Criticism of Government Response to COVID-19 in Canada

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We review the scientific literature about general-population-lockdown and social-distancing measures, which is relevant to mitigation policy in Canada. Federal and provincial Canadian government responses to and communications about COVID-19 have been irresponsible. The latest research implies that the government interventions to "flatten the curve" risk causing significant additional cumulative COVID-19 deaths, due to seasonal driving of transmissibility and delayed societal immunity.

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I. Absence of an evidentiary basis to support general-population lockdown

General-population lockdown has previously not been attempted in modern medical history

1. Intervention during an epidemic of a viral respiratory disease by lengthy large-scale (regional, provincial, national) general-population lockdown to individual homes and institutions has not been attempted in modern medical history (since the influenza pandemic of 1918), and has not been studied in field research.[1, 2]

2. The closest published studies, for viral respiratory disease, are for school closures (Earn et al., 2012; Wu, JT et al., 2010; Cauchemez et al., 2009), and are insufficient and inconclusive. General-population lockdown measures intended to "flatten the curve" were not applied in the 2013-2016 Ebola outbreak or in the 2003 SARS epidemic, and the effectiveness of the measures that were applied remains inconclusive (Bell, 2004; Tan, 2006; Coltart et al., 2017; Peak et al., 2018).

3. The authoritative critical assessment by Ferguson et al. (2006) of the expected array of mitigation strategies for viral respiratory-disease pandemics did not even consider general-population lockdowns, and found that quarantine of infected individuals and their families could significantly reduce the overall attack rate, and that "School closure during the peak of a pandemic can reduce peak attack rates by up to 40%" (i.e., "flatten the curve").

Health liabilities of general-population lockdown during an epidemic are not known from empirical studies

4. Both effectiveness and potential liabilities of general-population lockdown (and social-distancing) strategies are unknown, although critical warnings have recently been expressed in the leading scientific literature, as described below (Wittkowski, 2020; Kissler et al., 2020).

[1] See the "History" section of the *Wikipedia* article "Social Distancing" (accessed on 15 April 2020): https://en.wikipedia.org/wiki/Social_distancing#History
[2] See also the *Wikipedia* article "Cordon sanitaire" (accessed on 15 April 2020): https://en.wikipedia.org/wiki/Cordon_sanitaire

The epidemiological effectiveness (R0 reduction) of lockdown is entirely hypothetical

5. There are no studies that reliably measure reduction in the epidemiological basic reproduction number (R0), relative to its value in the absence of government intervention, induced by specific lockdown measures in a real urban society. The assumed benefit from the intervention, in limited regard to R0, is entirely hypothetical. There are not even bounds provided by any empirical study, recent comments (Anderson et al., 2020) and tentative estimates (Bi et al., 2020; Thakkar et al., 2020) notwithstanding.

II. Scientific expert reports: lockdown causes significantly more cumulative COVID-19 deaths

Any temporary advantage from mitigation comes at the expense of lower population immunity and higher cumulative deaths

6. In social circumstances in which R0 would be reduced by lockdown measures, this is necessarily achieved at the expense of a resulting lower population immunity (measured as the ratio of the numbers of immune and susceptible individuals), which leaves the population more vulnerable to the same virus, or a similar strain, than if no lockdown or social distancing had been applied (Wittkowski, 2020; Kissler et al., 2020). The cumulative number of infections is thereby increased substantially, compared to no government intervention (see the case with seasonal forcing, Fig. 5 of Kissler et al., 2020; and see the arguments regarding the impact of increasing the duration of the epidemic, in Wittkowski, 2020).

7. For the only realistic case of seasonal variation of transmissibility (R0), in the words of Kissler et al. (2020), published on 14 April 2020 in *Science*:

> "For simulations with seasonal forcing, the post-intervention resurgent peak could exceed the size of the unconstrained epidemic (figs.), both in terms of peak prevalence and in terms of total number infected. Strong social distancing maintained a high proportion of susceptible individuals in the population, leading to an intense epidemic when R_0 rises in the late autumn and winter. ... The observation that strong, temporary social distancing can lead to especially large resurgences agrees with data from the 1918 influenza pandemic in the United States, in which the size of the autumn 1918 peak of infection was inversely associated

with that of a subsequent winter peak after interventions were no longer in place."

Any flattening of the infection peak does not itself save lives in the initial (first wave) epidemic

8. Even in highly unlikely circumstances in which subsequent waves would not occur for the next several years, the net number of lives saved by lockdown in the initial epidemic, under theoretically optimal conditions, is usually small (see the case of zero seasonal forcing, Fig. 4 of Kissler et al., 2020; and see the discussion in Wittkowski, 2020).

9. The only recognized goal of social-distancing or lockdown is solely to reduce peak intensity of the epidemic ("flatten the curve"), in order to avoid overwhelming the health system and to buy time to develop a vaccine or other treatments (e.g., see Kissler et al., 2020), yet the government did not provide evidence that any life-saving treatment would be denied to anyone in Canada, and there are many ad hoc reports of emptied hospitals, based on video on-site recording (e.g., "Jane Scharf advocate for vulnerable persons reacts to COVID-19 policy", *YouTube*, in Ottawa, 5 April 2020)

10. The context is one in which the coronavirus is deadly almost exclusively to elderly people having comorbidity conditions (Ioannidis et al., 2020), and where the most severe cases do not survive irrespective of any medical intervention (49.0 % of hospitalized cases classified as "critical" are fatal; Wu, Z and McGoogan, 2020).

"Flattening the curve" extends the period of confinement, while suppressing the attainment of societal immunity, and thus increases the cumulative deaths among the segregated elderly

11. If applied too early in the epidemiological cycle (at or prior to "peak incidence" of infections) of the initial epidemic, effective lockdown significantly prolongs the infectious period, thereby putting the most vulnerable individuals (the elderly) at higher risk, and causing a higher fatality rate than if there had not been a general-population lockdown (Wittkowski, 2020). This arises because, within the infectious period of the epidemic, segregation of the vulnerable individuals is already not perfect, and becomes more difficult to maintain for longer segregation times. This means that the lockdown itself can kill a significant number of vulnerable individuals that would not die otherwise, by increasing their likelihood of becoming infected, in the artificially-prolonged initial (first wave) epidemic.

Governments fail to consider the optimal time for starting a lockdown, and the additional negative consequences from early or late lockdowns

12. The theoretical optimal time (or "window") for applying a lockdown, in terms of saving lives in the initial (first wave) epidemic, is to start the lockdown at "peak prevalence" (maximum number of infections), which is counter intuitive but demonstrable (Wittkowski, 2020). The governments have not considered this.

The approach being followed by governments is reckless

13. The expressed government-plan is to extend the lockdown until the incidence curve dies down, and to reinstall it or other measures on resurgence, as long as needed to develop a vaccine (12 to 18 months),[3] which is reckless because:
    i. This delays societal immunity for an extended period, and gives rise to foreseen substantial increases in cumulative deaths and illness caused by the government interventions (described above; Wittkowski, 2020; Kissler et al., 2020).
    ii. Intermittent recurring lockdowns are predicted to work, in ideal conditions, only if they are so frequent and long in duration as to be effectively permanent (see Fig. 6 of Kissler et al., 2020).
    iii. There is no guarantee that a vaccine can be developed, and there are significant dangers, especially under an accelerated and relaxed regulatory regime (Weingartl et al., 2004; Callaway, 2020).[4]
    iv. Even successful development optimistically would take 12 to 18 months prior to substantial production (Anderson et al., 2020).
    v. There is no guarantee that the coronavirus will not mutate, thus rendering the vaccine purely harmful.
    vi. There is no demonstration that any death-causing insufficiency in the medical system at peak demand would occur.
    vii. There are no realistic and contextual studies of the negative social, family, psychological, and individual-health consequences of extended general-population lockdowns, not to mention the national economy.
    viii. The long-term impacts of the broadly-applied infringements in civil rights and freedoms are not known — including any permanent structural erosion of democracy itself, due to increased authoritarianism and heightened regulatory

[3] "Social-Distancing Measures In Canada Could Last 12 To 18 Months: Trudeau - The prime minister said "normality" is on hold until a vaccine is available", by Zi-Ann Lum and Althia Raj, *Huffington Post*, updated 11 April 2020. https://www.huffingtonpost.ca/entry/coronavirus-canada-how-long_ca_5e8f4c22c5b6b371812d5bb3

[4] And see: "As pressure for coronavirus vaccine mounts, scientists debate risks of accelerated testing", by Julie Steenhuysen, *Reuters*, 11 March 2020. https://www.reuters.com/article/us-health-coronavirus-vaccines-insight/as-pressure-for-coronavirus-vaccine-mounts-scientists-debate-risks-of-accelerated-testing-idUSKBN20Y1GZ

or penal consequences for violating government directives (Hickey and Davidsen, 2019).

14. As such, the governments have acted in diametrical opposition to the precautionary principle: "government shall not act with insufficient scientific knowledge, if the action has any likelihood of causing more harm than good".

15. The governments are playing Russian roulette with the lives of the most vulnerable members of society, regarding death from the coronavirus itself, both in the initial (first wave) and artificially-prolonged epidemic, and in subsequent waves of infection, in the following years.

16. Regarding extended confinement of the segregated elderly, there are already several media reports of deaths being caused by the lockdown conditions themselves (e.g., "Quebec premier Legault confirms 31 dead at Dorval care residence - When health authorities went to the centre, Legault said, almost all personnel had abandoned the home, leaving the seniors behind", *National Post*, 12 April 2020)

III. Justification for the early panic-response is not corroborated

17. Recent studies converge in showing that COVID-19 is not particularly virulent, nor unusually contagious, compared to the baseline of seasonal influenza and influenza-like-illnesses:

- **Verity et al. (2020)** showed that the infection-fatality-ratio is near-zero (< 0.03 %) for persons under 30 years of age, rising to 0.2 % at 49 years of age, and to 0.6 % at 59 years of age (their Table 1).

- **Palmieri et al. (2020)**, in their report of deaths in Italy up to 20 March 2020, showed that virtually all deaths involved multiple comorbidity conditions (heart condition, diabetes, hypertension, active cancer, etc.), with a median age of 80.

- The work of **Silverman et al. (2020)** shows that the overall (all ages included) infection-fatality-ratio is likely to be 0.1 % (typical of average seasonal influenza), rather the earlier determination by Verity et al. (2020) of 0.66 % (not atypical for a virulent seasonal influenza), as reviewed in *The Economist* on 12 April 2020.[5]

[5] "Why a study showing that covid-19 is everywhere is good news - If millions of people were infected weeks ago without dying, the virus must be less deadly than official data suggest", *The Economist*, 12 April 2020. https://www.economist.com/graphic-detail/2020/04/11/why-a-study-showing-that-covid-19-is-everywhere-is-good-news

- **Wu, Z and McGoogan (2020)** report that of 44,672 health care workers exposed in China, 3.8 % were infected and that 0.29 % of those infected died (infection-fatality-ratio among health care workers in China).

- The deaths for COVID-19 are virtually exclusive to susceptible individuals >65 years of age, and there is no reasonable justification for a general-population lockdown of all individuals versus a policy of vigilant protection specifically of those at risk. In the words of **Ioannidis et al. (2020)**:

  > "People <65 years old and not having any underlying predisposing conditions accounted for only 0.3%, 0.7%, and 1.8% of all COVID-19 deaths in Netherlands, Italy, and New York City. People <65 years old have very small risks of COVID-19 death even in the hotbeds of the pandemic and deaths for people <65 years without underlying predisposing conditions are remarkably uncommon. Strategies focusing specifically on protecting high-risk elderly individuals should be considered in managing the pandemic."

- Likewise, from the Italian report of 3,200 "COVID-19 deaths" **(Palmieri et al., 2020)**:

  > "Overall, 1.2% of the sample [deaths with confirmed coronavirus] presented with a no comorbidities, 23.5% with a single comorbidity, 26.6% with 2, and 48.6% with 3 or more."

18. Thus, there is no objective reason to believe the coronavirus is significantly more contagious or more virulent than seasonal influenza or influenza-like-illness, and there is no reason to believe that Canada has a more virulent strain of the coronavirus than has infected the rest of the world.

IV. Faith in epidemic-modelling of catastrophe-scenarios and mitigation strategies is not justified

19. A panicked response can be incited by mere computer simulations performed with dubious input assumptions, tentative input parameters, and an unrealistic model architecture. Such a model (Wu, JT et al., 2020) may have played a role in China's response in Wuhan.

20. Such models are incorrect for two main reasons, leaving aside the uncertainty in input parameters. First, the models almost always assume a constant basic reproduction number (R0), which is now (since 2010) conclusively known to be wrong for viral

respiratory diseases expressed in temperate latitudes. In fact, the R0 has a strong seasonal variation, even during the course of an epidemic, which can be 4-fold in magnitude, and which is driven by absolute humidity of the atmosphere (Shaman et al., 2010).

21. Second, when the models are used to evaluate mitigation strategies, they employ complete guesswork, since the impact of the mitigation measures on R0 are always unknown, and, additionally, would be highly dependent on cultural and organizational features of the society, including compliance.

22. There is no need to rely on these models because the similarities with the 2003 SARS epidemic are compelling. In the words of Wittkowski (2020):

> "During the 2003 SARS epidemic the number of new cases peaked about three weeks after the initial increase of cases was noticed and then declined by 90% within a month. ... The 2003 SARS and the 2020 SARS-CoV-2 are not only similar with respect to genetics (79% homology),(Lu 2020) immunology,(Ahmed 2020) involvement of endocytosis (also with influenza and syn-cytial viruses),(Behzadi 2019) seasonal variation (same season in the northern hemisphere also with influenza, syncytial, and metapneumo viruses)(Olofsson 2011), evolution (origin in bats, 88% homology),(Benvenuto 2020; Malik 2020) but also with respect to the duration between emergence and peak of cases as well as between this peak and resolution of the epidemic (Table 1)."

23. The general-population global lockdown saga, incited by incorrect model simulations, should not have occurred. The epidemic would be over, and societal immunity would be achieved, in the regions of high transmission, without government intervention other than facilitating specific measures to protect vulnerable persons.

V. The Canadian government's forecast of deaths is questionable

24. Canada has made dramatic pronouncements regarding potential deaths: [6]

> "OTTAWA — Canada could see the end of the first wave of the COVID-19 epidemic before autumn, according to federal projections, but only if

[6] "COVID-19 Deaths In Canada Could Hit 4,400 To 44,000 In Coming Months With Strong Measures: Feds - The Public Health Agency of Canada says the death toll could be much higher with poor containment measures", by Laura Osman, Canadian Press, *Huffington Post*, 9 April 2020.
https://www.huffingtonpost.ca/entry/covid-19-deaths-canada-projections_ca_5e8f2484c5b6d641a6bb21cb

> strong physical distancing measures are strictly maintained the whole time.
>
> Even in that best-case scenario, the federal public health agency projects that 4,400 to 44,000 Canadians could die of COVID-19 in the coming months.
>
> If those containment measures are relaxed or abandoned, the death toll could be much, much higher, the agency says.
>
> "These stark numbers tell us that we must do everything that we can now to stay in that best-case scenario," said chief public health officer Dr. Theresa Tam, in releasing the national projections Thursday morning in Ottawa."

25. To date (16 April 2020), in Canada, there have been 1,048 deaths. The epidemic curve rose sharply on ~7 March, peaked at ~20 March, at a value of ~650 voluntarily-reported new cases per day, and has been declining steadily from the peak value. [7, 8]

26. The epidemic curve is following the same pattern as with the 2003 SARS epidemic (Wittkowski, 2020): "During the 2003 SARS epidemic the number of new cases peaked about three weeks after the initial increase of cases was noticed and then declined by 90% within a month." It is also occurring constrained within the high-transmissibility season for viral respiratory diseases in Canada (e.g., Schanzer et al., 2010), as expected for a disease primarily transmitted by virion-laden aerosol particles (Rancourt, 2020).

27. There is no compelling reason to conclude that the general-population lockdown measures (first requested by the Trudeau government on 17 March [9]) had a detectable effect in Canada. The lockdown measures may have been implemented after "peak prevalence" of actual infections, which renders mitigation measures entirely without effect (Wittkowski, 2020).

28. Even if Canada — with its publicly funded health sector, its pristine air, its relatively uncrowded living conditions, and its regular seasonal natural immunizations to every form of viral respiratory illness — were to suffer the same COVID-19 fatality rate as Italy[10], then this would translate (without age-structure adjustment) to 13,500 Canadian deaths, which (in a year) corresponds to 4 % of the Canadian death rate per year from

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[7] https://www.canada.ca/en/public-health/services/diseases/coronavirus-disease-covid-19.html

[8] https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/health-professionals/epidemiological-summary-covid-19-cases.html?topic=tilelink#a2

[9] "As Canada ramps up restrictions, a Wuhan resident describes what months of lockdown feels like", *CBC Radio*, 23 March 2020. https://www.cbc.ca/radio/asithappens/as-it-happens-the-monday-edition-1.5506723/as-canada-ramps-up-restrictions-a-wuhan-resident-describes-what-months-of-lockdown-feels-like-1.5506725

[10] 358 deaths per M; WHO Situation Report #87, accessed on 16 April 2020, in Italy, which has the oldest population in Europe, with 22.4 % over 65 years, in 2015, whereas Canada had 15.6 % in 2014, and which has heavy air pollution in its north.

all causes, and is comparable to historic non-pandemic influenza-associated excess mortality in the USA (Lui and Kendal, 1987; and see Iuliano et al., 2018).[11]

VI. And what of civil rights?

29. As with any war, the first rights to disappear are civil rights, but this war was unnecessary, and ill-conceived.

30. No elderly person or person deemed to be at risk should ever be forcibly confined to house (or room) arrest "for their own good". If that person is without symptoms and wishes to go outside, or in public, then that must be their choice to make.

31. The same must hold for any nominally healthy person without symptoms: they must be free to move and free to associate with others.

32. Risk must be a personal evaluation and choice, not a proscribed given, or there is no freedom. Those who are afraid to go out can organize accordingly. Those who want a particularly large "personal space" in public can express themselves and negotiate.

33. Now the government is entertaining the noxious idea of censorship law against freely expressed views about the risks associated with a pandemic.[12]

34. The same kind of science deficit and science contrary to entertained public policy exists regarding requiring individuals to wear face masks in public or health-care worker in non-surgical settings to wear respirators (Rancourt, 2020).

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[11] And see: "80,000 died of the flu last winter in the U.S., the highest death count in decades", by Associated Press, *Los Angeles Times*, 26 September 2018. https://www.latimes.com/nation/la-na-flu-deaths-us-20180926-story.html (accessed on 17 April 2020).

[12] "Federal government open to new law to fight pandemic misinformation - It's one of several measures the government is considering to counter fake news about the virus online", by Elizabeth Thompson, *CBC News*, 15 April, 2020. https://www.cbc.ca/news/politics/covid-misinformation-disinformation-law-1.5532325

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