

Aboriginals as Unwilling Immigrants:
Contact, Assimilation and Labour Market Outcomes*

Peter Kuhn, Department of Economics, University of California, Santa Barbara, CA 93106, USA.
Fax: 805 893 8830; email: pjkuhn@econ.ucsb.edu.

Arthur Sweetman, School of Policy Studies, Queen's University, Kingston, ON K7L 3N6 Canada.
Fax: 613-533-2135; email: sweetman@qsilver.queensu.ca

Like immigrants, aboriginal populations' economic success may be enhanced by the acquisition of skills and traits appropriate to the "majority" culture in which they reside. Using 1991 Canadian Census data, we show that Aboriginal labour market success is greater for Aboriginals whose ancestors intermarried with non-Aboriginals, for those who live off Indian reserves, and for those who live outside the Yukon and Northwest Territories. While these three "facts" could also be explained by a combination of other processes, such as discrimination, physical remoteness, and selection, only the skill/trait acquisition, or "assimilation" hypothesis is consistent with all three.

JEL Classification numbers: J15, J7

Keywords: Aboriginal, wages, employment

* Please address correspondence concerning this paper to P. Kuhn. This paper grew out of research conducted by the authors for the Royal Commission on Aboriginal Peoples, but in no way reflects any official views of that Commission. The authors thank the Social Sciences and Humanities Research Council of Canada and the Canadian International Labour Network for financial support. We also thank Gary Sandefur and Ronald Trosper for helpful comments at a session of the American Economic Association meetings.

1. Introduction.

Over the past three decades, the economic assimilation of immigrants has been the subject of countless research papers in labour and population economics. Immigrants often arrive in a new country with a set of skills and cultural traits (including language) that are not ideally suited to economic success in its culture, and the rate of convergence of immigrants' labour market outcomes to natives' is typically attributed to the acquisition of those skills and traits.

Aside from immigration, there is of course a second way in which one can become a minority in a country where one's skills are not ideally matched to the majority culture: invasion of one's homeland. For such aboriginal populations, economic success may nonetheless be enhanced by assimilating into the dominant culture. Perhaps surprisingly, this assimilation process and its role in the economic success of aboriginal peoples has received almost no attention from labour- or population economists.¹

The goal of this paper is to study economic assimilation of an aboriginal population using 1991 Census data from Canada.² We show that three measures of contact with the dominant culture—residence away from an Indian reserve, residence outside the Yukon and Northwest Territories, and intermarriage with non-Aboriginals—are among the most powerful predictors of Aboriginal labour

¹There is a small amount of work on Aboriginal labour markets in North America but it is largely descriptive, and does not focus on assimilation effects. Studies include Sandefur and Scott (1983), Snipp (1989) and Kimmel (1994) for the US; and George and Kuhn (1994) and Drost (1996) for Canada. Australian Aboriginals have been more extensively studied (see for example Daly 1994); again the literature tends not to focus on assimilation effects.

²Canada is an interesting context in which to study the labour market outcomes of Aboriginal peoples for several reasons. Compared, for example, to the US, Aboriginals form a much higher share of the Canadian population, and—in part because most of Canada was colonized by Europeans much later-- a larger fraction of Aboriginals still live in remote areas where contact with the invading culture has been limited. Working with Canadian data also has practical advantages: a quirk of the Canadian Census public use file allows us to identify individuals living on Indian reserves. This has a powerful effect on Aboriginals' labour market prospects, and is not identified in the 1990 US Census PUMS.

market success in Canada. Indeed these are, in some situations and in a well-defined sense, more important than the standard human capital variables. For example, according to our results, raising the education levels of men with purely Aboriginal backgrounds to those of non-Aboriginals is predicted to raise their wages by five percent. At the same time, holding *all* observed characteristics (including education) constant, an observationally identical individual would earn twelve percent more if he had mixed (Aboriginal and non-Aboriginal) origins rather than purely Aboriginal origins.

Section 2 of the paper briefly discusses our analytical framework. Section 3 describes the data. Section 4 presents our results on the effects of “social mobility” into the dominant culture –as measured by intermarriage of one’s ancestors with non-Aboriginals-- on labour market outcomes. Section 5 focuses on geographical mobility, in the sense of residence away from Aboriginal enclaves such as reserves or the Northern Territories. Section 6 considers some alternative explanations of our main results and compares them to the assimilation hypothesis, and Section 7 concludes.

2. Analytical Framework: The Assimilation Hypothesis

Beginning with Chiswick (1978), economists have devoted considerable attention to measuring the rate at which new skills, appropriate to economic success in a “host” culture, are acquired by immigrants. While some dispute remains concerning the size of these effects (see for example Borjas (1985), but also Duleep and Regets (1997)), it is widely accepted that some assimilation towards natives’ earnings levels does occur. The standard way to measure such assimilation is to measure the effect on earnings of the number of years that have elapsed since a person entered the host country.

Essentially, the argument goes, the more years that have elapsed, the more contact with the host culture

has occurred, and the more new skills can be acquired.

Clearly, since (essentially) all Canadian Aboriginals were born in Canada, there is no direct analogy to the “years since migration” variable for Aboriginals.³ There are, however, large variations among the Aboriginal population in the amount of contact individuals have had with non-Aboriginal society, and we shall identify assimilation effects in this paper with direct measures of this contact. The first of these is based on intermarriage: Like most immigrants (but unlike, for example, African-Americans), North American Aboriginals have intermarried to a very high degree with non-Aboriginals.⁴ If assimilation over a number of generations is important, one might expect the close interaction that occurs within a family to be a key channel via which it occurs. The other two measures of assimilation we use, because they are based on geographical mobility, are more directly analogous to the immigrant experience. In particular, we propose that individuals who live in ethnically segregated environments, such as Indian reserves, or simply in isolated areas –Canada’s Northern Territories-- where contact with the dominant culture is rare, are likely to have acquired fewer skills, habits and attitudes that are conducive to economic success in that culture.

³ One analogy to the “YSM” variable might count the number of years that have elapsed since one’s area of residence was first colonized by Europeans. This is essentially what we do when we look at differences between the Territories and the rest of Canada, or at certain “province” effects on labour market outcomes (in particular, the prairie provinces –Manitoba, Saskatchewan and Alberta-- which were settled last among the provinces).

⁴In the U.S. in 1976, 56 percent of Indian males were married to white wives, compared to 2 percent of black males (Sandefur and Scott, 1983).

3. Data.

Statistics Canada's 1991 Census Public Use Microdata File forms the basis of our analysis. This file consists of 809,654 individuals, a 3 percent sample of the Canadian population. Given the relatively small share of the Canadian population that is Aboriginal, and the relatively small fraction of Aboriginals who are employed, this is the only publicly-available data set of sufficient size to allow a reasonably precise analysis of Aboriginals' labour market outcomes.⁵

In the 1991 Census, an individual's ethnic origin is measured by the following question: "To which ethnic or cultural group(s) did this person's ancestors belong?" A large number of responses could be chosen, including three we define as Aboriginal: North American Indian, Inuit, and Métis.⁶ For this paper, two Aboriginal ethnic groups are defined. Individuals reporting a single ethnic origin are called "single origin Aboriginals" if that origin is Aboriginal; individuals reporting multiple ethnic origins are denoted "multiple origin Aboriginals" if they have at least one Aboriginal ethnic origin.⁷ To avoid repetition, the terms "native" and "Aboriginal" are used synonymously throughout this paper.

Our measure of intermarriage in this paper is based on the difference between single- and

⁵In conjunction with the 1991 Census, Statistics Canada has also conducted a special survey of Aboriginals called the Aboriginal Peoples Survey (APS). While providing a wealth of detail on a narrowly-defined group of Aboriginals, this data set excludes most of the Aboriginals we find are highly assimilated: those with multiple ethnic origins. It also does not supply a comparison population of non-Aboriginals.

⁶The 1991 Census also contains a "Registered Indian" indicator. This is a legal construct determining access to such factors as rights to live on a reserve, and tax-exempt status. Using it gives similar results to the "single Aboriginal origins" category in the current paper.

⁷One quirk of the Census is that individuals who have two or more different Aboriginal origins (e.g. Indian and Métis) are classified, along with those who have Aboriginal and non-Aboriginal ethnic origins, as multiple origin Aboriginals. This would serve to make the multiple origins group look more like those with single origins than it ought to, but the effect is likely very small. Statistics Canada (1993 - Table 1) indicates that only 2% of the multiple origins group are combinations of the Aboriginal subgroups exclusively.

multiple-origin Aboriginals; it is noteworthy that it thus concerns not current intermarriage, but intermarriage among one's parents or earlier forebears. While not necessarily ideal, it does have the following advantages over a measure of current intermarriage: first, it is less directly subject to endogeneity or selection effects. Second, it captures the fact that Aboriginal assimilation may be a much slower process than for immigrants, involving several generations. Unlike immigrants, Aboriginals as a group are not a self-selected group who voluntarily chose to migrate in search of greater economic opportunity, and this may be reflected in a slower assimilation rate. A shortcoming of our intermarriage indicator, however, is that we do not know how many generations back the intermarriage occurred, or whether the father or mother's origins were Aboriginal.⁸

Our sample is restricted to individuals between the ages of 15 and 64, and excludes those with missing information on crucial variables (eg., age, Aboriginal ethnic origin or education), those living in collectives or outside of Canada, non-permanent residents, and those with top-coded family income. To ensure that our results are not affected by discrimination against visible minorities who are not Aboriginals, all such visible minorities (as defined by Statistics Canada's Interdepartmental Working Group on Employment Equity Data) are also excluded.⁹ Together these restrictions leave us with a sample of 487,080 observations, which we use to study Aboriginal/non-Aboriginal differentials in labour force activity. In those parts of the paper where we analyse the *wages* available to Aboriginals

⁸To the extent that culture is more likely to be transmitted through one's mother, and that recent intermarriage might leave less time for assimilation than earlier intermarriage, this information might help add structure to the assimilation hypothesis.

⁹We also deleted the very small number of people who reported no Aboriginal ethnic origins, but were band members and/or Registered Indians. As most Indian bands maintain quite strict controls over who qualifies for membership, many or most of these individuals may simply have been misclassified.

and non-Aboriginals, we further restrict our sample to those working full-time and full-year in 1990 (the calendar year preceding the Census interview). This full-time, full-year sample also excludes self-employed and family members, since the reported levels of pay for these people may not correspond to their “true” levels of net compensation.¹⁰

As with all work concerning Aboriginals using Canadian census data, there is a problem that results from incomplete enumeration of reserves: In the 1991 Census, as in the 1986 Census, a number of Indian reserves refused to cooperate with Census-takers; in the 1991 PUMF all of the individuals living in the 78 reserves or settlements that were incompletely enumerated are excluded from the data set. Geographically, the distribution of these reserves was not that different from those that did participate, though they were somewhat more concentrated in Ontario and in urban areas.¹¹ Since our regressions control for province of residence, and for residence in large urban areas, this source of difference between enumerated and non-enumerated reserves should not affect our findings. More importantly, it should not affect our results for the majority of Aboriginals who live off reserves, and who are the main focus of our analysis here.

A final data issue is the identification of those living on "Indian reserves and settlements", which

¹⁰ Self-employed individuals are *not* excluded from the larger sample we use to study labour force activity. Thus, for example, any on-reserve Aboriginal engaged in “traditional” activities such as trapping or fishing will be counted as employed if he or she reports that activity as self employment. Because reported self employment on reserves is very rare, however (for example only 3.0 percent of single-origin aboriginal men on reserves reported *any* self-employment income in the Census, compared to 4.5 percent off reserves, and 9.7 percent of non-Aboriginal men), this may not capture all individuals engaged in “traditional” activities.

¹¹ Twenty percent of the excluded reserves are urban, and the largest group, 33, are in Ontario. See Statistics Canada (1994) (pages 107 ff and appendices 1 and 2) for details and a list of incompletely enumerated reserves. The estimated undercount of persons is about 38,000 (Silcoff, 1996).

the Census labels synonymously as "band housing".¹² Statistics Canada does not provide an indicator of on-reserve residence on its public use Census files, but it is sometimes possible to infer this from housing-related questions. As George and Kuhn (1994) show, this inference can be made cleanly in the 1986 file; it can also be made in 1991 though not quite as cleanly. In 1991, the gross rent (GROS RTP) and owner's major payments (OMPP) questions allow for individuals living in band housing and in farm dwellings to be separated from the remainder of the population. The dwelling tenure (TENURP) question allows us to further identify those who own the farm dwelling in which they live, but we cannot separate Aboriginals who rent and live in (part of) a farm dwelling from those who live in band housing (ie. on an Indian reserve or settlement). Our final sample can thus be divided into: 1) those who do not live on a reserve and 2) those who live either on a reserve or rent (a room in) a farm dwelling. We label this latter group as living on a reserve in the remainder of the paper.¹³

4. Social Mobility: Effects of Intermarriage

If acquiring the skills and values of the dominant culture is important to Aboriginals' economic success, and if many of these skills and values are taught to children in families, one would expect Aboriginals who grew up in families containing a non-Aboriginal parent (or grandparent, etc.) to have

¹²We are indebted to Oliver Lo of Statistics Canada for clarifying these definitions.

¹³To assess the size of this misclassification problem, we looked at the percentage of the non-Aboriginal sample that fall into the latter group and are classified as living on a reserve, although they may rent (a room in) a farm dwelling. It is 0.39% for men and 0.33% for women. These are very small proportions even if we assume that all of these individuals live in farm dwellings and are therefore misclassified (which is not necessarily true). If the same fractions hold for the Aboriginal population, then less than 10 people would be misclassified in the largest group studied. It is possible, however, that a larger fraction of Aboriginals are misclassified, since theirs is a more rural population. Even three times more misclassification is, however, only one percent of the sample of Aboriginals.

an advantage in the Canadian labour market. In this section we study labour market differentials between single- and multiple-origin Aboriginals to see if this is indeed the case. We show that, whether or not we control for differences in the standard measures of human capital, or for differences in the geographical distribution of the two groups, single-origin Aboriginals are much less likely to work and earn much lower wages than multiple-origin Aboriginals.

Because of the distinct labour market patterns of Canada's Territories and Indian reserves, –which we examine in the following section–, we restrict our attention in this section to the majority of Aboriginal Canadians who lived outside the Yukon and Northwest Territories, and not on Indian reserves in 1991. Our examination begins with differences in labour market activity, then turns to wage differentials among full-time, full-year workers.

(a) Employment and Unemployment

The main patterns of labour market activity among Canada's off-reserve Aboriginal population outside the Yukon and Northwest Territories, relative to non-Aboriginals, are summarized in Table 1. Considering men and women together, it is clear that Aboriginal Canadians exhibit less overall labour force activity than non-Aboriginals: 58.7 percent of individuals aged 15 to 64 reporting any Aboriginal origins were employed, compared with 70.4 percent of non-Aboriginal Canadians. Of this 11.7 percentage point gap, $(12.1 - 7.5 =) 4.6$ points, or about 40 percent, takes the form of higher Aboriginal unemployment, the rest constitutes higher non-participation. Interestingly, in 1990, 32.7 percent of Aboriginals worked full-time, full-year, compared to 45.6 percent of non-Aboriginals; a gap which exceeds the gap in survey week employment rates. This larger gap suggests that Aboriginals' work

patterns are more intermittent than those of non-Aboriginals.

While the above gaps between Aboriginals and non-Aboriginals are substantial, a much more striking result emerges when we disaggregate Aboriginals into single- and multiple-origin groups in columns 2 and 3. Clearly, the size of Aboriginal labour force activity gaps is strongly influenced by (ancestral) intermarriage: *for both men and women, most of the Aboriginal/Non-Aboriginal gap is associated with the single-origins group.* For example, the 11.7 percentage point overall Aboriginal employment gap actually consists of only a 4.0 point gap for those with multiple origins and a 25.2 point gap for those with single origins, with similar differences in unemployment and labour force participation rates. The 25 percentage point gap between this group's employment rates and that of non-Aboriginals dwarfs even the gender gap in employment, of 14 percentage points, in the non-Aboriginal population. Indeed, single-origin Aboriginal men are substantially less likely to work than non-Aboriginal women in Canada. In contrast, for almost outcomes, Aboriginals of mixed ancestry appear to be highly assimilated, in the sense of having labour market outcomes that are fairly close to those of Canadians who do not belong to any visible minority.

A final message of Table 1 is that the Aboriginal labour force activity gap varies considerably with gender. For example, for single-origin Aboriginal men, the Aboriginal/non-Aboriginal unemployment gap is 10.8 percentage points, compared to only 5.0 percentage points for women; indeed Aboriginal women's unemployment rate is considerably below men's.

What explains the sizable gaps in Aboriginal labour force activity documented in Table 1, both

relative to non-Aboriginals and between single- and multiple-origin Aboriginals? To gain some insights into this question, we use a variant of Oaxaca's (1973) method to partition these gaps into a component which can be statistically attributed to observable differences between these three groups --largely in human capital and geographical location-- and one which cannot. The results are presented in Table 2, which restricts attention to gaps in survey week employment rates.¹⁴ Table 2's first column shows the difference between the predicted employment probability of an Aboriginal with mean Aboriginal characteristics and a non-Aboriginal with mean non-Aboriginal characteristics, calculated from a probit regression.¹⁵ Because the probit function is nonlinear, these gaps are not exactly equal to the gaps reported in Table 1: the expected participation probability of an individual with mean characteristics is conceptually distinct from the mean participation probability in a sample of heterogeneous individuals. In practice, however, they are very similar¹⁶, and --for reasons of mathematical convenience-- it is the former gap we proceed to decompose in the remainder of the Table.

In columns 2 and 3 of the Table, the adjusted gaps using "own" regressions estimate what the employment gap would be if Aboriginals had the observed characteristics of non-Aboriginals. Adjusted gaps using "non-Aboriginal" regressions predict what the gap would be if non-Aboriginals had the

¹⁴ Results for other measures of work activity are very similar.

¹⁵ The probit coefficients on which these predictions are based are reported in Appendix Table 1. Control variables include age, education, region, marital status, and are described there as well. For consistency with the remainder of the Table, the column 1 predictions --at each group's own means-- are simply repeated in the rows labelled "own regressions" and "non-Aboriginal regressions".

¹⁶ For single-origin men (relative to non-Aboriginals), Table 1 shows a differential employment rate of 77.5 - 51.5 = 26 percentage points, compared to a difference in predicted employment probabilities of 30 percentage points in Table 2. Differences in mean employment probabilities for multiple origin men, single origin women and multiple origin women are 4.9, 23.5, and 2.5 percentage points respectively (from Table 1), compared with differences in predicted employment probabilities at the means of 6, 27 and 3 percentage points in Table 2.

characteristics of Aboriginals. These adjusted gaps therefore give two alternative estimates of the inter-group difference that *cannot* be attributed to differences in all the observed characteristics between the two groups.¹⁷ Because education and training may be more under policymakers' control than other variables, column 2 makes these counterfactual comparisons using the education and training variables only.

Overall, the decompositions of Table 2 indicate the following. First, as noted in Table 1, unadjusted employment gaps (relative to non-natives) are much higher for single-origin Aboriginals than multiple-origin Aboriginals: For men the single-origin gap is *five times* as high as the multiple origin gap; for women it is *nine times* as high. Second, differences in observable characteristics, including education, can explain a substantial fraction of this (much larger) single-origins gap, but not very much of the smaller multiple-origins gap. For example, the “own” regression results indicate that, constraining both Aboriginal groups' characteristics to be the same (and equal to those of non-Aboriginals), the

¹⁷ More specifically, let predicted employment probabilities be given by $\hat{y}^N = f(\overline{x^N \mathbf{b}^N})$ and $\hat{y}^A = f(\overline{x^A \mathbf{b}^A})$, where bars denote sample means, x 's are sample characteristics (including a constant), \mathbf{b} 's are regression coefficients, superscripts A and N indicate “Aboriginal” and “non-Aboriginal” respectively, and f denotes the probit function (which is nonlinear). Note that:

$$\hat{y}^N - \hat{y}^A = \left[f(\overline{x^N \mathbf{b}^A}) - f(\overline{x^A \mathbf{b}^A}) \right] + \left[f(\overline{x^N \mathbf{b}^N}) - f(\overline{x^N \mathbf{b}^A}) \right] \quad (1)$$

$$\hat{y}^N - \hat{y}^A = \left[f(\overline{x^N \mathbf{b}^N}) - f(\overline{x^A \mathbf{b}^N}) \right] + \left[f(\overline{x^A \mathbf{b}^N}) - f(\overline{x^A \mathbf{b}^A}) \right] \quad (2)$$

The difference between the predicted employment rates of an “average” individual in each of two groups can thus be decomposed into two parts: a part due to differences in mean characteristics (the first square bracket in either (1) or (2) above); and a part due to differences in coefficients (the second square bracket in either (1) or (2)). The “own regressions” adjusted gap estimates in Table 2 thus correspond directly to the second square bracket in (1) above; the “non-Aboriginal regressions” adjusted gap estimates to the second square bracket in (2).

employment gap falls to 15 percentage points for single-origin Aboriginal men, now “only” three times as high as the 5 percentage point gap faced by multiple-origin Aboriginal men. A sizable fraction of this reduction, especially for single-origin women, is attributable to Aboriginals’ education and training deficits compared to non-Aboriginals. Equalizing Aboriginals’ access to education thus can play an important role in reducing their employment gaps, but according to our estimates will not nearly be enough to eliminate them.

Third, for both men and women, observed characteristics explain much more of the single-origin/non-Aboriginal gap when the aboriginal regressions are used than the non-Aboriginal regressions. Inspection of the means and coefficients involved reveals that this is largely a consequence of the differential effect of geography on Aboriginals and non-Aboriginals: Interestingly, living in the Prairie provinces reduces Aboriginals’ employment but raises that of non-Aboriginals.¹⁸ Since it seems much easier to imagine a possible migration of Canada’s aboriginal population such that it had the same geographical distribution as non-Aboriginals than the other way around, the former (own regressions) thought-experiment seems to us the most interesting.

In sum, while observed characteristics are important, very sizable differences between the employment rates of single- and multiple-origin Aboriginals remain even after we control for measurable characteristics. To appreciate the size of these differences, note that according to row 1 of Table 2, the predicted effect of raising single-origin Aboriginal males’ education levels to those of non-Aboriginals is a reduction in their employment gap by (30-24=) 6 percentage points. This is

¹⁸ Outside Canada’s Territories, the interior Prairie provinces are the part of Canada that was colonized most recently by Europeans. The high gaps here are thus consistent with our intergenerational assimilation hypothesis, and with the differences between the Territories and the rest of Canada we document later in this paper.

substantially smaller than difference in the Aboriginal-white gap between single- and multiple-origin Aboriginals of ten percentage points (15-5; from column three, rows 1 and 3).

What explains the single-multiple origin employment differential? Some of it may be due to lesser discrimination against multiple-origin Aboriginals who, on average, may be less visibly identifiable to employers, customers or co-workers than single-origin Aboriginals. While this is possible, we argue in Section 6 that discrimination cannot explain the two other differentials we document in this paper: differentials between aboriginals on- and off- reserves, and a higher Aboriginal-non-Aboriginal wage gap in the Territories. Another possibility might be selection into intermarriage: “able” Aboriginals might be more likely to find non-Aboriginal mates. For this to be relevant to our findings, however, note that there must be a substantial inherited component of ability: our finding is that individuals with non-Aboriginal *ancestors* do better than those with only Aboriginal ancestors, and these ancestors could be from several generations back. Thus, although other explanations are possible, the effects of ancestral intermarriage documented here are very suggestive of the importance of skills (and cultural traits) acquired via close contact with non-Aboriginals as an important determinant of Aboriginal labour market outcomes. .

(b) Wages.

The measure of wages we use in this paper is the annual earnings of full-time, full-year paid workers. Means of this variable for Aboriginal and non-Aboriginal workers are presented in Table 3. According to this Table, the wages of Aboriginal Canadians were 10.4 percent less than those of non-Aboriginals in 1990, which is very similar to the 11.0 percent gap found by George and Kuhn (1994) in

the 1986 Census. Parallel to the employment patterns analyzed above, the gap is considerably greater for those with single Aboriginal origins (at 19.9%) than for multiple-origin Aboriginals (7.0%). Also parallel to employment patterns, the Aboriginal wage gap is smaller for women (5.9%) than for men (11.3%). Interestingly, however, *in contrast to the huge labour force activity gaps examined in the last section, Aboriginal wage gaps are relatively modest in size* compared to those faced by other groups. For example, all the wage gaps in Table 3 are substantially smaller than the male-female wage gap of 30.3% (1-26888/38607) among non-Aboriginals.

Some insights as to why Aboriginal Canadians' wages are lower than non-Aboriginals' can be derived from a decomposition of these gaps analogous to those in the last section. These are presented in Table 4. (The underlying regression coefficients are reported in Appendix Table 2). According to column 1, the biggest wage gap to be explained is again that between single-origin Aboriginal men and non-Aboriginal men, at 25 log points, or 28.4 percent. In addition, Table 4 shows that, especially for women, a substantial fraction of the wage gap between single-origin Aboriginals and non-Aboriginals, and between single- and multiple-origin Aboriginals, can be explained by differences in age, education and other characteristics between these groups. For men, however, a substantial fraction cannot thus be explained. For example, according to column 1, raising single-origin males' education to non-Aboriginal levels is predicted to raise their wage by only (25-20=5) log points (7 points according to row 2). At the same time, according to column 3, the unexplained wage differential between single- and multiple-origin Aboriginals is (16-4) 12 points, or 9 points, depending on which regressions are used. In this sense, ancestral intermarriage has a more important effect on wages than eliminating all educational differences between Aboriginal and non-Aboriginal males.

What explains these “unexplained” wage differentials between single- and multiple-origin Aboriginals, especially males, in column 3 of Table 4? As for the labour market activity differentials documented earlier, these remaining differences might capture discrimination or selection. They might, however, also capture cultural and skill differences associated with assimilation into the dominant North American culture via intermarriage. This contact/assimilation interpretation of our results receives added support from our analysis of geography-based differences *among single-origin Aboriginals* to which we now turn.

5. Geographical Mobility: Reserves and Territories

Like immigrants, a large number of Canadian Aboriginals have left their ancestors’ regions of birth to live and work. The regions they are leaving are often enclaves where natives form a majority, but are isolated from the “mainstream” economy and culture. In this section we document the effects of leaving these areas on the employment and wages of Aboriginals. We consider two kinds of mobility: mobility away from Indian reserves, and mobility out of Canada’s Northern Territories. Because only a very small number of multiple-origin Aboriginals live on reserves, or in the Territories, our analysis throughout this section focuses only on single-origin Aboriginals; this also serves to hold the level of “social mobility” constant while we turn our focus to geographical mobility.

(a) Reserves

About 27 percent of the single-origin Aboriginals in our sample live on one of Canada’s 633 Indian reserves; adjusting for Statistics Canada’s estimate of under-enumeration of reserves, the actual

fraction of working-age single-origin Aboriginals living on reserves is probably about 33 percent.¹⁹

These reserves vary tremendously in size and location, ranging from small neighbourhoods in the heart of Vancouver to both small and large geographical areas in very remote locations. What they all have in common, however, is a small population base --the most populous has fewer than 25,000 residents-- , and ethnic homogeneity: non-Aboriginals are prohibited from living on reserves. In this section we examine the effects of living on a reserve on Aboriginals' labour market outcomes.

Descriptive statistics on the wages and labour force activity of Aboriginals on- versus off-reserves are given in Table 5. Men's on-reserve employment rates, at 32.8 percent, are almost twenty percentage points lower than off-reserve; women's employment rates are about 15 points lower.²⁰ *Only about 12 percent of Aboriginal men and women living on reserves worked full-year, full-time in 1990*, compared with 28 and 20 percent for single-origin off-reserve men and women respectively (and with 56 and 36 percent of non-Aboriginal men and women, from Table 1). In addition to carrying a penalty in terms of access to jobs, living on a reserve appears to carry a wage penalty with it as well: those few on-reserve Aboriginals who did work full-time, full-year earned 20 to 25% less than single-origin, off-reserve Aboriginals.²¹

¹⁹This is derived from Statistics Canada's own estimates of the total undercounts, (38,000: see Silcoff 1996), plus an estimated 61.5% share of the aboriginal population between the ages of 15 and 64 (Mitchell 1998).

²⁰Especially in the less urbanized reserves, traditional hunting, fishing, and trapping activities may be important uses of time and sources of (in-kind) income. To the extent that these activities are not reported as self employment, they will not be reflected in our statistics here.

²¹ Because of the favourable tax treatment of reserve residents, this number may overstate the difference in real, after-tax incomes. As our focus in this paper is on the determinants of pre-tax wages (i.e. on incomes and productivity, not consumption and living standards) we do not attempt to adjust for these differences here. A related issue concerns income from traditional activities on reserves: one might argue that excluding these incomes would lead to an exaggeration of the wage gap between reserves and non-reserve areas. We disagree, for the following reason: Our estimates use the earnings of full-time, full-year paid workers to represent the available "wage

Table 6 decomposes the above total reserve-employment, and reserve-wage effects respectively into components that can, and cannot, be explained by differences in observed characteristics, using the same technique as in the last section's analysis of intermarriage.²² Because of small on-reserve sample sizes, the standard errors of the predicted gaps using the on-reserve regressions are very large; we thus restrict our attention to the off-reserve regressions. According to these regressions, differences in observed characteristics between on- and off-reserve Aboriginals play an important role in explaining their differential employment rates. With the possible exception of women's survey-week employment gaps, however, reserve-wage and reserve-employment gaps remain both economically and statistically significant when observed characteristics are held constant. For men in particular, highly significant employment gaps of 11 percentage points, and wage gaps of .29 log points (or 33.6 percent) remain when observed characteristics are controlled for.

We conclude from our analysis of reserve-wage and reserve-employment effects that something intrinsic to living on a reserve appears to reduce both the wages and employment of Aboriginal Canadians. Whatever this factor is, it seems unlikely to be discrimination, since it is a differential *among* single-origin Aboriginals. Further, if anything, one might expect the ethnically homogeneous environment of reserves to provide a haven from discrimination by the non-Aboriginal majority, in the same way that self-employment and urban "enclave" economies have been argued to

rate" on reserves. This will underestimate the wages available to a randomly-selected worker on a reserve only if it is less than the (unobserved) mean earnings of the reserve residents in the "traditional" sector. As most traditional activities tend to be subsistence hunting and trapping, we think this is highly unlikely. If anything, the wages of full-time, full-year paid workers seem likely to overstate the "true" mean wage available to a randomly-selected reserve resident, in which case our estimates of the reserve-wage gap are *underestimates* of the true gap.

²²Results of the underlying regressions are available on request from the authors.

provide a haven from discrimination for a number of immigrant groups (Borjas 1986). The reserve-wage and -employment effect could, as we have argued, reflect a lack of contact with the majority culture, making it harder to acquire skills and values that are helpful in promoting regular paid employment of the sort measured by the Census. Other potential causes of these effects, whose analytical merits and shortcomings are discussed in detail in Section 6, include selection (it could be that those Aboriginals who leave reserves would have earned high wages on reserves as well), lack of physical capital on reserves, and the pure geographical remoteness of many reserves that is not captured by our crude “geography” controls (province of residence and residence in a CMA). First, however, some further insights into the effects of pure “geographical” remoteness on Aboriginals and non-Aboriginals are provided in our analysis of Canada’s northern Territories below.

(b) The Territories.

Canada’s two northern Territories, the Yukon and Northwest Territories, comprise a huge geographical area with a forbidding climate. Sparsely populated, but with a much higher Aboriginal population share than the rest of the country, they are the portions of the country that have changed the least since European colonization. In this section we examine the effects of living in the Territories on the labour market outcomes of Aboriginals and non-Aboriginals. Because the number of multiple-origin Aboriginals living in the North is very small, our analysis, like that for reserves, focuses only on the single-origins group, thus implicitly controlling for the degree of aboriginal ancestry by restricting the sample. Also, because of the small number of individuals living on reserves in the Territories, our analysis is restricted to those living *off* reserves.

Descriptive statistics on the employment and wages of Canadian Aboriginals and non-

Aboriginals in the Territories, versus the rest of Canada, are given in Table 7. For both men and women, labour force activity exhibits an interesting and consistent pattern: non-Aboriginals in the Territories are *more* attached to the labour force (more likely to work, less likely to be unemployed or out of the labour force) than in the rest of Canada, while Aboriginals in the Territories are *less* attached to the paid labour force than in the rest of Canada. As a consequence, the Aboriginal/non-Aboriginal gaps in all these outcomes are much greater in the Territories than elsewhere. Regarding wages, both Aboriginal and non-Aboriginal Canadians receive a premium in the Territories, but this premium (at around 14% for both women and men) is smaller for Aboriginals than for non-Aboriginals (at 27-37%). As a consequence, the Aboriginal wage gap is also higher in the Territories than the rest of Canada. A final, perhaps surprising, result of Table 7 is the exceptionally high employment rates and wages of *non-Aboriginal women* in Canada's Territories. At 81.1 percent, the employment rates of (non-Aboriginal) women in the Territories are above those of men in the rest of Canada. Non-Aboriginal women's wages are 37 percent more in the Territories than the south, compared to only a 27 percent premium for men. This exceptional degree of labour market success presents a difficult target for northern Aboriginal women to attain in any gender-specific comparison.

Because of the small sample of people we have in the Territories, it is not practical to estimate separate employment and wage regressions for Territories versus the rest of Canada. In order to control for observed differences between workers in the Territories and the "south" we thus simply estimate pooled regressions including a dummy variable for residence in the Territories, separately for Aboriginals and non-Aboriginals. Coefficients on these Territory dummies are reported in Table 8. Even with this pooling of Territories and the rest of Canada, all but one of the probit coefficients for

Aboriginals are insignificant, with the exception of a higher unemployment rate for women in the North. All the results for non-Aboriginals, however, strongly support the notion that residence in this remote region *improves* their labour market outcomes: employment is higher, unemployment lower, and wages are higher, especially for women. To some extent, this is surely a compensating differential for isolation and a higher cost of living.

In sum, our evidence shows that living in the North either reduces, or at least has no beneficial effect on Aboriginal labour force attachment. However, because living in the North clearly raises the labour force attachment of non-Aboriginals, and raises their wages more than those of Aboriginals, the Aboriginal/non-Aboriginal gap in all outcomes is greater in the North. In our opinion, this beneficial labour market effect of northern residence for *non*-Aboriginals casts some doubt on the ability of pure “geographical” remoteness to explain Aboriginals’ relatively poor labour market outcomes when they live either on reserves *or* in the North.²³

6. Alternative Explanations: Is it really assimilation?

So far in this paper we have documented three “stylized facts” which are consistent with an “assimilation” explanation of Aboriginal-Nonaboriginal differentials in labor market outcomes. This of course does not prove that assimilation is an important process, as other processes might explain the same constellation of facts. In this section we scrutinize the “assimilation” hypothesis more closely in

²³It might again be explained by pure selection, but note that selection into the North would need to work in *opposite* directions for Aboriginals and non-Aboriginals to explain this result. Further, many explanations of *why* non-Aboriginals in the North might be positively selected and Aboriginals negatively selected themselves involve arguments about a lack of assimilation among Aboriginals there.

two ways. First, we assess the ability of a number of competing hypotheses to explain the same set of facts. Second, drawing on other literature and on some other empirical patterns found in the current paper, we expand the list of stylized facts against which we judge all the competing hypotheses about patterns in Aboriginal labour market outcomes. While it is possible to explain all these outcomes with one or more *combinations* of other hypotheses, we argue that no single hypothesis does as well against all the “facts” together as the assimilation hypothesis.

Our main argument in this section is summarized in Table 9. The columns in Table 9 list a series of stylized facts about Aboriginal Canadians about which we can be fairly certain.²⁴ The first simply refers to the fact that Aboriginals have worse labour market outcomes, on average, than non-Aboriginals. The following three (columns 2-4) are the main facts we have documented in this paper, and have been extensively discussed already. Column 5 refers to results documented in Kuhn (1997), who disaggregates the population of aboriginals into those whose “mother tongue” was an aboriginal language (a “mother tongue” is defined as the first language spoken as a child which the individual still speaks at the survey date) and others. Both in the unadjusted data and in a series of employment and wage regressions, Kuhn found that, even controlling for one’s ability to currently speak the two official languages (English and French), persons whose first language was aboriginal had worse labour market outcomes. Columns 6 and 7 list two findings of the current paper that were, in a sense, unexpected: the

²⁴ Importantly, and strikingly, in all cases in which we are aware of any evidence, the same empirical patterns also hold for American and Australian aboriginals. For example, despite vast cultural and racial differences between Canadian and Australian Aboriginals (Aborigines in the case of Australia), Australian Aborigines face larger wage and employment gaps if they are male, and if they live in remote areas. Also, wage gaps are small compared to employment gaps. For Australian evidence, see the large collection of papers at the Centre for Aboriginal Economic Policy Research, at <http://www.anu.edu.au/caepr>.

fact that, for Aboriginals, employment gaps tend to be large but wage gaps small, and that male Aboriginals do worse relative to non-Aboriginals than female Aboriginals do, relative to female non-Aboriginals. Finally, column 8 simply lists the widely-documented fact that, while conditions on many Indian reserves remain abysmal today, overall labour market outcomes for Aboriginals have been improving over a long time horizon, both absolutely and relative to non-Aboriginals.

The rows of Table 9 list six possible processes, or hypotheses, that might explain the stylized facts in the columns. One of these (number 3) is the contact/assimilation hypothesis we have focused on in this paper; others have mostly been discussed in passing already, and include discrimination, geographical remoteness, and lack of physical capital on reserves.

Proceeding by rows, it is clear that discrimination against Aboriginals as a group can only explain labour market differentials between all Aboriginals as a group and non-Aboriginals. This is reflected in a “yes” (Y) in column 1. Of course, to the extent that discrimination against Aboriginals has fallen over time, it can also explain Aboriginal economic progress over time. As a hypothesis, it does not shed any obvious light on the other empirical regularities listed in Table 9. If discrimination varies in intensity against subgroups of Aboriginals, Row 2 suggests that it could explain some other differentials we observe. Most compelling here is the notion that, because they may be more visibly identifiable as Aboriginals, single-origin Aboriginals may suffer more from discrimination than multiple-origin Aboriginals. One might also make a differential discrimination argument to explain why aboriginal men do much worse relative to non-Aboriginal men than women do (relative to non-Aboriginal women) but it is not clear why discrimination should affect Aboriginal men more than women. Even *differential* discrimination, however, cannot easily explain most of our other findings: for example the “reserve” and

“territory” effects on employment and wages occur *within* the group of single-origin Aboriginals only.

With the exception of gender differences in the aboriginal gap (for which we have no simple explanation) the contact/assimilation hypothesis provides an explanation for all the stylized facts we observe. In addition to the empirical regularities already discussed, note that assimilation can explain the “language” effect because individuals whose mother tongue is Aboriginal likely had less contact with non-Aboriginal culture, at least early in life. It may be worth noting that this finding is particularly striking because it controls for the official languages currently spoken by the individual (which are most likely to be used in the workplace). To the extent that engaging in work increases contact with non-Aboriginal culture, the assimilation story can also explain the fact that our measured wage gaps are small relative to employment gaps: conditional on working full-time and full-year, Aboriginal wages do not fall far short of non-Aboriginal wages. Increasing contact with the majority culture over time can also explain aboriginal economic progress via assimilation effects.

As discussed earlier, it is tempting to attribute at least some of the reserve wage- or employment effect simply to geographical remoteness, but remoteness cannot explain what we see in the Territories. Living in these areas seems to *improve* the labour market outcomes of non-Aboriginals, so something more than pure geographical distance (e.g. “cultural distance”?) must be playing the key role. In our view this casts enough doubt on the ability of geographical remoteness to explain the reserve-wage effect that we place a question mark in column 3 for this hypothesis.

A number of the differentials observed in our data could be explained by simple selection arguments based on unobserved ability or productivity differences among individuals. For example, if persons with greater unobserved ability tend to migrate off reserves, we should see a reserve wage

effect of the kind documented in this paper. However, if the reserve-wage effect is *pure* selection (meaning that, on average, Aboriginals have the same unobserved productivity as non-Aboriginals), then off-reserve Aboriginals should earn strictly *more* than non-Aboriginals because they are positively selected. This is not the case. Thus, while selection may play a role in the reserve wage effect, it needs to be augmented by another story (such as lower overall Aboriginal productivity stemming from a process such as cultural/skills mismatch, or discrimination) to be consistent with the other facts we observe. Lack of access to physical capital on reserves can also explain the reserve-wage effect but not (in any obvious way) any of the other regularities we see.

We conclude from our discussion of Table 9 that there surely exists a combination of other hypotheses that can explain most, if not all, of the stylized facts concerning Aboriginal labour market outcomes of which we are aware. For example, such a combination could include discrimination against aboriginals that is declining over time (this explains findings 1 and 8), and greater discrimination against aboriginals who are single-origin and male (findings 2 and 7).

If we combine these two hypotheses with three distinct and particular selection stories --specifically, Aboriginals whose ancestors intermarried are more productive on fixed, unobserved dimensions *that are unrelated to cultural/skills assimilation* than those whose ancestors didn't; similarly for Aboriginals who live off reserves; and similarly for Aboriginals who live outside the Territories-- we can explain most of the facts at our disposal. Five comments, however, are in order here. First, because our findings are based on comparing individuals whose *ancestors* intermarried to others, and on a comparison of individuals whose families may have left reserves and the Territories generations ago to others, these selection arguments implicitly require a large degree of heritability of

unobserved ability. After several generations, this may not be realistic, especially given regression to the mean in the intergenerational transmission of most characteristics. Second, for selection to explain our “Territories” results, it must work in *opposite* directions for Aboriginals and non-Aboriginals: non-Aboriginals must be positively selected in the North, Aboriginals negatively selected there. Third, it is hard to explain the “aboriginal mother tongue” finding by selection: if anything, one might expect persons who, when surveyed, still speak an *additional* language to the official languages they know to be more, not less able on unobserved dimensions than others. Fourth, none of the stories examined here, including contact/assimilation, seems to offer a convincing explanation of the gender differences we see. Perhaps the simplest explanation of this finding is that non-Aboriginal women suffer gender discrimination (thus presenting a low “target” for Aboriginal women to reach) and that, for some reason, gender and ethnic discrimination place only a single, not a double burden on Aboriginal women. Finally, no single hypothesis does nearly as well by the very crude metric of Table 9 than the “contact/assimilation” hypothesis. Thus, it seems very clear that the analogy between the Aboriginal and the immigrant experience pursued in this paper deserves further exploration and research.

7. Conclusion

Compared to a number of other minority groups, Aboriginal peoples, both in Canada and around the world, have been largely ignored by labour and population economists. In this paper, we show that Aboriginal Canadians face significantly worse labour market prospects than non-Aboriginal Canadians: they are less likely to be employed, more likely to be unemployed or out of the labour force, and earn lower wages than non-Aboriginals. Interestingly, these gaps are considerably larger for

men than women, and larger for employment rates than wage rates.²⁵

What explains the relative lack of labour market success among Canadian Aboriginals? Not surprisingly, one set of factors that plays an important role are the “traditional” human capital measures: lower levels of education, training, and also the relative youth of the Aboriginal population. In addition to these variables, however, we have shown that three factors --(ancestral) intermarriage with non-Aboriginals, residence off reserves, and residence outside the northern Territories-- all have substantial positive effects on Aboriginal relative wages and employment rates that, in some cases, and in a well-defined sense, are more important than the “traditional” human capital variables.

While each of the three above phenomena has multiple possible explanations, including pure geographical remoteness, selection, and differential discrimination, we argue that, taken together, they are strongly suggestive of one common explanation, which we term the “contact/ assimilation” hypothesis. According to this hypothesis, skills (and perhaps cultural traits) acquired via close contact with the majority culture increase Aboriginal economic success, at least as measured by monetary income and participation in work for pay.

Much more work is needed to sort out the precise quantitative importance of the economic assimilation hypothesis among Aboriginal populations worldwide. Promising avenues for such research include the use of panel data to explore the wage and employment changes experienced by persons

²⁵This large role of employment gaps contrasts with immigrants to North America, for whom assimilation primarily takes the form of wage growth among full-time workers. This difference may be due to the continuing availability of traditional non-market subsistence activities for a number of Aboriginals, and the greater ease and frequency of back-and-forth migration between reserves and settlements (where these are carried out) and the “dominant” culture.

who migrate onto and off reserves; this would address a number of the selection issues noted in the paper.²⁶ Additionally, data on the Aboriginal status of individuals' mothers, fathers and grandparents might add more structure to the "contact" hypothesis; for example one might expect cultural assimilation to operate more through mothers than fathers, and the degree of assimilation to depend on the amount and timing of intermarriage in a person's background. Further work on the importance of discrimination might examine the effect of geographical variation in publicly-expressed racist attitudes about Aboriginals, which can still be found in parts of Canada.

It remains to be said that, despite our findings regarding the economic benefits of contact with the "majority" culture, it does not of course follow that we *advocate* assimilation –this is a highly personal choice for most individuals, and (especially today in Canada) a highly political one for groups.²⁷ As well, our results do not by any means imply that native cultural autonomy or distinctiveness necessarily *precludes* economic success. Our data merely show that, given the options available to Aboriginal Canadians up to 1991, one of their most reliable routes to economic success, as measured by the standards of the dominant North American culture, has been assimilation into that culture, in the sense of leaving reserves, living in cities, and marrying non-Aboriginals.

²⁶ Further work might also consider using available instruments (such as, for example, geographical or temporal differences in the tax advantages of living on a reserve) for these migration decisions, in order to address selection and endogeneity issues.

²⁷ Current sentiment among many organized Aboriginal groups in Canada is strongly against further cultural assimilation.

REFERENCES

Borjas GJ (1985) "Assimilation, Changes in Cohort Quality, and the Earnings of Immigrants", Journal of Labour Economics 3: 463-489.

Borjas GJ (1995) "The Self-Employment Experience of Immigrants", Journal of Human Resources 21: 485-506.

Chiswick B (1978) "The Effect of Americanization on the Earnings of Foreign Born Men", Journal of Political Economy 86: 897-921.

Daly AE (1994) "The determinants of employment income for indigenous Australians", Australian National University, Centre for Aboriginal Economic Policy Research, discussion paper no. 68/1994.

Drost, H (1996) "Joblessness among Canada's Aboriginal Peoples", in Brian K. MacLean and Lars Osberg, eds., The Unemployment Crisis: All for Nought? Montreal: McGill-Queen's University Press.

Duleep HO, and Regets MC (1997) "Measuring Immigrant Wage Growth Using Matched CPS Files". Demography. 34 (2).

George P, and Kuhn P (1994). "The Size and Structure of Native-White Wage Differentials in Canada", Canadian Journal of Economics 27: 20-42.

Indian and Northern Affairs Canada (1992) Basic Departmental Data. Ottawa, Supply and Services.

Kimmel, J (1994) "Rural Wages and Returns to Education: Differences between Whites, Blacks and American Indians", W. E. Upjohn Institute for Employment Research, working paper no. 94-

27.

Kuhn, P. (1997) "Trends in Aboriginal Labour Market Outcomes, 1986-1991: Preliminary Results". Unpublished manuscript, McMaster University.

Mitchell, A (1998) "Population Bomb Ticking on Reserves", The Globe and Mail, Wednesday January 14, p. A1.

Oaxaca, R (1973). "Male-Female Wage Differentials in Urban Labour Markets." International Economic Review 14: 693-709

Patrinou HA, and Sekellariou CN (1992). "North American Indians in the Canadian Labour Market: A Decomposition of Wage Differentials", Economics of Education Review 11: 257-66.

Sandefur G, and Scott WJ (1983), "Minority Group Status and the Wages of Indian and Black Males". Social Science Research 12: 44-68.

Silcoff, S (1996) "Natives Continue to Snub Census", The Globe and Mail, Friday May 17: A6.

Snipp CM.(1989) American Indians : The First of This Land New York : Russell Sage Foundation.

Statistics Canada, (1993). Age and Sex, 1991 Census of Canada. Ottawa: Industry, Science and Technology Canada. Catalogue number 94-327.

Statistics Canada, (1994). Canada's Aboriginal Population by Census Subdivision and CMA: Aboriginal Data, 1991 Census of Canada. Ottawa: Industry, Science and Technology Canada. Catalogue number 94-326.

Table 1 - Labour Force Status: Persons Not Living on Reserves or in the Yukon or Northwest Territories.

	Aboriginal Origins			
	Any Aboriginal Origins	Single Aboriginal Origins	Multiple Aboriginal Origins	Non Aboriginal
<u>MEN</u>				
Employed (%)	65	51.5	72.6	77.5
Unemployed (%)	14.2	19	11.5	8.2
Not in LF (%)	20.8	29.5	15.9	14.2
FTFY (%)	39.6	28.1	46.1	55.8
N	7001	2525	4476	231811
<u>WOMEN</u>				
Employed (%)	53.2	39.9	60.9	63.4
Unemployed (%)	10.2	11.8	9.3	6.8
Not in LF (%)	36.6	48.3	29.8	29.8
FTFY (%)	26.8	20	30.7	35.6
N	8069	2965	5104	236361
<u>ALL</u>				
Employed (%)	58.7	45.2	66.4	70.4
Unemployed (%)	12.1	15.1	10.3	7.5
Not in LF (%)	29.3	39.6	23.3	22.0
FTFY (%)	32.7	23.7	37.9	45.6
N	15070	5490	9580	468172

Notes:

a. This and all following tables restrict the sample to ages 15-64.

b. Rows 1-3 for each group (Employed, Unemployed and Not in LF) refer to labour force status in the Census week. The fourth row gives the fraction of individuals who were full-time, full-year (49 or more weeks) workers in the preceding calendar year (1990) preceding the Census.

Table 2 - Predicted Employment Gaps (relative to non-Aboriginals): Persons Not Living on Reserves or in the Yukon or Northwest Territories

	Unadjusted	Adjusted for Education & Training Only	Adjusted for all Observable Character- istics
<u>MEN</u>			
Single Origins			
Own Regressions	.30 (.010)	.24 (.015)	.15 (.013)
Non-Aborig Regs	.30 (.010)	.26 (.010)	.25 (.010)
Multiple Origins			
Own Regressions	.06 (.006)	.05 (.008)	.05 (.008)
Non-Aborig Regs	.06 (.006)	.05 (.006)	.06 (.006)
<u>WOMEN</u>			
Single Origins			
Own Regressions	.27 (.012)	.20 (.016)	.12 (.015)
Non-Aborig Regs	.27 (.012)	.20 (.012)	.22 (.011)
Multiple Origins			
Own Regressions	.03 (.006)	.03 (.008)	.03 (.008)
Non-Aborig Regs	.03 (.006)	.03 (.006)	.05 (.006)

Note:

a. Prediction standard errors in parentheses.

**Table 3 - Mean Earnings of Full-Time, Full-Year Workers
(Not in Territories or Reserves)**

	Single Origin	Multiple Origin	Single & Multiple	Non- Aboriginal
<u>MEN</u>				
Mean	30157	35652	34252	38607
% Gap	21.9	7.6	11.3	
N	600	1754	2354	103691
<u>WOMEN</u>				
Mean	23455	25986	25295	26888
% Gap	12.8	3.3	5.9	
N	521	1387	1908	73268
<u>ALL</u>				
Mean	27042	31384	30242	33755
% Gap	19.9	7.0	10.4	
N	1121	3141	4262	176959

Table 4 - Predicted Wage Gaps (relative to non-Aboriginals) among Full-Time, Full-Year Workers (Not in Territories or Reserves)

	Unadjusted	Adjusted for Education & Training Only	Adjusted for all Observable Character- istics
<u>MEN</u>			
Single Origins			
Own Regressions	.25 (.018)	.20 (.025)	.16 (.024)
Non-Aborig Regs	.25 (.018)	.18 (.018)	.13 (.018)
Multiple Origins			
Own Regressions	.08 (.009)	.07 (.011)	.04 (.011)
Non-Aborig Regs	.08 (.009)	.07 (.009)	.04 (.009)
<u>WOMEN</u>			
Single Origins			
Own Regressions	.12 (.018)	.07 (.024)	.01 (.024)
Non-Aborig Regs	.12 (.018)	.06 (.018)	.01 (.018)
Multiple Origins			
Own Regressions	.03 (.011)	.03 (.013)	.02 (.013)
Non-Aborig Regs	.03 (.011)	.06 (.011)	.02 (.011)

Note:

a. Prediction standard errors in parentheses.

**Table 5 - Labour Force Status and Annual Earnings
for Single-Origin Aboriginals Living On and Off Reserves**

	On Reserve	Off Reserve
<u>MEN</u>		
Employment Status		
Employed (%)	32.8	51.5
Unemployed (%)	23.6	19.0
Not in Labour Force (%)	44.6	29.5
Full-Time Full Year (%)	12.6	28.1
N	1104	2525
Annual Earnings		
Mean (\$)	22645	30157
% Gap Relative to Off Reserve	24.9	--
N	120	600
<u>WOMEN</u>		
Employment Status		
Employed (%)	25.1	39.9
Unemployed (%)	10.7	11.8
Not in Labour Force (%)	64.2	48.3
Full-Time Full-Year (%)	12.2	20.0
N	1017	2965
Annual Earnings		
Mean (\$)	18611	23455
% Gap Relative to Off Reserve	20.6	--
N	108	521

**Table 6 - Predicted Employment and Wage Gaps between Single-Origin
Aboriginals living On versus Off Reserves**

	Unadjusted	Adjusted for Education & Training Only	Adjusted for all Observable Character- istics
<u>MEN</u>			
Employment (Survey Week)			
On-Reserve Regressions	.21 (.024)	.18 (.058)	.04 (.049)
Off-Reserve Regressions	.21 (.024)	.17 (.027)	.11 (.028)
Wages			
On-Reserve Regressions	.39 (.038)	.34 (.158)	.05 (.158)
Off-Reserve Regressions	.39 (.038)	.33 (.041)	.29 (.041)
<u>WOMEN</u>			
Employment (Survey week)			
On-Reserve Regressions	.16 (.031)	.11 (.066)	.11 (.066)
Off-Reserve Regressions	.16 (.031)	.10 (.034)	.06 (.035)
Wages			
On-Reserve Regressions.	.28 (.035)	.27 (.169)	.06 (.169)
Off-Reserve Regressions	.28 (.035)	.22 (.040)	.11 (.040)

Note:

a. Prediction standard errors in parentheses.

**Table 7 - Labour Force Status and Annual Earnings:
Yukon and Northwest Territories versus Rest of Canada**

	Single Origin Aboriginals		Non- Aboriginals	
	Terri- tories	Rest of Canada	Terri- tories	Rest of Canada
<u>MEN</u>				
Employment Status				
Employed (%)	44.7	51.5	88.2	77.5
Unemployed (%)	19.8	19.0	5.7	8.2
Not in LF (%)	35.5	29.5	6.1	14.2
FTFY (%)	24.1	28.1	62.3	55.8
N	282	2525	493	231811
Annual Earnings				
Mean (\$)	34460	30157	49227	38607
% Gap vs. Non-Aboriginals	30.0	21.9	--	--
% Gap vs. Rest of Cda.	14.3	--	27.5	--
N	63	600	253	103691
<u>WOMEN</u>				
Employment Status				
Employed (%)	38.9	39.9	81.1	63.4
Unemployed (%)	15.3	11.8	3.9	6.8
Not in LF (%)	45.8	48.3	15.0	29.8
FTFY (%)	17.0	20.0	47.1	35.6
N	288	2965	408	236361
Annual Earnings				
Mean (\$)	26716	23455	36941	26888
% Gap vs. Non-Aborig.	27.7	12.8	--	--
% Gap vs. Rest of Cda.	13.9	--	37.4	--
N	45	521	172	73268

Note:

a. Includes individuals living off reserves only.

**Table 8 - Territory Coefficients in Employment and
Wage Regressions by Aboriginal Ethnic Origin**

	MEN		WOMEN	
	Single Origin Aboriginals	Non- Aboriginals.	Single Origin Aboriginals	Non- Aboriginals.
Probits				
Employment	-.080 (.106)	.241 (.080)	.096 (.105)	.318 (.076)
Unemployment	.054 (.120)	-.032 (.008)	.342 (.128)	-.215 (.114)
FTFY	-.040 (.115)	.024 (.063)	.122 (.121)	.241 (.065)
Earnings Regressions				
	.203 (.072)	.170 (.026)	.196 (.076)	.300 (.032)

Note:

a. standard errors in parentheses.

Table 9: Comparing Hypotheses and Stylized Facts about Aboriginals

	The “Stylized Facts”							
	A. Employment and Wage Differentials Between:					B. Other		
	Aboriginals and non-Aboriginals	Single- and multiple Origin Aboriginals	Single-origin Aboriginals on and off Reserves	Persons (aboriginal and non-) inside versus outside the Territories	Single-origin aboriginals who spoke a native language and those who didn't	Large Employment gaps, small wage gaps conditional on (FT) employment	Larger gaps for men than women	Aboriginal economic progress over time
The Hypotheses:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Discrimination against aboriginals (as a group)	Y							?
2. Differential Discrimination (single vs multiple, men vs women)		Y			Y		Y	
3 Contact/Assimilation	Y	Y	Y	Y	Y	Y	?	Y
4. Geographical Remoteness			?					?
5. Selection (endogenous mobility or intermarriage)		Y	Y	Y	?			
6. Access to Physical Capital on Reserves			Y					

Notes:

- a. “Y” (yes) indicates the hypothesis can account for the stylized fact in question.
- b. “?” indicates consistency only under specific conditions (see text)
- c. A blank cell indicates either inconsistency between the hypothesis and the fact, or that the fact is not informative about the validity of the hypothesis

**Appendix Table 1 - Probit Coefficients for Employment
by Sex and Aboriginal Ethnic Origin**

	MEN			WOMEN		
	Single Origin	Multiple Origin	Non- Aboriginal	Single Origin	Multiple Origin	Non- Aboriginal
Nfld	-.243 (.196)	-.439 (.186)	-.753 (.020)	.420 (.205)	-.435 (.165)	-.586 (.019)
NB/PEI	-.334 (.298)	.007 (.166)	-.276 (.018)	-.062 (.298)	.158 (.145)	-.271 (.016)
NS	-.301 (.262)	-.011 (.139)	-.259 (.017)	.065 (.267)	.016 (.123)	-.324 (.016)
Que	-.236 (.115)	-.261 (.093)	-.127 (.013)	.106 (.112)	.068 (.080)	-.190 (.012)
Man	-.320 (.100)	.051 (.083)	.094 (.018)	-.246 (.094)	-.057 (.075)	.059 (.016)
Sask	-.353 (.104)	.038 (.103)	.225 (.019)	-.408 (.097)	.099 (.095)	.110 (.017)
Alta	-.205 (.094)	.074 (.069)	.100 (.012)	-.169 (.087)	.103 (.060)	.009 (.011)
BC	-.188 (.089)	.049 (.063)	-.077 (.011)	-.297 (.083)	-.050 (.056)	-.140 (.010)
CMA	.103 (.058)	.068 (.045)	.032 (.007)	.064 (.053)	.092 (.040)	.071 (.006)
Age	.119 (.014)	.127 (.011)	.155 (.002)	.099 (.014)	.131 (.012)	.159 (.002)
Age**2	-.149 (.018)	-.161 (.015)	-.205 (.002)	-.129 (.019)	-.180 (.016)	-.219 (.002)
kidslt6	--	--	--	-.299 (.065)	-.596 (.050)	-.620 (.008)
kidsge6	--	--	--	-.096 (.063)	-.310 (.049)	-.268 (.008)
married	.490 (.068)	.395 (.060)	.494 (.009)	.304 (.069)	.230 (.058)	.100 (.010)
wsepdiv	.112 (.116)	-.075 (.097)	.065 (.015)	.067 (.093)	.001 (.076)	.028 (.013)
grade 5-8	.176 (.143)	.349 (.202)	.277 (.024)	.188 (.167)	.795 (.339)	.131 (.027)
grade 9-10	.320 (.144)	.498 (.198)	.346 (.024)	.423 (.166)	.987 (.334)	.310 (.027)
grade 11-13	.787 (.147)	1.022 (.197)	.632 (.024)	.878 (.167)	1.513 (.333)	.718 (.026)
training	.657 (.142)	.948 (.196)	.743 (.023)	1.115 (.166)	1.631 (.332)	.952 (.026)
univ. 1-4	.934 (.164)	1.194 (.203)	.910 (.024)	1.261 (.177)	1.872 (.334)	1.101 (.027)
univ 5+	--	1.396 (.270)	.973 (.029)	1.313 (.323)	2.057 (.361)	1.220 (.032)
french	.251 (.136)	.138 (.130)	-.131 (.015)	-.194 (.129)	-.163 (.110)	-.113 (.014)
biling	.407 (.110)	.139 (.070)	-.279 (.011)	.091 (.103)	.056 (.057)	.035 (.010)
neither	.385 (.290)	-.284 (.962)	-.274 (.050)	--	--	--
ex_inc	1.88 (1.205)	.477 (.874)	.085 (.115)	1.35 (1.175)	.308 (.758)	-2.40 (.104)
constant	-2.742 (.271)	-2.685 (.267)	-2.607 (.037)	-2.666 (.280)	-3.290 (.381)	-2.595 (.038)
ln L	-1503.23	-2252.97	-103123.48	-1700.59	-2991.27	-131499.09
N	2525	4476	231811	2920	5104	235213

Notes:

a. Standard errors in parentheses.

b. Variable definitions: Nfld-BC give province of residence. CMA indicates residence in a Census Metropolitan Area. Kidslt6 and Kindsge6 count the number of children aged 0-5 and 6-16 respectively. Wsepdiv indicates widowed, separated or divorced; single denotes never married). Grade 0-4 through Univ 5+ indicate highest level of schooling completed. Official languages currently spoken are indicated by: english (English) french (French only), biling (bilingual), and neither. Age is age in years, and ex_inc is family income net of the respondent's wage and salary income.

**Appendix Table 2 - Coefficients from Wage Regressions
by Sex and Aboriginal Ethnic Origin**

	MEN			WOMEN			
	Single Origin	Multiple Origin	Non-Aboriginal	Single Origin	Multiple Origin	Non-Aboriginal	
nfld	-.037 (.132)	-.121 (.104)	-.124 (.010)	-.034 (.152)	-.024 (.117)	-.113 (.013)	
nb_pei	-.166 (.234)	-.176 (.085)	-.151 (.008)	-.095 (.244)	-.126 (.089)	-.131 (.010)	
ns	-.291 (.157)	-.087 (.055)	-.161 (.007)	-.376 (.187)	-.221 (.075)	-.182 (.009)	
que	.046 (.069)	-.118 (.038)	-.093 (.005)	.010 (.081)	-.149 (.042)	-.092 (.006)	
man	-.056 (.071)	-.127 (.037)	-.136 (.007)	-.128 (.063)	-.138 (.048)	-.143 (.008)	
sask	-.124 (.082)	-.163 (.050)	-.140 (.008)	-.232 (.080)	-.236 (.066)	-.171 (.009)	
alta	.039 (.065)	-.019 (.030)	-.034 (.005)	-.219 (.062)	-.124 (.035)	-.066 (.006)	
bc	-.050 (.059)	-.034 (.029)	-.011 (.004)	-.194 (.062)	-.028 (.034)	-.060 (.005)	
cma	.065 (.039)	-.021 (.020)	.059 (.003)	.110 (.039)	.121 (.024)	.129 (.003)	
age	.074 (.013)	.086 (.007)	.077 (.001)	.070 (.013)	.078 (.008)	.067 (.001)	
age2	-.081 (.016)	-.091 (.009)	-.080 (.001)	-.073 (.016)	-.089 (.011)	-.073 (.001)	
married	.279 (.051)	.267 (.028)	.223 (.004)	-.033 (.048)	.015 (.029)	.001 (.004)	
wsepddiv	.177 (.086)	.067 (.044)	.120 (.006)	-.094 (.066)	.005 (.040)	.023 (.006)	
grd5_8	-.139 (.121)	-.049 (.170)	.049 (.015)	-.030 (.163)	--	-.013 (.022)	
grd9_10	.015 (.121)	.034 (.166)	.131 (.015)	.031 (.159)	-.161 (.080)	.085 (.021)	
grd11_13	.099 (.119)	.183 (.165)	.236 (.015)	.241 (.157)	.106 (.074)	.270 (.021)	
training	.172 (.116)	.222 (.165)	.317 (.015)	.309 (.156)	.188 (.073)	.377 (.021)	
univ1_4	.209 (.124)	.330 (.166)	.464 (.015)	.486 (.159)	.403 (.075)	.618 (.021)	
univ5p	.396 (.194)	.546 (.173)	.603 (.015)	.608 (.199)	.656 (.092)	.848 (.022)	
french	-.108 (.084)	-.006 (.060)	-.067 (.007)	-.163 (.092)	-.003 (.067)	-.043 (.008)	
biling	-.079 (.064)	.062 (.029)	.016 (.005)	-.021 (.076)	.107 (.032)	.027 (.005)	
neither	-.165 (.213)	--	-.153 (.027)	.092 (.255)	--	-.200 (.028)	
constant	8.369 (.252)	8.163 (.199)	8.296 (.022)	8.302 (.273)	8.253 (.161)	8.255 (.028)	
adj. R ²	.21	.34	.30	.24	.28	.28	
N	600	1754	103691	521	1387	73268	

Notes:

- a. Standard errors in parentheses.
- b. See Appendix Table A1 for variable definitions.