

In the Matter Of:  
The Long-Term Care Homes Public Inquiry

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DAY 37 VOLUME 37  
September 14, 2018

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THE LONG-TERM CARE HOMES PUBLIC INQUIRY

PUBLIC HEARINGS

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--- This is Day 37/Volume 37 of the Public Hearings in the above Inquiry proceedings taken at the offices of Neeson Court Reporting Inc., 77 King Street West, Suite 2020, Toronto, Ontario, on the 14th day of September, 2018, commencing at 9:30 a.m.

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BEFORE: The Honourable Justice Eileen E. Gillese, Commissioner

REPORTED BY: Helen Martineau, CSR  
& Olivia Arnaud, CSR

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A P P E A R A N C E S (CONT'D):  
  
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1 --- Upon commencing at 9:29 A.M.

2

09:29:31 3 THE COMMISSIONER: Good morning,  
09:29:32 4 everyone.

09:29:35 5 MS. STEPHENS: Good morning,  
09:29:37 6 Commissioner. We wanted to  
09:29:38 7 start off with just doing a tiny  
09:29:39 8 bit of housekeeping with respect  
09:29:41 9 to documents, unrelated to the  
09:29:43 10 witnesses this week, but during  
09:29:44 11 the course of the work that the  
09:29:50 12 Commission Counsel have been  
09:29:50 13 doing in the last month or so  
09:29:52 14 since we've been on break from  
09:29:54 15 the hearings in St. Thomas, we  
09:29:55 16 have realized that there are a  
09:29:57 17 few documents that were -- one  
09:30:01 18 that needed to be modified, that  
09:30:03 19 would be the Overview Report,  
09:30:05 20 and one document that was  
09:30:05 21 referred to in evidence but  
09:30:06 22 never made an exhibit. So we  
09:30:08 23 just want to make those changes  
09:30:13 24 and make sure that that gets  
09:30:14 25 into the record.

09:30:15 26 The first document that we --  
09:30:17 27 that has been prepared is an  
09:30:19 28 addendum to the Ministry of  
09:30:22 29 Health and Long-Term Care's  
09:30:23 30 Overview Report. So this is now  
09:30:25 31 in the database. It's document  
09:30:28 32 I.D. 1674359. And essentially

09:30:32 1 this is an addendum to volume  
09:30:37 2 5(A) and 5(B) of the Overview  
09:30:38 3 Report. That volume had dealt  
09:30:39 4 with the Ministry's inspections  
09:30:44 5 at Telfer Place. And during --  
09:30:47 6 recently we had discovered that  
09:30:49 7 we had in fact inadvertently  
09:30:52 8 omitted the inspections that had  
09:30:54 9 happened in the winter of 2016,  
09:30:58 10 which was while Elizabeth  
09:30:58 11 Wettlaufer was still working as  
09:31:00 12 an agency nurse in that home  
09:31:03 13 through April 2016, and that was  
09:31:06 14 when she stopped working in that  
09:31:08 15 home.  
09:31:09 16 So this essentially completes  
09:31:11 17 the story for Telfer Place by  
09:31:15 18 adding in the three inspections  
09:31:17 19 that happened during that period  
09:31:18 20 of time, including the Resident  
09:31:20 21 Quality Inspection. And that  
09:31:22 22 RQI inspection has been referred  
09:31:24 23 to in evidence by two witnesses.  
09:31:27 24 The orders associated with that  
09:31:29 25 RQI are already exhibits, so we  
09:31:32 26 thought it really did make sense  
09:31:33 27 to make sure that all of this  
09:31:35 28 was included in that Overview  
09:31:38 29 Report.  
09:31:39 30 So what I would be asking is  
09:31:40 31 that that addendum be filed as  
09:31:43 32 Exhibit 9(B), so that would



09:31:46 1 be -- it will again follow  
09:31:48 2 closely with the earlier -- the  
09:31:50 3 original Overview Report, the  
09:31:52 4 first minor addendum to the  
09:31:54 5 Overview Report and now this  
09:31:55 6 one.  
09:31:55 7 THE COMMISSIONER: All right.  
09:31:57 8 Thank you very much,  
09:31:57 9 Ms. Stephens. So Exhibit 9(B)  
09:32:00 10 then. And did you say the  
09:32:01 11 document I.D. was 1674359?  
09:32:03 12 MS. STEPHENS: That's correct.  
09:32:07 13 THE COMMISSIONER: Thank you.  
09:32:08 14 Just for those of you who are  
09:32:08 15 following along on our webcast,  
09:32:10 16 it's important for you to  
09:32:11 17 understand. So this is part  
09:32:12 18 then of the foundational  
09:32:13 19 documents, an additional part to  
09:32:17 20 the Ministry of Health  
09:32:17 21 investigation; and it's also  
09:32:20 22 important to know that this  
09:32:21 23 document was available to all of  
09:32:22 24 the participants throughout the  
09:32:24 25 process by means of the  
09:32:27 26 database. It was in the  
09:32:28 27 database; right?  
09:32:28 28 MS. STEPHENS: That's correct.  
09:32:31 29 THE COMMISSIONER: Thank you.  
09:32:32 30 Okay. Go ahead. So that's  
09:32:33 31 Exhibit 9(B).  
09:32:35 32 EXHIBIT NO. 9(B): Addendum to

1 the Overview Report, Document  
09:32:36 2 1674359.  
09:32:36 3 MS. STEPHENS: And then the next  
09:32:38 4 document that we would like  
09:32:39 5 entered as an exhibit, and this  
09:32:41 6 could just go in in the  
09:32:46 7 sequential order, this here is  
09:32:46 8 document 54715. This is a  
09:32:51 9 summary of Dr. McDonald's police  
09:32:54 10 statement that was given to the  
09:32:56 11 police during the Elizabeth  
09:32:59 12 Wettlaufer investigation, and it  
09:33:01 13 was identified and referred to  
09:33:03 14 as Exhibit A to Dr. McDonald's  
09:33:07 15 affidavit, which is Exhibit 65;  
09:33:09 16 but it was not made an exhibit  
09:33:11 17 during the course of the  
09:33:13 18 hearings or during the course of  
09:33:14 19 his testimony. So we just would  
09:33:17 20 like to have this filed now as  
09:33:19 21 an exhibit just to sort of close  
09:33:20 22 the circle on that and complete  
09:33:23 23 the record.

09:33:23 24 THE COMMISSIONER: All right.  
09:33:25 25 Thank you very much again,  
09:33:27 26 Ms. Stephens. So document  
09:33:27 27 54715. And, Madam Clerk, can  
09:33:31 28 you just help me with the  
09:33:33 29 exhibit number on this one?

09:33:34 30 THE CLERK: Yes, Commissioner.  
09:33:35 31 That is Exhibit 167.

09:33:36 32 THE COMMISSIONER: So it becomes

09:33:38 1 Exhibit 167.  
09:33:40 2 EXHIBIT NO. 167: Document  
3 54715, Summary of Dr. McDonald's  
4 Statement Given to Police During  
5 Wettlaufer Investigation;  
6 Previously Identified and  
7 Referred to as Exhibit A to  
8 Dr. McDonald's Affidavit,  
9 Exhibit 65.  
09:33:42 10 THE COMMISSIONER: And just to  
09:33:42 11 be clear, this was already  
09:33:43 12 referred to in evidence as part  
09:33:44 13 of Exhibit A to Dr. McDonald's  
09:33:48 14 affidavit evidence; correct?  
09:33:48 15 MS. STEPHENS: That's correct.  
09:33:50 16 THE COMMISSIONER: Thank you  
09:33:51 17 very much.  
09:33:51 18 MS. STEPHENS: And that is all  
09:33:52 19 for me this morning,  
09:33:54 20 Commissioner.  
09:33:54 21 THE COMMISSIONER: Thank you so  
09:33:55 22 much.  
09:33:55 23 MS. JONES: Our next witness is  
09:34:00 24 Dr. Michael Hillmer.  
09:34:01 25 THE COMMISSIONER: Thank you  
09:34:02 26 very much. Good morning,  
09:34:11 27 Dr. Hillmer. Thank you for  
09:34:12 28 joining us.  
09:34:35 29 DR. MICHAEL PAUL HILLMER: AFFIRMED.  
09:34:35 30 EXAMINATION IN-CHIEF BY  
09:35:13 31 MS. JONES:  
09:35:13 32 Q. Good morning, Dr. Hillmer.

09:35:15 1 A. Morning.

09:35:16 2 Q. Dr. Hillmer, you are the

09:35:17 3 Executive Director of Information Management

09:35:20 4 Data and Analytics at the Ministry of Health

09:35:21 5 and Long-Term Care; correct?

09:35:21 6 A. Yes.

09:35:25 7 Q. And that's a position within

09:35:26 8 the Ministry's Health System Information

09:35:29 9 Management, or HSIM division?

09:35:32 10 A. Yes.

09:35:32 11 Q. And you are here today to

09:35:35 12 give evidence about data analytics work your

09:35:38 13 group at the Ministry did after Elizabeth

09:35:41 14 Wettlaufer confessed to the offences in 2016?

09:35:43 15 A. Yes.

09:35:43 16 Q. So as part of these

09:35:47 17 proceedings, Dr. Hillmer, you've sworn an

09:35:50 18 affidavit; is that correct?

09:35:50 19 A. Yes.

09:35:51 20 Q. And it's right there in front

09:35:52 21 of you. If you can just switch to the final

09:35:55 22 page of the affidavit and confirm that this is

09:35:57 23 indeed your signature and your affidavit?

09:35:59 24 A. It is.

09:36:01 25 MS. JONES: And, Madam

09:36:04 26 Commissioner, if this could be

09:36:05 27 marked as the next exhibit?

09:36:07 28 THE COMMISSIONER: All right.

09:36:08 29 Thank you. So if I'm correct,

09:36:09 30 Madam Clerk, that would be

09:36:10 31 Exhibit 168?

09:36:12 32 THE CLERK: Yes.

09:36:12 1 THE COMMISSIONER: The affidavit  
09:36:13 2 of Dr. Michael Hillmer is -- and  
09:36:16 3 attached all the exhibits  
09:36:21 4 becomes Exhibit 168 in these  
09:36:22 5 proceedings. Thank you,  
09:36:24 6 Ms. Jones.

09:36:12 7 EXHIBIT NO. 168: Affidavit of  
8 Dr. Michael Hillmer and All  
09:36:12 9 Attached Exhibits.

09:36:12 10 BY MS. JONES:

09:36:25 11 Q. Thank you. And if we can  
09:36:26 12 turn, Dr. Hillmer, for you it's at tab A. And  
09:36:28 13 it is document 72898, which is your curriculum  
09:36:33 14 vitae.

09:36:50 15 And we see under "Education"  
09:36:53 16 first at the bottom of that section you have  
09:36:56 17 your Bachelor of Science in biochemistry and  
09:36:59 18 your Masters in science and pharmacology;  
09:37:01 19 correct?

09:37:01 20 A. Yes.

09:37:03 21 Q. And in 2007 you obtained your  
09:37:08 22 Ph.D. in clinical epidemiology?

09:37:09 23 A. Yes.

09:37:10 24 Q. And can you help us with  
09:37:12 25 epidemiology? How would you describe the  
09:37:16 26 subject of epidemiology?

09:37:17 27 A. Sure. Epidemiology is a  
09:37:21 28 study of disease in populations. What kind of  
09:37:27 29 diseases populations are afflicted by; what  
09:37:31 30 causes them; who is susceptible to them; what  
09:37:34 31 are the factors that lead to those diseases;  
09:37:36 32 and looking at all the different subgroups

09:37:38 1 within the populations and how a disease might  
09:37:41 2 spread within them.

09:37:42 3 Q. Okay. Thank you. And can  
09:37:43 4 you give us an example then of the types of  
09:37:45 5 work epidemiologists employed by the Ministry  
09:37:50 6 of Health and Long-Term Care do?

09:37:50 7 A. Sure. There are two major  
09:37:54 8 categories of work an epidemiologist for the  
09:38:00 9 Ministry might do.

09:38:01 10 The first category tends to be  
09:38:03 11 in the realm of public health where an  
09:38:06 12 epidemiologist might be called in when  
09:38:09 13 something like the SARS outbreak happens. And  
09:38:12 14 they would look at who has become infected,  
09:38:19 15 what's characteristic about them, how the  
09:38:19 16 disease might spread from person to person.  
09:38:23 17 And those pieces of information become really  
09:38:26 18 important for understanding the outbreak and  
09:38:28 19 controlling it.

09:38:36 20 And then the other major  
09:38:37 21 category of which I fall into and the team that  
09:38:38 22 I lead falls into are looking at patterns of  
09:38:39 23 healthcare utilization, typically using  
09:38:42 24 databases, healthcare administrative databases.

09:38:44 25 So we'd look at the number of  
09:38:46 26 interactions people have with the hospital and  
09:38:50 27 physicians and the kinds of medications they  
09:38:52 28 might be using; and how they access the system;  
09:38:56 29 how they travel through the system; the  
09:38:58 30 outcomes of the care they receive. And that  
09:39:00 31 ends up being really informative for people  
09:39:03 32 developing policies and programs.

09:39:05 1 Q. Thank you. And you've been  
09:39:08 2 employed at the Ministry of Health since you  
09:39:11 3 completed your PhD; is that correct?

09:39:13 4 A. Right.

09:39:14 5 Q. So since 2007?

09:39:15 6 A. Yes.

09:39:16 7 Q. And you've held various  
09:39:18 8 roles, as described in your affidavit, but  
09:39:20 9 since 2016 you've held your current role; is  
09:39:23 10 that fair?

09:39:23 11 A. That's right.

09:39:24 12 Q. I'm going to ask you some  
09:39:33 13 questions now about your division, the HSIM  
09:39:34 14 division at the Ministry of Health and  
09:39:37 15 Long-Term Care. And if you turn now back to  
09:39:38 16 your affidavit, and you turn to page 3, please?

09:39:52 17 And at page 3, paragraph 5 of  
09:39:53 18 your affidavit, Dr. Hillmer, you describe the  
09:39:55 19 role of the HSIM division as being to obtain  
09:39:59 20 and analyze health data to improve decision  
09:40:01 21 making. And that's what you just explained to  
09:40:03 22 us a moment ago?

09:40:04 23 A. Correct.

09:40:05 24 Q. And you also say there that  
09:40:09 25 the HSIM division is not tasked with  
09:40:12 26 implementing the results of the analysis?

09:40:14 27 A. That's right. We would  
09:40:18 28 typically be asked by another group in the  
09:40:21 29 Ministry to help them with an analysis that  
09:40:23 30 would inform their work and then they would go  
09:40:25 31 and develop the policy or implement the  
09:40:28 32 program.

09:40:28 1 Q. And do you have an example  
09:40:30 2 for us of that sort of thing where your group  
09:40:33 3 does the data analysis and then another group  
09:40:34 4 at the Ministry implements the work?

09:40:38 5 A. Absolutely. The Ministry has  
09:40:41 6 been doing a lot of work to address the rise  
09:40:48 7 and use of opioids and the bad effects that  
09:40:51 8 they end up causing. So my colleagues might  
09:40:53 9 come to me and ask for assistance to understand  
09:40:58 10 the opioid issue.

09:41:02 11 And so we would go into our  
09:41:04 12 healthcare administrative databases and start  
09:41:06 13 to look at who -- what kind of physicians are  
09:41:10 14 dispensing opioids? Are there any  
09:41:13 15 characteristics that distinguish high  
09:41:17 16 prescribers from low prescribers? Who is  
09:41:21 17 receiving those opioids? What is happening to  
09:41:22 18 them after they use them? Are they going to  
09:41:24 19 the hospital? Are they dying? Where is this  
09:41:26 20 happening? Are there any other salient issues  
09:41:29 21 that the data can tell us about that might lead  
09:41:32 22 the policy developers and program implementers  
09:41:35 23 to make a better program knowing that in this  
09:41:37 24 particular region the burden is higher?

09:41:40 25 So they need to invest more  
09:41:42 26 resources in that region, or prescribing is the  
09:41:46 27 issue so they need to look at policies that  
09:41:49 28 look at prescribing versus any number of other  
09:41:52 29 issues that they might learn about from the  
09:41:54 30 kind of analysis we would give them.

09:41:56 31 Q. Okay. Thanks very much.

09:41:58 32 And if you look now back to your



09:42:00 1 affidavit, still on page 3 at paragraph 6,  
09:42:04 2 you've set out the fact that the HSIM division  
09:42:08 3 is made up of four branches; correct?

09:42:10 4 A. Yes.

09:42:11 5 Q. And you oversee all four of  
09:42:13 6 those branches?

09:42:13 7 A. That's right.

09:42:14 8 Q. And you've set out the roles  
09:42:16 9 of each in your affidavit. I only want to go  
09:42:19 10 to 6(b) in particular. So this is one of the  
09:42:24 11 branches of the HSIM and it's called the  
09:42:32 12 "Health Analytics Insight Branch"; correct?

09:42:34 13 A. Right.

09:42:34 14 Q. And approximately how many  
09:42:37 15 people work in that branch?

09:42:37 16 A. Approximately 30.

09:42:38 17 Q. And you have set out here  
09:42:41 18 that this branch is tasked with helping to  
09:42:41 19 describe the health status of the population,  
09:42:45 20 patient journeys, care utilization patterns, et  
09:42:48 21 cetera?

09:42:48 22 A. Right.

09:42:48 23 Q. And then that information is  
09:42:50 24 then used for the preparation of analysis and  
09:42:52 25 reports for various purposes?

09:42:53 26 A. Right.

09:42:54 27 Q. So I'm going to pass you,  
09:42:57 28 just by way of example, a document called  
09:43:02 29 "Long-Term Care in Ontario, Sector Overview"  
09:43:05 30 and that's document 71733. And, Dr. Hillmer,  
09:43:34 31 are you familiar with this document?

09:43:35 32 A. I am.

09:43:35 1 Q. And we see on the very first  
09:43:38 2 page that it's the work of the Health Analytics  
09:43:40 3 Branch, which is the branch we were just  
09:43:42 4 discussing?

09:43:42 5 A. Right.

09:43:42 6 Q. And if you turn to page 3  
09:43:44 7 within this document we look under

09:43:49 8 "Introduction", we see that it reads that:

09:43:51 9 "This report provides high-level  
09:43:52 10 analysis of LTC-related data  
09:43:55 11 that are frequently needed in  
09:43:58 12 the Ministry of Health and  
09:43:59 13 Long-Term Care."

09:44:00 14 Correct?

09:44:00 15 A. Right.

09:44:01 16 Q. And then if you turn over one  
09:44:03 17 page to page 4 we see that the report, this is  
09:44:06 18 just the report's highlight section, but we see  
09:44:08 19 that the report contains information about  
09:44:10 20 long-term care funding, capacity, discharges,  
09:44:14 21 lengths of stay, et cetera?

09:44:15 22 A. Right. It's a good example  
09:44:17 23 of the work that the branch does.

09:44:20 24 MS. JONES: Perfect. And if we  
09:44:21 25 can mark this, Madam  
09:44:22 26 Commissioner, as the next  
09:44:25 27 exhibit, please.

09:44:25 28 THE COMMISSIONER: Yes. Thank  
09:44:26 29 you. That is Exhibit 169.  
09:44:32 30 Document 71733.

09:44:38 31 EXHIBIT NO. 169: Document 71733  
32 entitled "Long-Term Care in

1 Ontario, Sector Overview."  
09:44:43 2 MR. GOLDEN: I just have a  
09:44:43 3 potential objection about this.  
09:44:45 4 I understand the witness said  
09:44:46 5 that this document is a good  
09:44:49 6 example of the work that the  
09:44:51 7 branch does, but the document  
09:44:54 8 contains tremendous detailed  
09:44:57 9 information about the structure  
09:44:58 10 of the long-term care program, a  
09:45:00 11 lot of details about funding, a  
09:45:02 12 lot of questions that have been  
09:45:03 13 asked during the Ministry phase.  
09:45:05 14 We had a very robust and  
09:45:07 15 detailed Ministry phase and this  
09:45:09 16 kind of data was not introduced  
09:45:11 17 through witnesses who work in  
09:45:13 18 the field, apart from the  
09:45:17 19 statistical collection.  
09:45:19 20 So I understood the witness said  
09:45:20 21 this is a good example of work  
09:45:22 22 that his branch does. If that's  
09:45:25 23 the purpose that it's going in  
09:45:25 24 for that's fine. But my concern  
09:45:28 25 is that it's going in as an  
09:45:30 26 exhibit and then will later be  
09:45:32 27 used for all kinds of purposes  
09:45:34 28 without it having been  
09:45:35 29 introduced during the Ministry  
09:45:37 30 phase with an opportunity for  
09:45:38 31 proper examination and  
09:45:40 32 reflection.

09:45:40 1 THE COMMISSIONER: Let me just  
09:45:43 2 check though, Mr. Golden, this  
09:45:43 3 document was in the database, as  
09:45:45 4 I understand it?  
09:45:45 5 MR. GOLDEN: Yes.  
09:45:48 6 THE COMMISSIONER: So you were  
09:45:49 7 aware of it?  
8 MR. GOLDEN: It's in the  
9 database, yes.  
10 THE COMMISSIONER: And so you  
09:45:50 11 would have been aware of it  
09:45:50 12 prior to the Ministry evidence  
09:45:51 13 being led?  
09:45:51 14 MR. GOLDEN: Sure.  
09:45:54 15 THE COMMISSIONER: So it's  
09:45:55 16 introduced as an -- as a good  
09:45:57 17 example of the work that he's  
09:45:59 18 done. Are we intending to use  
09:46:00 19 it for other purposes directly?  
09:46:02 20 MS. JONES: I think,  
09:46:05 21 Commissioner, as Mr. Golden just  
09:46:12 22 confirmed, this is information  
09:46:13 23 that's been in the database that  
09:46:15 24 his client has had from the  
09:46:17 25 outset and his client has had  
09:46:18 26 every opportunity to deal with.  
09:46:20 27 I am putting it in as an example  
09:46:22 28 of the work of the Health  
09:46:23 29 Analytics Branch. I'm not sure  
09:46:26 30 though that anyone would be  
09:46:27 31 restricted in terms of looking  
09:46:28 32 at some of the statistics that

09:46:30 1 are in the report, if they are  
09:46:31 2 of assistance to you in doing  
09:46:33 3 your work.  
09:46:33 4 THE COMMISSIONER: All right,  
5 thank you.  
09:46:35 6 Mr. Golden, thank you for your  
09:46:36 7 comments. I remain of the view  
09:46:40 8 it should be entered as Exhibit  
09:46:42 9 169, but I take fully your --  
09:46:45 10 basically your caution about the  
09:46:47 11 fact in terms of any weight that  
09:46:49 12 I might give this document.  
09:46:51 13 Thank you.  
09:46:52 14 Go ahead, Ms. Jones.  
09:46:53 15 BY MS. JONES:  
09:46:55 16 Q. Thank you.  
09:46:55 17 And if we turn now to paragraph  
09:47:00 18 7 of your affidavit, which is on page 4, we see  
09:47:16 19 here that you've given evidence so far about  
09:47:21 20 the type of data that your group analyzes. And  
09:47:23 21 you provide at paragraph 7 examples of the  
09:47:27 22 sources of this data that you have to work  
09:47:29 23 with?  
09:47:29 24 A. Yes.  
09:47:30 25 Q. And the sources include data  
09:47:32 26 from OHIP; correct?  
09:47:33 27 A. That's right.  
09:47:35 28 Q. And data that's generated  
09:47:39 29 from filled prescriptions submitted to the  
09:47:41 30 Ministry for payment?  
09:47:41 31 A. Correct.  
09:47:42 32 Q. Data from CIHI, which this

09:47:46 1 Commission has heard about and we'll talk about  
09:47:48 2 again in a moment?

09:47:49 3 A. Yes.

09:47:49 4 Q. And data from a Registered  
09:47:51 5 Persons Database, which I understand has  
09:47:53 6 demographic information like age and gender for  
09:47:57 7 each resident of Ontario that accesses  
09:47:59 8 healthcare services?

09:47:59 9 A. Each resident who is eligible  
09:48:05 10 for healthcare services paid for by the  
09:48:08 11 Province of Ontario.

09:48:09 12 Q. Okay. Thank you. And I  
09:48:12 13 understand that these are simply examples of  
09:48:15 14 the sources of the data that you have?

09:48:17 15 A. Yes.

09:48:18 16 Q. And other examples, for  
09:48:20 17 example, set out in your affidavit would be  
09:48:21 18 data you could get from the Office of the Chief  
09:48:24 19 Coroner, for example, about a cause of death?

09:48:25 20 A. That's right. And other  
09:48:28 21 healthcare administrative databases that we  
09:48:31 22 collect that aren't listed there as well.

09:48:34 23 Q. Okay. And is it fair to say  
09:48:36 24 that the data that HSIM has is comprehensive in  
09:48:43 25 that it is about every resident in Ontario who  
09:48:45 26 has a health card and interacts with the  
09:48:48 27 healthcare system?

09:48:49 28 A. I agree with that statement  
09:48:51 29 in general. Every provincially-funded  
09:48:54 30 healthcare transaction typically finds its way  
09:49:00 31 into one of these databases.

09:49:01 32 Q. And that would include

09:49:02 1 information about residents in long-term care  
09:49:04 2 homes?

09:49:04 3 A. Yes, it would.

09:49:04 4 Q. And once this data is  
09:49:07 5 collected is it stored by people's names or is  
09:49:12 6 it anonymized in some way?

09:49:14 7 A. The people who analyze this  
09:49:17 8 information are looking at anonymized  
09:49:20 9 information. They don't see anybody's name or  
09:49:22 10 specific address. And it is stored by a unique  
09:49:30 11 number, you know, that is based on their health  
09:49:33 12 card number but it's all scrambled.

09:49:36 13 So no analyst sees any detail  
09:49:40 14 that they could link to an individual person.  
09:49:42 15 And then, furthermore, we would never report at  
09:49:44 16 a really -- at an individual level. It's  
09:49:49 17 always aggregated to some much higher level, a  
09:49:52 18 city or a Local Health Integration Network  
09:49:57 19 level, or even a bigger region like the  
09:49:59 20 Province.

09:50:00 21 So there's no -- there's no risk  
09:50:02 22 ever that we would inadvertently identify  
09:50:06 23 somebody through the kinds of reporting that we  
09:50:08 24 do.

09:50:08 25 Q. And in terms of the data that  
09:50:11 26 you -- or your branch collects from CIHI in  
09:50:16 27 particular, we've heard about CIHI but if you  
09:50:19 28 can remind us briefly what is CIHI?

09:50:21 29 A. Canadian Institute for Health  
09:50:24 30 Information. CIHI is a federal agency funded  
09:50:26 31 by the federal government and the provincial  
09:50:28 32 governments, and their mandate is to maintain

09:50:32 1 health standards for data collection and  
09:50:35 2 reporting, and particularly relevant here.  
09:50:39 3 They will collect a whole range of information  
09:50:40 4 from long-term care facilities, hospitals,  
09:50:44 5 rehab hospitals, mental health facilities.  
09:50:48 6 Those facilities submit to that organization  
09:50:51 7 and then we, as the Ministry of Health, receive  
09:50:54 8 that information typically quarterly.

09:50:55 9 Q. And am I correct in my  
09:50:56 10 understanding that the information that CIHI  
09:51:00 11 receives from long-term care homes is generally  
09:51:03 12 information from the RAI-MDS assessments?

09:51:09 13 A. That's right.

09:51:10 14 Q. And that information from  
09:51:13 15 RAI-MDS assessments is submitted to LHINs -- or  
09:51:15 16 submitted to CIHI and CIHI then submits it to  
09:51:18 17 the Ministry?

09:51:18 18 A. Exactly.

09:51:19 19 Q. And to give us a sense of the  
09:51:22 20 scope of the data that HSIM has about a  
09:51:26 21 long-term care home resident, example, from all  
09:51:29 22 sources, and I hear you that it would be on an  
09:51:31 23 anonymized basis. Would this data include a  
09:51:35 24 resident's age, gender, demographic information  
09:51:39 25 like that?

09:51:39 26 A. Yes.

09:51:39 27 Q. And a resident's diagnoses?

09:51:44 28 A. Yes.

09:51:44 29 Q. Their care needs?

09:51:46 30 A. Yes.

09:51:46 31 Q. Their mobility status?

09:51:48 32 A. Yes.



09:51:49 1 Q. Information, for example,  
09:51:52 2 about changes in weight and even whether the  
09:51:54 3 resident is leaving food on their plate  
09:51:57 4 uneaten?

09:51:57 5 A. That's included.

09:51:58 6 Q. Okay. Hospitalizations?

09:52:00 7 A. Yes.

09:52:00 8 Q. Whether a resident is in  
09:52:04 9 pain?

09:52:04 10 A. Yes.

09:52:05 11 Q. A resident's cognitive  
09:52:07 12 status?

09:52:07 13 A. Yes.

09:52:08 14 Q. Whether the resident has  
09:52:10 15 pressure ulcers?

09:52:11 16 A. Yes.

09:52:12 17 Q. Okay. And even measures of  
09:52:14 18 things like social inclusion?

09:52:15 19 A. Yes.

09:52:16 20 Q. So is it fair to say that  
09:52:20 21 HSIM has a -- an extensive amount of data about  
09:52:23 22 long-term care home residents?

09:52:25 23 A. Yes, it is.

09:52:25 24 Q. Now, I'm going to ask you  
09:52:28 25 some questions about the initiation of the  
09:52:31 26 project that brings you here today. So I  
09:52:35 27 understand that the HSIM division became  
09:52:39 28 involved in a project after Elizabeth  
09:52:41 29 Wettlaufer confessed to her offences at -- to  
09:52:44 30 explore whether those offences could have been  
09:52:46 31 detected earlier using data?

09:52:53 32 A. Sorry, can you repeat the

09:52:55 1 question?

09:52:55 2 Q. Yes, I can. I understand  
09:52:57 3 that the division, the HSIM division became  
09:52:58 4 involved, after Elizabeth Wettlaufer confessed  
09:53:02 5 to her offences, in a project to see if those  
09:53:04 6 offences could have been detected earlier using  
09:53:07 7 data?

09:53:07 8 A. That's right.

09:53:07 9 Q. And if we look back at your  
09:53:11 10 affidavit on page 8, paragraph 18, and in this  
09:53:31 11 paragraph you describe a meeting which took  
09:53:35 12 place at the Ministry in December 2016?

09:53:37 13 A. Yes.

09:53:37 14 Q. So can you tell us, first of  
09:53:40 15 all, who asked for this meeting and who  
09:53:42 16 attended this meeting?

09:53:43 17 A. Sharon Lee Smith is the  
09:53:48 18 Associate Deputy Minister of Policy and  
09:53:51 19 Transformation at the Ministry of Health, and  
09:53:52 20 she called together myself, Brian Pollard, who  
09:53:55 21 the Assistant Deputy Minister of the Long-Term  
09:53:59 22 Care Homes division, and Dr. Dirk Huyer, Chief  
09:54:04 23 Coroner for the Province. And she asked us to  
09:54:09 24 think about ways this might have been detected  
09:54:12 25 earlier.

09:54:13 26 And it was at that point that I  
09:54:14 27 expressed my belief that a data-driven approach  
09:54:19 28 might have been a useful way to find these  
09:54:24 29 offences earlier.

09:54:24 30 Q. Okay. And then if you go to  
09:54:28 31 paragraph 19 of your affidavit, as a result of  
09:54:33 32 this belief that a data-driven project might

09:54:36 1 have detected these offences earlier, I  
09:54:39 2 understand that such a data-driven project was  
09:54:41 3 undertaken between January and September 2017?

09:54:44 4 A. That's right.

09:54:45 5 Q. And it's described -- the  
09:54:48 6 results of that project are described in a  
09:54:50 7 PowerPoint presentation dated September 2017  
09:54:55 8 entitled "Detecting Long-term Care Homes with  
09:54:58 9 Excessive Rates of Mortality"; is that right?

09:55:00 10 A. Yes.

09:55:01 11 Q. And that is attached to your  
09:55:03 12 affidavit at tab F, and it is document  
09:55:08 13 70312\_01.

09:55:15 14 MS. JONES: Madam Commissioner,  
09:55:16 15 the version that is attached to  
09:55:18 16 Dr. Hillmer's affidavit is in  
09:55:20 17 black and white. We'll be  
09:55:22 18 looking at the colour version  
09:55:24 19 today but for the sake of the  
09:55:25 20 record I think we should mark,  
09:55:27 21 as well, the colour version as  
09:55:28 22 an exhibit.

09:55:28 23 THE COMMISSIONER: All right.  
09:55:29 24 Thank you. So that would become  
09:55:39 25 Exhibit 170 in the proceedings.

09:55:43 26 EXHIBIT NO. 170: Document  
27 70312, PowerPoint Presentation  
28 dated September 2017 Entitled  
29 "Detecting Long-term Care Homes  
30 with Excessive Rates of  
09:55:43 31 Mortality."

09:55:43 32 MS. JONES: Thank you.

09:55:46 1 THE COMMISSIONER: Thank you.

09:55:46 2 BY MS. JONES:

09:55:47 3 Q. And, Dr. Hillmer, before we  
09:55:48 4 look at this in too much detail, did you  
09:55:50 5 supervise this project?

09:55:51 6 A. I did.

09:55:52 7 Q. And you state in your  
09:55:54 8 affidavit that it's -- the project is at a  
09:55:58 9 proof-of-concept or preliminary stage, and I'm  
09:56:01 10 going to ask you some more detailed questions  
09:56:03 11 about that later, but what does it mean to be  
09:56:06 12 at a "proof-of-concept stage"?

09:56:07 13 A. To us a proof of concept is  
09:56:13 14 an exercise to see if something is feasible.  
09:56:18 15 When we start projects we don't necessarily  
09:56:22 16 know that they are going to be able to achieve  
09:56:25 17 the objectives that we set out. And so the  
09:56:28 18 proof of concept is an experimental effort to  
09:56:33 19 look at the data, in our case, and see if we  
09:56:40 20 can use methods and different techniques to  
09:56:46 21 find out if in this case whether we could have  
09:56:48 22 found any signals of these deaths earlier than  
09:56:51 23 they were found in reality.

09:56:54 24 Q. And if we go then to Slide 3,  
09:56:58 25 or page 3 of this presentation? You state here  
09:57:10 26 the purposes of the project. And if you can  
09:57:12 27 translate that for us in your own words? The  
09:57:17 28 purpose of the project that you undertook?

09:57:19 29 A. The purpose was to try and  
09:57:25 30 use the data that we have, that we've described  
09:57:28 31 earlier, to see if there were -- to see if  
09:57:34 32 there was any way that that -- those increased

09:57:37 1 deaths related to the offences could have been  
09:57:42 2 detected earlier. That's the simple  
09:57:43 3 explanation of the objective.

09:57:44 4 Q. Okay. And if we look at the  
09:57:47 5 first paragraph you talk about the development  
09:57:50 6 of a model; correct?

09:57:50 7 A. Right. So our approach, and  
09:57:56 8 it's what we do, we look at large amounts of  
09:57:59 9 data and we use statistics to do that. So  
09:58:02 10 the -- what's described on this page is the  
09:58:06 11 statistical approach we were using.

09:58:09 12 Q. Okay.

09:58:10 13 A. And we'll describe in more  
09:58:11 14 detail as we go on.

09:58:12 15 Q. Okay, perfect. And if I  
09:58:17 16 understand this correctly, the essence of the  
09:58:18 17 project was to see if could develop a model  
09:58:21 18 that would identify long-term care homes with  
09:58:24 19 higher than expected death rates over a  
09:58:28 20 particular period of time?

09:58:28 21 A. That's the key part is that  
09:58:32 22 we were trying to find homes that had a higher  
09:58:36 23 than expected, and the -- generating the  
09:58:42 24 expected number is what this project was all  
09:58:46 25 about. Because we know how many people did die  
09:58:48 26 and so the statistical approach described here  
09:58:52 27 is all about how we get to that expected  
09:58:53 28 number.

09:58:53 29 Q. Right. Perfect. And then  
09:58:55 30 the second part of that bullet is that -- and  
09:58:57 31 then potentially to use this as a quality  
09:58:59 32 control technique to develop a system from -- a

09:59:04 1 moderating system to flag homes with excessive  
09:59:06 2 rates of death?

09:59:06 3 A. Right. And I do want to  
09:59:08 4 point out that this project described in this  
09:59:13 5 PowerPoint slide was written by a group of  
09:59:15 6 highly, highly statistically-minded, analytical  
09:59:19 7 people and we'll describe it as we go through.  
09:59:21 8 But often the choice of words they used are  
09:59:24 9 maybe not what I would use, but they think  
09:59:29 10 very -- they think in a very detailed,  
09:59:31 11 technical way.

09:59:32 12 So when you look at "excessive"  
09:59:37 13 I don't want anybody to think that that's  
09:59:39 14 necessarily even a value judgment. We're just  
09:59:43 15 looking from a statistical purpose how many  
09:59:46 16 were expected. And anything above or below  
09:59:50 17 that would be then either expected higher or  
09:59:55 18 lower.

09:59:56 19 And it's not like they're  
09:59:57 20 necessarily excessive. And I do want to point  
09:59:59 21 that out because you might get a sense of  
10:00:03 22 definitiveness from that that isn't necessarily  
10:00:05 23 the case.

10:00:06 24 Q. Okay. So fair enough. And I  
10:00:09 25 think what you're saying then is if the -- a  
10:00:12 26 long-term care home has a rate of death that's  
10:00:14 27 even one additional than what you would expect  
10:00:17 28 that would technically, on a statistical  
10:00:19 29 analysis, be considered an excessive rate of  
10:00:21 30 death in your model?

10:00:22 31 A. Or just one over what was  
10:00:24 32 expected.

1 Q. Right, okay. And then if we  
2 link this model, this model of coming up with a  
3 way of measuring expected versus actual deaths  
4 in long-term care homes, if we link this to the  
5 Elizabeth Wettlaufer portion of the project how  
6 do those two things fit together?

7 A. Well, the rationale is that  
8 if you're looking at a given home and you  
9 understand the residents there, you can  
10 generate the expected number of people who die,  
11 and then any actions of somebody like Elizabeth  
12 Wettlaufer would be extra additional deaths  
13 that would be unexpected and then would make  
14 that actual number of deaths observed higher.

15 So it might, the number -- you  
16 would go further above that expected number and  
17 it might reveal itself as an outlier.

18 Q. Okay. So the idea was to  
19 develop the model and then apply it to see in  
20 Elizabeth Wettlaufer's case if the model would  
21 have detected an increase in those deaths?

22 A. It was, but it was also to  
23 look at every single home in the province.

24 Q. Right. Okay.

25 And if you turn now to Slide 14  
26 in the PowerPoint presentation? And we see  
27 data here for fiscal year 2015 to 2016; right?

28 A. Yes.

29 Q. And I want to focus on the  
30 second bullet which says that during that time,  
31 and I understand this is in relation to  
32 long-term care homes, there were 21,074 deaths

1 or 19.6 percent of active clients died in that  
2 year?

3 A. Correct.

4 Q. And would you expect this  
5 percentage, just under 20 percent to be roughly  
6 the same year-over-year in long-term care  
7 homes?

8 A. Roughly, yes.

9 Q. And so statistically on an  
10 average long-term care home approximately 20  
11 percent of the residents will pass away every  
12 year?

13 A. I'm going to say generally  
14 yes, but if it's a small home they're going to  
15 be -- it might not be 20 percent. The bigger  
16 the home is probably the closer it is going to  
17 be to the 20 percent.

18 Q. And we'll talk about small  
19 homes a little bit more later as well?

20 A. Yes.

21 Q. But if we know that  
22 approximately 20 percent of long-term care  
23 residents pass away every year, in determining  
24 whether a home has an excessive rate of  
25 mortality or more than expected mortality can  
26 we just compare that home's mortality rate with  
27 20 percent?

28 A. No, not in any fair way. We  
29 call this the "crude rate" or the number of  
30 people who are actually dying in every single  
31 home. And you can imagine one home that has  
32 older and sicker residents and just naturally



10:03:33 1 those residents are going to -- more of them  
10:03:35 2 will die than a home that had a comparatively  
10:03:40 3 younger and less sick population.

10:03:42 4 And if you were just to look at  
10:03:43 5 that number and make some conclusion that that  
10:03:46 6 home had a higher percentage of people dying,  
10:03:51 7 it would have nothing to do with the home but  
10:03:53 8 everything to do with the characteristics of  
10:03:55 9 the residents that live there.

10:03:57 10 So if you were just to look at  
10:03:58 11 that crude number then it wouldn't be  
10:04:02 12 especially informative.

10:04:03 13 Q. Okay. And so I understand  
10:04:05 14 that as a result, as a result of the fact that  
10:04:08 15 different homes have different patient groups,  
10:04:12 16 the purpose of the project, as described in  
10:04:14 17 your affidavit, is to come up with a  
10:04:16 18 risk-adjustment model to take that into  
10:04:18 19 account?

10:04:18 20 A. Right. So through the  
10:04:21 21 application of statistics you can adjust for  
10:04:26 22 one home that has older, sicker residents,  
10:04:30 23 younger, less sick residents, and then you get  
10:04:34 24 a much more apple-to-apple kind of comparison  
10:04:38 25 between the homes. It's no longer impacted by  
10:04:42 26 the fact that the residents' populations are  
10:04:45 27 different across the homes.

10:04:46 28 Q. And I think a good way of  
10:04:49 29 thinking about this might be to look at  
10:04:51 30 Slide 4. And if we look at Slide 4 it states  
10:05:03 31 that:

10:05:06 32 "Long-term care home deaths vary

1 significantly by homes and that  
2 an excessively high death rate  
3 of a home could reflect the  
4 acuity level of residents in the  
5 home, [as you've just  
6 described], poor quality of care  
7 provided by the home or, [for  
8 example], the actions of  
9 healthcare professionals in the  
10 home."

11 Including actions such as those  
12 of Elizabeth Wettlaufer?

13 A. That's right. I don't  
14 consider that necessarily an exhaustive list,  
15 but for the purposes of our project, our goal  
16 was to adjust the resident characteristics so  
17 that we could compare home to home and then try  
18 to make a conclusion about what was happening  
19 in the home, the kinds of practices they were  
20 using, the environment that was there such that  
21 any deaths that were expected were not because  
22 of differing resident characteristics but some  
23 factor that is theoretically related to the  
24 home.

25 Q. So that the risk adjustment  
26 process controls for that first bullet point,  
27 the acuity level of residents, to try to  
28 potentially flag the bullets below or other  
29 bullets?

30 A. Anything -- so those two  
31 bullets plus any other set of factors that  
32 might lead to somebody's death.

1 Q. Okay. And this is the last  
2 sort of complicated statistical part but I'm  
3 going to ask you to explain for us the  
4 standardized mortality ratio to make sure  
5 everyone understands that.

6 A. Sure.

7 Q. And perhaps we can go back to  
8 your affidavit now to page 9, paragraph 23 and  
9 24. So I understand that this analysis is risk  
10 adjustment, looking at these homes is captured  
11 and organized into what's called a  
12 "standardized mortality ratio." Is that fair?

13 A. Yes.

14 Q. And what is a standardized  
15 mortality ratio and how does it work?

16 A. We've talked about the  
17 expected number of people dying in long-term  
18 care homes and so the mortality ratio is you  
19 take the number of people who died in any given  
20 period, so this is the observed number, and you  
21 divide it by the number of people expected to  
22 die that gets generated through our model. And  
23 you end up with a ratio such that if a home had  
24 ten people who did die, we saw that, and then  
25 ten people expected to die would have a ratio  
26 of 1.

27 And it's just a nice, intuitive  
28 way to think, to show the results so that  
29 that's the reference point. 1 is our reference  
30 point, and any number of people more than -- if  
31 you have more people dying observed, actually  
32 dying than expected, if 20 people died and ten

1 were expected, your ratio would be 2.

2 And, conversely, if five people  
3 died and ten were expected you would have the  
4 ratio of .5. So you just get to -- it's a good  
5 technique to talk about the results because  
6 it's all based on that 1. And any time you go  
7 above or below it's -- you can say if it's half  
8 it's 0.5. If five people dying and ten  
9 expected you can say it's 50 percent less than  
10 expected, so it's just a nice, intuitive way.

11 Q. So that every home is given,  
12 that's why it's called "standardized", every  
13 home is given a value on that 1 scale?

14 A. Exactly right. You  
15 standardize to that home that had exactly the  
16 same number of people who died that were  
17 expected to die and then everybody else by  
18 definition is above or below it.

19 Q. So if you're higher than 1  
20 your home has had more deaths than were  
21 expected and if you're lower than 1 your home  
22 has had less deaths than were expected?

23 A. Correct.

24 Q. Now, you described the risk  
25 adjustment, the concept of risk adjustment, and  
26 now I'm going to ask you questions about how  
27 you went about risk adjustment to come at your  
28 expected death rate at each home.

29 And if you turn to page 12,  
30 paragraph 28, you provide detail in your  
31 affidavit about how your team undertook this  
32 process. And you state that you had to decide

1 on the right statistical approach for  
2 identifying the risk factors that your model  
3 would take into account in predicting how many  
4 residents would die?

5 A. That's right. And I do want  
6 to point out that the -- we arrived at these  
7 approaches and the factors we were going to  
8 consider through looking at published  
9 literature and reports published by research  
10 institutes. So that's always the first step we  
11 take is to find out if anybody had done this  
12 approach before because we like to base it on  
13 the work of others that have been studied and  
14 peer-reviewed.

15 So we have a sense that the  
16 factors we're picking and the approach we're  
17 picking is reasonable and sound. So that's, I  
18 think, an important starting point for any  
19 project. And I wanted to make sure that  
20 everybody knew that.

21 Q. Perfect. And when you took  
22 those steps, that starting point, to look for  
23 published literature, whether anyone had done  
24 it before, could you find an example of this  
25 type of project being done in the long-term  
26 care home setting?

27 A. So we found published  
28 literature of academics trying to predict  
29 mortality. And the affidavit has example -- an  
30 example of one of those studies that we found  
31 very relevant. The one written by the lead  
32 author Porock.

1 We didn't find any jurisdiction  
2 that seemed to be doing this as a routine  
3 monitoring system in the same way that the  
4 published study had envisioned in the same way  
5 we were thinking about it. So we relied  
6 heavily on that study plus the other ones  
7 attached.

8 Q. And at paragraph 29 you set  
9 out, after that preliminary literature review  
10 and scan you decided to use two different  
11 approaches to create your prediction algorithm?

12 A. Right.

13 Q. And the first approach is a  
14 traditional statistical approach. And you set  
15 out here that that attempts to select variables  
16 of interest through consultation with experts  
17 and literature review. So is it fair to say  
18 our known knowledge about what kinds of things,  
19 like what health conditions, age, are  
20 predictive of mortality?

21 A. Right. It is entirely based  
22 on a group of people coming together and  
23 explicitly deciding, I'm going to include  
24 factors like age and level of sickness in my  
25 prediction model. And that comes either  
26 through the -- what's been published or a group  
27 of experts like physicians and methodologists  
28 discussing what should be included.

29 Q. And if we turn back to your  
30 PowerPoint presentation and look at Slide 10,  
31 are these the factors, the risk factors used in  
32 this traditional statistical approach?

1 A. That's right. And they all  
2 come from the RAI-MDS assessments.

3 Q. And so -- and there's factors  
4 that again wouldn't surprise us, things like  
5 age, a diagnosis with cancer, for example, and  
6 emergency room visits, et cetera.

7 A. Exactly.

8 Q. And across the top in the  
9 light purple in the colour copy we see "Core  
10 Set", and then in the middle of the page we see  
11 "Additional Variables", can you explain that to  
12 us please?

13 A. In the traditional  
14 statistical approach you often try different  
15 combinations of variables to try and figure out  
16 what gives you a really good model. And so the  
17 team thought the core set, the variables that  
18 the team started with, and then the additional  
19 variables are other factors they added to see  
20 if they got a better prediction.

21 Q. And was it found that a  
22 certain group of additional factors did lead to  
23 a better prediction?

24 A. They did. I think there's a  
25 slide here that refers to that, but yes.

26 Q. And we will get to that  
27 slide.

28 Now, if you look back at your  
29 affidavit, paragraph 29, sub (b) in addition to  
30 the traditional statistical approach your team  
31 also did an automated approach or a  
32 machine-learning approach. And what's that?

1 A. It's a statistical approach  
2 where they -- simplistically, the computer is  
3 considering all the factors. In this case all  
4 the RAI-MDS variables.

5 Q. Which is over 600?

6 A. Over 600. And it makes a  
7 series of choices autonomously about what gives  
8 the best predictive model. So it's not relying  
9 on either what's been published or the wisdom  
10 of experts but it's just trying to pick the set  
11 of factors that lead to the best possible  
12 prediction.

13 Q. Okay.

14 A. And there's a whole set of  
15 complicated math behind that, but essentially  
16 it's -- it's got a set of parameters it's  
17 trying to achieve around a really good  
18 predictive model and that is how it goes about  
19 picking those variables.

20 Q. And you describe in your  
21 affidavit, and we will not go over it in  
22 detail, but there were three different  
23 machine-learning approaches that your team  
24 tried?

25 A. That's right.

26 Q. And one of them ultimately  
27 you concluded was the most effective  
28 machine-learning approach?

29 A. In our opinion it got the  
30 most accurate predictions.

31 Q. And which one was that?

32 A. It was the one that's called



10:16:16 1 the "Extreme Gradient Boost."

10:16:16 2 Q. And how did you assess that  
10:16:19 3 that one got the most accurate predictions?

10:16:23 4 A. When you're looking at these  
10:16:29 5 predictive models there's a measure that  
10:16:31 6 statisticians look at that gives them that  
10:16:33 7 measure of "best." So if you think of a  
10:16:37 8 prediction this model is saying, this resident  
10:16:41 9 will die or they don't die. And clearly in any  
10:16:42 10 data set there will be residents that really do  
10:16:44 11 die or don't die.

10:16:42 12 And so this measure of this  
10:16:44 13 "best" measure just basically compares did the  
10:16:47 14 model say that they died and did they die? And  
10:16:50 15 if it does that really well, and conversely,  
10:16:53 16 did it say that they would live and did they  
10:16:55 17 live? The model that picks out those people  
10:16:58 18 accurately is deemed to be the best model.

10:17:02 19 Q. And this XGBoost model, it's  
10:17:06 20 the best of the machine-learning approaches in  
10:17:10 21 your assessment, was it also better than the  
10:17:13 22 traditional statistical method?

10:17:15 23 A. It was better. And as an  
10:17:17 24 aside, we have come to learn that this Extreme  
10:17:23 25 Gradient Boost method is often the model that  
10:17:28 26 teams use who are entering competitions to pick  
10:17:32 27 really good prediction models for companies  
10:17:34 28 like Netflix and Amazon. And so often this  
10:17:39 29 XGBoost is the one that they use. So that gave  
10:17:43 30 us a bit of extra confidence that it was a  
10:17:45 31 really effective model to predict things.

10:17:48 32 Q. Now, you've described the use

1 in these machine approaches to all of the  
2 RAI-MDS, over 600 factors potentially go into  
3 the machine-learning approaches. Does  
4 information collected by the Ministry of Health  
5 and Long-Term Care's Inspection Branch go into  
6 these models?

7 A. No.

8 Q. So, for example, information  
9 from Critical Incident Reports or information  
10 from LPA assessments?

11 A. No, only the RAI-MDS for this  
12 project was considered.

13 Q. And why is that? Would it be  
14 helpful to use information from inspections?

15 A. Without having looked at it  
16 specifically I couldn't say for sure, and if we  
17 did look at it it's possible. But there is a  
18 bigger issue in that a lot of the inspection  
19 data is not specific to a resident. It's about  
20 a practice or a policy the home is supposed to  
21 do. And so our model is all based on resident  
22 characteristics. What's the risk of that  
23 resident dying? And so there's that issue.

24 And then where it is to a  
25 resident the nature of the data collected  
26 doesn't allow us to link it back to our RAI-MDS  
27 data, so there's no health card number. And by  
28 the time it makes it into the database, the  
29 inspection database, there's no name, no health  
30 card number, it's just that there was a  
31 critical incident associated with whatever  
32 aspect of the inspection.

10:19:30 1 So there are those two issues.  
10:19:35 2 And whether it was -- you know, we're trying to  
10:19:37 3 get a prediction of death and it's hard for me  
10:19:40 4 to say without having looked at it whether it  
10:19:43 5 would have been a useful endeavour or not.

10:19:48 6 Our selected model did achieve a  
10:19:50 7 really, really high level of that sort of best  
10:19:54 8 measure. So we're relatively confident it is a  
10:19:57 9 good predictor of whether somebody is going to  
10:19:59 10 die.

10:19:59 11 Q. Your existing model?

10:20:01 12 A. Correct.

10:20:02 13 Q. But it is something that you  
10:20:05 14 could, going forward, look at which is whether  
10:20:08 15 or not inspection data could also be  
10:20:09 16 implemented in your --

10:20:09 17 A. We could look into it.

10:20:10 18 Q. And similar to sort of  
10:20:12 19 inspection data what about data, whether from  
10:20:14 20 inspections or otherwise, about medication  
10:20:16 21 errors? Is that considered in your model?

10:20:19 22 A. It's not. The model does  
10:20:23 23 have different medications that the residents  
10:20:27 24 are receiving but not anything about medication  
10:20:30 25 errors.

10:20:31 26 Q. And are you aware of a  
10:20:33 27 comprehensive source of data about medication  
10:20:36 28 errors that you could access?

10:20:37 29 A. I'm not aware.

10:20:39 30 Q. And could that be something  
10:20:42 31 that would be of assistance to the model?

10:20:45 32 A. I'm not sure whether it would

10:20:53 1 be helpful or not. Part of the purpose of the  
10:20:55 2 model is to look at the -- to try and make a  
10:21:01 3 statement about the practices the homes are  
10:21:03 4 engaging in that might be leading to expected  
10:21:05 5 deaths and observed deaths.

10:21:08 6 If you were to include  
10:21:09 7 medication errors that might adjust for that  
10:21:12 8 factor and take it out of the -- out of  
10:21:15 9 consideration just in the same way we took  
10:21:17 10 resident characteristics out of consideration  
10:21:20 11 by controlling for them.

10:21:22 12 So I'd want to get a group of  
10:21:24 13 experts together who really understood  
10:21:26 14 medications and their administration and their  
10:21:28 15 impact and get their advice on whether it would  
10:21:31 16 be helpful or not.

10:21:34 17 Q. And do I understand you  
10:21:35 18 correctly that what you're trying to do, if we  
10:21:37 19 think back to Slide 4, you're trying to control  
10:21:40 20 for the acuity of patients to take that out of  
10:21:42 21 the equation so that you can see what's left?  
10:21:45 22 Is that fair?

10:21:45 23 A. It is fair. And there's  
10:21:47 24 another -- medication errors -- it -- there's  
10:21:51 25 no -- there are different places that try to --  
10:21:57 26 their collection efforts to try and find out  
10:21:59 27 what is the rate of medication errors. Because  
10:22:01 28 we know medication errors -- we'd like to  
10:22:04 29 reduce them in general but they are very hard  
10:22:07 30 to capture reliably because providers are  
10:22:13 31 generally loath to report themselves as having  
10:22:17 32 made an error.

1 And that's -- in my experience  
2 and other collection efforts they're  
3 underreported. And so it's difficult to  
4 include a variable that you don't have any --  
5 that isn't comprehensive, that isn't being  
6 reported reliably. And so medication errors  
7 are difficult to capture reliably.

8 Q. And if they're difficult to  
9 capture reliably could that have an effect on  
10 the accuracy of your model?

11 A. It would absolutely have an  
12 impact on the accuracy because anything that is  
13 not captured sort of systematically or  
14 comprehensively introduces a source of bias and  
15 then the model doesn't produce very good  
16 results.

17 The RAI-MDS, every resident has  
18 one, it's captured by trained professionals and  
19 so you have some higher level of confidence  
20 that it's captured consistently and reliably.

21 Q. Thank you, and one more  
22 question in the area of medications in  
23 particular, putting aside medication errors,  
24 what about just information about medication  
25 prescribing within the home? Whether a home  
26 has a higher or lower than average amount of  
27 medication prescribing, is that part of your  
28 model?

29 A. We included whether residents  
30 were receiving certain kinds of medications,  
31 that was a factor included, but not at a home  
32 level. So we did include medications in the

1 sense that they were a factor considered in the  
2 model.

3 Q. But what your model is doing  
4 is it's adjusting it on a patient basis not on  
5 the home basis?

6 A. Correct.

7 Q. For the acuity. Now, I  
8 understand that once you had the different  
9 statistical methods and the risk factors sorted  
10 out your group then ran this model for every  
11 long-term care home in Ontario?

12 A. That's right.

13 Q. And what you did was the  
14 model had come up with an expected rate of  
15 death, on an annual basis, for each of the  
16 long-term care homes and you compared it to  
17 that home's actual rate of death?

18 A. That's right, over a 12-month  
19 period.

20 Q. So that you would then, for  
21 each of the homes, come up with your 1 scale  
22 standardized mortality ratio?

23 A. For that year, yes.

24 Q. For that year. And I  
25 understand that you plotted -- let me ask you  
26 one thing before I go on. Why did you do it on  
27 a 12-month period instead of, for example,  
28 quarterly or monthly?

29 A. Oh, that's a good question.  
30 Twelve months was the period we selected  
31 because we needed -- each home needed to have a  
32 certain number of deaths. And any given home

10:25:13 1 in a month or a quarter might have, you know,  
10:25:16 2 one death or no deaths.

10:25:18 3 And the model -- you just need  
10:25:23 4 deaths to occur at a certain number for the  
10:25:26 5 model to work. And if you picked a month you  
10:25:29 6 would have a whole bunch of homes that had zero  
10:25:32 7 deaths and it just would give you a really bad  
10:25:35 8 prediction. You wouldn't be confident in the  
10:25:38 9 predictions.

10:25:38 10 Q. So 12 months, from a  
10:25:40 11 statistical standpoint, was what your group  
10:25:44 12 concluded was the right period of time to look  
10:25:45 13 at?

10:25:45 14 A. It's the period we picked,  
10:25:48 15 yes.

10:25:48 16 Q. And now if we turn back to  
10:25:54 17 the PowerPoint and we look at Slide 21, please?  
10:26:13 18 So I understand that what we're looking at is  
10:26:14 19 the annual period fiscal year 2015 and 2016;  
10:26:18 20 correct?

10:26:18 21 A. That's right. And the fiscal  
10:26:19 22 year for the Ministry goes from April to March.

10:26:23 23 Q. Okay. And so if you can  
10:26:25 24 describe for us this graph and what we learn on  
10:26:31 25 this graph?

10:26:32 26 A. Sure. So the -- I think it's  
10:26:36 27 a dark green line, it's the curved line. It  
10:26:42 28 is -- so imagine there are 630 individual  
10:26:46 29 little dots. And so it is the -- the  
10:26:50 30 risk-adjusted rate that each home -- we  
10:26:55 31 calculated for each home. And so right at the  
10:26:59 32 20 percent mark that's the provincial average.

10:27:04 1  
10:27:07 2  
10:27:07 3  
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10:27:12 5  
10:27:14 6  
10:27:17 7  
10:27:20 8  
10:27:25 9  
10:27:29 10  
10:27:32 11  
10:27:35 12  
10:27:37 13  
10:27:39 14  
10:27:44 15  
10:27:45 16  
10:27:47 17  
10:27:49 18  
10:27:49 19  
10:27:51 20  
10:27:54 21  
10:27:57 22  
10:27:57 23  
10:27:59 24  
10:28:03 25  
10:28:04 26  
10:28:05 27  
10:28:07 28  
10:28:10 29  
10:28:10 30  
10:28:13 31  
10:28:16 32

Q. So that's the dotted blue line?

A. The dotted blue line sitting at approximately 20 percent.

And you'll see, if you remember back we talked about how we set the reference point at 1. So you can imagine there's one dot that sits right at that 19.4 percent line. And that was the home that had the exact same number of observed deaths as expected, so that was sort of set as our reference point and then everybody else was above or below it. And then not surprisingly you can see in the bottom box 313 homes were above the provincial rate, but that's sort of by definition.

Q. By definition half the homes would be above and half would be below?

A. Right.

Q. And where the green line crosses the blue line would be the home that was a 1 on the standardized mortality ratio?

A. Right.

Q. And ones that are below would have standardized mortality ratios of less than 1, so less deaths than expected; correct?

A. Right.

Q. And the ones above the blue line would have standardized mortality ratios above 1?

A. Right. So more observed deaths than expected.

And then the next part of the



1 graph is you'll see this red line at 29.49.  
2 It's just -- we picked an arbitrary point, 10  
3 percent above the provincial average. Part of  
4 it is because that's when the green line on the  
5 right seems to -- the pattern seems to change.  
6 It seems to spike upwards.

7 And so part of the project was  
8 to try and predict the number of deaths and  
9 another part was to try and -- how would you  
10 define an outlier? How might you look for a  
11 home that was sort of deemed to be high or low  
12 on that mortality ratio? So an arbitrary 10  
13 percent was what the project team picked just  
14 for the sake of looking at who was above and  
15 below.

16 Q. And so that if we look then  
17 at where the green line crosses the benchmark,  
18 and I understand that it was selected at this  
19 stage as sort of an arbitrary measure. The  
20 idea would be that using a measure like this  
21 you could identify sort of outlier homes that  
22 were not only above the provincial average from  
23 what was expected and their own expected death  
24 rates, but a more significant amount above  
25 those markers?

26 A. Right. You could pick that  
27 benchmark anywhere you wanted and in this case  
28 it resulted in about 20 homes being above that  
29 mark.

30 Q. Okay. And then one thing  
31 that had been confusing to me until you  
32 explained it to me which is, why along the

10:29:44 1 bottom we have long-term care homes by --  
10:29:47 2 organized by number? And those numbers are  
10:29:49 3 consistent through the slides, but why are  
10:29:52 4 there less than 630 numbers at the bottom?

10:29:55 5 A. It's just if you tried to  
10:29:59 6 print out all 600 they would all be smushed on  
10:30:02 7 top of one another and you would not be able to  
10:30:05 8 see them, so there are 630 points and --

10:30:07 9 Q. It's just little markers  
10:30:08 10 along the way?

10:30:09 11 A. Just little markers along the  
10:30:11 12 way. But we know what point is what and  
10:30:13 13 they're all plotted appropriately, it's just  
10:30:16 14 that nobody would be able to read it otherwise.

10:30:20 15 Q. If you turn now to the next  
10:30:23 16 slide, Slide 22? This is the first of four  
10:30:27 17 slides. We're not going to look at each of  
10:30:29 18 them that have the heading, "Homes for  
10:30:32 19 Monitoring". So what are these slides and why  
10:30:34 20 are they called "Homes for Monitoring"?

10:30:37 21 A. So the project team, again,  
10:30:42 22 their goal was just to look at the results in a  
10:30:44 23 lot of different ways. And they meant what are  
10:30:50 24 ways to look at outliers?

10:30:53 25 So if there are homes that were  
10:30:54 26 much higher or much lower what are ways you  
10:30:57 27 could show that on a graph and maybe show  
10:31:00 28 somebody that these ones seem to be ones that  
10:31:03 29 were unusually high or unusually low.

10:31:07 30 And so this graph is showing, if  
10:31:09 31 you can imagine the graph that was on slide 21,  
10:31:15 32 that sort of upward spike at the very right.

1 This is just a magnification of it. So it's  
2 just the individual homes and their rate all  
3 shown on this graph. And you can see that  
4 they're the ones -- or 15 of them that were  
5 above that arbitrary 10 percent higher than the  
6 provincial rate.

7 Q. And thanks for that  
8 explanation about the title of the slide, but  
9 just to be clear, have the homes in this slide,  
10 demonstrated on this slide, have any of those  
11 had any additional monitoring as a result of  
12 this project?

13 A. So, no. Remember, this was  
14 all -- this was -- we considered this still a  
15 preliminary exercise that was really  
16 statistical in nature.

17 So no extra monitoring arose out  
18 of this project above and beyond the inspection  
19 regime that exists now.

20 Q. And I'm going ask you more  
21 questions about that and implementation later,  
22 but just for now if we go to the next slide,  
23 Slide 23, and if you can just briefly describe  
24 for us the difference between Slide 22 and 23  
25 and why this slide now has the same long-term  
26 care homes across the chart, but it now has  
27 these lines going up and down?

28 A. Right. So it's the same  
29 chart in that the same homes are shown and they  
30 have all the same predicted -- the same rates.  
31 The green bars are what's known as "confidence  
32 intervals". And because we're making

10:32:57 1 predictions there's always a degree of  
10:32:59 2 uncertainty associated with a prediction. So  
10:33:02 3 the confidence interval is the statistical  
10:33:04 4 technique that allows you to be really  
10:33:09 5 confident in the prediction or not confident.  
10:33:12 6 And you're not confident when the green bars  
10:33:16 7 are really wide; and you're more confident when  
10:33:20 8 they're really small.

10:33:26 9 So one thing I wanted to point  
10:33:27 10 out is it's -- you could rank all the homes and  
10:33:33 11 that's what that graph on Slide 20 did. But  
10:33:36 12 these -- what these confidence intervals do is  
10:33:39 13 anytime they overlap you're less confident.  
10:33:44 14 That number 10 is actually number 10 because it  
10:33:47 15 overlaps with number 9 so they are somewhat  
10:33:51 16 interchangeable. So that is one important  
10:33:53 17 point.

10:33:53 18 And another important point is  
10:33:55 19 when those green bars cross the benchmark or  
10:33:58 20 the provincial rate there is a chance that it  
10:34:03 21 could have been under that rate, again because  
10:34:06 22 we're dealing with predictions and so the model  
10:34:09 23 is doing its best to predict the future but  
10:34:13 24 you're always uncertain about the future.

10:34:15 25 And so when we see those  
10:34:19 26 intervals overlap either with each other or a  
10:34:25 27 benchmark, you can be less confident that  
10:34:27 28 that's the actual truth of the prediction.

10:34:29 29 Q. And is one of the factors  
10:34:32 30 that could influence the confidence interval  
10:34:34 31 being big or the line being long, the green  
10:34:35 32 line being long, the number of residents in the

10:34:36 1 home?

10:34:37 2 A. Absolutely. So when it's a  
10:34:42 3 big sample size, a big home, you're going to be  
10:34:46 4 more confident in the results. It's just kind  
10:34:48 5 of the nature of data.

10:34:50 6 And so one weakness of this  
10:34:54 7 approach is that small homes have really wide  
10:34:57 8 confidence intervals so you can't be -- you're  
10:35:00 9 less confident in the prediction when it's a  
10:35:03 10 small home because it's a smaller number of  
10:35:05 11 people and a smaller number of deaths.

10:35:06 12 Q. Thank you. Now, you said at  
10:35:09 13 the beginning that you couldn't find an example  
10:35:13 14 of this type of project, this prediction of  
10:35:16 15 mortality rates and comparing it to actual  
10:35:19 16 mortality rates having been done in the  
10:35:23 17 long-term care home context, to the best of  
10:35:24 18 your research before, but have you seen it done  
10:35:26 19 in the context of other settings other than  
10:35:28 20 long-term care?

10:35:28 21 A. I just want to clarify. We  
10:35:32 22 found researchers who did this as a research  
10:35:34 23 project but we didn't find a healthcare -- a  
10:35:43 24 group running a healthcare system that seemed  
10:35:45 25 to be doing this for this sector. It certainly  
10:35:49 26 could be happening but we didn't necessarily --  
10:35:51 27 we didn't find any examples of it.

10:35:54 28 So this approach, this  
10:35:55 29 standardized mortality ratio approach, it's  
10:35:58 30 used extensively throughout healthcare, it's  
10:36:02 31 used in manufacturing. It's just a  
10:36:04 32 well-accepted way to look at -- to try and find

1 outliers. So the group we talked about before,  
2 CIHI, they calculate it for hospitals across  
3 the country. And you'll find just hundreds and  
4 hundreds of examples of groups doing this to  
5 try and find outliers.

6 Q. And I'm going to ask you one  
7 more question as well about literature. And  
8 I'm going to ask that you have a look at an  
9 article called "Shipman Statistical Legacy".  
10 Is this an article that you're familiar with,  
11 Dr. Hillmer?

12 A. I am.

13 Q. And did this article or the  
14 research in this article play any role in your  
15 thinking about this project?

16 A. It did. At that original  
17 meeting in December that we described where  
18 Sharon Lee Smith asked, could we have done  
19 anything to detect this? I thought of some  
20 work that had been done by a British  
21 statistician, David Spiegelhalter, who looked  
22 at Harold Shipman and all the murders he  
23 committed in the U.K.

24 And I had seen David  
25 Spiegelhalter speak at an event years and years  
26 and years ago, and I found this article in the  
27 context of thinking about this project to  
28 remind myself about that lecture I had seen  
29 years and years ago.

30 Q. And is it fair that this is  
31 an article about a statistical analysis that  
32 was done of the Shipman murders to look in

1 hindsight about whether or not they could have  
2 been predicted?

3 A. Right. And you can see the  
4 different charts but particularly on -- I think  
5 it's page 12 of this article or it's referenced  
6 as 12 in the bottom left. It's a similar kind  
7 of chart where they pick a threshold and  
8 they're looking at rates. And they're just  
9 trying to think about could Shipman have been  
10 picked out from all the other providers in the  
11 country providing care any earlier?

12 Q. Thank you. And I should  
13 state for the record that it's document 71735.

14 MS. JONES: And, Madam  
15 Commissioner, if we could have  
16 this marked as the next exhibit,  
17 please?

18 THE COMMISSIONER: Yes, thank  
19 you. So that's Exhibit 171,  
20 "Shipman's Statistical Legacy."  
21 EXHIBIT NO. 171: Article  
22 Entitled "Shipman's Statistical  
23 Legacy."

24 BY MS. JONES:

25 Q. Now, if I can have you turn,  
26 Dr. Hillmer, to your affidavit, page 19,  
27 paragraph 48? And you set out here at  
28 paragraph 48 the findings of the project. And  
29 if you can summarize those for us?

30 A. So we talked about the  
31 different approaches we took and whether it was  
32 the traditional statistical one or the three

10:39:29 1 different machine-learning ones. So they all  
10:39:31 2 ended up having a similar set of predictor  
10:39:34 3 variables or risk factors whether it was a  
10:39:37 4 group of experts who are looking at literature  
10:39:39 5 and consulting their own kind of experience; or  
10:39:43 6 whether it was the machine going through a  
10:39:45 7 process to come up with a best set of  
10:39:47 8 predictors.

10:39:48 9 So it always gives us confidence  
10:39:50 10 when different methods end up with the same  
10:39:52 11 kind of predictor variables.

10:39:55 12 And it was also reassuring to us  
10:39:58 13 that they all had a similar mortality ratio at  
10:40:02 14 the end. And that ends up being shown really  
10:40:06 15 nicely in one of the slides that I think you  
10:40:08 16 will reference.

10:40:08 17 Q. And we can go to that slide  
10:40:11 18 first, but just for the sake of everyone in  
10:40:13 19 putting the Commissioner's notes, at 48 sub (a)  
10:40:17 20 there's a reference to "predictor variables."  
10:40:20 21 And just to clarify, we've used that phrase  
10:40:23 22 here but it would be the same as risk factors?

10:40:25 23 A. Synonymous in our minds, yes.

10:40:27 24 Q. So you've referenced then a  
10:40:31 25 slide that helpfully describes this. And I'll  
10:40:35 26 ask if we can pull up the PowerPoint Slide 51.

10:40:40 27 A. Right. So Slide 51, you see  
10:40:51 28 the different approaches along the bottom. So  
10:40:55 29 the logistic regression, the one on the far  
10:40:59 30 left, that was the traditional statistical  
10:41:01 31 approach; and then the ones on the right,  
10:41:06 32 DecisionTree, RandomForest, XGB were the three



1 different machine-learning models.

10:41:11 2 And what this graph is showing  
10:41:12 3 is where -- if you think of the top 50  
10:41:14 4 according to that mortality ratio, or the  
10:41:17 5 bottom 50, it shows where that model ranked  
10:41:20 6 that home.

10:41:20 7 Q. Just to be clear --

10:41:22 8 A. Each line is one home.

10:41:24 9 Q. Each line is one home. And  
10:41:27 10 sometimes they're really squished together but  
10:41:29 11 some of the lines you can see a little spread  
10:41:31 12 out. But if you think of each line as a home  
10:41:33 13 then carry on.

10:41:34 14 A. Right. Thank you. So each  
10:41:36 15 line is one home. So if you kind of start at  
10:41:38 16 the left and follow one line you'd see where it  
10:41:43 17 ranked, where logistic regression ranked it,  
10:41:48 18 and then where DecisionTree ranked it, and  
10:41:49 19 where RandomForest ranked it.

10:41:51 20 And what you're looking for here  
10:41:53 21 is you want them to be bunched together tightly  
10:41:58 22 because that means each model is giving you a  
10:42:01 23 similar result. And you can see in a few cases  
10:42:04 24 it diverges, which is expected I think, because  
10:42:08 25 the different models have different factors so  
10:42:11 26 they're going to make slightly different  
10:42:13 27 predictions, but on balance the tighter they  
10:42:16 28 are the better.

10:42:16 29 And what we took out of this was  
10:42:19 30 that each model, on balance, was ranking the  
10:42:22 31 homes similarly according to the expected -- to  
10:42:26 32 the prediction.

1 Q. So that the top 50 homes in  
2 terms of excessive mortality were relatively  
3 stable using all the different methods?

4 A. That's the conclusion we took  
5 out of this graph.

6 Q. And that's important, you've  
7 indicated, because it helps validate your  
8 model?

9 A. Right.

10 Q. Now, you have set out though  
11 in your affidavit, starting at paragraph 56,  
12 page 21, certain limitations and challenges.  
13 And you've touched on at least one of these as  
14 you've been giving your evidence this morning.

15 But if we can go through these  
16 now and look at paragraph 56 sub (a) first?  
17 One of the limitations you say here is that:

18 "The prediction algorithm [or  
19 the model] used to calculate the  
20 number of expected deaths is  
21 still at a research stage."

22 So what do you mean by that?

23 A. So when we went about this  
24 project we followed a pretty standard process  
25 where we consulted some literature. We went to  
26 the Chief Coroner and the Deputy Chief Coroner,  
27 Dr. Huyer and Dr. Jhirad. They gave us their  
28 expert opinion on the set of predictor -- or  
29 the set of risk factors we had selected. And  
30 so that gave us some expert opinion about the  
31 model.

32 But we say it's a research stage

10:44:15 1 because it hasn't gone through a full,  
10:44:19 2 thorough, rigorous review with a diverse group  
10:44:21 3 of experts who would include people who really  
10:44:24 4 know methods, and people who really know  
10:44:26 5 statistics, and clinical experts, and people  
10:44:31 6 who really understand how care is delivered in  
10:44:36 7 long-term care homes.

10:44:38 8 And you -- I personally would  
10:44:41 9 want that group to come together and have some  
10:44:43 10 time to review what we've done. A), they could  
10:44:49 11 tell us are there other ways you would do this  
10:44:52 12 that we didn't think of? And b), if this is  
10:44:58 13 deemed to be the way that is useful and  
10:45:00 14 effective, did we construct it and apply it in  
10:45:03 15 a way that makes sense.

10:45:04 16 Q. So is this sort of by way of  
10:45:06 17 a peer-review type process?

10:45:07 18 A. I think peer review is a good  
10:45:09 19 way to think about it. We always like to  
10:45:11 20 convene groups of experts together from  
10:45:14 21 different realms and they can criticize it and  
10:45:23 22 we can respond. And you end up with a better  
10:45:26 23 outcome through that process.

10:45:28 24 Q. Okay. And the experts you  
10:45:30 25 would want to bring together would be both  
10:45:32 26 statistical experts and sector-related experts?

10:45:37 27 A. Yes, I think so. Because a  
10:45:40 28 big part of this is at the end of the day it  
10:45:43 29 has to be believable. A group of experts need  
10:45:47 30 to come together and say, Are these expected  
10:45:50 31 numbers the predictions? Are they believable?  
10:45:54 32 Do they make sense to you? Can you imagine in

10:45:57 1 your mind how this model is producing these  
10:46:01 2 numbers? And we think of that as scientists as  
10:46:06 3 validity.

10:46:07 4 It has to have -- face validity  
10:46:09 5 for us is important. So the experts have to  
10:46:11 6 believe it. It has to make sense to them.

10:46:14 7 Q. And can you do that expert  
10:46:17 8 consultation now?

10:46:19 9 A. I mean, theoretically we  
10:46:21 10 could do it now. We've done a very light  
10:46:26 11 version of that to date. And so it started  
10:46:28 12 with Dr. Huyer and Dr. Jhirad and some  
10:46:34 13 consultations with them at the beginning stages  
10:46:36 14 that we were picking the right kinds of risk  
10:46:38 15 factors.

10:46:40 16 We had a -- we got together with  
10:46:42 17 some scientists from the Institute for Clinical  
10:46:46 18 Evaluative Sciences and they are a research  
10:46:48 19 institute that specializes in this kind of work  
10:46:52 20 looking at healthcare data, coming up with  
10:46:54 21 models. So they came together and gave us some  
10:46:58 22 advice, some suggestions, which we tried and  
10:47:01 23 none of them which improved the model so we  
10:47:04 24 didn't take their suggestions.

10:47:06 25 And then we went to a professor  
10:47:08 26 of computer science who really knows about  
10:47:11 27 machine learning and he gave us some advice.  
10:47:14 28 Again, their advice didn't improve the model so  
10:47:18 29 that was reassuring in that we had come up with  
10:47:21 30 a model that, at least from their limited  
10:47:23 31 review, they weren't able to come up with  
10:47:26 32 suggestions that kind of improved it.

10:47:30 1 But, in fairness, they didn't --  
10:47:32 2 we called them together and we presented and  
10:47:35 3 they -- it's not like they had a month to  
10:47:37 4 review our material and do a thorough review.

10:47:40 5 Q. Right. So you've done some  
10:47:42 6 expert consultation but you would like to do a  
10:47:45 7 final stage; is that fair?

10:47:45 8 A. A long-winded way for me to  
10:47:49 9 say yes.

10:47:49 10 Q. That's no problem. And just  
10:47:51 11 to be clear, is there anything preventing you  
10:47:53 12 from doing that final stage of expert  
10:47:55 13 consultation now?

10:47:58 14 A. So, again, theoretically no,  
10:48:04 15 but we need to know as a Ministry and -- as a  
10:48:09 16 Ministry, are we going to start pursuing this  
10:48:12 17 as a project? So we just haven't called  
10:48:15 18 together those -- that bigger group of experts  
10:48:19 19 until that decision has been made.

10:48:21 20 Q. Okay. And, again, I will ask  
10:48:24 21 you questions about the phase of the project at  
10:48:26 22 the end but that's helpful.

10:48:28 23 If you look now at 56(b), over  
10:48:31 24 the page, page 22? I think just to simplify  
10:48:41 25 (b) in terms of another limitation or challenge  
10:48:43 26 for the project is simply that there could be  
10:48:46 27 other risk factors that could also be taken  
10:48:48 28 into account?

10:48:51 29 A. That's exactly right. The  
10:48:53 30 MDS-RAI is very rich. I mean, you understand a  
10:48:58 31 person's functional status, their cognitive  
10:49:01 32 status, their clinical complexity so it does

1 include a lot. But that's not to say that  
2 there aren't other factors you could imagine  
3 that would be really important to include in  
4 this model.

5 So we always hold out the  
6 possibility that there are other factors that  
7 we've omitted just because they, are not  
8 captured or nobody had thought of them.

9 Q. So further factors that could  
10 just further refine the model; is that fair?

11 A. Further refine it or -- I'd  
12 say further refine it. I want to say when you  
13 put these models together they are making  
14 predictions so there's always some level of  
15 uncertainty. And you always look for factors  
16 that could maybe improve it or disprove it, for  
17 that matter.

18 Q. And then (c), that there's no  
19 perfect way to perfectly validate the  
20 information because you never have all the  
21 circumstances leading up to death, and that, to  
22 be fair, is just a challenge of any project  
23 like this. It's more of an observation about  
24 the nature of the project?

25 A. It is. We talk a little bit  
26 about in the affidavit this idea of an  
27 observational approach versus an experimental  
28 controlled approach. And we don't know cause  
29 and effect here. So we have a mortality ratio,  
30 we don't know why those deaths came about.

31 And it's a super important point  
32 that everybody needs to understand. We have no

1 idea what caused the death. The model is just  
2 predicting a number. And a), we don't know  
3 what that true number is, this model is just  
4 trying to tell us based on the data what that  
5 should be. And we don't know why the death  
6 came to be.

7 Q. And because there could be  
8 various factors that could result in an  
9 excessive death rate at a home; correct?

10 A. Exactly.

11 Q. So your model doesn't assist  
12 us with what those factors are, it just tells  
13 us that the home has that death rate?

14 A. Exactly right.

15 Q. And things like an infectious  
16 disease outbreak, for example, could cause an  
17 excessive rate of death?

18 A. Exactly.

19 Q. Or in theory, a healthcare  
20 serial killer like Ms. Wettlaufer or  
21 Dr. Shipman?

22 A. It just measures or tries to  
23 predict number of deaths. It makes no  
24 statement about how they came to be and it  
25 can't do that.

26 Q. Right. So it could be all  
27 sorts of different things. Other things as  
28 well like poor care at the home could influence  
29 the rate?

30 A. Any reason that somebody  
31 comes to die it can't tell you anything about  
32 those reasons.

1 Q. Fair enough. And so that was  
2 (d) on your list; (e) we've already talked  
3 about which is the fact that smaller homes will  
4 have a broader confidence interval just  
5 statistically?

6 A. Right. And so we had talked  
7 as a project team that if it's a very small  
8 home, 20 beds in a year-long period there might  
9 be one death or maybe no deaths. So the way  
10 small homes get treated in this model have to  
11 be treated so carefully because you just have  
12 less confidence in how the model can deal with  
13 them. And that's just a kind of a statistical  
14 reality that small sample sizes are unreliable.

15 Q. And finally you point out  
16 that some of the risk factors drawn from  
17 RAI-MDS data may reflect the status of dying.  
18 The fact that as someone is closer to dying  
19 they get more assessments and that could  
20 influence the data somewhat?

21 A. Right. As a resident comes  
22 closer to death their status is changing and  
23 that is one of the triggers for a new  
24 assessment.

25 So those residents will have  
26 more frequent assessments which means the data  
27 is more frequent than a resident who maybe had  
28 a -- their last assessment was 80 or 90 day  
29 ago. Like their last quarterly assessment.  
30 And so just inherently the model is thinking  
31 about more recent data for those patients. So  
32 it's just a potential source of bias and,



10:53:18 1 again, just an inherent limitation of this  
10:53:21 2 approach.

10:53:21 3 Q. And then if you turn now back  
10:53:23 4 in your affidavit to paragraph 50, which is on  
10:53:29 5 page 20, you conclude or you have concluded  
10:53:39 6 that:

10:53:41 7 "Despite these limitations that  
10:53:42 8 are inherent in the project, the  
10:53:43 9 project has produced a  
10:53:45 10 methodologically sound,  
10:53:47 11 potentially valuable approach to  
10:53:49 12 calculating excessive rates of  
10:53:50 13 mortality."

10:53:52 14 And so on what basis have you  
10:53:56 15 concluded that this is a methodologically sound  
10:53:58 16 approach?

10:53:59 17 A. So in -- at various points  
10:54:01 18 we've talked about these factors but we've  
10:54:06 19 talked to a small group of experts who have  
10:54:10 20 given us suggestions that we've incorporated.

10:54:15 21 We saw that each model had  
10:54:19 22 similar risk factors. So that was  
10:54:21 23 confidence-inspiring for us. We see that the  
10:54:24 24 ranking across the models is relatively stable  
10:54:28 25 and, again, that measure of model performance  
10:54:34 26 was really, really good. And so from a pure  
10:54:39 27 kind of technical perspective that's how we  
10:54:42 28 came to that conclusion.

10:54:43 29 Q. Okay, thank you. So that  
10:54:45 30 when you say in your affidavit that the results  
10:54:47 31 are preliminary you're referring to the fact  
10:54:49 32 that you now want to go on and just do this

1 extra step of the extra expert consultation?

2 A. That's right. And it very  
3 well could be through that consultation that  
4 you make some fundamental changes, or a group  
5 of experts come to the conclusion that those  
6 limitations we've talked about are too limiting  
7 and you might not want to proceed. But at this  
8 point it's always a balance.

9 We think it's methodologically  
10 sound from a technical perspective but there  
11 are lots of other factors to consider too.

12 MS. JONES: I'm going to ask you  
13 now to turn to Slide 20.

14 Madam Commissioner, I'm about to  
15 turn to a slightly different  
16 area which is the analysis  
17 relating to the Wettlaufer  
18 offences. If this is a good  
19 time for the break? Or I can  
20 push on.

21 THE COMMISSIONER: I think this  
22 would be a good time. Thank  
23 you.

24 -- RECESSED AT 10:55 A.M.

25 -- RESUMED AT 11:12 A.M.

26 THE COMMISSIONER: Go ahead.

27 BY MS. JONES:

28 Q. Dr. Hillmer, we were looking  
29 at the PowerPoint, and I'd asked to look at  
30 Slide 20. Okay.

31 And is it fair to say that  
32 Slide 20 is part of your team's retrospective

11:13:08 1 analysis of whether Elizabeth Wettlaufer's  
11:13:11 2 offenses could or would have been detected had  
11:13:15 3 the project been in place at the relevant time?

11:13:20 4 A. That's exactly right, and we  
11:13:22 5 have the similar results for every other home  
11:13:24 6 as well. This is -- we showcase this for that  
11:13:27 7 exact reason, though.

11:13:29 8 Q. Okay. And it's only of  
11:13:31 9 Caressant Care; why is that?

11:13:32 10 A. That was where a large number  
11:13:37 11 of the murders occurred. And while we were  
11:13:40 12 doing this project, the source of information  
11:13:44 13 we had around where the murders had occurred  
11:13:46 14 and the timing was coming from the media. We  
11:13:49 15 didn't have any other source of information at  
11:13:54 16 that point, so that was why we had picked  
11:13:57 17 Caressant.

11:13:58 18 Q. Okay.

11:13:59 19 A. To highlight.

11:14:00 20 Q. Right, okay. And then if you  
11:14:01 21 look at the top under "Three Periods," am I  
11:14:04 22 correct that you ran the model for three  
11:14:09 23 12-month periods?

11:14:10 24 A. That's right. So you'll  
11:14:12 25 remember that we needed 12 months to be able to  
11:14:16 26 observe enough deaths to make the model  
11:14:18 27 reliable, and so these are three different  
11:14:21 28 periods. And you'll see, you know, the first  
11:14:24 29 period 2011 April to 2012 March, that  
11:14:27 30 represents a fiscal year for the Ministry, so  
11:14:31 31 that's typically what we use for our analysis  
11:14:35 32 rather than a calendar year.

1 Q. Okay. And did you pick these  
2 periods of time because of your understanding  
3 that these periods of time were when the  
4 murders took place?

5 A. Yes.

6 Q. Okay. And we do know that  
7 there were crimes earlier, and the death of  
8 Mr. Silcox in 2007. Why does your model not go  
9 back earlier?

10 A. It was only in 2010 when the  
11 RAI-MDS was fully implemented across the  
12 province, and so that's when we started because  
13 it is -- this model is completely dependent on  
14 the RAI-MDS assessment data.

15 Q. Okay. And if we look at this  
16 slide, there's a language on the left-hand side  
17 just below the dark purple box which says  
18 "core set"?

19 A. Right. So you'll remember we  
20 described the risk factors we talked about. So  
21 the core set represents the risk factors listed  
22 on the pertinent page of this presentation, and  
23 so when using the core set, this is where  
24 Caressant -- these are the results for  
25 Caressant Care for those three time periods  
26 using the core set of risk factors.

27 Q. Okay. And this is the  
28 traditional statistical model; is that fair?

29 A. That's a very good point.  
30 This is the results out of the traditional  
31 statistical model, and it's highlighted first  
32 because that's the way the project unfolded.

1 We started with a traditional statistical  
2 model, and then we moved to the machine  
3 learning, so it follows the pattern of how the  
4 project unfolded.

5 Q. Okay. And if we look at --  
6 there's a box in green and shaded in light  
7 blue. You had referenced earlier that in the  
8 traditional statistical model, you concluded  
9 that the core set of risk factors plus certain  
10 additional variables were the most accurate for  
11 that model?

12 A. That's right. So the  
13 highlighted box was the one that had that best  
14 metric of model performance, so you'll again  
15 see the results for the three time periods for  
16 that model. So that's the one we choose the  
17 highlight.

18 Q. Okay. And have you then  
19 compared this version of the traditional  
20 statistical model results with the machine  
21 learning approach, and are they similar  
22 results?

23 A. Well, you'll see in the  
24 affidavit, the last page, I think, has a table  
25 which compares the results from the different  
26 methods.

27 Q. Okay. And did you conclude  
28 that they were similar across the methods?

29 A. Well, we did. It might be  
30 helpful just to look at it right now. On  
31 page 25, you'll see a table with "CCW" for  
32 Caressant Care, and the method -- these refer

11:17:44 1 to the different methods. There were four  
11:17:47 2 methods. Only three are highlighted.

11:17:50 3 The RandomForest had a very  
4 similar if not identical ranking to the  
5 DecisionTree, so that's why we've only  
6 characterized the one there, but Logistic being  
11:18:01 7 the traditional statistical model and then the  
11:18:02 8 Extreme Gradient Boost being one of the machine  
11:18:05 9 learning methods.

11:18:06 10 So you can follow along starting  
11:18:09 11 in 2010. These are all represent fiscal years  
11:18:14 12 again, so starting in April, going to March of  
11:18:17 13 the next year. And you can see they're all,  
11:18:22 14 you know, within sort of 10 or 15 places of one  
11:18:26 15 another with a few exceptions, but when you  
11:18:34 16 think of 600 homes, we concluded that they were  
11:18:37 17 broadly similar rankings.

11:18:37 18 Q. Okay.

11:18:38 19 A. But again, the Extreme  
11:18:40 20 Gradient Boost being the one that we thought  
11:18:42 21 was the most accurate predictor.

11:18:43 22 Q. Okay, perfect. And I'm going  
11:18:45 23 to ask you what these numbers represent, what  
11:18:47 24 these rankings represent. So if we go back, I  
11:18:51 25 think it's probably the easiest to do it on the  
11:18:57 26 slide, which is Slide 20.

11:18:58 27 And do the numbers that we were  
11:19:01 28 just looking at, those ranking numbers, are  
11:19:04 29 they the same type of value as -- if we're  
11:19:08 30 looking in the shaded box -- the 64, the 61,  
11:19:15 31 and the 64?

11:19:15 32 A. The rankings are the -- the

11:19:16 1 numbers are the same. So the way we  
11:19:22 2 constructed this was that the home that had the  
11:19:24 3 highest observed over-expected ratio was No. 1,  
11:19:29 4 and then all the way down to 630 plus. So when  
11:19:33 5 you see a number that is closer to one, it had  
11:19:33 6 a higher number of observed deaths than were  
11:19:38 7 predicted.

11:19:39 8 Q. Okay. And one of the ways  
11:19:41 9 you explained this to me which helped me keep  
11:19:44 10 this in mind is the No. 1 home would be the  
11:19:48 11 home with the highest standardized mortality  
11:19:53 12 ratio?

11:19:53 13 A. Right. You know, it would  
11:19:54 14 be -- I don't know what the exact ratio was,  
11:19:56 15 but it would be much higher than one.

11:19:58 16 Q. Right. So the home that is  
11:20:00 17 one would have the highest excess level of  
11:20:03 18 deaths, and the home that was 633 would  
11:20:08 19 actually have significantly less deaths than  
11:20:10 20 your model would have anticipated?

11:20:13 21 A. Right.

11:20:13 22 Q. So in this model, what does  
11:20:17 23 this tell us about -- if you take us through  
11:20:22 24 the data on this model, what does this tell us  
11:20:24 25 about these three time periods and the  
11:20:32 26 mortality ratio in the home during these three  
11:20:35 27 time periods?

11:20:36 28 A. I'd ask everybody to look at  
11:20:38 29 the blue box just so that we're looking at the  
11:20:40 30 same row. The first time period, the fiscal  
11:20:44 31 year 2011, we'll see a number of 64. And then  
32 if you keep going towards the right, you'll see

11:20:51 1 that that 64 gets generated from -- that there  
11:20:56 2 were 55 observed deaths in the home over that  
11:21:00 3 12-year -- 12-month period, excuse me, and then  
11:21:01 4 the model had predicted roughly 39 predicted  
11:21:06 5 deaths.

11:21:07 6 So we see it's over -- more  
11:21:09 7 people did die than the model predicted, and  
11:21:14 8 once you compare that to all the other homes,  
11:21:18 9 it was No. 64 of 630 plus or so.

11:21:23 10 Q. Okay. And the number right  
11:21:25 11 beside that 58 over 38 is 1.41, and that would  
11:21:30 12 be the standardized mortality ratio?

11:21:32 13 A. Right. Thank you for that.  
11:21:34 14 Yes.

11:21:35 15 Q. And you have concluded in  
11:21:37 16 your affidavit, having done this analysis, that  
11:21:42 17 it would have been -- the words you use are  
11:21:45 18 "virtually impossible" having done this  
11:21:48 19 analysis to have detected Ms. Wettlaufer's  
11:21:52 20 offenses from a data perspective.

11:21:54 21 Can you help us with that given  
11:21:55 22 the data that we see here and the fact that  
11:21:59 23 there was a higher number of deaths than  
11:22:02 24 anticipated over these time periods?

11:22:05 25 A. Sure. So I mean, as we  
11:22:07 26 talked about before, there were 300 homes that  
11:22:11 27 had more people that died than were predicted  
11:22:15 28 by the model.

11:22:16 29 So just because there are more  
11:22:19 30 people that did die than predicted isn't  
11:22:25 31 indicative of anything related to a murder or  
11:22:28 32 any kind of intentional bad act. I think it's



11:22:32 1 most informative to look at page 25 of the  
11:22:35 2 affidavit to get a sense of why we came to that  
11:22:39 3 conclusion.

11:22:40 4 Q. And this is back to the  
11:22:41 5 chart?

11:22:41 6 A. Back to the chart. So --

11:22:43 7 Q. And actually, Dr. Hillmer, in  
11:22:46 8 case people are comparing these two, there's a  
11:22:49 9 slight discrepancy if we look at the logistic  
11:22:53 10 model number and the numbers on Slide 20 for  
11:22:58 11 2011, for example.

11:23:00 12 You've provided me with the  
11:23:04 13 explanation it's very complicated, but just in  
11:23:06 14 a nut shell, can you explain why these numbers  
11:23:10 15 are slightly different from one another?

11:23:13 16 A. I will do my best. So you  
11:23:14 17 have to -- any time you develop a model, you  
11:23:18 18 have to train it. You have to -- the model  
11:23:21 19 needs to learn, and it needs to learn how to  
11:23:25 20 predict effectively. So you always need some  
11:23:28 21 small sample of data for the model to learn so  
11:23:32 22 that it can understand I'm predicting  
11:23:36 23 somebody's dying, and then I see that they're  
11:23:40 24 actually -- that they did die.

11:23:42 25 So that little sub-sample of  
11:23:46 26 data is often called training data or learning  
11:23:49 27 data. And so the way the project team  
11:23:54 28 constructed this model was that in any given  
11:23:57 29 year, a small random of data is selected for  
11:24:00 30 the model to learn, and the rest of the data is  
11:24:04 31 used to generate the predictions.

11:24:06 32 So every time the model is run,

11:24:08 1 there are going to be small little differences  
11:24:11 2 in the number of predicted deaths, and they're  
11:24:14 3 going to be minute, and you can see the  
11:24:19 4 logistic here for 2011 was 70, and it's 64  
11:24:28 5 here.

11:24:28 6 So that difference of six might  
11:24:32 7 seem, oh, well, that's -- is that a big  
11:24:35 8 difference? It's not a big difference because  
11:24:37 9 it probably resulted from, you know, the  
11:24:39 10 expected deaths changing from, for example,  
11:24:42 11 38.9 to 38.7. So that's why there's going to  
11:24:48 12 be small differences when this model is run.  
11:24:51 13 You always have to have the training data.  
11:24:56 14 It's just a requirement of this kind of model.

11:24:57 15 Q. Perfect. That's very  
11:24:58 16 helpful. And then you were going to tell us  
11:25:00 17 through looking at this chart why you concluded  
11:25:03 18 that Ms. Wettlaufer's offenses in particular  
11:25:05 19 could not have been detected?

11:25:08 20 A. Yeah. So we'll look at the  
11:25:09 21 chart and then we'll look at the PowerPoint  
11:25:11 22 because I think you can get insights from both.

11:25:14 23 Because you could imagine  
11:25:16 24 looking at a home that was No. 1 or No. 15,  
11:25:20 25 very high ranking in that it had many more  
11:25:25 26 people that did die than expected. So that  
11:25:29 27 might be one clue that it was an outlier.

11:25:32 28 And so in any given year,  
11:25:36 29 Caressant Care is, you know, 65, 73. I'm just  
11:25:40 30 reading across the table right now, across the  
11:25:44 31 years. You know, in 2014, 169, 186.

11:25:48 32 So in our opinion, it didn't

1 necessarily stand out as top 20 or 50, so that  
2 might not have alerted anybody to anything that  
3 was happening. And it doesn't change. So if  
4 we think of 2010 as before Elizabeth Wettlaufer  
5 is there, it's 65. It actually improves a  
6 little bit during the years that she is there,  
7 at least from these rankings.

8 Q. And just to be clear, she's  
9 there, but I think you're referring to the  
10 years of the murders.

11 A. Sorry.

12 Q. That's all right.

13 A. Yes, yes.

14 Q. But carry on.

15 A. Yes. Thank you for that  
16 clarification. And then after the period from  
17 my understanding of when she was not there, the  
18 ranking fluctuates up to 160 but then down to  
19 78 again several years after her departure.

20 So there wasn't anything that  
21 suggested to us that the rank was hundreds and  
22 hundreds of places different. So we just  
23 didn't think it would have tripped any alerts  
24 in anybody's mind.

25 Q. Okay.

26 A. And the other point I'd make  
27 if we could go back to Slide 20, if we look --  
28 so 64 -- I'm going to -- if we go back to the  
29 blue box, period of 2011, that's the first row.  
30 It has the rank of 64.

31 But if you look at that, that is  
32 55 actual deaths in that year, and if one or

1 two of them were related to murders that  
2 weren't there, that would really not change  
3 their ranking substantially. So we come to  
4 this conclusion that they were so infrequent  
5 and spread out over years that any given year  
6 period, the ranking wouldn't have changed  
7 substantially.

8 Q. Okay.

9 A. So it's just from a  
10 statistical perspective, the number of deaths  
11 resulting from her were very small --

12 Q. Right.

13 A. -- from the context of there  
14 being, you know, over 50 deaths from all the  
15 reasons that people came to die in that home.

16 Q. Okay. So this is a function  
17 of the particular distribution of the deaths in  
18 this particular case?

19 A. So it's a function that there  
20 were 50 plus deaths regardless of what  
21 Elizabeth Wettlaufer did, and in any given  
22 year, the number that she contributed to the  
23 observed would have been one, two, or three,  
24 which wouldn't have changed the ranking  
25 substantially.

26 And because of that, it wouldn't  
27 have vaulted that home into the number 2010 or  
28 one (ph) positions that might have made  
29 somebody think, oh, that's something worthy of  
30 attention.

31 Q. Okay. But if there had been  
32 a higher number of unexpected deaths, that

11:28:55 1 might have influenced the model more so that it  
11:28:58 2 might have vaulted up to the top 20 or the top  
11:29:01 3 15?

11:29:02 4 A. Entirely possible. And so  
11:29:05 5 the thinking about the Shipman example, I think  
11:29:10 6 the British statistician was able to conclude  
11:29:15 7 that somebody could have found his murders  
11:29:18 8 sooner because there were hundreds and hundreds  
11:29:22 9 of murders so that the line that represented  
11:29:25 10 his practice pattern was so much different than  
11:29:37 11 everybody else's.

11:29:38 12 And so that's what this project  
13 was about, and we end up concluding that that  
14 pattern is not that much different because it  
11:29:39 15 was only ever one, two, or three. Not to say  
11:29:42 16 that if there were many more that might have  
11:29:46 17 tripped whatever threshold you established, but  
11:29:50 18 in this case, no.

11:29:51 19 Q. Okay, perfect. And we know,  
11:29:55 20 for example, that there was a particular time  
11:29:57 21 in October and November 2011 where three  
11:30:04 22 murders took place over a period of less than  
11:30:09 23 two months.

11:30:12 24 So you've given us some evidence  
11:30:14 25 so far about challenges about looking at  
11:30:16 26 smaller data sets, but wouldn't it be a good  
11:30:20 27 idea to at least try and see if you could look  
11:30:23 28 for clusters or spikes in death over smaller  
11:30:29 29 periods of time, whether that would increase  
11:30:31 30 the sensitivity of the model?

11:30:34 31 A. So it's always tough  
11:30:37 32 looking -- I mean, when you look backwards,

11:30:40 1 knowing what you know now, you could apply the  
11:30:44 2 model to a very small period and maybe expect  
11:30:46 3 to get something, but going forward, you don't  
11:30:50 4 have any sense of when those clusters are  
11:30:53 5 happening.

11:30:54 6 I mean, I think, conceivably,  
11:30:56 7 you could look at a big home and understand  
11:30:59 8 what the death pattern was and maybe  
11:31:02 9 specifically look. But our idea always was  
11:31:09 10 that this model, you know, if it was running  
11:31:13 11 continuously -- and the way we thought it would  
11:31:16 12 run was each new quarter, we would get new  
11:31:20 13 information and we would run a new 12-month  
11:31:23 14 period that dropped the quarter from the  
11:31:27 15 previous 12-month period.

11:31:30 16 And so the idea that then we  
11:31:34 17 would have some way of knowing where those  
11:31:37 18 clusters happened amongst 633 homes in any  
11:31:46 19 given month, it's a challenging endeavor. And  
11:31:49 20 I think you want this model to have enough  
11:31:53 21 deaths for it to be valid.

11:31:56 22 So I think that's -- you know, I  
11:31:58 23 think for those reasons, it's difficult to  
11:32:04 24 imagine applying it to a very small period  
11:32:06 25 because although one home might have had a  
11:32:10 26 small cluster, this model works on all homes,  
11:32:13 27 and that cluster might have only happened in  
11:32:15 28 one.

11:32:15 29 So I think that's probably my  
11:32:17 30 best explanation in that this model will  
11:32:20 31 produce a home-specific result, but it only  
11:32:23 32 does it in the context of running it for all

1 deaths in the province for all homes. And if  
2 you start to apply it to a particular home for  
3 a particular month, it just won't give you  
4 stable results, and so all the rest of the  
5 rankings are going to be unstable as well.

6 Q. Okay. And in terms of the  
7 data that you have, do you have data that would  
8 allow you to drill down further on other  
9 features of the deaths in a home, like whether  
10 they occurred on the night shift versus the day  
11 shift?

12 A. We don't have that data. We  
13 just have that the death occurred and the date.

14 Q. Okay. And what about which  
15 floor the deaths took place on?

16 A. No.

17 Q. And what about what  
18 caregivers were providing care around the time  
19 of death; do you have that data?

20 A. We don't have that data, and  
21 I think even if we did, it would produce an  
22 enormously complex model. You could imagine --  
23 again, we're talking about 12-month period, 633  
24 homes, how many data points that would  
25 represent, and not having gone through the  
26 exercise, I don't know if it would be valuable.  
27 But my sense having done this before is that it  
28 would introduce a ton of complexity, and we  
29 would have to do it to see if it was valuable,  
30 but I would be skeptical that it would be a  
31 valuable way to do it.

32 Q. And do you have a source of

11:33:57 1 that data in any event, the source of the data  
11:34:01 2 about what caregivers were providing care, time  
11:34:03 3 of day, floor? Do you have a source?

11:34:06 4 A. So we do not have a source,  
11:34:10 5 and, again, I would be skeptical that that much  
11:34:15 6 extra data would be a useful exercise.

11:34:18 7 Q. Okay. So overall, then,  
11:34:21 8 Dr. Hillmer, before we turn to what's been done  
11:34:24 9 with the project, is it fair to say that your  
11:34:28 10 view is that this is a potentially valuable  
11:34:31 11 tool to detect or flag excessive deaths in  
11:34:36 12 long-term care homes?

11:34:36 13 A. I do believe it is a  
11:34:39 14 potentially valuable statistical tool that can  
11:34:43 15 look for patterns because it takes into account  
11:34:48 16 all the residents that are in homes in any  
11:34:53 17 given year, so it's comprehensive, and  
11:34:55 18 everybody's considered all homes, and it can be  
11:34:58 19 run routinely.

11:35:00 20 And we see that it does seem to  
11:35:07 21 identify a list of 20, 30, 40 homes that look  
11:35:12 22 different statistically than others. That's  
11:35:16 23 not to say we have any idea that there's  
11:35:22 24 anything going on in those homes that would be  
11:35:25 25 unusual, but again, just from that statistical  
11:35:28 26 perspective, they seem to be different, and  
11:35:34 27 that might be a way you could proceed with some  
11:35:34 28 subsequent step.

11:35:36 29 Q. Okay. And so some subsequent  
11:35:37 30 step in theory could be, for example, to look  
11:35:39 31 at a top -- whatever your benchmark is. Let's  
11:35:43 32 say the top 20, top 30 homes and try to figure



1 out why their death rate is significantly  
11:35:50 2 higher than you expected?

11:35:50 3 A. Right. I mean, you're  
11:35:52 4 exactly right. One possible explanation is we,  
11:35:57 5 you know, we've talked about before an  
11:35:59 6 infectious disease outbreak, influenza. You  
11:36:07 7 might find out that after talking to the care  
11:36:09 8 providers in that home that there were aspects  
11:36:11 9 of the residents' health or the complexity of  
11:36:15 10 their health that weren't effectively  
11:36:15 11 incorporated. And again, that's what you'd  
11:36:18 12 hope the expert validation would help you with.

11:36:21 13 But you always hold out the  
14 possibility that there's some factor about the  
11:36:26 15 resident's health that you weren't able to  
11:36:26 16 account for in the model. So without even  
11:36:29 17 thinking about anything that the home is doing  
11:36:32 18 or not doing, it just -- it might be that the  
11:36:38 19 model isn't effectively doing its prediction.

11:36:41 20 Q. That's fair. But it could  
11:36:42 21 also be -- you've mentioned infectious disease  
11:36:45 22 outbreak. It could also reflect if someone  
11:36:47 23 went into the home and the fact that poor care  
11:36:50 24 was being provided in the home?

11:36:51 25 A. Like I say before, it  
11:36:54 26 could -- it would reflect any number of things  
11:37:00 27 from potentially poor care to resident  
11:37:01 28 complexity that wasn't being captured to, you  
11:37:05 29 know, malicious actions of somebody to -- I  
11:37:10 30 could probably speculate a big long list, and  
11:37:13 31 that's the point, that this model doesn't tell  
11:37:16 32 you anything about that.

1 Q. Right.

11:37:17 2 A. You have to go and understand  
11:37:20 3 what's happening in that home to be able to  
11:37:22 4 make any kind of conclusion.

11:37:24 5 Q. Okay. Thank you,  
11:37:27 6 Dr. Hillmer. So now I'm going to ask you some  
11:37:29 7 questions about what happened with the work  
11:37:30 8 that you've done and the presentation.

11:37:33 9 So the PowerPoint presentation  
11:37:34 10 is dated in September 2017. At that time or  
11:37:39 11 around that time, did you present the findings  
11:37:43 12 of your model to anyone?

11:37:44 13 A. We did. The date of  
11:37:48 14 September, I think, reflects when we sort of  
11:37:54 15 wrapped everything up, and we haven't -- we  
11:37:58 16 haven't run the model or done any enhancements  
11:38:02 17 or anything since September.

11:38:04 18 So in the summer of 2017, we did  
11:38:09 19 sit down with Dr. Huyer. Originally, the  
11:38:17 20 meeting was set up such that Brian Pollard, the  
11:38:19 21 assistant deputy minister of the long-term care  
11:38:23 22 homes division was there, Dr. Huyer, and I --  
11:38:29 23 at the moment, I am just drawing a blank on  
11:38:33 24 whether Dr. Jhiard was at that meeting as well,  
11:38:36 25 but Dr. Huyer and Brian Pollard were there for  
26 sure.

11:38:38 27 Brian Pollard had to step out,  
28 so we went through the presentation with  
29 Dr. Huyer. He was really interested in the  
11:38:59 30 project. He was excited and enthusiastic about  
11:39:03 31 its possibilities, and we left it at that. I  
11:39:06 32 mean, he was excited, and so we didn't get into

11:39:11 1 specifics about any kind of interaction between  
11:39:14 2 the Ministry of Health and the Chief Coroners'  
11:39:18 3 Office about how this might be used, although  
11:39:23 4 that is a possible way this could happen.

11:39:26 5 And then about two weeks later,  
11:39:29 6 members of my team went to see Brian Pollard  
11:39:32 7 and did the same presentation for him, and I  
11:39:36 8 think he thought the same thing: Like, this is  
11:39:41 9 a potentially useful additional to all the  
11:39:44 10 other means of surveillance that they have in  
11:39:46 11 place right now.

11:39:46 12 And one interesting outcome of  
11:39:48 13 that was that the team shared a list of the top  
11:39:52 14 20 homes that the model produced, and after  
11:39:56 15 looking at the list, Brian Pollard thought, you  
11:39:59 16 know, these are homes that have come to our  
11:40:02 17 attention through our existing surveillance  
11:40:05 18 mechanisms.

11:40:05 19 So that gave us a little bit of  
11:40:10 20 confidence that -- it was not necessarily  
11:40:12 21 telling them anything that they didn't know,  
11:40:14 22 although from a different perspective, in  
11:40:17 23 that -- you know, they had whatever mechanisms  
11:40:19 24 they had in place to intervene or not; whatever  
11:40:27 25 the outcomes of their surveillance regime are,  
11:40:31 26 that they had enacted those already.

11:40:36 27 Q. So then, the impression was  
11:40:36 28 that --

11:40:36 29 MR. GOLDEN: Sorry. I'm very  
11:40:38 30 concerned about what's happening  
11:40:40 31 here. We're getting hearsay  
11:40:42 32 evidence about what someone in a

11:40:44 1 meeting said about how one set  
11:40:44 2 of data correlated with another.  
11:40:46 3 Now, Mr. Pollard sat in the  
11:40:51 4 courtroom in St. Thomas day  
11:40:51 5 after day. If he wanted to give  
11:40:52 6 that evidence and the Ministry  
11:40:53 7 wanted to lead that evidence,  
11:40:54 8 they should have. But we've  
11:40:55 9 heard very clearly from this  
11:40:57 10 witness that the project that he  
11:40:59 11 was involved with was a  
11:41:01 12 statistical project and that he  
11:41:02 13 is telling the Commission and  
11:41:04 14 the public very clearly, you  
11:41:06 15 can't use this statistical  
11:41:08 16 information to draw conclusions  
11:41:10 17 about quality of care.  
11:41:12 18 And now, indirectly to have some  
11:41:16 19 hearsay evidence about what  
20 someone else in the Ministry  
11:41:20 21 said correlated with their data  
11:41:22 22 is not right.  
11:41:25 23 MS. JONES: I think my friend's  
11:41:27 24 concern is fair to a certain  
11:41:29 25 extent, and I don't think that  
11:41:30 26 evidence as to whether or not  
27 these lists directly line up  
11:41:34 28 should be admissible for the  
11:41:34 29 truth of its contents.  
11:41:35 30 But I think to the extent that  
11:41:37 31 the person in charge of the  
11:41:38 32 project understood that there

11:41:40 1 was some overlap, that that's  
11:41:41 2 part of the factual matrix in  
3 which implementation, decisions,  
11:41:46 4 and discussions would take  
11:41:48 5 place -- but I understand my  
11:41:50 6 friend's point, and I don't  
11:41:52 7 think it should go in to say  
11:41:53 8 that there's a complete lineup  
11:41:53 9 between these two lists unless  
11:41:56 10 Dr. Hillmer has himself done  
11:41:58 11 that analysis.  
11:41:59 12 THE COMMISSIONER: I am  
11:42:01 13 concerned about the factual  
11:42:03 14 foundation; I don't think it has  
11:42:05 15 been laid, and I understand the  
11:42:06 16 limited way in which you're  
11:42:08 17 introducing it.  
11:42:09 18 Given it's a Public Hearing and  
11:42:11 19 it's not a courthouse, we have  
11:42:12 20 to be careful that that  
11:42:14 21 information is understood in  
11:42:15 22 that proper context. Are you  
11:42:17 23 able to pass along to another  
11:42:20 24 area without --  
11:42:22 25 MS. JONES: Absolutely.  
26 THE COMMISSIONER: All right.  
27 Thank you.  
28 BY MS. JONES:  
11:42:23 29 Q. No problem at all. Okay. So  
11:42:27 30 at that meeting, and we won't go back over that  
11:42:31 31 evidence, were any decisions -- or over the two  
11:42:34 32 meetings, rather, over that summer, were any

11:42:37 1 decisions made by you or Mr. Pollard or  
11:42:44 2 Dr. Huyer about next steps in this project or  
11:42:47 3 the implementation of this project?

11:42:49 4 A. No.

11:42:49 5 Q. But there were discussions  
11:42:51 6 about the fact that it was a potentially  
11:42:55 7 valuable addition sort of to the arsenal that  
11:42:59 8 the Ministry has in looking at long-term care  
11:43:04 9 homes?

11:43:04 10 A. Yes, but bearing in mind what  
11:43:06 11 that looked like and how to account for the  
11:43:09 12 different limitations we talked about and how  
11:43:13 13 they would be accounted for. That discussion  
11:43:19 14 hadn't happened, and, you know -- so I just  
11:43:21 15 want to say that potentially useful from a  
11:43:24 16 methods' perspective, but applying it is a  
11:43:29 17 whole different discussion. And the  
11:43:31 18 discussions we had never went beyond us saying  
11:43:35 19 there seems like there's some merit here.

11:43:37 20 Q. Okay. And the discussions at  
11:43:39 21 the meeting, and what about after those  
22 meetings in the summer of 2017? Have there  
11:43:43 23 been further discussions about the  
11:43:44 24 implementation of this project, what it would  
11:43:47 25 look like, who could implement the project?

11:43:50 26 A. Not to any degree of  
11:43:55 27 specificity. I've had some -- what I would  
11:44:01 28 characterize as hallway conversations with  
11:44:04 29 Brian Pollard about what we might do with this  
11:44:08 30 or not do with this. So I think that's the  
11:44:10 31 extent of it. Nothing formal.

11:44:13 32 Q. And why is that, Dr. Hillmer?

11:44:17 1 Why hasn't the project advanced past the fall  
11:44:22 2 of 2017?

11:44:23 3 A. Well, I think it's a fair  
11:44:25 4 question, and I think to some extent, there  
11:44:29 5 have been some fairly significant demands on  
11:44:32 6 the Ministry's time. Whenever there's a  
11:44:35 7 provincial election, the government starts to  
11:44:40 8 do an enormous amount of work to prepare for a  
11:44:44 9 new government coming in. So that takes up a  
11:44:48 10 huge amount of time across everybody's  
11:44:52 11 portfolio.

11:44:52 12 And then again, you know, when  
11:44:53 13 that new government comes into power, there's a  
11:44:57 14 whole rhythm of ensuring the new government is  
11:45:03 15 prepped to do their job.

11:45:04 16 This Inquiry has consumed an  
11:45:07 17 enormous amount of time of the Ministry  
11:45:07 18 prepping for all the proceedings, and I think  
11:45:11 19 those -- I would attribute it to those demands  
11:45:16 20 plus others that we haven't been able to, you  
11:45:20 21 know, sit down and have a formal discussion and  
11:45:23 22 say, what are we going to do with this or not,  
11:45:26 23 if anything.

11:45:27 24 Q. Okay. And in the meantime,  
11:45:31 25 before there's those formal discussions and  
11:45:34 26 further implementation decisions, has the  
11:45:36 27 Ministry taken any steps to look -- to take any  
11:45:39 28 further steps to look at the homes that were  
11:45:41 29 identified in the slides as having particularly  
11:45:44 30 excessive rates of mortality?

11:45:46 31 A. Not beyond the existing  
11:45:51 32 mechanisms that the Ministry has in place for

1 surveillance inspection and intervention  
2 according to parameters set out in the  
3 legislation and regulations.

4 Q. And have you yourself --  
5 actually, I'll take that question back.  
6 There's one slide, 63, I just want to make sure  
7 we cover off, which is in your PowerPoint  
8 called "Next Steps," and there's two next steps  
9 here.

10 I understand one is trying to  
11 model the data using a 24-month rolling period  
12 as well as a 12-month rolling period. And the  
13 second was to look -- my understanding of the  
14 second point, and correct me if I'm wrong, was  
15 to look whether the model could actually be  
16 used to predict adverse events other than  
17 mortality, so other adverse events like  
18 hospitalizations, for example. Is that a fair  
19 summary of the next steps on this slide?

20 A. So the way I think of this  
21 slide, and again, remembering who wrote it, a  
22 bunch of statistically minded analysts is that  
23 this is the equivalent of more research is  
24 needed. I mean, every kind of academic  
25 publication ends with that statement, so  
26 analysts are always going to think of ways that  
27 they could, you know, do other kinds of  
28 analyses.

29 And so, you know, we talked  
30 about how the small homes were -- the  
31 predictions were potentially unreliable in the  
32 small homes, so one way to look at that is to



11:47:31 1 move to a 24-month period where there would be  
11:47:32 2 more deaths in the 24-month period than there  
11:47:34 3 would be in the 12-month period.

11:47:37 4 And another thing they thought  
11:47:39 5 of was could we create a composite outcome that  
11:47:46 6 included death plus different aspects of  
11:47:46 7 hospitalizations for things like pressure  
11:47:46 8 ulcers and pneumonia and other things that, you  
11:47:50 9 know, could potentially be related to poor  
11:47:52 10 care.

11:47:53 11 Q. Okay. And do you --

11:47:54 12 A. Sorry. And we haven't done  
11:47:58 13 these steps.

11:48:00 14 Q. Okay. And why haven't you  
11:48:05 15 taken these steps?

11:48:06 16 A. Until the point comes when we  
11:48:07 17 decide that we're going to invest in this as  
11:48:10 18 some kind of an ongoing tool, we're not going  
11:48:12 19 to do more work on this because we always have  
11:48:15 20 more demand on our time for analytical products  
11:48:23 21 and reports than we do resources to complete  
11:48:23 22 them. So, you know, these are just potentially  
11:48:23 23 interesting ideas that analysts thought of.

11:48:26 24 Q. Okay. And you do state,  
11:48:29 25 though, in your affidavit -- we don't have to  
11:48:32 26 turn it up -- but at paragraph 54 of your  
11:48:37 27 affidavit, that you had identified or your  
11:48:40 28 division had identified the long-term care home  
11:48:40 29 division or the coroners potential partners for  
11:48:43 30 the implementation of the project.

11:48:45 31 When you were considering them  
11:48:46 32 as potential partners, how did you consider --

11:48:49 1 what did you consider implementation might look  
11:48:52 2 like?

11:48:52 3 A. Beyond considering them as  
11:48:56 4 potential partners, I don't think we had put a  
11:48:59 5 lot of thought into implementation; a) because  
11:49:03 6 we would advise on things like, you know, what  
11:49:06 7 a benchmark might be; and, you know, we don't  
11:49:09 8 have a lot of experience implementing programs,  
11:49:12 9 so it's not really our purview to think about  
11:49:16 10 implementation beyond what would be useful from  
11:49:21 11 an analytical perspective to help the program  
12 work.

13 And I don't know and nor do  
11:49:25 14 people in my division know that much about how  
11:49:27 15 the inspection regime works other than we know  
11:49:31 16 that it exists and we sometimes provide  
11:49:35 17 analytical advice into it. But in our thinking  
11:49:40 18 about this project, it seemed like they would  
11:49:42 19 be potential partners to help us figure that  
11:49:45 20 out.

11:49:45 21 Q. Okay. And just to be  
11:49:48 22 perfectly clear, is there anything preventing  
11:49:56 23 the Ministry from moving forward with the  
11:50:01 24 project at this time, and what would that look  
11:50:02 25 like? Is there an approval that you need from  
11:50:02 26 the assistant deputy minister? Who needs to  
11:50:03 27 initiate this to actually move it forward?

11:50:06 28 A. Well, I mean, projects move  
11:50:09 29 forward in lots of different ways, but it could  
11:50:12 30 be that myself, Brian Pollard, and Dr. Huyer  
11:50:18 31 sit down and really discuss is there any way  
11:50:22 32 that this could be implemented in a feasible

1 way that made sense, in an appropriate way, you  
2 know, that took into account all of the  
3 limitations, in that the merits of proceeding  
4 outweigh the limitations. And, you know, we  
5 might make a proposal to the Deputy Minister of  
6 Health, and she might agree or disagree.

7 We would potentially need, you  
8 know, ministerial approval, possibly a higher  
9 level of cabinet. So those are things I don't  
10 have full control over, and it's tough to  
11 speculate on what level of approval is needed  
12 when I don't understand what the implementation  
13 pathway would be.

14 So I would like everybody to  
15 bear in mind I could speculate on lots of  
16 permutations that might require lots of  
17 different approval pathways, but in the absence  
18 of what this would look like, and we haven't  
19 gone through that exercise, it's very difficult  
20 for me to speculate.

21 Q. Okay. But in terms of  
22 getting together with the chief coroner and the  
23 assistant deputy minister, is the intention to  
24 do that, then?

25 A. I've talked to Brain Pollard,  
26 the assistant deputy minister, and I think we  
27 will have a conversation about what we will do  
28 with this predictive approach and whether it  
29 is, in fact, the only predictive approach out  
30 there that might be valuable and how it might  
31 look in practice.

32 Q. Okay. And just finally,

1 then, Dr. Hillmer, if the project is going to  
2 be implemented in some way, do you know whether  
3 your group would continue to be the group that  
4 would run the numbers and do the analysis?

5 A. I don't know that for a fact.  
6 I mean, we could, but there are other groups  
7 out there that could do it as well.

8 Q. And could you give us an  
9 example of that?

10 A. CIHI, Canadian Institute for  
11 Healthcare Information could be one of the  
12 groups. There are different research  
13 organizations in the province that  
14 theoretically could do it. If a group has the  
15 data, they could run this model. So it's --  
16 for us, we could or any number of people could.

17 MS. JONES: Thank you very much,  
18 Dr. Hillmer. Those are my  
19 questions.

20 THE COMMISSIONER: Thank you.

21 MS. JONES: Madam Commissioner,  
22 I understand that Mr. Van  
23 Kralingen is -- oh, I apologize.  
24 It's Ms. Bambers on behalf  
25 of Her Majesty.

26 THE COMMISSIONER: For whatever  
27 reason, my screen is flashing  
28 like a dance hall situation, and  
29 it's very distracting. Are we  
30 able to either shut if off and  
31 I'll just -- can we shut it, and  
32 then I'll just watch that one?

11:53:17 1 Thank you. Perfect, thank you.  
11:53:28 2 EXAMINATION-IN-CHIEF BY MS.  
3 BAMBERS:  
11:53:29 4 Q. Just a few questions for you,  
11:53:33 5 Dr. Hillmer. You told us before you started  
11:53:37 6 the project, you and your team did a scan for  
11:53:44 7 literature to see if anyone else had undertaken  
11:53:48 8 such a project?  
11:53:49 9 A. That's right.  
11:53:50 10 Q. And earlier this week, we  
11:53:54 11 heard from a professor from California,  
11:53:58 12 Professor Yorker. She testified that in  
11:54:02 13 Florida, the Department of Public Health was an  
11:54:07 14 agency that noted an uptick in deaths, and I  
11:54:14 15 just wanted to ask -- though she was unable to  
11:54:19 16 tell us any details about it, whether the  
11:54:20 17 deaths were reported or what kind of data they  
11:54:23 18 had access to.  
11:54:25 19 I wanted to just confirm with  
11:54:26 20 you: Did you find anything from -- any sort of  
11:54:30 21 project from the Department of Health in  
11:54:34 22 Florida?  
11:54:35 23 A. It didn't come to our  
11:54:37 24 attention. We didn't find anything like that.  
11:54:39 25 But I always hold out the possibility that  
11:54:44 26 something's out there that we didn't find, but  
11:54:46 27 we didn't find it.  
11:54:48 28 Q. Okay, thank you. And you  
11:54:53 29 told Ms. Jones that you didn't take into  
11:54:58 30 account medication errors made in your model,  
11:55:03 31 and one reason it would be difficult to take  
11:55:06 32 into account is that the data wasn't

1 comprehensive.

2 And I want to explore a little  
3 bit more about med errors because, as you can  
4 imagine, they would be variable, like missing a  
5 dose of Tylenol versus receiving a wrong drug  
6 that might be much more potent, and those med  
7 errors would have different impacts on  
8 residents.

9 Does the model in some other way  
10 take account of a potential impact of a med  
11 error?

12 A. It doesn't as constructed,  
13 and I think you make a good point that  
14 medication errors can be ones of co-mission  
15 where you are giving a wrong dose or the wrong  
16 drug or omission where you don't give the drug  
17 as indicated at all.

18 And then the magnitude of the  
19 impact -- determining that is not an easy  
20 exercise, and I think without having some sense  
21 of what that framework would look like, how  
22 would we even enter it into a model. Even if  
23 we did have access to it, it would be a whole  
24 research exercise unto itself.

25 Q. Okay. But I think you did  
26 tell us, though, that the RAI data does take  
27 into account the health status at various  
28 points in time of the resident?

29 A. So it takes into account the  
30 health status, the functional status, cognitive  
31 status. It does have information what drugs  
32 people are receiving. So insofar as any -- you

1 know, any untoward event manifested itself in  
2 health status, it would be included in the  
3 model, health status as captured in the  
4 RAI-MDS.

5 Q. Right. So if a patient was  
6 significantly worse because of an adverse  
7 reaction, that would be captured? Potentially  
8 be captured?

9 A. Potentially if the RAI  
10 assessment had a variable that that impact was  
11 manifested in.

12 Q. All right, thank you. And  
13 the last question I want to ask you about is  
14 the confidence intervals, and if we could go to  
15 Slide 23 of Exhibit 170?

16 Now, we talked about how the  
17 longer green lines show that you're less  
18 confident about a value and that the smaller  
19 green lines, you are more confident about a  
20 value. And I think you'd also told us that  
21 small homes have a larger confidence interval.

22 I don't think we talked about  
23 the text at the bottom of the graph, the  
24 markers, the LTCH numbers that are vertical on  
25 the bottom. Those, I understand, show the home  
26 number, and in brackets, underneath, I  
27 understand that shows the size of the home?

28 A. Right. This is not something  
29 my project team did. It was -- the individual  
30 home names were redacted through a process led  
31 by Commission Counsel, and what is left here is  
32 that somebody went through the presentation and

1 assigned a random number to the home.

2 And my understanding is that  
3 they did, you know, each time the same home  
4 appeared, they assigned the same number, and  
5 then in brackets is showing that that home --  
6 if you look at home 73 there, it says 1 to 50.  
7 That means the number of beds for that home is  
8 in between 1 and 50.

9 Q. All right.

10 A. So it's a small home.

11 Q. Right. And that's exactly  
12 what I wanted to ask you about. So the second  
13 long green line, it's long, and it's also, we  
14 know from the data right below it, a small  
15 home, correct?

16 A. Right.

17 Q. Okay. And if we look at  
18 the -- there's a longer line near the middle of  
19 the graph, long-term care home 77. That shows  
20 that it's a home with 1 to 50 beds. Another  
21 small home?

22 A. Right. Exactly.

23 Q. Okay. And, Commissioner, I  
24 just wanted to bring to -- or I'll ask  
25 Dr. Hillmer first. A few of these homes' sizes  
26 show "unknown." Did you know the size of all  
27 the homes?

28 A. So we know the size of all  
29 the homes. And again, if you were to see the  
30 unredacted version, you'd see that there would  
31 be a home name and then the size, and just the  
32 way it printed, the home size was hidden behind



12:00:49 1 that lavender box. So the poor person who was  
12:00:56 2 going through the exercise of redacting  
12:00:57 3 literally didn't know the home size.

4 Q. Yes.

5 A. So that's why it shows up as  
12:01:02 6 "unknown," but we know.

12:01:02 7 Q. Yes. And, Commissioner, and  
12:01:02 8 for everyone else's benefit, like, if you do  
12:01:03 9 want to know the size of home 72, it is found  
12:01:07 10 elsewhere in this PowerPoint where the number  
12:01:12 11 is identified, and most of them are on page 36.

12:01:17 12 So if one went to page 36, and  
12:01:24 13 I'm not suggesting we have to, but you'll find  
12:01:27 14 that long-term care home 72 is also a small  
12:01:30 15 home as is the home 74. So those first three  
12:01:36 16 long lines, they're all from small homes?

12:01:40 17 A. Right. And I would just add  
12:01:42 18 that, to reinforce the point, if you look at  
12:01:45 19 some of the larger homes -- like, I'm looking  
12:01:48 20 at I think it's 82, which is closer to the  
12:01:51 21 right-hand side, it's between 250 and 300, and  
22 it's got a much smaller confidence interval, so  
23 it just generates much better results for  
12:02:01 24 bigger homes.

12:02:01 25 And again, I'm somewhat hesitant  
12:02:05 26 to use the word "rank" only because a lot of  
12:02:09 27 these confidence intervals overlap with one  
12:02:17 28 other. So, you know, in another version -- you  
12:02:19 29 know, it's just as likely that what's No. 1  
12:02:24 30 here could be No. 10 because they overlap.

12:02:28 31 So they were all ranked as the  
12:02:31 32 highest standardized mortality ratios, but it's

12:02:35 1 not necessarily easy or possible to distinguish  
12:02:39 2 the individual rank between the top -- I think  
12:02:41 3 this is 15 here, or -- yeah, 15.

12:02:46 4 MS. BAMBERS: Thank you. Those  
12:02:48 5 are all my questions.

12:02:49 6 THE COMMISSIONER: Thank you,  
12:02:51 7 Ms. Bambers.

12:02:54 8 MR. SCOTT: Commissioner, the  
12:02:56 9 Family counsel has no cogent  
12:03:00 10 questions for Dr. Hillmer, but I  
12:03:03 11 would like to thank him for  
12 12 turning what could have been a  
12:03:06 13 very arcane process into  
12:03:08 14 something we could all  
12:03:10 15 understand.

12:03:11 16 THE COMMISSIONER: Even you,  
12:03:12 17 Mr. Scott.

12:03:14 18 MR. SCOTT: Yeah.

19 THE COMMISSIONER: Thank you.

20 MR. SCOTT: Thank you,  
12:03:16 21 Commissioner.

12:03:16 22 THE COMMISSIONER: Thanks,  
12:03:17 23 Mr. Scott.

12:03:19 24 MS. JONES: And Mr. Golden for  
12:03:21 25 Caressant Care, Commissioner.

12:03:23 26 CROSS-EXAMINATION BY MR. GOLDEN:  
12:03:32 27 Q. Good afternoon. David

12:03:34 28 Golden. I'm counsel for Caressant Care, and I  
29 have to say along the lines of what Mr. Scott  
12:03:38 30 was saying: I was having nightmares,  
12:03:40 31 flashbacks to statistics classes.

12:03:42 32 But, again, I appreciate the

12:03:45 1 candor of your evidence, and really, one of the  
12:03:48 2 issues that I want to make sure is clearly  
12:03:52 3 understood because of the public that's  
12:03:54 4 watching and so on, and I think you were quite  
12:03:57 5 clear about this, is that we really have to be  
12:04:01 6 careful and not use this information, this  
12:04:01 7 preliminary work to make any conclusions about  
12:04:05 8 the quality of care that's delivered in these  
12:04:10 9 homes; am I right about that?

12:04:12 10 A. You're absolutely right. I  
11 would be -- it's the first thing I would say  
12:04:14 12 that this model is completely agnostic to what  
12:04:18 13 happens in the home. It is represented by  
12:04:20 14 the health status -- the predictions are  
12:04:22 15 represented by the health status of the  
12:04:24 16 individuals as measured in the RAI-MDS, and it  
12:04:27 17 says nothing about how that health status came  
12:04:31 18 to be.

12:04:31 19 Q. And, in fact, Commission  
12:04:34 20 Counsel in asking about the soundness of the  
12:04:37 21 project took you to paragraph 50 of your  
12:04:40 22 affidavit and asked you about the first  
12:04:44 23 sentence, but I would like to ask you about the  
12:04:46 24 last sentence just to make sure that the public  
12:04:49 25 is clear about this. In paragraph 50 of your  
26 affidavit, to pick up on what you just said,  
12:04:53 27 the last sentence says:

12:04:53 28 "Of note, the ratio is agnostic  
12:05:00 29 to the mechanism of death; i.e.,  
12:05:00 30 it is not possible to determine  
12:05:02 31 the cause of higher numbers of  
12:05:05 32 observed deaths strictly from

12:05:05 1 this tool."

12:05:07 2 A. Exactly right.

12:05:08 3 Q. Okay. And I take it that if  
12:05:12 4 there's some form of this preliminary work to  
12:05:16 5 go forward, I think you were also quite clear  
12:05:19 6 that it would make sense to involve  
12:05:20 7 consultations with experts in long-term care?

12:05:23 8 A. That would be my  
12:05:24 9 recommendation.

12:05:25 10 Q. All right. And so I take it  
12:05:27 11 that in the work that's been done so far, there  
12:05:31 12 hasn't been any consultation with clinicians  
12:05:34 13 who are involved in designing and delivering  
12:05:38 14 care in long-term care? Clinicians, I would  
12:05:41 15 say.

12:05:41 16 A. No, I think it's a good  
12:05:43 17 question, and when we consulted with Dr. Huyer  
12:05:47 18 and Dr. Jhiard, they're both coroners, so  
12:05:51 19 they're not actively involved in providing  
12:05:56 20 care.

12:05:56 21 My understanding is that  
12:05:57 22 Dr. Jhiard did speak to a subcommittee they  
12:06:01 23 have, and I don't know the composition, but I'm  
12:06:05 24 going to say I agree in that it was not a group  
12:06:09 25 of active, practicing clinicians in long-term  
12:06:12 26 care.

12:06:12 27 Q. What we do actually have is a  
12:06:14 28 party to this Inquiry an association  
12:06:16 29 specifically of medical doctors who specialize  
12:06:19 30 or have expertise in delivering care in  
12:06:23 31 long-term care facilities. They weren't  
12:06:27 32 consulted, were they?

1 A. I don't know for sure. I  
2 think that -- like, I don't know the  
3 composition of the group that Dr. Jhiard  
4 consulted, but insofar as there is any overlap  
5 there, I would say I don't think so.

6 Q. And did the CIHI people know  
7 what you were using their data for? Was their  
8 consultation with CIHI about the use of the RAI  
9 data?

10 A. No, but we don't typically  
11 consult with them about how we use the data  
12 that they send to us.

13 Q. All right. And if you turn  
14 up Slide No. 10, and there's a list of the  
15 factors -- this is from the PowerPoint -- the  
16 list of risk factors, and I was wondering, how  
17 is it that these particular risk factors made  
18 it onto the list that's in this slide, but  
19 other risk factors that might be out there did  
20 not make it onto this list?

21 A. I think it's a good question.  
22 So this list was generated -- so this is the  
23 list that was generated for what we call the  
24 traditional statistics approach where, you  
25 know, a group of experts decide what variables  
26 make it in. And so these are variables that  
27 showed up in the literature we found and that  
28 were -- come to through the discussions with  
29 the coroner and the deputy coroner.

30 And so I would characterize it  
31 as a process that, you know, is based on what's  
32 been published before plus best judgment. The

12:08:14 1 model we ended up picking, it just decided on  
12:08:19 2 its own. I know it sort of seems esoteric, but  
12:08:26 3 through the method, it decided what the best  
12:08:26 4 grouping of variables were to come up with the  
12:08:28 5 best prediction, so no human advised on the  
12:08:32 6 constellation of variables in the model we  
12:08:37 7 decided was the best.

12:08:37 8 Q. But is there any  
12:08:39 9 consideration or factoring in of the  
12:08:40 10 differences between urban and rural homes? Was  
12:08:46 11 that given any weight?

12:08:46 12 A. No. I don't think we  
12:08:48 13 included location of home.

12:08:48 14 Q. What about availability of  
12:08:50 15 hospitals and geriatric specialists in a  
12:08:50 16 particular community as opposed to more  
12:08:53 17 isolated communities; was that factored in?

12:08:56 18 A. No.

12:08:56 19 Q. What about homes, and there's  
12:08:58 20 a fair number of them, and we've had some  
12:09:01 21 evidence about it, that cater to a particular  
12:09:06 22 cultural or ethnic community that have a  
12:09:10 23 particular language base. Was any weighting  
12:09:14 24 done for that?

12:09:15 25 A. No.

12:09:15 26 Q. And what about deaths or  
12:09:18 27 residents where a family has hired outside  
12:09:26 28 companions to supplement care; was that taken  
12:09:28 29 into account?

12:09:28 30 A. No.

31 Q. All right. Anything about  
32 the homogeneity of the resident population

1 within each home that was treated as a factor?

2 A. I am not sure I understand  
3 what you're getting at there.

4 Q. Well, looking at the mix of  
5 residents within a particular home to see if  
6 that has any contribution from a social point  
7 of view; was that taken into account?

8 A. The RAI-MDS has different  
9 measures that capture some aspects of social  
10 interaction and inclusion, and it captures the  
11 status of the individual. So if what you're  
12 getting is captured in the RAI, then it was  
13 considered, but if what you're getting at is  
14 not captured in the RAI, then it's not.

15 Q. Fair enough. What about  
16 whether the deaths are of residents are in ward  
17 accommodation or private accommodation; was  
18 that factored in?

19 A. We captured some aspects of  
20 bed type, and I'm just going to take a minute  
21 and find the slide that has that information.  
22 So if you'll give me a moment, I'm going to  
23 find it. So on Slides 48 and 49, you're going  
24 to see the variables from the RAI-MDS that were  
25 included in each model.

26 Q. So I take it, then, if  
27 they're not on page 48, they weren't included;  
28 is that right?

29 A. 48 and 49.

30 Q. Okay.

31 A. So we do have -- there is a  
32 variable bed type. I'm sorry I'm not going to

12:11:37 1 be able to tell you exactly whether bed type is  
12:11:39 2 going to answer your question in particular.

12:11:43 3 Q. Right. Well, you don't know  
12:11:45 4 whether it's an interim stay, a long-term stay,  
12:11:51 5 a convalescent bed as opposed to what I was  
12:11:55 6 asking about, ward accommodation versus private  
12:11:58 7 versus semi-private?

12:12:00 8 A. I'm going to say I'm  
12:12:02 9 uncertain.

12:12:03 10 Q. Okay. And what about taking  
11 into account whether a resident has their own  
12:12:04 12 personal physician who provides care to them or  
12:12:07 13 they have to rely on a home's physician, and  
12:12:09 14 was that taken into account?

12:12:11 15 A. No. Again, all the factors  
12:12:14 16 came from the RAI-MDS. So insofar as any of  
12:12:21 17 those events contribute to the individual's  
12:12:24 18 health status, they're captured, but not as a  
12:12:28 19 direct contribution.

12:12:28 20 Q. All right. And I take it as  
12:12:29 21 well that from Slide No. 13 that there were  
12:12:34 22 some issues in terms of how you deal with  
12:12:36 23 deaths that occur in hospital.

12:12:39 24 A. Um-hmm.

12:12:40 25 Q. Is that right?

12:12:41 26 A. So you make a really good  
12:12:43 27 point, and we didn't cover this in my testimony  
12:12:47 28 to date in that we included -- we attributed a  
12:12:56 29 death to a home if somebody died outside of the  
12:13:00 30 home within 30 days.

12:13:01 31 Q. But that was done without  
12:13:04 32 considering whether that death occurred as a



12:13:07 1 result of some intervening event that happened  
12:13:13 2 after they left the home and they were entered  
12:13:16 3 into hospital; isn't that right?

12:13:19 4 A. That's a fair point, yes.

12:13:21 5 Q. All right. And as well, you  
12:13:22 6 didn't look at the hospital deaths in terms of  
12:13:25 7 where the hospitals rank in terms of are those  
12:13:29 8 particular hospitals ranking above the  
12:13:33 9 "expected" rate of death?

12:13:35 10 A. We didn't look at that.

12:13:37 11 Q. All right. And I take it  
12:13:52 12 it's fair to say that you had a discussion with  
12:13:56 13 Commission Counsel about looking at a top 10,  
12:13:58 14 15, 20, 30, 40 homes, Caressant Care Woodstock  
12:14:00 15 was not part of those?

12:14:01 16 A. No, not in the rankings we  
12:14:03 17 came up with. Correct.

12:14:04 18 Q. And I don't believe  
12:14:06 19 Meadow Park (London) was, either?

12:14:10 20 A. I, off the top, couldn't say  
12:14:12 21 what ranking it was assigned.

12:14:15 22 MR. GOLDEN: Okay. I have  
12:14:16 23 nothing further. Thank you.

12:14:17 24 THE COMMISSIONER: Thank you.

12:14:26 25 MS. JONES: Ms. Meadus, Madam  
12:14:33 26 Commissioner.

12:14:33 27 THE COMMISSIONER: Thank you.

12:14:36 28 CROSS-EXAMINATION BY MS. MEADUS:

12:14:43 29 Q. Morning.

12:14:46 30 A. Morning.

12:14:47 31 Q. Good afternoon, I guess. I  
12:14:49 32 believe it's -- yes. Good afternoon. My

1 name's Jane Meadus, and I'm here representing  
2 the Ontario Association of Residents' Councils.  
3 That's an umbrella group that represents the  
4 association that -- sorry, the umbrella for the  
5 residents' councils, and there's mandatory  
6 residents' councils in every home. So that's  
7 who I represent.

8 So I just have a few questions.  
9 In your document, which is G -- I believe it's  
10 G(1), "Predicting Death in the Nursing Home."  
11 That would be Document 72901. It's in your  
12 affidavit.

13 A. Oh, sorry, did you say G?  
14 Tab G?

15 Q. Yes.

16 A. Okay.

17 Q. Tab G, sorry. Tab G --

18 A. Okay.

19 Q. -- would be the first one.  
20 So what would be page 497 of that, so basically  
21 the last page of the text part, okay, you quote  
22 or you talk about the CHESS scale, and can you  
23 just explain what that is?

24 A. Yeah. It's a composite  
25 measure that includes several individual  
26 variables from the RAI, and it was developed as  
27 a means to help predict mortality, predict  
28 death.

29 Q. So how is that different from  
30 what you've been doing, then?

31 A. We created an approach that  
32 uses all the variables in the RAI, and, in

1 fact, I think in our final model -- I'm just  
2 going to go back and take a look.

3 Q. I think if you look at your  
4 slide...

5 A. Yeah. We do -- if you look  
6 at Slide 48 --

7 Q. Yeah.

8 A. -- the CHESS scale is  
9 included as a variable prediction of death,  
10 which makes sense because, by nature, it was  
11 designed to predict death.

12 Q. So again, that's why I'm just  
13 not understanding. So I understand it predicts  
14 death, and you've done something that does the  
15 same. What's the difference between the two  
16 models?

17 A. They're just different  
18 statistical approaches.

19 Q. Okay.

20 A. I mean, I think the point of  
21 the CHESS was so somebody could very quickly,  
22 looking at a RAI assessment of somebody, come  
23 up with a piece of information that might be  
24 useful at a point in time for the provision of  
25 care.

26 And it's easy to calculate, and  
27 it can be done -- yeah, from my understanding  
28 on the spot, from the RAI assessment -- whereas  
29 our tool, instead of just trying to take a  
30 very -- you know, come up with one kind of  
31 specific set out of variables, it just looked  
32 at all of them and tried to come up with the

12:17:51 1 best predictor of death.

12:17:52 2 Q. Okay. So does the CHESS  
12:17:54 3 data, because I'm sort of seen this around, is  
12:17:54 4 it looking at the specific person and giving  
12:17:57 5 that person a number versus sort of an overall  
12:18:01 6 number for the home; is that part of the  
12:18:03 7 difference?

12:18:03 8 A. The CHESS is based on a  
12:18:06 9 specific person, but in essence, our model is  
12:18:07 10 too because we look at each individual and  
12:18:11 11 their most recent assessment, their RAI  
12:18:17 12 assessment, taking into account everything  
12:18:19 13 that's in that assessment and trying to develop  
12:18:22 14 the most accurate prediction of whether that  
12:18:24 15 person is going to die in 90 days.

12:18:28 16 I am unsure of the exact  
12:18:31 17 parameters of CHESS, whether it's, you know,  
12:18:33 18 what length of time it's useful for predicting  
12:18:36 19 mortality and things like that.

12:18:38 20 Q. But it is something that you  
12:18:39 21 did use in your overall prediction, is that  
12:18:42 22 correct, as part of the data points?

12:18:44 23 A. Yeah, I think if you look at  
12:18:48 24 Slide 48, it gets included in every single one  
12:18:51 25 of the models.

12:18:52 26 Q. Okay, thank you. I'm going  
12:18:53 27 to bring you to Slide 22. I believe hopefully  
12:18:57 28 that was the right one. Okay, maybe it is 21.  
29 Try 21. Yes, that's the one.

12:19:08 30 So just explain to me, the line  
12:19:09 31 that goes way up at the end, what does that  
12:19:13 32 tell you? So is that telling you -- so you've

1 got a number across the top, which would be,  
2 like, 60. So is that telling you some of the  
3 homes are going very high? I just didn't  
4 understand what that meant.

5 A. Well, I mean -- so anything  
6 above the blue dotted line, those homes had  
7 more actual deaths than the models predicted.  
8 So at the far right-hand side of that graph,  
9 you're just seeing homes that had more actual  
10 deaths than expected compared to everybody  
11 else, like, many more.

12 Q. Right. But does it mean it  
13 goes up to the number 60, and what does that  
14 mean?

15 A. So the way the calculation  
16 works here is, again, think back to that idea  
17 of that reference point where the green line  
18 crosses the blue dotted line, that's the home  
19 that has the same number of actual deaths as  
20 predicted.

21 So same number, divide two  
22 numbers, they're the same, you get one. And  
23 then the risk adjusted rate is one times the  
24 provincial rate. So those homes to get to 60,  
25 you know, they probably had about a ratio of  
26 three times the 20 percent, and that's how you  
27 end up with the 60 percent risk adjusted rate.

28 Q. Okay.

29 A. That's kind of how you get  
30 the apples to apples comparison.

31 Q. So that's the 60 percent,  
32 then? That's the percentage?

1 A. Yeah, exactly.

2 Q. Thank you. That helps. That  
3 clarifies it for me. It's been a while again  
4 that I've taken statistics as well.

5 And I think another question  
6 about statistics and what the value of the  
7 information is: So we talked about how smaller  
8 homes, you have -- you know, maybe the  
9 predicted death is one and you get two, and  
10 that's 100 percent increase, and so that's  
11 really skewing the numbers, right?

12 A. Totally.

13 Q. But can you look at -- once  
14 you run the data, can you get any information  
15 about the absolute numbers? I think that's the  
16 right term. So the chart we were looking at  
17 for Caressant Care, for example, it had the  
18 numbers of -- it gave you the numbers, and I  
19 just forgot to write down that on the page.  
20 28?

21 A. 20.

22 Q. 20? 20, thank you.

23 A. I think.

24 Q. I did write it down, but is  
25 that the right one? Yes. So it has sort of  
26 the numbers, and it says -- what I understand  
27 in that observed versus expected, right?

28 So you can figure out what the  
29 difference in the absolute numbers are, right?  
30 You're getting a 1.41. That's the statistical  
31 difference; is that correct?

32 A. No. So the number of people

12:22:02 1 that died that, you know, according to our --

2 Q. Sure.

12:22:05 3 A. -- the way we constructed it,  
12:22:07 4 and the Caressant Care counsel made the point  
12:22:11 5 that it included people who had been admitted  
12:22:16 6 to hospital within 30 days, so that's how we  
12:22:20 7 defined it. So there were 55 people that died  
12:22:25 8 who were in Caressant Care according to that  
12:22:27 9 definition.

10 Q. Sure, um-hmm.

12:22:27 11 A. So that was the observed  
12:22:28 12 number.

13 Q. Right.

12:22:28 14 A. And then the 38.9 is what the  
12:22:32 15 model predicted --

16 Q. Right.

12:22:34 17 A. -- based on the resident  
12:22:37 18 characteristics. So the 1.41 is just what  
12:22:38 19 comes out of dividing those two numbers.

12:22:38 20 Q. Okay. So my question is, is  
12:22:40 21 can you get any information about the number,  
12:22:42 22 the actual number? So the difference between  
12:22:43 23 the 39 and the 55, is that important  
12:22:48 24 information, or do you only look at the  
12:22:51 25 statistical numbers?

12:22:51 26 A. I am afraid I'm not following  
12:22:54 27 your question.

12:22:55 28 Q. Okay. So you're coming up  
12:22:56 29 with a number, right, as you said that there's  
12:23:00 30 so many percentage ahead or those -- you know,  
12:23:01 31 where you do the provincial average, right?

12:23:03 32 It seems to me when you're

12:23:04 1 getting up to numbers of 14 or 15 actual  
12:23:08 2 people, which is the way the public would look  
12:23:09 3 at it, that seems like a lot to me. So is that  
12:23:13 4 an important number?

12:23:14 5 A. Well, I think it goes back to  
12:23:16 6 the idea that, you know, if you're just looking  
12:23:21 7 at the actual number of people that died  
12:23:23 8 without thinking about how sick they are, it's  
12:23:27 9 hard to compare home to home unless you account  
12:23:30 10 for that.

12:23:31 11 So I think -- that's the way the  
12:23:32 12 model works is it just tries to control across  
12:23:38 13 all homes so that regardless of what home  
12:23:40 14 you're looking at, you're not worried that that  
12:23:45 15 home had a much sicker population and that's  
12:23:47 16 why more people died. Because, you know,  
12:23:50 17 people dying is obviously horrible, but some  
12:23:53 18 people are going to die at a higher rate just  
12:23:57 19 because they're sicker or older.

12:23:59 20 Q. Right. But doesn't the 38  
12:24:02 21 number, isn't that already -- didn't you adjust  
12:24:03 22 for that?

12:24:03 23 A. The 38, yes.

12:24:03 24 Q. Doesn't that adjust for  
12:24:04 25 the -- like, that adjusts for the acuity --

26 A. Yes.

27 Q. -- in the home? So that's  
12:24:08 28 what I'm asking. So then you get a 38 to a 55,  
12:24:08 29 and should that be a concern?

12:24:12 30 A. Well, that's -- I think we're  
12:24:14 31 saying the same thing in that the ratio is just  
12:24:19 32 a different way to think about -- different way



12:24:22 1 to depict the 55 over the 38. So, you know,  
12:24:26 2 the higher that ratio gets, 1.4 to -- you're  
12:24:29 3 just -- the home for whatever reason is having  
4 more people actually dying than the model  
5 predicts.

6 MS. MEADUS: Okay, thank you.  
12:24:36 7 Those are my questions.

12:24:36 8 THE COMMISSIONER: So just to --

9 MS. MEADUS: Right, um-hmm.

12:24:37 10 THE COMMISSIONER: -- make sure  
12:24:38 11 that I didn't confused as a  
12:24:40 12 result of that.

12:24:40 13 MS. MEADUS: Sorry. And I  
12:24:41 14 didn't mean to do that.

12:24:42 15 THE COMMISSIONER: No, no, not  
12:24:43 16 at all. But the 38.9 figure has  
12:24:48 17 adjusted for age and acuity  
18 levels and so on --

19 THE WITNESS: Yes.

12:24:50 20 THE COMMISSIONER: -- but the 55  
12:24:51 21 is an actual true number of  
12:24:54 22 deaths?

12:24:54 23 THE WITNESS: Yes.

12:24:57 24 THE COMMISSIONER: And so to  
25 understand anything meaningfully  
26 about the difference between 55  
12:25:00 27 and 38.9, I heard your earlier  
12:25:02 28 testimony to say you would have  
12:25:03 29 to then go out and do more  
12:25:05 30 questions to find out why.

12:25:07 31 THE WITNESS: That's exactly  
12:25:08 32 right.

12:25:09 1 THE COMMISSIONER: All right.  
12:25:09 2 THE WITNESS: That -- if anybody  
12:25:10 3 takes anything out of this,  
12:25:13 4 that's the conclusion I would  
12:25:14 5 like them to take away, that,  
12:25:17 6 you know, this is just one view,  
12:25:18 7 and you need to go ask more  
12:25:20 8 questions.  
12:25:20 9 THE COMMISSIONER: Thank you.  
12:25:22 10 MS. MEADUS: Thank you very  
12:25:23 11 much.  
12:25:23 12 THE COMMISSIONER: Thanks,  
12:25:28 13 Ms. Meadus. Thank you.  
12:25:32 14 Spending the weekend on your  
12:25:36 15 report did help me. I have to  
12:25:38 16 be honest, it was a whole  
12:25:40 17 weekend spent on this.  
12:25:42 18 MS. JONES: Ms. Hughes.  
19 THE COMMISSIONER: Thank you.  
20 MS. HUGHES: Good morning or  
21 good afternoon, I think.  
22 THE COMMISSIONER: Good  
23 afternoon, Ms. Hughes. Good  
12:25:54 24 afternoon.  
12:25:54 25 CROSS-EXAMINATION BY MS. HUGHES:  
12:26:02 26 Q. Thanks. Dr. Hillmer, my name  
12:26:04 27 is Kate Hughes, and I have some questions for  
12:26:06 28 you on behalf of the Ontario Nurses  
12:26:09 29 Association. And I'd like to start off, if we  
30 could look at Exhibit 169, which is Document  
12:26:16 31 71733, and go to page 4 of that, that was a  
12:26:18 32 question that you were asked about morning.

12:26:20 1 You were taken to this document. So if we  
12:26:24 2 could just take a moment to take a look at it?

3 A. Um-hmm.

12:26:26 4 Q. And this was a document we  
12:26:29 5 were told that your division was responsible  
12:26:31 6 for creating, which is the long-term care  
12:26:35 7 sector overview; is that correct?

8 A. Correct.

12:26:37 9 Q. Okay. And we were taken to  
12:26:40 10 page 4 briefly on that, and if we go back to  
12:26:46 11 page 4, we can see that in terms of the type of  
12:26:48 12 data that your division at the Ministry of  
12:26:51 13 Health collects is -- and I know it's a little  
12:26:54 14 hard to read on that small print, but we can  
12:26:57 15 see that under the report "Highlights" that you  
12:27:00 16 collect data on long-term care funding,  
12:27:03 17 long-term care capacity and demand, admissions,  
12:27:08 18 resident characteristics and staffing and  
12:27:11 19 compliance; is that right?

20 A. Correct.

12:27:12 20 A. Correct.  
12:27:13 21 Q. Okay. And I take it that  
12:27:15 22 those numbers are important in terms of looking  
12:27:19 23 at long-term care; for instance, you need to  
12:27:22 24 know how many people are in long-term care and  
12:27:26 25 their types of demands, et cetera; is that  
12:27:30 26 correct?

27 A. Correct.

12:27:30 28 Q. And we've heard a lot of  
12:27:32 29 evidence over the last couple of months about  
12:27:35 30 long-term care, and I think everybody has said  
12:27:37 31 in terms of long-term care in Ontario that the  
12:27:40 32 acuity demands in long-term care has gone up.

12:27:46 1 We've heard that the residents are mainly  
12:27:49 2 female, which you've set out in here. The  
12:27:52 3 average age has gone up, that the acuity level  
12:27:55 4 has gone up, and the co-morbidities have gone  
12:28:00 5 up. Would you say that the statistics bear  
12:28:02 6 that out?

12:28:03 7 A. I'm going to say I have not  
12:28:05 8 read this report recently insofar as there are  
12:28:14 9 statements in there that bear that out, I would  
12:28:16 10 agree, but I can't say for certain. I'd have  
12:28:19 11 to look at the report quickly --

12:28:22 12 Q. Okay.

12:28:22 13 A. -- but that matches my  
12:28:25 14 general understanding of the sector.

12:28:27 15 Q. Okay. And certainly, that's  
12:28:28 16 your division that gathers this information; is  
12:28:33 17 that right?

12:28:33 18 A. Well, I don't mean to sound  
12:28:37 19 pedantic, but we either collect it directly or  
12:28:41 20 we get it from partners who collect it, but --

12:28:45 21 Q. Oh, for sure.

12:28:45 22 A. Yeah, okay. Good.

12:28:45 23 Q. Yes. But you've get these  
12:28:46 24 headings, and these headings --

12:28:46 25 A. Yeah.

12:28:48 26 Q. -- are obviously relevant for  
12:28:51 27 long-term care?

12:28:51 28 A. Yeah. So we have access to  
12:28:51 29 all this information.

12:28:51 30 Q. And that includes staffing,  
12:28:54 31 for instance. It summarizes that 75 percent of  
12:28:56 32 the staffing are by PSWs in this report?

12:28:58 1 A. Right.

12:28:59 2 Q. Okay. And it sets out things

12:29:00 3 like almost 70 percent of long-term care had

12:29:04 4 dementia, for instance?

12:29:06 5 A. Correct.

12:29:07 6 Q. And so that's an increase,

12:29:09 7 and it's a concern, obviously?

12:29:12 8 A. It's an increase, yes.

12:29:13 9 Q. And so all of these factors,

12:29:16 10 funding, the demand, the characteristics are

12:29:20 11 ones that the Ministry, in particular, your

12:29:25 12 division -- not you personally, maybe, but your

12:29:28 13 division is responsible for doing reports and

12:29:29 14 gathering that information; is that right?

12:29:34 15 A. That's right.

12:29:34 16 Q. Okay. Now, if I could take

12:29:36 17 you to Exhibit 168 now, your report, and we've

12:29:40 18 looked at and we've heard a little bit this

12:29:42 19 morning about your particular project in this,

12:29:44 20 and if I could take you to Slide No. 4 in that

12:29:49 21 report, and that's the background slide. Oh,

12:30:03 22 it's the PowerPoint --

23 A. Okay.

12:30:05 24 Q. -- slide? Sorry.

12:30:05 25 A. That's how bureaucrats

12:30:08 26 understand.

12:30:08 27 Q. Oh, you call it a PowerPoint?

12:30:12 28 A. Yes.

12:30:12 29 Q. Yes, okay. I didn't know if

12:30:15 30 that was a certain brand name of a slide. In

12:30:19 31 any case, we've got the background of your

12:30:21 32 PowerPoint, page 4, and you state or whoever

1 wrote this PowerPoint sort of in the background  
2 said, look, the long-term care home death rates  
3 vary significant by home.

4 And then we know from your  
5 statistics that you went through, you went  
6 through and what you found out that, if I  
7 understand it, no matter they way you run the  
8 numbers -- whether or not you're running what  
9 you call the RF or the DecisionTree or the  
10 Logistics or I think what's called XGB, no  
11 matter how you run it, you came up with the  
12 same set of 22 long-term care homes?

13 A. No, no. What I said was that  
14 the different methods came up with very similar  
15 rankings. I don't know for sure that they were  
16 the exact same.

17 Q. Okay, fair enough. Thank you  
18 for correcting me on that. Similar rankings?

19 A. Yes.

20 Q. And so that was about -- I  
21 think you told in the slide, it's says about 22  
22 homes; is that right?

23 A. Sorry, 22 -- if I remember, I  
24 think 22 was what the number of homes that were  
25 above -- using that traditional statistical  
26 model, the number of homes that were above are  
27 arbitrary 10 percent higher than the provincial  
28 average rate.

29 Q. Okay.

30 A. Yeah.

31 Q. But a similar set of  
32 homes kept coming up; is that right?

1 A. Well, that gets borne out if  
2 you look at Slide 52. Again -- I think it's  
3 52. Look at 51. So you can see the different  
4 methods are by and large giving similar  
5 rankings, so they're not the same --

6 Q. Right.

7 A. -- but there is a -- you  
8 know, the higher density or the tightness of  
9 the lines -- the straighter the lines are, the  
10 more similar the rankings are across methods.

11 Q. Right. And if I could look  
12 at Slide 58 under the summary, it says:

13 "All approaches identified a  
14 similar set of homes with  
15 excessive rate of mortality."

16 And whether or not it's 20 or  
17 22, that's what I understood that no matter how  
18 you ran it, you get a similar set of homes?

19 A. Yes.

20 Q. Okay. Okay, fair enough.  
21 And then if we could take you back to Slide  
22 4 -- sorry to keep skipping around -- under the  
23 background, you said, look, the excessive high  
24 rate of death could reflect a number of things:  
25 It could be the acuity level of the residents,  
26 or it could be the poor quality of care  
27 provided by the home, or it could be specific  
28 actions like Elizabeth Wettlaufer's actions; is  
29 that correct?

30 A. Again noting it's not an  
31 exhaustive list, but yes.

32 Q. Right. And so in terms of

1 the poor quality by the home -- or I'm going to  
12:33:25 2 take you to risk factors. If we could then go  
12:33:29 3 to Slide No. 10?

12:33:30 4 Now, you were taken to this  
12:33:39 5 earlier, this predefined list of risk factors,  
12:33:42 6 and you looked at a number of things, but you  
12:33:46 7 looked at the discharge bed type, whether or  
12:33:49 8 not it was a long-term stay, interim, respite,  
12:33:54 9 et cetera. You can see that.

12:33:55 10 But can I ask you: You know  
12:33:58 11 that homes are divided by different types of  
12:34:02 12 homes. There is the not-for-profits and  
13 there's the for-profits. Did you divide it  
12:34:04 14 that way, by the for-profits and  
12:34:07 15 not-for-profits?

12:34:07 16 A. We didn't.

12:34:08 17 Q. Okay. And you're aware that  
12:34:10 18 there is different staffing levels at the  
12:34:13 19 not-for-profits and the for-profits. Did you  
12:34:16 20 do any analysis on the staffing levels?

12:34:17 21 A. Staffing levels weren't  
12:34:19 22 included in the model.

23 Q. Okay. And so --

12:34:21 24 A. And I just -- I mean, the  
12:34:22 25 staffing levels were not included.

12:34:24 26 Q. Okay. And so for the group,  
12:34:26 27 the same subset of homes that were identified  
12:34:30 28 as being higher than the benchmark, the 20 or  
12:34:40 29 22 -- and do you know if it's 20 or 22? Have I  
12:34:43 30 got that...?

12:34:44 31 A. 22 if you use that  
12:34:46 32 traditional approach. I'm not sure off the top



1 what the other models produced, if it was the  
12:34:51 2 same or a slightly different number who were  
12:34:51 3 above that benchmark.

12:34:53 4 Q. Right, okay. So I'm going to  
12:34:54 5 say -- let's say 22 because --

12:34:55 6 A. Approximately 20, I think, is  
12:34:57 7 good for this.

12:34:58 8 Q. Okay, fair enough.  
12:35:00 9 Approximately 20. Do you know if they were  
12:35:02 10 for-profit or not-for-profit homes?

12:35:05 11 A. I don't know, actually.

12:35:07 12 Q. And you have the data with  
12:35:07 13 respect to this home, so that could be easily  
12:35:09 14 identified; would you agree with me?

12:35:10 15 A. We could.

12:35:11 16 Q. And indeed, I understand the  
12:35:17 17 Ministry has given information about the  
12:35:20 18 staffing at each home, so that also could be  
12:35:24 19 determined?

12:35:24 20 A. The staffing could be -- so  
12:35:26 21 remember here, this model is all based on  
12:35:29 22 individual residents, and so we couldn't  
12:35:34 23 necessarily connect any staffing to any  
12:35:37 24 particular person, so...

12:35:38 25 Q. Right. And I'm not asking  
12:35:40 26 about a particular person --

12:35:42 27 A. No, I know, but the way we've  
12:35:45 28 constructed this is more or less based on an  
12:35:49 29 individual resident basis.

12:35:51 30 Q. Okay. But you've identified  
12:35:53 31 these 20 homes, and I think my question is just  
32 to you. You've said, look, we could easily

1 identify if they were municipal homes,  
2 not-for-profit homes or --

3 A. We could.

4 Q. And each of these homes would  
5 be filing with the Ministry their staffing  
6 agreements, so you could also figure out their  
7 staffing levels of resident to regulated staff?  
8 That could be calculated by running the  
9 numbers, I take it?

10 A. We get routine financial  
11 submissions from the homes that include, you  
12 know -- we call them, you know, kind of -- a  
13 chart of accounts, you know, in kind of an  
14 accounting world. So we understand, you know,  
15 how much is spent on certain categories. So  
16 staffing would be one of them.

17 Q. We hear them called  
18 "envelopes." Different.

19 A. Well, sure. So I don't  
20 consider myself a staffing or financial expert,  
21 so I'm not -- I don't want to speculate on what  
22 we could do or can't do, but to the extent that  
23 we have that information, we could do that  
24 calculation.

25 Q. Thank you. Now, have you --  
26 did you hear the evidence of Professor Yorker,  
27 the expert that gave evidence in this matter on  
28 Wednesday?

29 A. I only read some media  
30 summaries on it.

31 Q. Okay. Have you ever read her  
32 report?

1 A. I did not.

2 Q. Okay. So I'm going to ask  
3 just to take you to one part of her report.  
4 Her report is Document 72896, I believe  
5 Exhibit 163, and if we could go to page 15 of  
6 her report?

7 MS. STRATTON: Page number  
8 again, sorry?

9 BY MS. HUGHES:

10 Q. Page 15 of her report. And  
11 there's a heading called:

12 "Research on Nursing to Improve  
13 Patient Safety, Satisfaction,  
14 and Outcomes."

15 And she cites in this report a  
16 number of footnotes from the research of  
17 Linda Aiken and others, and that indicates in  
18 that research that -- she says that her  
19 research demonstrates the relationship between  
20 nursing staff ratio and education on patient  
21 outcomes.

22 Her studies conclude that  
23 patient outcomes overall improve when nurses  
24 are better educated and when staffing ratios  
25 are higher. And specifically, she quotes:

26 "When one additional patient was  
27 added to the nurse's workload  
28 results in a 7 percent increase  
29 in patient mortality."

30 So the research specifically was  
31 around patient mortality and how nurse staffing  
32 ratios could affect that. Did your project in

1 any way look at this research?

2 A. First of all, if I read that,  
3 it says:

4 "For every one additional  
5 patient to a nurse's workload  
6 results in a 7 percent increase  
7 in hospital mortality,"  
8 and we're talking about  
9 long-term care. So that's just something I  
10 note off the start.

11 And so, again, we looked at the  
12 number of predicted deaths as a function of  
13 resident characteristics, and, like, we have  
14 talked about the reasons those deaths come to  
15 be need to be elucidated through further  
16 questions. And I think you could come up with  
17 lots of different questions to ask as to why  
18 there might be more deaths than expected.

19 Q. Okay. And, Dr. Hillmer, if I  
20 could just take you to go a few lines up, it  
21 indicates her research was a study of outcomes  
22 in hospitals, nursing homes, and home care.

23 A. Okay.

24 Q. And are you familiar with  
25 that research?

26 A. There was a time many years  
27 ago when I was familiar with long-term care  
28 home research because I -- it was a little bit  
29 of a focus of my PhD thesis, but probably  
30 20 years ago.

31 Q. Okay.

32 A. So no, I'm not that familiar

1 with it anymore.

2 Q. Okay. But you would agree  
3 with me, in terms of this research, it  
4 indicates that there's a correlation between  
5 the nurse's workload -- so if you have  
6 additional workload or additional patients or  
7 residents that are added to your care that it  
8 has an effect on patient -- actual mortality.

9 And would you agree with me that  
10 based on that research, it would look like that  
11 would be a risk factor that would be worth  
12 looking at?

13 A. It's enormously difficult for  
14 me to comment on a), a report I haven't read  
15 and individual studies as cited in the report  
16 contributing to this paragraph and then connect  
17 it to the project we did, so I don't think I  
18 can even answer that question.

19 Q. Okay. And I think you've  
20 told us that you didn't do that as part of the  
21 project, although one could because the  
22 Ministry does have that information?

23 A. Well, I mean, the project is,  
24 as I described it, predicting deaths based on  
25 resident characteristics and their health  
26 status. And we've talked about there are lots  
27 of reasons that health status could come to be.

28 And so, again, this model is all  
29 about that predication, comparing to observed,  
30 and needing to go then and understand why that  
31 pattern came to be. And any number of  
32 questions could be asked ranging from what you

1 talked about to whether there was an infectious  
2 disease outbreak.

3 Q. All right, okay. So I think  
4 you've been clear that while you could have  
5 looked at the types of staffing, it just wasn't  
6 run; the numbers weren't run. Would that be  
7 fair?

8 A. Correct.

9 Q. Okay. And I'm wondering if  
10 you could help me in one other area, if we  
11 could go to Dr. Yorker's report, staying on her  
12 report at page 5. And we see that in her  
13 report, she studied 131 prosecutions and 90  
14 convictions in 25 countries, and she told us in  
15 her oral evidence that that was done from the  
16 70s on, a period of 48 years, okay?

17 And if I could then just ask you  
18 to take a look at page 7, if we could go to  
19 that, if you could help us because you've been  
20 very helpful in terms of statistics and how to  
21 figure out from an epidemiological point of  
22 view various things.

23 She says and concludes, look,  
24 the numbers are "very small," and she says:

25 "The chances of being killed by  
26 a healthcare serial killer are  
27 extremely low..."

28 And then it says:

29 "...estimated to be less than 1  
30 in 2 million healthcare  
31 providers."

32 And her footnote is from an

1 unpublished dissertation from the University of  
12:43:21 2 Wales dealing with the English statistics.

12:43:23 3 And I was wondering if you could  
12:43:28 4 help me or help all of us in understanding: If  
12:43:31 5 we were actually looking at the chances of  
12:43:33 6 being killed by a health care serial killer,  
12:43:36 7 you would have to, worldwide -- I take it you  
12:43:39 8 would have to look at -- and you're looking at  
12:43:41 9 the numbers of health care providers.

12:43:43 10 First of all, you'd have to know  
12:43:46 11 the numbers of health care providers, is that  
12:43:50 12 correct, worldwide?

12:43:51 13 A. This is a tough line of  
12:43:54 14 questioning, again, because I didn't read the  
12:44:00 15 report, and I haven't really put a lot of  
12:44:03 16 thought into how I might calculate that.

12:44:05 17 Q. Okay. And I'm not asking  
12:44:05 18 about the serial killers, but let's say we're  
12:44:05 19 calculating any number, the number of people  
12:44:06 20 who got SARS, let's say, or any -- from an  
12:44:10 21 epidemiological profile. And you're saying,  
12:44:13 22 what are your chances worldwide? First of all,  
12:44:16 23 you'd have to look at the number of people  
12:44:21 24 worldwide, would you agree with me? You  
12:44:25 25 couldn't run it based on one country if you're  
26 looking at the stats for 25?

12:44:26 27 A. I'm afraid --

12:44:26 28 MS. JONES: Madam --

12:44:28 29 THE WITNESS: -- I'm not  
12:44:31 30 following the line of  
12:44:32 31 questioning here.

32 BY MS. HUGHES:

1 Q. Okay.

12:44:34 2 A. I'm just not following it.

12:44:41 3 Q. Okay. So with respect, I'm

12:44:42 4 just asking you from when you look at

12:44:43 5 statistics, and you've spoken all morning about

12:44:43 6 statistics, if you're looking at data and

12:44:45 7 trying to figure out what is a statistic, then,

12:44:49 8 and if you're putting a statistic that's based

12:44:52 9 on 25 countries, you'd agree with me pretty

12:44:57 10 clear, you'd have to look at the numbers of all

12:44:58 11 25 countries; would that be fair?

12:45:01 12 A. Well, I guess I would say any

12:45:02 13 time you think about a sample, you need to

12:45:05 14 define what your sample is, and the sample is

12:45:08 15 going to be driven by what you're trying to

12:45:13 16 achieve, and that -- I'm afraid I'm at a loss

12:45:20 17 here as to what the question is.

12:45:23 18 Q. Okay. And perhaps you

12:45:25 19 could -- could you help me just in one other

12:45:30 20 question on that area because this is my last

12:45:34 21 area on that. With respect, then, if you're

12:45:35 22 looking at statistics over a period of, let's

12:45:39 23 say, 48 years, when you're looking at those

12:45:41 24 numbers, would you agree with me you'd have to

12:45:47 25 look at the numbers over all of the years? You

12:45:49 26 wouldn't just take a certain point in time?

12:45:51 27 A. It really depends on what

12:45:53 28 you're trying to do.

12:45:54 29 Q. Okay, all right.

12:45:55 30 A. So I'm going to -- I don't

12:45:56 31 think I can agree with you, I just -- without

12:45:58 32 knowing what the specifics are.



12:46:01 1 MS. HUGHES: All right. So  
12:46:02 2 you've given a lot of  
12:46:04 3 information about stats, but I  
12:46:08 4 don't think you can help us in  
12:46:09 5 that area, then, I think.  
12:46:13 6 Okay, thank you. Those are my  
12:46:14 7 questions.  
12:46:14 8 THE WITNESS: Okay.  
12:46:16 9 THE COMMISSIONER: Thanks.  
10 RE-EXAMINATION BY MS. BAMBERS:  
12:46:31 11 Q. Just one area of re-exam,  
12:46:36 12 Dr. Hillmer. My friend, Ms. Hughes, was just  
12:46:42 13 asking you about different ways that data may  
12:46:55 14 be interpreted to see if staffing had an  
12:46:59 15 impact, the level of staffing, and also whether  
12:47:03 16 the home was profit or non-for-profit had an  
12:47:07 17 impact, and that was in the context of  
12:47:09 18 hospitals. Are you aware -- I understand --  
12:47:14 19 MS: HUGHES: No, I don't think  
12:47:17 20 that was in the context of  
12:47:19 21 hospitals. We're talking about  
22 long-term care homes, which are  
23 designated by a  
12:47:22 24 (indecipherable) --  
12:47:22 25 BY MS. BAMBERS:  
12:47:23 26 Q. Right, right. Sorry, I  
27 apologize. Okay. In long-term care homes.  
12:47:28 28 Are you aware if hospitals also  
12:47:31 29 calculate mortality ratios?  
12:47:37 30 A. The Canadian Institute for  
12:47:40 31 Healthcare Information calculates standardized  
12:47:46 32 mortality ratios for almost every hospital in

12:47:49 1 Canada. They use a slightly different way to  
12:47:53 2 do it, but the ratio is the same in that it's  
12:47:57 3 an observed and expected number.

12:48:00 4 Q. All right. And do you know  
12:48:02 5 what hospitals do with that information?

12:48:04 6 A. My understanding is that it's  
12:48:06 7 used to stimulate quality improvement efforts  
12:48:10 8 and, you know, look for practices that could be  
12:48:13 9 improved that might then improve that number.

12:48:21 10 Q. Right. And are those ratios  
12:48:24 11 available publicly?

12:48:25 12 A. They are. You can go to  
12:48:28 13 their website. It's quite easy to find.

12:48:31 14 MS. BAMBERS: Okay, thank you.

12:48:32 15 MS. JONES: Thank you,

12:48:34 16 Commissioner. I have no  
12:48:34 17 questions in re-examination.

12:48:36 18 THE COMMISSIONER: Okay. I know  
12:48:38 19 that I am very limited. I  
12:48:40 20 understand the jurisprudence on  
21 this. I don't want to throw a  
22 spanner in the works.

12:48:42 23 I would like to ask one thing  
12:48:44 24 that if it's not acceptable or  
12:48:47 25 going to create procedural  
12:48:51 26 problems, I won't, and that is  
12:48:52 27 the question: Is this the only  
12:48:56 28 project that the Ministry has  
12:48:58 29 undertaken in relation to death  
12:49:00 30 calculations in long-term care  
12:49:02 31 homes?

12:49:02 32 As I said, I don't want to do

12:49:04 1 this if I'm going to upset any  
12:49:09 2 procedural fairness issues. Is  
3 that an acceptable question for  
12:49:11 4 me to put...?  
12:49:11 5 MS. BAMBERS: We have no issue  
12:49:12 6 with that question,  
12:49:15 7 Commissioner.  
12:49:16 8 MS. JONES: Of course no issue,  
12:49:17 9 Commissioner.  
12:49:18 10 THE COMMISSIONER: Okay. Thank  
12:49:19 11 you very much. So that's my  
12:49:21 12 real question: Is this, to the  
12:49:24 13 best of your knowledge, the only  
12:49:24 14 project that the Ministry has  
12:49:27 15 undertaken in relation to  
12:49:28 16 looking at deaths in long-term  
12:49:30 17 care homes?  
12:49:30 18 THE WITNESS: So it's a good  
12:49:36 19 question. We look at -- you  
12:49:43 20 know, death is something we look  
12:49:45 21 at quite frequently because it's  
12:49:48 22 an important metric of the  
12:49:53 23 health of a population.  
12:49:54 24 So I would say this is the only  
12:49:57 25 project where we've attempted to  
12:50:01 26 predict the number of deaths and  
12:50:04 27 compare it to the actual number  
12:50:07 28 of deaths in long-term care, you  
12:50:09 29 know, using this kind of  
12:50:10 30 approach.  
12:50:11 31 So I would say we look at deaths  
12:50:13 32 in the context of many other

12:50:17 1 facets, but this is the only one  
12:50:20 2 that I know about where we've  
12:50:22 3 attempted to, you know, have a  
12:50:24 4 model that could be run again  
12:50:27 5 and again and again on a routine  
12:50:29 6 basis and give you a number of  
12:50:31 7 predicted deaths.

12:50:33 8 THE COMMISSIONER: So your  
9 original answer where you said  
12:50:34 10 death is something we look at  
12:50:34 11 frequently in the long-term care  
12:50:38 12 home context?

12:50:40 13 THE WITNESS: Yeah, across all  
12:50:41 14 sectors. You know, population  
12:50:42 15 as a whole, different subgroups  
12:50:46 16 of the population, different  
12:50:50 17 geographies, and then within  
12:50:52 18 different care settings, so --  
12:50:59 19 but I think -- so that's the  
12:51:05 20 distinction. It's just  
12:51:06 21 something we look at generally,  
12:51:08 22 and then in specifics here, the  
12:51:08 23 big difference is that we try to  
12:51:11 24 predict.

12:51:12 25 THE COMMISSIONER: Right, okay.

12:51:13 26 THE WITNESS: And that, you  
12:51:13 27 know, looking in general is more  
12:51:15 28 just -- as it's happening, you  
12:51:16 29 know, we look at the patterns.  
12:51:20 30 Is it changing? You know, are  
12:51:22 31 certain groups of individuals  
12:51:24 32 dying in a different way than

12:51:26 1 before? You know, how are  
12:51:31 2 mortality rates of people with  
12:51:36 3 diabetes changing over time as a  
12:51:37 4 finite example, but this project  
5 attempts to predict the expected  
12:51:41 6 number to get at some aspect of  
12:51:42 7 what might have happened.  
12:51:44 8 THE COMMISSIONER: Right. Thank  
12:51:45 9 you very much. As a result of  
12:51:46 10 my questions, did anybody else  
12:51:48 11 wish to follow up on that?  
12:51:50 12 Ministry?  
12:51:51 13 MS. BAMBERS: No, Commissioner.  
14 THE COMMISSIONER: And  
15 Commission Counsel? No.  
12:51:57 16 Does that actually mean that we  
12:51:59 17 finished early on a Friday?  
12:52:00 18 This is just dazzling. I mean,  
12:52:03 19 it's truly dazzling.  
12:52:04 20 So thank you so much to  
12:52:08 21 everyone. As I understand it,  
12:52:09 22 then, the Public Hearings will  
12:52:11 23 stand recessed until we  
24 recommence in St. Thomas on  
12:52:13 25 Monday, September 24th at 9:30.  
12:52:15 26 Thank you so much. Thank you  
12:52:17 27 very much, Dr. Hillmer.  
12:52:18 28 THE WITNESS: Thank you,  
12:52:18 29 Commissioner.  
12:52:36 30

31 -- Adjourned at 12:52 P.M.  
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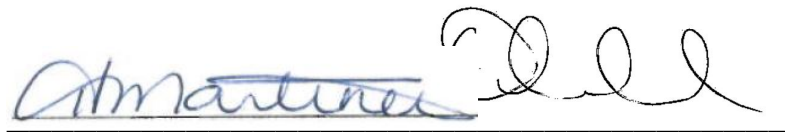
We, HELEN MARTINEAU, CSR, Certified Shorthand Reporter, and OLIVIA ARNAUD, CSR, Certified Shorthand Reporter, do certify:

That the foregoing proceedings were taken before us at the time and place therein set forth;

That the testimony of the witness and all objections made at the time of the examination were recorded stenographically by us and were thereafter transcribed;

That the foregoing is a true and correct transcript of our shorthand notes so taken.

Dated this 14th day of September, 2018.



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