Culture and Economic Development:

The Case of Aboriginal Languages

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Abstract

Marginalization of Aboriginals has led to their lower than average socio-economic success (Wilson & Macdonald, 2010). This paper studies Aboriginal language attainment for Canadian Aboriginals with and without a mother tongue language. I investigate the likelihood of speaking an Aboriginal language as income or government transfer payments change. My findings show that, for Aboriginals, as income expands out from zero, involvement in speaking a traditional language begins with a large increase from the first to second income decile, and thereafter follows a downward sloping pattern. However, a subsample of Aboriginals with a mother tongue experience no correlation with speaking an Aboriginal language and their income level.

Key words: Aboriginal, language, economic development, income, mother tongue, government transfers

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I. Introduction

Puzzling results present themselves when investigating the connection between Aboriginal's income and the use of their mother tongue. From the sample used containing all Aboriginals, I find a negative relationship between income and speaking an Aboriginal language. However, given a subsample of those who grew up with an Aboriginal mother tongue[1], it is found that income has no relationship with their continuing to speak an Aboriginal language in adulthood. Why is there such a difference between Aboriginals with a mother tongue and those without? Suggestions that may explain the intuition behind this paradox are developed through the exposition of this paper. A common theme in describing these contributions is what I will call a regional factor. Location of Aboriginals may have implications for their total and market income, the amount of government transfer payments they receive, and whether they have a mother tongue.

This paper attempts to find how Aboriginal language use changes in response to varying individual income. This research question is used to broadly reflect the correlation between culture and economic development. Using language as a proxy for culture captures many essential aspects of the vastness of Aboriginal norms (Alfred & Corntassel, 2005). Aboriginal languages, like most languages, are key drivers of cultural success, for they capture high levels of knowledge, historical facts, ecological understanding, and societal values (Alfred, 1999). By employing data collected from Canada's 2006 census I explore the economic relationship between language and income through the mechanisms of total and market income, government transfer payments, and mother tongue indicators. The leisure-consumption model provides a

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[1] Henceforth mother tongue is taken to mean an Aboriginal mother tongue in the cases where individuals may have other languages in their heritage. Aboriginal mother tongue indicates that a person learned an Aboriginal language in childhood.

framework for these relationships when language is a function of leisure; the more available leisure time one has, the more time is available to spend speaking Aboriginal languages with friends and family.

Aboriginal culture in Canada has many sub-cultures and languages, and the extent to which their culture penetrates society may expand or contract given different states of economic development (Smith, 1994). Throughout history, Aboriginals have experienced many economic and cultural shocks, so they are currently situated on the lower end of a huge (thirty percent difference) income gap which persists between themselves and non-Aboriginal Canadians (Wilson & Macdonald, 2010). The dominant economic system in Canada may force Aboriginals to face a trade-off between their traditional culture and success in the dominant economic system (Battu et al, 2007). The varying discrepancy of how Aboriginal culture and language is perceived created a burning curiosity for this author to find out how these outcomes are correlated.

Prior to my empirical analysis, I was expecting to find a parabolic, or U-shaped, relationship in the data between minority languages and income implying that Aboriginal language acquisition is highest at the lower and upper bounds of income, but median income groups speak Aboriginal languages less frequently. This trend would be aptly modelled by the backward bending labour supply curve. Although this result is not explicitly shown in my analysis on income, it is found when the regression of government transfer payments is conditioned on regional variables.

This paper is, to the best of my knowledge, the first to investigate the relationship between languages and income for Aboriginals. It is also the first to explore how mother tongue and government transfers can further impact the culture-economic relationship. This study sheds

light on the 1,172,790 people identified as Aboriginal in 2006 (Statistics Canada, 2006). Further, my findings have important implications for policy analysis, economic development, consumers of culture, and most notably, Aboriginals.

In the next section, a deeper look is taken into previous literature surrounding Aboriginal culture and its perceived relation to economic development. This is followed by a discussion of microeconomic models and intuitions that will help explain the paper's findings. I then explain the dataset used and the summary statistics which sets up my empirics section in which I analyze the estimation results. This paper is concluded with a summary of findings and their implications.

II. Literature Review

Aboriginal languages are proven in many literatures to be essential to Aboriginal culture. Alfred and Corntassel (2005) state: "our true power as Indigenous people ultimately lies in our relationships with our land, relatives, language, and ceremonial life" (pg. 605). This quote from an article on Indigenous resurgence suggests that Indigenous sovereignty can in part be solidified by strengthening connection to their languages. Improvement in economic development is simultaneously important for Aboriginals. The Assembly of First Nations is an advocacy organization representing the Indigenous in Canada and supporting Indigenous economic development through projects including poverty action research, resource revenue sharing, and inter-nation trade (Assembly of First Nations, 2015). These examples of support programs for both Aboriginal languages and economic development are key drivers in the research of their internal relationship. Currently, eleven language groups house over fifty-nine Aboriginal languages in Canada (Indigenous Foundations, 2009). Though language is essential to culture,

Aboriginal languages have been in rapid decline. Alfred (1999) declares that "native languages embody indigenous people's identity and are the most important element in their culture. They must be revived and protected as symbols and sources of nationhood." The cultural importance of language makes it a good proxy for culture.

Marginalization of Aboriginals and their culture contribute to lower than average socio-economic standing of aboriginal people at both the individual and community level (Wilson & MacDonald, 2010). Gross and Richards (2010) find that urban Aboriginals with higher socio-economic status, through factors such as education and cultural involvement, have correspondingly higher rates of happiness.

In 1985, Borjais wrote a defining paper in immigration literature stating that the growth rate of earnings for immigrants is relatively slow as people assimilate into westernized culture. This is useful because we can draw similarities between Aboriginals and other minorities such as immigrants. This opposed the view, which was common at the time, that after approximately a decade immigrants do extremely well in the United States labour market (Borjais, 1985). Borjais (1985) proved the statistical significance of his study by using data on cohorts of immigrants in the 1970 and 1980 USA censuses and tracking their success. This testing was much more valid than the previous cross-sectional analyses. Kuhn and Sweetman (2002) used this as an analogy for Aboriginals as unwilling immigrants by showing that their (unwilling) assimilation rendered similar labour market outcomes. Using 1991 Canadian census data, they find that increased interaction with the dominant culture is a good predictor of labour market success in Canada (Kuhn & Sweetman, 2002). These findings suggest a natural trend of traditional culture participation, in say, language, to slowly decrease as individuals advance in the labour market and earn higher income.

The distinction between minority cultural values and economic success is highlighted in my results. Previous authors have also elucidated this contrast. Battu et al (2007) suggest that minorities will often reject dominant values, inducing a trade-off between cultural identification and economic advantage. I will use this trade-off theory to help explain the theoretical model, in the model section. This trade-off is seen in those choosing to speak minority languages and the costs they bear in their economic well-being (Battu et al, 2007). However, Smith (1994) presents an opposing argument that American Aboriginal tribes may be able to strengthen their cultural independence by developing their economies. The notion of economic development as a means to an end of sustaining Aboriginal band characteristics highlights the relatively (to non-Aboriginal incomes) low incomes of Aboriginals and low funding for their bands. Smith's (1994) proposition could suggest that the trade-off raised by Battu et al (2007) may be significantly smaller. The results of this paper tie into these opposing results by emphasizing the trade-off literature, yet also suggesting that government transfers (increased funding) may benefit Aboriginal culture.

III. Modelling

In this section I outlay the microeconomic mechanism that helps to explain a person's reaction to changes in income, and how this reaction affects their likelihood of speaking an Aboriginal language. The leisure-consumption model is used here; it illuminates the income and substitution effects which occur in response to changes in income. For the purposes of this paper, I assume that a majority of leisure time is spent engaging in cultural activities, or more specifically, it is spent engaging in or interacting with those speaking Aboriginal languages. I also discuss those individuals earning income through speaking an Aboriginal language.

The leisure-consumption framework helps clarify how and why the likelihood of speaking an Aboriginal language may be correlated with income. The reason for using this model is that language can be considered a function of income. Furthermore, income is a function of work and leisure. The amount of traditional language speakers one is surrounded by is also important for the model. Each of these internal factors of language has interconnected effects on the likelihood of speaking an Aboriginal language.

III.2 The Leisure-Consumption Model

As noted above, the microeconomic leisure-consumption model is used to depict the choices one makes in regards to how to spend their time. This model creates a space for thinking about the opportunities people have for engaging in speaking Aboriginal languages and how these opportunities may increase or decrease at different income levels.

Income and substitution effects provide further intuition for the leisure-consumption model. Income effects state that as wages increase, income increases for every hour worked and one can be as well off even by working less, so it becomes relatively more desirable to take leisure. Substitution effects are present when the wage increases, and the opportunity cost of leisure increases and thus it becomes relatively less desirable to take leisure. Most commonly, the substitution effect dominates the income effect at most income levels. Only at very high incomes is it expected that the income effect will begin to dominate.

III.3 Language as Leisure

Leisure time is used in many ways to actively participate in speaking an Aboriginal language, often by interacting with friends and family members. Aboriginal language is part of life for some, while others use it less often possibly only during cultural events. In each of these

cases, people are exercising their leisure time to speak a traditional language. The more

Aboriginal language speakers that one has around them, the more likely they will be to speak an

Aboriginal language. This suggests that areas containing larger numbers of Aboriginal people

will see more Aboriginal language speakers. These areas often include reservations. People in

these settings are shown to, on average, earn less income than those in large metropolitan areas

(Wilson and Macdonald, 2010). Consequently, speaking an Aboriginal language and earning a

low level of income may be highly correlated.

III.4 Language to Earn Income

Many Aboriginal speakers earn a low absolute income (Wilson & Macdonald, 2010).

However, there are many cases in which fluency in Aboriginal languages could be advantageous

in the labour market (Smith, 1994). Moreover, Aboriginal language can be a function of income.

Given that a person speaks an Aboriginal language, they will have certain advantages and

disadvantages in the labour market (Kuhn & Sweetman, 2002). Some examples of high paying

careers relying on speaking an Aboriginal language include people working in Aboriginal

relations, governmental resource allocations, Aboriginal-issue lawyers, Aboriginal studies

teachers and professors, and many more occupations (Statistics Canada, 2008). As Aboriginal

affairs are becoming better respected by the public, the amount of Aboriginal-oriented career

paths is bound to increase (Wilson & Macdonald, 2010). Aboriginal language as a function of

income can be better defined by applying the leisure-consumption model.

<center>**IV. Data**</center>

My data comes from the publicly available section of the 2006 Canada census microdata

files. This extensive dataset organizes information on 2.7 percent of individual Canadians. I have

restricted my sample to include only those who are over sixteen years of age and identify with at

least one of these Aboriginal groups: North American Indian, Inuit, Treaty Indian, Registered

Indian, Indian band member, or First Nation. The resulting sample size is 13,422 Aboriginal

individuals living both on and off reserve, or 1.59 percent of Canada's total population. I have

not included those who identify as Métis in my sample, as the Métis traditional languages,

namely Michif or Bungee, are for all intensive purposes lost (Bakker & Papen, 1997). This is

clear in the data, as only 3.7 percent of Métis speak a traditional language, whereas that number

is 31.2 percent for North American Indian's.

It is important to note that these numbers may not fully represent Canada's Aboriginal

population due to incomplete enumeration of 22 of 774 Indian reservations that were not

included in the census (Statistics Canada, 2006). These 22 reserves either chose not to

participate, or the study was interrupted and incomplete (Statistics Canada, 2008). Another

shortcoming of this dataset is that we cannot observe whether a person in the dataset is living on

or off reserve. If this reservation data were publicly available the estimation results might be

better explained, because regional factors seem to be statistically important in identifying the

likelihood of a person acquiring an Aboriginal language. Having access to reserve data would

allow me to attain a sense of whether a person is immersed in an environment with other

Aboriginals. This would be especially helpful to explain the confusing results found for those

with Aboriginal mother tongues, who most likely do live on reserves.

The correlations I find and assess lead to compelling conclusions about the data for

Aboriginal people speaking traditional languages across income groups. The nebulous nature of

language and limited cultural variables in the data leave me without instrumental variables.

Therefore, I do not identify causal effects. The remainder of this section will define the factors

and variables used in my empirical study.

III.2 Income Variables

For a general assessment of income I refer to total income, which is the total income after

tax of an individual in 2005. "Total income [after tax] refers to income from all sources ... minus

any federal, provincial, and territorial income taxes paid" (Statistics Canada, 2006). Average

total income in my sample is 17,553.31 Canadian dollars with a standard deviation of 18,176.38,

as seen in Table 1. This higher standard deviation is due to the high variance of incomes. There

is higher volatility in the upper-income deciles compared to the lower income deciles because of

the vast amount of low income earners.

The leisure-consumption model more clearly explains changes in wages/salaries, so I

investigate language correlation with market income. Market income is defined by Statistics

Canada (2006) as "the sum of employment income, investment income, retirement pensions,

superannuation and annuities, and other money income ... before tax minus all government

transfers." Summary statistics of this variable are also given in Table 1. Note that market income

is lower than total income because government transfers are excluded. This implies that there is a

considerable reliance on government supplemented income through transfer payments.

I explore the relationship that Aboriginal languages have with the dollar amount of

government transfers individuals receive in order to understand how supplemental income may

be a factor of Aboriginal language attainment. Government transfer payments are the sum of

grants to Aboriginal persons and organizations, old age security pension and guaranteed income

supplement, Canada or Quebec Pension Plan benefits, employment insurance, child benefits,

social assistance, workers compensation benefits, family and youth allowances, and more

(Statistics Canada, 2006). In 2006, government grants to Aboriginal persons or organizations

totalled 5.8 billion dollars (Statistics Canada, 2006). Because Aboriginals receive a high rate of

government transfer payments, I opted to include them in my analysis.

Each of these income and transfer payment values has a large range, yet the majority earn

on the lower end of the distribution (Wilson & Macdonald, 2010). To effectively interpret the

changes that occur as individuals increase their income, I divide the income variables into

deciles. This splits total income into ten income ranges, each containing approximately 1,342

observations. Using deciles makes for an effective comparison of increases in income since

people are compared in a more equal manner. I use deciles for market income and government

transfer payments as well. Since both experience a high frequency of zeros, only six and seven of

the deciles are shown in the graphs, respectively. The data shown in the estimation outputs for

market income are relative to people in the first three deciles of income which are all zero,

similarly for government transfer payments. Note that government transfer payments are

increasing in their scale, correspondingly opposite to the increasing income scale; for example

someone in income decile 2 is likely to be in government transfer payment decile 7, as low

incomes often bring more transfer payments.

III.3 Language Variables

To identify whether one speaks an Aboriginal language, I use the non-official language

question from the census. I use this as a dummy variable to indicate that one has "the ability to

carry on a conversation of some length on various topics" (Statistics Canada, 2006) in an

Aboriginal language. The mean proportion of the sample who speak an Aboriginal language is 34 percent with a standard deviation of 0.48units.

Mother tongue indicates that an individual learned an Aboriginal language at some point in childhood. I used the mother tongue, non-official language question from the census to gather this data. In my regression estimation I use mother tongue to restrict the sample thereby showing the subsequent results. In my sample, 30.9 percent claim to have a mother tongue, with a 0.46 standard deviation.

III.4 Conditional Variables

In my conditioned regression equations, I condition the base equation on demographics, education, and region. The summary statistics for these are seen in Table 1. Demographics are used to control for age (16-85 years) and sex. On a scale of one to thirteen education is defined by dummy variables for an individual's highest attained degree or diploma, one being no schooling, eight is bachelor level education, and thirteen defines a doctorate degree. The region variable, conditions on central metropolitan area and province; additionally, I created a rural indicator variable by using the product of non-central metropolitan areas and provinces. There are 23 central metropolitan areas or census agglomerations reported in the census varying from Toronto, to Winnipeg, to the Kelowna to Abbotsford region. The rural indicator is formed from all non-central metropolitan areas in each of the 11 census provinces (the territories are calculated as one 'northern' province). Adding demographics, education, and region into my estimations allows for controlled correlation that tells a more complete story.

V. Empirical Analysis

I estimate the likelihood of speaking an Aboriginal language given assorted income variables and other factors. I use this estimation to aptly address my research question by assessing the effects that adding conditional variables have on the income coefficient when added into my regression equation. All of my estimation equations are regressed on 'speak,' a dummy variable that indicates 1 or 0 if someone speaks or does not speak an Aboriginal language, respectively. The nature of this variable is such that the regression coefficients of the independent variables give a proportional value for speak, or as I commonly refer to it: the likelihood of speaking an Aboriginal language.

V.2 Total Income Estimations

Figure 1 graphs the relationship between total income deciles and the likelihood of speaking an Aboriginal language, and Table 2 displays the regression coefficients. With no additional conditioning, that is regressing speak on the income decile dummies, it can be seen that as someone moves from the first income decile (at the origin) to the second, they are 15 percent more likely to speak an Aboriginal language. This is a statistically significant positive jump between income decile one and two, yet as income deciles increase further there is a general trend downward. Consequently, compared to those earning zero income, everyone earning at least some income is more likely to speak an Aboriginal language. Given your income is greater than zero, as you move to higher income deciles, you will be less likely to speak an Aboriginal language (with the exception of income decile five and nine – if these extended to more incomes around them we may have seen the U-shape unfold).

The second line in Figure 1 is the same regression as above with conditioning on demographic, regional, and educational variables. The trend is similar to the unconditioned case,

but the likelihood of speaking an Aboriginal language is at all points lower than in the

unconditioned case. People earning in the second income decile have a 2.96 percent higher (with

a standard deviation of 0.02) probability of speaking an Aboriginal language than those in the

first income decile.

This generally negative relationship between income and speaking Aboriginal languages

models the common hypothesis that there exists a trade-off between minority culture and

economic success valued by high income. My results parallel that of Kuhn and Sweetman's

(2002) by using income instead of labour market outcomes and language use instead of other

connections to Aboriginal culture.

V.3 Market Income Estimations

The connections to the previous literature hold when the same OLS (ordinary least

squares) regressions are performed using market income rather than total income. Figure 2 shows

the likelihood of speaking an Aboriginal language among market income groups relative to

someone in one of the first 3 deciles that earn zero market income. Correspondingly, Table 3

shows the regression outputs. Within this figure, I have included the average market income in

dollar amount for each market income decile in order to create more complete understanding of

the income gradient. These regression estimations show that all non-zero market income earners

are less likely to speak an Aboriginal language than those not earning any market income. A

similar, but approximately 5 percent less dramatic trend, is seen for the case when conditioned

on demographics, region, and education.

The reason that the level of Aboriginal language speaking is lower at every point in

market income, but not in total income, has to do with the differentiation of market income

excluding those not actively in the labour force. It is measured by wages and salaries. Total

income may include those living off welfare assistance or retirement income. Exploring total

government transfer payments will help us further understand this difference.

V.4 Government Transfer Payments

Coefficients for government transfer payment deciles regressed on the dummy for

speaking an Aboriginal language are plotted in Figure 3, and explained in greater detail in Table

4. In the unconditioned case there is a strictly positive and increasing proportion of Aboriginal

language speakers relative to those not receiving government transfers. This correlation states

that as one collects more transfer payments from the government, they will be increasingly likely

to speak an Aboriginal language, relative to non-transfer-receivers. Conditioning this equation

on regional factors draws the U-shaped result that I had expected to find in the data on income.

This implies that for anyone receiving government transfer payments, their likelihood of

speaking an Aboriginal language initially decreases and eventually increases as the dollar

amount of government transfer payments increase. When I include demographics and education

in addition to region as conditional variables, the correlation between government transfers and

speaking an Aboriginal language flattens, but maintains a 'W' shape. Note that in all cases the

results on government transfer payments are statistically significant at the 1 percent level.

The implications of this could suggest a regional correlation of government transfers,

implying that where one lives is correlated with the amount of government transfer payments

they receive. The negative income effects that rural to urban migration have as found by Gross &

Richards (2012) may help explain the regional effect found in my results of government

transfers. Given that government transfer payments make up a considerable portion of total

income for many Aboriginals, they are likely to work less and have more leisure time (when compared to non-Aboriginals); this suggests a reason for higher language attainment at greater amounts of transfers.

V.5 Aboriginal Mother Tongue

Aboriginals who identify as having an Aboriginal mother tongue appear to be a special case. When restricting my sample to mother tongue Aboriginals, that is, those who learned or grew up in a community with others speaking in mother tongue as a child, there is virtually no correlation between income and speaking an Aboriginal language in adulthood. The regression estimates to prove this are seen in Table 5, which uses total income deciles; nevertheless, the non-correlation holds in each case including market income and government transfers. This minimal correlation result is true in the conditioned and unconditioned cases for the total income, market income, and government transfer payment estimations. This is the puzzling conclusion alluded to in the introduction. Income and transfer payments are correlated with speaking an Aboriginal language for the sample of all Aboriginals, but this correlation disappears for the sample of those with a mother tongue. This implies that those without mother tongue have language use which is very strongly tied to income.

A possible solution to this puzzle is again the regional factor. Those Aboriginals with a mother tongue are likely to have grown up in an environment with plenty of native language speakers around them. Having friends and family who use a traditional language is likely to encourage a person to take up, or continue speaking that Aboriginal language. Using the leisure-consumption model again to think about this, it is clear that using your leisure time to speak an

Aboriginal language is dependent on whether one has someone they are close to, to speak that language with.

VI. Conclusion

This paper has analyzed Aboriginal language use and income and how these vary for the sample of Aboriginals in Canada as well as for the sample of those with a mother tongue. Using income deciles to graph this relationship, my findings show that as income expands out from zero, involvement in speaking a traditional language begins with an increase from no income to some income. However, as income increases further, language usage follows a downward sloping pattern. This mostly negative correlation between income and Aboriginal languages may be the result of Aboriginal disadvantage in the labour market as found by Kuhn and Sweetman (2002), implying a trade-off between cultural identity and economic success (Battu et al, 2007).

This trade-off may exist, but it is also believed that by growing Aboriginal economies they will be better able to solidify their culture (Smith, 1994). In finding that government transfer payments have a positive correlation with speaking Aboriginal languages, I infer that supporting Aboriginals economically is can positively affect the outcome of their culture.

A puzzling result that this research finds is that those with a mother tongue do not experience the same relationship between income and Aboriginal language speaking as the full sample of Aboriginals. This suggests that the sample of Aboriginals without a mother tongue experience very a high negative correlation with income which is pulling the sample downward. The implications of this lie with the unobservable differences between those with a mother tongue and those without. It is possible that mother-tongue Aboriginals grew up on reservations,

or in areas that speaking a native language is of benefit to them for social rather than economic reasons.

These findings are especially important for investigations of Aboriginal culture and economic development, policy makers, and background information for Aboriginal movements. With further regional knowledge, I believe that this study could be improved. This research can stand as a jumping off point for further exploration into how and why Aboriginal language and culture varies with income or economic success.

VII. Tables and Figures

Figure 1: Likelihood of Speaking an Aboriginal Language Relative to Someone in the 1st Income Decile
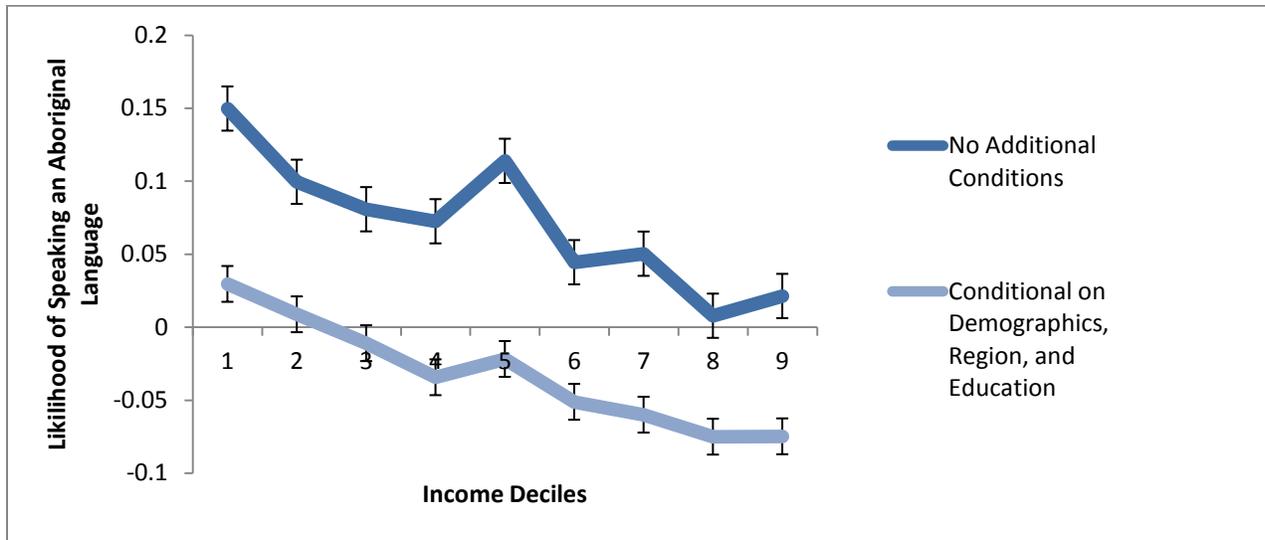

Figure 2: Average Market Income in each Market Income Decile (Top) and Likelihood of Speaking an Aboriginal Language Among Market Income Deciles (Bottom)
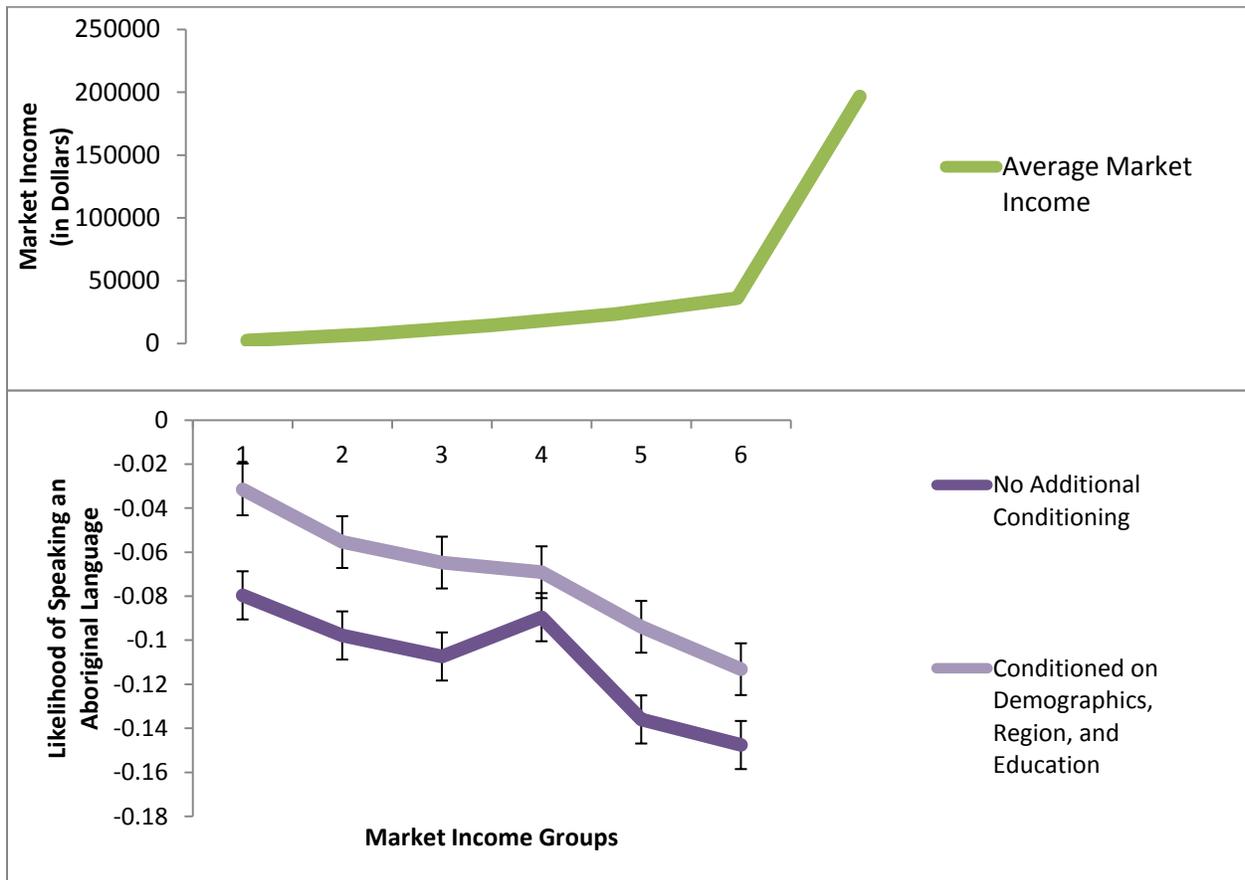
Figure 3: Likelihood of Speaking an Aboriginal Language Given Government Transfer Payment Decile (Relative to No Government Transfers)
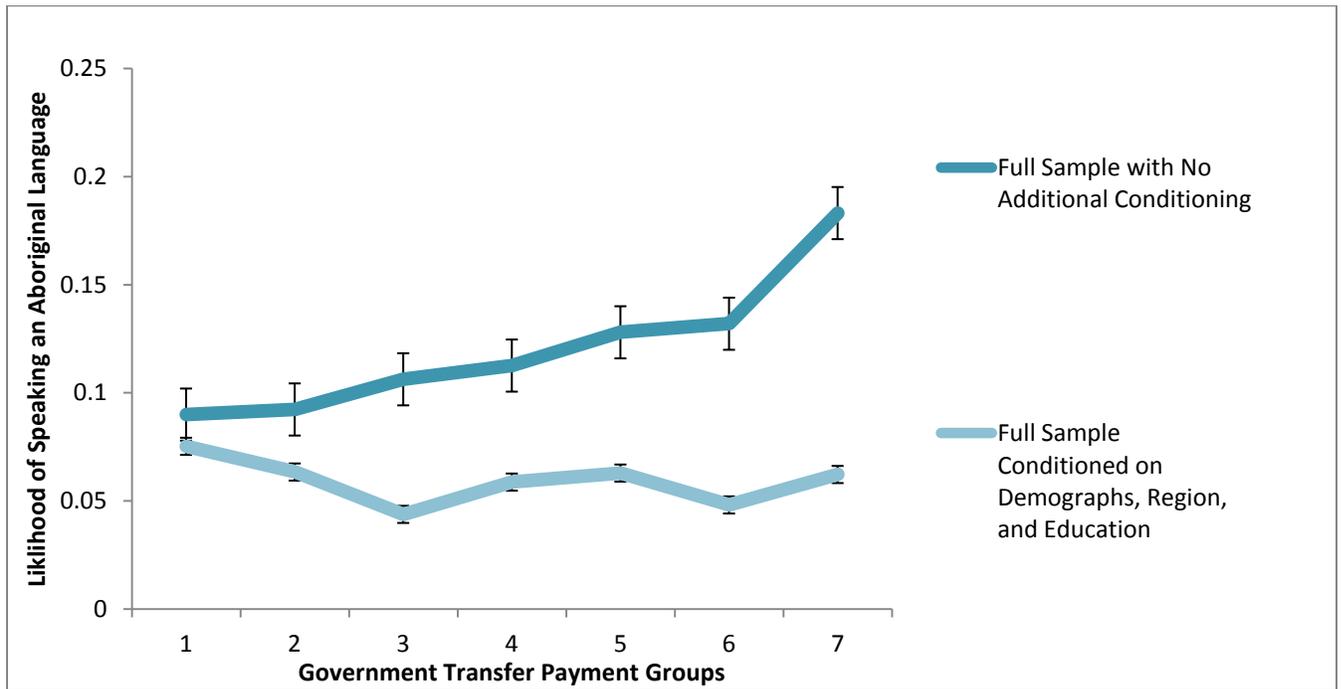

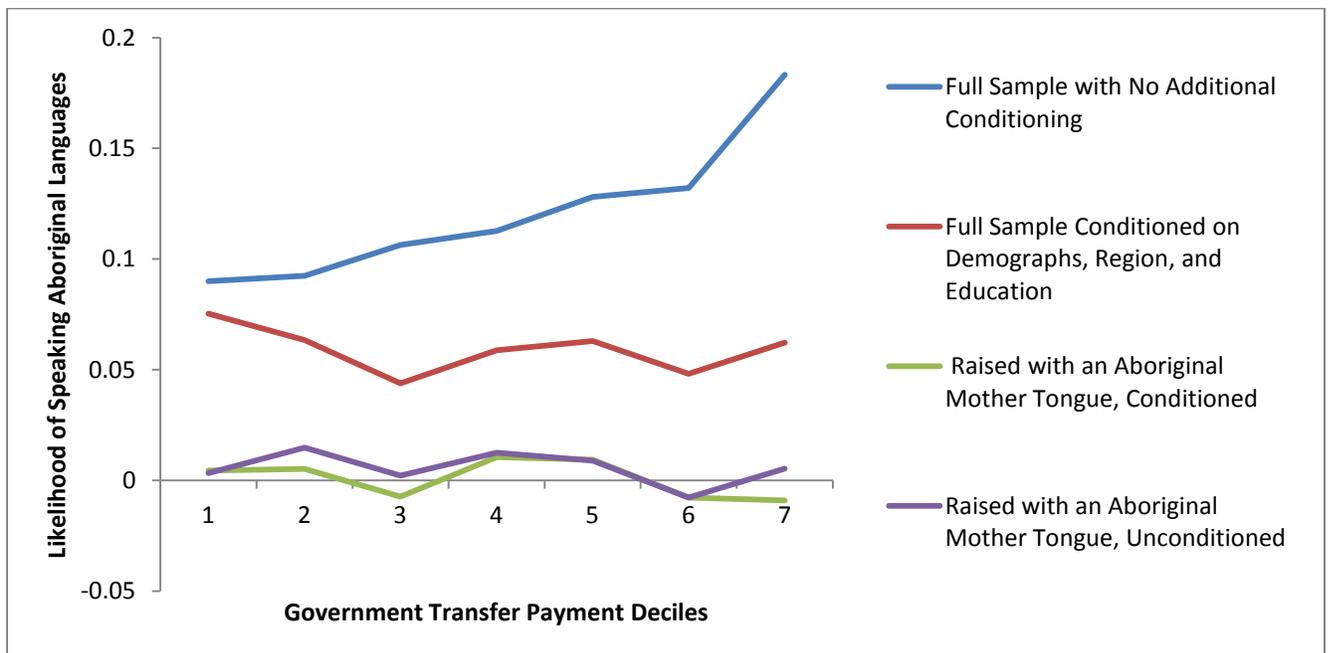Figure 4: Aboriginal Language Speaking Given Government Transfers

Table 1: Summary Statistics

	Mean	Standard Deviation	25th Percentile	75th Percentile
Total Income After Tax	$17760.15	19491.16	4000	26000
Market Income	$15740.06	26219.86	0	24000
Government Transfers	$4102.03	5819.17	0	6800
Age	38 years	6 years	22 years old	48 years old
Education	High School	2 Levels	No Schooling	Bachelor Degree
Speaking Aboriginal Language	34%	.43	N/A	N/A

Table 2: Coefficients of Total Income Deciles

Variable	Base	Demogra~s	Education	Region	All
incdecile					
1	0.150	0.065	0.179	0.105	0.030
	7.949	3.196	9.637	6.256	1.662
2	0.100	0.021	0.137	0.078	0.009
	5.187	1.020	7.212	4.556	0.481
3	0.081	-0.026	0.133	0.081	-0.011
	4.302	-1.197	7.128	4.897	-0.581
4	0.073	-0.067	0.125	0.087	-0.034
	3.947	-3.073	6.851	5.350	-1.804
5	0.114	-0.056	0.166	0.124	-0.022
	5.997	-2.452	8.782	7.341	-1.088
6	0.044	-0.109	0.113	0.075	-0.051
	2.403	-4.925	6.070	4.550	-2.625
7	0.050	-0.101	0.122	0.063	-0.060
	2.633	-4.468	6.346	3.745	-3.003
8	0.008	-0.149	0.101	0.043	-0.075
	0.421	-6.696	5.299	2.590	-3.796
9	0.019	-0.144	0.123	0.044	-0.075
	1.043	-6.432	6.291	2.675	-3.729

Notes: This table displays the coefficients on total income when regressed on the dummy for speaking an Aboriginal language. Additional variables are included in the regression that are not shown here, but they are reflected in the column titles. Incdecile = Total income deciles. The t-values are displayed under each coefficient.

Table 3: Coefficients of Market Income

Variable	Base	Demogra~s	Education	Region	All
MarketInco~e					
4	-0.080	-0.068	-0.059	-0.056	-0.032
	-5.877	-5.028	-4.381	-4.657	-2.644
5	-0.098	-0.108	-0.057	-0.067	-0.055
	-6.926	-7.630	-3.999	-5.351	-4.376
6	-0.107	-0.134	-0.062	-0.061	-0.065
	-7.427	-9.165	-4.257	-4.753	-4.954
7	-0.091	-0.132	-0.043	-0.053	-0.068
	-6.356	-8.999	-2.933	-4.095	-5.129
8	-0.139	-0.191	-0.082	-0.078	-0.099
	-9.629	-12.808	-5.488	-6.033	-7.254
9	-0.149	-0.209	-0.081	-0.092	-0.114
	-10.277	-13.836	-5.303	-7.019	-8.050

Notes: This table shows the coefficients on market income deciles when regressed on the dummy variable for speaking an Aboriginal language. Additional independent variables are added to the regression, but not shown in the table they are instead reflected in the column titles. Statistical t-values are displayed underneath each coefficient.

Table 4: Coefficients of Government Transfer Payments

Variable	Base	Demogra~s	Education	Region	All
govdecile					
3	0.090	0.098	0.102	0.091	0.076
	5.639	5.913	6.463	6.411	5.184
4	0.093	0.100	0.114	0.079	0.064
	6.640	6.634	8.210	6.379	4.840
5	0.106	0.112	0.118	0.069	0.044
	7.303	7.272	8.245	5.378	3.235
6	0.113	0.124	0.123	0.080	0.059
	7.530	7.857	8.342	5.979	4.255
7	0.129	0.131	0.134	0.100	0.063
	8.654	8.257	9.171	7.549	4.506
8	0.132	0.112	0.124	0.116	0.049
	8.888	6.887	8.461	8.779	3.353
9	0.184	0.148	0.166	0.151	0.063
	12.417	8.403	11.417	11.497	4.005

Notes: This table estimates the coefficients of government transfers payments as the regression is conditioned on additional factors in each column, with the t-value reported underneath each

coefficient. Govdecile indicates the government transfer payment decile, of which, 0-2 are all zero.

Table 5: Mother Tongue Indication

Variable	Base	Demogra~s	Education	Region	All
incdecile					
1	0.018	0.007	0.023	0.027	0.011
	1.082	0.400	1.337	1.616	0.581
2	0.013	0.004	0.018	0.017	0.002
	0.749	0.197	1.005	0.974	0.120
3	0.014	0.005	0.022	0.024	0.007
	0.824	0.242	1.230	1.419	0.377
4	0.021	0.012	0.028	0.033	0.013
	1.222	0.606	1.598	1.980	0.678
5	0.020	0.009	0.024	0.035	0.010
	1.149	0.414	1.410	2.102	0.467
6	0.001	-0.007	0.008	0.012	-0.007
	0.071	-0.331	0.457	0.711	-0.351
7	0.031	0.024	0.041	0.036	0.021
	1.690	1.134	2.229	2.059	1.011
8	0.015	0.008	0.031	0.024	0.008
	0.818	0.359	1.695	1.351	0.411
9	0.024	0.015	0.043	0.027	0.010
	1.357	0.705	2.324	1.562	0.479

Notes: This table shows the estimation coefficients for the income deciles that are regressed onto the dummy variable for speaking an Aboriginal language for the sample of people with a mother tongue. The statistical t-values are reported beneath each coefficient.

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