



## NATIONAL CITIZENS INQUIRY

Vancouver, BC

Day 3

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### EVIDENCE

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**Witness 8: Douglas Allen**

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[00:00:00]

**Shawn Buckley**

I'd like to introduce our next witness, Douglas Allen. Douglas, welcome to the National Citizens Inquiry.

**Douglas Allen**

Thank you very much.

**Shawn Buckley**

Douglas, can you please state your full name for the record, spelling your first and last name?

**Douglas Allen**

Douglas Allen, D-O-U-G-L-A-S A-L-L-E-N.

**Shawn Buckley**

Douglas, do you swear to tell the truth, the whole truth, and nothing but the truth, so help you God?

**Douglas Allen**

I do.

**Shawn Buckley**

Now you, by way of introduction, you are an economist; you have been teaching economics for 41 years, 35 of those years as a full professor. You are at Simon Fraser University and you are one of two—and there's only two allowed as I understand it—Burnaby Mountain

instructors, and you get that designation based on research and academic contributions that are basically at a highest order.

**Douglas Allen**

Correct.

**Shawn Buckley**

You've written five books, two of which are textbooks, and you have published over 100 peer-reviewed articles.

**Douglas Allen**

That's correct.

**Shawn Buckley**

Commissioners, Mr. Allen's CV will be entered as an exhibit [Exhibit number unavailable], as will some of his written materials that he's provided to us, just to form part of the record. Now you're here today to share with us your thoughts on basically how this COVID pandemic was handled and with an economic lens, and I'll just let you start your presentation [Exhibit VA-9].

**Douglas Allen**

Thank you very much. I'm going to talk about lockdowns. I'm going to use that term very generically to refer to all forms of non-pharmaceutical interventions from school closures, stay-at-home orders, mask mandates, et cetera. There may be some specific contexts where I'll talk about specific ones. I've titled my talk "COVID Lockdown Mistakes," and I think there are some fundamental mistakes that were made, mistakes that we knew better and, unfortunately, not only made them but repeated them over and over again. I want to explain why and what happened.

[What Authority Does an Economist Have Regarding COVID19 Lockdown?]

First, let me just say, what kind of authority does an economist have to speak on COVID-19?

And I would just say the following: that I'm deeply trained in mathematics and mathematical models. In my own research, I build mathematical models. I'm deeply trained in statistics and econometrics—econometrics being the study of how to deal with real-world data—data that's not generated by some random process but generated by some either physical or behavioural process, such as the spread of the virus in a community. And sort of critical to the discussion of any kind of policy is that, of course, as an economist, I'm deeply trained in cost-benefit analysis: how to do it, how to identify costs, how to identify benefits, et cetera.

And I will also say that I became interested, like most people, very immediately in March of 2020, about what was going on, and I have published three papers on lockdown and lockdown policy. The first paper was one of the first ones that sort of was critical of lockdown policy. And I think perhaps because of that, it went viral. I wish my other research went viral, but this one did. It was published late in the fall of 2021, and the journal, it has 60,000 downloads already and had already been circulating for five or six months. Twitter ranked it as the #32 most discussed paper of Twitter in 2021.

[Mistake #1: TOTAL Costs and Benefits were miscalculated or not included]

I've read literally hundreds of studies dealing with lockdown and COVID and analyzed them. The fundamental mistake, policy mistake—and it's sort of an Economics 101 mistake—is that any type of policy should be decided on the total costs and total benefits of that action. And not only from the beginning, but repeatedly, those costs and benefits were either miscalculated or various costs and benefits were ignored. And I'm going to use this as my framework for what I'm going to talk about today.

I'm going to very briefly discuss these epidemiological models called SIR models or SIRS models, depending on the equations, and show you why they overestimated the benefits of lockdown. I'm going to focus on a particular equation or structure of the model. Don't worry, I'm not going to show you the equation,

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but it's an assumption about human behaviour. And when I tell you what it is, you'll be shocked and wonder how you could have a model like this. But it characterized virtually all of the SIR models, and my understanding is in British Columbia, it's still the characteristic of the models being used.

I'm going to show you a problem in the value-of-life calculation that was used, and it's kind of a sneaky little problem that an average person might not be aware of, but it sort of biased the way it was looked at. I'm going to analyze the actual number of lives that were saved by lockdown, and I'm going to look at a problem with some various cost calculations. I'm going to focus in on a specific type of cost, namely what are known as "collateral deaths": these are deaths that were directly caused by the lockdown activity.

### **Shawn Buckley**

And Douglas, can I actually just ask you, because this is being recorded, you're hitting the table with your hand and getting [a boom] every time you do that. Thank you.

### **Douglas Allen**

Sorry. You know, when an economist doesn't have much of an argument, he starts pounding the table, so I'll try to watch that. It's a bad signal.

If I have time, I'd like to talk about the economic reasoning behind the vaccine mandates. We just heard a nice discussion on the legal issues of the mandates. However, I wouldn't mind making a few comments on the economic rationale for the mandates and why there was a problem with the economic reasoning behind them as well.

[Simple SIR models failed to predict COVID19 deaths]

So the simple SIR models and their failure to predict COVID-19 deaths. Epidemiologists use a model, and the model is just a series of equations, that's all it is. The equations are a little complicated because they include what are called derivatives, and so they're called differential equations. But essentially what these models do is they just make predictions about how a few things are going to change over time: they're going to make a prediction about how many people are susceptible to the virus over time; how many people get infected over time; and how many people recover over time.

And like all models in epidemiology or in economics or in physics or whatever, their success depends on two things. One, what we might call the structure of the model: Does

the model include equations on all the dimensions that you would be worried about? And I'm going to argue that these models did not. And the second thing is, like all models, they depend on the parameter values that are in the models. These models have variables in there that you need to assign values to before you can make them run. And I'm going to argue that they used incorrect ones.

The importance of these models is that these were what were used to declare what would be the benefits of lockdown. Lockdown presumably was going to either delay infection and help the overrunning of the hospitals or delay infection long enough that a vaccine might arrive and save lives. And for today's talk, I might as well talk about it in the context of saving lives. These were models that were used to predict how many lives would be saved by lockdown.

[SIRS models (susceptible, infected, recovered)]

Everybody was exposed to graphs like this in the news media from the get-go, and they take on all kinds of different forms depending on what's on the vertical axis, but they all have the same basic idea. And first off, to note: they're sort of intimidating because they're very non-linear and they're multiple colours, and usually what's on the vertical axis is something we don't quite understand. So there's almost immediately a deference to the science of these things, but they're actually quite simple.

On the horizontal axis is usually time, starting with some date and moving through. On the vertical axis here is hospital capacity, critical bed capacity. The big black line is what's going to happen if we do nothing: And so if we do nothing, the virus is going to enter into the community. Everybody's going to get infected. There's going to be this massive surge of infected people. Hospitals will become overrun or deaths will skyrocket and then, eventually, everybody becomes infected, and then we have this collapse and we reach some endemic state.

Everybody was forced to learn the phrase, "flatten the curve." Flatten the curve meant that if we intervened in some way and imposed some sort of lockdown, then we could delay either the infections, the deaths, or whatever. And if you look at this graph, they all work the same way. The stronger the lockdown, the more restrictions we put on people, the flatter the curve gets.

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And so the more we push out things into the future when, presumably, we can handle them.

Now, some of the assumptions that were made in these models was—one was that 100 per cent of us were susceptible to infection. Now that turned out to be grossly overestimated: that anywhere between 40 to maybe 60, 70 per cent of us had some sort of T-cell memories from previous coronavirus infections and were not susceptible.

There's a number that I want to spend a little time on, and it's called the reproduction number and it's absolutely critical in these models. The reproduction number, all it means is that if I get infected, how many people do I infect? And then those people will infect the same number. These models assume that I would infect 2.4 people and those people then would infect 2.4 people. And each one of those, subsequently, would infect 2.4 people. If the reproduction number was 2—so every person that gets infected infects two other people—and if the Province of British Columbia was a single social network, then it only takes 21 days for 5 million people to become infected. So at a 2.4 number, I actually didn't work this out, but it would be much less than that. If that number was correct, within a month, and

again, if we were one single social network, the entire province would have been infected. That number is not only wrong, but these models assume that this number was constant. And that turns out to be the real big problem. It is not a constant number.

The other thing is there's something called the infection fatality rate [IFR]. So if you take all of the people infected, if you take the number of people who died that were infected divided by the total number of people that were infected, you get what's called the infection fatality rate. It's a number that's difficult to calculate because we often don't know how many people were infected because we don't know the infections of the asymptomatic people. Anyway, these models assumed that it was 0.9 per cent. That turned out to be seven times too high. So again, these are the parameters that are too high and are incorrect.

And then the structural problem: I'm going to call it the "zombie assumption." And this is the hard thing to believe, and for an economist, somebody who studies human behaviour, it's really hard to believe. When I started looking at these models, I kept thinking, well, maybe the next one will have corrected this obvious problem. These models assume—and it's an implicit assumption because the equation is just missing—it assumes that humans behave as zombies. The zombie is walking towards somebody with a rifle and he's shooting and he just keeps walking. Or you might think it assumes that human beings are just rocks, that they fall off a cliff and they fall at some rate of descent, and that's just the way it is, that the human being never changes their behaviour.

It's as if these models were saying something like the following: Let's put a \$100 bill outside this hotel and we'll lay it on the sidewalk. And these models would predict, by the laws of inertia, that \$100 bill is just going to sit there. Well, by the laws of common sense and economics, it's going to disappear pretty quickly, right? The models are missing the human component, the fact that human beings actually respond to the environment around them.

[RESULT: These Models Failed Miserably]

Now, the result of the failure of these models to include a structural equation or multiple equations that deal with human behaviour, the failure to have accurate and proper parameters meant that they were grossly incorrect in their predictions of how many people would die.

This is a table from a paper that I published all around the world. That model predicted in March of 2020 that 266,000 Canadians were going to die in the next three months if we did nothing. And that's a pretty horrifying number. Then it predicted that if we had absolute and total lockdown that there would still be 132,000 people that would die in the next three months. The reality was that by July 30th, 3 months later, there were just over 9,000 people dead of COVID-19 in Canada. That means that the model was off by a factor of almost 15. Everyone should say that a model that is off by a factor of 15 is false and wrong, and you shouldn't listen to it anymore. It's been refuted, right? If you really are believing in the science,

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you would say you made a prediction and it was the opposite of what actually happened. Even today, at the end of April, there have been 52,000 people that have been declared, have died from COVID-19. We're still, after three years, not even close to the predictions of this model. The model was wrong because it ignored the way humans behaved.

[Fatal Error: The Exogenous Behaviour Assumption]

Now, I want to show you something that's really quite interesting. Here, I'm going to focus in on this structural equation.

Unlike the model's predictions, human beings actually aren't zombies and we're not like rocks, and if you know there's a threat, you behave accordingly. So if there's a virus that's entered the community, and last week before it entered the community you were going to the store every day and you were shaking hands with people and hugging your friends and all the rest of it, and now there's a virus around and you don't know much about it, but you know that it's potentially, maybe serious, guess what? You don't go to the store as often. If you do go to the store, you're a little more careful. Maybe you don't hug strangers or anything like that.

So it's of no surprise to economists that reproduction number is not going to stay at 2.4. It's going to change very quickly. Now, a group of economists in UCLA, led by a fellow by the name of Andrew Atkinson, in the summer of 2020, took the data that was available from every jurisdiction in the world where there had been more than 30 COVID deaths. And they measured a whole bunch of things. But one of the things they looked at is what happens to this reproduction number after a jurisdiction has experienced 30 COVID deaths. So the virus has entered into a community, maybe it's the Province of British Columbia, maybe it's the State of California, maybe it's France, whatever. And they found something to the world was remarkable; to an economist, it's not remarkable at all. In fact, it's just exactly what you would have predicted.

Initially, the reproduction number is all over the place. In some jurisdictions, it's as high as 4 or 5; in other jurisdictions it's maybe around 1.5. But initially, it's all over the map. But it very quickly, if you look at this graph here, the black line is this estimated reproduction number. The red line and the blue lines are just the confidence intervals of the bands. And so between the blue lines, essentially 99 per cent of all of the estimates fall in there. So you can see it's a very narrow band. But you see that within 20 days, you end up in what's called an endemic state. The pandemic is not around. A pandemic is when the reproduction number is greater than one and the virus is exploding. That's not what happened. Within 20 days of every single jurisdiction, the virus starts to reach this endemic state.

Now, why is that? It's not that we had reached a herd immunity. There was no biological endemic state. This is what's called a behavioural endemic state, that people were responding and behaving in a way that drives it down into the endemic state. Now, the interesting thing about this is that these different places had different lockdown policies: Some were unlockdowned still; some had really strict lockdowns; some had different lockdowns, minor lockdowns. They had different timings in which they imposed.

The thing that Andrew Atkinson, the question he posed at the end of summer is, "Maybe if every jurisdiction, regardless of their lockdown policy, the virus is behaving exactly the same way, then maybe the lockdown policies are having no effect on the virus." Now, keep in mind, this is August of 2020. And this result in the academic community, again, went viral. Everybody in the academic community knew it, which meant every person in public health had to also know this result. It wasn't like this was some secret.

[Estimate of the effective reproduction rate (R) of COVID-19: Canada and United States]

For the people that are watching, the people that are not academic, may be wondering, how do I ever find out all these numbers? There is a fantastic resource available online. It's a data repository at the University of Maryland. It's called Our World in Data. And you can go

there to look up all kinds of things. If you're worried about inflation right now, go look up inflation data or whatever. If you go to this site, there's a coronavirus webpage. You can go to there. It's extremely easy to use. You can look up any country, all kinds of different variables, and you can find out what's been going on. And here, I'm just showing you, this is with the raw data—so not estimating what Atkinson did—just looking at the raw data of this reproduction number for Canada and the United States. And you can see what happens. In March of 2020,

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we hit 1. We entered an endemic state within 20 or 30 days of the virus spreading around. And we basically have stayed there.

Now, these big bumps here were the Omicron thing, but I don't think I need to go into why there's more variants there. But essentially, we have been in an endemic state since the spring of 2020. Now, the endemic state that we're in now is a biological one. British Columbia has 80 per cent of us are vaccinated, but probably close to 100 per cent of us have had COVID-19, right? I mean, we've reached a herd immunity, and the virus really has very little place to go other than animals and people that have not been infected yet. But the point is this, is that we were in a behavioural endemic state almost from the beginning.

Now again, think back to the logic of lockdowns. Logic of lockdowns was “No, no, no, no, no, the virus is exploding all around us.” It was not exploding all around us. Almost immediately, it was not exploding all around us.

[Estimate of the effective reproduction rate (R) of COVID-19: World Data]

You can look at the world, the same thing. You can look at any country, go to Our World in Data, look at any country, and it always looks the same. The virus behaved the same regardless of the lockdown policies once it entered the community.

[Mistake #2: Value of Lives Saved was Mismeasured]

Okay, so the models were wrong in estimating how many people were going to die. But what the early studies did when they said, “Okay, well, what's the benefit of lockdown? We want to get the value of the lives that we're saving.” So here they made a really sneaky thing.

Economists and other people in the social sciences, whenever lives are involved and you have to get an estimate of the value of human life, we use something called the “value of a statistical life.” And what this does is we look at real human behaviour, and we watch you and we say, “Okay, you took a job for an extra \$10 an hour, but that job is actually going to increase the chance that you're going to be killed on work because it's dangerous. And so you have demonstrated to me how much you're willing to trade off dollars for a chance that you're going to die. And so we can use that information to calculate, what are you saying the value of your life is?” That's what this idea of the value of a human life.

And it's actually not a bad way of measuring the value of human life because it's actually saying, “You tell me what the value of your life is.” And it's not based on your income; it's based on what we might call the “utility” that you get of living. You get satisfaction, maybe of seeing your grandchildren like I do. There's no GDP change in that; it's just utility that you get. And this is a measure of that.

Now, we've been making these calculations for 60 years. And the one fact that we know is that this number is not constant, it declines over your life: that the value of the life of

somebody who's 90 years old is lower than the value of life of a child. And if you don't believe that, go to a funeral of a child versus the funeral of a 90-year-old. And everybody in the funeral of the child knows this is a terrible tragedy, right?

In this particular example I've got here, just the numbers, the numbers really don't matter, but it just demonstrates this. This is sort of typical of a North American value of life calculation. It says the value of the life of a child is around \$14 million in North America. The value of an 85-year-old is about \$2 million. Now, that's all fine. But here's what the sneaky part was, one of the sneaky parts.

[Most of the 2020 studies assumed VSL = \$10M for everyone]

Every cost-benefit study that I could find in the early part of 2020 that was generating the justification for these lockdowns assumed that every human being had a value of life of \$10 million. Now, that's not just wrong, we know that it's wrong—it's also absurd. Because to say that the value of life is constant would be to say that it doesn't matter if you live one more day or another 40 years. Those extra 40 years added nothing to the value of your life. The value of your life is \$10 million, whether you live one more day or not.

So it's not just wrong, but it's also absurd. But here's the thing. The majority of people who died of COVID-19 were over 70, and in fact, you were really vulnerable if you were over 80. If you're 85 the value of your life was \$2 million, but we're assigning a value of \$10 million. So not only are we overestimating the number of people that were going to be saved by lockdown, but we're then multiplying them by a number that's probably five times too large.

So just to give you an example:

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In Canada, we were told that we were going to lose over a quarter million people. We were told that if we had full lockdown, we would still lose 132,000 people. So that meant that lockdown in Canada, if we had a complete and utter lockdown in Canada, we would have saved 134,000 lives. If you multiply 134,000 lives by \$10 million, you get \$1.3 trillion. That is an enormous number. That's almost half the GDP of Canada. Now again, if you think back to March and April of 2020, essentially there was about an \$80 billion drop in the stock market value of the country. Eighty billion is nothing compared to \$1.34 trillion, right? I mean, when you come up with a number of \$1.34 trillion, you can steamroll over just about anybody when you got a number that big. But that number is that big because they completely miscalculated the number of people and miscalculated the value of the life.

[Mistake #3: Don't Ignore the Data]

So this is what happened in the spring of 2020 in this calculation. I mentioned that even by the summer of 2020, Andrew Atkinson had figured out that lockdown was sort of in trouble by the data. But in my academic experience, I've been doing this my whole life, I don't think I've ever known a time when more academics studied a single topic immediately and persistently. The amount of research that was done was really quite phenomenal. Probably in the order of 40,000 or 50,000 studies were done on COVID-19. And they were done immediately. No human being could really keep up with all of the research. And yet, it was, for the most part, completely ignored.

I just want to show you something that's really quite staggering when you look back at this. Look at the date here. This is an opinion piece in *The New York Times*. The date is March 20th of 2020. This is nine days after the World Health Organization has declared a



pandemic. This opinion piece is written by Dr. David Katz. He's an epidemiologist. He's already got his hands on data from South Korea, which turned out to be fantastic data set. He's got his hands on data from the United Kingdom. He's got data from the Netherlands, a little bit of data from the United States. And he's also got the data from the Diamond Princess. Remember, that was the cruise ship that people got held hostage on.

What's interesting about the Diamond Princess was we knew the total number of people that were infected and we knew how many people died. So that was a very reliable source of the infection fatality rate because we knew what the denominator was. And generally speaking, we don't know that for a long time. Now, we also knew that that population was older than the community, but we could still get a very good benchmark of what the infection fatality rate was.

What did Dr. Katz conclude in March '20? He said the following. He said "A pivot right now from trying to protect all people to focusing on the most vulnerable remains entirely plausible. With each passing day, however, it becomes more difficult. The path we are on may well lead to uncontained viral contagion." That's exactly what happened, wasn't it? "And monumental collateral damage." That's also what happened. "To our society and economy, more surgical approach is what we need." If you go and look this article up, you'll see in the beginning, he's saying, "Oh, my gosh, you know, we thought we were dealing with smallpox, but we're not. This is a standard coronavirus and we know how to deal with this. And we're going about it all wrong."

And so if somebody says to you, "Well, you know, we made these mistakes in March of 2020, in April of 2020, well, we made them because we didn't know what was going on." We actually knew what was going on. Right? Dr. Katz knew what was going on. On May 5th of 2020, Ioannidis, an epidemiologist in California came out again with a major study looking at the infection fatality rate and saying, "You know, we're way off on this." So we did know early on what was going on.

### **Shawn Buckley**

Was that Dr. Bhattacharya?

### **Douglas Allen**

No, not Jay Bhattacharya, it's Ioannidis, thank you, Ioannidis, Dr. Ioannidis.

[Nine days after the Pandemic was declared, we had information]  
So what did Dr. Katz discover especially in the South Korean data?

[00:30:00]

He discovered this, and basically all this is, is just showing that the infection fatality rate was a function of age. And everybody knew this very quickly, right, that if you were 70 years old, you're about 1,000 times more likely to die from the COVID-19 than you were if you were 20 years old. That COVID-19 was never a serious threat to people under the age of 60. Of course, people under the age of 60 died of COVID-19, but, you know, we die of all kinds of things. The point is that the probability of dying was incredibly small. When you've got this dramatic age profile of the infection fatality rate, it immediately tells you where you should be devoting your resources and your attention, and it's not to people under 40.

He also figured out, again, using the Princess data, that the infection fatality rate was not 0.9 of per cent. We learned in the Ioannidis study, et cetera, that the infection fatality rate was on average about 0.15 of per cent, which meant that 99.85 per cent of the population was going to survive the thing. So we knew almost immediately, we're not dealing with the Grim Reaper; we're not dealing with something that was equivalent of smallpox in the 18th century. We were dealing with something that was serious, but not of the magnitude that we were led to believe it was.

[My 2021 study]

My own 2021 study. So what I did, throughout the fall of 2020 and the early spring of 2020, again, massive amounts of studies that were done. I surveyed all this literature, and I concluded the following. I said, "A reasonable conclusion to draw from the sum of lockdown findings on mortality is that a small reduction cannot be ruled out for early and light levels of lockdown restrictions." Not that you could find evidence, but there was still a lot of noise in the data, and you couldn't rule out the fact that there might have been one, but there was "no consistent evidence that strong levels of lockdown have any beneficial effect . . . Maybe lockdowns had a marginal effect, but maybe they do not; a reasonable range of decline in COVID-19 is between 0 and 20 per cent."

[Studies in Applied Economics]

Now, maybe the Commissioners have heard of this study, but if you haven't, I would direct your attention to it. It's a study by Jonas Herby and a few co-authors. It was published in January of 2022. They came out with a subsequent update, I think, in May of '22. In my opinion, this is the best article that is written about describing the various issues related to the costs and benefits of lockdown. It's mostly focused on the benefit side but deals with costs a little bit as well.

This study screened over 18,000 studies on COVID lockdown. What they did was they did a meta-analysis; a meta-analysis is a type of statistical analysis that allows you to amalgamate various studies. They amalgamated only what are called causal studies: these are studies that say, did lockdowns cause a reduction in the mortality? As opposed to just studies that are correlative or just trying to show an association. So they're looking at the very best of studies. They collect mostly what are called difference-in-difference studies. The lockdown gets rolled out in different locations at different times and in different ways and in different intensities. You can exploit this difference across these jurisdictions to get at, what's the actual effect of the lockdown? The actual effect of a stronger lockdown? et cetera.

They look at these things and here's what they conclude: that all of these lockdowns had about a 3 per cent reduction in mortality. All of this effort that we went through basically had almost no effect. "An analysis of each of these three groups," they look at three different types of lockdowns, "support the conclusion that lockdowns have had little to no effect on COVID-19 mortality." The reason why they have no effect goes back to that behavioural assumption. If you're in a jurisdiction that has no lockdown and you think you're a vulnerable person, guess what? You lock down yourself, you behave carefully. If you're in a jurisdiction that has a lockdown, guess what? People that aren't vulnerable, they're non-compliant with the lockdown. And so you end up having it not make much of a difference.

[00:35:00]

[On the Benefit of the Lockdown Side]

On the lockdown side of the equation, we knew that early on, very early on, the models were wrong. We knew. We had empirical evidence in the summer of 2020 that they were ineffective. By the spring of 2021, we had many empirical studies showing that there was no effect. And by the fall of 2021, when the Herby study became available, we had a massive meta-analysis that confirmed that lockdowns and other non-pharmaceutical interventions had almost no effect on mortality. I'll just point out also in the Herby paper, and the paper is about 150 pages long, they break down each non-pharmaceutical intervention on its own. They look at school closures, stay-at-home orders, masking, social distancing. And one of the ironies is, of course, you probably have heard this many times, is that some of these things actually increase mortality. You tell people they can't play in parks, they have to stay at home. Stay-at-home orders generally increased mortality. So bottom line: there was no benefit to locking down the population, none.

[Mistake #4: Mismeasure of the Costs of Lockdown]

Now, mismeasure of the cost of lockdowns. Here's another really sneaky thing that happened in 2020. Initially, the only costs that were considered was the lost GDP. We're going to take a human being that's working and we're going to tell them to go stay home for two weeks and you're not going to be able to work: Of course, that's going to reduce the amount of goods and services that are available. And of course, that is a cost. And like I mentioned earlier, that cost was about \$80 billion in the first few months of COVID-19. Now humans are ingenious and resilient, and we all know that we discovered quickly ways of working from home and adapting and all the rest of it. And so this kind of cost sort of faded away. But it was still a cost in the early period. But it was the only cost that was considered.

Now the interesting thing is that this is sort of a fundamental economic mistake, something that you would fail a "100" student for making. Because what it turned out they were doing, was the units that they were comparing the benefits to was different than the units they were comparing the cost to: they were comparing apples to oranges. Now what do I mean by that? If you remember when I talked about how they valued human lives, they valued them based on the utility you get from life. You want to visit your grandchildren, that's a value to you and we'll take that into account in the value of life, even though it has no consequence on GDP. But when it comes to costs, we're not going to count the utility of taking your life away from you, we're just going to count the lost GDP of having to stay at home. On the one hand, we're counting utility; on the other hand, we're counting GDP: we're comparing apples to oranges.

Now if you want to turn it around, we could have done the calculation— It would have been probably not correct, I mean, at least it's comparing apples to apples. But suppose we wanted to measure the benefits in terms of GDP: We're going to lock you down. And oh, you're going to die of COVID, but you're 85. You weren't producing any GDP, so the value of your life is zero. So we lost nothing, I guess the locking down was terribly inefficient, right? We lost GDP, but we didn't lose any value of life. Everybody would think that was absurd, but at least you're comparing apples to apples. So by comparing apples to oranges, by comparing the utility of life to just GDP, again, you're biasing: you're saying the benefits of lockdown are enormous, but the costs really aren't that big of a deal. It was just the lost GDP. Sorry.

In my 2021 study, I used a methodology to get at an estimate of the utility loss of lockdown. And I concluded that the cost-benefit ratio was 141. And so to put that into context, that would mean that for every 80-year-old that had a death that was averted because of lockdown, we ended up killing 141 80-year-olds. You save one life, but it costs you 141. It was based on that cost-benefit calculation that I declared that we committed the greatest

peacetime policy disaster in our history. If you were a British Columbian, you might remember 25 years ago, we had the fast-ferry fiasco that brought down the government, and everybody knew about it. The cost-benefit ratio of that fiasco was just three, just three. The cost-benefit ratio here was 141,

[00:40:00]

that the costs were greater than the benefits.

[Additional Costs Include]

Everybody knows, and I'm sure you've heard much testimony on this. I'm not going to spend any time on most of these issues, but we know that there was lost educational opportunities. I just read a study the other day showing that the catch up, we have not recovered from these lost educational opportunities. I can speak as a professor that there were incredible lost opportunities at the university level, and these have long consequences. Lower education means that your wages are going to be lower over your lifetime. Lower wages means that your health outcomes are going to be lower. It means that your life expectancy is shorter and so that there are going to be lost lives because of the lost education opportunities.

There are increased deaths and reduced life expectancy due to spells of unemployment. Unemployment reduces lifetime earnings, reduction in lifetime earnings reduces health outcomes, increases probability of death, et cetera. And again, in both of these categories, if you calculate the value of lost life, they swamp any estimate of the benefits of the lockdown. Increased deaths of despair, increased suicides, increased drug overdoses, addictions, all kinds of things, increased domestic violence, increased family breakdown, supply chains disruptions, and costs and consequences. Now maybe you had to wait an extra three months for a new oven for your kitchen, but around the world, the supply chain interruptions have been devastating in terms of mortality.

Direct deaths caused by lockdowns, and these are deaths that are called collateral deaths; so you actually lock down, and this actually caused a death. Now how could that be? If you remember, who can forget, hospitals were shut down, only for COVID patients, and we were terrified. We thought that if we even went to a hospital, it was sort of signing your death warrant. Lots of people missed cancer appointments, screenings, all sorts of things like this, and these people later died or died before their time.

One thing for the Commission to realize is that the costs are going to take a generation to figure out. We know these costs exist; we're trying to estimate them. People are making estimates, but the actual answer is going to take a generation. What does it mean to have a child that was born during COVID and never saw a human face for two years? You know, the consequences of that will take 20, 30 years to find out. But we know they exist, and we are making estimates, and like I said, if you took any category of these costs and convert them to the value of lives lost, it swamps, swamps any benefit of lockdown.

[Collateral Deaths]

I just want to focus in on this collateral death issue because it's something that we can get numbers at and can get estimates on. And again, if the Commissioners are unaware of Casey Mulligan, he's at the University of Chicago in the economics department. He's done lots of work with his students on this, and he's been working on collateral deaths, and he estimates for the United States that about 170,000 people died as a consequence of lockdown. In one of my papers that's submitted to you, I look into a study done in England that again looks at collateral deaths. And there, they go really deeply into what caused

people to die, and again, come up with a very large number of collateral deaths. Far more people died these collateral deaths than died of COVID.

Now I just want to show you on this category alone what this means. In the United States, up to December 2021, about 825,000 people died of COVID. If we take the Herby value of 3.2 per cent, if lockdown reduces mortality by 3.2 per cent, then that means only 27,000 deaths in the United States were averted. The other 800,000 people would have died anyway. That means that if we take the 171,000 people that were killed because of lockdown—that's the cost—and divide by the benefit of saving 27,000 lives, you still end up with a cost-benefit ratio of six. Remember again, the fast-ferry fiasco that brought down a government, the cost-benefit ratio was three. This is twice as worse. On this one category, you could reject lockdown just based on that alone.

[Estimated daily excess deaths per 100,000 people during COVID-19, Canada]  
Just a few numbers going back to Our World in Data.

[00:45:00]

If you look at Canada, now here I'm being speculative. But if you look at Canada, the dark line is the line of excess deaths attributed to COVID in our country; the red line is the excess deaths not attributed to COVID. And you see that since the spring of '21, our excess deaths— I should define excess deaths: So for any given day, for any given week, for any given month, or any given year, there's an expected number of people that are going to die. In Canada, we expect on any given week of the year, about 800 people are going to die. If 900 people die in that week, we call the 100, excess deaths. The reason why we use excess deaths because it doesn't rely on some government agent categorizing you died of COVID-19 just because you tested positive. You got a bullet wound in your head, but I mean, we count you as COVID-19 because you tested positive. So it's a more accurate way of measuring excess deaths.

And so the red line: if there were 100 excess deaths in a week, the red line might say there was 90 of them were non-COVID related, and only 10 were COVID related. So we see since the spring of '21, there are excess deaths that are not COVID related—are high. Now, again, this is evidence you'd want to look into it, but there's evidence of these collateral deaths, people that were dying. It's more deaths than we think, and they're not COVID related. And so you'd want to investigate that.

[Estimated daily excess deaths per 100,000 people during COVID-19, World]

I was mentioning on the world scene, if you look at the world, excess deaths on the world, you see the COVID deaths on the bottom, you see the dark red line is the excess deaths that were not COVID. From the get-go, there have been massive excess deaths around the world. And again, this is probably, it's entirely speculative on my part, but it's probably very much related to supply chain issues. You're in a country where you're close to subsistence and suddenly food supply chains get disrupted and you start to starve to death, right? And again, this is just one of the consequences of lockdown. We worry about what happened in our own country, but what we did had consequences to people that are far worse off than we are.

[Estimated daily excess deaths per 100,000 people during COVID-19, Sweden]

If you look at Sweden, it doesn't seem like there's much evidence of excess deaths outside of COVID at all. And, of course, we know now that if you look at excess deaths in Sweden, Sweden, which experienced absolute minimal amounts of lockdown, had the lowest excess deaths of all European nations, even lower than Norway, its Nordic neighbour that got so

much positive review. And of course, they didn't suffer all of the cost consequences from lockdown. So they had none of the costs of lockdown, and they had the benefits of a low [thing.]

[Bottom Line: Cost/Benefit practically infinite]

So again, my conclusion from April '21, it hasn't changed. Lockdowns are not just an inefficient policy, but they must rank as one of the greatest peacetime policy disasters of all time.

Am I okay to go on and talk about just some economic logic of the mandates? It won't take long.

### **Shawn Buckley**

Yeah, you absolutely are.

### **Douglas Allen**

[Mistake #5: Vaccine Mandates]

Again, I'm not talking about the legal aspects of mandates, I'm talking about the economic rationale about them. They were illogical from an economic point of view. Things that you obviously know about the coronavirus: So you cannot isolate a coronavirus; it's not like smallpox that you can isolate and remove from a population. It exists in animals and birds and as well as humans, and so it's never going to be eliminated. It's constantly mutating, we all know that by now, and so even though you vaccinate against one strain, it's going to mutate and those mutations are often going to be able to avoid the vaccine. It's not like measles that you can get a shot when you're young and it's good for the rest of your life. There's no single vaccine that is going to protect you.

We also know from the vaccine literature that there are many non-responders for one reason or another. They get the vaccine, but they're not immune because they did not respond to the vaccine. What this means is that with our vaccines for COVID-19 is there was always large, what is called "leakage": that people who are vaccinated could get infected and they shed the virus and therefore can infect others.

[Vaccine Mandates, Problem 1]

These facts present problems for the logic of mandates, and I'll just point out two. The purpose of the mandate—the stated purpose of the mandates—was that the vaccinated person could be assured that the person sitting beside them in the movie theatre or the dining restaurant was also vaccinated.

[00:50:00]

And therefore, they were safe around that person. But the problem is, of course, just because you're vaccinated does not mean that you don't get infected. And probably most of us have been infected multiple times by COVID-19, even when we've been vaccinated.

I reveal some of my personal health information: I got COVID-19 in the fall of '21; I had received two of the vaccinations. At the time, we didn't know the different infection rates, but we did know that people with the vaccine were getting infected. Conditional on getting an infection, the vaccinated person still sheds the virus at the same rate as the unvaccinated person. So if I'm sitting beside somebody who's vaccinated, but they're infected, they're going to shed the virus as if they were unvaccinated. But here's the

dilemma: The person who is vaccinated will have fewer symptoms and is more likely to be asymptomatic, and so I can't tell that the vaccinated person beside me is infected. If they're unvaccinated, they may have sniffles or something like that, and I have a guess that they're actually infected, and I'll stay away. They probably know themselves that they're infected and they'll probably stay away as well.

The fact that the vaccine masks the infection actually makes it more dangerous to be around vaccinated people than unvaccinated people. And so the logic behind the mandate was faulty. I may have been in more danger, not less danger. It's really an empirical question.

[ Vaccine Mandates, Problem 2]

Now, the second problem with mandates is this. The chief benefit of the vaccine, and we learned this in 2021, was that it reduced the severity in most people. I'm not saying there were not negative consequences.

[The Chief benefit of the vaccine is drastic reduction in severity of illness]

I'm saying for most people, it reduced the severity of illness, and we can see this. Here is the week-by-week death count in Canada, and this little bubble here, that's the delta variant. The delta variant had an infection fatality rate that was sort of similar to the beta variant and the alpha variant. But when the delta variant came along, a large fraction of the population was vaccinated. And unlike the earlier two waves, there was not the spike in deaths. The big spike that came after, that's Omicron. The reason why, even though Omicron was less lethal, why there was still a large death count was because it was so transmissible. A massive amount of people got infected.

[This means that vaccines were mostly a PRIVATE GOOD]

But my point here is that the benefit of the vaccine was that it reduced the severity of an illness. Now here's the point. That means that the vaccine is what we call a private good: if I get vaccinated, it benefits me. It really has nothing to do with you, nothing to do with you. The purpose of the mandate was because, presumably, this is a "public good" and that my vaccination is actually serving some public purpose. But it's not serving a public purpose: I can get infected and I shed the virus like anybody else. And so it's a private good and a fundamental core tenet, I think, on human rights and freedom is that you get to decide your private goods. Nobody tells you what colour of a car to buy. Nobody tells you whether you can get a driver's licence or not. We don't tell people what they have to eat at night. These are your choices because it's really nobody else's business. And your decision to get vaccinated or not is really an individual's private business because it only confers a private benefit. And so the whole argument that there's some "public good" nature of the vaccine, I think, is completely wrong.

[A core tenet of human rights is the freedom to decide PRIVATE GOODS]

And here's another thing from Our World in Data. We can look at the lockdown measures that were placed on people and you see what happened. We all know what happened in 2021, we put stronger measures of restrictions on unvaccinated people. And I think this is going to go down as one of the shameful episodes in the history of our country that we discriminated against people like that. Yeah, I'm sorry for getting emotional because there are people in my family that decided on their own to not get vaccinated, and they were told you couldn't travel, you couldn't go to a restaurant, you couldn't go to a theatre. We convinced everybody that the unvaccinated were going to kill everyone else, and so they were shunned and not invited places, et cetera. I think that's just a tragedy.

[How to Prevent a Future Relapse]

So how do we prevent a future relapse? I only have a few ideas and not solutions.

**Shawn Buckley**

And I'm just wondering, you know, we're getting close to the 60 minutes

[00:55:00]

and I am confident there's going to be a lot of—

**Douglas Allen**

I can stop there.

**Shawn Buckley**

questions for you, so I'll turn you over to the commissioners.

**Commissioner Massie**

Well, I have a couple of more technical questions. I really like the model you presented. But one of the things that always puzzles me with all of these models, like flattening the curve, it's not clear to me that the assumption that was made with any measure you take to flatten the curve was going to reduce the total number or just spread it in time. Because when I look at the curve we're showing in your model, the area under the curve is not the same.

**Douglas Allen**

Is the same, yes. So this is, again, another one of these sort of things, it was an evolving lie. So it's absolutely right. Those different curves that I showed you, the area under the curves are exactly the same. And what that means is, if you're looking at mortality, flattening the curve, according to those models, does not change the number of people who die. It just spreads them out. That's why the initial argument was, "Oh, we're just trying to not overrun the hospitals." Which was another red herring because a fundamental idea in economics is that the amount of goods available is never fixed. There's no such thing as a fixed hospital capacity. We can change hospital capacity like that. And of course, if you remember, we did. We set up hospitals all over the place and they just remained empty. Central Park in New York City was converted to a hospital. If you remember, President Trump brought in a naval ship with a hospital; it was never used, nor was the Central Park one. So, yes, exactly right. The initial thing was, "Oh, we're just worried about hospital capacity." You could make the argument that, look, if we defer infection, maybe a vaccine will come along and then we may avert a death. But you're absolutely right—flattening the curve only delayed infection.

The other thing—sorry if I could evolve—the idea became eventually the idea of zero COVID, that somehow for the first time in human history, we could take a virus that's spread throughout the population and somehow create a zero COVID. I mean, that's the extent of that sort of reasoning where it went.



**Commissioner Massie**

Yeah, I don't want to go to the zero COVID illusion. That's another story.

**Douglas Allen**

Yes, that's another story altogether.

**Commissioner Massie**

The other thing I'd like to ask you is a lot of these models and data we're getting from public sources, and I agree with you, Our World in Data is very good. But in all of these models, it's based on when you estimate—would it be COVID case or COVID hospitalization or COVID death—it's based on attribution. And if the attribution is biased, for whatever reason, technical, political, whatever reason—the calculation we're doing based on that is not that reliable.

**Douglas Allen**

Absolutely, you're talking about—I have to define what's a COVID death. Yes exactly, and, of course, I'm sure you've heard the average number of comorbidities is four: so these are people that are extremely sick anyway, and you've got dementia and heart disease, but you tested positive for COVID. But we know now, and especially in the U.S., that hospitals were given dollars for every COVID patient, the extra dollars for every COVID death, so there's a strong incentive to write COVID-19 down for everything. That's right, and so this is the academic's job to take into account for that, to try to work around it, and one of the ways you work around it is you use excess death numbers. Or in that British study that I cite in my paper, I mean, to actually dig deep into the medical records and find out what was the actual cause of death, what were the comorbidities, et cetera. But you're absolutely right, if you can't trust the cause of death, well, then, you're in trouble.

**Commissioner Massie**

My other question has to do with when we look at excess death. I mean, it seems to me that given the numbers that we know now are probably the best numbers we can estimate for COVID, real COVID death—it seems to me that very often these numbers are kind of close to the noise to what you can measure in actual excess deaths that varies according to the season and all kinds of other factors. So it makes the calculation or estimation of the real impact a little bit difficult. Like the three per cent reduction that was estimated, it was estimated based on taking for granted that the COVID deaths were what they were. But if they're not, then the three per cent could even be an excess or an exaggeration.

[01:00:00]

**Douglas Allen**

That could be zero.

**Commissioner Massie**

That could be zero.

## **Douglas Allen**

Yeah, yeah, yeah, yeah, no, absolutely. So again, this is why I sort of stress, take a look at that Herby study. I mean, they sort of extensively consider these issues, and how can we handle them? And which studies actually controlled or tried to get at these issues, and which ones did not? I mean, they make an enormous effort to go through these studies and say, “What are the good ones and what are the bad ones? And let’s throw out the ones that are kind of meaningless and look at the good ones.”

[Estimated daily excess deaths per 100,000 people during COVID-19, Canada]

But again, even in this graph, I don’t know if you can see it here, but I mean, you know, there is a confidence band and you can see over time the confidence band is growing because we don’t have as good of a data. But yeah, these are all issues that a good academic is going to want to consider. And I guess the point I’d like to get out to the Commission is, there really are good studies out and there’s lots of them, maybe hundreds or thousands of them. There are people like the Herby studies that are pulling them together and allowing people to look at them and write them up in a way that ordinary people can understand. And part of the reason for me being here today is that I think, just to even tell people about Our World in Data, that there are resources available right at everybody’s fingertips to find out the truth.

## **Commissioner Massie**

My last question would have to do with the fact that when you look at these curves up and down— And let’s say we go all-cause mortality, we don’t try to attribute. As we rolled out other measures than the lockdowns— Or other measures like the vaccine, especially the vaccine mandates that can create these very interesting short time, in terms of deployment of the vaccine in some areas, we went from zero to a very high number. In some of the cases, it was more defined in the area where they had the special mandates to really—like vaccine equity programs and stuff like that.

So when we look at the overall excess death mortality, people have examined whether when vaccines were rolled out, overall, was it beneficial in terms of excess death or not? Is that another additional factor that needs to be taken into account? Because we’ve seen that other non-pharmaceutical measures like lockdowns or masks and other things like that or smaller gathering were superimposed on the vaccine, so it makes the analysis of that very tricky in order to—

## **Douglas Allen**

Very tricky. So these are all what are called confounding issues, right. There’s all sorts of things going on at the same time, which again, not to get technical, but there are ways of dealing with it properly. Again, you know, using that difference-in-difference technique. Because I can find out there are two jurisdictions, maybe they’re virtually identical except there’s one difference, and so I can get an estimate to identify the effect of that one thing. And yeah, it takes a lot of work. And you’ve got to be really cautious when you just look at a correlation between this thing and that thing. It really can mean almost nothing.

But again, there has been lots of work to try to narrow in on what we call and identify the “causal effect” of— Like I said, there’s lots of studies looking at each one of these things: What’s the causal effect of a mask mandate? What’s the causal effect of actually wearing the mask? Because you can put a mandate on and nobody watches it, so you know, there’s that distinction. There’s all kinds of distinctions. What happens when you put a lockdown on

and a vaccine mandate on at the same time? Again, it's a very tricky issue, but we do have ways of trying to identify the causal.

**Commissioner Massie**

Maybe just one last question, because I understand that there's a lot of data, you have to sort out the best studies in order to get the understanding. But it seems to me that when you show the data that was available very early on, that's pretty much what we ended up getting. So this data was pretty accurate. Why is it been ignored, even nowadays, by the health agencies?

**Douglas Allen**

Yeah, this is an interesting issue. One of the papers I submitted is on this. Why did we make the mistake not once, not twice, but five times? We continually made the mistake. And I think what's going on here is, it was not a conspiracy around the world. It was that every public health officer and politician had an incentive to basically double down. That they panicked in March of 2020—they knew, at least by the end of April if not earlier, that they made a tremendous mistake. But what are you going to do? Are you going to announce to the Canadian public that you just lost \$80 billion of their pension funds and all the rest of it? No. You're going to kind of hope that, well, maybe this thing will just go away.

[01:05:00]

And you remember at the time, it was two weeks to flatten the curve, but it got extended. Well, let's just extend it a little bit. Summer comes along; things settle down and you're kind of hoping that's the end of it. The last thing you want to do is admit you made a mistake. You're victorious. In fact, we re-elected a government on that victory in the fall. But now the virus comes back. Well, now what do you do? You can't admit you were wrong because you just got elected on your performance. So you double down. You say, "No, it's even more dangerous. We're going to have a real serious lockdown now because we think the vaccines are about to come."

And then when it comes back in the spring, you do it again. And just like in Blackjack, when you double down, the stakes get larger and larger. And so even in the spring of '22, when everybody had had Omicron, Omicron taught us all that it wasn't death that was at the door, it was Omicron that was at the door, and we were all going to survive it. And so even then, we almost had the Emergencies Act invoked. Why? Because the stakes were so high. You locked down people five times in a row, and now you admit that you've made a mistake? Not going to happen.

This is one of the things— Somehow, we have to be able to allow politicians and health officers, if they acted in good faith, they have to be allowed to admit they made a mistake. We can punish them at the ballot box. Now if they acted in bad faith, and if they broke the law, then of course that's another story. But somehow, if the politicians had known, if they could have said in May of 2020, "Oh my gosh, we panicked, sorry about that. And maybe you'll kick us out of office, but we're not going to be held liable for these things." Maybe we could have avoided it. That's a tough one.

**Commissioner Massie**

Thank you.

**Commissioner Drysdale**

I've got just a few short questions. You mentioned that some of the original models that were relied on by the Canadian government were by a particular researcher by the name of Neil Ferguson. With the unlimited resources the Canadian government seems to have, you think they would have gone and did go to the very best researchers in the world. Do you have any feeling for how Mr. Ferguson had done in the past with his predictions?

**Douglas Allen**

He had actually an abysmal track record. He's a physicist, he's not even an epidemiologist. And his physicist training probably led him naturally to conclude that there's no point in modelling human behaviour. But yeah, he had a very bad track record with the swine flu and SARS, the original SARS virus, et cetera.

I do know in the province of British Columbia that they relied on other modellers, two of them are at SFU. And I was just speaking to one of them two weeks ago. And they still have not added any kind of behavioural equations to the model. Still. It's three years later, right? And part of the reason is because an applied mathematician or an epidemiologist who has sort of this physics background, they're not trained in human behaviour. It's not like there's an equation that they just pull off the shelf and put in. They have to come up with the equation, right? They have to have some sort of training in, how do human beings respond?

There's lots of actual models out there. They're called SIRB models, the Susceptible Infected Recovered Behavioural. And these models are mostly developed by social scientists, including economists. And again, Andrew Atkinson and his team in UCLA were developing these models in 2020, and they're far more accurate in predicting the number of deaths. And in fact, one of the things I still have not had time to do— Atkinson has a model in the spring of '21 that is making forecasts all the way out to 2023. And he's pretty accurate. He has to guess at when people are going to get vaccinated and all the other kind of things. But it's not like these things are not done. It's just that I think a lot of the people that government is relying on have not been trained in human behaviour; they don't know what equation to throw into their model.

**Commissioner Drysdale**

With regard to your comment to Dr. Massie. I'm not sure if you saw a video that was played in this Commission of Theresa Tam in 2010 in a documentary that was done for the National Film Board where she said, "It's better to overreact at the beginning and then apologize for the mistake and move on." So I suggest to you that at least Ms. Tam knew that she could have changed direction, as she quoted herself in the National Film Board film.

[01:10:00]

**Douglas Allen**

I was unaware of that.

**Commissioner Drysdale**

Thank you.

**Shawn Buckley**

It looks like there are no further questions.

I just, on your point that you seem actually very forgiving of public health officials. And yet your evidence shows that as early as of March 2020, it was really clear that the models that our behaviour was being relied on were wrong. And that data never changed. It just kept getting confirmed and confirmed. So I believe your evidence is as of March 2020, we knew we shouldn't be locking down and there was no justification. And we also knew that they would be causing harm.

**Douglas Allen**

No. I agree. I mean, of course, the sooner they could have admitted a mistake, the better for them, better for everybody. And the longer that they delay that, the harder it is to admit your mistake. And the more likely it's bad faith, and as soon as it becomes bad faith, then you really have no incentive to admit that you're wrong.

**Shawn Buckley**

Now, I would like to thank you because first of all, I see why you've been named a Burnaby Mountain instructor. You're a very good teacher, and you have shared with us some information we didn't have and given us some understanding into modelling that hasn't been presented here, and so you've done us a real service. And on behalf of the National Citizens Inquiry, I'd like to sincerely thank you for coming and sharing with us.

**Douglas Allen**

You're welcome. Thank you.

**Shawn Buckley**

I'll just wait. Dr. Allen is getting a standing ovation.

[01:11:55]

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*The evidence offered in this transcript is a true and faithful record of witness testimony given during the National Citizens Inquiry (NCI) hearings. The transcript was prepared by members of a team of volunteers using an "intelligent verbatim" transcription method.*

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