

Court File No.: T-1417-18

FEDERAL COURT

B E T W E E N:

Reginald Percival, Alan Medrick McKay, Iona Teena McKay and Lorna Watts

Plaintiffs

and

His Majesty the King

Defendant

AFFIDAVIT OF PETER GORHAM

I, Peter Gorham, of the Town of Whitby, in the Province of Ontario, AFFIRM THAT:

1. I am the President and Actuary of JDM Actuarial Expert Services Inc. ("JDM Actuarial"). My duties and responsibilities in that position include providing pension and actuarial consulting advice, expert testimony, retirement planning and governance services. I am a fellow of both the Canadian Institute of Actuaries and the Society of Actuaries, which is the professional association for actuaries in the United States of America. I attained my designation as Associate, Society of Actuaries, in 1977 and attained both fellowships as an actuary in 1980.
2. I spent my professional career providing pension, benefits and actuarial consulting services to clients across Canada. In my professional career I often was required to make

assumptions about future contingent events. I was also required to review historical data to determine its accuracy and suitability for estimating future financial requirements.

3. I have provided expert testimony in numerous legal matters, the first being in 1987. Since 2016, I have provided over twenty expert reports estimating class size in historical matters where there was little data available to directly determine class size. Those reports required making assumptions about missing data, developing models to calculate class size from the resulting data and determining survivorship to a current date. As such, I have knowledge of the matters contained in this Affidavit. A true copy of my curriculum vitae is attached as Appendix 1 to my report.
4. I was asked to prepare a report to estimate the number of students that lived in a group home or boarding home between September 1958 and June 1992, together with the number of those students who survived to 24 July 2016. Attached hereto and marked as Exhibit "A" is a true copy of my report dated 27 July 2023.
5. In my opinion, there were likely:
 - (a) between 38,000 and 44,000 students who lived in a boarding home or group home between 1958 and 1992, of whom between 30,000 and 35,000 were alive on 24 July 2016.
 - (b) between 36,000 and 42,000 students who lived in a boarding home between 1958 and 1992, of whom between 28,000 and 33,000 were alive on 24 July 2016.
 - (c) between 1,100 and 1,600 students who lived in a group home between 1958 and 1992, of whom between 900 and 1,400 were alive on 24 July 2016.

6. I hereby certify that my report conforms to my duty to:
- a. provide opinion evidence that is fair, objective and without advocacy for either party and related only to matters that are within my area of expertise;
 - b. if called upon to give oral evidence or written testimony, I will give that testimony in a fair, objective manner and without advocacy for either party; and
 - c. assist the court and provide such additional assistance as the court may reasonably require to determine the matters in issue.
7. I acknowledge that the duty referred to above prevails over any obligation that I may owe to any party or by whom or on whose behalf I am engaged. A copy of the Certificate Concerning Code of Conduct acknowledging the above duties is attached as Appendix 6 to my report.
8. I make this affidavit for the purpose of assisting the court and for no other or improper purpose.

AFFIRMED remotely by Peter Gorham of the Town of Whitby, Province of Ontario, before me in the City of Ottawa, Province of Ontario, on the 10th day of August, 2023 in accordance with O. Reg. 431/20 Administering Oath or Declaration Remotely.

**Johnson,
Hannah**

Digitally signed by Johnson, Hannah
DN: C=CA, O=GC, OU=Jus-Jus, CN="Johnson,
Hannah"
Reason: I am the author of this document
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Commissioner for Taking Affidavits
Hannah Johnson

Peter Gorham
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Gorham
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PETER GORHAM

**This is Exhibit “A” referred to in
the Affidavit of Peter Gorham,**

Affirmed remotely by Peter Gorham in the Town of
Whitby, in the Province of Ontario, before me at the City
of Ottawa, in the Province of Ontario on the 10th of
August, 2023 in accordance with O. Reg. 431/20,
Administering Oath or Declaration Remotely

**Johnson,
Hannah**

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Hannah"
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A Commissioner for Taking Affidavits etc.
Hannah Johnson

Indigenous Students in Boarding & Group Homes Class Size Estimates

Reginald Percival, Alan Medrick McKay, Iona Teena McKay
and Lorna Watts v. His Majesty the King

27 July 2023

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A. Purpose

1. I am president and actuary with JDM Actuarial Expert Services Inc. I regularly provide actuarial consulting services as well as actuarial expert testimony. I am a fellow of the Canadian Institute of Actuaries and of the Society of Actuaries. I received my Actuarial Fellowship in 1980 and have provided pension, benefits and actuarial consulting services for approximately 45 years. A copy of my curriculum vitae is attached as Appendix 1.
2. I understand and acknowledge that as an expert, I have a duty to provide evidence in this proceeding as follows:
 - a. to provide opinion evidence that is fair, objective and non-partisan;
 - b. to provide opinion evidence that is related only to matters that are within my area of expertise; and
 - c. to provide such additional assistance as the court may reasonably require, to determine a matter in issue.
3. I acknowledge that the duty referred to above prevails over any obligation that I may owe to any party by whom or on whose behalf I am engaged. A certificate accepting the code of conduct for expert witnesses is attached as Appendix 6.
4. This report has been prepared for Mr. Travis Henderson of the Department of Justice, Canada who is representing Canada in the matter of Reginald Percival, Alan Medrick McKay, Iona Teena McKay and Lorna Watts v. His Majesty the King.
5. The purpose of this report is to present estimates of the possible class size in this matter for use in the exploratory discussions between plaintiff's and defendant's counsel.
6. The intended users of this report are the court(s) having jurisdiction in the matter at hand, the Department of Justice, their clients, the representative plaintiffs and class counsel. The report should not be provided to anyone who is not an intended user except as may be required by law. The findings herein should not be relied upon by any party other than an intended user.

B. Background

7. From about September 1958 to about June 1992, a number of Indigenous students were placed in boarding homes or group homes while attending school. I was requested to provide an estimate of the number of students placed in boarding homes during that period together with the number who survived to 24 July 2016.
8. The plaintiffs allege that students suffered a loss of culture and various forms of abuse while living in the boarding homes and/or group homes.
9. Information exists regarding students in boarding homes and group homes while attending school from about September 1969 to about June 1992. That information was provided to me in the form of an electronic data base showing individual students by school year. From that data, individual students can easily be identified.
10. I was originally provided with such data for September 1969 to June 1989. That data was used to prepare a preliminary report dated 8 January 2020. I was subsequently provided with additional data for September 1989 to June 1992. I merged that data with the prior data for purposes of this report.
11. Some information exists giving aggregate total students or estimates of the aggregate total for some school years from 1958-59 to 1968-69. Since this is aggregate data, individual students cannot be identified. Any student who was in a boarding or group home for more than 1 school year will be included in the counts more than once. I therefore developed a process for estimating the number of unique students in these counts.
12. I have utilised all of the above data in estimating the number of unique students who were placed in boarding or group homes during the class period.

Important Note

13. The data provided included all students placed in boarding homes and group homes. I am informed that some of these students were placed by Canada and some by Band Councils and Tribal Councils. There is no information in the data provided to me to be able to estimate the number of students placed by those groups.
14. Consequently, the estimates of the number of students presented herein include students placed by Canada, Band Councils and Tribal Councils.

C. Data

1969-70 to 1991-92

15. I was provided with spreadsheets containing data on individual students. For each student, there is one record for each year they were in a boarding or group home.
16. I was informed that the data in the spreadsheet came from two separate sources, the National Register (the “**NR Data**”) and a database created for purposes of the Indian Residential Schools Settlement Agreement (the “**CT Data**”). I have treated the additional data provided to me in July 2023 for the three years September 1989 to June 1992 as a third source (the “**2023 Update**”). It is described as coming from the Nominal Role.
17. As discussed below, I have reviewed the data for errors. I am informed that this is the most complete data available about students in the Boarding and Group Home Program. However, there was no way that I could examine it and determine how reasonable, complete and accurate it is. I have therefore relied on those who compiled and maintained the data for making it complete, reliable and accurate.
18. Any errors, missing information or duplicate information within the data will affect the accuracy of the results I present. The results are only as good as the data used.
19. There are 43,516 records in the NR Data and 39,450 records in the CT data. 19,892 of the records are in both source files, so the total number of records after removal of those duplicates is 63,074.
20. I examined those records and found a further 189 that appeared to be duplicates. On inspection, I found 114 records that in my opinion were clearly the same student¹. For the balance of 75 records, some of them were clearly different students² while for the others, it was not clear whether they were for the same or different students³. I removed the 114 duplicates from the data and I retained the 75 records that appeared to not be duplicates.
21. There are 9,279 records in the 2023 Update. I examined that data and found 229 duplicate records which I removed, leaving 9,050 records.

1 For example, same name, district and year of attendance but a different birthdate that was likely due to a typographical error (9-11-1965 and 11-9-1965 or 9-11-1965 and 9-11-1966).

2 For example, same name but slightly different birthdates and different districts.

3 For example, same name and district but very different birthdates that could not be explained as a typographical error (9-11-1965 and 6-2-1957).

22. In total, there are 72,010 records, or 72,010 student-years. A student that was in a boarding or group home for five years will have five records in the data.
23. There are 32,860 unique students within the data. Table 23 summarises the counts of those students by year of entry.

Table 23 – Summary of Students from Data

Year Beginning	Number Entering Boarding Home	Total Number in Boarding Home	Number Entering Group Home	Total Number in Group Home	Total Number Entering Either	Total Number in Either
1969	3,370	3,370	-	-	3,370	3,370
1970	1,105	4,256	-	-	1,105	4,256
1971	1,148	4,472	-	-	1,148	4,472
1972	1,069	5,376	-	-	1,069	5,376
1973	1,685	4,617	57	58	1,742	4,675
1974	1,903	3,015	92	116	1,995	3,131
1975	1,186	2,772	56	131	1,242	2,903
1976	1,014	2,261	163	245	1,177	2,506
1977	1,641	2,732	259	398	1,900	3,130
1978	1,327	2,727	95	310	1,422	3,037
1979	770	2,255	162	303	932	2,558
1980	960	2,321	108	209	1,068	2,530
1981	1,157	2,381	55	174	1,212	2,555
1982	732	2,106	134	238	866	2,344
1983	1,012	1,868	183	345	1,195	2,213
1984	1,211	2,254	229	418	1,440	2,672
1985	1,167	2,244	186	381	1,353	2,625
1986	1,289	2,534	169	230	1,458	2,764
1987	1,433	2,858	182	251	1,615	3,109
1988	1,060	2,536	98	198	1,158	2,734
1989	1,326	2,741	131	230	1,457	2,971
1990	1,395	2,772	114	221	1,509	2,993
1991	1,329	2,874	98	212	1,427	3,086
Total	30,289	67,342	2,571	4,668	32,860	72,010

24. I noted that the number of total students increased significantly from 1969 to a maximum of 5,376 in 1972 and then declined, yet the number of students entering for the first year remained relatively steady in all years other than 1973, 1974 and 1977.
25. 1973 and 1974 appear to have been anomaly years. There was a huge increase in the number of students entering the boarding and group home program. Most of those students left after the first year. I created a continuance chart to follow each student through their years in the program so that I could determine the number of students who left the program in each year. Table 25 summarises the data. Note that because

there is no information about students prior to 1969, the duration for 1969 is a minimum – a student who was in the program starting in 1967 is indistinguishable from one who started in 1968 or 1969.

26. While many students were in the program continuously, there are some who had a break – for example, they entered in 1972 and had six years in a boarding home but over a period of eight years. There is one student that spent 14 years in the program, three who spent 13 years and seven who spent 12 years.

Table 26 – Number of Students by Year Started and Duration of Stay

Year Beginning	Years in Boarding or Group Home							Total Entering in Year
	1	2	3	4	5	6	Longer	
1969	178	803	90	1,489	728	38	44	3,370
1970	119	40	479	401	40	16	10	1,105
1971	84	336	589	76	38	16	9	1,148
1972	138	675	141	59	34	8	14	1,069
1973	939	293	235	223	34	6	12	1,742
1974	1,027	520	210	96	60	32	50	1,995
1975	686	279	137	80	29	14	17	1,242
1976	562	266	166	90	46	19	28	1,177
1977	965	391	250	125	56	67	46	1,900
1978	631	271	181	83	208	31	17	1,422
1979	484	199	121	71	33	11	13	932
1980	516	223	155	79	59	19	17	1,068
1981	594	348	132	73	48	4	13	1,212
1982	419	202	115	71	34	16	9	866
1983	543	320	161	98	40	17	16	1,195
1984	722	384	181	72	47	18	16	1,440
1985	670	324	164	100	59	22	14	1,353
1986	698	353	169	158	45	35	-	1,458
1987	792	383	224	136	80	-	-	1,615
1988	556	285	182	135	-	-	-	1,158
1989	816	344	297	-	-	-	-	1,457
1990	776	733	-	-	-	-	-	1,509
1991	1,427	-	-	-	-	-	-	1,427
Total	14,342	7,972	4,379	3,715	1,718	389	345	32,860

27. I have split Table 26 between those who were only in boarding homes, only in group homes and those who were in both boarding and group homes. Those tables can be found in Appendix 3.

1958-59 to 1968-69

28. There is no individual student data available for the school years 1958-59 to 1968-69. I was provided with a chart that listed total number of students as found in various sources. A copy of that chart for the national totals is included as Appendix 4. A summary of the estimates from that chart are shown in Table 28.

**Table 28 – Summary of Students in Boarding and Group Homes
from Various Sources**

Year Beginning	Plaintiffs' Counsel ⁴	National Nominal Role	Source 1 ⁵	Source 2
1958			254	
1959			1,020	
1960			1,264	
1961	3,000		1,638	
1962				
1963				
1964	3,200			
1965	3,222		2,847	2,000
1966			3,613	
1967			4,000	
1968			3,671	3,000 ⁶
1969		3,443	2,800	4,000 ⁷
1970	5,040	4,282	2,800	
1971	5,500	4,502	3,294	
1972			5,700	
1973	5,867			
1974		3,054		
1975		2,784		
1976		2,269		
1977		5,408	5,444	
1978		5,096	2,975	
1979		4,246		
1980		4,505		
1981	2,629	2,387	3,185	
1982		2,111		
1983		1,879		

⁴ The column titled "Plaintiffs' Counsel" is to indicate that the reference to the source document was provided by plaintiffs' counsel.

⁵ The numbers under "Source 1" and "Source 2" are taken from many sources. The source reference can be found in the chart in Appendix 4.

⁶ There is an additional value for 1968 of 4,000.

⁷ There are additional values for 1969 of 3000, 3600 and 4000.

1984	2,263
1985	2,255
1986	2,952
1987	3,327
1988	2,998

29. The number of students taken from the National Nominal Role do not match with the number of students from the individual record in the NR Data and CT Data. In all years except 1977 to 1980, the totals from the National Nominal Role are reasonably similar to the number of students in the NR Data and CT Data. The totals from the National Nominal Role from 1977 to 1980 are significantly higher than the corresponding totals pre-1977 and post-1980. In my opinion, for 1977 to 1980, the totals from the individual records appear to be more reasonable, as they are similar to the totals from the previous and succeeding years.
30. It is possible that the program was significantly expanded for the four years 1977-78 to 1980-81 and then contracted back to what previously existed. It is possible (but in my opinion highly unlikely) that all the numbers prior to and subsequent to those four years are wrong and these four years are the only correct numbers.
31. If we assume that the National Nominal Role is correct, that results in an additional 3,700 students. However, I estimate such an assumption would result in only about 160 new students entering the program in 1981-82, a number that is significantly different from the number of new students in every other year.
32. For purposes of this report, I have assumed that the numbers taken from the National Nominal Role for the four years 1977-78 to 1980-81 have been inflated in some manner – possibly through inadvertent double counting, inclusion of students from another program, or something else. I have therefore ignored the totals for those years as taken from the National Nominal Role.

Students from 1958-59 to 1968-69

33. The only information that I have for these years are the estimates of total students in each year as shown in Table 28. Any students who lived in a boarding home for more than one year will be included in those numbers more than once.
34. Using the individual data for 1969-70 to 1988-89 as a guide, I made estimates of the number of students entering in each year and the total number of students living in a boarding home in each year. I then created a continuance model to follow the students through their time in boarding homes based on the percentages assumed to spend from 1 to 6 years in a boarding home. The purpose of the continuance model was to

determine whether the number of students entering the program each year was consistent with the total number of students in boarding homes each year. In essence, this provided a reasonableness check on the assumed number of entrants and the total number of students in each year.

35. I have estimated that the number of new entrants and the total number of students in each year are as shown in the following table.

Table 35 - Estimated New and Total Number of Students - 1958-59 to 1968-69

Year Beginning	Number Entering	Total Number
1958	254	254
1959	785	1,000
1960	440	1,264
1961	650	1,638
1962	710	1,950
1963	975	2,400
1964	860	2,600
1965	1,360	3,222
1966	1,250	3,613
1967	1,190	3,800
1968	965	3,671
Total	9,439	25,412

36. The NR Data and CR Data contain a large number of student records for 1969-70. Those students include the students who entered the program in 1969-70 as well as those who had previously entered the program. By examining the totals for other years, I estimated that 2,650 of the students in the NR Data and CR Data had entered the program prior to 1969-70 and are also included in the 9,439 students shown in Table 35.

The Continuance Model

37. As mentioned above, I created a continuance model to follow students through their time in the program. The model recognised that students would leave at any time between one and six years. (We know that there were some students who remained in a boarding or group home longer than six years, but using a six-year maximum for the continuance model does not, in my opinion, affect the results produced.)

38. Regardless of the various assumptions that I made, I was unable to produce a continuance model that did not have a significant discontinuity unless I made adjustments to the number of students entering the program from 1969-70 to 1988-89. I determined that by adding 1,570 students to the totals from the NR Data and CR Data records, the continuance model produced a reasonable movement of students through their years of boarding.
39. I only had to adjust for the number of students entering the program – no adjustment to the total number of students in any year was required. Any adjustment to the total number of students would require the same additional adjustment to the number entering. This implies that the approximately correct number of data records are included in the NR Data and CR Data, but that over the 20 years of data, about 1,570 students are misidentified as someone who was already in the program. For example, some of the duplicate records that were removed prior to my receiving the data (and some of the duplicate records that I removed) might not have been duplicates but rather were entered with the wrong name and date of birth⁸.
40. An alternative to increasing the number of students entering would be to reduce the number of total students by an equal amount. If I use the unadjusted number of students entering based on the NR Data, CR Data and 2023 Update records and reduce the total number of students by 1,570, the continuance model produces smooth and consistent results.
41. The addition of 1,570 students entering (or reduction of 1,570 total students in the program) is not the only possible assumption to produce a reasonable set of results from the continuance model. A different set of assumptions for the students who entered the program prior to 1969-70 would lead to a different set of adjustments to the students in the NR Data and CR Data. However, in my opinion, the total adjustments required would be in the range of 1,400 to 1,800 students under any set of reasonable assumptions.
42. It is also possible that the continuance model itself introduced errors that led to the discrepancies described above and there is no need to adjust the number of students.
43. For conservatism, I assumed that an adjustment should be made and there are 1,570 additional students who were in a boarding or group home and who are not separately

⁸ It is hard to imagine more than 1,500 students being entered using another student's name and date of birth without the error being identified. However, if the NR Data and CR data records were produced by a series of automated routines, it could be reasonable for such an error to have happened without notice.

identified in the NR Data, CR Data and 2023 Update. The adjustments by year are listed in Table 43.

Table 43 - Adjustments to Students Entering Program - NR Data and CR Data

Year Beginning	Adjustment Applied
1970	800
1971	200
1972	650
1973	(430)
1974	20
1975	30
1976	35
1977	(10)
1978	20
1979	5
1980	50
1981	5
1982	30
1983	25
1984	20
1985	40
1986	40
1987	20
1988	20
1989	0
1990	0
1991	0
Total	1,570

Total Number of Students

44. There are 28,469 unique students within the data. I have adjusted that by adding 1,570 students.
45. I have assumed there are 9,439 students who entered the program between 1958-59 and 1968-69, of whom 2,650 are included in the NR Data and CR Data. That produces a total of 41,219 unique students between 1958-59 and 1991-92.
46. Because of the assumptions made in producing this estimate, it is likely that the actual number of students is either more or less than 41,219. I have therefore created a range within which I expect the actual number of students may lie. Even so, it is possible that

the actual number of students may be even greater or lesser than the upper and lower bounds of the range.

47. In my opinion, the total number of students likely lies within the range of 38,000 and 44,000.
48. Table 48 shows the number of students that I assumed entered the Boarding and Group Home program in each year as well as the number remaining in the program beyond one year. The column "1st Year" shows the number of students who entered the program in that year – those who are in their first year at a boarding or group home. The column "2nd Year" shows the number who are in their second year of the program – they would have entered in the prior school year. For example, the 216 students shown in 1959 for 2nd Year are part of the 254 students shown as 1st Year in 1958. The difference of 38 are the students who entered in 1958 and exited after one year.

Table 48 – Estimate of Students in Boarding and Group Homes by Duration

Year	1st year	2nd year	3rd year	4th year	5th year	6th year	Total Students
1958	254						
1959	785	216					1,001
1960	440	667	162				1,269
1961	650	374	500	113			1,637
1962	710	552	280	350	62		1,954
1963	975	603	414	196	192	21	2,401
1964	860	829	452	290	108	65	2,604
1965	1,360	731	622	316	159	37	3,225
1966	1,250	1,156	548	435	174	54	3,617
1967	1,190	1,062	867	384	239	59	3,801
1968	965	1,011	796	607	211	81	3,671
1969	720	902	748	774	213	15	3,372
1970	1,905	673	668	727	272	15	4,260
1971	1,348	1,710	498	650	255	19	4,480
1972	1,719	1,254	1,672	484	228	18	5,375
1973	1,312	1,507	858	807	170	16	4,670
1974	2,015	513	351	149	93	12	3,133
1975	1,272	974	352	185	72	45	2,900
1976	1,212	564	425	185	88	33	2,507
1977	1,890	632	305	223	38	43	3,131
1978	1,442	944	355	164	119	14	3,038
1979	937	785	515	174	74	74	2,559
1980	1,119	464	544	280	84	42	2,533

Year	1st year	2nd year	3rd year	4th year	5th year	6th year	Total Students
1981	1,217	566	244	342	148	37	2,554
1982	896	621	335	132	264	98	2,346
1983	1,220	453	264	177	54	46	2,214
1984	1,460	683	268	139	97	26	2,673
1985	1,393	660	321	126	79	45	2,624
1986	1,499	686	321	176	59	25	2,766
1987	1,635	819	386	169	77	23	3,109
1988	1,178	824	424	184	91	34	2,735
1989	1,457	664	449	250	88	41	2,949
1990	1,509	696	367	237	112	36	2,957
1991	1,427	831	401	221	111	61	3,052
Total	41,219	25,627	15,712	9,647	4,031	1,135	97,117

Student Average Age

49. The data of individual students included dates of birth and years in a group home or boarding home. I reviewed that data for reasonableness. There are a number of records where the date of birth is most likely wrong. For example, some students have a date of birth after entering a group or boarding home. Others would have been over age 25 upon entry to a group or boarding home.
50. I calculated the age at entry and at exit from group homes and boarding homes for each student other than those for who the date of birth appeared to be clearly wrong.
51. There are 405 students with a calculated age under five upon entry to a group home or boarding home. There are 386 students with a calculated age over 21 upon entry to a group home or boarding home. I have assumed that most, if not all of those are an error in the date of birth. Since I only use the date of birth for calculating the average age, these likely errors are not material for the purpose of the report, and I have not attempted to correct or investigate them further.
52. The average age at entry to a group or boarding home was 15.3. The average age at exit from a group or boarding home was 17.5.
53. On average, a student spent 2.2 years in the program.

D. Survivorship to July 2016

54. To estimate the survivorship of students to 24 July 2016 and to 31 July 2023, I utilised Canadian population mortality tables from 1941 through to 2019 (the most recent such table available from Statistics Canada). These were combined into a series of cohort tables based on year of birth.
55. The Canadian population mortality was adjusted to reflect differences in mortality between all Canadians and Indigenous Canadians. Mortality rates were projected from 2019 to 2023 using a standard projection to recognise ongoing improvements in mortality. The process of adjustment and projection is described in Appendix 3.
56. The result is a series of mortality rates that reflect the changes in Indigenous peoples' mortality year by year during the period 1941 to 2023.
57. By combining these mortality rates, I developed a table of survivorship percentages which gives the percent of students who were born in years from 1941 to 1992 and who are expected to have survived to July 2016 (the "**2016 Survivor Table**" – Table 87) and survive to July 2023 (the "**2023 Survivor Table**" – Table 88)
58. The survivor percentages were applied to each group of students entering the program based on the year of exit from the program and assuming an average age of 18 for the students when leaving. Based on that assumption, the oldest student in the program is assumed to have been born in 1941.

E. Class Size Estimate

60. Based on the data regarding students living in boarding homes and group homes, I estimate the total number of unique students living in a boarding or group home during the period 1958-59 to 1991-92 was between 38,000 and 44,000. Of those, I estimate that about 30,000 to 35,000 survived as of July 2016. Of those survivors, I estimate that about 3,000 to 3,700 died between July 2016 and July 2023.
61. I estimate that there were between 36,000 and 42,000 students who lived in a boarding home, of whom between 28,000 and 33,000 survived as of July 2016. Of those survivors, I estimate that about 3,000 to 3,600 died between July 2016 and July 2023.
62. I estimate that there were between 1,100 and 1,600 students who lived in a group home, of whom between 900 and 1,400 survived as of July 2016. Of those survivors, I estimate that about 250 to 300 died between July 2016 and July 2023.
63. The following table sets out the estimated number of students by the total number of years each lived in either or both a boarding home and group home. These totals are the approximate mid-point of the estimated range. This shows the number of students who are estimated to have remained in the program for the years indicated. This is the difference between the totals shown in the bottom row of Table 48. For example, the 9,900 shown for 2 years is the difference between the 25,627 total who were in the program for at least two years and the 15,712 who were in the program for at least three years from Table 48.

Table 63 – Students by Years in Boarding or Group Homes

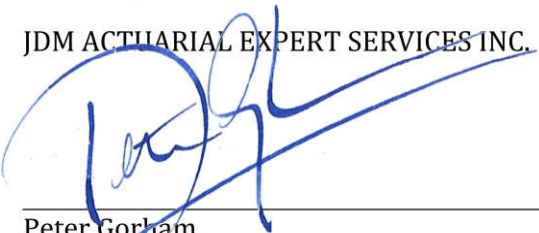
Years	Number	Survived to 2016	Deceased by 2016
1	15,600	13,200	2,400
2	9,900	7,900	2,000
3	6,100	4,700	1,400
4	5,600	4,100	1,500
5	2,900	2,000	900
6 or more	1,100	800	300
Total	41,200	32,700	8,500

64. I am informed that the data on which the estimates presented above include students placed by Canada, Band Councils and Tribal Councils. Consequently, the estimate of number of students includes those placed by all three organisations. I do not have sufficient information to split the numbers between Canada, Band Councils and tribal Councils.

F. Certification

65. I hereby certify that:
- a. in my opinion, subject to specific comments within the report, the data used is appropriate for the purposes of the report;
 - b. in my opinion, the actuarial methods employed are appropriate for the purposes of this report;
 - c. in my opinion, the assumptions used are, in aggregate, appropriate for the purposes of the work;
 - d. the calculations were prepared in accordance with the Canadian Institute of Actuaries Standards of Practice;
 - e. there are no subsequent events other than those discussed in this report that I am aware of that would have an impact on the results presented herein; and
 - f. this report has been prepared and my opinions given in accordance with accepted actuarial practice in Canada.

JDM ACTUARIAL EXPERT SERVICES INC.



Peter Gorham
Fellow, Canadian Institute of Actuaries
Fellow, Society of Actuaries

27 July 2023

Date

Appendix 1 Curriculum Vitae of Peter Gorham, F.S.A, F.C.I.A.

<i>Position & Responsibilities</i>	Peter is the President and Actuary of JDM Actuarial Expert Services Inc. (JDM Actuarial). He provides pension and actuarial consulting advice, expert testimony, retirement planning and governance services.
<i>Areas of Specialization</i>	<p>Peter has provided expert advice and testimony to the legal profession since 1987. His experience includes determining:</p> <ul style="list-style-type: none"> • certification of criminal rates of interest, • lost benefits for wrongful dismissal, • the present value of future income and future care costs, • valuation of life estates, • present value of future trust plan benefits and present value of past funds under various possible investment scenarios, • present value of future contingent events. <p>In the past, Peter has also provided expert evidence for:</p> <ul style="list-style-type: none"> • family law pension valuations. <p>He has provided expert testimony to the Supreme Court of British Columbia, Court of King's Bench of Alberta, Court of King's Bench of Manitoba, the Ontario Superior Court of Justice, La Cour Supérieure du Québec, the Ontario Unified Family Court, the High Court of Justice of Trinidad and Tobago, the Supreme Court of Bermuda, Ontario Employment Standards Tribunal, Ontario Workplace Safety and Insurance Tribunal, Canada Human Rights Tribunal and the Canadian Institute of Actuaries Disciplinary Tribunal.</p> <p>Within the pension and actuarial consulting practice, Peter's main areas of expertise include the design, financing, administration and governance of pension and benefit plans. His strengths lie in providing innovative and workable solutions that address a client's needs. He is effective in communicating actuarial concepts in simple and understandable terms.</p> <p>Peter is an experienced public speaker and an author of numerous articles related to pensions and benefits.</p>
<i>Background</i>	Peter is an actuary, receiving his fellowship in 1980. He attended the University of Toronto, graduating with a B.Sc. in Actuarial and Computer Sciences. Prior to founding JDM Actuarial in 2011, Peter spent 13 years as a partner at Morneau Shepell, and prior to that, 20 years with Aon Consulting, (formerly MLH + A inc), serving clients in the area of pension and employee benefits.
<i>Professional & Other Affiliations</i>	<p>Fellow of the Canadian Institute of Actuaries Fellow of the Society of Actuaries Faculty, Humber College PPAC program, retired Past-President, Rotary Club of Whitby Sunrise</p>

Appendix 2 Documents Utilised

66. The following documents and data were provided to me for use in preparing this report:
- a. A Statement of Claim between Reginald Percival, Alan Medrick McKay, Iona Teena McKay and Lorna Watts and Her Majesty the Queen, Court File number T-1417-18, dated 24 July 2018;
 - b. an Excel spreadsheet titled “RIA-SACCB - Chart Boarding Home Class Size Preliminary Data - 2019-09-20.xlsx” containing various estimates of the number of students in boarding and group homes between 1958-59 and 1988-89;
 - c. an Excel spreadsheet titled “Boarding and Group Homes - Nominal Roll Data - Updated 3 - From Kim Nov 29 - 2019.xlsx” containing the NR Data and CT Data records;
 - d. a Word document titled “Historic Nominal Role Guide” identifying some of the codes used in the nominal role data from time to time; and
 - e. an Excel spreadsheet titled “ESDPP-EB-ESE-ODT-DATA REQUEST-Federal Boarding Homes Class Action - 1989-1990 to 1991-1992 Nominal Roll - Copy.xlsx” containing the 2023 Update for students in boarding and group homes between 1989-90 and 1991-92.
67. The following documents and data were obtained by me and were utilised in the preparation of this report:
- a. Canada Life Mortality Tables for the following years, as compiled by Statistics Canada from time to time:

i. 1930-1932;	x. 2006-2008;
ii. 1940-1942;	xi. 2007-2009;
iii. 1950-1952;	xii. 2008-2010;
iv. 1955-1957;	xiii. 2009-2011;
v. 1965-1967;	xiv. 2010-2012;
vi. 1970-1972;	xv. 2011-2013;
vii. 1975-1977;	xvi. 2012-2014;
viii. 1980-1982;	xvii. 2013-2015;
ix. 1985-1987;	xviii. 2014-2016;
x. 1990-1992;	xix. 2015-2017;

- | | |
|------------------|------------------|
| xi. 1995-1997; | xx. 2016-2018; |
| xii. 2000-2002; | xxi. 2017-2019; |
| xiii. 2005-2007; | xxii. 2018-2020. |

- b. the Canadian Pensioner Mortality Table 2014 projection factors B (www.cia-ica.ca/docs/default-source/2014/214013e.pdf);
- c. “New Birth Cohort Life Tables for Canada and Quebec 1801-1991” by Robert Bourbeau, Jacques Légaré, and Valérie Émond, Statistics Canada publication 91F0015MIE, September 1997, which contains a series of abridged period life tables for Canada from 1831 to 1921; (www.prdh.umontreal.ca/BDLC/data/pdfs/CAN.pdf)
- d. “Abridged Life Tables for Registered Indians in Canada 1976-2000” by Ravi B. P. Verma (Statistics Canada) and R. Pierre Gauvin (Department of Indian and Northern Development), published in *Canadian Studies in Population*, Vol 31(2), 2004, pp 197-235; (www.canpopsoc.ca/CanPopSoc/assets/File/publications/journal/CSPv31n2p197.pdf)
- e. “L’accroissement démographique des groupes autochtones du Canada au XXe siècle” by Norbert Robitaille and Robert Choinière, *Cahiers québécois de démographie* 161 (1987): 3–35; [www.erudit.org/en/journals/cqd/1987-v16-n1-cqd2463/600606ar]
- f. “First People Lost: Determining the State of Status First Nations Mortality in Canada using Administrative Data” by Randall Akee and Donna Feir, University of Victoria, February 2018; [www.uvic.ca/socialsciences/economics/assets/docs/discussion/DDP1802.pdf]
- g. “A Statistical Profile on the Health of First Nations in Canada: Vital Statistics for Atlantic Canada and Western Canada, 2003-2007”, Health Canada, 2014; (<https://publications.gc.ca/site/fra/9.699550/publication.html?wbdisable=true>)
- h. “Projections of the Aboriginal Populations, Canada, Provinces and Territories, 2001 to 2017” by Statistics Canada, catalogue no. 91-547-XIE, published June 2005; [<https://www150.statcan.gc.ca/n1/en/catalogue/91-547-X>]; and
- i. “Life expectancy of First Nations, Métis and Inuit household populations in Canada”, by Michael Tjepkema, Tracey Bushnik and Evelyne Bougie, Statistics Canada, 18 December 2019. [www150.statcan.gc.ca/n1/en/catalogue/82-003-X201901200001].

Appendix 3 Students by Type of Accommodation and Duration

68. The following three tables are based on Table 26 but split by type of accommodation. This data is from the individual data records and is prior to any adjustments I made.

Table 68a – Number of Students by Year Started & Duration of Stay - Boarding Homes Only

Year Started	Years in Boarding Home							Total Entering in Year
	1	2	3	4	5	6	Longer	
1969	178	803	90	1,489	728	38	41	3,367
1970	119	38	479	400	40	15	9	1,100
1971	84	336	589	74	38	16	9	1,146
1972	138	674	141	58	34	8	14	1,067
1973	913	276	224	215	31	6	8	1,673
1974	992	494	191	78	55	23	44	1,877
1975	664	259	123	61	26	12	15	1,160
1976	506	234	129	67	29	11	25	1,001
1977	854	333	199	99	47	58	34	1,624
1978	601	243	160	75	191	31	16	1,317
1979	389	173	103	61	23	9	10	768
1980	477	203	130	63	42	10	15	940
1981	574	331	119	65	39	4	13	1,145
1982	377	169	82	51	28	11	8	726
1983	465	265	123	75	34	13	12	987
1984	624	293	156	56	37	16	14	1,196
1985	561	287	145	87	50	18	12	1,160
1986	599	317	154	146	41	29	-	1,286
1987	714	332	207	114	60	-	-	1,427
1988	520	261	156	108	-	-	-	1,045
1989	756	300	250	-	-	-	-	1,306
1990	730	657	-	-	-	-	-	1,387
1991	1,329	-	-	-	-	-	-	1,329
Total	13,164	7,278	3,950	3,442	1,573	328	299	30,034

Table 68b - Number of Students by Year Started & Duration of Stay - Group Homes Only

Year Started	Years in Group Home							Total Entering in Year
	1	2	3	4	5	6	Longer	
1969	-	-	-	-	-	-	-	-
1970	-	-	-	-	-	-	-	-
1971	-	-	-	-	-	-	-	-
1972	-	-	-	-	-	-	-	-
1973	26	2	1	6	-	-	-	35
1974	35	24	13	5	-	2	-	79
1975	22	7	2	5	1	-	1	38
1976	56	15	21	11	5	2	1	111
1977	111	42	36	8	2	3	2	204
1978	30	11	3	1	7	-	-	52
1979	95	22	8	5	7	1	3	141
1980	39	16	18	7	10	5	-	95
1981	20	8	5	3	4	-	-	40
1982	42	27	27	10	2	-	-	108
1983	78	46	17	10	2	1	1	155
1984	98	58	3	2	-	-	1	162
1985	109	10	3	4	2	-	1	129
1986	99	17	2	1	-	-	-	119
1987	78	24	4	8	8	-	-	122
1988	36	7	5	7	-	-	-	55
1989	60	20	12	-	-	-	-	92
1990	46	39	-	-	-	-	-	85
1991	98	-	-	-	-	-	-	98
Total	1,178	395	180	93	50	14	10	1,920

Table 68c - Number of Students by Year Started & Duration - Both Boarding and Group Homes

Year Started	Years in Boarding and Group Home							Total Entering in Year
	1	2	3	4	5	6	Longer	
1969	-	-	-	-	-	-	3	3
1970	-	2	-	1	-	1	1	5
1971	-	-	-	2	-	-	-	2
1972	-	1	-	1	-	-	-	2
1973	-	15	10	2	3	-	4	34
1974	-	2	6	13	5	7	6	39
1975	-	13	12	14	2	2	1	44
1976	-	17	16	12	12	6	2	65
1977	-	16	15	18	7	6	10	72
1978	-	17	18	7	10	-	1	53
1979	-	4	10	5	3	1	-	23
1980	-	4	7	9	7	4	2	33
1981	-	9	8	5	5	-	-	27
1982	-	6	6	10	4	5	1	32
1983	-	9	21	13	4	3	3	53
1984	-	33	22	14	10	2	1	82
1985	-	27	16	9	7	4	1	64
1986	-	19	13	11	4	6	-	53
1987	-	27	13	14	12	-	-	66
1988	-	17	21	20	-	-	-	58
1989	-	24	35	-	-	-	-	59
1990	-	37	-	-	-	-	-	37
1991	-	-	-	-	-	-	-	-
Total	-	299	249	180	95	47	36	906

Appendix 4 Data on Total Students in Boarding and Group Homes

The following is a copy of the Excel chart listing various total number of students accommodated in boarding and group homes at the national level. The information highlighted in yellow was indicated to have been provided by plaintiffs' counsel.

Year	Total Enrolment	Class Size (Students)	Source	Comment/Reliability?
1958	38,513	254	017072, p. 3	Report indicates 254 "Resident Boarders attending Indian Day Schools" and 0 "Resident Boarders attending Non-Indian Schools"
1959	38,836	1,020	017072, p. 3	Report indicates 283 "Resident Boarders attending Indian Day Schools" and 737 "Resident Boarders attending Non-Indian Schools"
1960	40,637	1,264	017072, p. 3	Report indicates 362 "Resident Boarders attending Indian Day Schools" and 902 "Resident Boarders attending Non-Indian Schools"
1961	43,115	1,638	017072, p. 3	Report indicates 393 "Resident Boarders attending Indian Day Schools" and 1,245 "Resident Boarders attending Non-Indian Schools"
1961		3,000	NCA-013241	"Present trends seem to indicate that hostel and residential school accommodation may be needed for 3,000 high school pupils. An equal number will be accommodated in private homes and the remaining 4,000 will be day pupils."
1962	46,596			
1963	50,549			
1964	55,475			
1964		3,200	Indian Affairs Branch, "Facts and Figures", 1964, at p. 41	Total of 3,200 provincial school boarders
1965		3,222	Indian Affairs Branch, "Facts and Figures", 1966, at p. 41	Total of 3,222 provincial school boarders
1965	57,265	2,000	TAY-001042	"...the Branch has an extensive private home placement program which is presently accommodating approximately 2,000 Indian students at the high school, university and vocational school levels"
1965		2,847	NEL-001952	
1966	61,395	3,613	NEL-001953	
1967	64,439	4,000	NEL-001834	"... approximately 4,000 students in boarding homes in connections with our elementary and secondary integration projects"
1968	66,217	3,671	121697	Estimates of students in boarding homes during this period range from "3,000 high school students" living in private boarding homes" [NCA-011240-0001; 014204A], 3,671 students living in a "Boarding Home" while attending school [121697] to "[o]ver 4,000 students accommodated in private boarding homes" [010081, p. 8 and FDS-002826[01-01]].
1968	66,217	4,000	010081, p. 8 and FDS-002826[01-01]	over 4000
1968	66,217	3,000	NCA-011240-0001; 014204A	approximately
1969	62,834	4,000	019617, p. 6	approximate value
1969	62,834	2,800	177295, p. 5	2,800 Indian students (or roughly 4% of all registered Indian pupils)
1969	62,834			

Year	Total Enrolment	Class Size (Students)	Source	Comment/Reliability?
1969	62,834	3,600	FBH-000058[00-02]	" approximately 3,600 Indian students" (during a single school term)
1969	62,834	3,600	NPC-601364a	"some 3600 Indians..."
1969	62,834	6%	019762, p. 3; NCA-016606-0006	Six (6) per cent of all Indian students said to attend school "from boarding home"
1969	62,834	3,443	National Nominal Roll	
1969		2800	RCA-003465-0001	
1970	66,707	2,800	201244A, p. 3	approximate value
1970	66,707	4,282	National Nominal Roll	
1970		5,040	Department "Program Information Center Report on the Education Program", 1971, at 250/8	Pupils maintained in private homes - October 1970: Nationally, there are 1,252 elementary school pupils, 3,574 secondary school pupils, and 214 handicapped pupils (total of 5,040 students nationally)
1971	67,435			
1971	67,435	4,505	National Nominal Roll	
1971		5,500	Report on Education Program (Manitoba), 1971, at 2500/4	"Currently about 5500 Indian students attending provincial schools are maintained in private homes."
1971-1972		3,294	FBH-000695, p.6	
1971-1972		3,294	FBH-000697	
1971-1972		3,294	PBQ-002837	
1971-1972		3,294	PBQ-002839	
1972	71,523	8%	019762, p. 3; NCA-016606-0006	Eight (8) per cent of all Indian students said to attend school "from boarding home"
1973	71,319			
1973		5,867	Statement by the Honourable Jean Chretien, Minister of Indian Affairs and Northern Department, 1873, at p.17	Document: Students attending school from boarding home in 1972-73: 8% DOJ's footnote: "1972/73: There were approximately 11,000 indigenous students attending school away from home, including in student residences. This accounted for 15% of all indigenous students. 8% of all indigenous students were in boarding homes and 7% of all indigenous students were in residences. Thus, there were approximately 5,867 students in boarding homes."
1974	74,575	3,054	National Nominal Roll	
1975	74,339	2,784	National Nominal Roll	
1976	71,817	2,269	National Nominal Roll	
1977	71,717	5,444	PBQ-002996[02-02]	"Verified Beneficiaries" of financial assistance relating to "Room and Board" [PBQ-002996[02-02]]. Note: this amount likely contains non-minor beneficiaries.
1977	71,717	5,408	National Nominal Roll	
1978	78,088	2,975	PBQ-002995	2,737 students were living in "Boarding" Homes (both on and off reserve) and 238 students were living in [presumably education-related] "Group Homes": a grand total of 2,975 Boarding/Group Home students [PBQ-002995]. Note: this figures based on nominal roll data.

Year	Total Enrolment	Class Size (Students)	Source	Comment/Reliability?
1978	78,088	5,096	National Nominal Roll	
1979	81,359	4,246	National Nominal Roll	
1980	81,237	4,505	National Nominal Roll	
1981	82,801	3,185	200396A, pp. 24-25; PBQ-003165, p. 26	3,185 "elementary and secondary students... placed in private or group homes." This number includes "students who require placement because of special learning problems, i.e. deaf children, blind children" [200396A, pp. 24-25; PBQ-003165, p. 26].
1981		2,387	National Nominal Roll	
1981		2,679	Indian Control of Indian Education, Status Report, 1980-81, at p.23	2,679 pupils under Departmental Control (nationally)
1982	80,466	2,111	National Nominal Roll	
1983	77,412	1,879	National Nominal Roll	
1984	78,082	2,263	National Nominal Roll	
1985	80,121	2,255	National Nominal Roll	
1986	80,623	2,952	National Nominal Roll	
1987	82,271	3,327	National Nominal Roll	
1988	84,271	2,998	National Nominal Roll	

Appendix 5 Development of the Survivorship Table

Period and Cohort Mortality

69. The most readily available mortality tables that span the years of this action are the Canada Life Tables, a series of mortality statistics produced by Statistics Canada from census data. There are tables available from 1901 to 2019 produced every 5 or 10 years (with a few recently produced annually)⁹. These tables provide information about mortality of an average Canadian.
70. Over the past century, mortality of Canadians has improved. That has been evident by the increase in life expectancy at birth from about 61 years¹⁰ in 1931 to about 82 years¹¹ in 2019.
71. The Canada Life Tables are period tables – they provide information about mortality rates for a specific year. But individuals experience mortality from different years as they progress through life.
72. A person born in 1971 does not experience 1971 mortality as they age. That person born in 1971 is aged 40 in 2011 and benefits from all the factors that have improved mortality over the prior 40 years. To measure the mortality for a 40-year old in 2011, we should utilise the 2011 rates, not the rates that were measured in 1971 at birth.
73. Cohort mortality tables provide rates that recognise the changes in mortality as one ages. By combining the various period mortality tables produced by Statistics Canada, we can produce a series of cohort tables – one table for each year of birth.
74. Unless we make projections about future changes in mortality, a cohort table can only provide information about the rates up to the current year. While there are several tables available that project future improvements to mortality, they are not required for this matter (other than to project mortality from 2019 to 2023) and I have created cohort mortality tables with rates up to 2023 only.
75. Using the available Canada Life Tables, I constructed a series of period tables for each year from 1901 to 2023. The changes in mortality for the years between each of the

⁹ The tables for 1901, 1911 and 1921 are abridged life tables, meaning that mortality rates are provided for every five-year age band. (All subsequent tables show mortality rates for every integer age). I interpolated those quinquennial rates to obtain a mortality rate for each integer age. I verified those rates by comparing the resultant life expectancies to the life expectancies calculated by Statistics Canada in the original table.

¹⁰ In 1931, life expectancy at birth was about 62 for males and about 60 for females.

¹¹ In 2019, life expectancy at birth was about 79.8 for males and about 84.1 for females.

Canada Life tables was calculated by me using geometric differences. To estimate mortality improvements since 2019, I utilised the Canadian Pensioner Mortality Projection Rates B for 2019 to 2023. That projection table is based on mortality improvements under the Canada Pension Plan for contributors and pensioners.

76. Based on the year-by-year period tables, I combine them to create a series of cohort tables for each birth year 1901 to 2023.

Canada and Indigenous Mortality

77. Several studies have shown that mortality of Indigenous people differs from that of the average Canadian.
78. I found five articles comparing mortality for Indigenous Canadians and all Canadians.
- a. "Abridged Life Tables for Registered Indians in Canada 1976-2000" by Ravi B. P. Verma, Margaret Michalowski (Statistics Canada) and R. Pierre Gauvin (Department of Indian and Northern Development) (the "**Verma Study**"). This study looked at life expectancy for Canadians who identify as Registered Indian and compared that to Canadian life expectancy for all Canadians for the period 1976 to 2000.
 - b. "L'accroissement démographique des groupes autochtones du Canada au XXe siècle" by Norbert Robitaille and Robert Choinière (the "**Robitaille Study**"). This study compared life expectancy and mortality rates for Registered Indian, Inuit and all Canadians over the period 1941 to 1981 (although life expectancy for Registered Indians was only presented for 1961 to 1981).
 - c. "A Statistical Profile on the Health of First Nations in Canada: Vital Statistics for Atlantic and Western Canada, 2003-2007" by Health Canada, July 2014 (the "**Health Canada Report**"). This report is based mainly on statistics for First Nations people registered under the Indian Act and living on-reserve (except for the data for British Columbia which included those living both on and off-reserve). Results are shown based on mortality rates at various ages from 0 to 80.
 - d. "First People Lost: Determining the State of Status First Nations Mortality in Canada Using Administrative Data" by Randal Akee and Donna Feir, University of Victoria, February 2018 ("**First People Lost Report**"). This report analysed data over the period 1974 to 2013 for First Nation people living both on and off-reserve. Results are presented as mortality rates as well as the ratio of First Nation mortality to all Canadian mortality.

- e. "Life expectancy of First Nations, Métis and Inuit household populations in Canada", by Michael Tjepkema, Tracey Bushnik and Evelyne Bougie, Statistics Canada, 18 December 2019 (the "**Statistics Canada Report**"). This report presents life expectancies as of 2011 at various ages separately for First Nations, Métis, Inuit and non-Indigenous peoples.
79. Three of these studies provide the results in terms of life expectancy. When constructing a table of survivorship, we need to determine the underlying mortality rates¹² rather than directly use life expectancy. A reasonable approximation to the underlying mortality rates can be obtained by applying a multiplier to the rates from another table of mortality¹³.
80. Table 80 shows the life expectancies from the five reports. The values are reasonably consistent but mask some significant differences in the age-specific results.

Table 80 – Life Expectancy of First Nation, Métis, Inuit and All Canadians 1940 to 2013

Period	First Nation (Status)	Métis	Inuit	All Canadians
1941-1951			30	67
1951-1961			38	70
1961-1962	62			71
1965-1968	63		55	72
1971	63			73
1976	63		65	74
1981	66			75
2003-2007	73			80
2011	75	79	73	81
2010-2013	76			81

81. I have determined that by applying varying mortality multiples to the Canada Life Tables I can obtain a life expectancy at birth that is similar to the life expectancies for Registered Indians as reported in the Verma and Robitaille Studies.

¹² Both life expectancy and survivorship are calculated from the individual age-based mortality rates.

¹³ Applying a single multiplier to another mortality table fails to recognise differences in relative mortality by age. However, in my experience the error is minor in relation to the added precision gained by having a table that gives a similar life expectancy to reality. For example, if there is a significant spike in mortality among the population we are modelling at, say, ages 15 to 30, applying a multiplier to Canadian population rates will recognise those deaths, but they will be spread out over a lifetime rather than between ages 15 and 30. In my opinion, the resulting effect on survivorship is immaterial for the purposes of this report.

A better approach is to apply different multipliers at each age or quinquennial age band, provided the data is sufficient to permit that. This approach was used by me for the data in the Statistics Canada Report.

Table 81 – Life Expectancy¹⁴ and Mortality Multiples for Registered Indians

Year	Canadian Life Expectancy	Registered Indian Life Expectancy	Difference in Life Expectancy	Mortality Multiple
1961	71	62	9	190%
1966	72	63	9	190%
1971	73	63	10	200%
1976	74	63	11	220%
1981	75	66	9	205%
1996-2000	79	71	8	195%

82. From 1961 to 2000, Canadian Registered Indians experienced mortality that was about double the mortality of the average Canadian. In my opinion, the fluctuation between 190% and 220% is not significant and could be explained by either data issues or by improvements in mortality being experienced by Registered Indians and all Canadians at different times during that period.
83. The Health Canada Report, First People Lost Report and Statistics Canada Report all provide details that permit age-specific results. They each result in differing mortality multiples for each age group of First Nation people. The First People Lost multiples are the lowest and produce the lowest mortality rates – resulting in a greater number of survivors from any population. The Health Canada and Statistics Canada Report produce reasonably similar numbers of survivors and are reasonably consistent with the Verma and Robitaille Study results.
84. Both the First People Lost Report and the Statistics Canada Report provide some evidence that the changes in mortality and life expectancy over time are roughly similar for each Indigenous identity. In other words, it appears that Indigenous life expectancies increase over time similar to the increase in life expectancy for all Canadians. However, the time periods reviewed were relatively short and are not determinative of the mortality relationships by Indigenous identity over long periods, such as we are addressing herein.
85. In the absence of better data, I have determined that applying these mortality multiples to all years of this class action is likely to be significantly better than applying no mortality multiples.

¹⁴ The life expectancy shown is an average for males and females.

86. I understand that the students in boarding and group homes may have included First Nations, Metis and Inuit students. The mortality rates experienced by each of these three groups of Canadians differ. I do not have any information on the racial profile of the students. For the purposes of this report, I have assumed that on average, the mortality rates for First Nation Canadians is, on average, appropriate for estimating survivorship of the students as a group.

The 2016 Survivorship Table

87. I applied the mortality ratios from the Health Canada Report to the cohort mortality for the Canadian population to estimate mortality rates for First Nation Canadians. From those mortality rates, I calculated the probability of survival for those entering care during the class period. Sample survival rates to July 2016 are shown in Table 87.

Table 87 - Survival Rates to 2016

Year Entered Program	Survivorship Probability
1958	46.2%
1963	59.6%
1968	70.2%
1973	77.5%
1978	83.4%
1983	88.6%
1988	92.4%

The 2023 Survivorship Table

88. I applied the mortality ratios from the Health Canada Report to the cohort mortality for the Canadian population to estimate mortality rates for First Nation Canadians. From those mortality rates, I calculated the probability of survival for those entering care during the class period. Sample survival rates to July 2023 are shown in Table 88.

Table 88 - Survival Rates to 2023

Year Entered Program	Survivorship Probability
1958	32.5%
1963	45.0%
1968	58.3%
1973	68.7%
1978	76.9%
1983	82.8%
1988	87.9%

Appendix 6 Form 52.2 – Acknowledgement of Expert’s Duty

Court File No. T-1417-18

FEDERAL COURT

BETWEEN:

Reginald Percival, Alan Medrick McKay, Iona Teena McKay and Lorna Watts

Plaintiff

and

His Majesty the King

Defendant

Certificate Concerning Code of Conduct for Expert Witnesses

I, Peter Gorham, having been named as an expert witness by the defendant, *the Department of Justice, (Canada)*, certify that I have read the Code of Conduct for Expert Witnesses set out in the schedule to the *Federal Courts Rules* and agree to be bound by it.

27 July 2023

Date



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