

The Impact of the Residential Schooling System on Aboriginal Health in Canada

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Abstract

The purpose of this study is to understand the relationship between attendance of Aboriginal residential schools in Canada and later life health outcomes for Aboriginal people. Residential schools were undoubtedly harmful to those who attended and to the families who were separated by their existence. The aim of my study is to identify whether later life health outcomes for attendants of residential schools is statistically different from Aboriginal people in Canada who did not attend federal residential schools. Data was obtained was the 2006 Aboriginal Peoples Survey. My findings suggest that residential schools have had a negative impact on health outcomes, increasing the likelihood of poorer self-reported health and a greater number of chronic conditions. My findings also suggest that going to a residential school has had a greater negative health impact on individuals than smoking.

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1 Introduction

Although it has been over two decades since the last Aboriginal residential school closed down in Canada, the impacts of the failed attempt at assimilation are still felt today by survivors and their families. Starting in the mid-1800s up until 1986, the residential school system was the primary tool of the federal government in its attempts to assimilate Aboriginal Canadian children into mainstream European-Canadian society. The ensuing decades proved to be some of the most problematic for Aboriginal people of Canada. Children were often forcibly separated from their parents and communities and sent to federal residential schools across all of Canada. At the schools, contact with the outside world, with family or friends was tightly controlled and infrequent (Law Commission of Canada, 2000).

In addition to the trauma associated with forcible separation and the loss of their language and culture, attendants also suffered from sub-standard living conditions in the schools themselves. The federal residential schools were notorious as breeding grounds for excessive punishment, destitution and physical abuse. Many children were malnourished, sexually abused or even forced into indentured manual labour (Llewellyn 2002). Many Aboriginal children died at the schools and those who survived were undoubtedly traumatized physically, emotionally and mentally.

Given the high degree of trauma residential school attendants experienced at such a young and developmentally important age, an important question is the extent to which this had long-term impacts, especially health consequences, on survivors today. There are many studies for the general population which link early childhood and adolescent traumas to latter life negative health outcomes (McEwen 2003). The conditions at residential schools most certainly

fits the criterion of a traumatic environment.

Aboriginal health in itself is a topic of great importance to health practitioners and policy makers alike. It is well-documented that Aboriginal people in Canada on average experience lower health outcomes compared to non-Aboriginal Canadians. Aboriginals score lower on almost all conventional measures of health status, including higher mortality and incidence of disease. The average life expectancy of an Aboriginal Canadian is approximately six years less than the overall Canadian Population (Rosenberg and Wilson 2002). Furthermore, Aboriginal people also suffer more from higher rates of chronic illness, obesity, infant mortality and suicide than other Canadians.

In order to fully understand the relationship between residential schools and long-term health outcomes it is first important to understand the role social determinants play in health. Labour market outcomes, social and racial exclusion and health status are all inextricably tied together. In general, Aboriginal populations in Canada tend to have lower incomes and obtain less education than their non-Aboriginal counterparts (Frohlich 2006). Historical circumstances, including the institution of residential schools, have contributed to a structural inequity between Aboriginal and non-Aboriginal Canadians which has created a deeply entrenched inequality in income, health and educational attainment.

There are two main avenues where residential schools may play a role on health outcomes: (1) the direct effect of early childhood trauma in latter life development and health outcomes and (2) the psychological distress leading to a higher level of negative social pathologies, which through socioeconomic determinants worsens health outcomes. The aim of my study is not to determine which of the effects dominates in health outcome but the existence and

magnitude of health consequences.

My main findings suggest residential schools have played a significant role in Aboriginal health outcomes. Those who attended a residential school are more likely to report a greater number of chronic conditions than non-attendants, as well as a greater likelihood to report “Fair or Poor” health. It appears that attending a residential school is also associated with an increased likelihood of obesity. These results remain economically and statistically significant even after accounting for personal, socio-economic and regional differences among the survey respondents.

2 Literature Review

A review of the literature suggests that Aboriginal people face a host of social and societal issues which negatively impact health outcomes including the negative effects of residential schools. Aboriginal people in Canada experience a disproportionate amount of substance abuse, mental illness and early mortality. Studies have focused on how a loss of autonomy and social exclusion contributes to social maladies and pathologies (Loppie and Wien 2009). I will briefly review the history of residential schools in their historical and political context and discuss the current understanding of socio-demographic relationships with health production.

2.1 History of Residential Schools

Residential schools were the primary mechanism used by the federal government in their attempts to assimilate Aboriginal children into mainstream Canadian society. At the time of confederation, Aboriginal peoples were de-

clared wards of the federal government and, as such, the financial responsibility of the federal government (Llewellyn 2002). In order to lessen the financial burden, the federal government undertook a policy of assimilation under the belief they were enfranchising Aboriginal people. In principle, children would be taken away from their Aboriginal families and communities and taught in a more traditional western style. They would adopt English as their primary language and, once graduated, they would be a part of mainstream Canadian society.

The residential schools were created as “total institutions” . The term total institutions, according to the Law Commission, refers to institutions that seek to re-socialize people by instilling them with new roles, skills or values. This meant that such institutions had almost complete control over their students, who both studied and lived at residential schools for at least ten months every year. However, in recent decades we have learned the extent to which abuses and neglect occurred at residential schools (Loppie and Wien 2009). Given the nature of “total institutions”, Aboriginal students lacked outside support and any recourse to circumvent abuse. A report put forward by the Law Commission of Canada in 1997 discovered the degree to which abuses occurred in residential schools. To prevent insubordination by students, many schools adopted disciplinary practices such as food deprivation, strapping and solitary confinement, as ways to punish children who misbehaved (Tait 2003). Also, there were a disturbing number of reports of sexual abuse occurring at the schools between administrators and the students.

At the peak of the residential schooling system, an estimated 75 percent of First Nation, Metis and Inuit children aged six to fifteen were attending a residential school (Tait 2003). It is also estimated that nearly 100,000 Aboriginal

children attended residential schools while they existed.

2.2 Determinants of Aboriginal Health

In conventional frameworks the main determinants of health are as follows: demographic status, socioeconomic status, access to health care and place of residence (Rosenberg and Wilson 2002). Demographic status refers to differences in attributes such as gender and age. Females and males each have different illnesses and diseases to which they are predisposed. The relationship with age is also straightforward as health status is known to depreciate with age. Access to health care and place of residence are often interrelated as well. Those who live in more urban areas often have more access to health services than those who live more rurally or in isolated areas. Beyond access to more hospitals and physicians, Rosenberg and Wilson (2002) argue that living in cities also offers benefits such as parks, recreational centres and greater employment opportunities.

The relationship between socioeconomic status and health is a far more complicated one. Increased earnings and increased educational attainment are almost universally associated with more positive health outcomes. In the most simple economic framework increased income increases the budget constraint and allows for more health consumption. The relationship between health and educational attainment is a little more complicated as educational attainment generally increases income, but also more education is associated with better health decisions. There is also selection bias when it comes to educational attainment and those who choose more education may also have the same underlying characteristics as those who make better health decisions. In other words, individuals who value the benefits of higher education are likely to be

the same individuals who value following a healthy lifestyle.

In any discussion of Aboriginal Health, socioeconomic status remains one of the most important considerations. Material circumstance is always an important factor in research and studies concerning Aboriginal health. As previously discussed income and educational attainment are positively correlated with good health status. However, the Aboriginal population in Canada has lower incomes and less educational attainment than the non-Aboriginal population. Frohlich (2006) reports that 28 percent of Aboriginal people relied on social assistance compared with 8.1 percent among the total Canadian population. However, differences in socioeconomic status do not alone explain discrepancies in health outcomes. Frohlich (2006) discovered that even at the same levels of income and living off-reserve, Aboriginal people suffer nearly double the number of chronic conditions compared to non-Aboriginals.

An argument can be made that attendance of residential schools had a negative impact on Aboriginals economic performance as well. Children who attended schools were taught that their own culture was inferior and uncivilized. There is evidence that, as a result, many residential school survivors suffer from low self-esteem and low belief in their own abilities (Barton and Thommasen 2005). As a consequence, residential school attendants would be less likely to pursue post-secondary education and less likely to pursue other forms of human capital enrichment given the pathologies they developed as a consequence of attending residential schools. The lack of success in their education would be associated with lower labour market outcomes and ultimately lower socioeconomic status.

2.3 Residential Schools and Health Considerations

Apart from the socioeconomic effects that residential schools may have had, it is very likely they had direct consequences on health as well. Loppie and Wien (2009) explore some of the negative impacts that residential schools had on First Nation adults. Over 81.3 percent of respondents reported isolation from family as a key negative factor associated with residential schools while 79 percent of respondents reported verbal and emotional abuse, harsh discipline and loss of cultural identity. Nearly 70 percent of respondents also reported experiencing physical abuse at residential schools. Loppie and Wien discuss how racism and social exclusion can lead to negative health consequences. They document that when Aboriginal youth experience social exclusion, alcohol and drug abuse often increase. Furthermore social exclusion creates economic barriers that can prevent Aboriginal participation and productivity.

It is also possible that residential schooling manifested itself in mental illness amongst some attendants as well. Brasfield (2001) describes a syndrome called “Residential School Syndrome” which, it should be noted, sounds very similar to post-traumatic stress disorder (henceforth PTSD). Studies have demonstrated that those suffering from PTSD are also more likely to suffer physiological symptoms as well, including but not limited to: migraines, fibromyalgia and other nerve disorders (APA, 1994). The symptoms of Residential School Syndrome include: flashbacks, nightmares, recurrent intrusive memories, anger management and tendency to abuse substances as coping mechanisms. Tait (2003) discusses the clear link between residential school attendance and an increase in fetal alcohol syndrome amongst the children of residential school attendants. Coupled with Barton and Thommasen’s (2005) analysis, this suggests the trauma from residential schools manifests in higher

rates of substance abuse.

My analysis will contribute to the former by analyzing differences in latter life health outcomes between those Aboriginals who did and those who did not attend a residential school. I will attempt to quantify differences in health outcomes of non-residential and residential school Aboriginals. Do those who attended residential school report poorer health? Are there higher incidences of chronic conditions and obesity among residential school attendees? Exploring the data can offer insight into the magnitude and effect residential schools had on latter life health outcomes. Although there have been many sociological studies which have discussed at length the ramifications residential schools may have had on the Aboriginal population, my research appears to be the first to provide quantitative evidence on the matter.

3 Data and Methodology

3.1 Data

All data is taken from the Aboriginal Peoples Survey (henceforth APS) from the 2006 cycle. The APS 2006 is a comprehensive national survey for off reserve Aboriginal people from all provinces and territories. Data was retrieved for over 30,000 respondents. However, after the necessary exclusions were made ¹ I was left with a sample of 20,902 individuals. All respondents were 20 or older during the 2006 survey. It is important to note, the APS only surveys off-reserve Aboriginals which mean there is no data for on-reserve participants. Although this may seem like a limitation in some respects it means the Abo-

¹Excluded from the study were all non-respondents to survey questions to be used in analysis. .

iginal population in my study are more similar to non-Aboriginal Canadians. Living on-reserve is associated with other negative social pathologies which would likely be associated with more negative health outcomes.

The key explanatory variable of interest will be whether or not a respondent attended a residential school. Out of the 20,000 respondents, close to 1700 indicated that they had attended a government residential school. It is noted in the survey, the question itself is personal and there are no further questions on duration of attendance. As such it is a binary variable where a respondent either did or did not attend a residential school. One element which makes exploring the relationship between health outcomes and residential school attendance so compelling is the absence of a self-selection bias. It is assumed given the circumstances surrounding the institution of residential schools respondents who attended residential schools did not do so of their own volition. As previously mentioned, exploring the relationship between education and health is often problematic since respondents can choose the level of education to pursue.

Before beginning my analysis it is important to ensure that there is no significant age difference between the two populations. The last residential school was closed in Canada in 1986 although by that time they were not nearly as prevalent as they were in earlier decades. It is entirely possible that the residential school population is considerably older than the non-residential school respondents. If this was the case, then age may be the primary factor driving differences in number of chronic conditions and poorer self-reported health. However, analyzing the mean ages of both populations there is not a large difference. Both the residential and non-residential school populations had mean ages under fifty. Moreover, in the empirical analysis below I control

for age.

The key dependent variables in my analysis are three different measures of health outcomes. First and foremost I look at differences in self-reported health, namely those who reported “Fair” or “Poor” health as opposed to “Excellent”, “Very good” or “Good”. This is the most subjective measure of health in my analysis since there are no specific guidelines of what qualifies as “Good”, “Excellent” or “Poor” health and it is the opinion of the respondent. In contrast to self-reported health I also look at more objective measures of health outcomes such as number of chronic conditions and rates of obesity.

Table 1: Percentage of Respondents Reporting Excellent to Poor Health

	Non-Residential Schools	Residential Schools
Excellent	22.80	14.54
Very Good	34.42	25.61
Good	26.48	30.30
Fair	10.98	20.36
Poor	5.32	9.17

There are considerable differences in self-reported health between residential and non-residential school Aboriginals. Non-residential school Aboriginals are nearly twice as likely to report “Excellent” health compared to their residential school counterparts. Non-residential school Aboriginals are also far more likely to report being in “Very Good” health. When it comes to the more negative health outcomes such as “Fair” or “Poor” health, those who had attended residential schools are much more likely to report negative health outcomes. The differences in self-reported health are surprisingly striking.

The next variable of interest is the number of chronic conditions, which is enumerated from “Zero” to “Five or more”. This is used to assess if those who attended residential schools suffer from more chronic diseases. This is one of

the most important measures since chronic conditions such as heart disease, diabetes and arthritis often require more constant and long term health care and can also be the most detrimental to quality of life. It is important to note that the “Number of Chronic Conditions” variable does not specify which chronic conditions respondent suffer but merely the quantity.

Table 2: Percentage of Respondents Suffering from Chronic Conditions

	Non-Residential Schools	Residential Schools
None	45.19	31.26
One	25.93	25.5
Two	13.83	18.26
Three	8.08	11.55
Four	3.83	6.33
Five or more	3.13	7.00

The greatest difference in chronic conditions appears to be between zero and one. Nearly half of non-residential school respondents report having no chronic conditions whatsoever, whereas only about a third of those who have attended residential school report having no chronic conditions. Although a greater percentage of non-residential school attendants reported having one condition, residential school attendants were more likely to report suffering from multiple conditions. Furthermore, residential school attendants were more than twice as likely than non-residential school attendants to report five or more chronic conditions.

The final health outcome that I study is “Obesity”, a health condition which is often associated with lower life expectancy, higher incidence of disease and lower quality of life. It describes any respondent with a body mass index (BMI) greater than or equal to 30.0. While BMI is limited in scope when looking at individuals since it fails to account for muscle mass and body type, it is still useful for looking at population body mass.

Table 3: Percentage of Respondents reporting Obesity

	Non-Residential Schools	Residential Schools
BMI greater than 30.0	25.49	31.67

Once again there is a striking difference between residential and non-residential school respondents. Respondents who had attended residential school are 24 percent more likely to report being obese than non-residential school Aboriginals.

3.2 Methodology

In order to understand the effect residential school in regards to health outcomes, I develop my empirical model in four stages. First I regress the health outcome on whether or not a respondent has attended a residential school. In the next stage I add controls for personal characteristic. Because data is categorical in nature, dummy variables are heavily utilized. Given the binary nature of whether or not one reported “Fair or Poor” health status, or whether or not one is obese I will be using a probit model to estimate these relationships. For number of chronic conditions I will use an OLS regression.

$$Pr(Y = 1|X) = \phi(\beta_1 ResidentialSchool) \quad (1)$$

$$\mathcal{Y}_i = \alpha + \beta_1 ResidentialSchool + \varepsilon_i \quad (2)$$

In order to control for personal characteristics I use a dummy for gender, and dummies for aboriginal identity, whether or not the respondent identifies as First Nation, Metis or Inuk. In order to control for age there are dummies for those who are between the ages of 20-25 (once again all those younger than 20 were excluded from my analysis), for those between the ages of 45 and

64, and finally for all respondents 65 and older. This will help to control for biological and generational health differences. I will also use dummy variables for whether a respondent lives in an urban, rural and arctic area. Finally in terms of personal characteristics I use a dummy for respondents who have ever identified as a daily smoker to control for the various health implications of smoking.

$$Pr(Y = 1|X) = \phi(\beta_1 RS + \sum_{i=2}^{10} \beta_i Personal) \quad (3)$$

$$\mathcal{Y}_i = \alpha + \beta_1 RS + \sum_{i=2}^{10} \beta_i Personal + \varepsilon_i \quad (4)$$

In the third stage of my analysis I include controls for socio-economic differences in respondents. Education and employment variables are accounted for. With regards to education there is a dummy variable for those who have not completed high school and one for any respondent who has engaged in any sort of post-secondary education at either university or college. The omitted base variable for education will be for those who have completed high school but had no addition education. The controls for employment include a dummy variable for those who are unemployed, as well as a dummy for those who are not working by choice. The omitted base variable is for those who are currently employed. In order to control for low income respondents there is a dummy variable for whether or not they received welfare from the government in the last twelve months. This is useful because those who qualify for unemployment benefits do not qualify for welfare benefits from the government and vice versa. Low income and employment status are often related to health outcomes. Thus, the third stage relationships I estimate are:

$$Pr(Y = 1|X) = \phi(\beta_1 RS + \sum_{i=2}^{10} \beta_i Personal + \sum_{i=11}^{15} \beta_i SES) \quad (5)$$

$$\mathcal{Y}_i = \alpha + \beta_1 RS + \sum_{i=2}^{10} \beta_i Personal + \sum_{i=11}^{15} \beta_i SES + \varepsilon_i \quad (6)$$

In the final stage of my empirical analysis I include regional controls as well, to account for regional differences across Canada. I have grouped the provinces and territories into six different regions. There is a dummy for the Atlantic region includes the Maritime Provinces (Nova Scotia, New Brunswick and Prince Edward Island) as well as Newfoundland and Labrador. I also include dummies for the Prairie Provinces (Manitoba, Saskatchewan and Alberta) and three territories (Nunavut, Northwest Territories and Yukon) are also aggregated. Finally there is a dummy for Quebec and British Columbia. Canada is a large and diverse country economically, and health policies come under provincial jurisdiction.

$$Pr(Y = 1|X) = \phi(\beta_1 RS + \sum_{i=2}^{10} \beta_i Personal + \sum_{i=11}^{15} \beta_i SES + \sum_{i=16}^{20} \beta_i Regional) \quad (7)$$

$$\mathcal{Y}_i = \alpha + \beta_1 RS + \sum_{i=2}^{10} \beta_i Personal + \sum_{i=11}^{15} \beta_i SES + \sum_{i=16}^{20} \beta_i Regional + \varepsilon_i \quad (8)$$

For ease of interpretation in the following results tables I present the marginal effects of the independent variables on the probability of the outcome and provide the probit coefficients in my appendix. For the OLS model I display the coefficients in my results tables and standard errors in my appendix. All regressions have been done in Stata v. 11 and population weights have been used for all analysis.

4 Results

Overall, there is strong evidence that attending a residential school has negative health consequences for respondents. In terms of self-reported health, those who have attended a residential school were much more likely to report “Fair” or “Poor” health even with additional personal, socioeconomic and regional controls. Likewise, those who attended a residential school were much more likely to report being obese although the relationship slightly weaker. The strongest relationship is between residential school attendance and the incidence of chronic diseases.

With regard to Table 4, attending a residential school is associated with around a five percent increase in the likelihood of reporting “Fair” or “Poor” health, even with the addition of all the controls. In terms of self-reported health, age played a significant role. Older respondents were far more likely to report being in “Fair” or “Poor” health than their younger counterparts. Also not finishing high school is also associated with more negative reports of self reported health. This reflects a lot of the earlier arguments made between the relationship of socioeconomic status and health outcomes. Unemployment did not appear to be a significant factor for health, but not working by choice is associated with more negative health. It is important to reiterate that those in poorer health are more likely ‘choosing’ not to work because they are in poor health, which may be why unemployment appears insignificant.

Table 5 indicates a substantial relationship between residential school attendance and reported number of chronic conditions. Even after accounting for personal and socioeconomic differences, attending residential school is associated with an increased number of chronic conditions.

4.1 Results for Self-Reported Fair or Poor Health

Table 4: Results for “Fair or Poor Health”, Marginal Effects dF/dx

	(1)	(2)	(3)	(4)
Residential School	0.132***	0.078***	0.045***	0.046***
Female	-	0.026***	0.002	0.002
Metis Identity	-	0.000	0.008	0.006
Inuk Identity	-	-0.004	-0.025	-0.022
Younger than 25	-	-0.35**	-0.047***	-0.047***
Aged 45-65	-	.134***	0.108***	0.108***
Older than 65y	-	0.286***	0.121***	0.125***
Ever daily smoker	-	-0.015*	-0.003	-0.003
Urban Region	-	-0.005	0.004	0.003
Inuit Region	-	0.005	-0.012	0.003
Less than high school	-	-	0.062***	0.061***
Post-Secondary	-	-	-0.008	-0.013
Unemployed	-	-	0.011	0.012
Not in labour force	-	-	0.170***	0.172***
Recieved Welfare	-	-	0.193***	0.194***
Regional Effects	-	-	-	(***)
Observed P	0.163***	0.097***	0.042***	0.070***
Predicted P	0.163***	0.097***	0.042***	0.070***
Pseudo R-squared	0.0051	0.0565	0.1544	0.1586

Education, geographical, identity, employment and education dummies are included in the above regression, the omitted variables are “Lives in Rural Area”, “First Nation Identity”, “Ages 25-45”, “Completed High School” and “Currently Employed”. Values significant at 10*, 5** and 1*** percent level.

4.2 Results for Chronic Conditions

Table 5: Number of Chronic Conditions Reported

Specification	(1)	(2)	(3)	(4)
Residential School	0.482***	0.236***	0.157***	0.190***
Female	-	0.219***	0.145***	0.150***
Metis Identity	-	0.05	0.078**	0.081**
Inuk Identity	-	0.010	-0.052	-0.043
Younger than 25	-	-0.218***	-.269***	-0.260
Aged 45-65	-	0.764***	0.705***	0.699***
Older than 65y	-	1.519***	1.202***	1.215***
Ever daily smoker	-	0.081***	0.107***	0.112***
Urban Region	-	0.051**	0.062**	0.059**
Inuit Region	-	-0.292***	-0.359***	-0.134**
Less than high school	-	-	0.149***	0.046***
Post-Secondary	-	-	0.057	0.042
Unemployed	-	-	0.038	0.042
Not in labour force	-	-	0.478***	0.478***
Recieved Welfare	-	-	0.0580***	0.0587***
Regional Effects	-	-	-	(***)
Constant	-1.088***	0.0556***	0.370***	0.582***
Adjusted R-squared	0.0056	0.1564	0.2084	0.2218

Education, geographical, identity, employment and education dummies are included in the above regression, the omitted variables are “Lives in Rural Area”, “First Nation Identity”, “Ages 25-45”, “Completed High School” and “Currently Employed”. Values significant at 10*, 5** and 1*** percent level.

4.3 Results for Reported Obesity

Table 6: Incidence of Obesity, Marginal Effects dF/dx

	(1)	(2)	(3)	(4)
Residential School	0.062***	0.049***	0.044***	0.029*
Female	-	-0.026***	-0.027***	-0.027***
Metis Identity	-	0.018**	0.019**	0.005
Inuk Identity	-	-0.011	-0.013	-0.014
Younger than 25	-	-0.107***	-0.110***	-0.110***
Aged 45-65	-	0.032***	0.030***	0.032***
Older than 65y	-	-0.003	-0.014	-0.009
Ever daily smoker	-	0.035***	0.037***	0.039***
Urban Region	-	-0.017**	-0.015	-0.0145*
Inuit Region	-	-0.0017	-0.011	-0.004
Less than high school	-	-	0.001	-0.004
Post-Secondary	-	-	-0.30**	0.31***
Unemployed	-	-	0.011	0.013
Not in labour force	-	-	0.008	0.011
Recieved Welfare	-	-	0.035**	0.033**
Regional Effects	-	-	-	(***)
Observed P	0.258***	0.258***	0.258***	0.258***
Predicted P	0.258***	0.255***	0.255***	0.253***
Pseudo R-squared	0.007	0.0121	0.0140	0.0197

Education, geographical, identity, employment and education dummies are included in the above regression, the omitted variables are “Lives in Rural Area”, “First Nation Identity”, “Ages 25-45”, “Completed High School” and “Currently Employed”. Values significant at 10*, 5** and 1*** percent level.

With regard to personal characteristics, age remained one of the most significant factors for number of chronic illness with those who are younger than 25 reporting far less chronic conditions, those between 45-64 reporting slightly more and those older than 65 reporting the most incidence. This is unsurprising as health is known to depreciate with age. Also being female is also positively associated with increased number of chronic conditions. Aboriginal identity seemed more weakly associated with chronic conditions.

With regard to the socio-economic controls, not finishing high school is associated with higher incidence of chronic conditions while attending post-secondary did not appear to have any significant associated with number of chronic illnesses. Once again the health penalty of not finishing high school is smaller in magnitude than the effect of attending a residential school. There is also no observed relationship between chronic illness and unemployment. There is a very strong positive relationship between those not in the labour force and number of chronic illnesses, however it is likely that those who are suffering from more illnesses may choose not work so there should not be a causal interpretation. Likewise, a strong and positive relationship between chronic illness and receiving welfare may also indicate employment penalties from suffering poor health.

One of those most interesting features in Table 4 and 5 is the relationship between smoking and health outcomes. Although smoking is positive and significantly associated with incidence of chronic illnesses and reporting poorer health, the effect of attending a residential school dominated the effects of smoking in both cases. Those who attended a residential school and did not smoke were more likely to suffer more chronic illnesses than a smoker who did not attend a residential school. In fact, smoking is not very statistically

significant in the probability of negative self-reported health.

The relationship between obesity and residential schooling is also significant but to not the extent of the other two health outcomes. Attending a residential school is associated with an 3 percent increased likelihood of reporting obesity when all controls are taken into account. As with all of my other health outcomes, age played a role in the probability of obesity. Unlike chronic and conditions and self-reported health, being older than 65 is not a significant factor in obesity. However, being between the ages of 45 and 65 was associated an increased probability of being obese. However, this may be a reflection of generational differences in eating habits and not merely biological age differences. Unlike the other two health outcomes, employment status did not appear to have a relationship with obesity, however receiving welfare is associated with an increased probability of reporting obesity.

In all three chosen health outcomes, residential schooling remained a significant factor in an increased probability of negative health outcomes. In fact, the effect of residential schooling is comparable in magnitude to many socio-economic and demographic effects which are well known and have established relationships with health. Once again it is important to reiterate the exogenous nature of residential schools which suggests my results are causal.

5 Conclusion

Aboriginal Health in Canada remains an important topic for policy and cultural discussion. My results suggest residential schools have had a considerably negative and persistent impact on the health of attendees. My results are consistent with the literature which suggests that the psychological distress, abuse and disenfranchisement which occurred at residential schools still have concrete manifestatons to this day.

As always certain caveats should be kept in mind while interpreting results. The APS is a self-reported and as such is subject to measurement error. Also a high non-response rate for questions concerning weight and health suggests some of my figures may be under-reported. Also as previously mentioned, the APS only surveys off-reserve Aborigines which means results from my survey may not hold for those living on reserve. In fact the literature suggests that being on-reserve can reinforce negative social pathologies even moreso.

With evidence of health consequences there is always the consideration of public policy to keep in mind. Although the federal government has acknowledged and apologized for residential schools, there are other prescriptive measures to be considered. The most obvious policy prescription would be increasing primary health care resources and focussed health initiatives to mitigate some of the direct effects residential schools have had on attendants. For instance, providing more mental health resources for those who suffer from “Residential School Syndrome”. Furthermore, there is likely a question of appropriate compensation. Although is very often difficult to conceptualize compensating what has been lost in terms of health, welfare and quality of life, there should be resources made available to alleviate the suffering residential school attendants are still facing today.

Economic and social policies should not just address primary health care but also address the distribution of social determinants of health as well. By recognizing the relationship social determinants have with health outcomes suggests that social policies should not just address health but also equity and economic growth. As discussed by the Commission on Social Determinant of Health, removing and mitigating social and material inequality is a pro-health policy endeavor (Marmot 2007). As previously discussed, residential schools likely had negative economic outcomes on attendants. Effective policy needs to recognize the many determinants which influence health outcomes and not just primary care initiatives. By providing resources which promote economic growth, such as educational resources health outcomes can also be improved.

Future research into the intergenerational effects of residential schools would be interesting and provide insight into issues which may arise for a younger generation. Children whose parents attended residential schools may also be suffering negative consequences from either the resulting social pathologies their parents underwent. As was mentioned by Tait (2003), children whose mothers attended residential school were more likely to be suffer from Fetal Alcohol Syndrome. Although I've explored some of the health consequences residential schools have had, there are future research opportunities in labour market outcomes, income penalties and other welfare effects residential schools have had.

The value of health status cannot be overstated. Apart from the intrinsic quality of life benefits that good health delivers to individuals, it is also important economically. Health is an input into production and human capital as much as education and income are inputs for health. Any disruption to either causes negative repercussions in both spheres. By understanding the

determinants of Aboriginal health, we can not only improve quality of life but hopefully help Aboriginal people of Canada become less marginalized in the future generations.

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7 Appendices

7.1 Probit Coefficients for Reporting Fair or Poor Health

Table 7: Respondents reporting Fair or Poor Health

	(1)	(2)	(3)	(4)
Residential School	0.444 (0.05)	0.287 (0.06)	0.191 (0.06)	0.192 (0.06)
Female	-	0.111 (0.03)	0.011 (0.03)	0.011 (0.03)
Metis Identity	-	-0.000 (0.03)	0.037 (0.03)	0.029 (0.03)
Inuk Identity	-	-0.017 (0.10)	-0.123 (0.11)	-0.105 (0.11)
Younger than 25	-	-0.154 (0.07)	-0.238 (0.09)	-0.239 (0.09)
Aged 45-64	-	0.520 (0.04)	0.459 (0.04)	0.460 (0.04)
Older than 65	-	0.891 (0.06)	0.457 (0.06)	0.471 (0.06)
Ever Daily Smoker	-	-0.064 (0.04)	-0.016 (0.04)	-0.014 (0.04)
Urban Region	-	-0.002 (0.03)	0.023 (0.03)	0.013 (0.03)
Inuit Region	-	0.020 (0.10)	-0.058 (0.11)	0.049 (0.12)
Less than High School	-	-	0.264 (0.05)	0.259 (0.05)
Post-secondary	-	-	-0.053 (0.05)	-0.062 (0.05)
Unemployed	-	-	0.050 (0.07)	0.055 (0.07)
Not in labour force	-	-	0.667 (0.04)	0.674 (0.04)
Recieved welfare	-	-	0.685 (0.05)	0.690 (0.05)
Region	-	-	-	(***)
Constant	-0.982 (0.02)	-1.289 (0.04)	-1.568 (0.06)	-1.439 (0.07)

Education, geographical, identity, employment and education dummies are included in the above regression, the omitted variables are “Lives in Rural Area”, “First Nation Identity”, “Ages 25-45”, “Completed High School” and “Currently Employed”. Standard errors reported in parenthesis.

7.2 Probit Coefficients for Reported Obesity

Table 8: Results for Incidence of Obesity

	(1)	(2)	(3)	(4)
Residential School	0.182 (0.05)	0.148 (0.05)	0.133 (0.05)	0.088 (0.05)
Female	-	-0.080 (0.03)	-0.084 (0.03)	-0.084 (0.03)
Metis Identity	-	0.056 (0.03)	0.058 (0.03)	0.017 (0.03)
Inuk Identity	-	-0.036 (0.09)	-0.043 (0.09)	-0.045 (0.09)
Younger than 25	-	-0.370 (0.06)	-0.385 (0.06)	-0.388 (0.06)
Aged 45-64	-	0.100 (0.03)	0.091 (0.03)	0.101 (0.03)
Older than 65	-	-0.009 (0.05)	-0.044 (0.06)	-0.028 (0.06)
Ever Daily Smoker	-	0.106 (0.03)	0.114 (0.03)	0.119 (0.03)
Urban Region	-	-0.054 (0.03)	-0.047 (0.03)	-0.045 (0.03)
Inuit Region	-	-0.006 (0.09)	-0.027 (0.09)	-0.005 (0.10)
Less than High school	-	-	-0.004 (0.05)	-0.012 (0.05)
Post-secondary	-	-	-0.092 (0.04)	-0.095 (0.04)
Unemployed	-	-	0.035 (0.07)	0.039 (0.07)
Not in labour force	-	-	0.025 (0.04)	0.033 (0.04)
Recieved Welfare	-	-	0.107 (0.05)	0.101 (0.05)
Region	-	-	-	(***)
Constant	-0.659 (0.01)	-0.626 (0.03)	-0.586 (0.05)	-0.516 (0.05)

Education, geographical, identity, employment and education dummies are included in the above regression, the omitted variables are “Lives in Rural Area”, “First Nation Identity”, “Ages 25-45”, “Completed High School” and “Currently Employed”. Standard errors reported in parenthesis.

7.3 Chronic Conditions Standard Errors

Table 9: Results for Number of Chronic Conditions

	(1)	(2)	(3)	(4)
Residential School	0.482 (0.06)	0.236 (0.06)	0.157 (0.05)	0.190 (0.05)
Female	-	0.219 (0.03)	0.145 (0.03)	0.150 (0.02)
Metis Identity	-	0.050 (0.03)	0.078 (0.02)	0.081 (0.02)
Inuk Identity	-	0.010 (0.07)	-0.052 (0.07)	-0.043 (0.07)
Younger than 25	-	-0.218 (0.04)	-0.269 (0.04)	-0.260 (0.04)
Aged 45-64	-	0.764 (0.03)	0.705 (0.03)	0.699 (0.03)
Older than 65	-	1.519 (0.06)	1.202 (0.06)	1.215 (0.06)
Ever Daily Smoker	-	0.081 (0.03)	0.107 (0.03)	0.112 (0.03)
Urban Region	-	0.051 (0.03)	0.062 (0.02)	0.059 (0.02)
Inuit Region	-	-0.292 (0.07)	-0.359 (0.07)	-0.134 (0.08)
Less than high school	-	-	0.149 (0.04)	0.146 (0.04)
Post-secondary	-	-	0.057 (0.03)	0.046 (0.03)
Unemployed	-	-	0.038 (0.05)	0.042 (0.05)
Not in Labour Force	-	-	0.478 (0.04)	0.478 (0.04)
Recieved Welfare	-	-	0.582 (0.05)	0.587 (0.05)
Region	-	-	-	(***) (0.05)
Constant	1.088 (0.01)	0.556 (0.03)	0.370 (0.04)	0.582 (0.05)

Education, geographical, identity, employment and education dummies are included in the above regression. the omitted variables are “Lives in Rural Area”, “Completed High School” and “Currently Employed” Standard errors reported in parenthesis.