

The most glaring difference between Taiwan and Canada is that, like the other industrialized countries of Asia, Taiwan never implemented the type of economic lockdowns tried in the West. In fact, the West in general adopted a similar policy package to Taiwan's, including travel screening, domestic symptom surveillance, promoting production of protective gear, and compulsory quarantines, but without Taiwan's level of government competence, or Korea's or Japan's for that matter.

As a result, these industrialized Asian countries did not shut down the economy as was done in the West. They did not close schools, and even left restaurants and bars open, with adjustments to limit risk such as taking temperatures, as discussed above. This has left these economies largely intact, while avoiding much of the collateral damage already widely seen in the West, ranging from mass unemployment and bankruptcies to dramatic rises in depression, suicide, and drug overdoses.

Instead, as mentioned, the majority of workplaces and offices, even public venues, remained open across Taiwan, with frequent temperature checks and reporting of symptoms. The four areas that were given special care as potential vectors of transmission were restaurants

33. Huang Tzu-ti, "Public in Taiwan allowed to buy 3 masks a week starting March 5," *Taiwan News*, March 2, 2020.

34. Jeffrey Wu and Frances Huang, "Online vendors to start selling surgical masks Wednesday," *Focus Taiwan*, June 2, 2020.

35. Huang Tzu-ti, *op. cit.*, footnote 33.

36. Wharton School, *op. cit.*, footnote 9.

37. *Idem.*

38. C. Jason Wang, Chun Y. Ng, and Robert H. Brook, *op. cit.*, footnote 17, p. 5.

39. *Ibid.*, p. 4.

40. *Ibid.*, pp. 4-5. Author's calculations

41. Business Wire, "3 Factors Contribute to Taiwan's Success against COVID-19: Former VP," July 13, 2020.

42. Business Wire, "Taiwan Donates over 51 Million Masks to Countries Worldwide," July 22, 2020.

and bars, public transport, schools, and public gatherings.

In the case of restaurants and bars, as with offices, masks were required when not eating, temperature checks and sanitizer were required, and customers had to be seated at a prescribed distance from one another—in practice, this might mean using every other seat or every other table.[43] Masks were similarly required to use public transportation, enforced by fines.

For schools, the policy was determined by the Ministry of Education, and was a graduated response. First of all, if a single student or teacher was diagnosed with COVID-19, all of their classes would be suspended for fourteen days. If a second student or teacher were infected in the same school, the entire school would close for fourteen days. And if, at any point, one-third of the schools in a given city were shut down, then all remaining schools in the city would also shut for fourteen days.[44] This tailored policy meant that the vast majority of students could continue their studies, and their parents could go to work, with the flexibility to stop individual outbreaks.

These industrialized Asian countries did not close schools, and even left restaurants and bars open, with adjustments to limit risk.

A very similar graduated policy was used in universities, which might face greater risk to the extent that they are much larger than K-12 schools or because more students might have recently travelled abroad. The Ministry of Education helped each university establish task forces that screened students based on travel history, occupation, contacts, and clusters of known infections. Masks

43. Cindy Sui, *op. cit.*, footnote 21.

44. C. Jason Wang, Chun Y. Ng, and Robert H. Brook, *op. cit.*, footnote 17, p. 6.

were required indoors, along with frequent sanitization and certain ventilation requirements.[45]

These university policies were ultimately successful, with only seven confirmed cases among six separate universities as of June 18, suggesting that propagation among the university community was almost non-existent. The one university with two cases "was temporarily closed, adopted virtual classes, and reopened after fourteen days of contact tracing and quarantine of possible contacts."[46]

The final focal area of social distancing was public gatherings. Gyms, parks, and beaches all remained open, but "nonessential gatherings" were limited to no more than 100 people indoors and 150 people outdoors.[47]

1.6. COVID-19 Cases in Canada and the West

When looking for policy models, it is tempting to look to Western countries such as the UK or other parts of Europe. Unfortunately, cross-country comparisons suggest that no Western country was even remotely well prepared for the pandemic. While cumulative confirmed cases as of August 13 were 3,200 per million people in Canada (versus 20 per million in Taiwan), there were 1,400 per million in Finland, 2,700 in Germany, 4,700 in the UK, 7,800 in Sweden, and 11,900 per million in tiny Luxembourg. The US, meanwhile, had logged 16,000 cases per million.[48]

Among the lowest case numbers in the "West" were Australia and New Zealand, at 885 per million and 253 per million, respectively. Still, even New Zealand's case rate was over twelve times higher than Taiwan's, and it has become increasingly clear that this may have been due to New Zealand's strict border closure in what is, after all, a remote island nation. Such options may be of limited use to countries like Canada or Taiwan that have closely integrated and much larger neighbours.

Indeed, months later, New Zealand discovered the risks of over-reliance on border closures, with an outbreak after nearly 100 days being COVID-free sending the country back into lockdown.[49] One of New Zealand's top epidemiologists subsequently refused credit for the low cases, reserving his praise for, as it turns out, Taiwan.[50]

In Australia, borders were similarly closed early and, ultimately, to all foreigners. Links with China were cut as early as February 1st, then by March to all non-citizens and non-residents. Notably, Australia did not impose early lockdowns implemented elsewhere, but did, like Sweden, urge people to stay home.[51] The "overwhelming number" of new cases during the peak of the crisis in Australia had been directly linked to overseas travel, so the border controls themselves were credited as a "turning point" in case numbers.[52]

Cross-country comparisons suggest that no Western country was even remotely well prepared for the pandemic.

Unfortunately, like New Zealand, Australia's heavy reliance on border controls rather than the kind of proactive measures seen in Taiwan may have simply delayed the crisis, as Australia suffered a "second wave" and fresh lockdowns in major cities even as the rest of the West had long since passed the peak of the crisis.[53]

Setting aside these cases, the single biggest contrast between the kinds of measures taken by Taiwan, Korea, or Japan and countries in the West like Canada have been the Western reliance on generalized lockdowns. Western countries mandated the closing of offices, factories and worksites, retail stores and restaurants, and schools. In many countries, again including Canada, even outdoor activities were restricted.

As we now know, the consequences of this have been economically catastrophic across Canada and the West, throwing millions into unemployment and bankruptcy at levels unseen since the Great Depression. Lockdowns have also entailed much collateral damage in the form of more numerous instances of depression and

45. Shao-Yi Cheng *et al.*, "How to Safely Reopen Colleges and Universities during COVID-19: Experiences from Taiwan," *Annals of Internal Medicine*, July 2020.

46. *Idem.*

47. Cindy Sui, *op. cit.*, footnote 21.

48. Author's calculations. European Centre for Disease Prevention and Control, *op. cit.*, footnote 5.

49. Nick Perry, *op. cit.*, footnote 2.

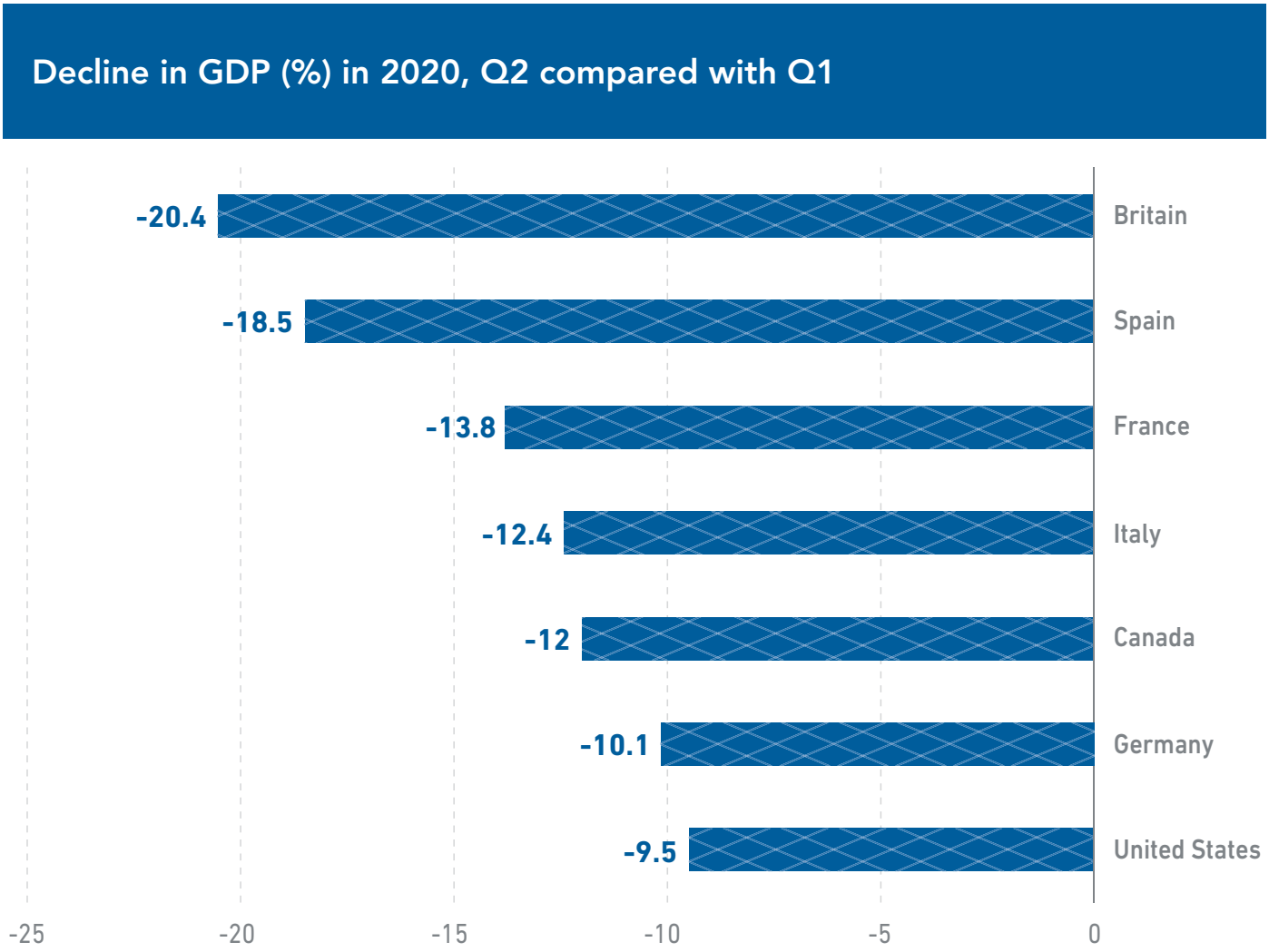
50. Anna Jones, "How did New Zealand become Covid-19 free?" BBC News, July 9, 2020.

51. Nectar Gan, "How did Australia flatten its coronavirus curve? Restrictions easing as infection rate continues to fall," CNN News, May 1st, 2020.

52. Stephen Duckett and Anika Stobart, "4 ways Australia's coronavirus response was a triumph, and 4 ways it fell short," *The Conversation*, June 3, 2020.

53. Damien Cave, "What Lockdown 2.0 Looks Like: Harsher Rules, Deeper Confusion," *The New York Times*, August 4, 2020.

Figure 1-1



Source: Eshe Nelson, "Britain's New Record: A Recession Worse Than in Europe and North America," *The New York Times*, August 12, 2020.

suicide,[54] as well as the health effects of delayed non-COVID-19 medical care.[55]

The effectiveness of lockdowns is among the most intense and controversial debates in the West. Some of the arguments will be explored below, but the most salient point is that competent and proactive pandemic management by governments can apparently be so effective that the lockdown question becomes moot. That is, given that Taiwan has had just seven COVID-19 deaths so far without lockdowns, even if lockdowns "worked," they were completely unnecessary.

With that caveat in place, it is important to remember that because COVID-19 is deadly and contagious, there was substantial voluntary physical distancing across most countries, regardless of whether it was mandated or remained voluntary. Google has published mobility reports since the beginning of 2020 tracking the number of people going to work, visiting stores, and staying home in a variety of countries.

According to Google's data, by April 1st, Canada had seen a 61% drop in workplace attendance, and a 52% drop in retail and recreation (see Table 1-2). In Sweden, which did not enact mandatory lockdowns on the scale that Canada did, the drop was 29% for work and 22% for retail and recreation. These numbers suggest that perhaps half of physical distancing was voluntary, with the other half due to mandates. Numbers in the US

54. Leo Sher, "The impact of the Covid-19 pandemic on suicide rates," *QJM: An International Journal of Medicine*, Vol. 113, No. 10, October 2020, p. 710.

55. Allison Jones, "Delayed cardiac surgeries due to coronavirus may have caused 35 deaths in Ontario: minister," Global News, April 28, 2020.

Table 1-2

Social mobility, voluntary and forced, % change from baseline (February 15, 2020)

	Canada	Sweden	US	Taiwan
Workplace attendance				
April 1st, 2020	-61%	-29%	-49%	+7%
May 1st, 2020	-55%	-79%	-45%	-36%
June 1st, 2020	-43%	-23%	-37%	+5%
Retail & recreation				
April 1st, 2020	-52%	-22%	-37%	-10%
May 1st, 2020	-47%	-46%	-32%	+3%
June 1st, 2020	-23%	+1%	-18%	-10%
Grocery & pharmacy				
April 1st, 2020	-21%	-5%	-11%	+2%
May 1st, 2020	-16%	-24%	-7%	+15%
June 1st, 2020	-2%	+5%	-2%	+6%

Note: Google cautions that inter-country comparisons may not be fully comparable.
Source: Google, COVID-19 Community Mobility Reports, October 2020.

were in between, at 49% for workplaces and 37% for retail and recreation, reflecting the fact that some states like New York imposed strict lockdowns while others like South Dakota remained open.[56]

Lockdowns have entailed much collateral damage in the form of more numerous instances of depression and suicide.

Taiwan, meanwhile, on the same date actually had seen a rise in workplace attendance, perhaps to handle production or logistical disruptions due to the virus or to partners in countries enduring lockdowns. Meanwhile, retail and recreation in Taiwan dropped just 10%, reflecting the low level of fear among the majority of shoppers who were not elderly or living with pre-existing conditions.

By May, the disruption continued in Canada and actually intensified in Sweden, as high case numbers there led people to voluntarily distance to a greater degree even than in Canada. On May 1st, Google measured in Canada a 55% drop in workplace attendance and a 47% drop in retail and recreation, while in Sweden the drops were 79% and 46%. Essentially, Swedes individually implemented a voluntary, bottom-up lockdown.

Parts of Sweden were thus open and vibrant, especially where young people continued to congregate, while other parts essentially felt locked down. One epidemiologist at the Karolinska Institute in Stockholm wrote, "Apart from a few popular streets in central Stockholm, the pedestrian traffic elsewhere is down anywhere from 50% to 90%."[57]

Taiwan, meanwhile, was well past the crisis. On May 1st, it had actually seen a rise in retail and recreation, but a 36% drop in workplace attendance, perhaps as a result

56. Google, COVID-19 Community Mobility Reports, October 2020. Google cautions that inter-country comparisons may not be fully comparable.

57. Kristina Fiore, "Are Stockholm's Hospitals About to Break?" *MedPage Today,* May 1st, 2020.

Table 1-3

Louisiana vs. West Virginia: Social mobility, % change from baseline (February 15, 2020)

	Louisiana	West Virginia
Cases per million	29,000	4,600
Workplace attendance		
April 1st, 2020	-45%	-43%
May 1st, 2020	-39%	-39%
June 1st, 2020	-26%	-27%
Retail & recreation		
April 1st, 2020	-32%	-34%
May 1st, 2020	-24%	-24%
June 1st, 2020	-8%	+5%
Grocery & pharmacy		
April 1st, 2020	-3%	-10%
May 1st, 2020	+3%	-3%
June 1st, 2020	+2%	+10%

Note: Google cautions that inter-country comparisons may not be fully comparable.
Source: Google, COVID-19 Community Mobility Reports, October 2020.

of overseas disruptions, or of companies taking precautions and having employees work from home to reassure partners.[58]

By June 1st, 2020, as deaths continued to decline worldwide, the worst had passed for all of these countries. Canadian and US retail and recreation had recovered roughly half the COVID-19 drop, while Sweden's had fully returned to normal. Workplace attendance in Canada remained depressed, however, at 43% below baseline, and not much better in the US at 37% below, but significantly better in Sweden at just a 23% decline. Taiwan, meanwhile, had returned to a level of workplace attendance above the pre-crisis baseline, perhaps fixing the damage and disruption in supply chains or re-establishing on-site operations.

While it is early days to study these data, one interesting pattern is that, among US states, distancing had very little impact on the case toll. For example, the worst-hit state as of August 14 was Louisiana, with 29,000 cases per million, while West Virginia was among the lowest, at 4,600 cases per million.[59] Google's data shows Louisianans actually stayed home about as much as West Virginians, as measured by workplace attendance and retail and recreation numbers. That is, the most economically significant elements of lockdowns appear to have little impact on a six-fold difference in case numbers.

There was substantial voluntary physical distancing across most countries, regardless of whether it was mandated or remained voluntary.

58. Google, *op. cit.*, footnote 56.

59. Centers for Disease Control and Prevention, Coronavirus, COVID Data Tracker, Case Trends, Compare State Trends, October 2020.

Alongside such anomalies, the key takeaways from this data are that, first, a significant portion of distancing was voluntary, driven not by mandates, but by individuals' perception of the risk. In the peak of the crisis, Swedes in fact distanced much more than Canadians, despite being free to ignore physical distancing recommendations. Taiwanese never distanced significantly, as measured by Google's retail location data, perhaps because they quickly saw that their government had the crisis in hand.

While this paper is not focused on the effectiveness of generalized lockdowns on reducing deaths from COVID-19, it is important to note that there is substantial disagreement about whether lockdowns have any effect at all, or maybe even increase the death toll via the well-known socioeconomic health effects of unemployment, bankruptcy, and financial stresses.

For now, the key point is that lockdowns may well have been moot, and will be moot in the future, if effective and relatively straightforward tactics are used to control a pandemic when it first starts to spread. If these measures had been used in Canada, Europe, or the United States, then devastating lockdowns would likely never even have been considered.

Part One Summary

Because Taiwan carefully and competently managed the outbreak, using travel screening and case identification, and manufacturing and distributing protective gear, it was never forced into the Sophie's Choice faced in the West that ultimately drove policy-makers to untested and economically devastating generalized lockdowns.

It is important to highlight the fact that we cannot know with precision which measures in Taiwan were most important in limiting cases and deaths. This means that Canada does not necessarily have to adopt the entire package—simply screening flights before disembarkment, say, and building up domestic supplies of protective equipment would intuitively make a substantial contribution to pandemic response efforts without overly burdening Canadian society.

If, for example, contact tracing is not possible to the degree it was conducted in Taiwan, it is important to learn about the measures that can be taken in Canada today. And even for measures that are politically impossible at the moment, it is important to remain aware that there are ways to combat a pandemic that do not involve the kind of untargeted economic lockdowns that, unfortunately, constituted a foundation of COVID-19 policy in Canada.

PART TWO

Expanding Surge Capacity

So far, we have discussed best practices for keeping case numbers low. But some of these practices may take time to implement in Canada, during which we remain vulnerable to subsequent "waves" of COVID-19. This brings us to the next line of defence before turning to economically catastrophic lockdowns: increasing the ability of the health care system to expand its capacity in a crisis.

"Surge capacity" is the ability of a medical system to quickly increase staff, space, equipment, and funds in response to a crisis. It serves to respond to natural disasters or mass casualty events, from terrorism to industrial accidents to transport disasters. In the context of an infectious pandemic, surge capacity acts as an important "insurance policy" that gives policy-makers the room to manoeuvre needed to make careful decisions without worrying that hospitals and clinics will be overwhelmed.

Several months ago, the RAND Corporation, a prestigious US health care think tank, published a study on surge capacity, disaggregating surge into three elements: space, staff, and stuff—that is, medical locations and facilities, trained and qualified health professionals, and equipment or drugs.[60] In the study, RAND argued that typically, these resources are not available in similar proportion; rather, one of the three will be a bottleneck.

Space, in this context, means approved and appropriate space to administer care—surgical theaters, hospital beds, locations where patients can be isolated. This was a particular challenge with COVID-19 because of the need to distance patients from each other, as well as maintaining separate quarantine zones to avoid mingling staff who treat COVID-infected patients and staff who treat others.[61] This element reduced space significantly, imposing a surprise "tax" on surge capacity.

The second element is staff, with best practices during surge being to quickly recall retirees and, even if temporarily, re-license them. In addition, nurses and other support staff can often be rapidly "retooled," for example training non-ICU nurses on ICU equipment, procedures, and requirements. Of course, this on-boarding of retirees and retraining of staff can itself impose a cost on personnel suddenly in short supply, since training does take time and can temporarily slow an organization. While the RAND study does not focus on telemedicine, this can allow more intensive use of specialized staff, for example a cardiologist treating patients remotely across multiple hospitals rather than each hospital bumping up against a bottleneck.

Two aspects of surge staffing were unique to COVID-19. Because it is an infectious respiratory disease that tends to be more lethal to older people, it imposes risks precisely on the retired staff who would normally be recalled in a surge. As a result, RAND recommended using these retired staff primarily to treat non-COVID patients, freeing up younger staff to attend to those infected with COVID-19. At the same time, telemedicine offered the important benefit that staff could be kept physically distanced from patients, avoiding becoming spreaders of infection themselves and saving valuable time in decontamination and moving between quarantined locations.[62]

Surge capacity gives policy-makers the room to manoeuvre needed to make careful decisions without worrying that hospitals and clinics will be overwhelmed.

The third area of focus in the RAND study is "stuff"—medical equipment and drugs, including specialized equipment needed for COVID-19 such as respirators and personal protective equipment. Some of this was stockpiled, but what is not stockpiled ultimately becomes a question of flexible budgets. Quickly getting the funds, the procurement staff, and the ability to install and operate specialized equipment constitutes the third potential bottleneck.

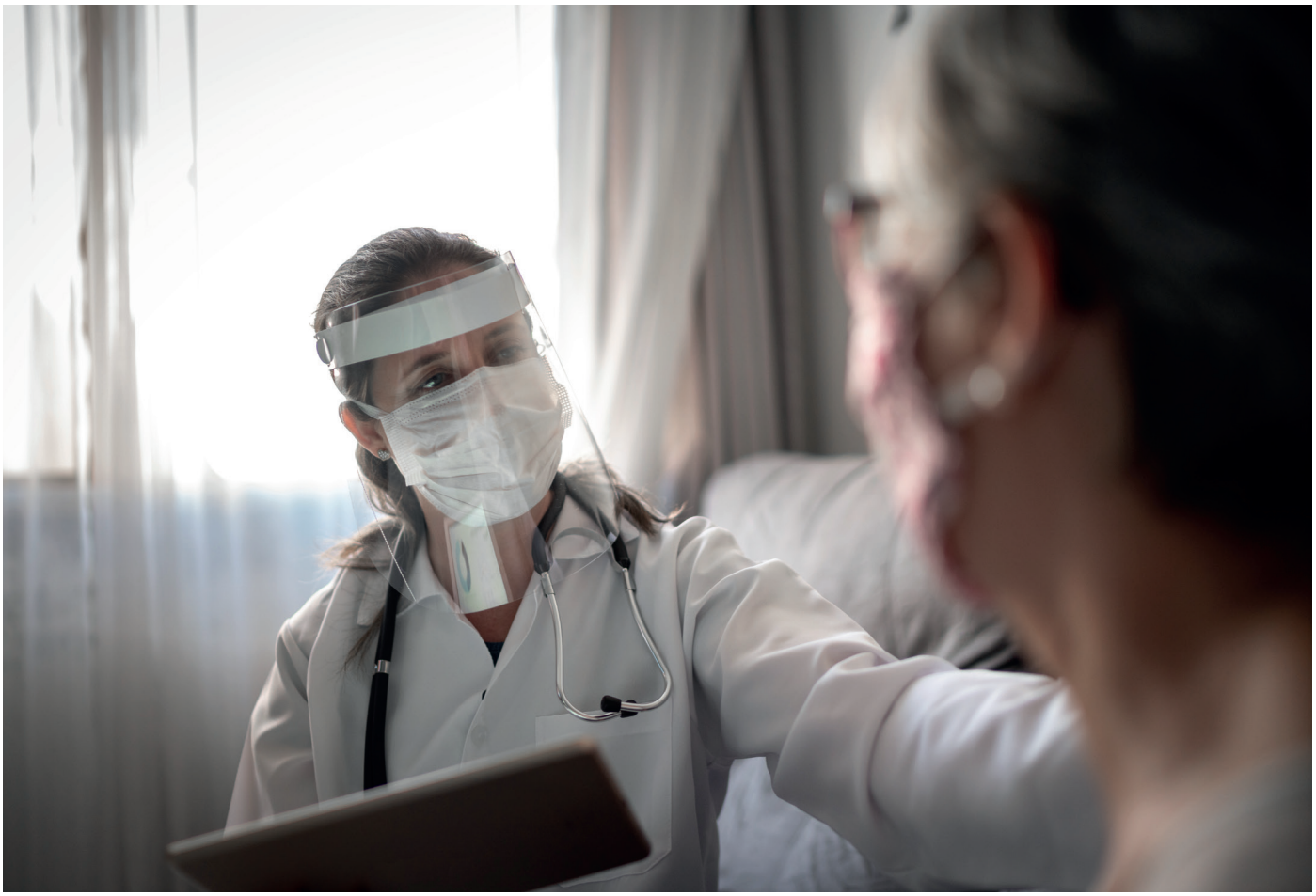
It's worth pointing out that with an appropriate sense of urgency, none of these three elements should have been difficult for Canada. There are, as it happens, thousands of trained medical staff in Canada who are either retired or whose licences have lapsed.[63] As for support

60. Mahshid Abir *et al.*, "Critical Care Surge Capacity in U.S. Hospitals: Strategies for Responding to the COVID-19 Pandemic," RAND Corporation, 2020, p. 2.

61. Gareth Iacobucci, "Covid-19: Doctors sound alarm over hospital transmissions," *The BMJ*, May 19, 2020, p. 1.

62. Christopher Cheney, "Coronavirus: Urgent need to boost care capacity and healthcare worker safety," *HealthLeaders*, March 26, 2020.

63. Morgan Lowrie, "COVID-19: Thousands of doctors, nurses rally to government call to fight coronavirus," *National Post*, March 17, 2020.



services such as procurement, Canada has among the most educated workforces in the world.[64]

Federal and provincial governments stood ready to provide billions of dollars very quickly, to do whatever it took. And, it bears noting, Canada is a far richer country than either Taiwan or Korea, both in terms of GDP per capita and in absolute terms. Yet these resources were simply not brought into operation in a timely manner, suggesting the problem lies in how resources are used as much as in raw quantities.

And it is in terms of surge, above all else, that Canada has performed quite poorly during the pandemic, not only displaying an unremarkable ability to expand capacity, but also severe bureaucratic inertia when it comes to repurposing the resources that already exist within the system yet are unused. Most dangerously, this mediocre surge is coming amid decades-long shortages across Canada's health care system that have left Canada with third-world levels of key medical equipment such as MRI machines, comparatively long waiting times, and among the lowest number of medical staff per capita of any industrialized country.[65]

As in Part One, the goal is to identify best practices. Because COVID-19 has hit the province of Quebec harder than nearly any country in the world, in terms of both cases and deaths per million, this means looking at countries with comparable numbers to Quebec.

As of July 21, 2020, Quebec had 6,800 cases per million, and 665 deaths per million, three to six times the rest of Canada, which registered just 1,800 cases per million and 110 deaths per million.[66] As mentioned above, over the same period, Taiwan suffered just twenty cases per million and 0.3 deaths per million—just seven deaths in total. Indeed, at the peak of the crisis in

64. United Nations Development Programme, *Human Development Indices and Indicators – 2018 Statistical Update,* September 25, 2018, p. 22.

65. Peter St. Onge, "Canada's Health Care Woes: Waiting Lists, Outdated Equipment, Staff Shortages," MEI, Economic Note, December 18, 2019, p. 3.

66. Author's calculations. Government of Canada, *Canada COVID-19 Weekly Epidemiology Report (15-21 July 2020),* July 24, 2020, p. 21.

Quebec, on April 29, 2020 there were 151 deaths in a single day.[67]

Obviously, then, Taiwan will not be very instructive for measuring surge capacity. Indeed, there are only a few countries that have suffered a number of cases comparable to Quebec's and that have universal health care systems that might serve as achievable models for Canada. Among these are two with statistics of comparable quality to Canada's: Sweden and Singapore. Both had more cases per capita than Canada, and Sweden had many more deaths than Canada, albeit not as many per capita as Quebec.

2.1. Cases in Surge Capacity: Sweden and Singapore

Surge Capacity in Sweden

Early on, Sweden had among the highest rates of COVID-19 cases and deaths in the world. By July 21, the country had a case-rate nearing 8,000 per million,[68] nearly 20% above that of Quebec. Some observers blamed the perfectly bad timing of Sweden's annual escape-from-winter holidays,[69] or the disastrous policy taken in Sweden, as in Quebec, to comingle infected and healthy vulnerable populations in senior centres with very little testing for COVID-19.[70]

Whatever the reason for Sweden's high rate of both cases and deaths, that terrible toll meant Sweden faced a comparable challenge to Quebec's in terms of both the number of COVID-19 patients and the number of COVID-19 related deaths. And yet, in terms of surge capacity, the country succeeded in responding to the challenge. Before the pandemic, Sweden had a well-established surge capability that, according to a pre-COVID-19 study in 2020, could within eight hours increase surgical capacity nationwide by nearly four-fold, from 105 to 399 surgical teams, along with 433 surgical theatres and 480 ICU beds that could quickly be made available. Half of this surge in teams could actually be achieved in just two hours.[71] The emphasis was on surgical resources since the system was optimized for natural disasters or mass casualty events, but in the context of COVID-19, the resources were surprisingly relevant since ICU beds turned out to be a key shortage in COVID-19 treatment in places like Canada.

Organization and delivery of health care in Sweden is mainly managed at the county level, ranging in population from 57,000 to 1.8 million people. Additional funding comes from the central government. In terms of capacity, university hospitals made up 36% of surgical theaters, while county-run hospitals made up 63%, and a single private hospital the final 2%.[72] Notably, county hospitals were actually faster than university hospitals, able to surge ICU capacity in just half the time, suggesting streamlined processes. In addition, the Swedish military was set up to contribute another 1.5% to 2.5% of capacity, relatively insignificant in the context of the overall hospital surge.[73]

Whatever the reason for Sweden's high rate of both cases and deaths, in terms of surge capacity, the country succeeded in responding to the challenge.

When COVID-19 struck, hospital capacity actually followed these parameters: capacity nationwide was quickly doubled, and tripled in the hard-hit Stockholm region. Even at the peak of the crisis, the country "always had around 20-30 percent spare capacity in intensive care." Ultimately, according to the chief physician at Mälarsjukhuset hospital in the southwest, "nobody was turned down for a lack of resources, and everybody who would benefit from intensive care received it."[74]

Of particular note was the experience at Karolinska University Hospital, the country's largest. The hospital was given special orders to scale up capacity to handle overflow from other facilities, and it rapidly increased ICU beds "from 38 to 200." At the peak of the crisis, Karolinska had "around 140 corona patients in intensive care… with spare beds to take in more."[75]

Karolinska's ability to rapidly expand capacity was exhibited in all three areas outlined in the RAND study: space, staff, and stuff. And in each case, the key to the

67. Government of Quebec, Health, Health Issues, A to Z, Coronavirus, Situation in Quebec, Distribution of the number of daily deaths related to the COVID-19 according to their living environment, October 2020.

68. Author's calculations. European Centre for Disease Prevention and Control, *op. cit.*, footnote 5.

69. Kristina Fiore, *op. cit.*, footnote 57.

70. *Idem.*

71. Magnus Blimark *et al.*, "Swedish emergency hospital surgical surge capacity to mass casualty incidents," *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine*, Vol. 28, No. 12, February 2020, p. 3.

72. *Idem.*

73. *Idem.*

74. Emma Löfgren, "'The biggest challenge of our time': How Sweden doubled intensive care capacity amid Covid-19 pandemic," *The Local*, June 23, 2020.

75. *Idem.*

expansion was flexibility: the ability to quickly deploy resources.

In terms of staff, Karolinska administrators had the flexibility to limit all non-essential administrative work, to repurpose administrative staff to hands-on patient care, and to bring in volunteers at their discretion, without needing centralized approval. They could bring in staff from other facilities or even regions, including staff from private care providers when needed.[76]

In terms of equipment, Karolinska achieved its increases to ICU beds in existing units, but also converted postoperative wards for COVID-19 patients. Hospital administrators had budget authority to order new equipment, without needing to go up the chain of command to bureaucrats. They also had the authority to proactively seek out older equipment, including mothballed but still usable equipment which was found in basement storage in Karolinska as well as at the National Board of Health emergency reserves. Finally, hospital administrators had the authority to borrow ventilators from private care providers and even from private veterinary clinics, although this option was never required.

Finally, Karolinska administrators had flexibility in terms of funding. Swedish health care is managed on an activity-based funding principle, unlike in Canada where annual budgets are set for the facility, regardless of how many patients come in for treatment. Regional health care directors were instructed to spend what they needed to, reassured by the Prime Minister that no expense would be spared.[77] Given the activity-based funding model, institutions could be more confident they would actually be compensated for the additional treatment, rather than fearing that any additional expenditures would come out of their politically negotiated budget.

Surge Capacity in Singapore

Aside from Sweden, one of the only developed countries with a universal system that saw comparable numbers of cases to Quebec's was Singapore. There, the number of cases was high for a different reason: migrant labourers. While Singapore saw very few cases among the general population, perhaps because it used similar policies to other developed Asian countries, many migrants in Singapore are unskilled and live in crowded dormitory-type housing where COVID-19 spread rapidly. As of July 21, Singapore registered 8,500 cases per million—roughly 25% higher than Quebec's rate, and higher even than Sweden's. Despite this enormous caseload, though, Singapore's death rate from COVID-19 was just 5 per million,[78] nearly as low as Taiwan's and less than 1/100 of Quebec's.

Like Sweden, Singapore rapidly tripled isolation beds, from some 550 in January to nearly 1,500 by early May. Also like Sweden, Singapore designated a key facility to handle overflow, the National Centre for Infectious Diseases (NCID). Because it was to function as a "backstop," capacity in the NCID was increased even more rapidly than in the rest of the system, rising five-fold to reach more than 500 isolation beds.[79] Ultimately, despite the surge in cases, this turned out to be more than enough, to the point that only non-urgent clinical work was delayed to maintain capacity.[80]

Despite this enormous caseload, though, Singapore's death rate from COVID-19 was just 5 per million, nearly as low as Taiwan's and less than 1/100 of Quebec's.

In addition to the in-facility surge across Singaporean hospitals, more than 10,000 beds were set up outside hospitals for patients who had COVID-19 but were not in critical condition. This was partly in order to reduce exposure inside facilities and partly to reserve intensive resources for the most critically ill. These beds were set up in company dormitories, army bases, and even a convention centre, with plans readied to rapidly expand that number if the need arose.[81] This spare capacity allowed Singapore the luxury of separating patients by infection status, minimizing the kind of nosocomial (hospital-acquired) transmission that affected Quebec so severely.

Ultimately in Singapore, 18,000 beds were created for the isolation and care of COVID-19 patients, with preparations for another 23,000, in a country of under 6 million people,[82] compared to just 11,321 beds in acute

76. *Idem.*

77. *Idem.*

78. Author's calculations. European Centre for Disease Prevention and Control, *op. cit.*, footnote 5.

79. Linette Lai, "Singapore's healthcare capacity can be expanded for Covid-19 needs: Gan Kim Yong," *The Straits Times,* May 5, 2020.

80. Lim Min Zhang, "Coronavirus: Hospitals expanding ICU capacity in anticipation of needs," *The Straits Times,* April 29, 2020.

81. Philip Heijmans, "Singapore Scaling Up Medical Facilities as Virus Cases Climb," *Bloomberg,* April 28, 2020.

82. *Idem.*

hospitals before COVID-19.[83] For a sense of scale, with a population almost seven times larger, there were 91,000 hospital beds in Canada in 2019, and just 4,500 intensive care beds.[84]

Like Sweden, Singapore gave authority to individual hospital administrators to flexibly deploy resources for rapid response. In the wake of the SARS crisis, Singapore had already previously streamlined fiscal and operational capabilities, and dedicated resources to outbreaks as contingencies.[85] Indeed, the NCID itself had been established as a post-SARS reform, and all hospitals in Singapore had already created isolation units collocated with emergency departments to quickly isolate patients from the non-infected population.

Long before COVID-19, Singapore's health ministry had mandated and meticulously maintained regular drills for all hospitals on both mass casualty events and infectious respiratory outbreaks, with results evaluated by neutral outside auditors. According to one academic paper, these simulations were "orchestrated down to the smallest detail" and involved all available staff—for example, even housekeepers and security guards could be repurposed for whatever tasks were needed[86]—something very difficult to imagine in Canada's heavily unionized health care system.

Additional post-SARS reforms streamlined communications with the Ministry of Health itself, coordinating contact tracing methods and reporting so that data was consistent and accessible to decision makers and to risk managers. Finally, audits were established to ensure stockpiles of materials and supplies, and the robustness of supply chains, again verified by neutral outside auditors.[87]

The broad lesson from Singapore is that, first, there was a seriousness of purpose given to surge capacity, and specifically to the mitigation of respiratory outbreaks, that was not seen in the West. This is understandable given Singapore's experience with SARS, and indeed many of these measures were introduced in the wake of government failures to contain the SARS epidemic. Yet while it is understandable, it must at this point be a priority for Western countries to build up flexibility and streamline processes to quickly respond to respiratory outbreaks that can so quickly mushroom into a pandemic.

2.2. Canadian Surge and COVID-19

The COVID-19 pandemic unfolded very differently in Quebec compared to the rest of Canada, with far more cases and deaths per capita. This was not necessarily anticipated at first, since early cases were concentrated in Ontario and British Columbia,[88] so the sense of urgency as well as lockdown measures were similar across the country. This also meant that the failures of Canada's surge were most tragic, above all, in Quebec.

On a per capita basis, Quebec suffered nearly four times as many cases as the rest of Canada, and seven times more deaths.

Out of 121,889 cases reported in Canada as of August 15, 2020, half were in Quebec (see Figure 2-1).[89] The death toll was yet more concentrated, with two-thirds of Canada's COVID-19 deaths occurring in the province. On a per capita basis, Quebec suffered nearly four times as many cases as the rest of Canada, and seven times more deaths. This meant that, compared to other countries, Quebec had a great need for surge capacity, while it turned out that things were less urgent in the rest of Canada.

Throughout Canada, deaths were concentrated in senior centres (see Table 2-1). This was especially true in Quebec, perhaps explaining its higher fatality rate. Canada's proportion of COVID-19 deaths occurring in long-term care centres was 81%,[90] almost double the OECD average (42%) and by far the highest among countries surveyed by the Canadian Institute for Health Information (CIHI). For comparison, the proportion of deaths in long-term care homes was 28% in Australia, 27% in the UK, and 31% in the US.[91] While the CIHI did not survey Sweden, others have put Sweden's ratio at

83. Kathleen F., "Are hospitals already full as COVID-19 cases continue to spike?" *The Online Citizen*, May 16, 2020.

84. Canadian Institute for Health Information, "Hospital Beds Staffed and In Operation, 2018–2019," *CIHI,* May 2020.

85. J. J. Woo, "Policy capacity and Singapore's response to the COVID-19 Pandemic," *Policy and Society*, Vol. 39, No. 3, June 2020, pp. 348-352.

86. Arpana R. Vidyarthi *et al.*, "Understanding the Singapore COVID-19 Experience: Implications for Hospital Medicine," *Journal of Hospital Medicine*, Vol. 15, No. 5, May 2020, p. 281.

87. *Idem.*

88. Steve Scherer and Allison Martell, "Canada's hardest hit province limits virus testing as demand grows for swabs," Reuters, March 14, 2020.

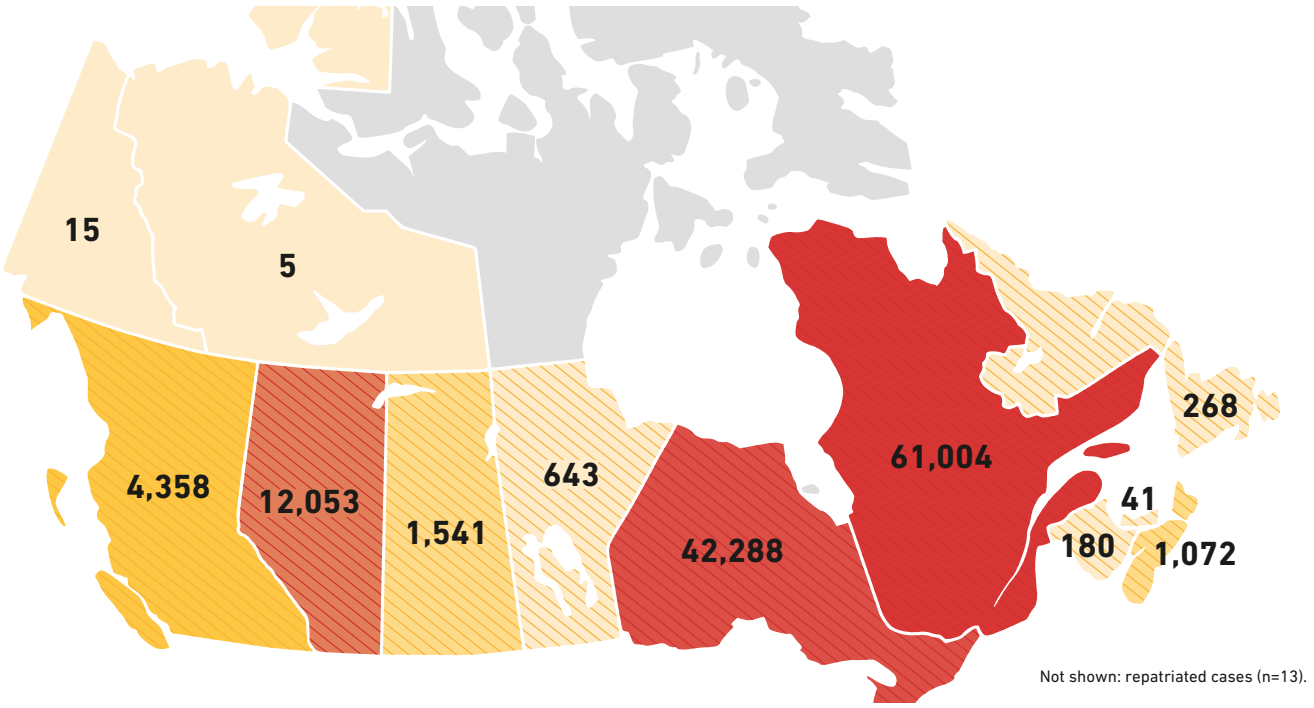
89. Author's calculations. Government of Canada, *Canada COVID-19 Weekly Epidemiology Report (9 August to 15 August 2020),* August 21, 2020, p. 3.

90. Canadian Institute for Health Information, "Pandemic Experience in the Long-Term Care Sector: How Does Canada Compare with Other Countries?" June 2020, p. 2.

91. *Ibid.*, p. 3.

Figure 2-1

Number of COVID-19 cases per province as of August 15, 2020



Source: Isha Berry *et al.*, "Open access epidemiologic data and an interactive dashboard to monitor the COVID-19 outbreak in Canada," *Canadian Medical Association Journal, For the COVID-19 Canada Open Data Working Group*, April 14, 2020; Open Covid, Data and Dashboard, Dashboard, consulted August 15, 2020.

50%.[92] Since CIHI's report, other estimates have found similar numbers for Canada, and especially Quebec, ranging from 81%[93] to 82%[94] nationwide. Indeed, the CIHI reports that, as of May 25, Canadian long-term care patients died at a rate nearly 50% higher than in the US, although there was a far lower rate of cases and deaths outside long-term care in Canada.

To understand why Canada had such an awful toll in senior centres, one observation stands out as important across Canada in the early days of COVID-19: concerns about health care system capacity. From the beginning of the pandemic, experts warned that Canada's long-running shortages of hospital beds, physicians and nurses, advanced equipment, and facilities meant that the Canadian health care system would be quickly overwhelmed.[95]

Canada's proportion of COVID-19 deaths occurring in long-term care centres was 81%, almost double the OECD average.

An April 2020 paper by a group of academic and government-affiliated researchers predicted that Canada would run out of ICU capacity in a matter of weeks. At peak crisis, and even with the most stringent distancing in their model, their projections meant that the four largest provinces would need to increase existing ICU beds by between 62% and 154% (see Table 2-2). This would also translate to a needed surge of between 310% and 746% of the stock of vacant ICU beds at that time.[96]

92. Per Bergfors Nyberg and Natalie Huet, "Are care homes the dark side of Sweden's coronavirus strategy?" *Euronews,* May 21, 2020.

93. Amanda Coletta, "Canada's nursing home crisis: 81 percent of coronavirus deaths are in long-term care facilities," *The Washington Post,* May 18, 2020.

94. Tonda MacCharles, "82% of Canada's COVID-19 deaths have been in long-term care, new data reveals," *The Toronto Star,* May 7, 2020.

95. Allison Martell and Moira Warburton, "Canada's stretched hospitals brace for impact," Reuters, March 20, 2020.

96. Affan Shoukat *et al.* "Projecting demand for critical care beds during COVID-19 outbreaks in Canada," *Canadian Medical Association Journal,* April 8, 2020, p. 4.

Table 2-1

COVID-19 deaths per million population as of May 25, 2020, total and long-term care centres

	Total	Long-term care centres
Australia	3	1
Israel	33	19
Norway	44	25
Slovenia	51	5
Hungary	52	3
Austria	72	13
Germany	99	34
Portugal	130	32
Canada	176	142
OECD average	266	112
United States	295	91
Ireland	329	184
Netherlands	341	50
France	436	208
Italy	543	176
United Kingdom	547	150
Spain	574	379
Belgium	807	400

Source: Canadian Institute for Health Information, "Pandemic Experience in the Long-Term Care Sector: How Does Canada Compare with Other Countries?" June 2020, p. 7.

In the face of this urgency, actual surge varied widely by province, but was much smaller than this predicted shortage, and indeed was a much smaller surge than Sweden or Singapore. An August 2020 paper by researchers at the University of Toronto listed the capacity efforts in Quebec,[97] which started with a total of 18,000 acute care beds (used for severe but stable patients) and 1,000 intensive care beds (used by the most severe cases), for a population of roughly 8.5 million. After emptying 4,000 beds primarily by postponing elective procedures, a net increase of just 2,000 available beds was announced. The province also identified 3,000 more beds that could be pressured into service during a surge, including 1,500 in non-hospital institutions and the recently decommissioned Hotel-Dieu hospital in Montreal. In all, generously including these non-hospital and decommissioned beds, this comes to a surge of 5,000 beds on an initial stock of 18,000—less than 30% and roughly half the surge seen in Sweden and Singapore.

The surge numbers were similar in other provinces. By the April peak of the crisis, Ontario had expanded critical care beds by just over 40%, with hopes to eventually increase acute care beds by 20%.[98] Ottawa area public health officials announced they would surge 304 critical care ventilated beds, thought to be essential for COVID-19 critical care, out of a total stock of 3,400 hospital

97. North American Observatory on Health Systems and Policies, *North American COVID-19 Policy Response Monitor: Quebec,* August 28, 2020, pp. 15-16.

98. Author's calculations. Hospital Management, "Canadian province Ontario expands hospital capacity," April 17, 2020.

Table 2-2

Predicted surge in ICU beds required during peak of crisis (April 2020)

	BC	Alberta	Ontario	Quebec	4-province average
Existing beds per 10K population	0.63	0.68	0.79	1.05	0.79
Vacant beds per 10K	0.13	0.14	0.16	0.21	0.16
Predicted beds needed per 10K	1.60	1.60	1.70	1.70	1.65
Implied surge, % of existing beds	+154%	+135%	+115%	+62%	+110%
Implied surge, % of vacant beds	+746%	+657%	+569%	+310%	+539%

Source: Affan Shoukat *et al.*, "Projecting demand for critical care beds during COVID-19 outbreaks in Canada," *Canadian Medical Association Journal*, April 8, 2020, p. 4. Author's calculations.

beds, with plans to add another 900 ICU beds at some point in the future.[99] Alberta announced a mere 26% rise in available hospital beds.[100] As one commenter noted, "after decades-long neglect of emergency rooms, it was too late for hospitals to suddenly build surge capacity for COVID-19 patients."[101]

Far from a well-established 85% international benchmark for occupancy, allowing for 15% spare capacity, Canadian hospitals routinely exceed 100% capacity.

Part of the reason for this inadequate surge was surely the near total lack of surge capacity in normal times. The Canadian Association of Emergency Physicians (CAEP) wrote, "The Covid-19 pandemic has rightly called into question the ability of Canadian emergency departments—and the healthcare system as a whole—to handle any potential large surge of patients presenting to our doors." CAEP specifically criticized the lack of a "buffer" due to existing overcrowding, and pleaded that, post-crisis, we do not return to being complacent about capacity.[102]

The CAEP report noted that, far from a well-established 85% international benchmark for occupancy, allowing for 15% spare capacity, Canadian hospitals routinely exceed 100% capacity, a situation of overcrowding that leaves patients waiting in hallways—so-called "hallway medicine"—or even giving up and going home after interminable waits at Canada's overcrowded emergency rooms.[103] Quebec, for example, had a median ER stay time of 4.6 hours in 2018-2019.[104] Meanwhile, roughly 1 million Canadians languish on waiting lists, potentially in pain or at risk of worsening condition, waiting for elective and even for medically necessary care.[105]

99. Josh Pringle, "Ottawa area hospitals working to add beds in event of COVID-19 patient surge," CTV News, April 3, 2020.

100. Author's calculations. CBC News, "Alberta looking to free up 2,250 hospital beds for COVID-19 patients, AHS official says," March 26, 2020.

101. Sharon Kirkey, "What Canada must learn from its flawed COVID-19 response to get ready for a second wave," *National Post*, May 15, 2020.

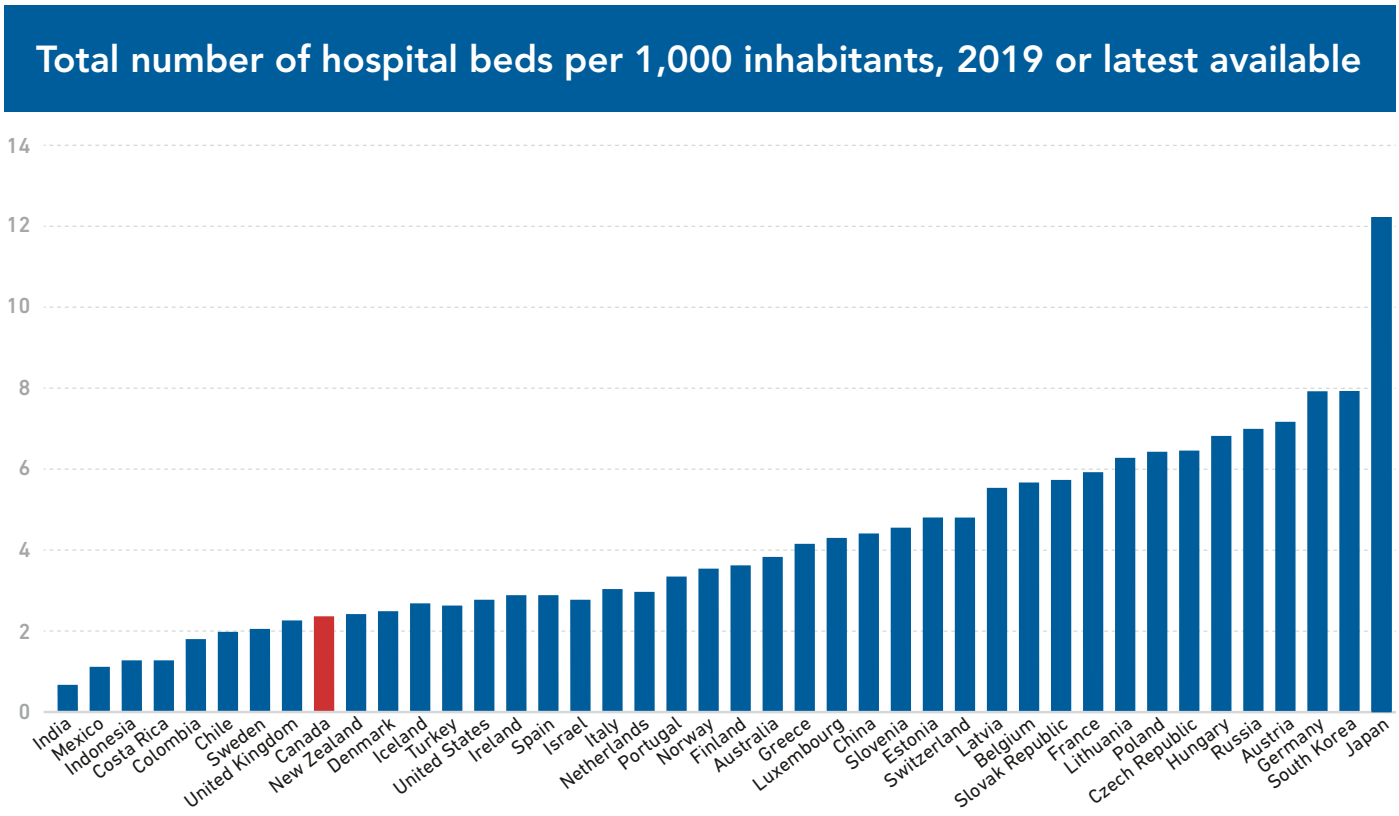
102. Canadian Association of Emergency Physicians, "Surge Capacity and the Canadian Emergency Department," March 24, 2020, pp. 1-2.

103. Peter St. Onge, *op. cit.*, footnote 65, p. 3.

104. Patrick Déry, "Emergency Rooms: Fewer Patients, Longer Waits," Viewpoint, MEI, August 21, 2019, p. 1.

105. Peter St. Onge, *op. cit.*, footnote 65.

Figure 2-2



Source: OECD, Data, Health, Health equipment, Hospital beds, consulted October 2020.

The CAEP report notes that these problems have long predated the pandemic, and were combined with other bureaucratic barriers such as difficulty moving admitted patients from emergency departments to in-patient wards and ICUs, in contrast to the streamlined procedures in both the Swedish and Singaporean surges. Canada has one of the lowest rates of hospital bed availability in the OECD, at 2.5 beds per 1,000 population (see Figure 2-2), while 15% of acute care beds in Canada are occupied by patients who no longer need to be in an acute bed but cannot be discharged because of inadequate capacity elsewhere in the system.

These concerns, that Canada has both a shortage of essential medical resources, and poorly manages what is available, are borne out by a variety of studies. The Canadian Institute for Health Information estimates that Canada has fewer than two acute care hospital beds per 1,000 people, among the lowest in the OECD.[106] Meanwhile, a CBC News analysis of 169 Ontario hospitals published in January—before the current crisis—found that 83 were beyond full capacity for more than 30 days, 39 had hit 120% capacity or higher for at least one day, and fully 40 had averaged 100% capacity or higher in the preceding six months.[107]

Canada has one of the lowest rates of hospital bed availability in the OECD, at 2.5 beds per 1,000 population.

Indeed, having been scared away in the early days of COVID-19, by May, emergency rooms in Montreal were already back to pre-pandemic overcrowding despite the ongoing threat of infection from the disease itself, with almost half of emergency rooms at or over capacity.[108] Even at the height of the COVID-19 crisis, when ERs in

106. Canadian Institute for Health Information, OECD Interactive Tool: International Comparisons — Peer countries, Canada, 2019.

107. Catherine Varner, "The end of hallway medicine?" *Healthy Debate*, June 3, 2020.

108. Matt Gilmour and Selena Ross, "10 out of 21 of Montreal's ERs are at or over capacity, increasing infection risk," CTV News, May 29, 2020.

other countries were nearly empty, Montreal hospitals were so overcrowded they were sending patients to Trois-Rivières, over 100km away.[109]

As a consequence of this lack of capacity in the face of extreme projections by health experts, thousands of scheduled surgeries were shelved at the end of March. Meanwhile, testing shortages were also seen in Quebec, not reaching even half of the testing target months into the crisis,[110] while Quebec medical staff were actually asked to reuse N95 masks and face shields.[111] The topic became controversial, as health workers went to the media with horror stories about being forced to work without adequate protection.[112] Meanwhile, again to preserve capacity, hospitals insisted that COVID-19 screening occur in clinics rather than hospitals,[113] further pushing the infection back into the community.

Beyond the risks borne unnecessarily by medical personnel and the risks pushed back into the community were the decisions made in response to the urgency about capacity shortages. Most seriously, in retrospect, was the catastrophic policy of emptying out hospitals to senior centres in order to free up capacity for the expected rush of COVID-19 patients, then forcing even infected patients to remain in suddenly over-burdened senior centres.[114] Hospitals mass-expelled long-term patients, who normally occupy one in three hospital beds and are often extremely frail and require very intensive care and treatment. This sudden influx of vulnerable patients not only overwhelmed senior centres simultaneously struggling to prepare for COVID-19, but also put these vulnerable people out into large-scale settings where they, in practice, became infected at their most vulnerable. Quebec, announcing it needed to clear 6,000 beds, sent an undisclosed number directly into the Centres d'hébergement de soins de longue durée (CHSLD) senior care system—likely making up the majority of the previously discussed 5,000 bed "surge" in capacity, but of course, at enormous and tragic personal cost.[115]

At the same time, to again protect hospital capacity, Quebec restricted the transfer of sick residents back from senior centres to hospitals, trapping them in those same over-burdened senior care centres that were less equipped and less trained to treat them or to isolate them from infecting other elderly or frail residents. As one Montreal pediatrician summed it up, Quebec "unwittingly engineered a situation in which facilities could harbour the virus and trap its victims inside to get sick and die."[116] This policy ultimately backfired, making the original capacity problem worse as the rapid spread of the virus in CHSLDs finally caused a reversal, sending patients back to hospitals.[117]

As a consequence of this lack of capacity in the face of extreme projections by health experts, thousands of scheduled surgeries were shelved at the end of March.

Beyond the horrific death toll, the second major category of collateral damage from fears about capacity has been the lockdowns themselves. The Quebec Premier has admitted basing decisions on reopening stores and schools according to hospital capacity levels alone.[118] The mayor of Montreal similarly predicated reopening the city based on whether or not sufficient tests were available.[119] Even schools across the province were kept closed longer than planned, not explicitly to protect students or teachers, but simply in response to aggregate province-wide case numbers and a shortage of medical staff,[120] implying that hospital capacity was influencing policy that should have been made instead based on the medically informed trade-offs involved.

109. Aaron Derfel, "Analysis: Swamped Montreal hospitals told to send COVID-19 patients off-island," *Montreal Gazette,* May 6, 2020.

110. Author's calculations. Giuseppe Valiante and Sidhartha Banerjee, "Political unity in Quebec dissolves as government thrashed on COVID-19 response," *The Globe and Mail,* May 14, 2020.

111. Allison Lampert, "Quebec sees coronavirus cases soar, faces equipment shortage," Reuters, March 31, 2020.

112. The Canadian Press, "Some Quebec health-care workers don't have protective equipment, union says," *National Observer,* April 10, 2020.

113. Adina Bresge, "COVID-19 clinics to open as doctors call for cases to be kept out of hospitals," *OHS Canada,* March 6, 2020.

114. Sharon Kirkey, *op. cit.*, footnote 101.

115. Barbara Sibbald, "What happened to the hospital patients who had 'nowhere else to go'?" *Canadian Medical Association Journal,* Vol. 192, No. 22, June 2020, p. E614.

116. Alan Freeman and Samuel Freeman, "Why Quebec is at the centre of Canada's COVID-19 epidemic," *iPolitics,* April 14, 2020.

117. Jonathan Montpetit, "Montreal hospitals running short on space, 2 weeks from reopening," CBC News, May 6, 2020.

118. Michelle Lalonde, "Too many people hospitalized to reopen Montreal as planned, Legault says," *Montreal Gazette,* May 5, 2020.

119. Jesse Feith, "Coronavirus updates, May 7: Reopening delay comes as Quebec reports 911 new cases, 121 deaths," *Montreal Gazette,* May 7, 2020.

120. Kalina Laframboise, "Quebec delays reopening of Montreal schools, daycares, and stores as coronavirus cases rise," Global News, May 7, 2020.

In other words, nearly the entirety of Quebec society, from jobs and livelihoods to children's educations, became an afterthought to health care capacity, an entire society holding its breath, afraid to make any move that could topple or overwhelm too-scarce health care resources.

2.3. Reforms to Improve Surge Capacity in Canada

What can be done to improve the ability of Canada's health care system to handle the next surge? While COVID-19 hit Quebec hardest this time, we cannot know which parts of the country will be hardest-hit next time. Every province needs to be ready.

The obvious first question is whether Canada's lacklustre surge capacity is the result of budgetary cuts in recent years. This has long been the narrative of activists and lobbyists, from a group of left-wing economists co-signing an open letter decrying so-called "austerity"[121] to organizations like the left-leaning Canadian Centre for Policy Alternatives[122] and the consistently pro-spending Canadian Public Health Association[123] claiming that even rising spending qualifies as "austerity." This narrative has been perpetuated by sympathetic journalists, such as in a 2016 CBC article characterizing newly-elected Prime Minister Trudeau as "casting aside" years of austerity.[124]

The facts of the matter are altogether different: Health care spending in Canada is one of the highest among universal systems, and has risen substantially in recent decades. The Canadian health care system spends nearly 30% more per capita than the OECD average[125] (see Figure 2-3) and nearly double what Singapore spends.[126]

In actual dollars, CIHI's latest 2019 figures estimated that health spending in Canada would reach over $264 billion, which amounts to $7,068 per person.[127]

Moreover, far from austerity, according to the CIHI, health spending in Canada has grown consistently over the past 45 years, even adjusted for inflation (see Figure 2-4), rising at a rate of 3.9% in 2019—roughly four times higher than population growth.[128]

Health care spending in Canada has risen substantially in recent decades. The Canadian health care system spends nearly 30% more per capita than the OECD average.

Indeed, spending has risen substantially faster than the economy; the CIHI estimated 2019 health care spending at 11.6% of Canada's GDP, up from around 10% in the early 2000s, and just 7% in the 1970s (see Figure 2-5).[129] The trend for the past 45 years is unmistakably rising, with only brief and temporary reductions as a share of Canada's output. One can argue about whether this increased spending and squeezing out of other priorities is a good thing, but it is simply inaccurate to characterize this soaring health spending as "austerity."

Focusing on public health spending, the rise has been similarly steep. Across all provinces, increased spending has driven the rise in provincial taxes to the point they are nearly the same level as federal taxation, and health costs have grown to fully 37% of provincial budgets in 2016—up from approximately 33% in 1993[130]—and have been projected to climb as high as 42% by 2030.[131] This excess tax burden from public health spending already costs roughly $12,000 for a household of two adults,[132] or $1,000 per month in additional taxes.

121. Erin Weir, "Economists Against Austerity," Progressive Economics Forum, February 11, 2014.

122. Pete Hudson, "Fast Facts: Austerity is bad for your health," Canadian Centre for Policy Alternatives, March 21, 2019.

123. Policy and Advocacy Blog, "Public health and austerity budgets – A conundrum," Canadian Public Health Association, April 16, 2014.

124. Don Pittis, "World watching as Canada casts aside austerity and gambles on a fiscal surge," CBC News, March 24, 2016.

125. Author's calculations. OECD, Data, Health, Health resources, Health spending, consulted October 2020.

126. The World Bank, Data, Current health expenditure per capita (current US$), consulted October 22, 2020.

127. Canadian Institute for Health Information, *National Health Expenditure Trends 1975 to 2019*, October 31, 2019, p. 6.

128. The World Bank, Data by indicator, Climate, Population Growth (annual %), Canada, November 2020.

129. Canadian Institute for Health Information, "National Health Expenditure Trends, 1975 to 2019: Data Tables – Series B, Total, Table B.1.3 Total health expenditure as a percentage of provincial/territorial GDP by province/territory and Canada, 1975-2019," October 31, 2019.

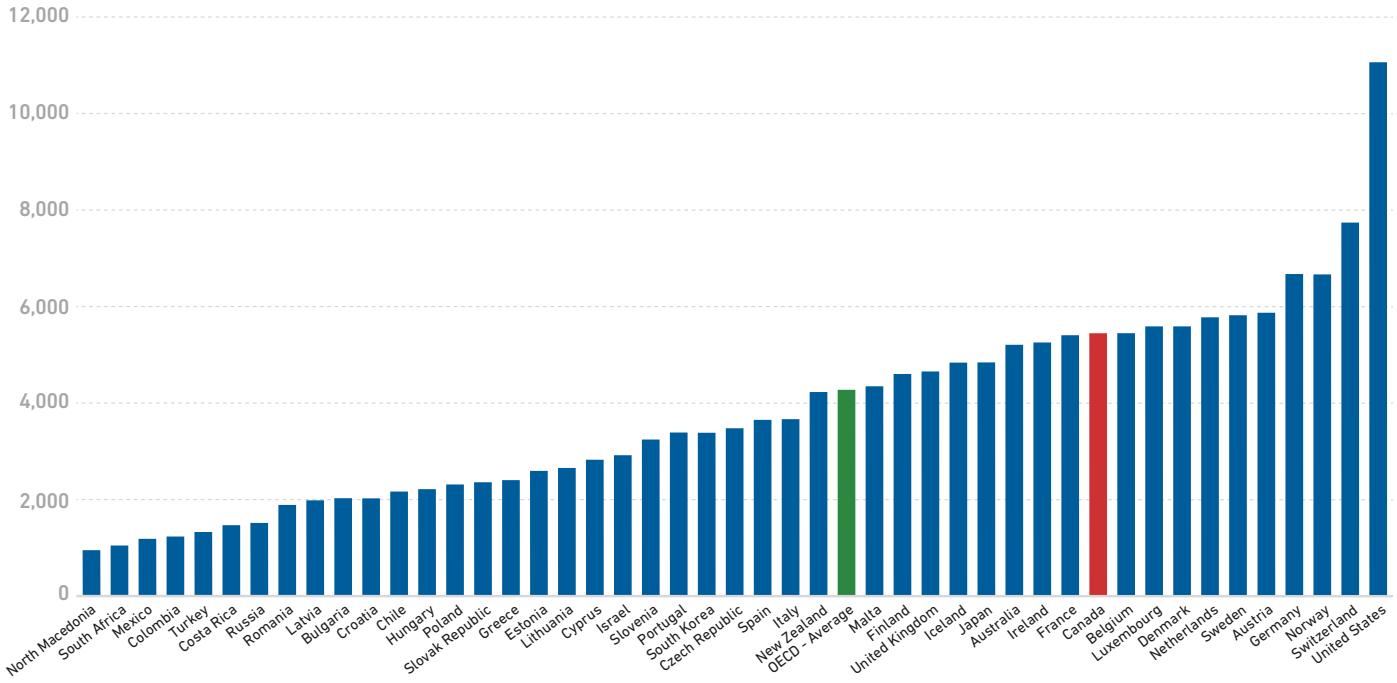
130. Canadian Institute for Health Information, *op. cit.*, footnote 127, p. 22.

131. Bacchus Barua, Milagros Palacios, and Joel Emes, *The Sustainability of Health Care Spending in Canada 2017*, Fraser Institute, March 14, 2017, p. 18.

132. Fraser Institute, "Canadian health care insurance isn't free. Here's what you pay," Infographic, 2017.

Figure 2-3

Annual health spending, OECD countries, US$/capita, 2019 or latest available



Source: OECD, Data, Health, Health resources, Health spending, consulted October 2020.

Even in Quebec, despite yet more accusations of austerity from the media,[133] and even a formal demand by a Liberal MNA for an apology from her party for that supposed austerity,[134] total health spending has consumed a growing portion of GDP for decades, rising from 9.6% in 1998 to 12.7% in 2017.[135] Moreover, health spending has, also for decades, consumed a rising portion of the provincial budget, going from 33.6% in 2001 to 34.3% in 2016.[136] A larger piece of a growing budget, again, is hardly austerity. Indeed, these jumps in public spending necessarily crowd out other priorities, including potentially the very screening and support policies described in Part One that worked to limit COVID-19 cases in other countries.

Yet despite 45 years of high and growing spending, Canadian health care capacity is among the worst among universal systems. In fact, Canada's expensive system ranked among the worst in the 2017 CIHI survey among eleven universal systems for wait times for "doctors, specialists, and emergency department visits."[137] Most salient for COVID-19, when surge capacity was needed, Canadian health care turned out to be much less flexible than other countries' systems despite all of its spending.

The CIHI estimated 2019 health care spending at 11.6% of Canada's GDP, up from around 10% in the early 2000s, and just 7% in the 1970s.

This poor showing suggests that spending is not the issue, and that structural reforms are required to address Canada's weak surge capacity. In the remainder of this section, four key reforms will be proposed to address

133. Philip Authier, "Analysis: Quebec budget unkind to health care and education spending," *Montreal Gazette,* March 27, 2015.

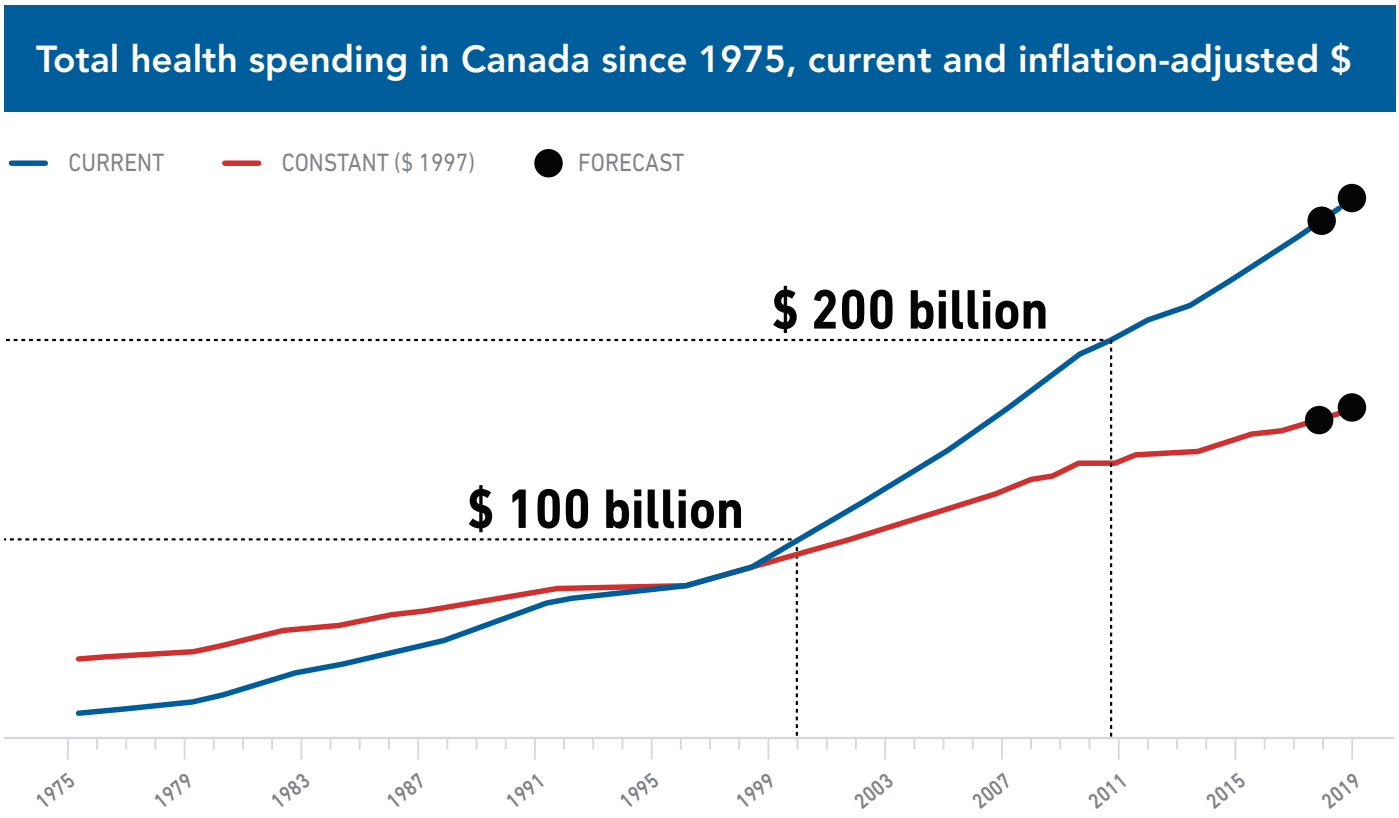
134. Vincent Geloso, "'Austerity' claims in Quebec have little basis in fact," Fraser Institute, February 12, 2019.

135. Canadian Institute for Health Information, *op. cit.*, footnote 129.

136. Bacchus Barua, Milagros Palacios, and Joel Emes, *op. cit.*, footnote 132, p. 5.

137. Canadian Institute for Health Information, *How Canada Compares, Results from The Commonwealth Fund's 2016 International Health Policy Survey of Adults in 11 Countries,* 2017, pp. 8-15.

Figure 2-4



Source: Canadian Institute for Health Information, *National Health Expenditure Trends 1975 to 2019*, October 31, 2019, p. 6.

these structural issues rather than simply relying on the crutch of yet more spending and failing to achieve results.

Reform 1: Activity-Based Funding

A key feature of Canada's health care system, and one of the sources of its problems, is the use of the "global budget" funding mechanism. This mechanism made it much harder to quickly expand capacity, both because Canada's baseline capacity was lower, and because funds are not tied to the treatment of patients, but based instead on historical budgets, or worse, political lobbying.

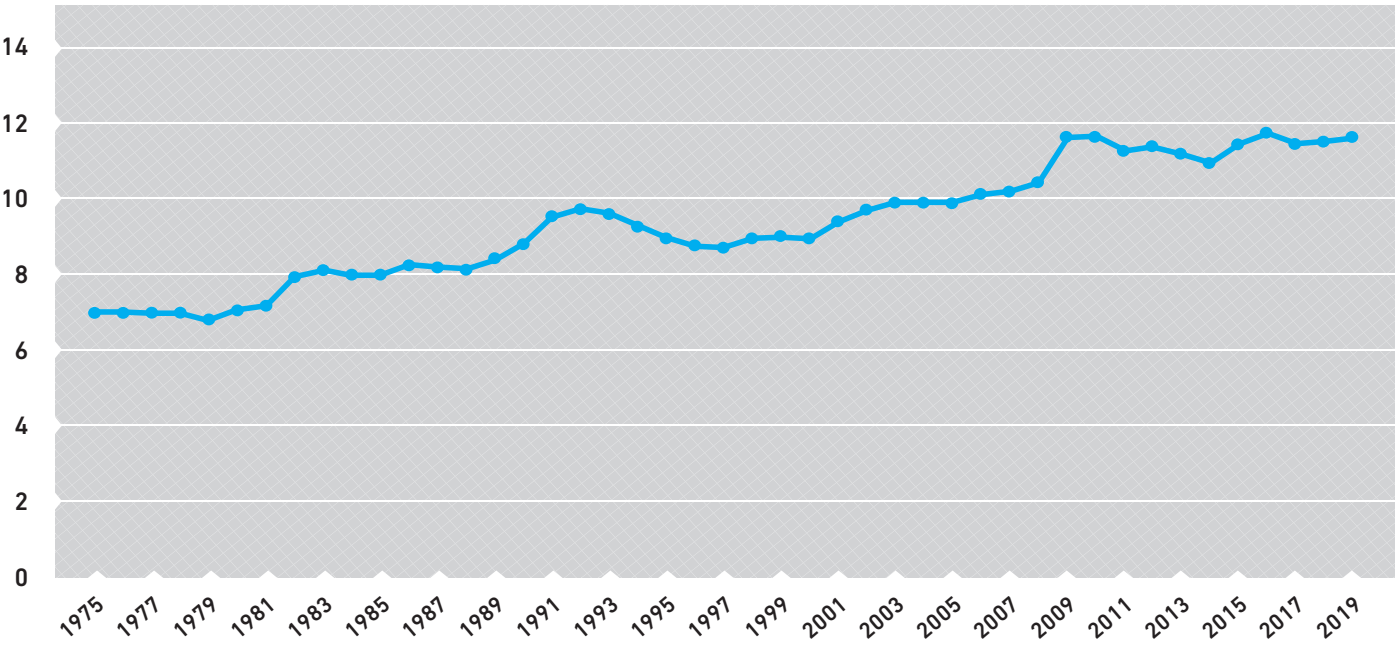
Under global budgets, a hospital or organization gets a set amount of money, typically a yearly budget. If it has "too many" patients, it can request extra funds, but with no guarantee they will be forthcoming, since budgets are necessarily politically negotiated, like all government budgets. Hospitals have an obvious incentive to reduce the number of patients they treat in order to save, and to lobby against other priorities or indeed other hospitals for more budget, whether or not they actually need the funding.

Health costs have grown to fully 37% of provincial budgets in 2016—up from approximately 33% in 1993—and have been projected to climb as high as 42% by 2030.

The main alternative to global budgets for universal systems is activity-based funding (ABF). In contrast to global budgets, ABF means the funds follow the patient. If a hospital has "too many" patients, it automatically gets the funding to go with those patients. And if it has "too few" patients, perhaps because service is poor or waiting times are too long, it automatically gets punished in the form of a lower budget. This means hospitals have a built-in incentive to do what they're supposed to do: treat as many patients as they can, at a level of quality that maintains their good reputation.

Figure 2-5

Total health spending in Canada since 1975, % of GDP



Source: Canadian Institute for Health Information, "National Health Expenditure Trends, 1975 to 2019: Data Tables – Series B, Total, Table B.1.3 Total health expenditure as a percentage of provincial/territorial GDP by province/territory and Canada, 1975-2019," October 31, 2019. Forecasts for 2018 and 2019.

Patients are thought of more as valued customers than as costs.

Global budgets make it trivially easy to control health care costs by simply cutting the budget. Unfortunately, if the number of patients goes up, or if the mix of treatments cost more due to Canada's aging population, the funds must come from somewhere. In practice, the easiest solution is to use waiting lists to limit the number of patients, while using older equipment or outdated drugs to save money, potentially putting patients' lives at risk, or forcing them to live in pain. This means that even though Canadian doctors, nurses, staff, and administrators seek to do their best for patients, the incentives built into global budgeting punish such behaviour.

In contrast, activity-based funding ensures that resources are matched to need, with pay-rates that have been rationally determined in light of particular treatments and conditions. In essence, whether it's a surge during a crisis or endemic waiting lists, activity-based funding will direct funds where they are needed.

Empirical studies demonstrate the improved results from activity-based funding. One study found that by increasing efficiency, ABF reduces waiting lists, increases quality of hospital stays, and enhances the transparency of hospital activity as hospitals seek to attract more patients.[138]

This poor showing suggests that spending is not the issue, and that structural reforms are required to address Canada's weak surge capacity.

The main supposed downside of activity-based funding is higher costs, primarily because more patients are treated. Treating more patients, of course, should be the goal of a health care system. Indeed, for these reasons, European universal systems have increasingly turned to activity-based funding rather than the global budgets used in the past, to the point that ABF is seen as "the international model" with over 30 countries now using

138. UBC Centre for Health Services and Policy Research, "Activity-Based Funding (ABF): Hospital funding models for Canadians provinces," March 2014, p. 2.

activity-based funding, most of them universal systems.[139]

As COVID-19 hit Canada, activity-based funding might have meant, not just a higher baseline capacity better matched to actual patient needs, but also a faster mechanism for hospitals to build surge capacity, so they could make expensive investments safe in the knowledge they would not be out-of-pocket when it came time to lobby for budget.

Hospitals have a built-in incentive to do what they're supposed to do: treat as many patients as they can, at a level of quality that maintains their good reputation.

Reform 2: Decentralization and Liberalization

A second area of inflexibility in Canada's lacklustre surge is the rules and regulations governing existing providers, often enforced by unions. These involve longstanding concerns about over-bureaucratization, over-unionization, over-centralization, inflexible rules, and irrational regulations. Together, these risk creating a "staff before patients" mentality, as if hospitals existed to serve staff rather than to serve patients.

During the COVID-19 crisis, these ongoing problems conspired to tie administrators' hands such that they had difficulty allocating resources, including even just hiring the staff they needed. They had to clear multiple levels of approval, as well as pass union muster, to launch or acquire the facilities and equipment they need (about which more below). These levels of approval could involve going up one or more levels of bureaucratic authority, each layer with its own veto power and its own processes to be meticulously followed. It is unsurprising that such a rule-bound system proved incapable of quickly responding to a crisis.

Particularly in Quebec, one of the biggest problems during COVID-19 has turned out to be inertia in the health care system. Quebec Premier Francois Legault himself famously complained of the "bureaucratic monster" as the pandemic "drove home the reality that not even the premier controls the machine that proved itself completely unable to respond to the crisis."[140] Problems were severe in terms of accountability, quality control, communication, and transparency, and this was brought home for Quebecers by a complex organizational chart of the health care system of a small town near Montreal.[141]

This bureaucratic "monster" was rendered, not just frustrating, but fatal by the fact that reforms had gradually centralized the health care system in Quebec to the point that hospital administrators lacked the authority to order new equipment, or to make staffing decisions. In particular, a series of reforms in 2015 streamlined staff without necessarily streamlining powers, cutting 2,000 bureaucrats and reducing locations six-fold, but retaining requirements for centralized approvals for capacity-related decisions.[142] Even at the time, critics warned that by retaining centralized decision-making, it would be very difficult "to allocate resources efficiently when the unexpected occurs."[143] This warning turned out, tragically, to be correct.

Because health care is managed at the provincial level, with the federal government's main contribution being funnelling money collected from taxpayers to each province, provincial governments are largely responsible for directly financing, organizing, and delivering health services, as well as for supervising providers.[144] This includes directly funding physicians and drug programs, and contracting to deliver hospital, community, and long-term care.

Even before COVID-19, academic papers had warned of capacity bottlenecks in this bureaucracy, particularly in critical care. These bottlenecks covered all three areas the RAND Institute warned of in their "space, staff, stuff" formulation: hobbling the expansion or repurposing of facilities, the flexible deployment or hiring of staff, and the acquisition of new equipment.

One 2015 paper warned of a mismatch between ICU beds and nurses, such that they could not be readily used, or of ICU beds reserved for specific departments

139. Liza Heslop, "Activity-based funding for safety and quality: A policy discussion of issues and directions for nursing-focused health services outcomes research," *International Journal of Nursing Practice*, Vol. 25, No. 5, October 2019, p. 2.

140. Philip Authier, "Analysis: Legault uses cabinet shuffle to address weakness in health system," *Montreal Gazette*, June 23, 2020.

141. Éric Yvan Lemay, "Un monstre bureaucratique qu'on appelle un CIUSSS," *Le Journal de Montréal*, April 21, 2020.

142. Agnès Gruda, "Réseau de la santé : dompter le monstre," *La Presse*, May 6, 2020.

143. Germain Belzile, "Centralized Health Care: A Recipe That's Doomed to Fail," Viewpoint, MEI, July 2017, p. 1.

144. Roosa Tikkanen *et al.*, "International Health Care System Profiles - Canada," The Commonwealth Fund, June 5, 2020.

sitting unused despite shortages in other departments. Smaller hospitals admitted transferring patients to larger hospitals in order to maintain spare capacity, whether or not the recipient hospital had spare capacity of its own.[145]

Long before COVID-19, researchers had warned of the danger of engineered shortages in Canadian health care. The Commonwealth Fund put the blame for limited spending on global budgets, political mandates against providers, restrictions on the number of physicians and nurses (such as provincial limits to numbers of students admitted annually), and restrictions on "new investment in capital and technology."[146] Taken together, these paint a picture of bureaucratic pressure to cut spending wherever it can be cut, rather than to provide adequate care that patients need.

Beyond procurement, among the most dramatic problems in Quebec's COVID-19 response have related to staffing. Widespread lack of personnel may have directly contributed to spreading COVID-19 by shuffling staff around to temporarily cover shortages. The chair of the infection prevention control program at the Jewish General Hospital noted, "Whenever an outbreak is being detected a month after visitors have been asked not to come anymore, we have to ask ourselves, how did the virus get there? Quite naturally, we're suspecting that some of these outbreaks were caused by a health-care worker who introduced a virus into those institutions."[147]

Staffing shortages became especially problematic during the worst months of the COVID-19 crisis. At one point in early May, some 11,600 workers were absent from Quebec's already short-staffed health care system. Of the remaining workers, roughly 50% were part-time workers.[148]

Meanwhile, health care unions demanded no delays to vacations even as the premier begged staff to come back to treat thousands of patients.[149] Unions further won concessions so that older health workers or those who are pregnant could stay home and continue to be paid, rather than being assigned to non-COVID-19 patients in order to free up other workers to handle those cases.[150]

An obvious solution might have been to quickly hire new staff, particularly those with medical backgrounds. Indeed, this did occur, but it was intentionally limited by health care unions such that only previous union members could be licensed, and nobody over the age of 70, a substantial constraint reducing the availability of retired doctors and nurses.[151] Former Doctors Without Borders President Joanne Liu was famously caught in these bans,[152] along with tens of thousands of foreign-trained doctors and nurses whom health care unions banned from helping save Quebec patients' lives.[153]

These ongoing problems conspired to tie administrators' hands such that they had difficulty allocating resources, including even just hiring the staff they needed.

As the crisis progressed, unions became more aggressive yet, including two unions suing the government over scheduling and personnel leaves, condemning such basic administrative tools as "measures that are 'convenient' for managers."[154] Ultimately, the government issued decrees relaxing work hour rules, liberalizing hires without requiring union permission case-by-case, and temporarily suspending the requirement to consult with unions before hiring. The decree further relaxed restrictions on promotion and reassignment, allowing administrators critical flexibility they lacked.[155] Alas, these liberalizations are unlikely to be made permanent, as the unions continue to mobilize against such patient-centred reforms.

145. Robert A. Fowler *et al.,* "Critical care capacity in Canada: results of a national cross-sectional study," *Critical Care,* Vol. 19, No. 1, April 1st, 2015, p. 3.

146. Roosa Tikkanen *et al., op. cit.,* footnote 144.

147. Kate McKenna, "How Quebec's desperate attempt to fill staffing holes is spreading COVID-19 in hospitals and nursing homes," CBC News, May 6, 2020.

148. Cindy Sherwin and Adam Kovac, "Quebec offers healthcare workers bonuses to fight staffing shortages," CTV News, May 7, 2020.

149. Verity Stevenson, Benjamin Shingler, and Colin Harris, "COVID-19 in Quebec: 'We need you', says Legault of 9,500 workers absent from health-care network," CBC News, April 23, 2020.

150. The Canadian Press, "Quebec nurses' union reaches agreement with government to protect workers amid COVID-19," CTV News, March 31, 2020.

151. Quebec Minister of Health and Social Services, "Public Health Act – Order number 2020-004," March 15, 2020, p. 3.

152. The Canadian Press, "Former Doctors Without Borders president told she's unqualified to help fight COVID-19," *Montreal Gazette,* April 18, 2020.

153. Katherine Wilton, "Australian nurse wants to help out during COVID-19 crisis, but Quebec says no," *Montreal Gazette,* April 20, 2020.

154. The Canadian Press, "Health-care unions take Quebec to court over emergency health measures," CTV News, July 13, 2020.

155. Quebec Minister of Health and Social Services, "Public Health Act – Order number 2020-007," March 21, 2020, pp. 2-3.

The situation was similar in other provinces. Ontario unions called for work stoppages amid the worst of the pandemic in order to fight emergency liberalization allowing staffing decisions based on patient need rather than seniority.[156] The Ontario Council of Hospital Unions called for a series of "escalating" actions to fight the rules.[157] Even temporary measures limiting dual-location work for some medical staff, directly aimed at limiting the spread of COVID-19, were energetically protested by unions because they might reduce the earnings of union-members.[158]

In another Kafkaesque case, despite a tremendous nurse shortage in Prince Edward Island, recently graduated registered nurses were not permitted to tend to patients unsupervised because union rules mandated that they had to pass nursing exams first—exams that had been cancelled by the pandemic itself.[159]

At one point in early May, some 11,600 workers were absent from Quebec's already short-staffed health care system.

Alberta has recently been particularly active, reorganizing critical care service and standardizing clinical information systems and electronic medical records in order to permit more transparency regarding efficiency and efficacity of care. Ontario, in the wake of SARS, had implemented a similar Critical Care Strategy including twice-daily clinical updates of every patient in ICUs into a centralized electronic database to facilitate transportation, reporting on quality metrics, and improved decision-making on surge capacity.[160]

Particularly relevant to Quebec's COVID-19 experience, pre-crisis Alberta had set up direct communications between hospitals and senior care centres, as well as between hospitals and specialists, which allowed patients to bypass emergency departments and be admitted directly from specialist to hospital. Eddy Lang, head of emergency medicine at the Cummings School of Medicine at the University of Calgary credited this policy alone as "key to limiting the spread of the virus" and to avoiding the kinds of outbreaks seen in Ontario and, especially, in Quebec.[161]

Administrative flexibility was a key element to both Sweden's and Singapore's surge strategies, from hiring or moving staff to assigning nurses some tasks normally performed by doctors while assigning cleaning staff some tasks normally carried out by nurses. This flexibility across the board, based on decentralization and liberalization, is essential going forward for Canada, in addition to doing away with the global budgets that have starved baseline capacity. Canada must be far more agile in the smart use of its health care resources in future crises.

Reform 3: Expanded Use of Existing Resources

The third reform goes beyond smarter management into proactively tapping the largest and most quickly deployable pool of underused health care resources across Canada: existing health care professionals. These are qualified individuals prevented by regulation from offering services they are already trained to provide. In particular, the two largest groups of underused professionals are nurses and pharmacists, while the single largest underused technology is telemedicine.

Nurses and Pharmacists

In Canada, both nurses and pharmacists have medical training that can approach that of doctors in certain regards, which is important given the long-standing shortage of medical doctors. In some countries, both nurses and pharmacists already diagnose, prescribe for, and even treat a majority of patient ailments.[162] Unfortunately, it is also common for doctors' unions such as the Royal College of Physicians and Surgeons or the American Medical Association to restrict such competition in order to drive up their own salaries, not only by limiting the number of people who can become doctors,[163] but also by excluding nurses and pharmacists from providing certain services.

156. Canadian Union of Public Employees, "Health care workers reeling from Ontario government attack on their basic rights: CUPE seeks a mandate from its members to respond forcefully," Press release, July 9, 2020.

157. John Chidley-Hill, "Ontario health care workers plan work interruption in response to emergency orders," Global News, July 14, 2020.

158. Unifor, "Public Health Ontario data reveals devastating pandemic effects for health care workers," Press release, July 16, 2020.

159. Kevin Yarr, "Vacancies putting pressure on P.E.I. nursing system, says union," CBC News, July 9, 2020.

160. Robert A. Fowler, *op. cit.*, footnote 145, p. 6.

161. Catherine Varner, *op. cit.*, footnote 107.

162. Sonya Collins, "A tale of two countries: The path to pharmacist prescribing in the United Kingdom and Canada," *Pharmacy Today,* March 1st, 2014.

163. Patrick Déry, "It's Time to End Med School Quotas," MEI, Viewpoint, March 15, 2018, p. 1.

In 2019, there were roughly 91,000 doctors in Canada,[164] and 440,000 nurses.[165] Of these nurses, over 6,000 are nurse practitioners, who hold master's degrees and a total of six years of medical education.[166] Meanwhile, the single largest group of nurses are registered nurses, who numbered nearly 400,000 in 2019. While Quebec has expanded the scope of work allowed for so-called "super-nurses" (specialized nurse practitioners),[167] there remains enormous room to quickly expand the range of diagnoses and treatments for both "super-nurses" and, depending on the complexity of the task, other categories of nurses.

The two largest groups of underused professionals are nurses and pharmacists, while the single largest underused technology is telemedicine.

In fact, studies have found that nurses are well-qualified to take on many more tasks that currently occupy doctors. A 2009 study from the American College of Physicians found that between 60% and 90% of primary care can be delivered by nurse practitioners,[168] while another study found that doctors and nurse practitioners agreed on diagnosis 94% of the time, and agreed on treatment 96% of the time.[169] Note that even doctors don't always agree on diagnosis and treatment, hence the popularity of a "second opinion" for major diagnoses or treatments.

A second category of underused medical professionals in Canada is pharmacists, who number nearly 43,000 across the country[170] and have medical training approaching that of doctors when it comes to diagnosing and prescribing for routine conditions. During COVID-19, pharmacists' scope-of-work was indeed expanded in Quebec in an emergency deregulation allowing them to diagnose and prescribe for some conditions.[171] Considering that pharmacists today have essentially zero wait-times and very patient-friendly hours and locations, it seems obvious that this emergency deregulation should be made permanent in Quebec, and across Canada.

Going forward, because liberalization of scope-of-practice can, at low cost, quickly bring many thousands of qualified medical staff into service and take pressure off overburdened doctors, not only should COVID-related deregulations be made permanent, but a proper review should be made of which conditions nurses of varying levels, as well as pharmacists, are perfectly qualified to diagnose, prescribe for, and treat, determined on a condition-by-condition basis.

Telemedicine

Beyond scope of work, a second area that can be quickly disentangled from irrational regulation is telemedicine, essentially the provision of medical services remotely, over the internet or by phone. During the COVID-19 pandemic, because of the communicable nature of the disease, first Quebec and then other provinces relaxed restrictions on telemedicine on an emergency basis. Telemedicine is popular among patients for its convenience, with over three-quarters supporting virtual care in a Canadian Medical Association (CMA) poll.[172] Unfortunately, the CMA itself has demanded detailed oversight[173] that had so far effectively strangled the adoption of telemedicine in Canada.[174] This even as proponents had for years been arguing that telemedicine can lower costs and make better use of Canada's existing doctors.

In the wake of emergency deregulation, patient uptake was unsurprisingly astronomical, with Quebec provider Dialogue reporting that 100,000 Canadians had signed up for telemedicine in just the first weeks.[175] According to a 2009 study,[176] doctors across Canada actually want

164. Canadian Institute for Health Information, *op. cit.,* footnote 84.

165. Canadian Institute for Health Information, "Nursing in Canada, 2019," July 30, 2019.

166. Author's calculations. Registered Nurses' Association of Ontario, "A Canadian's Guide to the Different Types of Nurses," September 21, 2018.

167. Caroline Plante, "Quebec health minister introduces bill giving super-nurses more powers," *Montreal Gazette,* October 9, 2019.

168. Jack Ginsburg, Tia Taylor, and Michael S. Barr, "Nurse Practitioners in Primary Care," American College of Physicians, 2009, p. 7.

169. Marie-Laure Delamaire and Gaétan Lafortune, *Nurses in Advanced Roles: A Description and Evaluation of Experience in 12 Developed Countries*, OECD, August 31, 2010, p. 43.

170. National Association of Pharmacy Regulatory Authorities, Programs and Services, National statistics, January 1st, 2020.

171. Collège des Médecins du Québec, "COVID-19: Assouplissement de certaines modalités relatives aux activités des pharmaciens," March 16, 2020.

172. Author's calculations. Canadian Medical Association, *What Canadians Think about Virtual Health Care,* May 2020, p. 26.

173. Canadian Medical Association, "Virtual Care in Canada: Discussion Paper," August 2019, pp. 6-9.

174. Patrick Déry, *Health Care Entrepreneurship – How to Encourage the Deployment of Telemedicine in Canada,* MEI, Research Paper, September 19, 2019, pp. 27-34.

175. Josh O'Kane and Sean Silcoff, "Telemedicine companies see soaring demand for online health consultations," *The Globe and Mail,* March 18, 2020.

176. Marcel Boyer and Julie Frappier, "Medical Specialists in Quebec: How to Unlock the Reserve Supply," MEI, Economic Note, April 22, 2009, p. 2.

Table 2-3

Licence required to provide virtual care, by province, pre-pandemic

	BC	AB	SK	MB	ON	QC	NB	NS	PEI	NL
DOCTORS										
Licence from the province where the doctor practises	√	–	–	–	√	–	–	√	–	√
License from the province where the patient receives care	–	√	–	√	–	√	√	–	√	–
License always required if either the doctor or the patient is located in the province	–	–	√	–	–	–	–	–	–	–
NURSES										
Licence from the province where the nurse practises	√	–	–	√	√	√	√	√	√	√
License from the province where the patient receives care	–	√	√	–	–	–	–	–	–	–

Source: Patrick Déry, *Health Care Entrepreneurship – How to Encourage the Deployment of Telemedicine in Canada*, MEI, Research Paper, September 19, 2019, p. 29.

to work significantly more hours, but are prevented from doing so by regulation. This implies that telemedicine could help deploy this unused capacity, allowing doctors to see more patients, in the process adding capacity to the system at extremely low cost. This stock of unused capacity is likely large, with an estimated equivalent of 790 full-time medical specialists in Quebec alone.[177]

A further unnecessary restriction is on interprovincial treatment. As can be seen in Table 2-3, most provinces bar doctors from treating patients outside the province in which they are licensed or practice, with Alberta and Saskatchewan even barring nurses from treating patients in other provinces. Assuming we trust different provinces' ability to license medical professionals, this state of affairs appears completely irrational, and again should alert us to the existence of senseless constraints on the treatment of Canadian patients.

In the present crisis, telemedicine offers two important benefits. First, it allows more intense use of specialists; general practitioners, and even nurse practitioners, can be assigned the simplest and most common cases, while specialists can spend their time dealing with patients whose conditions match their expertise, wherever they may be located.[178] This is particularly important in remote areas, where patients may otherwise have to travel long distances to see a specialist. This can deter them from seeking treatment, or even prove unfeasible if their condition has deteriorated. Second, and specific to COVID-19, telemedicine allows staff to diagnose and treat many patients without themselves being exposed to contagion.

A proper review should be made of which conditions nurses of varying levels, as well as pharmacists, are perfectly qualified to diagnose, prescribe for, and treat.

Still, even beyond COVID-19, the current liberalization of telemedicine should be maintained so that Canadians continue to have improved access to general practitioners and specialists without having to languish so long on waiting lists.

177. *Idem.*

178. Christopher Cheney, *op. cit.*, footnote 62.

The emergency deregulations of both scope-of-work and telemedicine illustrate how regulatory burdens had kept a substantial amount of Canada's health care capacity off the table before COVID-19 came along. Given ongoing shortages and waiting lists in Canada, this neglect was deeply harmful in normal times, but now we have seen the dire consequences of the country's glacial surge capacity when Canadians really needed it.

Reform 4: Entrepreneurial Health Care

So far, we have discussed reforms that focus on making better use of existing resources. The other major area of improvement, of course, is bringing new resources into play. Given historic public deficits as a result of COVID-induced lockdowns, there is even greater reason to look to the private sector to lend a hand by allowing more entrepreneurial participation in health care. This would naturally be on terms that are acceptable to the Canadian public, meaning private sector provision with strict quality and pricing standards, combined with no out-of-pocket requirements for medically necessary care.

This model of entrepreneurial care is increasingly seen in universal systems that have welcomed the private sector, not just in Sweden and Singapore, but also in places like Germany and France, and even the UK's National Health System. This is important, because not only could it increase the amount of surge capacity in Canadian health care, but it could improve longstanding capacity issues, addressing "hallway medicine" and waiting lists year-in and year-out.

To a far greater degree than other universal health care systems, Canada places barriers on entrepreneurs and innovative providers. Even in normal times, monopolistic government regulations reduce competition and starve patients of the additional capacity that investors are eager to contribute. European systems such as France's, on the other hand, now feature many private clinics offering treatment as a complement to the public system.[179]

In France, care is universal and paid for through a payroll tax, fully covering even poor non-contributors, yet patients are free to choose private providers, who make up roughly half of health care capacity. Some 93% of people carry supplementary insurance, which covers private provision, and doctors are allowed to work in both the public and private sectors.[180]

In Germany, coverage is similarly universal with income-based contributions and private clinics.[181] Patients have freedom of choice, doctors can practise in both public and private sectors, and patients can buy supplemental private insurance to cover certain procedures. Waiting times are practically non-existent—it takes a median of four days to see a doctor, and once at the doctor's office the wait time is just 33 minutes.[182]

Finally, even in the UK's universal and tax-financed system, doctors can work in both public and private sectors at the same time, and there is competition between private and public providers. General practitioners in the UK must offer a choice of four providers, with patients free to choose among private and public providers, which forces those providers to compete on features like shorter waiting times. Indeed, when the UK did introduce activity-based funding in 2003, waiting times for surgeries dropped by two-thirds, which suggests that a system that allows private sector provision paired with controls on activity-based funding can substantially improve a health care system's baseline capacity.[183]

Beyond COVID-19, the current liberalization of telemedicine should be maintained so that Canadians continue to have improved access to general practitioners and specialists.

In contrast, Canada has all but strangled private provision. Hopes were raised by the Supreme Court's 2005 decision in Chaoulli vs. Quebec, which declared that unreasonably long waits for care is equivalent to effective denial of care. Yet those hopes were largely dashed as regulators aggressively whittled down the scope of liberalization to an unsustainably narrow list of conditions that starved clinics and doctors of resources.[184] A study published in the *Canadian Medical Association Journal*

179. Yanick Labrie and Marcel Boyer, "The Private Sector Within a Public Health Care System: The French Example," MEI, Economic Note, April 2008, p. 1.

180. Yanick Labrie, *What can we learn from European healthcare?* MEI, February 22, 2013, pp. 19 and 22.

181. Roosa Tikkanen *et al.*, "International Health Care System Profiles - Germany," The Commonwealth Fund, June 5, 2020.

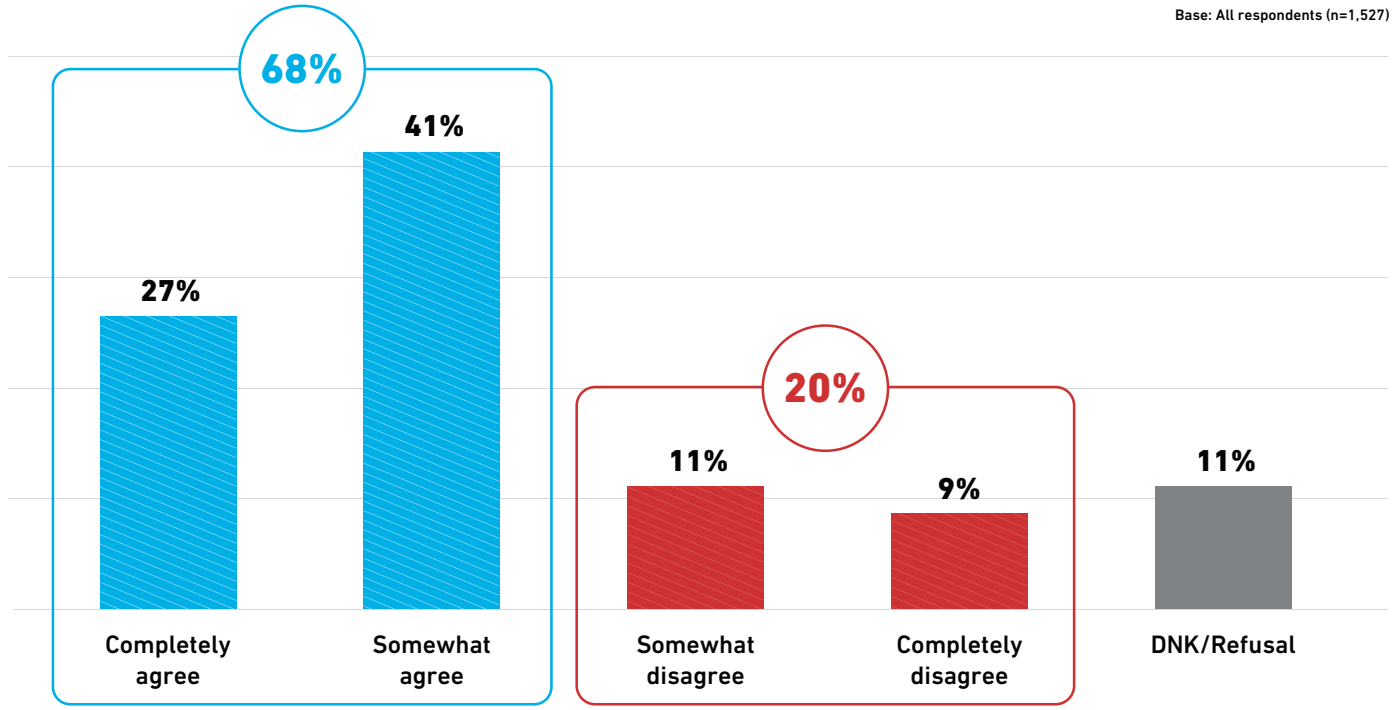
182. Andres Luque Ramos, Falk Hoffman, and Ove Spreckelsen, "Waiting times in primary care depending on insurance scheme in Germany," *BMC Health Services Research*, Vol. 18, No, 191, March 20, 2018, p. 3.

183. Yanick Labrie, *op. cit.*, footnote 180, pp. 30-31.

184. Yanick Labrie, "The Chaoulli Decision and Health Care Reform: A Missed Opportunity?" MEI, Viewpoint, June 2015, p. 1.

Figure 2-6

Canadians support entrepreneurial health care



Note: Q3 – Would you agree or disagree that the government should allow patients increased access to care provided by private health entrepreneurs, as long as medically required care remains covered by the government?
Source: Leger, "Health Care System," poll conducted for the MEI, November 27, 2019, p. 7.

reported healthy growth in private clinics in Quebec through 2011,[185] but since then the sector has run into tighter regulations that have forced some clinics to close.[186]

More recently in British Columbia, Dr. Brian Day endured years of legal harassment and threats for opening a clinic to serve patients seeking to buy private care rather than waiting months or years for medically necessary care. In September of this year, following a four-year trial, the BC Supreme Court ruled that patients have no right to private health care, even when wait times are arbitrarily long, though Dr. Day responded that he will appeal this decision.[187]

Given historic public deficits as a result of lockdowns, there is even greater reason to allow more entrepreneurial participation in health care.

In fact, opinion polls have found that a substantial majority of Canadians and Quebecers favour more private provision of medical services, even the private management of public hospitals. A 2018 poll found that 70% of Quebecers believe the government should give increased access to care by private health care providers, as long as medically necessary care is paid for by the government.[188]

Meanwhile, a 2019 poll of all Canadians found that 68% favour allowing patients increased access to care provided

185. Wendy Glauser, "Private clinics continue explosive growth," *Canadian Medical Association Journal*, Vol. 183, No. 8, May 17, 2011, p. E437.

186. Yanick Labrie, *The Public Health Care Monopoly on Trial: The Legal Challenges Aiming to Change Canada's Health Care Policies*, MEI, Research Paper, November 19, 2015, p. 15.

187. Amy Judd, "B.C. Supreme Court rules against private healthcare in landmark case," Global News, September 10, 2020.

188. Leger, "Les Québécois et la santé," poll conducted on behalf of the MEI, August 30, 2018, p. 7.

by private health entrepreneurs, again so long as that care is paid for by the government (see Figure 2-6). That same poll found that nearly two-thirds of Canadians want the right to buy private health insurance if patients are not treated within a reasonable time in the public system, and nearly half of Canadians actually favour allowing private companies to manage public hospitals.[189]

Despite ongoing legal harassment against the consensus of Canadian voters, there are nonetheless clinics and doctors who remain eager to build needed capacity. For example, one recent project in Edmonton aims to build a $200 million orthopedic surgery centre at no cost to the taxpayer.[190] Such projects should not be attacked, but encouraged as a way to both build Canada's baseline surge capacity and better serve Canadians who have suffered too long on waiting lists.

Privately managed care that is free to the patient when medically necessary is increasingly the standard across high-performing universal health care systems.

Unfortunately, private-sector engagement tends to lead to accusations of "two tier medicine" in which the rich are supposedly treated while the poor wait. In Europe, in fact, the exact opposite is true: In France, for example, new private providers actually tended to locate in poorer areas[191] which are, after all, at a disadvantage to the extent that politics generally influences where capacity is built. The implication is that the rich in France already get politicians to deliver capacity, and it is precisely the poor who rely on the attention of entrepreneurs. And so, just as restaurants serve rich and poor alike, so too private clinics happily serve the poor, at a reasonable price, to the extent that competition with other providers is allowed.

This pattern is consistent in Canada as well. A 2013 poll found most Quebecers who seek out private care are not rich, but rather are driven to the private sector because they got sick of waiting in pain, were unable to get timely treatment in the public sector, or could not access the limited hours or locations available in the public system.[192]

Private capacity shines brightest during a surge, when that extra capacity can be redeployed. For example, at the height of the COVID-19 crisis, the British government requisitioned some 8,000 beds from private facilities.[193] In Canada, there was no such option because those beds are essentially non-existent.

Privately managed care that is free to the patient when medically necessary is increasingly the standard across high-performing universal health care systems from Germany to Singapore. Whether for immediate needs in surge capacity or to finally resolve the decades-long crisis of long wait times, it is past time for Canada to follow suit and liberalize the entrepreneurial provision of health care.

Part Two Summary

The four reforms discussed above—activity-based funding, decentralization and liberalization of management, the expanded use of existing resources (nurses, pharmacists, and telemedicine), and making more room for entrepreneurial health care—are notable in that they do not require tens of billions of dollars in new government spending. Rather, these are commonsensical administrative reforms that simply involve standing up to special interests that have long alienated Canada's health care systems from the patients they are meant to serve.

The data suggests that together, these reforms would bring greater resources, greater efficiency, and greater flexibility to Canadian health care, not just in a surge scenario but in normal times as well. The COVID-19 pandemic should bring a renewed sense of urgency, measured not in years of study groups and panels, but in immediate lives at risk, whether from subsequent "waves" or from the "health debt" [194] now incurred by months of postponing medically essential surgeries in a system that was already overloaded.

189. Leger, "Health Care System," poll conducted for the MEI, November 27, 2019, pp. 7-10.

190. The centre plans to provide 10,000 surgeries per year, intensively using its surgical theatre 23 hours a day, free to patients and billed to the province at current rates. Charles Rusnell and Jennie Russell, "Proposed $200M private orthopedic surgical facility would be largest in Alberta's history," CBC News, August 10, 2020.

191. Yanick Labrie, *For a Universal and Efficient Health Care System: Six Reform Proposals,* MEI, Research Paper, March 2014, p. 21.

192. Jasmin Guénette and Julie Frappier, "Private Medicine in Quebec," MEI, Economic Note, December 2013, pp. 2-3.

193. James Illman, "NHS block books almost all private hospital sector capacity to fight covid-19," *Health Service Journal,* March 21, 2020.

194. Marc Montgomery, "COVID-19: Hospital surgeries facing massive backlog," Radio-Canada International, April 23, 2020.

Indeed, a *Canadian Medical Association Journal* panel warned in June that Canada was only marginally prepared for a second wave, because hospital capacity has not fundamentally changed.[195] Without reforming management and adding flexibility, we will not have fundamentally transformed our ability to respond to the next crisis.

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195. Lauren Vogel, "Is Canada ready for the second wave of COVID-19?" *Canadian Medical Association Journal*, Vol. 192, No. 24, June 15, 2020, p. E665.

CONCLUSION

There is a large gap between what Canadians expect from their governments and their health care systems, on the one hand, and how these have performed in the face of the COVID-19 pandemic, on the other.

This paper has sketched out case studies of Taiwan's successful mitigation, and of successful health care surges in Sweden and Singapore. In all three cases, generalized lockdowns and their economically devastating effects were avoided. The measures used instead featured competent and serious programs to screen overseas travellers, to quarantine infected individuals, to find and treat community transmission, and to rapidly build out capacity, including for the manufacture of protective gear. This analysis should help focus attention on building government's core capabilities, rather than continuing to hold the livelihoods, and indeed the lives, of millions of Canadians hostage to governments' inability to competently manage core tasks of public safety.

As for what to do when the disease has already spread, we have detailed four recommendations for dramatically improving Canada's health care surge capacity. Taken together, global budgets, Kafkaesque administrative inflexibility, restrictive licensing and regulations, and the prohibition of much private care have starved the Canadian health care system not just of baseline capacity to treat Canadians in a timely manner, but of the ability to quickly augment capacity in a serious crisis. We will never know how many lives could have been saved with more flexible and efficient health care, but we can certainly improve our preparation for the next crisis.

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European experience has demonstrated that the health care reforms described in this study are consistent with a universal and publicly financed health care system. Moreover, such reforms are popular among voters in Quebec and across Canada. If enacted, they will not only protect us in the next health crisis, they also empower patients, while building the kind of capacity that will allow policymakers to make decisions calmly, without the threat of a health care collapse looming over Canadian society.

The next crisis may come much sooner than expected, whether from subsequent waves of COVID-19, or combined with the gigantic "health debt" of thousands of patients who have now gone additional months without treatment. Time is short to fundamentally repair a dysfunctional health care system that failed to protect many of our most vulnerable despite the very best efforts of our heroic medical professionals.[196]

196. Sharon Kirkey, *op. cit.*, footnote 101.

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