SUMMER VILLAGE OF SILVER SANDS
AGENDA
Friday, February 26th, 2021 commencing at 9:00 a.m.
Virtual – or Onoway Council Chambers
Due to COVID restrictions, the public may participate via zoom, call the office to arrange for same.
As per bylaw 286-2018 Council and/or Council Committee meetings may not be filmed or voice recorded.

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1. Call to order

2. Agenda
   a) Friday, February 26th, 2021 Regular Council Meeting

3. Minutes: p1-5
   a) Friday, January 29th, 2021 Regular Council Meeting

4. Delegations: n/a

5. Bylaws:

   a) Bylaw 311-2021 - a Bylaw for the purpose of establishing one or more assessment review boards and the appointment of an assessment review board clerk. With the change in service provider from Lac Ste. Anne County to Capital Region Assessment Services Commission, a new bylaw is required. We have attached the existing bylaw for reference and this bylaw will be rescinded upon final passing of this new bylaw *(give 1st reading as is or as amended, give 2nd reading as is or as amended, give unanimous consent to consider 3rd reading as is or as amended, give 3rd and final reading as is or as amended)*

   p6-8
   p9-11

   b) Bylaw 312-2021 – a Bylaw for the purpose of establishing the position of designated officer (clerk of the assessment review board). Again this new bylaw is required because of the change from Lac Ste. Anne County to Capital Region Assessment Services Commission, and as previous, the existing bylaw is attached for your reference and will be rescinded upon final passing of this bylaw. *(give 1st reading as is or as amended, give 2nd reading as is or as amended, give unanimous consent to consider 3rd reading as is or as amended, give 3rd and final reading as is or as amended)*

   p12-13
   p14-15

   c) Bylaw 313-2021 – a Bylaw for the purpose of establishing the position of designated officer (municipal assessor). This bylaw was identified during our Municipal Accountability Program review as needing to be updated. Our existing bylaw is attached for reference and will be rescinded upon final passage of this new bylaw. . *(give 1st reading as is or as amended, give 2nd reading as is or as amended, give unanimous consent to consider 3rd reading as is or as amended, give 3rd and final reading as is or as amended)*

   p16-17
   p18

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6. Business:

a) Capital Region Assessment Services Commission – it was back in October 2020 that Council approved entering into an agreement with the noted Commission for the provision of Assessment Review Board Services starting in 2021. At this meeting Council has considered the required new bylaws, and following their final passing Council needs to appoint the board member panelists and clerk of the assessment review board *(that the Summer Village of Silver Sands approve the 2021 Capital Region Assessment Services Commission 5 Assessment Review Board Member Panelists as follows: Darlene Chartrand, Tina Groszko, Stewart Hennig, Richard Knowles and Raymond Ralph AND THAT Richard Barham be approved as the Clerk of the Assessment Review Board)*

b) Draft Waste Cart Policy – further to previous discussions, attached is a draft waste cart policy whereby each property will be granted one cart to which the Summer Village will cover the costs of the contractor and the tippage fees. If property owners wish to have an additional cart they will need to make that arrangement directly with the contractor and pay all associated costs to that contractor. The Summer Village will only pay for one cart per property. And on the go forward, when lots are consolidated they will be required to return one cart or make those direct payment arrangements for that second cart with the contractor *(approve policy as is or with amendments, or some other direction as given by Council at meeting time)*

p 19-20

c) 2021 Draft Operating and Capital Budget – further to discussions and changes at our January meeting, attached is an updated draft budget reflecting a 1.5% increase in municipal tax dollars collected as directed at that meeting. Further review and discussion to take place at meeting time *(accept draft budget and changes for information, and bring back to next Council meeting)*

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d)

e)

f)

7. Financial
   a) Income & Expense Statement – as of January 31st, 2021

8. Councillors' Reports
   a) Mayor Poulin
   b) Deputy Mayor Turnbull
   c) Councillor Horne

9. Administration Reports
   p21 a) Development Officer's Report
   p22-23 b) Public Works Report
   c) SANG gas line replacement project update
   d) Development Agreement update
   e) Municipal Accountability Program review update
   f) Audit update
   g)

10. Information and Correspondence
   a) Government of Alberta, Statement of Direct Deposit:
      p24 i) February 2nd, 2021 in the amount of $438.00 for February FCSS payment
      p25 ii) February 9th, 2021 in the amount of $21,201.00 for MOST payment
   p26-27 b) Community Peace Officer Reports for January 2021
   p28-31 c) Fortis Alberta – February 1st, 2021 letter on approved 2021 distribution rates revised
   p32-88 d) Municipal District of Spirit River No. 133 – January 27th, 2021 letter to Premier Kenney on the Province's handling of COVID-19 pandemic
   e)

SUMMER VILLAGE OF SILVER SANDS
AGENDA

Friday, February 26th, 2021 commencing at 9:00 a.m.
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11. Open Floor Discussion with Gallery (15 minute time limit)

12. Closed Meeting (if required) n/a

13. Adjournment

Next Meetings:

- February 27th, 2021 – Summer Village of Lac Ste. Anne County East Mtg (YS host)
- March 26th, 2021 – Regular Council Meeting
- April 30th, 2021 – Regular Council Meeting
- May 28th, 2021 – Regular Council Meeting
- June 25th, 2021 – Regular Council Meeeting

SUMMER VILLAGE OF SILVER SANDS
REGULAR COUNCIL MEETING MINUTES
FRIDAY, JANUARY 29, 2021
VIA TELECONFERENCE

	PRESENT	Mayor: Deputy Mayor: Councillor: Administration: Public Works: Delegations: Public at Large:	Bernie Poulin Liz Turnbull Graeme Horne Wendy Wildman, Chief Administrative Officer (CAO) Heather Luhtala, Assistant CAO Dan Golka, Public Works Manager Dennis Woolsey – Director of Emergency Management Rick Wagner – Deputy Director of Emergency Management 0
1.	**CALL TO ORDER**	Mayor Poulin called the meeting to order at 9:00 a.m.	
2.	**AGENDA** 1-21	**MOVED** by Councillor Horne that the January 29, 2021 agenda be approved with the following additions: Under Delegations: a) Dennis Woolsey, Director of Emergency Management & Rick Wagner, Deputy Director of Emergency Management – to provide update on COVID-19 and Emergency Management Under Business: g) January 28, 2021 email from the Summer Villages of Lac Ste. Anne County East requesting consideration to support upcoming Xplornet application to the Universal Broadband Fund h) January 28, 2021 Zoom Meeting Invite with the Province and Lac Ste. Anne County regarding sewer systems around our lakes scheduled for February 9, 2021 i) January 21, 2021 email on 2021 AUMA President's Summit on Policing Virtual Event Scheduled for February 4 and 17, 2021 j) January 28, 2021 email Request from resident to cancel or reduce Development Permit invoice 21DP04-31 **CARRIED**	
3.	**MINUTES** 2-21	**MOVED** by Deputy Mayor Turnbull that the minutes of the November 27, 2020 Regular Council Meeting be approved as presented. **CARRIED**	

4.	**DELEGATIONS**	
	3-21	**MOVED** by Councillor Horne that Council accept for information the discussion with Dennis Woolsey, Director or Emergency Management and Rick Wagner, Deputy Director of Emergency Management with respect to their COVID-19 and emergency management updates. **CARRIED** Dennis and Rick exited the meeting at 9:20 a.m.
5.	**BYLAWS**	n/a
6.	**BUSINESS**	
	4-21	**MOVED** by Councillor Horne that Council authorize the Summer Village of Silver Sands to participate in a 2021 Alberta Community Partnership application, under the Intermunicipal Collaboration (IC) – Explore and Opportunity Stream, to study the potential for regionalization of shared and common services among the partner members, with the Summer Village of Val Quentin acting as the Managing Partner. **CARRIED**
	5-21	**MOVED** by Deputy Mayor Turnbull that Council authorize the Summer Village of Silver Sands to participate in a 2021 Alberta Community Partnership application, under the Municipal Restructuring (MR) – Restructuring Study Stream, to establish a process to facilitate the prospective amalgamation of regional summer villages, with the Summer Village of Sunset Point acting as the Managing Partner. **CARRIED**
	6-21	**MOVED** by Deputy Mayor Turnbull that Council appoint Dwight Moskalyk as Returning Officer and Diane Wannamaker as Substitute Returning Officer for the 2021 Municipal Election for the Summer Village of Silver Sands. **CARRIED**
	7-21	**MOVED** by Councillor Horne that the Summer Village of Silver Sands plan its 2021 nomination day and election day (including advance vote) along with its nomination day and voting day locations in conjunction with other Summer Villages if appropriate (with date/time/locations coming back to a future Council meeting for finalization). **CARRIED**

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	8-21	**MOVED** by Deputy Mayor Turnbull that the Council of the Summer Village of Silver Sands support the 2021 Census and encourage all residents to complete their census questionnaire online at www.census.gc.ca. to ensure accurate and complete census data which support programs and services that benefit our community including grant funding AND THAT this information be advertised in the May 2021 newsletter and put on the Summer Village's website. **CARRIED**
	9-21	**MOVED** by Councillor Horne that the Summer Village work with Ste. Anne Natural Gas with respect to the location of their gas line replacement project AND THAT notice of this construction project be included in the May 2021 newsletter and that a meeting be arranged to discuss the details of the project. **CARRIED**
	10-21	**MOVED** by Mayor Poulin that, as requested, the Summer Village of Silver Sands provide in-kind support to the Lake Isle & Lac Ste. Anne Water Quality Management Society (LILSA) with respect to their blue-green algae work by including their information in our future newsletters and on the municipal website. **CARRIED**
	11-21	**MOVED** by Deputy Mayor Turnbull that Council accept for information the discussion with respect to the Draft 2021 Budget AND THAT Administration update the budget accordingly, draft budget not to exceed a 1.5% overall increase in municipal tax dollars collected from the previous year, that the minimum municipal tax be increased to $850.00 for the 2021 Tax Year ($700 in 2020) AND THAT an updated draft budget be brought back to the next Council meeting for Council's review. **CARRIED**
	12-21	**MOVED** by Mayor Poulin that the Summer Village of Silver Sands provide a letter of support to Xplornet in support of their application to the Universal Broadband Fund grant stream for work to expand the broadband network in certain areas in the Lac Ste. Anne/Lake Isle corridor. **CARRIED**
	13-21	**MOVED** by Councillor Horne that Council and Administration be authorized to attend the zoom meeting with the Province and Lac Ste. Anne County regarding sewer systems around our lakes scheduled for February 9, 2021. **CARRIED**
	14-21	**MOVED** by Mayor Poulin that Council and Administration be authorized to attend the 2021 AUMA President's Summit on Policing virtual event scheduled for February 4 and 17, 2021. **CARRIED**

3

	15-21	**MOVED** by Councillor Horne that Council authorize a reduction of $50.00 to development permit invoice 21DP04-31. (Original invoice $250.00, reduced to $200.00). **CARRIED**
7.	**FINANCIAL**	
	16-21	**MOVED** by Deputy Mayor Turnbull that the income and expense report as of December 31, 2020 be accepted for information as presented. **CARRIED**
8.	**COUNCIL REPORTS**	
	17-21	**MOVED** by Deputy Mayor Turnbull that Mayor Poulin be authorized to participate in the Lac Ste. Anne Weir and Water Levels Action Group AND THAT administration advise MLA, Shayne Getson's office of same. **CARRIED**
	18-21	**MOVED** by Mayor Poulin that the Council reports be accepted for information as presented. **CARRIED**
9.	**ADMINISTRATION REPORTS**	
	19-21	**MOVED** by Mayor Poulin that as the Summer Village currently allows and budgets for one waste cart per titled lot, any requests for additional waste carts can be requested by the resident directly to the waste services provider and the resident will be responsible for all costs including waste cart fee, waste collection fee and tippage fees AND THAT administration bring back a draft Waste Cart Policy to the next regular Council meeting which includes this provision for resident requests for additional waste carts. **CARRIED**
	20-21	**MOVED** by Councillor Horne that the Administration and Public Works reports be accepted for information as presented. **CARRIED**
10.	**CORRESPONDENCE**	
	21-21	**MOVED** by Deputy Mayor Turnbull that the following correspondence be accepted for information: a) Government of Alberta Statement of Direct Deposit: -Nov. 10 in the amount of $11,784.00 for MOST funding -Nov. 24 in the amount of $53,115.00 for MSI and MSP funding and $292.00 for December FCSS funding -Dec. 24 in the amount of $296.00 for January FCSS funding

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		b) Alberta Municipal Affairs Minister Tracy Allard – Nov. 19 email on being approved under the Municipal Stimulus Funding in the amount of $12,964.00 for our playground upgrade project c) Alberta Municipal Affairs Minister Tracy Allard – undated letter received December 10th, 2020 on Ministerial Order for the Summer Village Emergency Management group (removing Castle Island) d) Community Peace Officer Report for October 2020 e) Town of Onoway – November 10th, 2020 Organizational Meeting Results **CARRIED**
11.	**OPEN GALLERY**	n/a
12.	**CLOSED MEETING**	n/a
13.	**NEXT MEETING(S)**	The next Regular Council meeting has been scheduled for Friday, February 26, 2021 at 9:00 a.m.
14.	**ADJOURNMENT**	The meeting adjourned at 10:47 a.m.

_____
Mayor, Bernie Poulin

_____
Chief Administrative Officer, Wendy Wildman

5

BYLAW NO. 311-2021

Municipal Government Act RSA 2000 Chapter M-26
Part 11 Assessment Review Boards

BEING A BYLAW OF THE SUMMER VILLAGE OF SILVER SANDS IN THE PROVINCE OF ALBERTA FOR THE PURPOSE OF ESTABLISHING ONE OR MORE ASSESSMENT REVIEW BOARDS AND THE APPOINTMENT OF AN ASSESSMENT REVIEW BOARD CLERK

WHEREAS Section 454 of the Municipal Government Act requires Council to establish by bylaw a Local Assessment Review Board and a Composite Assessment Review Board; and

WHEREAS Section 456 of the Municipal Government Act requires Council to appoint a designated officer to act as the Clerk of the Assessment Review Boards having jurisdiction in the Summer Village of Silver Sands;

NOW THEREFORE, the Council for the Summer Village of Silver Sands, in the Province of Alberta, duly assembled enacts as follows:

Definitions

1. In this Bylaw, unless the context otherwise requires, the following definitions apply;

   a) "Assessment Review Boards" (ARB) means either the Local Assessment Review Board (LARB) or the Composite Assessment Review Board (CARB);

   b) "Assessment Clerk" means an individual appointed pursuant to Section 456 of the Municipal Government Act who is accredited by the Municipal Government Board to act as the Clerk of Assessment Review Boards for the Summer Village of Silver Sands;

   c) "CRASC" means Capital Region Assessment Services Commission contracted by the Summer Village of Silver Sands to provide a full ARB administration services;

   d) "Composite Assessment Review Board" (CARB) means a board established pursuant to Section 454 of the Municipal Government Act to hear and make decisions on complaints referred to in Section 460.1 (2) of the Municipal Government Act;

   e) "Council" means the duly elected Council of the Summer Village of Silver Sands;

   f) "Local Assessment Review Board" (LARB) means a board established pursuant to Section 454 of the Municipal Government Act to hear and make decisions on complaints referred to in Section 460.1 (1) of the Municipal Government Act;

   g) "Summer Village" means the Summer Village of Silver Sands;

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h) "Municipal Government Act" means the Municipal Government Act, RSA 2000, c M-26; and

i) "Panelist" means an individual who is accredited by the Alberta Municipal Government Board to hear Assessment Complaints and who will be appointed to the Assessment Review Boards.

Establishment of Boards

2. Council hereby establishes the following boards:
   a) Local Assessment Review Board; and
   b) Composite Assessment Review Board

Duties

3. The Assessment Review Boards shall carry out all duties and responsibilities as set out in the Municipal Government Act and its regulations.

Appointments of Board Members, Chair and Assessment Clerk

4. Annually Council will appoint the list of Panelists, the names of the Chair of the LARB and CARB and the name of the Assessment Clerk provided to the Summer Village Council by CRASC.

5. All Panelists and Assessment Clerk serve at the pleasure of Council and may be removed by resolution of Council where, in the opinion of Council, removal is warranted.

Fees and Expenses

6. Compensation payable to CRASC for its performance including Annual fees, Hearing fees, Panelist fees and Assessment Clerk fees will be outlined in a Memorandum of Agreement between CRASC and the Summer Village.

Filing a Complaint

7. Upon receipt of an assessment complaint, the Summer Village shall provide to CRASC a completed Assessment Review Board Complaint form and supporting documentation in a timely manner.

8. A complaint must be accompanied by the appropriate fee as established by resolution of Council.

7

BYLAW NO. 311-2021

Municipal Government Act RSA 2000 Chapter M-26
Part 11 Assessment Review Boards

Rescind Bylaw
THAT Bylaw 291-2019, is hereby rescinded with the passing of this bylaw.

Effective Date
THAT this Bylaw shall come into force and effective on the date of the third and final reading.

Read a first time on this 26th day of February, 2021.

Read a second time on this 26th day of February, 2021.

Unanimous Consent to proceed to third reading on this 26th day of February, 2021.

Read a third and final time on this 26th day of February, 2021.

Signed this 26th day of February, 2021.

_____
Mayor, Bernie Poulin

_____
Chief Administrative Officer, Wendy Wildman

8

Existing Bylaw

BYLAW NO. 2020-2

Municipal Government Act RSA 2000 Chapter M-26
Part 11 Assessment Review Boards

BEING A BYLAW OF THE SUMMER VILLAGE OF NAKAMUN PARK IN THE PROVINCE OF ALBERTA FOR THE PURPOSE OF ESTABLISHING ONE OR MORE ASSESSMENT REVIEW BOARDS AND THE APPOINTMENT OF AN ASSESSMENT REVIEW BOARD CLERK

WHEREAS Section 454 of the Municipal Government Act requires Council to establish by bylaw a Local Assessment Review Board and a Composite Assessment Review Board; and

WHEREAS Section 456 of the Municipal Government Act requires Council to appoint a designated officer to act as the Clerk of the Assessment Review Boards having jurisdiction in the Summer Village of Nakamun Park;

NOW THEREFORE, the Council for the Summer Village of Nakamun Park, in the Province of Alberta, duly assembled enacts as follows:

Definitions

1. In this Bylaw, unless the context otherwise requires, the following definitions apply;

   a) "Assessment Review Boards" (ARB) means either the Local Assessment Review Board (LARB) or the Composite Assessment Review Board (CARB);

   b) "Assessment Clerk" means an individual appointed pursuant to Section 456 of the Municipal Government Act who is accredited by the Municipal Government Board to act as the Clerk of Assessment Review Boards for the Summer Village of Nakamun Park;

   c) "County" means Lac Ste. Anne County contracted by the Summer Village of Nakamun Park to provide a full ARB administration services;

   d) "Composite Assessment Review Board" (CARB) means a board established pursuant to Section 454 of the Municipal Government Act to hear and make decisions on complaints referred to in Section 460.1 (2) of the Municipal Government Act;

   e) "Council" means the duly elected Council of the Summer Village of Nakamun Park;

   f) "Local Assessment Review Board" (LARB) means a board established pursuant to Section 454 of the Municipal Government Act to hear and make decisions on complaints referred to in Section 460.1 (1) of the Municipal Government Act;

   g) "Summer Village" means the Summer Village of Nakamun Park;

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h) "Municipal Government Act" means the Municipal Government Act, RSA 2000, c M-26; and

i) "Panelist" means an individual who is accredited by the Alberta Municipal Government Board to hear Assessment Complaints and who will be appointed to the Assessment Review Boards.

Establishment of Boards

2. Council hereby establishes the following boards:
   a) Local Assessment Review Board; and
   b) Composite Assessment Review Board

Duties

3. The Assessment Review Boards shall carry out all duties and responsibilities as set out in the Municipal Government Act and its regulations.

Appointments of Board Members, Chair and Assessment Clerk

4. Annually Council will appoint the list of Panelists, the names of the Chair of the LARB and CARB and the name of the Assessment Clerk provided to the Summer Village Council by the County.

5. All Panelists and Assessment Clerk serve at the pleasure of Council and may be removed by resolution of Council where, in the opinion of Council, removal is warranted.

Fees and Expenses

6. Compensation payable to the County for its performance including Annual fees, Hearing fees, Panelist fees and Assessment Clerk fees will be outlined in a Memorandum of Agreement between the County and the Summer Village.

Filing a Complaint

7. Upon receipt of an assessment complaint, the Summer Village shall provide to the County a completed Assessment Review Board Complaint form and supporting documentation in a timely manner.

8. A complaint must be accompanied by the appropriate fee as established by resolution of Council.

10

BYLAW NO. 2020-2

Municipal Government Act RSA 2000 Chapter M-26
Part 11 Assessment Review Boards

Rescind Bylaw
THAT Bylaw 2010-03, a Bylaw of the Summer Village of Nakamun Park to Establish one or more Assessment Review Boards is hereby rescinded with the passing of this bylaw.

Effective Date
THAT this Bylaw shall come into force and effective on the date of the third and final reading.

Read a first time on this _____ day of _____, 2020.

Read a second time on this _____ day of _____, 2020.

Unanimous Consent to proceed to third reading on this _____ day of _____, 2020.

Read a third and final time on this _____ day of _____, 2020.

Signed this _____ day of _____, 2020.

_____
Mayor, Marge Hanssen

_____
Chief Administrative Officer, Dwight Moskalyk

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BYLAW NO. 312-2021

Municipal Government Act RSA 2000 Chapter M-26

Section 210, Designated Officer
Section 456, Appoint Assessment Review Board Clerk

A BYLAW OF THE MUNICIPALITY OF SILVER SANDS, IN THE PROVINCE OF ALBERTA, TO ESTABLISH THE POSITION OF DESIGNATED OFFICER

WHEREAS, pursuant to the provisions of section 210 of the *Municipal Government Act*, the Council may pass a bylaw to establish one or more positions to carry out the powers, duties, and functions of a designated officer.

AND WHEREAS, pursuant to section 456 of the *Municipal Government Act*, the council of a municipality must appoint a designated officer to act as the clerk of the assessment review boards having jurisdiction in the municipality.

NOW THEREFORE, the Council of the Summer Village of Silver Sands, in the Province of Alberta, duly assembled, enacts as follows:

1. The Assessment Review Board Clerk is hereby established as a Designated Officer.

2. The Assessment Review Board Clerk is the designated officer for the purpose of the following sections of the *Municipal Government Act*:

   i) section 456(1) – Duties of the Clerk of the Assessment Review Board
   ii) section 461 & 462 – Assessment Complaints
   iii) section 469(1) – Notice of Decision of the Assessment Review Board
   iv) section 483 – Decision Admissible on Appeal

3. That as the Summer Village has entered into an agreement with Capital Region Assessment Services Commission for the provision of Assessment Review Board services within the Summer Village, Richard Barham be appointed Assessment Review Board Clerk for the Summer Village of Silver Sands.

4. That this bylaw is effective upon the date of its third and final reading.

5. That bylaw 292-2019 be rescinded.

THAT this Bylaw shall come into force and effective on the date of the third and final reading.

Read a first time on this 26th day of February, 2021.

Read a second time on this 26th day of February, 2021.

Unanimous Consent to proceed to third reading on this 26th day of February, 2021.

Read a third and final time on this 26th day of February, 2021.

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Municipal Government Act RSA 2000 Chapter M-26
Section 210, Designated Officer
Section 456, Appoint Assessment Review Board Clerk

Signed this 26th day of February, 2021.

_____
Mayor, Bernie Poulin

_____
Chief Administrative Officer, Wendy Wildman

13

Existing Bylaw

BYLAW NO. 292-2019

Municipal Government Act RSA 2000 Chapter M-26
Section 210, Designated Officer
Section 456, Appoint Assessment Review Board Clerk

A BYLAW OF THE MUNICIPALITY OF SILVER SANDS, IN THE PROVINCE OF ALBERTA, TO ESTABLISH THE POSITION OF DESIGNATED OFFICER

WHEREAS, pursuant to the provisions of section 210 of the *Municipal Government Act*, the Council may pass a bylaw to establish one or more positions to carry out the powers, duties, and functions of a designated officer.

AND WHEREAS, pursuant to section 456 of the *Municipal Government Act*, the council of a municipality must appoint a designated officer to act as the clerk of the assessment review boards having jurisdiction in the municipality.

NOW THEREFORE, the Council of the Summer Village of Silver Sands, in the Province of Alberta, duly assembled, enacts as follows:

1. The Assessment Review Board Clerk is the designated officer for the purpose of the following sections of the *Municipal Government Act*:

   i) section 456(1) – Duties of the Clerk of the Assessment Review Board
   ii) section 461 & 462 – Assessment Complaints
   iii) section 469(1) – Notice of Decision of the Assessment Review Board
   iv) section 483 – Decision Admissible on Appeal

2. That as the Summer Village has entered into an agreement with Lac Ste. Anne County for the provision of Assessment Review Board services within the Summer Village, Mike Primeau be appointed Assessment Review Board Clerk for the Summer Village of Silver Sands.

3. That this bylaw is effective upon the date of its third and final reading.

4. That bylaw 236 – Assessment Complaints Designated Officer - be rescinded.

THAT this Bylaw shall come into force and effective on the date of the third and final reading.

Read a first time on this 31st day of May, 2019.

Read a second time on this 31st day of May, 2019.

Unanimous Consent to proceed to third reading on this 31st day of May, 2019.

Read a third and final time on this 31st day of May, 2019.

Signed this 31st day of May, 2019.

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Municipal Government Act RSA 2000 Chapter M-26
Section 210, Designated Officer
Section 456, Appoint Assessment Review Board Clerk

_____

Mayor, Bernie Poulin

_____

Chief Administrative Officer, Wendy Wildman

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BYLAW NO. 313-2021

Municipal Government Act RSA 2000 Chapter M-26
Section 210, Designated Officer
Section 284.2, Appoint Municipal Assessor

A BYLAW OF THE MUNICIPALITY OF SILVER SANDS, IN THE PROVINCE OF ALBERTA, TO ESTABLISH THE POSITION OF DESIGNATED OFFICER

WHEREAS, pursuant to the provisions of section 210 of the Municipal Government Act, the Council may pass a bylaw to establish one or more positions to carry out the powers, duties, and functions of a designated officer.

NOW THEREFORE, the Council of the Summer Village of Silver Sands, in the Province of Alberta, duly assembled, enacts as follows:

1. The Municipal Assessor is hereby established as a Designated Officer.

2. The delegation of Municipal Assessor as a designated officer shall include, but not be limited through this bylaw to additional powers assigned by the Chief Administrative Officer or Council through other bylaws, the following authorities:

   - Section 284.2-MGA Carry out duties and responsibilities of an assessor

3. That as the Summer Village of Silver Sands has entered into an agreement with Capital Region Assessment Services Commission for the provision of assessment services within the Summer Village, Mr. Mike Krim be appointed Municipal Assessor for the Summer Village of Silver Sands.

4. That this bylaw is effective upon the date of its third and final reading.

5. That bylaw 252 be rescinded.

6. This Bylaw shall come into full force and effect on its final passing.

THAT this Bylaw shall come into force and effective on the date of the third and final reading.

Read a first time on this 26th day of February, 2021.

Read a second time on this 26th day of February, 2021.

Unanimous Consent to proceed to third reading on this 26th day of February, 2021.

Read a third and final time on this 26th day of February, 2021.

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Municipal Government Act RSA 2000 Chapter M-26
Section 210, Designated Officer
Section 284.2, Appoint Municipal Assessor

Signed this 26th day of February, 2021.

_____
Mayor, Bernie Poulin

_____
Chief Administrative Officer, Wendy Wildman

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Existing Bylaw

BYLAW NO. 252
SUMMER VILLAGE OF SILVER SANDS

A BYLAW OF THE MUNICIPALITY OF SILVER SANDS, IN THE PROVINCE OF ALBERTA, TO ESTABLISH THE POSITION OF DESIGNATED OFFICER

WHEREAS, pursuant to the provisions of section 210 of the Municipal Government Act, the Council may pass a bylaw to establish one or more positions to carry out the powers, duties, and functions of a designated officer.

NOW THEREFORE, the Council of the Summer Village of Silver Sands, in the Province of Alberta, duly assembled, enacts as follows:

1. That the position of Assessor be established to carry out the duties and responsibilities of an assessor as designated in the Municipal Government Act.

2. That as the Summer Village has entered into an agreement with Capital Region Assessment Services Commission for the provision of assessment services within the Summer Village, Mr. Mike Krim be appointed Assessor for the Summer Village of Silver Sands.

3. That this bylaw is effective upon the date of its third and final reading.

4. That bylaw 249 be rescinded.

This Bylaw shall come into full force and effect on its final passing.

READ a first time this 24th day of July 2014.

READ a second time this 24th day of July 2014.

UNANIMOUSLY CONSENTED TO AND READ a third and final time this 24th day of July 2014.

_____
Mayor, Bernie Poulin

_____
C.A.O., Wendy Wildman

18

Waste Cart Policy

Policy Purpose

The Summer Village of Silver Sands requires that the number of waste carts per property be regulated to ensure each lot has adequate and fair waste removal and to ensure the Summer Village is within its annual approved budget for waste collection and removal.

Residents have requested additional waste carts from the Municipality.

Policy Statement

Each titled residential lot will be provided the following:

- 1 – 96-gallon waste cart

Policy Notes

A consolidated lot (vacant/improved, vacant/vacant, improved/improved) is considered to be one titled lot and will be provided one waste cart per the above policy statement.

Lots that are to be consolidated and that have two waste carts will have one waste cart retrieved by the contractor at the request of the municipality once the municipality has received the land title for the newly consolidated lot. If the waste contractor is unable to retrieve one waste cart, the waste contractor will invoice the municipality and the municipality will invoice the property and any unpaid invoice after 60 days will be transferred to the tax roll. Additionally, the waste removal contractor will be instructed by the Summer Village to remove waste from only one waste cart at said lot.

Policy Purpose

The Summer Village will not allow additional waste carts per lot for the following reasons:

1. The cost of each waste cart is $130.00.
2. The Summer Village would be charged additional monthly fees for each additional cart.
3. Tippage fees would be charged on additional waste at the landfill.
4. The additional waste costs would have to be paid by each resident through the annual taxes.

5. The Summer Village does not budget for the cost of additional carts or for the cost of additional waste removal and tippage fees.

Policy Exceptions

Residents may enter into a private agreement with the Waste Services Contractor to purchase/lease an additional waste cart for their property. The resident will be responsible to the waste contractor for the cost of the cart as well as for the cost of regular waste removal and waste tippage fees. The waste contractor will be responsible for the invoicing and collection of payment through their private agreement with the resident.

Summer Village of Silver Sands

Report to Council

Meeting: February 26, 2021 - Regular Council Meeting

Originated By: Tony Sonnleitner, Development Officer, Summer Village of Silver Sands

Development Permits: None

Letters of Compliance:

21COMP03-31 **Plan 223 MC, Block 1, Lot 10 + Pt 11 : 10 Alder Avenue**

21COMP06-31 **Plan 6108 RS, Block 8, Lot 4 : 4 Bay Drive**

Enforcements: None

Tony Sonnleitner, Development Officer

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cao@onoway.ca

From: Dan Golka <sspublicworks@wildwillowenterprises.com>
Sent: February 19, 2021 2:04 PM
To: Wendy Wildman
Cc: administration@wildwillowenterprises.com

Public Works Report for February 26, 2021

SVSS Council Meeting

Update from January 29 th Council Meeting

1. Cleanup of fallen trees from windstorm, there will be more trees removed now that weather has warmed up.
2. Recycle bins. Calihoo Waste is the Blue Bag Recycling Bin provider for SVSS. The 2 front load lockable 6 yard bins emptied by front load recycle truck every two weeks. Public works picks up the recycle blue bags and cardboard on the scheduled Tuesdays and the bins are emptied on the scheduled Wednesday. The bins do not leave the Village! Working out very well!
3. Snow Bylaw 309-2020 There are a couple areas in the village that property owners are continuing to show disregard for snow removal bylaw #309-2020. Willow ave has a property owner pushing snow from private properties onto SVSS drainage diches covering several drainage culvert ends that will cause culverts to freeze and steam truck expenses to thaw. Village spent approximately $40,000.00 on Drainage upgrade on Willow ave in fall of 2020 yet property owner continues to dump snow on Village drainage ditches and Municipal reserves
   Hillside Crescent has property owners using ATV and snowblower to move snow onto village property. With spring thaw snow melts and runs down the road creating major soft spots in spring.

New Items

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1. Welcome Dustin Uhlman, SVSS Public Works Manager. I look forward to working with Dustin over next few days as he gets familiar with the village and upcomming drainage projects.
2. Large Bin Event Public works has contacted Calihoo Waste to get quote on rates if SVSS decides to hold event. I will have quote by meeting date.
3. Snow plowing season this year have managed to do with village plow truck and tractor. This week had Carl Schnell out with grader side wing to do push back to get the snow off the shoulders of the road into the ditch to make more room for upcoming snow.
4. Telus tower access approach off SSDR new culvert to be installed.
5. Will be meeting with Trent from Bolsom Engineering to get updates on 2020 drainage project results to see any work not completed till spring 2021. If any monies left over to apply to other projects.
6. Aspen Ave 2021 drainage project with Bolsom Engineering. Site visit to review project.
   Bolsom Engineering also getting estimates for future work on other drainage projects for 3-5 year Capital Project
7. SSDR, Golf Course Road getting quotes for crack sealing as well as sweeping.
8. SSDR road repairs getting quotes for repair at top of hill on entrance to village and replace cut where new culvert crossed SSDR from R10 to 1 Bay dr.

I will be leaving the SV of Silver Sands Public Works manager position February 28, but will be around for spring thaw as required. In the 5 plus years employed with the SV of Silver Sands as Public Works manager has been an awesome experience. I have met many wonderful people in the village and share a lot of fond memories. I am planning on spending more time at home with family and friends, but I am a phone call away if needed. So long for now Dan Golka

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Alberta Government

STATEMENT OF DEPOSIT NON-NEGOTIABLE

VENDOR	VENDOR ID	DATE ISSUED
SUMMER VILLAGE OF SILVER SANDS	0070000551	02-Feb-2021
DEPOSITED AT BANK:	DEPOSIT NO	DATE / AMOUNT
BRANCH: ACCOUNT:		02-Feb-2021 $438.00
	TOTAL	$438.00

DEPOSIT NO: 2000563044 — **DEPOSIT DATE: 02-Feb-2021**

VOUCHER	DESCRIPTION/REASON FOR PAYMENT	INVOICE/CREDIT NOTE	AMOUNT	SUB-TOTAL
1900684699	FCSS FEBRUARY PAYMENT	095261304FCS0221	$438.00	
	Total Payment From C&RS For Inquiries Call 825 468 4914			$438.00
			DEPOSIT TOTAL	$438.00

RECEIVED
FEB 0 9 2021

JCA6159234-0006437-03219-0001-0001-00-

JCA6159234 E D

03219

SUMMER VILLAGE OF SILVER SANDS
PO BOX 8
ALBERTA BEACH, AB
T0E 0A0

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Alberta Government

STATEMENT OF DEPOSIT NON-NEGOTIABLE

VENDOR	VENDOR ID	DATE ISSUED
SUMMER VILLAGE OF SILVER SANDS	0070000551	09-Feb-2021
DEPOSITED AT BANK: [redacted]	DEPOSIT NO	DATE / AMOUNT
BRANCH [redacted] ACCOUNT: [redacted]	[redacted]	-Feb-2021 $21,201.00
	TOTAL	$21,201.00

DEPOSIT NO: 2000585539 — **DEPOSIT DATE: 09-Feb-2021**

VOUCHER	DESCRIPTION/REASON FOR PAYMENT	INVOICE/CREDIT NOTE	AMOUNT	SUB-TOTAL
1900720031	MOST-0283: MOST-SUMMER VILLAGE OF SILVER SANDS	MOST-MOST-09190	$11,152.00	
1900720031	MOST-0283: MOST-SUMMER VILLAGE OF SILVER SANDS	MOST-MOST-09190	$10,049.00	
	Total Payment From MA For Inquiries Call 780 427 7481			$21,201.00
			DEPOSIT TOTAL	$21,201.00

RECEIVED
FEB 16 2021

JCA6183204-0006479-03240-0001-0001-00-

JCA6183204 E D

03240

SUMMER VILLAGE OF SILVER SANDS
PO BOX 8
ALBERTA BEACH, AB
T0E 0A0

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Town of Mayerthorpe

Report Title : SILVER SANDS DAILY EVENTS

Report Range 1/1/2021 12:00 am **to** 1/31/2021 11:59 pm

Daily Event Log Report

Date: 2021/01/08

Group: TOWN OF MAYERTHORPE

Officer: DAWN, DWIGHT

Backup Officer:

Group: TOWN OF MAYERTHORPE

Event Start: 2021/01/08 1330 **Event End:** 2021/01/08 1500

Event: GENERAL PATROL

Location: SILVER SANDS

Specific Location: SUMMER VILLAGE

Notes: PATROLLED VILLAGE CHECKING SECURITY OF RESIDENCES. STOPPED TO TOUCH BASE WITH TERRY ON PINE, BUT NO ONE HOME WHEN I STOPPED. ALSO TOOK UPDATE PICS OF 15 BAY DRIVE, I WAS A LITTLE DISAPPOINTED WITH CONDITION OF PROPERTY, I WAS HOPING THAT THROUGH THE HOLIDAYS THINGS WOULD BE COMPLETED AND THEY WERE NOT. WILL BE TOUCHING BASE NEXT WEEK WITH PROPERTY OWNER, UPDATING HIM AND GIVING A FINAL ULTIMATUM THAT RENTER COMPLETE THE CLEANUP OR WE WILL. ALTHOUGH THERE WERE THINGS DONE AS REQUESTED, I FIND THAT ABOUT ONLY 50 PERCENT IS COMPLETED.

Total Group Events: 1 **Total Time on Events:** 0 Days 2 Hours 30 Minutes

Total Events By Date: 1

Date: 2021/01/20

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Group: TOWN OF MAYERTHORPE

Officer: DAWN, DWIGHT

Backup Officer:

Group: TOWN OF MAYERTHORPE

Event Start: 2021/01/20 1430 **Event End:** 2021/01/20 1545

Event: GENERAL PATROL

Location: SILVER SANDS

Specific Location: SUMMER VILLAGE

Notes: SPOKE WITH RESIDENT ON PINE CRES, ABOUT ONGOING CONCERNS WITH ANOTHER RESIDENT FROM SAME ROAD, DI NOT SEE ANY FURTHER ISSUES FROM WILLOW AVE, BUT IT HASN'T SNOWED AND NOTHING TO CLEAR, CHECKED AS MANY RESIDENCES AS POSSIBLE FOR ANY DAMAGES FROM PREVIOUS EVENING WITH THE HIGH WINDS

Total Group Events: 1 **Total Time on Events:** 0 Days 2 Hours 15 Minutes

Total Events By Date: 1

Date: 2021/01/30

Group: TOWN OF MAYERTHORPE

Officer: DAWN, DWIGHT

Backup Officer:

Group: TOWN OF MAYERTHORPE

Event Start: 2021/01/30 1100 **Event End:** 2021/01/30 1230

Event: GENERAL PATROL

Location: SILVER SANDS

Specific Location: SUMMER VILLAGE

Notes: MET WITH DAN BEFORE SPEAKING WITH WAS RECEPTIVE WHEN i EXPLAINED HE COULD NO LONGER PUT SNOW IN THE DITCHES OR ON RESERVE LAND. ALSO HAD A COMPLAINT CALL FROM RESIDENT ON GOLF COURSE ROAD ABOUT NEIGHBOR PUTTING UP BLUE TARPS AND RATTAN DRAPING ON CHAINLINK FENCE BETWEEN THE 2 PROPERTIES, TOOK PICTURES SO i COULD SPEAK TO LAWYER BECAUSE IT IS A FENCELINE ISSUE WITH A FEW DIFFERENT THINGS THAT NEED TO BE ASKED.

Total Group Events: 1 **Total Time on Events:** 0 Days 2 Hours 30 Minutes

Total Events By Date: 1

Total Report Events: 3

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FORTIS ALBERTA

February 1, 2021

RE: Approved FortisAlberta 2021 Distribution Rates - REVISED

As a follow up to our correspondence in September 2020, FortisAlberta has received approval from the Alberta Utilities Commission (AUC) for its distribution rates, effective Jan. 1, 2021. In addition, the AUC has approved the Alberta Electric System Operator (AESO) 2021 tariff resulting in adjustments to the Base Transmission Adjustment Rider, the Quarterly Transmission Adjustment Rider and Balancing Pool Allocation. FortisAlberta collects and flows through all transmission and Balancing Pool costs billed by the Alberta Electric System Operator (AESO) as approved by the AUC.

The attached charts illustrate the estimated percentages and average changes for each rate class based on estimated consumption and demand between December 2020 and January 2021 on a *distribution rate only* basis and a *bundled bill* basis from your retailer. The bundled bill percentages indicated on the attached chart will vary slightly compared to the version you received in September, as it reflects the transmission rate rider adjustments.

We thank you for the opportunity to advise you of these updates. Please feel free to contact me or your Stakeholder Relations Manager should you have any questions or require further information.

Sincerely,

Dave Hunka, Manager, Municipalities & Key Accounts North
P: (780) 464-8311
C: (780) 868-7040
E: Dave.Hunka@FortisAlberta.com

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2021 Approved Rates
Average Monthly Bill Impacts by Rate Class
DISTRIBUTION ONLY

Rate	Rate Class Description	Consumption Usage	Demand Usage	Dec 2020 Bill	Jan 2021 bill	$ Difference	% Change
		300 kWh		$31.75	$32.15	$0.40	1.2%
11	Residential	640 kWh		$39.57	$40.07	$0.55	1.2%
		1200 kWh		$52.46	$53.12	$0.66	1.2%
		900 kWh	5 kVA	$84.06	$85.06	$1.00	1.2%
21	FortisAlberta Farm	1,400 kWh	10 kVA	$153.98	$155.79	$1.81	1.2%
		7,500 kWh	25 kVA	$363.77	$368.00	$4.23	1.1%
		6,000 kWh	20 kW	$781.94	$788.22	$6.28	0.8%
26	FortisAlberta Irrigation	14,518 kWh	33 kW	$1,324.69	$1,335.31	$10.62	0.8%
	*Seasonal bill impact	45,000 kWh	100 kW	$4,021.74	$4,053.98	$32.24	0.8%
31	Streetlighting (Investment)	5,144 kWh	12,500 W	$2,288.25	$2,327.79	$39.54	1.7%
33	Streetlighting (Non-Investment)	7,900 kWh	12,000W	$819.12	$833.42	$14.30	1.7%
38	Yard Lighting	5,000 kWh	12,000 W	$1,436.58	$1,462.13	$25.55	1.7%
	Rates 31, 33 and 38 is based on 100 HPS Lights in assorted fixture wattages.						
		1,083 kWh	5 kW	$72.76	$73.59	$0.83	1.1%
41	Small General Service	2,165 kWh	10 kW	$129.04	$130.52	$1.48	1.1%
		10,825 kWh	50 kW	$579.34	$585.96	$6.62	1.1%
		2,590 kWh	7.5 kW	$178.57	$180.51	$1.94	1.1%
44/45	Oil and Gas Service	5,179 kWh	15 kW	$333.11	$336.72	$3.61	1.1%
		25,895 kWh	75 kW	$1,501.36	$1,517.52	$16.16	1.1%
		32,137 kWh	100 kW	$590.52	$589.40	-$1.12	-0.2%
61	General Service	63,071 kWh	196 kW	$942.62	$940.88	-$1.74	-0.2%
		482,055 kWh	1500 kW	$4,848.13	$4,840.13	-$8.24	-0.2%
		824,585 kWh	2500 kW	$9,623.97	$9,525.10	-$98.87	-1.0%
63	Large General Service	1,529,869 kWh	4638 kW	$11,199.66	$11,081.29	-$118.37	-1.1%
		3,298,338 kWh	10,000 kW	$15,151.44	$14,984.13	-$167.31	-1.1%
65	Transmission Connected Service	The Distribution component will increase from $37.49/day to $39.17/per day. The Transmission Component is the applicable rate of the AESO.					

2021 Approved Rates
Average Monthly Bill Impacts by Rate Class
BUNDLED BILL Including Energy, Retail, and DT Rates & Riders

Rate	Rate Class Description	Consumption Usage	Demand Usage	Dec 2020 Bill	Jan 2021 bill	$ Difference	% Change
		300 kWh		$75.40	$76.94	$1.54	2.0%
11	Residential	640 kWh		$123.68	$126.59	$2.91	2.3%
		1200 kWh		$203.24	$208.36	$5.12	2.5%
		900 kWh	5 kVA	$193.79	$200.12	$6.33	3.2%
21	FortisAlberta Farm	1,400 kWh	10 kVA	$321.64	$331.74	$10.10	3.0%
		7,500 kWh	25 kVA	$1,237.47	$1,286.11	$48.64	3.8%
		6,000 kWh	20 kW	$1,587.94	$1,723.51	$135.57	7.9%
26	FortisAlberta Irrigation	14,518 kWh	33 kW	$3,234.64	$3,558.05	$323.41	9.1%
	*Seasonal bill impact	45,000 kWh	100 kW	$9,886.93	$10,888.68	$1,001.75	9.2%
31	Streetlighting (Investment)	5,144 kWh	12,500 W	$3,029.68	$3,082.75	$53.07	1.7%
33	Streetlighting (Non-Investment)	7,900 kWh	12,000W	$1,669.39	$1,698.42	$29.03	1.7%
38	Yard Lighting	5,000 kWh	12,000 W	$1,979.14	$2,012.07	$32.93	1.6%
	Rates 31, 33 and 38 is based on 100 HPS Lights in assorted fixture wattages.						
		1,083 kWh	5 kW	$212.43	$218.99	$6.56	3.0%
41	Small General Service	2,165 kWh	10 kW	$400.44	$413.35	$12.91	3.1%
		10,825 kWh	50 kW	$1,904.50	$1,968.26	$63.76	3.2%
		2,590 kWh	7.5 kW	$467.36	$478.72	$11.36	2.4%
44/45	Oil and Gas Service	5,179 kWh	15 kW	$899.08	$921.85	$22.77	2.5%
		25,895 kWh	75 kW	$4,284.27	$4,394.69	$110.42	2.5%
		32,137 kWh	100 kW	$3,828.11	$3,892.65	$64.54	1.7%
61	General Service	63,071 kWh	196 kW	$7,143.33	$7,270.46	$127.13	1.7%
		482,055 kWh	1500 kW	$52,152.08	$53,129.02	$976.94	1.8%
		824,585 kWh	2500 kW	$87,932.39	$87,418.81	-$513.58	-0.6%
63	Large General Service	1,529,869 kWh	4638 kW	$148,716.35	$147,831.52	-$884.83	-0.6%
		3,298,338 kWh	10,000 kW	$311,502.17	$309,683.77	-$1,818.40	-0.6%
65	Transmission Connected Service	The Distribution component will increase from $37.49/day to $39.17/per day. The Transmission Component is the applicable rate of the AESO.					

Riders Included:
Municipal Franchise Fee
(Average by Rate Class)
Municipal assessment Rider (0.73% on July 1, 2020)
Average EPCOR Default Supply Rate
2020 Q4 QTAR and 2021 Q1 QTAR
January 2020 BPAR and 2021 BPAR

Retail/Energy Price Assumptions
Rates 11 through 44 – October 2019 to September 2020
Average EEAI RRT Rates
Rates 61 and 63 – August 2019 to July 2020-2020 Base TAR and 2021 Base TAR

CUSTOMER CONTRIBUTIONS SCHEDULES **

Table 1
Maximum Investment Levels for Distribution Facilities
When the Investment Term is 15 years or more

Type of Service	Maximum Investment Level
Rate 11 Residential	$2,638 per service
Rate 11 Residential Development	$2,638 per service, less FortisAlberta's costs of metering and final connection
Rate 21 Farm and Rate 23 Grain Drying	$5,984 base investment, plus $857 per kVA of Peak Demand
Rate 26 Irrigation	$5,984 base investment, plus $952 per kW of Peak Demand
Rate 38 Yard Lighting	$851 per fixture
Rate 31 Streetlighting (Investment Option)	$3,080 per fixture
Rate 41 Small General Service	$5,984 base investment, plus $952 per kW of Peak Demand
Rate 45 Oil and Gas Service	$5,984 base investment, plus $952 per kW of Peak Demand FortisAlberta invests as required per unmetered to metered service conversion program.
Rate 61 General Service (less than or equal to 2 MW)	$5,984 base investment, plus $952 per kW for the first 150 kW, plus $120 for additional kW of Peak Demand
Rate 63 Large General Service (over 2 MW) (Distribution Connected)	$108 per kW of Peak Demand, plus $119 per metre of Customer Extension

**Alberta Utilities Commission (AUC) Decision 24843-D01-2020, Dec. 18, 2020.
Maximum Investment Levels are reduced if the expected Investment Term is less than 15 years.

Municipal District of Spirit River No. 133

Box 389 Spirit River, Alberta T0H 3G0
E-mail: mdsr133@mdspiritriver.ab.ca

Telephone (780) 864-3500
Fax (780) 864-4303

January 27, 2021

Honourable Premier Kenney
Alberta Premier

Email: premier@gov.ab.ca

Dear Honourable Premier Kenney,

Thank you for your response to our letter regarding our position on the handling of COVID-19 restrictions. We appreciate the tenuous position the government is in when making decisions surrounding the containment of COVID-19.

The MD of Spirit River appreciates the importance of preserving life, however we also recognize that the loss of lives during the shutdown will not be limited to those who die from COVID-19.

The aftermath of the lockdown as identified in the paper *COVID-19: Rethinking the Lockdown Groupthink*, by Ari R Joffe MD ,FRCPC with the Stollery Hospital, clearly outlines the massive cost both financially and to human lives if we continue with the lockdowns.

In the paper Joffe states, " ... lockdowns are far more harmful to human health than COVID-19 can be." We have attached a copy of his paper.

There are numerous other Physicians and papers, including the Great Barrington Declaration (gbdeclaration.org), a statement written by three public health experts from Harvard, Stanford and Oxford, that back the findings of Joffe.

Our council wishes to publicly state that we support the governments steps to reopening the economy and choosing a balanced approach to ensure a quick return to our economy and our wellbeing. We commend the leadership role you are taking.

Sincerely,

Tony Van Rootselaar, Reeve
Municipal District of Spirit River

Cc: Honourable Tyler Shandro Minister of Health
Honourable Nate Glubish, Minister of Service Alberta
Honourable Doug Schweitzer, Minister of Jobs, Economy and Innovation
Todd Loewen, MLA Central Peace Notley
Dan Williams, MLA Peace River

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To all RMA and AUMA Members

AIRDRIE
BEAUMONT
BROOKS
CALGARY
CAMROSE
CHESTERMERE
COLD LAKE
EDMONTON
FORT SASKATCHEWAN
GRANDE PRAIRIE
LACOMBE
LEDUC
LETHBRIDGE
LLOYDMINSTER
MEDICINE HAT
RED DEER
SPRUCE GROVE
ST. ALBERT
WETASKIWIN
CROWSNEST PASS, MUNICIPALITY OF
JASPER, MUNICIPALITY OF
LAC LA BICHE COUNTY
MACKENZIE COUNTY
STRATHCONA COUNTY
WOOD BUFFALO, REGIONAL MUNICIPALITY OF
ACADIA NO. 34, M.D. OF
ATHABASCA COUNTY
BARRHEAD NO. 11, COUNTY OF
BEAVER COUNTY
BIG LAKES COUNTY
BIGHORN NO. 8, M.D. OF
BIRCH HILLS COUNTY
BONNYVILLE NO. 87, M.D. OF
BRAZEAU COUNTY
CAMROSE COUNTY
CARDSTON COUNTY
CLEAR HILLS COUNTY
CLEARWATER COUNTY
CYPRESS COUNTY
FAIRVIEW NO. 136, M.D. OF
FLAGSTAFF COUNTY
FOOTHILLS COUNTY
FORTY MILE NO. 8, COUNTY OF
GRANDE PRAIRIE NO. 1, COUNTY OF
GREENVIEW NO. 16, M.D. OF
KNEEHILL COUNTY
LAC STE. ANNE COUNTY
LACOMBE COUNTY
LAMONT COUNTY
LEDUC COUNTY
LESSER SLAVE RIVER NO. 124, M.D. OF
LETHBRIDGE COUNTY
MOUNTAIN VIEW COUNTY
NEWELL, COUNTY OF
NORTHERN LIGHTS, COUNTY OF
NORTHERN SUNRISE COUNTY
OPPORTUNITY NO. 17, M.D. OF
PAINTEARTH NO. 18, COUNTY OF
PARKLAND COUNTY
PEACE NO. 135, M.D. OF
PINCHER CREEK NO. 9, M.D. OF
PONOKA COUNTY
PROVOST NO. 52, M.D. OF
RANCHLAND NO. 66, M.D. OF
RED DEER COUNTY
ROCKY VIEW COUNTY
SADDLE HILLS COUNTY
SMOKY LAKE COUNTY
SMOKY RIVER NO. 130, M.D. OF
SPIRIT RIVER NO. 133, M.D. OF
ST. PAUL NO. 19, COUNTY OF
STARLAND COUNTY
STETTLER NO. 6, COUNTY OF
STURGEON COUNTY
TABER, M.D. OF
THORHILD COUNTY
TWO HILLS NO. 21, COUNTY OF
VERMILION RIVER, COUNTY OF
VULCAN COUNTY
WAINWRIGHT NO. 61, M.D. OF
WARNER NO. 5, COUNTY OF
WESTLOCK COUNTY
WETASKIWIN NO. 10, COUNTY OF
WHEATLAND COUNTY
WILLOW CREEK NO. 26, M.D. OF
WOODLANDS COUNTY
YELLOWHEAD COUNTY
ATHABASCA
BANFF
BARRHEAD
BASHAW
BASSANO
BEAVERLODGE
BENTLEY
BLACK DIAMOND
BLACKFALDS
BON ACCORD
BONNYVILLE
BOW ISLAND
BOWDEN
BRUDERHEIM
CALMAR
CANMORE
CARDSTON
CASTOR
CLARESHOLM
COALDALE
COALHURST
COCHRANE
CORONATION
CROSSFIELD
DAYSLAND
DEVON
DIDSBURY
DRAYTON VALLEY
DRUMHELLER
ECKVILLE
EDSON
ELK POINT
FAIRVIEW
FALHER
FORT MACLEOD
FOX CREEK
GIBBONS
GRIMSHAW
HANNA
HARDISTY
HIGH LEVEL
HIGH PRAIRIE
HIGH RIVER
HINTON
INNISFAIL
IRRICANA
KILLAM
LAMONT
LEGAL
MAGRATH
MANNING
MAYERTHORPE
MCLENNAN
MILK RIVER
MILLET
MORINVILLE
MUNDARE
NANTON
NOBLEFORD
OKOTOKS
OLDS
ONOWAY
OYEN
PEACE RIVER
PENHOLD
PICTURE BUTTE
PINCHER CREEK
PONOKA
PROVOST
RAYMOND
REDCLIFF
REDWATER
RIMBEY
ROCKY MOUNTAIN HOUSE
SEDGEWICK
SEXSMITH
SLAVE LAKE
SMOKY LAKE
SPIRIT RIVER
ST. PAUL
STAVELY
STETTLER
STONY PLAIN
STRATHMORE
SUNDRE
SWAN HILLS
SYLVAN LAKE
TABER
THORSBY
THREE HILLS
TOFIELD
TROCHU
TURNER VALLEY
TWO HILLS
VALLEYVIEW
VAUXHALL
VEGREVILLE
VERMILION
VIKING
VULCAN
WAINWRIGHT
WEMBLEY
WESTLOCK
WHITECOURT
ACME
ALBERTA BEACH
ALIX
ALLIANCE
AMISK
ANDREW
ARROWWOOD
BARNWELL
BARONS
BAWLF
BEISEKER
BERWYN
BIG VALLEY
BITTERN LAKE
BOYLE
BRETON
CARBON

MINBURN NO. 27, COUNTY OF
CAROLINE
CHAMPION
CHAUVIN
CHIPMAN
CLIVE
CLYDE
CONSORT
COUTTS
COWLEY
CREMONA
CZAR
DELBURNE
DELIA
DONALDA
DONNELLY
DUCHESS
EDBERG
EDGERTON
ELNORA
EMPRESS
FOREMOST
FORESTBURG
GIROUXVILLE
GLENDON
GLENWOOD
HALKIRK
HAY LAKES
HEISLER
HILL SPRING
HINES CREEK
HOLDEN
HUGHENDEN
HUSSAR
HYTHE
INNISFREE
IRMA
KITSCOTY
LINDEN
LOMOND
CARSTAIRS
LONGVIEW
LOUGHEED
MANNVILLE
MARWAYNE
MILO
MORRIN
MUNSON
MYRNAM
NAMPA
PARADISE VALLEY
ROCKYFORD
ROSALIND
ROSEMARY
RYCROFT
RYLEY
SPRING LAKE
STANDARD
STIRLING
VETERAN
VILNA
WARBURG
WARNER
WASKATENAU
YOUNGSTOWN
ARGENTIA BEACH
BETULA BEACH
BIRCH COVE
BIRCHCLIFF
BONDISS
BONNYVILLE BEACH
BURNSTICK LAKE
CASTLE ISLAND
CRYSTAL SPRINGS
GHOST LAKE
GOLDEN DAYS
GRANDVIEW
GULL LAKE
HALF MOON BAY
RAINBOW LAKE
HORSESHOE BAY
ISLAND LAKE
ISLAND LAKE SOUTH
ITASKA BEACH
JARVIS BAY
KAPASIWIN
LAKEVIEW
LARKSPUR
MA-ME-O BEACH
MEWATHA BEACH
NAKAMUN PARK
NORGLENWOLD
NORRIS BEACH
PARKLAND BEACH
PELICAN NARROWS
POINT ALISON
POPLAR BAY
ROCHON SANDS
ROSS HAVEN
SANDY BEACH
SEBA BEACH
SILVER BEACH
SILVER SANDS
SOUTH BAPTISTE
SOUTH VIEW
SUNBREAKER COVE
SUNDANCE BEACH
SUNRISE BEACH
SUNSET BEACH
SUNSET POINT
VAL QUENTIN
WAIPAROUS
WEST BAPTISTE
WEST COVE
WHISPERING HILLS
CARMANGAY
WHITE SANDS
YELLOWSTONE
I.D. NO. 04 (WATERTON)
I.D. NO. 09 (BANFF)
I.D. NO. 12 (JASPER NATIONAL PARK)
I.D. NO. 13 (ELK ISLAND)
I.D. NO. 24 (WOOD BUFFALO)
I.D. NO. 25 (WILLMORE WILDERNESS)
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Subject: M.D of Spirit River No. 133 - Letter to Premier Kenney RE: COVID-19 Lockdowns

Attachments: MD Spirit River - Letter to Kenney.pdf; Rethink the Lockdown Paper.pdf

Good afternoon all,

For your perusal, please find attached a letter from Reeve Tony Van Rootselaar of the Municipal District of Spirit River No. 133 to the Honourable Premier Jason Kenney regarding the impact of COVID-19 lockdowns on Albertans, as well as a paper published by Ari R Joffe, MD, FRCPC with the Stollery Hospital.

Thank you,

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COVID-19: Rethinking the Lockdown Groupthink

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Keywords: Cost-benefit analysis; COVID-19; Groupthink; Lockdowns; Public Health

Abstract: The Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) has caused the Coronavirus Disease 2019 (COVID-19) worldwide pandemic in 2020. In response, most countries in the world implemented lockdowns, restricting their population's movements, work, education, gatherings, and general activities in attempt to 'flatten the curve' of COVID-19 cases. The public health goal of lockdowns was to save the population from COVID-19 cases and deaths, and to prevent overwhelming health care systems with COVID-19 patients. In this narrative review I explain why I changed my mind about supporting lockdowns. First, I explain how the initial modeling predictions induced fear and crowd-effects [i.e., groupthink]. Second, I summarize important information that has emerged relevant to the modeling, including about infection fatality rate, high-risk groups, herd immunity thresholds, and exit strategies. Third, I describe how reality started sinking in, with information on significant collateral damage due to the response to the pandemic, and information placing the number of deaths in context and perspective. Fourth, I present a cost-benefit analysis of the response to COVID-19 that finds lockdowns are far more harmful to public health than COVID-19 can be. Controversies and objections about the main points made are considered and addressed. I close with some suggestions for moving forward.

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Rethinking the Lockdown Groupthink

Introduction

The Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) initially caused Coronavirus Disease 2019 (COVID-19) in China in December 2019, and has caused a worldwide pandemic in 2020. In response, most countries in the world implemented lockdowns, restricting their population's movements, work, education, gatherings, and general activities in attempt to 'flatten the curve' of COVID-19 cases. Even now, as the so-called 'second-wave' of COVID-19 cases is occurring, governments are considering and some implementing another lockdown to again 'flatten the curve'. The public health goal of lockdowns is to save the population from COVID-19 cases and deaths, and to prevent overwhelming health care systems with COVID-19 patients. I was a strong proponent of lockdowns when the pandemic was first declared.[1]

In this narrative review I explain why I changed my mind. First, I explain how the initial modeling predictions induced fear and crowd-effects [i.e., groupthink]. Second, I summarize important information that has emerged relevant to the modeling. Third, I describe how reality started sinking in, with information on significant collateral damage from the response to the pandemic, and on the number of deaths in context. Fourth, I present a cost-benefit analysis of the response to COVID-19. I close with some suggestions for moving forward.

An important point must be emphasized. The COVID-19 pandemic has caused much morbidity and mortality. This morbidity and mortality have been, and continue to be, tragic.

1. The initial predictions induce fear

1.1 How it started: modelling

Early modeling made concerning predictions that induced fear (Table 1). Kissler et al. predicted the need for intermittent lockdowns occurring for a total of 75% of the time, even after July 2022, to avoid "overwhelming critical care capacity."[2-4] In their discussion they wrote that the response "is likely to have profoundly negative economic, social, and educational consequences... We do not take a position on the advisability of these scenarios given the economic burden...."[2] On March 16, 2020, the Imperial College COVID-19 Response Team published modelling of the impact of non-pharmaceutical interventions (NPI) to reduce COVID-19 mortality and healthcare demand in the United States (US) and United Kingdom (UK).[5] They wrote that suppression "needs to be in force for the majority [>2/3 of the time] of the 2 years of the simulation," without which there would be 510,000 deaths in Great Britain and 2.2 million deaths in the United States by mid-April, surpassing ICU demand by 30 times.[5] In their discussion they wrote that "we do not consider the ethical or economic implications [page 4]... The social and economic effects of the measures which are needed to achieve this policy goal will be profound [page 16]...."[5] The Imperial College COVID-19 Response Team extended this to the global impact of the pandemic on March 26, 2020,[6] and estimated that without lockdowns there would be "7.0 billion infections and 40 million deaths globally this year."[6] In their discussion they wrote "we do not consider the wider social and economic costs of suppression, which will be high and may be disproportionately so in lower income settings."[6] In a later publication, this group modeled that "across 11 countries [in Europe], since the beginning of the epidemic [to May 4], 3,100,000 (2,800,000 – 3,500,000) deaths have been averted due to [NPI] interventions...."[7] Another group similarly claimed that, in 5 countries [China, South Korea, Iran, France, US], NPIs "prevented or delayed [to April 6] on the order of 62 million confirmed cases."[8]

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1.2 How it took off: Crowd Effects [Groupthink]

There ensued a contagion of fear and policies across the world.[9-12] Social media spread a growing sense of panic.[13] Popular media focused on absolute numbers of COVID-19 cases and deaths independent of context, with a "sheer one-sided focus" on preventing infection.[12] There was an appeal of group hysteria; "everyone got a break from their ambitions and other burdens carried in normal life", and became united in crowds, which have a numbing effect.[9] There was talk of "acting together against a common threat", "about seeming to reduce risks of infection and deaths from this one particular disease, to the exclusion of all other health risks or other life concerns", with virtue signaling to the crowd, of "something they love to hate and be seen to fight against."[9] A war effort analogy is apt, with the "unquestioning presumption that the cause is right, that the fight will be won, that naysayers and non-combatants [e.g., not wearing a mask] are basically traitors, and that there are technical solutions [e.g., vaccine and drugs] that will quickly overcome any apparent problem or collateral damage."[9] This was associated with a "disregard and disinterest on the part of individuals in the enormity of the collateral damage, either to their own kids, people in other countries, their own futures...."[9] The crisis was framed as a "war against an invisible enemy," presenting the false choice between "lives and livelihood," spreading fear and anxiety while ignoring the costs of the measures taken - this resulted in conformity and obedience.[12,13] There has been a strong positive association between new daily and total confirmed COVID-19 cases in a country and support for the heads of government, reflecting the "rally 'round the flag'" effect ["the perception that one's group is under attack and hence unity is required to defend the group"].[14]

The NPIs spread to ~80% of OECD countries within a 2-week period in March 2020.[15] A main predictor of a country implementing NPIs was prior adoptions of a policy among spatially proximate countries, i.e., the number of earlier adopters in the same region.[15] Variables not predicting adoption of NPIs included the number of cases or deaths, population >65 years old, or hospital beds per capita in the country.[15] It seems we were all "stuck in this emotional elevation of COVID-19 deaths and suffering above everything else that could possibly matter."[16] There was the unquestioned assumption that "there were and are no alternatives to extreme measures implemented on entire populations with little consideration of cost and consequences [externalities]."[10] Even now, how a country 'performed' is measured by COVID-19 cases and deaths without denominators, without other causes of deaths considered, without considering overall population health trade-offs "that cannot be wished away" [e.g., the future of our children from lack of education and social interaction, and "changes to our wealth-generating capacity that has to pay for future policies"],[9] and without considering how sustainable current policies are [protection is temporary and leaves us susceptible; "there is no exit from the pandemic; there is only an exit from the response to it"[10]].

All of this, even though in October 2019 the WHO published that for any future Influenza pandemic: travel-related measures are "unlikely to be successful... are likely to have prohibitive economic consequences"; "[measures] not recommended in any circumstances: contact tracing, quarantine of exposed individuals, border closure"; social distancing measures [closures of workplace, avoiding crowding and closing public areas] "can be highly disruptive, and the cost of these measures must be weighed against their potential impact"; and "border closures may be considered only by small island nations in severe pandemics... but must be weighed against potentially serious economic consequences."[17] Referring to the 2009 influenza pandemic, Bonneux and Van Damme wrote that "the culture of fear" meant that "worst-case thinking replaced balanced risk assessment" on the part of influenza "experts".[18] But "the modern disease expert knows a lot about the disease in question, but does not necessarily know much about general public health, health economics, health policy, or public

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policy, which are much more about priority setting and hence resource allocation between competing priorities [because resources are limited, wise allocation saves lives]."[19]

Some of this crowd effect is related to cognitive biases, "the triumph of deeply human instincts over optimal policy."[20] Identifiable lives bias included the identifiable victim effect [we ignore hidden 'statistical' deaths reported at the population level], and identifiable cause effect [we prioritize efforts to save lives from a known cause even if more lives would be saved through alternative responses]. Present bias made us prefer immediate benefits to even larger benefits in the future [steps that would prevent more deaths over the longer term are less attractive].[20-22] The proximity and vividness of COVID-19 cases (i.e., availability and picture superiority bias), and anchoring bias [we adhere to our initial hypothesis, and disregard evidence that disproves our favorite theory] affected our reasoning.[21,23] Superstitious bias, that action is better than non-action even when evidence is lacking, reduced anxiety.[12] Escalation of commitment bias, investing more resources into a set course of action even in the face of evidence there are better options, made us stand by prior decisions.[24] We need to take an "effortful pause", reflecting on aspects of the pandemic that don't fit with our first impressions.[25] The groupthink ["the tendency for groups to let the desire for harmony and conformity prevail, resulting in dysfunctional decision-making processes... becoming less willing to alter their course of action once they settle on it"] needs to be replaced by deliberative consideration of all the relevant information.[24]

2. Important New Information Emerging

2.1 The Infection Fatality Rate (IFR)

Based on seroprevalence data as of September 9, 2020, including 82 estimates from across 51 locations in the world, Ioannidis found that the median corrected IFR was 0.23% [range 0.00 to 1.54%].[26] Among those <70 years old the median crude and corrected IFR was 0.05% [range 0.00 to 0.31%]. He estimated that for those <45 years old the IFR was almost 0%, 45-70 years old about 0.05-0.30%, and ≥70 years old ≥1%, rising to up to 25% for some frail elderly people in nursing homes.[27] He estimated that at that point there were likely 150-300 million infections that had occurred in the world, not the reported 13 million, most being asymptomatic or mildly symptomatic.[26,27] The WHO recently estimated that about 10% of the global population may have been already infected, which, with a world population of 7.8 billion, and 1.16 million deaths, would make a rough approximation of IFR as 0.15%.[28]

Even these numbers are most likely a large *over-estimate* of the IFR. First, in serosurveys the vulnerable [e.g., homeless, imprisoned, institutionalized, disadvantaged people], who have higher COVID-19 incidence, are more difficult to recruit. Second, there is likely a healthy volunteer bias in serosurvey studies. Third, and most importantly, there is a lack of sensitivity of serology.[29-34] Many reports now document there is often a rapid loss of antibody in COVID-19 patients that were less severely ill.[29-36] Moreover, at least 10% of COVID-19 patients never seroconvert, and many more may only develop a mucosal IgA response,[37,38] or only a T-cell response [which may be the case in up to 50% of mild infections].[39,40] Finally, most data come from unusual epicenters where "infection finds its way into killing predominantly elderly citizens" in nursing homes and hospitals,[26] and where "[in Italy, Spain, France] an underfunded, understaffed, overstretched and increasingly privatized and fractured healthcare system contribute to higher mortality rates... [Lombardy] has long been an experimental site for healthcare privatization."[10] With "precise non-pharmacological measures that selectively try to protect high-risk vulnerable populations and settings, the IFR may be brought even lower."[26]

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A serology-informed estimate of the IFR in Geneva, Switzerland put the IFR at: age 5-9 years 0.0016% (95% CrI 0, 0.019), 10-19 years 0.00032% (95% CrI 0, 0.0033), 20-49 years 0.0092% (95% CrI 0.0042, 0.016), 50-64 years 0.14% (95% CrI 0.096, 0.19), and age 65+ outside of assisted care facilities 2.7% (95% CrI 1.6, 4.6), for an overall population IFR 0.32% (95% CrI 0.17, 0.56).[41] Similarly, a large study from France found an inflection point in IFR around the age of 70 years [see their Figure 2D].[42]

2.2 High-risk groups

Ioannidis et al. analyzed reported deaths from epicenters, in 14 countries and 13 states in the United States, to June 17, 2020.[43] They found that in those age <65 years the relative risk of death was 30-100X lower in Europe and Canada, and 16-52X lower in the USA, compared to those ≥65 years old.[43] They estimated that those age 40-65 years old have double the risk of the overall <65 year old group, and females have 2X lower risk than males.[43] This is compatible with a steep inflection point in the IFR around the age of 70 years old. Older adults in nursing homes accounted for at least half of the COVID-19 deaths in Europe and North America, and over 80% in Canada.[44,45] In nursing homes the usual median survival is ~2.2 years, with a yearly mortality rate >30%, even without COVID-19.[46] Outbreaks of the seasonal respiratory coronavirus in adults living in long-term care facilities are common, with case-fatality rates of 8%.[47] Ioannidis et al estimated that the average daily risk of COVID-19 death for an individual <65 years old was equivalent to the risk from driving between 12-82 miles/day during the pandemic period, higher in the UK and 8 states [106-483 miles/day], and only 14 miles/day in Canada.[43]

By far the most important risk factor is older age.[41-43] There is a ~1000 fold difference in death risk for people >80 years old versus children.[43] In the largest observational study I am aware of, the OpenSAFELY population in the UK, including over 17 million people with 10,900 COVID-19 deaths, compared to those age 50-59 years old, the Hazard Ratio for death from COVID-19 ranged from 0.06 for those age 18-39 years, to >10 for those age >80 years.[48] In comparison, even important co-morbidities such as severe obesity, uncontrolled diabetes, recent cancer, chronic respiratory or cardiac or kidney disease, and stroke or dementia rarely had HR approaching ≥2.[48] Those co-morbidities with HR>2, including hematological malignancy, severe chronic kidney disease, and organ transplant, affected only 0.3%, 0.5%, and 0.4% of the total population.[48]

A rapid systematic review found that only age had a "consistent and high strength association with hospitalization and death from COVID-19... strongest in people older than 65 years...."[49] Other risk groups for mortality had either a low-moderate effect [obesity, diabetes mellites, male biological sex, ethnicity, hypertension, cardiovascular disease, COPD, asthma, kidney disease, cancer] and/or were inconsistently found to have an effect in the literature [obesity, diabetes mellites, pregnancy, ethnicity, hypertension, cardiovascular disease, COPD, kidney disease].[49] Even with these risk factors, the absolute risk may still be low, given the overall IFR in the population at that age.

2.3 Objection: Is This Age Discrimination?

An objection may be that singling out the elderly as high risk is age discrimination. This is false on two counts. First, pointing out the truly high-risk group is the elderly is only emphasizing that this is the group that requires protection from severe COVID-19 outcomes. Second, as Singer has pointed out, "what medical treatment does, if successful, is prolong lives. Successfully treating a disease that kills children and young adults is, other things being equal, likely to lead to a greater prolongation, and thus do more good, than successfully treating a disease that kills people in the 70's, 80's, and 90's."[50] In fact, when we try to stay healthy "what we are trying to do is to live as long as we can, compatibly with

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having a positive quality of life for the years that remain to us. If life is a good, then, other things being equal, it is better to have more of it rather than less."[50] We should count every quality adjusted life year equally, whether it is in the life of a teenager or a 90-year old.[50,51] This was also the conclusion of "The Fair Priority Model" for global vaccine allocation, prioritizing preventing premature death using a standard expected years of life lost metric.[52]

Different from discrimination such as racism ["no one who is black was ever white"}, in this case "everyone who is old was once young", i.e., there is an impartial age-neutral perspective from which we can all see that it is in everyone's interests to save the lives of younger people.[51] In a thought-experiment, Singer asks us to imagine that you have just become a parent, at some stage in your child's life she is likely to be infected with a dangerous virus, and her chances of being infected and dying from the infection are the same in any year of her life. Now imagine that curative drug A, effective if <40 years old, and drug B, effective if >40 years old, are so costly that the government cannot afford both to be produced. Which drug should be produced? It is clearly contrary to your child's interests to vote for drug B: this would increase her risk of dying before her 40th birthday; to improve her chances of living a longer life, we vote for drug A.[51]

Veil of ignorance reasoning is a widely respected and transparent standard for adjudicating claims of fairness. A fair distribution of resources is said to be one that people would choose out of self-interest, without knowing whom among those affected they will be: what would I want if I didn't know who I was going to be? In an experimental study participants were asked to decide whether to give the last available ventilator in their hospital to the 65 year old who arrived first and is already being prepped for the ventilator, or the 25 year old who arrived moments later, assuming whoever is saved will live to age 80 years old. In the veil of ignorance condition, the participant was asked to "imagine that you have a 50% chance of being the older patient, and 50% the younger."[53] Asked if "it is morally acceptable to give the last ventilator to the younger patient", 67% in the veil of ignorance condition vs. 53% in control answered 'yes' (odds ratio 1.69; 95% CI 1.12, 2.57); compared to younger age participants (18-30 years), older participants (odds ratio 3.98) and middle age participants (odds ratio 2.02) were more likely to agree.[53] Asked if "you want the doctor to give the ventilator to the younger patient", 77% answered 'yes', maximizing the number of life-years saved rather than the number of lives saved.[53]

2.4 The Herd Immunity Threshold

The classical herd immunity level is calculated based on the basic reproduction number (Ro) as (1 – 1/Ro), and is the proportion of the population that must be immune to a virus before the effective reproduction number (Re) is <1, and thus the virus cannot perpetuate itself in the population. This calculation assumes a homogeneously mixing population, where all are equally susceptible and infectious. For Ro 2.5, the threshold is ~60% of the population. However, the assumption is not valid, as there is heterogeneity in social mixing and connectivity, with higher and lower levels of activity and contacts. One model incorporating heterogeneity of social mixing found the threshold, for Ro 2.5, to be 43%, and likely lower as other heterogeneity in the population was not modelled [e.g., sizes of households, attending school or big workplaces, metropolitan versus rural location, protecting the elderly, etc.].[54] A model that incorporated variation in connectivity compatible with other infectious diseases found that for Ro 3, the threshold is 10-25% of the population developing immunity.[55] Another model that "fit epidemiological models with inbuilt distributions of susceptibility or exposure to SARS-CoV-2 outbreaks" calculated "herd immunity thresholds around 10-20% [because]... immunity induced by infection... [contrary to random vaccination] is naturally selective."[56] In support of this heterogeneity,

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it is now known that there is overdispersion of transmission of SARS-CoV-2, with 80% of secondary infections arising from just ~10% of infected people.[57-59]

2.5 Objection: consider Sweden

It has been claimed that Sweden's strategy of achieving herd immunity failed, with excess deaths and a suffering economy. However, that is not clear. First, cases and deaths fell consistently in later July/August, with deaths continuing at a very low level into October despite no lockdown.[60] Second, serosurveys in mid-July found 14.4% of the population may be seropositive; thus, with 5761 deaths as of August 1, in a population of 10.23 million, the crude IFR may have been 0.39%, and even lower considering the sensitivity of serology discussed above.[61] Early on, Sweden did not adequately protect those in nursing homes, a failing that also inflates the IFR.[62] The excess all-cause mortality per 100,000 up to July 25, 2020 in Sweden was 50.8, lower than in England and Wales, Spain, Italy, Scotland, Belgium, Netherlands, France, and the US.[62,63] Third, in a globalized world, with entangled webs of supply, demand, and beliefs, "what we do here will devastate people not just here, but also elsewhere and everywhere."[64] Compared to Denmark, with an economy heavily dependent on pharmaceuticals, Sweden's recession looks bad. However, compared to the European Union, Sweden looks good; the European Commission forecasts a better 2020 economic result for Sweden (GDP -5.3%) than many other comparable European countries (e.g., France -10.6%, Finland -6.3%, Austria -7.1%, Germany -6.3%, Netherlands -6.8%, Italy -11.2%, Denmark -5.2%).[65]

2.6 The Exit Strategy

Herd immunity appears to be the only exit from the response to COVID-19. This can be achieved naturally, or through vaccine. For the reasons given here, it is very possible that the lockdowns are only delaying the inevitable.

There are problems with the natural herd immunity approach involving the currently projected and implemented waves of lockdowns. First, this will take years to occur, causing economic and social devastation. This also assumes immunity is long-lasting such that cycles of shutting down can be successful over 2 or 3 years, and without which it is more likely COVID-19 will be an annual occurrence.[2] Second, the less devastating test-trace-isolation/quarantine strategy seems not feasible. In the United States it was estimated that there would be a need to train an extra 100,000 public health workers, and to do >5 million SARS-CoV-2 tests per day, necessitating the building of many new very large testing factories.[66] Countries would still need to keep borders closed and maintain physical distancing (e.g., no large events) in order to make contact tracing feasible; this would be for years, during which people may become very reluctant to be tested. Modeling suggests that to be successful, because asymptomatic and pre-symptomatic individuals may account for 48-62% of transmission (even in nursing home residents),[67] contact tracing and quarantine would have to occur within 0.5 days for >75% of contacts, necessitating mobile app technology that has its own feasibility and ethical problems.[68-70]

Vaccine induced herd immunity involves many assumptions. First, there will be the discovery of an effective and safe vaccine that does not cause antibody-dependent (or other immune) enhancement; this, even though the problem in severe COVID-19 may be the host response, especially in the elderly and children.[71-73] Second, the immune response will be durable, not last for only months, and have little immunosenescence [reduced response to vaccine with rapid decline of antibody levels] in the elderly.[72,74] Third, that mass production and delivery of the vaccine will occur very soon, and be done equitably to all humans on Earth; otherwise, there is the risk of conflict, war, and terrorism in response

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to gross inequity in vaccine distribution.[52] In response to the 2009 pandemic of H1N1 Influenza the United States achieved a weekly vaccination rate of only 1% of the population.[72] Vaccine refusers may include 30% of the population in North America and globally,[72,75] and if they have "increased contact rates relative to the rest of the population, vaccination alone may not be able to prevent an outbreak."[72] There is already competition among high income countries, and likely crowding out of low-income countries that represent about half of the human population.[76] The only globally eradicated human disease is smallpox, which took "30 years to achieve", and the "fastest historical development of a [new] vaccine was 4 years (Merck: mumps), while most take 10 years."[77]

3. Reality Sinking In

3.1 Iatrogenic Collateral Harms: lockdown as a 'drug' with dangerous side-effects when its use is prolonged

The COVID-19 response has threatened to make, and likely has already made, several Sustainable Development Goals for the most vulnerable among us in low-income countries out of reach.[78-82] The numbers involved are staggering, and in the many millions (Table 2). The response has had major detrimental effects on childhood vaccination programs, education, sexual and reproductive health services, food security, poverty, maternal and under five mortality, and infectious disease mortality.[78-93] The effect on child and adolescent health will "set the stage for both individual prosperity and the future human capital of all societies."[94] The destabilizing effects may lead to chaotic events (e.g., riots, wars, revolutions).[95,96]

In high-income countries, the collateral damage has also been staggering (Table 3), affecting visits to emergency departments and primary care for acute (e.g., myocardial infarction, stroke) and 'non-urgent' ('elective' surgery, and cancer diagnosis and treatment) conditions, intimate partner violence, deaths of despair, and mental health.[12,97-112] Of excess deaths occurring during the pandemic in high-income countries, 20-50% are not due to COVID-19.[62,113-115] There was an unexplained 83% increase of 10,000 excess deaths from dementia in England/Wales in April, and an increase in non-COVID-19 Alzheimer disease/dementia deaths in the US, attributed to lack of social contact causing a deterioration in health and wellbeing of these patients.[115,116]

COVID-19 "Is a disease of inequality and it also creates even more inequality."[95] Unequal structural determinants of health meant that disadvantaged minorities have experienced a greater toll from the COVID-19 "Great Lockdown",[117] with contributors including lower income (e.g., economic and job insecurity), homelessness or crowding at home (and in transportation), worse health care (and pre-existing health disparities), and inability to work from home (e.g., for essential, manual, and temporary workers).[45,95,118,119] COVID-19 policing has involved "racial profiling and violence, crippling punishments for those living in poverty, and criminalization of mental health."[120] Refugees are particularly vulnerable, undertaking "arguably the most essential form of travel... with little access to water, space or health care."[120] The effect on the health of women and girls is particularly severe, disproportionately affecting sexual and reproductive health services, income, and safety.[121,122]

3.2 Numbers in Context

Numbers without denominators and without context are deceiving. Some data in this section may put the COVID-19 pandemic numbers in perspective.

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Assuming all deaths *with* COVID-19 are deaths *from* COVID-19, in the USA as of August 22, 2020, COVID-19 was the cause of 9.24% of overall deaths; this means that >90% of deaths are not a focus of our attention (ETable 1, see Additional file 1).[123] Similarly, in Canada, COVID-19 was the cause of 5.96% of estimated deaths over the first 6 months of 2020, again meaning >94% of deaths are not a focus of our attention, and not being reported daily in the press as are COVID-19 deaths (ETable 2, see Additional file 1).[124,125] A similar analysis in the UK found that, during 16 weeks of the pandemic, the risk of death was "equivalent to experiencing around 5 weeks extra 'normal' risk for those over [age] 55, decreasing steadily with age, to just 2 extra days for schoolchildren... [and in those] over 55 who are [detected as] infected with COVID-19, the additional risk of dying is slightly more than the 'normal' risk of death from all other causes over one year."[126]

Across the world in 2019 there were 58,394,000 deaths, >4.87 million deaths/month and >159,983 deaths/day; COVID-19 deaths are shown relative to these underlying deaths in Table 4.[127,128] The number of deaths is highly unequal, with far more deaths at earlier ages in low-income countries and Sub-Saharan Africa.[127] If all countries were to achieve the Sustainable Development Goal of Under 5 Mortality Rate <25 deaths/1000 by 2030, from the year 2015 this would avert 12.8 million deaths.[129] From 2000-2017, if all units had an Under 5 Mortality Rate that matched the best performing unit in each respective country, this would have averted 58% of deaths in those under 5 years, that is, 71.8 (68.5 to 74.9) million deaths.[130] A realistic projection was that if the pandemic takes 5 years for "full cycling", 60% of the global population is infected, and the IFR is 0.19%, COVID-19 will account for 2.9% of global deaths. If only 10% of the high-risk population are infected, COVID-19 will account for 0.6% of global deaths over 5-years.[95]

Some causes of death in the world are given in Table 5; COVID-19 deaths (~3500/day up to September 4, 2020) are also shown.[131-143] For example, there are an estimated 4110 deaths/day from Tuberculosis,[133] 3699 deaths/day from motor vehicle collisions,[131] 21,918 deaths/day due to use of tobacco,[132] >3400 deaths/day from Under 5 cases of pneumonia or diarrhea,[137,138] and 30,137 deaths per day from dietary risk factors.[139] The WHO has estimated that if all people would adopt a vegan diet this would avert 13.7 M (95% CI 7.9, 19.4) deaths by 2030.[84] Some of these deaths are preventable if we were to take appropriate action, and some we as a society have decided we are willing to accept in trade-off for our freedom and wellbeing.

4. An Informed Cost-Benefit Analysis of Lockdowns

4.1 The Corona Dilemma

The economist Paul Frijters has asked us to consider "The Corona Dilemma" (Figure 1a and 1b) modelled after the so-called "Trolley Problem" in philosophy.[144] He asks us to imagine "you are the decision maker who can pull the lever on the train tracks to avoid the coming train from going straight."[144] Our options are to divert the train or not. "If you do not divert the train – you are letting the virus rage unchecked [i.e., COVID-19 deaths]."[144] On the other hand, "if you pull the lever – the diverted train will put whole countries into isolation, destroying many international industries and thus affecting the livelihood of billions, which through reduced government services and general prosperity will cost tens of millions of lives [i.e., COVID-19 reaction]."[144] The world pulled the lever, and the unintended health consequences of these measures did not play a part in modelling or policy.

4.2 Cost-Benefit Analysis

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Medical and Public Health experts are not expert in this type of analysis.[18,19] Health resources are finite. We all take health risks to ensure a better future for ourselves, family, children, and society. "Wellbeing of the population is the ultimate goal of government."[145,146] To compare outcomes of policies we need a common single metric of measurement to weigh trade-offs and make rational decisions. The goal is to maximize the sum of years lived by the population,[52] weighted by the health quality of those years [i.e., Quality Adjusted Life Years, QALY] or the wellbeing quality of those years [i.e., Wellbeing Years, WELLBY]. The QALY misses some important things that are valued by individuals, including joy, status, and things that give fulfillment like jobs. The WELLBY measures the value of anything that makes life enjoyable, and captures almost everything that is important to people. It is measured by life satisfaction, asking "overall, how satisfied are you with your life nowadays?" and rated on a Likert Scale from 0 ["not at all"] to 10 ["completely"]; the usual healthy level is '8', and those indifferent between living on or not at all score '2' – 1 regular year of happy life (1 QALY) is worth 6 WELLBY.[145,146] Despite some limitations, cost and benefit should be measured in terms of human welfare in the form of length, quality, and wellbeing of lives, and "to make no assessment is just to make policy in a vacuum."[147]

First, consider the benefits of lockdown, preventing COVID-19 deaths. Using the age distribution of deaths and comorbidities, in the UK the average person who died due to COVID-19 had 3-5 healthy years left to live; that is, 3-5 QALY, or 18-30 WELLBY.[95,144,147] This number was even lower in Italy.[144] We can calculate that lockdowns 'saved': 50% infected to herd immunity X 0.3% IFR X 7.8 Billion people X 5 QALY lost per death = 11.7 million deaths, 58.5 million QALY, or 360 million WELLBY. The number is likely much lower than this for several reasons: it is likely <40% to herd immunity, the IFR is likely <0.24%, some deaths would occur even with lockdowns [that might prevent at most 70% of deaths; in Sweden it was estimated lockdown could have prevented one-third of deaths],[148] with focus on retirement and nursing homes we might avoid many of the excess deaths, and we cannot stay locked down forever [if no 'exit strategy' exists, then lockdown is not really a 'strategy'[10]]. A more realistic number is at least 2X lower, well fewer than 5.2 million deaths 'saved'. It is also worth mentioning that the efficacy of lockdown has been questioned in several studies, reducing the benefit of lockdown potentially markedly further (ETable 3, see Additional file 1).[149-155]

Second, consider the costs of lockdown.[144,156-158] An important point must be made here. We are not comparing COVID-19 deaths vs. economy as prosperity. Rather, it is COVID-19 deaths vs. recession deaths – it's lives versus lives, as the economy is about lives. "It's horrible either way... [we're] advocating for the least people to die as possible."[159]

Expected costs of the recession in lives can be calculated based on two methods. One uses historical evidence of a strong long-run relation between government spending [economic development] and life expectancy.[144,156-158] Government expenditures on healthcare, education, roads, sanitation, housing, nutrition, vaccines, safety, social security nets, clean energy, and other services determines the population wellbeing and life-expectancy.[144] If the public system is forced to spend less money on our children's future, there are statistical lives lost [people will die in the years to come]. The social determinants of health, including conditions of early childhood, education, work, social circumstances of elders, community resilience (transportation, housing, security), and fairness (economic security) determine lifespan.[160] As a general rule, US$10K/year GDP buys an additional 10 years of life, so in a life of 75 years, US$750K buys 10 years in life expectancy = US$75K/QALY.[144,156-158] This is a maximum cost; in India US$25K/QALY is appropriate [most effect occurs for vulnerable and marginalized groups].[144] The other method is based on government numbers that are used to estimate how much health and life expenditures buy. Since the lockdown is a government public health policy, "it is saving lives which is what the lockdown was for... we are treating decisions on how to face COVID-19 in the same way as

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decisions... are made about resources to apply to the treatment of cancer, heart disease, dementia, and diabetes."[147] Based on research on how costly it is to save people from illness (how government services maintain health), in the UK it is US$20K/QALY, and using consumer willingness to pay it is US$80K/QALY.[144-146] This again is a maximum cost, as this is for Western countries, who are at least 3X wealthier than the average country in the world; you can save a life in poor countries with US$2-3K, and lives are saved more cheaply with the first few billions spent.[144,161] It is estimated that in 2020-2021 the world economy will shrink by at least US$8-9 trillion (about 6% of GDP), and this will take many years to recover (Figure 2).[144,156,157,162,163] The loss in terms of GDP will be "easily US$50 trillion over the coming decade",[144,156] with lockdowns ordering businesses and workplaces to stop functioning, ports closed, business bankruptcies, and resultant disrupted supply and demand chains.[64,164,165] We can calculate that the recession resulting from lockdowns 'cost': US$50 trillion X 40% as government expenditure ÷ US$100K/QALY = 200 million QALY, or 1.2 billion WELLBY. This is an underestimate, and the actual figure is likely at least 12X higher for several reasons: the number US$100K/QALY was used when it is far less than this for half the world population residing in low-income countries and may be much lower even in high-income countries, and a conservative estimate of world GDP loss during the pandemic was used, particularly if there is another prolonged period of lockdown.

Another cost of lockdown is the loneliness and anxiety effect on individuals. It is estimated that loneliness from isolation costs 0.5 WELLBY/person/year.[145,146] If lockdowns last for 2 months to 4 billion people, this results in a cost of 333 million WELLBY.[156] The cost is likely far higher, as this assumes only 2 months of lockdown, and does not include the effect of loneliness on life-span (i.e., early mortality) and disease that occurs particularly to young people.[166-172]

The last cost considered here is the effect of unemployment. It is estimated that unemployment costs 0.7 WELLBY/unemployed person/year.[145,146] Since it is estimated there will be 400 million additional unemployment years due to the lockdowns, the cost is 280 million WELLBY/year.[156,173] The cost is likely at least 3X higher, as recovery from unemployment will occur over several years, we do not consider the effect on wellbeing to the families of the unemployed, and we do not consider the effect on deaths of despair in young people or on loss of health insurance.

The effects of loneliness and unemployment on life-expectancy are not considered in the costs above, only the loss of life-satisfaction in WELLBYs. Recent literature has summarized the major effect of individual income, social network index (i.e., integration in a social network), and adverse childhood experiences on life-span, early mortality, risk of chronic diseases (including heart disease, diabetes, kidney disease, stroke, cancer, lung disease, Alzheimer's, substance use, depression), and suicide rates.[166-172] Recent financial difficulties, history of unemployment, lower life satisfaction, and history of food insecurity are associated with mortality in the United States.[167] Actual or perceived social isolation is one of the top 3 risk factors for death due to cardiovascular disease, increases risk of death in the next decade by 25-30%, and "risks creating cohorts of individuals who are less socially functional."[168,174] Unemployment is associated with a mean adjusted hazard ratio for mortality of 1.63.[175] Life stress is associated with development and exacerbation of asthma, rheumatoid arthritis, anxiety disorders, depression, cardiovascular disease, chronic pain, HIV/AIDS, stroke, certain types of cancer, and premature mortality.[176] Especially concerning are the effects on children during "the early years" of life, increasingly recognized as the period of greatest vulnerability to, and greatest return on investment from, preventing adverse long-term outcomes that can have lasting and profound impacts on future quality of life, education, earning potential, lifespan, and healthcare utilization.[169-172] The early years of life are a critical period when a child's brain develops from social interaction and experiences, thus providing the foundation for their entire future life potential. During the pandemic children are being

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exposed to increased intimate partner violence, family financial crises, disrupted education, an increasing achievement gap (i.e., low-income families who do not have access to computer, internet, space, food, and parental support cannot participate in online learning), loneliness, physical inactivity, lack of support services (e.g., school lunches, access to early childhood services and aids for those with disability), etc.[87,88,104,107,177-179] These adverse childhood experiences have permanent impacts that cannot be compensated for by later improvements in social situations.

The cost-benefit analysis is shown in Table 6, finding on balance the lockdowns cost a minimum of 5X more WELLBY than they save, and more realistically, cost 50-87X more. Importantly, this cost does *not* include the collateral damage discussed above [from disrupted healthcare services, disrupted education, famine, social unrest, violence, and suicide] nor the major effect of loneliness and unemployment on lifespan and disease. Frijters and Krekel have estimated that "the [infection] fatality rate should be about 7.8% to break-even and make a radical containment and eradication policy worthwhile, presuming that would actually eliminate the disease."[180] A similar cost-benefit analysis for Canada is shown in ETable 4 (see Additional file 1), with the cost at least 10X higher for lockdowns than the benefit. A different analysis for Australia is shown in Table 7, estimating the minimum cost is 6.6X higher than the benefit of lockdown.[181,182] Another cost-benefit analysis for the UK used National Institute for Health and Care Excellence guidelines for resource decisions, that 1 QALY should cost no more than US$38.4K. Assuming lockdown could save up to 440K people [although more likely at most: 66.65 million population X 40% to herd immunity X 0.24% IFR = 64K people] of 5 QALY each, and a minimum GDP loss of 9% [i.e., assuming lost output comes back quickly, and not including any health costs of unemployment or disrupted education], "the economic costs of the lockdown... is far larger than annual total expenditure on the UK national health service... the benefits of that level of resources applied to health... would be expected to generate far more lives saved than is plausibly attributable to the lockdown in the UK... The cost per QALY saved of the lockdown looks to be far in excess... (often by a factor of 10 and more) of that considered acceptable for health treatments in the UK."[147] The authors estimated the benefit of easing restrictions for over the next 3 months outweighs the cost by 7.3-14.6X.[147] "A cost-benefit analysis of 5 extra days at COVID-19 alert level 4" for New Zealand found that the cost in QALY was 94.9X higher than the benefit.[183] Finally, a cost-benefit analysis for the US is shown in Table 8, finding the cost of lockdown would be at least 5.2X the benefit.[184,185]

4.3 Objection: the economic recession would happen without lockdown

This is unlikely, particularly if the fear is appropriately controlled with clear communication on risk, numbers with denominators and context, and important trade-offs, as this information becomes available. The resources and attention should be directed towards protecting the most vulnerable (i.e., the elderly). The evidence for policy impact on total human welfare should be based on a wide range of expertise, including economists, and not only health experts. The CIDRAP group published suggestions for communication during a crisis, which included advice to not over-reassure (i.e., be realistic about the course post-lockdown – cases and deaths will climb), to express uncertainty (i.e., explain the difficult dilemmas and trade-offs, and why we choose which course; explain that the initial reaction was temporary, buying time to figure out next steps); to validate emotions (i.e., admit waves of disease will occur and there may be economic devastation); and to admit and apologize for errors (i.e., we must resurrect a devastated economy in order to save lives).[186]

The severity of mandated lockdowns was directly linked with the severity of the economic collapse.[147,181,187-191] These were direct commands to halt work, restrict travel, restrict the number of people inside dwellings, close factory floors, stay at home, etc. Economic activity, GDP loss, and

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unemployment were temporally, within weeks, related to lockdown orders.[181] There was a dramatic decline in employment, consumer spending, and economic outcomes largely accounted for by different degrees of restrictions in different countries.[181,188,189] The consensus, for example by the Bank of England, the Reserve Bank of Australia, the Organization for Economic Co-operation and Development, the International Monetary Fund (e.g., the "calamitous Great Lockdown"), and the Chief Medical Officer of Health in Canada (e.g., "the extensive slowdown in the Canadian economy as a result of public health emergency measures" on p. 29), is that the economic recession is a result of the lockdowns.[45,117,190,191,192]

4.4 Objection: consider the 'long-haulers'

The long-term effects of COVID-19 illness need to be studied and clarified. Much of the current information is based on anecdotes (i.e., single cases) in the press. It may be expected that survivors of ARDS due to COVID-19 will have significant quality of life sequelae similar to ICU survivors from other causes of ARDS, or even lower given the lower cytokine levels in COVID-19.[193,194] It may also be expected that some survivors of COVID-19 that did not require hospitalization will have significant lingering symptoms for months similar to what occurs with other causes of community acquired pneumonia.[195] The few studies reported to date do not well quantify the severity and duration of long-term symptoms such as fatigue, breathlessness, 'foggy thinking', etc., making it difficult to interpret the impact on cost-benefit analyses.[196-200] The highest rates of 'long-COVID-19' are from crowdsourced online data where there is likely a strong selection bias in participation.[201-203] In addition, most of these reports do not compare to contemporary controls during the pandemic, controls who are often experiencing social isolation, unemployment, and loneliness. For example, one survey of people without COVID-19 in the United States found a high prevalence of anxiety (25.5%), depressive (24.3%), and trauma and stressor related (26.3%) disorders, with 13.3% who started or increased substance use to cope, and 10.7% who seriously contemplated suicide in the last 30 days.[204] The Household Pulse Survey in the US found that in 2019 11% of adults had symptoms of anxiety or depressive disorder, while in April-August 2020 35-40% did.[205] Another survey in US adults found the prevalence of depression symptoms was more than 3-fold higher during COVID-19 than before, and worse for those with lower social and economic resources.[206] A survey in Australia found worse exercise (47.1%), mental wellbeing (41%), weight gain (38.9%), screen time (40-50%), and life satisfaction (down by an average of 13.9%) during the pandemic.[207] In Canada, 57% of children 15-17 years old reported their mental health was "somewhat worse" or "much worse" than it was prior to physical distancing measures during the pandemic, and Canadians ≥15 years old had a 23% decrease in reported "excellent or very good self-perceived mental health".[177,208] Although there will likely be many 'long-haulers', the incidence, severity, and duration of long-term symptoms would need to be very high to change the cost-benefit balance. Given that at a generous minimum the cost-benefit balance is at least 5X against lockdowns, the sequelae of COVID-19 would need to cost well over 200 million QALY worldwide, and likely >10X that number, to make the cost-benefit analysis in need of reconsideration.

4.5 Objection: Low-income countries are particularly susceptible and need protection

The Imperial College COVID-19 Response Team modeled the effect on low-income countries.[209] These countries were hypothesized to be more susceptible to COVID-19 deaths, even with markedly lower population over age 65 years (about 3%), due to several factors: larger size of households [i.e., more homogeneous contact patterns], far fewer hospital and ICU beds, lower quality of health care, and unique co-morbidities [e.g., HIV in >1%, tuberculosis in >25%, and malnutrition in >30% of the population].[209] For suppression to have benefit, it was estimated to need to be in force 77% of the time [compared to 66% in high-income countries] over the 18 months of modeling [and "well beyond the

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time window of our simulations"].[209] However, modeling inputs were overestimated, with >90% of the population infected, and baseline IFR at in high-income countries 1.03%. Moreover, low-income countries are more vulnerable to lockdown adverse effects for several reasons: lower ability to work from home, more household based transmission (when confined to home), economic vulnerability [a higher degree of informal labor markets, and marginal capacity to provide support for ensuring livelihoods], slower build-up of herd immunity [given limited health care capacity], little testing capacity, wider health risks from diverting all attention to a single disease, and future health system failure once suppression measures are lifted (also see Table 1).[209,210] The effects of a recession on government spending is magnified when this spending was already insufficient to improve the social determinants of health. In India, the desperation is leading to an increase in child trafficking.[211] Surveys in Africa indicate a very low IFR; for example, in Kenyan blood donors 5% were seropositive yet the country reported only 100 deaths, in Bantyre, Malawi, a serosurvey found 12.3% of healthcare workers were seropositive yet only 17 deaths were reported, and in two cities in Mozambique seropositivity was 3% and 10% yet only 16 deaths were reported.[212] It is extremely likely the cost-benefit analysis is even more against lockdown in low-income countries for these reasons.

5. Discussion:

5.1 What to do now: change the trolley track

5.1.1 Other calls for a change in response priorities

Several other groups and individuals have made calls for a change in COVID-19 response priorities (Table 9).[213-220] In an open letter on July 6, 2020, to the Prime Minister and Premiers of Canada signed by many former deputy ministers of health, chief public health officers, and medical deans, the authors called for "A Balanced Response."[213] They write that the current approach "carries significant risks to overall population health and threatens to increase inequalities... Aiming to prevent or contain every case of COVID-19 is simply no longer sustainable..."[213] In an open letter to the National Cabinet in Australia signed by many economists and medical experts with the Australian Institute for Progress, the authors make similar points.[214] They write that "to analyze the COVID-19 effect it is necessary to understand it as shortening life. But the lockdowns and the panic have also had a cost in shortening life for others."[214] Ioannidis called for evidence to guide policy, noting many of the collateral and recession effects discussed above.[215-219] "Shutdowns are an extreme measure. We know very well that they cause tremendous harm."[216] A resignation letter by an economist in the Australian Treasury wrote that "the pandemic policies being pursued in Australia... are having hugely adverse economic, social and health effects... The need for good policy process does not disappear just because we face a public health crisis..."[220] The "Great Barrington Declaration" written on October 4, 2020, by infectious disease epidemiologists and public health scientists recommends "Focused Protection."[221] The declaration writes that "current lockdown policies are producing devastating effects on short and long-term public health... leading to greater excess mortality in years to come..."[221]

A caveat to quoting these open letters is that "petitions cannot and should not be used to prove that the positions of the signatories are scientifically correct," as this would be based on the fallacies of 'argument ad populum' and 'invoking authority', and have other drawbacks.[222] These open letters are used only to show that many have expressed views similar to those expressed here, and this might open the door to serious consideration of the empirical evidence and arguments presented above.

5.1.2 Objection: Herd Immunity Is a Dangerous Idea

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There are several objections that have been made to the idea of opening up society to achieve natural herd immunity.[223-226]

First, an objection is that natural herd immunity assumes the immunity is long lasting, and this may not be the case.[223-226] If immunity is short-lived, then COVID-19 may become an endemic and likely yearly viral infection as predicted by Kissler.[2] In the event of short-lived immunity it will still be important to achieve natural herd immunity to protect the high-risk groups (i.e., the elderly) now and yearly (until a vaccine is widely available) without recurrent and prolonged lockdowns that devastate the economy and thus population life-expectancy and wellbeing. Notably, if immunity is not long-lasting this will be a problem for possible vaccine induced herd immunity as well, as the world population will need vaccines to be produced and delivered everywhere at least each year.

Second, another objection is that the costs in deaths, mental and physical health and suffering, socioeconomic inequities, and harming the economy will be too high.[223,224] This objection ignores the discussion above of the trade-offs involved that include not only COVID-19 direct effects, but also indirect effects of the response to COVID-19, the collateral damage and cost-benefit analysis where it was shown that the costs of all these effects is in fact much higher with lockdowns.

Third is the objection that uncontrolled transmission in younger people would inevitably result in infections in high-risk groups with high mortality.[223-226] The ability to successfully shield continuing care facilities and hospitals from COVID-19 is questioned.[223,224] Prolonged isolation of high-risk groups is said to be "unethical".[223] The objection is odd, as if we cannot protect those in nursing homes nor hospitals, why are we using personal protective equipment at all? In addition, prolonged isolation of *all* groups is what has occurred now, and based on the cost-benefit analysis this is what is unethical by causing far more harm to all, including the high-risk elderly. Of course, infection *can* still spread to high-mortality populations; however, the goal is to reduce this risk. Moreover, <10% of the population is at high-risk, accounting for >90% of potential deaths; surely we can focus on protecting this subgroup of people.[219] Monitoring in Europe shows that despite increasing COVID-19 cases, excess mortality has only shown a slight increase, suggesting protection of the most vulnerable may be feasible.[227] Modelling has also suggested that social distancing of those over 70 years of age would prevent more deaths than a fixed duration of social distancing of the entire population.[228]

Fourth is the objection that healthcare systems will be overwhelmed by uncontrolled spread.[223,224] This is a worrisome possibility, as health-care providers may be forced to make painful rationing decisions. If a healthcare system is overwhelmed, the effects would have to be extreme to make the benefit of lockdowns to save ICU capacity comparable to the long-term costs. There are several ways to minimize this possibility, including a focus on protecting those at high-risk (see below), information dissemination to cause fast awareness of voluntary sensible self-imposed use of handwashing and (in crowded areas) masks,[229,230] limiting very large gatherings, and expanding critical care capacity when necessary. Forecasting of healthcare capacity needs in the short or medium term, even when built directly on data and for next day predictions, has consistently failed, and most healthcare systems were not overwhelmed despite sometimes being stressed with high peaks of cases.[219,231] Forecasting failure led to elderly patients being discharged to nursing homes (where there was high mortality), and largely empty wards (unnecessarily affecting hospital utilization for other serious conditions); in Canada "overall ICU occupancy rates did not exceed 65% (p. 12)".[45,219] Lockdowns in anticipation of forecast healthcare incapacity should not be done, especially if based on forecasting that is not released for public scrutiny nor repeatedly fit to real-time data to verify accuracy. In addition, if there are insufficient ICU beds for

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the population due to underfunding, the effects of the recession on government healthcare spending in the future will markedly adversely worsen this situation in the long-term.

Fifth is the objection that natural herd immunity is not achievable.[223-226] This is based on the few case reports of re-infection, the Brazilian city of Manaus where seroprevalence was up to 66% yet there is currently a resurgence of COVID-19 cases, and the claim that natural herd-immunity has never occurred. The seven published case reports of re-infection, four with symptoms [one requiring hospitalization, and one death in an immunocompromised 89 year old with few details reported], when 10% of the world population has likely been infected over the past 10 months cannot yet provide evidence that severe reinfection and contagion is at all common.[232-237] Regarding Manaus, the high seroprevalence likely reflected the special situation of a relatively homogeneous cohort of people in overcrowded low socioeconomic urban situations, with reliance on crowded long riverboat travel; now there seems to be a different demographic cohort of young wealthy individuals being exposed.[238-240] In addition, the peak seroprevalence in blood donors in Manaus was 51.8% in June, while another study of household seroprevalence in Manaus on May 14-21 found this to be 12.7% [the respective numbers for Sao Paulo were closer, at 6.9% and 3.3% in the two serosurveys].[240,241] Even correcting for a possible lower sensitivity of capillary blood used in the household survey does not explain the difference, as the corrected seroprevalence might be up to 19.3%.[242] Regarding historical natural herd-immunity, it is likely that this was achieved for several infections, with outbreaks that occurred as births added sufficient numbers of new susceptible young individuals (e.g., for Measles, Mumps, Rubella).

Finally, an important point to emphasize is that the information in this review does *not* depend on natural herd immunity being achieved. The collateral damage, and the cost-benefit analysis showed that lockdowns are far more harmful than a risk-tailored population specific response. "Public health is the science and action of promoting health, preventing disease, and prolonging life… ensuring that Canadians can live healthy and happier lives (p. 59-60);"[45] some suggestions for how to do this is discussed below.

5.1.3 Some suggestions: What can we do?

5.1.3.1. Focus on protecting those at high risk: A risk-tailored, population-specific response.[243] This starts with better public understanding of the risks and trade-offs involved.[186] Protection should focus on high-risk groups: those hospitalized [e.g., prevent nosocomial infection],[216] in nursing homes [e.g., staff work in only one facility, adequate personal protective equipment supply, more staff, equitable pay],[244] prisons, homeless shelters, and certain demographics [e.g., age ≥70 years, those with multiple severe co-morbidities].[243] There should be investment in improving the social determinants of health [e.g., "invest in strategies that address health inequities and better serve the elderly, people experiencing homelessness, and those living with limited means"[243]].[45,160,245] Don't lock everyone down, regardless of their individual risk, as this will cause more harm than benefit.[216] It is not true that "no one is protected until everyone is protected."[45]

5.1.3.2. Open schools for children:[87,246] School provides essential educational, social, and developmental benefits to children.[247] Children have very low morbidity and mortality from COVID-19,[174] and, especially those ≤10 years old, are less likely to be infected by SARS-CoV-2[57,249-251] and have a low likelihood to be the source of transmission of SARS-CoV-2.[178,252] Children account for 1.9% of confirmed cases worldwide.[248] School closures don't seem to have an impact on community outbreaks.[178,253] Modelling predicted that school and university closures and isolation of younger people would increase the total number of deaths [postponed to a second and subsequent waves].[228] Modelling also predicted that

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school closures alone would prevent only 2-4% of deaths.[254] We need to educate parents and teachers regarding their low risk, and focus teachers with greater vulnerability due to age or multiple co-morbidity on remote learning. Until schools open, education is lacking especially for those with the fewest opportunities, worsening social disparities that education systems are intended to level. Similarly, allow visitation in children's hospitals and pediatric long-term care facilities, where the risk even with co-morbidities is so low as to not warrant the tragedy of sacrificing our most vulnerable in the false hope of protecting them.[43,48,49,178]

5.1.3.3. Build back better: Maybe we have learned that the "government can intervene decisively once the scale of an emergency is [or seems] clear and public support is present."[255] Maybe we can "recalibrate our sense of omnipotence seeing the ability of 'natural' forces to shock the global economy.[255] Maybe we can tip "energy and industrial systems towards newer, cleaner, and ultimately cheaper modes of production that become impossible to outcompete."[255] This would involve investment in clean technologies [e.g., renewable energy, green construction, natural capital, carbon capture and storage technologies], and conditional [on measurable transition] bailouts. This is because climate change, like the COVID-19 response, will involve market failures, externalities, international cooperation, and political leadership: the devastation is just in slow motion and far graver. The aggregate fiscal stimuli aimed at alleviating the consequences of the COVID-19 crisis for 149 countries amount to US$12.2 trillion.[256] Climate experts have estimated that "the additional investment needed to shift low-carbon energy investment onto a Paris-compatible pathway thus amounts to about US$300 billion per year globally over the coming 5 years... 12% [of total pledged stimulus to date] when considered over the entire 2020-2024 period...."[256] Moreover, "subtracting divestments from high-carbon fossil fuels... indicates that the overall increase in net annual investments to achieve an ambitious low-carbon transformation in the energy sector are notably small... 1% [of the total announced stimulus to date] over the 2020-2024 period."[256] A green recovery may be a driver of employment, spur innovation and diffusion of technologies, reduce stranded assets, and result in a more sustainable and resilient society.[117,256]

5.2. Some Research Priorities

More information will help to optimize responses to the pandemic. This particularly applies to possible prevention, prophylaxis, and treatment of COVID-19. How effective cloth masks are at preventing infection, or at reducing severity of infection needs more study.[257,258] The safety, efficacy, and durability of protection from vaccines, particularly in high-risk groups, must be determined in large Phase III randomized controlled trials.[259] Novel treatments are in clinical trials, with dexamethasone having benefit on mortality in those with severe COVID-19 requiring oxygen treatment.[260] Research is also required to determine the frequency and severity of reinfections.[261] The frequency, duration, and severity of 'long-COVID' requires better study. The impact of influenza on COVID-19 morbidity and mortality requires study, as both viruses may compete for the same susceptible individuals.[261] Importantly, research on "the impending authoritarian pandemic... [the] toll being inflicted on democracy, civil liberties, fundamental freedoms, [and] healthcare ethics..." (e.g., due to those responses that were not strictly necessary nor proportionate, largely copied from the "authoritarian example of others") is required to prevent regression and "erosion of rights-protective democratic ideals and institutions"[262] across the globe.[262-264]

6. Conclusion

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"The destruction of lives and livelihoods in the name of survival will haunt us for decades."[10] The decisions we made entailed "trade-offs that cannot be wished away."[10] The most affected by the pandemic response are "the poor, the marginalized, and the vulnerable," while we in high-income countries have shifted "negative effects... to places where they are less visible and presumably less serious."[10] We must open up society to save many more lives than we can by attempting to avoid every case (or even most cases) of COVID-19. It is past time to take an effortful pause, calibrate our response to the true risk, make rational cost-benefit analyses of the trade-offs, and end the lockdown groupthink.

Abbreviations

COVID-19: Coronavirus Disease 2019
GDP: Gross Domestic Product
IFR: Infection Fatality Rate
ICU: Intensive Care Unit
NPI: Non-pharmaceutical Intervention
QALY: Quality Adjusted Life Years
SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus 2
UK: United Kingdom
US: United States
WELLBY: Wellbeing Adjusted Life Years

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Figure Titles and Legends

Figure 1(A). The Trolley Dilemma using numbers compatible with the Corona Dilemma.
Legend: Modified with permission from Frijters P, reference 144.

Figure 1(B). The Corona Dilemma choices explicitly explained.
Legend: Modified with permission from Frijters P, reference 144.

Figure 2. Explanation of how acute GDP loss of 6-7% will accumulate over the decade to a loss of at least US$50 trillion.
Legend: Reproduced with permission from Frijters P [Personal Communication].

Additional Files

Additional file 1.pdf

Title: ETables

ETable 1. Total and COVID-19 deaths in the USA, as of August 22, 2020
ETable 2. COVID-19 deaths in Canada as of August 30, 2020 compared to deaths in 2018.
ETable 3. Studies suggesting that the efficacy of nonpharmaceutical interventions to prevent spread of COVID-19 are not as high as some predicted.
ETable 4. Cost-benefit analysis in WELLBYs for Canada's response to COVID-19.

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Table 1. Initial modeling predictions that induced fear and crowd-effects

Reference	Statements and Predictions from the modeling
Kissler et al.[2-4]	"prolonged or intermittent social distancing may be necessary into 2022 [to avoid overwhelming critical care capacity]... expanded critical care capacity... would improve the success of intermittent distancing and hasten the acquisition of herd immunity"
	"projected that recurrent wintertime outbreaks of SARS-CoV-2 will probably occur after the initial, most severe pandemic wave [if immunity wanes over 40 weeks]"
	With a baseline reproductive number (Ro) 2.5, no seasonality to viral transmission, and the current intensive care capacity of the USA they projected the need for intermittent lockdowns occurring for a total of 75% of the time, even after July 2022.
Imperial College modeling of non-pharmaceutical interventions in USA and UK[5]	"suppression [effective reproductive number (Re)<1] will minimally require a combination of social distancing of the entire population, home isolation of cases and household quarantine of their family members. This may need to be supplemented by school and university closures... [and] Will need to be maintained until a vaccine becomes available."
	"we show that intermittent social distancing – triggered by trends in disease surveillance – may allow interventions to be relaxed temporarily in relative short time windows....[Suppression] needs to be in force for the majority [>2/3 of the time] of the 2 years of the simulation."
	The modeling assumed an IFR of 0.9%, hospitalization rate of 4.4%, and that 81% of the population would be infected before herd immunity, resulting in 510,000 deaths in Great Britain and 2.2 million deaths in the United States by mid-April, surpassing ICU demand by 30X, if lockdowns did not occur.
Imperial College modeling of non-pharmaceutical interventions globally[6]	"we estimate that in the absence of interventions, COVID-19 would have resulted in 7.0 billion infections and 40 million deaths globally this year... healthcare demand can only be kept within manageable levels through the rapid adoption of public health measures... to suppress transmission... sustained, then 38.7 million lives could be saved."
	"[Suppression] will need to be maintained in some manner until vaccines or effective treatments become available."
Imperial College estimate of lives saved so far in Europe[7]	Used a "model [that] calculates backwards [infections] from observed deaths... [and] relies on fixed estimates of some epidemiological parameters [Ro 3.8; attack rates in different age groups from 60-99%; infection fatality rate in different countries of 0.91-1.26%]...."
	Concluded that "we find, across 11 countries [in Europe], since the beginning of the epidemic [to May 4], 3,100,000 (2,800,000 – 3,500,000) deaths have been averted due to [NPI] interventions...."
Hsiang et al.[8]	In 5 countries [China, South Korea, Iran, France, US], using "reduced-form economic methods", NPIs "prevented or delayed [to April 6] on the order of 62 million confirmed cases, corresponding to averting roughly 530 million total infections... we estimate that all policies combined slowed the average growth rate of infections [from 43%/day, a doubling time ~2 days] by -0.252 per day...."

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Table 2. Some effects of the COVID-19 response that put Sustainable Development Goals out of reach.

Sustainable Development Goal	Effect of COVID-19 Response: some details
Childhood vaccination	Programs stalled in 70 countries [Measles, Diphtheria, Cholera, Polio]
Education	School closures: 90% of students (1.57 Billion) kept out of school -Early primary grades are most vulnerable, with effects into adulthood: effects on outcomes of intelligence, teen pregnancy, illicit drug use, graduation rates, employment rates and earnings, arrest rates, hypertension, diabetes mellites, depression -Not just education affected: school closures have effects on food insecurity, loss of a place of safety, less physical activity, lost social interactions, lost support services for developmental difficulties, economic effects on families
Sexual and reproductive health services	Lack of access: estimated ~2.7 Million extra unsafe abortions For every 3 months of lockdown: estimated 2 Million more lack access to contraception, and over 6 months, 7 Million additional unintended pregnancies
Food security	Hunger pandemic: undernourished estimated to increase 83-132 Million (>225,000/day; an 82% increase) -from disrupted food supply chains [labor mobility, food transport, planting seasons] and access to food [loss of jobs and incomes, price increases]
End poverty	Extreme poverty (living on <US$1.90/day): estimated to increase >70 Million -Lost "ladders of opportunity" and social determinants of health
Reduce maternal and U5M	Estimated increase of 1.16 Million children (U5M) and 56,700 maternal deaths, if essential RMNCH services are disrupted (coverage reduction 39-52%) for 6 months in 118 LMIC -mostly (~60%) due to affected childhood interventions [wasting, antibiotics, ORS for diarrhea]; and childbirth interventions [uterotonics, antibiotics, anticonvulsants, clean birth]
Infectious Disease Mortality	Tuberculosis: in moderate and severe scenario, projected excess deaths (mostly from reduced timely diagnosis and treatment) 342,000-1.36 Million over 5 years (an increase of 4-16%) Malaria: in moderate and severe scenario, projected excess deaths (mostly from delayed net campaigns and treatment) 203,000 to 415,000 over 1 year (an increase of 52-107%, with most deaths in children <5yo). HIV: in moderate projected excess deaths (mostly due to access to antiretrovirals) 296,000 (range 229,000-420,000) in Sub-Saharan Africa over 1 year (an increase of 63%). Also would increase mother to child transmission by 1.6 times.

LMIC: low- and middle-income countries; ORS: oral rehydration solution; RMNCH: Reproductive Maternal Newborn and Child Health; U5M: under 5 mortality.
References: 78-93

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Table 3. Some effects of the COVID-19 response on public health in mostly high-income countries.

Effect of COVID-19 Response	Some Details
Delayed/avoided/disrupted medical care	Visits to emergency departments for myocardial infarction or stroke declined in USA by ≥20-48%
	Delayed cancer care and 'non-urgent' procedures -weekly presentations with cancer diagnoses down 46% in USA and UK -90% reduction in non-cancer surgeries in Ontario in March/April -surgery backlog in Ontario March 15 to June 13: 148,000; clearance time estimated to take 84 weeks -in Canada at least $1.3 billion additional funding is required to return to pre-pandemic wait times for six procedures (CABG, cataract surgeries, hip and knee replacements, MRI and CT scans) within 1 year
	Of excess deaths in high-income countries during pandemic, 20-50% are *not* from COVID-19
	Unexplained 83% increase (10,000 excess) deaths from dementia in England/Wales in April [lack of social contact causing a deterioration in health and wellbeing]
Violence against women [household stress; disrupted livelihoods, social/protective networks, support services]	Intimate Partner Violence: estimated effect from 3 months lockdown is 20% increase [>15 Million additional cases] Female Genital Mutilation: 2 Million more cases over next decade Child Marriages: 13 Million more cases over next decade
	Increased police reports [France, UK, Ontario] and support line calls [China, Italy, Spain, Vancouver, Alberta] by 20-50%
Deaths of despair [related to unemployment, and due to drugs, alcohol, and suicide]	In USA alone: 68,000 (from 27,000 – 154,000) suicide deaths predicted
	Mental Health effects of 3 months [suicide, depression, alcohol use disorder, childhood trauma due to domestic violence, changes in marital status, social isolation]: Years of Life Lost in USA 67.58 Million, Canada 7.79 Million, UK 13.62 Million, etc.
	Surge in Canada in opioid deaths (by 40-50%), alcohol consumption (by 19%), cannabis use (by 8%), tobacco smoking (by 4%), and suicidal thoughts.

References: 97-119

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Table 4. World mortality data 2019, with COVID-19 mortality to Sept 4 in 2020 for comparison.

Region	Annual deaths in thousands (per day)	Infant mortality Rate/1000	Under 5yo mortality Rate/1000 (% of deaths)	Age 15-60 mortality Rate/1000 (% of deaths)	Age 65+ (% of deaths)
World	58,394 (160)	28	38 (10%)	140 (32%)	(57%)
COVID-19 on Sept 4, 2020	**865 (3.5)**	**(0%)**	**(0.06%)**	**(26%)**	**(74%)**
High-income	11,161	4	5 (1%)	81 (19%)	(80%)
Middle-income	41,551	27	35 (9%)	144 (36%)	(55%)
Low-income	5,665	46	68 (31%)	234 (42%)	(27%)
Sub-Saharan Africa	9,052	49	74 (31%)	281 (46%)	(23%)
Canada	291	4	5 (1%)	62 (17%)	(82%)

References: 127,128. Effect of COVID-19 is in bold for emphasis.

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Table 5. Selected causes of death in the world, with deaths per year and day, compared to COVID-19 in 2020.

Cause of death	Deaths/year (/day)	Case Fatality Rate	Age Group predominant
COVID-19 on Sept 4, 2020	**864,618 (3500)**	**0.24%**	**≥65-70 years old**
Malaria	405,000 (1110)	0.2%	Children
Tuberculosis	1,500,000 (4110)	<15%	-
Measles	140,000 (384)	1.46%	Children
Influenza	389,213 (range 294-518K)[a]	0.01-0.02% for pH1N1	Children 34,800 [13-97K], and ≥65 years old. Respiratory deaths only
HIV	690,000 (1890)	-	Access to treatment for 67%
Motor Vehicle Collisions	1,350,000 (3699)	-	Young 5-29 years old, mostly in Low- to Middle-Income Countries
Tobacco	>8,000,000 (21918)	-	-
Childhood (U5M) pneumonia	808,920 (2216)	-	<5 years old
Childhood (U5M) diarrhea	533,768 (1462)	0.08% U5M	<5 years old
Dietary risk factors	11,000,000 (30137)	-	-

a. The 1957-1959 Influenza pandemic, when the world population was 2.87 billion, was estimated to cause 4 deaths/10,000 population totaling 1.1 million excess deaths due to respiratory disease, with the greatest excess mortality in school-aged children and young adults. If COVID-19 is of similar severity, given the world population of 7.8 billion, we would expect ~3 Million deaths, mostly in the elderly.[143]
K: thousands; U5M: under 5 mortality. Effect of COVID-19 in bold for emphasis. References: 131-143

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Table 6. Cost-Benefit analysis in WELLBYs for the world's response to COVID-19

Factor in World	**Benefit**	**Cost**
COVID-19 deaths	360M WELLBY	-
Recession	-	1.2B WELLBY
Unemployment	-	280M WELLBY
Loneliness	-	333M WELLBY
Disrupted health services, disrupted education, famine, social unrest, violence, suicide	-	Not counted
TOTAL	360M WELLBY	1.813B WELLBY
BALANCE		**5X [minimum]-87X [maximum]**

B: Billion; M: Million; WELLBY: wellbeing years. See text for details of the calculations.
Maximum: benefit reduced in half; recession effect increased 12X, unemployment effect increased 3X, and still not counting the disruption of health services, education, life-span effects of loneliness, etc.

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Table 7. Cost-benefit analysis in Quality Adjusted Life Years for Australia's response to COVID-19

Consideration	Cost/month	Benefit overall	Comment
Wellbeing (immediate)	83,333 QALY	-	Attributes half of reduction (of 0.5 WELLBY) to lockdown
Reduced economic activity (government services)	25,812 QALY	-	Attributes half of yearly 6% loss in GDP to lockdown, and only government expenditure (not private) buys welfare (36% of GDP), at $100,000/QALY
Increased suicides	600 QALY	-	Expected to rise 25% over next 5 years, and attributes only 40% of this to lockdown
Disrupted non-university schooling	740 QALY	-	Foregone wages of children: each year of schooling yields approximately 9% more future earnings; assumes 80-90% equivalence of disrupted to normal school days
Disrupted health services, future mental stress and violence	-	-	Not included. Also does not consider bad habits inculcated (reduced physical activity, increased weight gain (for 40%), increased alcohol intake)
Reduced COVID-19 deaths		50,000 QALY	This is for lockdown 'ad infinitum' (not per month); 0.04% of population saved
Total over 3 months of lockdown	**331,485 QALY**	**50,000 QALY**	**Minimum cost is 6.6X any benefit**

QALY: Quality Adjusted Life Years; WELLBY: Wellbeing Years. References: 181,182

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Table 8. A cost-benefit analysis for lockdown in the US, modified from Cutler & Summer.[184,185]

Factor	Quoted[184]	Revised	Explanation of revision
COST			
GDP loss	$7.592 Trillion	$7.592 Trillion[a]	No revision made. Note that, as the US accounts for 15% of world GDP, this translates to the global loss of $50.6 Trillion (as estimated in Table 6).
Mental Health	0	$0.8 Trillion	Assuming that 50% of the mental health effect is from lockdowns
BENEFIT			
Deaths avoided	$4.4 Trillion	$0.3125 Trillion	Assuming the 625,000 deaths lose 5 QALY each at $100,000 per QALY. This is better than assuming each death, regardless of age or comorbidity, is the loss of the entire value of a statistical life. This is also how the cost on mental health was calculated.
Health impairment	$2.6 Trillion	$0.4875 Trillion	Assuming 35% of quality of life is lost *for the remaining years left* [likely 15 remaining years of 80 on average in a statistical life].
Mental Health	$1.6 Trillion	$0.8 Trillion	Assuming 50% of the mental health effects are due to not having lockdowns to prevent COVID-19 cases.
Cost-benefit balance	**Benefit 1.3X Cost**	**Cost 5.2X Benefit**	A minimal estimate: the GDP loss will likely be higher; willingness to pay for QALY is usually <$100,000/QALY, and NICE uses $30,000/QALY; not all deaths could be avoided by lockdown; at least 20% of excess deaths are not due to COVID-19 (i.e., are more likely from the response); severe cases (i.e., those that do not need intensive care, and may only need oxygen) likely have lower risk for health impairment of the severity modeled.

a. If the Value of a Statistical Life is accepted as used in the reference at $7 million, and the US economy will lose $7.592 Trillion in GDP over the decade, that is equivalent to the loss of 1,084,571 whole (statistical 80-year duration) lives = 86,765,680 years of lost life; that is equivalent to (assuming 5 QALY lost per COVID-19 death) **17,353,136 COVID-19 deaths**.

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Table 9. Other calls for a change in COVID-19 response priorities

Reference	Content of the call for adjusting COVID-19 response priorities
Open letter on July 6, 2020, to the Prime Minister and Premiers of Canada[213]	The current approach "carries significant risks to overall population health and threatens to increase inequalities... Aiming to prevent or contain every case of COVID-19 is simply no longer sustainable... We need to accept that COVID-19 will be with us for some time and to find ways to deal with it."
	The response risks "significantly harming our children, particularly the very young, by affecting their development, with life-long consequences in terms of education, skills development, income and overall health."
	Suggest that we need "to focus on preventing deaths and serious illness by protecting the vulnerable while enabling society to function and thrive... While there is hope for a vaccine to be developed soon, we must be realistic about the time... We need to accept that there will be cases and outbreaks of COVID-19."
	"Canadians have developed a fear of COVID-19. Going forward they have to be supported in understanding their true level of risk... while getting on with their lives – back to work, back to school, back to healthy lives and vibrant, active communities...."
	COVID-19 "is not the only nor the most important challenge to the health of people in Canada... The fundamental determinants of health – education, employment, social connection and medical and dental care – must take priority..."
Open letter to National Cabinet of Australia[214]	"exposure to COVID-19 is only temporarily avoidable"; "to analyze the COVID-19 effect it is necessary to understand it as shortening life. But the lockdowns and the panic have also had a cost in shortening life for others."
	Some of these costs include that the lockdown: "will decrease national income... and this will have a measurable effect on the length of the average lifespan", "[has] disrupted normal health services... estimated an increase in cancer deaths over the next 12 months of 20%", [and will cause] future suicides by the unemployed and others whose lives have been ruined."
	Urge for "a cost-benefit analysis, including lives saved versus lives lost, both directly and consequentially... [and] weekly or daily non-epidemic death figures should be posted as well as deaths from the epidemic..."
Ioannidis, JPA[95,215-219]	Called for evidence to guide policy, noting many of the collateral and recession effects discussed above.
	"Shutdowns are an extreme measure. We know very well that they cause tremendous harm."
	"the excess deaths from the measures taken is likely to be much larger than the COVID-19 deaths... learning to live with COVID-19 and using effective, precise, least disruptive measures is essential to avoid such disasters and to help minimize the adverse impact of the pandemic"[95]
	"When major decisions (e.g., draconian lockdowns) are based on forecasts, the harms (in terms of health, economy, and society at large) and the asymmetry of risks need to be approached in a holistic fashion, considering the totality of the evidence."[219]

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Resignation letter by economist in Victorian Treasury[220]	"the pandemic policies being pursued in Australia... are having hugely adverse economic, social and health effects... The need for good policy process does not disappear just because we face a public health crisis... the elderly are many times more vulnerable to a serious outcome than the young. It was necessary, therefore, to work out a targeted age-based strategy... The direct and indirect costs imposed by regulatory approaches may not be... immediately obvious. Risk regulation that is poorly targeted or costly will divert resources from other priorities... needed to commission a cost-benefit analysis of alternative policy options...."
	Governments should have realized "they are hostage to chronic groupthink and actively sought alternative advice... instead of performing its taxpayer-funded duty of providing forthright analysis of alternatives... can (even now) be managed by isolating the elderly and taking a range of voluntary, innovative measures."
The Great Barrington Declaration[221]	"current lockdown policies are producing devastating effects on short and long-term public health... leading to greater excess mortality in years to come... keeping students out of school is a grave injustice... The most compassionate approach that balances the risks and benefits of reaching herd immunity, is to allow those who are at minimal risk of death to live their lives normally to build up immunity to the virus through natural infection, while better protecting those who are at highest risk."

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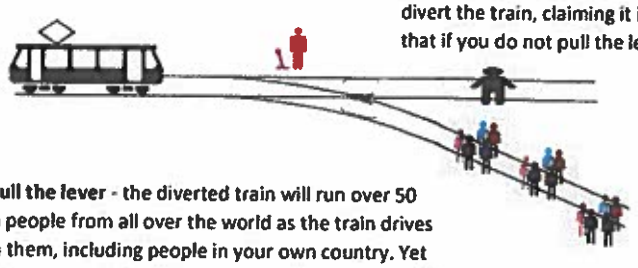
Figure 1a and 1b

The Corona Dilemma

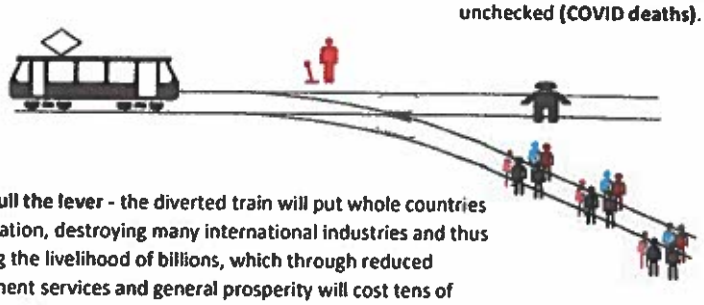
If you do not divert the train - one person, John, will get run over. He is elderly and suffering from many diseases. You know him personally and all his friends and family are watching you. They are all shouting at you to divert the train, claiming it is the moral and safe thing to do. You know that if you do not pull the lever, your life in the society you live in is over.



If you pull the lever - the diverted train will run over 50 random people from all over the world as the train drives through them, including people in your own country. Yet these people and their friends won't know where the train came from that hit them.

The Corona Dilemma

If you do not divert the train -you are letting the virus rage unchecked **(COVID deaths)**.



If you pull the lever - the diverted train will put whole countries into isolation, destroying many international industries and thus affecting the livelihood of billions, which through reduced government services and general prosperity will cost tens of millions of lives **(COVID reaction)**.

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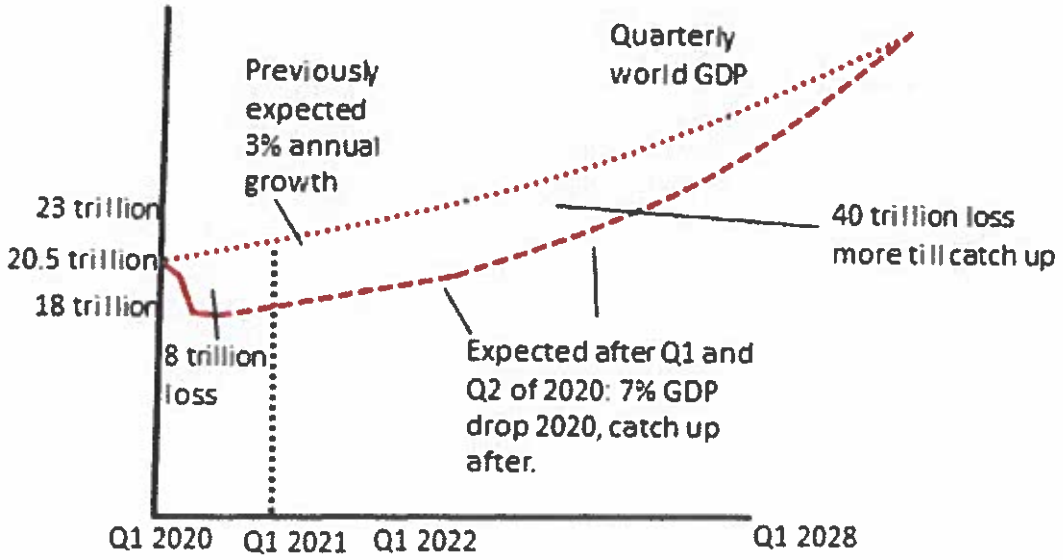
Figure 2

Previously projected GDP and later projected GDP: one-year loss versus cumulative loss



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ETable 1. Total and COVID-19 deaths in the USA, as of August 22, 2020.

Age group	COVID deaths in 6 months to Aug 22	Deaths from all causes to Aug 22	COVID as % of deaths in 2020
0-14	57	14679	**0.39%**
15-24	280	18594	**1.51%**
25-44	4558	93066	**4.90%**
45-54	8648	100926	**8.57%**
55-64	20655	231983	**8.90%**
65-74	34980	351806	**9.94%**
75-84	43392	430582	**10.08%**
85+	51710	537185	**9.63%**
TOTAL	**164280**	**1778821**	**9.24%**

Assumes all deaths *with* COVID-19 are deaths *from* COVID-19.
Reference: 123

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ETable 2. COVID-19 deaths in Canada as of August 30, 2020 compared to deaths in 2018.

Age group	COVID deaths in 6 months of 2020	Deaths in all of 2018	COVID as % of deaths over 6 months of 2020
0-19	1	3092	**0.06%**
20-29	9	3273	**0.55%**
30-39	15	4455	**0.67%**
40-49	50	7287	**1.35%**
50-59	211	19959	**2.07%**
60-69	651	40231	**3.13%**
70-79	1635	60143	**5.16%**
80+	6420	146266	**8.07%**
TOTAL	**8992**	**283706**	**5.96%**

In 2018 there were 23642 deaths/month and 777 deaths/day in Canada.
References: 124, 125

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ETable 3. Studies suggesting that efficacy of nonpharmaceutical interventions to prevent spread of COVID-19 are not as high as some predicted.

Study	Details of efficacy of non-pharmaceutical intervention
Luskin DL[149]	Using "highly detailed anonymized cellphone tracking data provided by Google... tabulated by the University of Maryland's Transportation Institute into a 'social distancing index'", it was found that lockdown severity correlated with a greater spread of the virus, even when excluding states with the heaviest caseloads, and not with population density, age, ethnicity, prevalence of nursing homes, or general health, suggesting that "[heavy] lockdowns probably didn't help."
	This analysis also found that states that subsequently opened-up the most tended to have the lightest caseloads, suggesting that "opening up [a lot] didn't hurt."
Atkeson A, et al.[150]	An analysis across 23 countries and 25 states each with >1000 deaths by July 22 found that the growth rates of daily deaths from COVID-19 fell rapidly [from a wide range of initially high levels - doubling every 2-3 days] within the first 30 days after each region reached 25 cumulative deaths, and has hovered around zero or slightly below since.
	Epidemiological models found that this implied both the Re and transmission rates fell rapidly from widely dispersed initial levels [Re≥3], and the Re has hovered around 1 after the first 30 days of the epidemic virtually everywhere in the world.
	The authors suggest that there must be "an omitted variable bias" accounting for this finding [and similar findings in previous pandemics], that the role of region-specific NPI's implemented in the early phase of the pandemic is likely overstated, and that the removal of lockdown policies has had little effect on transmission rates.
Chaudhry R, et al.[151]	A study using data from the top 50 countries ranked by number of cases found that "rapid border closures, full lockdowns, and wide-spread testing were not associated with COVID-19 mortality per million people."
Wood SN[152]	A mathematical model using "a Bayesian inverse problem approach applied to UK data on COVID-19 deaths and the disease duration distribution" suggested that "infections were in decline before the full UK lockdown (March 24), and that infections in Sweden started to decline only a day or two later."
Chin V, et al.[153]	The model for Europe used in [7] was based on circular reasoning [i.e., having modelled Re "as a step function and only allowed to change in response to an intervention"]. Using a model allowing for gradual changes over time and better fitting the data, complete lockdown had "no or little effect, since it was introduced typically at a point when Rt was already low." For example, when lockdown was adopted in the UK, "Rt had already decreased to 1.46." In fact, "lockdown and event ban had similar effect sizes on the reduction of Rt". Overall, "one cannot exclude that the attribution of benefit to complete lockdown is a modelling artefact."
Homburg S, Kuhbandner C.[154]	The model in [7] used circular reasoning ["the purported effects are pure artefacts"] by "using as an a priori restriction that Rt may only change at those dates where interventions become effective." In the UK "the growth factor had already declined... strongly suggests that the UK lockdown was both superfluous... and ineffective." In addition, the attribution of the decline in Sweden's Rt to banning of public events is odd because that was an "NPI that they found ineffective in all other countries."
Islam N, et al.[155]	Implementation of any physical distancing intervention [including lockdown] was associated with an overall reduction in COVID-19 incidence of only 13% [IRR 0.87, 95% CI 0.85 to 0.89] in 149 countries. There was no effect on this estimate of days since the first reported case of COVID-19 until the first implementation of physical distancing policies.

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ETable 4. Cost-benefit analysis in WELLBYs for Canada's response to COVID-19

Factor in Canada	Benefit per month	Cost per month
COVID-19 deaths	37.59M X 0.5 for herd X 0.003 IFR X 5 QALY/ 12 months = 23,494 QALY = **140,963 WELLBY**	-
Recession	-	(1.713T GDP/12 months X 0.15 GDP loss X 0.4 government spending)/100K = 85,650 QALY = **513,900 WELLBY**
Unemployment	-	2M X 0.7/12 months = **116,667 WELLBY**
Loneliness (if we end half of lockdown)	-	37.59M/2 X 0.5/12 months = **783,125 WELLBY**
Disrupted health services, disrupted education	-	Not counted
TOTAL	**0.141M WELLBY**	**1.41M WELLBY**
BALANCE		**10X [minimum]**

IFR: infection fatality rate; K: thousands; M: Million; QALY: quality adjusted life years; WELLBY: wellbeing years