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Differences in Homeownership Rates Between Aboriginal Peoples and White Canadians in the Toronto Census Metropolitan Area: Does Race Matter?

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The objective of this paper is to analyze homeownership rates for Aboriginals and whites, both of whom are Canadian citizens. Data were obtained from The Public Use Microdata Files for Individuals (PUMFI) drawn from the 1996 Census provided by Statistics Canada. The impact of race is examined using logistic regression models and controlling for socioeconomic and demographic characteristics of the Aboriginal and white population of Toronto, CMA. Results reveal that race is a barrier to Aboriginal homeownership even when Aboriginals have the same socioeconomic and demographic characteristics as whites. The findings suggest that further study is needed to determine the extent to which discrimination in housing might be a factor.

L'objectif de cet article est d'analyser les taux d'acquisition de propriétés pour les autochtones et les blancs, qui sont tous deux citoyens canadiens. Les données ont été obtenues à partir des fichiers de microdonnées d'usage public des personnes individuelles, tirés du recensement de 1996 fourni par Statistique Canada. L'impact de la race est examiné en utilisant des modèles de régression logistiques et en contrôlant les caractéristiques socio-économiques et démographiques de la population des autochtones et des blancs à Toronto, dans le recensement de la zone métropolitaine. Les résultats révèlent que la race est un obstacle à l'acquisition de propriétés par les autochtones même si les Autochtones possèdent les mêmes caractéristiques socio-économiques et démographiques que les blancs. Les résultats suggèrent d'effectuer davantage d'études pour déterminer l'étendue selon laquelle la discrimination en matière de logement peut être un facteur.

Introduction

We used the latest census data from Statistics Canada to analyze homeowership rates of Aboriginal households in Toronto, Census Metropolitan Area (CMA). The 1996 census enumerated Aboriginals as persons who identified themselves with at least one of the native groups (i.e., North American Indian, Metis or Inuit and/or those who reported being a Treaty Indian or a Registered Indian as defined by the Indian Act of Canada and/or who were members of an Indian Band or First Nation). Previously, Statistics Canada enumerated Aboriginals based on their background and ancestors rather than the recent method of perception about identity (Statistics Canada, 1997a).[1]

The shift in the census enumerating methods of Aboriginals should not be seen as distortion of the data. The fact remains that the distinction between Aboriginal groups is not based on ethnic differences but on the relationship between each Aboriginal sub-group and early European settlers and non-Native Canadians (Saku, 1999; Bone, 1992). More importantly, the census of Canada remains the most comprehensive, systematic, consistent, and important source of information on Aboriginal Canadians (Saku, 1999; Chartrand, 1993; Wright, 1993). According to the census, Aboriginals in Canada rose from about half a million in 1981 to 799,010 in 1996. Rapid growth of Aboriginals is more clear when we consider that their population in the 1941 census was only 118,000 (Patterson, 1993). This seven fold increase of the Aboriginal population in a half-century is due to a higher fertility rate than the Canadian average (Statistics Canada, 1986; Krauter and Davis, 1978: 7).

We have also relied upon the latest census data to define "white." It refers to people who are Caucasian in race and are neither Aboriginal nor visible minorities. The definition is derived from question 19 of the 1996 census (see Statistics Canada, 1997a: 98).

Aboriginals in Toronto CMA

In 1996, there were 16,100 Aboriginals in the Toronto CMA representing 0.38 percent of the total CMA population compared to 2.8 percent of the total Canadian population. Aboriginals' socioeconomic status in Toronto is a reflection of Canada as a whole in 1996. Despite their 100 percent Canadian birth status, only 6 percent of Aboriginals have a university degree compared to 19 percent for whites. Aboriginals' unemployment

rate is 8.4 percent, almost twice the rate for whites (4.9 percent). Moreover, Aboriginals are twice as likely as whites to hold menial jobs, 20 percent compared to 11 percent. Twenty percent of Aboriginals have professional or managerial jobs compared to 30 percent of the white population. Only 21 percent of Aboriginals fall in the $75,000 household income bracket compared to 39 percent of white households. Finally, 38.5 percent of Aboriginals were below Statistics Canada's low-income cut-off compared to 15 percent for whites (Statistics Canada, 1998).

In Toronto, only 0.04 percent of the Aboriginal population live on a reserve (Statistics Canada, 1996).[2] The reserve, Georgina Island, is located at the extreme northern part of the Toronto CMA. This segment will not be treated separately in this paper due to its small percentage of the urban Aboriginal population.

Conceptual or Theoretical Framework

The conceptual or theoretical framework originates from two related models which describe the relationship of the white majority population towards visible or racial minorities.

Differential Incorporation Model

The first model is referred to as "differential incorporation." It means that the white majority differentially incorporates some groups into mainstream society to a greater extent than others. The groups least incorporated into the mainstream in white society are people of color, i.e., visible minorities (Henry, 1994:13). However, some visible minorities are more incorporated into mainstream white society than others. Incorporation is conceptualized on the basis of equal access to the rewards that the economic and political systems generate and distribute (Breton, et al., 1990). In investigating differential access to rewards and resources, one must control for differences in socioeconomic variables such as educational attainment and differences in labor market experience in order to isolate the effect of race in the differential treatment of visible minorities by the white majority (Henry, 1994: 14).

Differential incorporation has been conceptualized as a two-way process. One process relates to the internal characteristics of the visible minority group in terms of its strengths and weaknesses, both economically and politically, and its cultural values. The other process involves exter-

nal forces imposed on the minority group by the white majority despite the socioeconomic status of the visible minority (Gordon, 1964:8; Lieberson, 1980). Racial discrimination is a major form of these external forces. It is assumed that differential incorporation has been applied to people of color in Canada because historically they have not readily fit into the white society (Henry, 1994). Although listed separately from visible minorities by Statistics Canada, we are considering Aboriginals among the group called "people of color."

Place Stratification Model

A second model which describes the relationship of the white majority towards people of color is referred to as place stratification. Place stratification for people of color implies that racial inequality is an integral part of the social structure reflected by the unequal spatial distribution of people of color and their residential segregation from the white majority (Logan, Alba and Leung, 1996). The place stratification model further suggests that differential characteristics of neighborhoods are associated with the uneven distribution of minority groups. Since neighborhoods' qualities significantly affect the life chances of groups, the white majority group is likely to restrict the opportunities of visible minority groups from obtaining neighborhoods' qualities similar to theirs (Alba and Logan, 1991, 1993). Such restrictions may include homeownership. The mechanisms used to carry out such restrictions include institutional actions in the housing market. For example, real estate brokers may show prospective white and Aboriginal home buyers houses in different neighborhoods. Similarly, lending institutions may grant or deny mortgages to Aboriginals and whites differentially, regardless of creditworthiness criteria. These actions make it difficult for minorities to have access to better quality neighborhoods (Massey and Denton, 1993). Thus, the white majority group keeps its social and spatial distance from the visible minority groups and secures its dominant and superior position over minorities by accessing a disproportionate share of the high quality neighborhoods' resources and rewards, including housing and jobs.

In the process of gatekeeping neighborhoods along racial lines, the place stratification model also suggests that many whites seek to avoid those neighborhoods that contain a certain percentage of minorities. The avoidance is less pronounced when a certain minority group represents only a small number of residents. In other words, the smaller the number

of the minority group in the neighborhood, the less likely social and institutional barriers will be erected. The reason behind this social phenomenon is that the size of the minority group matters in creating a threatening situation for whites (Blalock, 1967; Massey, 1985; Sterns and Logan, 1986; Logan, Alba, and Leung, 1996). We do not know at this point, however, whether the small size of Aboriginals in Toronto (less than 1 percent) has mattered in terms of the barriers to equal access. The access we are referring to is homeownership. Our specific objective is to analyze homeownership rates of Aboriginal and white Canadians.

Past Research

Importance of Homeownership in Canadian Society

Ownership has been favored by Canadians because "it provides the consumer with control" (Hannley, 1993: 210). In Canada, like other predominantly white societies, homeownership provides owners with a stake in the system. It is also perceived as an "indicator of social status and a source of personal autonomy" (Agnew, 1981: 75). Homeownership is "an established path to status and security" and represents permanency and stability in life (Ray and Moore, 1 991: 2). Buying a home is an "influential statement of success, security and stability" land a means of fitting into the social fabric (Adams, 1984: 524).

In addition to the social advantages, the economic benefits of homeownership are also unquestioned. According to Saunders (1978: 234), homeowners at all class levels generally can and do profit from homeownership. They do so because of house price inflation over time, buying up, and declining housing costs as the mortgage is paid off and ownership is "free and clear." It can also be argued that homeownership provides the type of profits that cannot be achieved through most other market mechanisms by persons of modest means (Verberg, 2000: 171). Other researchers have documented positive outcomes of homeownership, ranging from financial well being to increased social status and personal security (Sullivan, 1989; Adams, 1984; Agnew, 1981; Perin, 1977; Rakoff, 1977).

Homeownership is also positively related to political benefits in the form of political participation. It is suggested that homeowners are more likely than tenants to participate in mainstream political activities because homeowners have a stake in the social and economic benefits of

property ownership (Verberg, 2000: 170). In one sense, this is what Engels (1936) meant by political incorporation through homeownership. There is some evidence that high homeownership rates are associated with higher levels of voter turn out in Canadian elections (Pratt, 1987).

In contrast, being a tenant is fundamentally different both socially and economically (Blum and Kingston, 1984). They are more likely than homeowners to be viewed as an unsettling "out-group" with a lack of social esteem (Agnew, 1981: 75). Tenants are more likely to be seen as a transient group dependent on their landlords rather than an integrated part of society (Balakrishnan and Wu, 1992). Economically speaking, federal, provincial and municipal policies are less likely to favor tenants and more likely to favor homeowners (Backer, 1993). Tenants are penalized by the property tax treatment of apartments as "commercial property," which makes rent increasingly more expensive (Skaburskis, 1996).

In sum, the view that homeownership provides social, economic, and political advantages over renting is well documented (Rohe, McCarthy & Zandt, 2000). Homeownership is more likely to be associated with the social and economic well being of the owner, which in turn leads to an increased political participation and influence.

The Status of Aboriginals in the Housing Market

In contrast to studies addressing housing status on the reserves, there is limited information about differences in homeownership rates between urban Aboriginals and whites. This shortfall increases the importance of this study. Indeed, quantitative studies are so deficient that only one is cited here. Balakrishnan and Wu (1992) used 1986 Public Use census data and found that Aboriginals have very low odds of home ownership in Toronto despite controlling for age, education, household type, and income. The authors speculated that cultural or normative factors in the housing market may be the reasons for the low rates of homeownership. Balakrishnan and Wu also speculated that exclusion of a racial group from the choice of location may be associated with Aboriginals' low homeownership rates.

Data and Methodology

The impact of race on Aboriginals' homeownership is examined using a logistic regression model and controlling for socioeconomic and demo-

graphic characteristics of aboriginals and the white population of Toronto CMA. Data used in this section were obtained from *The Public Use Microdata Files for Individuals* (PUMFI) drawn from the 1996 Census and provided by Statistics Canada. PUMFI is composed of a 3% sample of population enumerated in the 1996 census. It provides extensive information on a mix of demographic, social, and economic characteristics for the Canadian population. Thus, the microdata files provide an advantage over using non-aggregated data for individual responses on a large number of variables. The PUMFI sample contains 117,580 households for Toronto CMA population, excluding institutional residents.

Data used here to estimate the predictors of homeownership in Toronto CMA were subjected to four separate operations. First, data were limited to a universe of Aboriginals and white non-institutional residents. Second, only household maintainers between 25 and 64 years of age living in private households were included in the analysis because it is less likely that home buying decisions will be made before the age of 25 and more likely for Canadians to retire at age 65 (Balakrishnan and Wu, 1992; Skaburskis, 1996). Third, data were further limited to white Canadian citizens either by birth or by naturalization. Fourth, only people living above the low income cut-offs were included in the analysis.[3] Analyzing only households above the low income level allows one to control for the advantage that some households might have from gaining homeownership through inheritance in spite of their achieved socioeconomic status. In addition to including only Aboriginals and white Canadian citizens who are 25 and over and above the low income cut-off, data were also limited to people who were classified by the census as non-movers, i.e., living at the same address which they occupied five years earlier, and movers but non-immigrants, i.e., living at a different address but in the same CMA that they occupied five years earlier (Statistics Canada, 1997b: 2-119).

Limiting the data to people who have been residents of Toronto CMA for at least five years is important for several reasons. First, it is a sufficient period of time for Aboriginals and naturalized white Canadian citizens to adjust to the new socioeconomic conditions of Toronto and to acquire sufficient capital. Second, five years is sufficient time for Aboriginals and new white Canadian citizens who have settled to know the nature of homeownership options available for them in Toronto. Finally, the decision to limit the analysis to residents who have been in Toronto for at least five years is consistent with the findings that "permanent house-

holds" have a higher chance of owning a home (Ioannides, 1987; Skaburskis, 1996: 227).

These five operations limited the sample to 29,675 households and allowed the analysis to determine the extent of differences in homeownership rates that remain between whites and Aboriginals after controlling for relevant socioeconomic and demographic variables. In the next section, we will present the operationalization of demographic and socioeconomic variables believed to influence the chances of owning a home. Theoretical guidelines about possible reasons for differences in homeownership rates dictated which variables to include in the model. Variables used to measure the potential for homeownership are race, age, martial status and household type, educational level, occupational level, and income level.

Operationalization of the Dependent Variables

Housing status was used as a dichotomous dependent variable to predict the chances of homeownership. It was coded 1 if the head of the household is a homeowner, with or without mortgage; and coded 0 if the head of the household is renting the dwelling. The categorical nature of the variable dictated the adoption of the logistic regression approach to measure the probability of owning a home. It is not feasible to use linear regression since any linear model with a non-zero slope can generate predicted values which are theoretically impossible, i.e., values which exceed the bounds of zero to one. The logistic regression technique, on the other hand, predicts probabilities which fall within the parameters of zero, renting the dwelling, and one, owning a home, thereby creating more realistic models (Hamilton, 1992, Kennedy, 1998). The equation for the model can be stated as:

$$\text{Homeownership} = \text{Race} + \text{Age} + \text{Marital Status \& Family Type} + \text{Education Level} + \text{Occupational Level} + \text{Income}$$

Table 1 illustrates the aggregate homeownership rates for Aboriginals and whites in Toronto CMA housing market at each social, demographic, and economic category. It illustrates the differential worth of qualifications for Aboriginals and whites in owning a house. The level of homeownership is greater for whites than for Aboriginals at every subgroup level. More importantly, Aboriginals are less represented in the

owners' market compared to whites regardless of equal socioeconomic or demographic characteristics.[4] For example, the economic benefits or returns for whites to have a higher occupational level are greater than those for Aboriginals when it comes to buying a home. Only 53.3 percent of Aboriginals who have professional or managerial jobs own their home versus 81.6 percent of whites who have the same qualifications. Thus, despite limiting the data to Aboriginals who are socially, economically, and demographically most likely to own a home, Aboriginals still represent more than twice the percentage of whites in the renters' market of Toronto CMA—49.2 versus 22.5 percent. These sobering statistics in Table 1 are an indication of *inequality* and warrant further investigation of the reasons behind the racial disparity in homeownership.

Operationalization of the Independent Variables

Logistic regression allows us to isolate and demonstrate the impact of race on the chances of homeownership while controlling for various demographic and socioeconomic variables. The model also measures the combined effects of all independent variables on predicting the probability of homeownership.

Table 1: Homeownership Status by Selected Demographic and Socioeconomic Characteristics of Aboriginal and White Household Maintainers†

	Aboriginals		**Whites**	
Characteristics	*Percent Owned*	*Percent Rented*	*Percent Owned*	*Percent Rented*
Age				
25 - 34	37.8	62.2	67.4	32.6
35 - 44	57.8	42.2	77.1	22.9
45 - 54	56.6	43.4	81.8	18.2
55 - 64	50.0	50.0	85.8	14.2
Martial Status and Family Type				
Legally Married	65.0	35.0	86.0	14.0
Single - Never Married	29.5	70.5	59.8	40.2
Divorced/Separated/Widowed	39.7	60.3	60.2	39.8
Husband/Wife with Children	69.4	30.6	88.2	11.8
Husband/Wife without Children	54.9	45.1	80.4	19.6
Male Lone Parent	50.0	50.0	63.2	36.8

Female Lone Parent	41.2	58.8	62.1	37.9
Educational Level				
High School or Lower	54.8	45.2	76.2	23.8
Trade School/Non-university	51.7	48.3	77.4	22.6
Some University or Higher	44.3	55.7	79.0	21.0
Occupational Level				
Menial Jobs	42.9	57.1	70.3	29.7
Service Jobs	47.1	52.9	74.6	25.4
Craft Jobs	62.9	37.1	76.9	23.1
Professional and Managerial Jobs	53.3	46.7	81.6	18.4
Income Level				
Less than $25,000	23.1	76.9	39.2	60.8
$25,000 - $ 49,000	27.4	72.6	56.6	43.4
$50,000 - $ 74,000	50.0	50.0	75.0	25.0
$75,000 or more	72.9	27.1	89.6	10.4
Total Toronto CMA	50.8	49.2	77.5	22.5

[†] The sample included only Aboriginal and white households above the low income cut-off, Canadian citizens, between 25 and 64 years old, and have been residents of Toronto CMA for at least five years.

Race

A race variable was used to identify the white and Aboriginal population of Toronto CMA, regardless of their ethnicity, as a predictor of homeownership in Toronto CMA. The race variable was included in the model as a dichotomous dependent variable coded 1 if the head of household is white and O if the head of household is Aboriginal. White individuals were not directly identified in the data produced by Statistics Canada, they were identified in the analysis by subtracting single responses of Aboriginals and visible minorities from the total population.[5] Aboriginals were directly identified by the census as those who identified themselves with one of the Aboriginal groups, i.e., North American Indian, Metis, or Inuit or those who reported being a Treaty or Registered Indian as defined by the *Indian Act* of Canada and/or who were members of an Indian Band or First Nation (Statistics Canada, 1 997b: 2-46).[6] Limiting the data by the race variable to the Aboriginal and white population of Toronto CMA and excluding other minority groups from the

analysis yields estimates that are specific to the two groups.

Age

The Aboriginal and white population between the age of 25 and 64 years old was divided into four dichotomous dependent variables to examine the differences in chances of homeownership for each cohort. Table 1 illustrates that the homeownership rate increases steadily with age for whites and reaches its peak for Aboriginals between age 35-44. At the bottom of the age trend are Aboriginal household maintainers between the age of 25 and 34 years old with the least ownership rate, 37.8 percent versus 67.4 percent for whites. At the top of the age trend are white household maintainers between the age of 55 and 64 years old with the highest homeownership rate, 85.8 percent versus only 50 percent for Aboriginals. The racial gap persists in each of the age cohorts analyzed in Table 1. The largest racial gap is between the 55-64 age group with 35.8 percent difference in homeownership rates in favor of whites. The smallest racial gap is between the 35-44 age group but still with a 19.3 percentage point difference in homeownership rates in favor of whites. The increasing trend in homeownership with age especially among whites is related to the fact that the older the person, the more likely the chance of increased capital which provides the means for homeownership (Miron, 1988; Myers and Park, 1999; Ray and Moore, 1991; Statistics Canada, 1987; Steele, 1979). It was further found that the positive correlation between age and homeownership is reversed after age 65 due to the decline in income and social needs (Balakrishnan and Wu, 1992).

Marital Status and Family Type

Dichotomous dependent variables included in this category were: legally married couples, singles, divorced, separated, or widowed household maintainers, husband and wife with children, husband and wife without children, male lone parents, and female lone parents. The measurement of *census family* was chosen instead of *economic family*. This decision is based on the fact that the concept of *economic family* refers to all persons related by blood, marriage, common-law, adoption, or not related but living together in a household. Thus, using the measurement of *economic family* could bias the results because it includes more than one *census family*.

Table 1 shows higher homeownership rates for married over non-

married households despite the persistence of a racial gap in homeownership between whites and Aboriginals in every category. This is consistent with previous studies where higher homeownership rates were found to be associated with married couples and families with children and lower rates were found to be associated with single persons and single parent families for both whites and minorities (Balakrishnan and Wu, 1992; Myers and Park, 1999; Skaburskis, 1996). Table 1 confirms previous findings using the 1996 census data and highlights the racial gap in homeownership across all the martial status categories. The largest gap between Aboriginals and whites was between single never married households (a difference of 30 percentage points). The lowest disparity in homeownership was between male Aboriginal and white lone-parent households. The difference was only 13.2 percentage points. The disparity is wider between Aboriginal and white female lone-parent households (20.9 percentage points).

Educational Level

For the purpose of consistency with previous studies which adopted the logistic model and to allow comparison of results, educational attainment was included in the analysis. Educational attainment is measured here by the highest level of schooling reached by the head of household. The variable was grouped using the census educational categories illustrated in Table A of the Appendix. Table 1 illustrates the racial gap between Aboriginals and whites in homeownership at every educational level. Aboriginals are less represented than whites at the highest educational level of *some university or higher*, 44.3 versus 79 percent. Aboriginals are also less represented than whites at the lowest educational level with a homeownership rate of 54.8 percent versus 76.2 percent for whites. In other words, whites with a *high school or lower* level of education have a higher homeownership rate than Aboriginals with *some university or higher*.

Occupational Level

Occupational level refers to the qualitative description used for the duties of Aboriginal and white household maintainers during the census week. As an independent variable, occupational level was grouped based on the Census occupational categories in Table B of the Appendix. Table 1 illustrates the racial gap in homeownership between Aboriginals and

whites at every occupational level. As in the case of educational level, the racial gap is wide to the point that whites at the lowest level of the socioeconomic spectrum have a higher homeownership rate than Aboriginals at the upper end of the socioeconomic spectrum. In other words, the lowest ownership rate for whites in *menial level* jobs, 70.3 percent, is higher than the highest ownership rate for Aboriginals in *professional and managerial level* jobs, 53.3 percent.

Income Level

Income of a household maintainer is the most important factor for mortgage qualifications and the commitment to high monthly payments (Skaburskis, 1996). Income level refers to the money received by household maintainers during the calendar year 1995 from the following sources: wages and salaries, net farm and non-farm self-employment income, federal child tax benefits, old age security pension and guaranteed income supplement, pension plan benefits, unemployment insurance benefits, income from government sources, dividends and interest on bonds, deposits and savings certificates and other investment income, retirement pensions and superannuation and annuities, and other money income such as alimony, child support, income from abroad, or non-refundable scholarships.

Previous studies reveal that differences in income levels are positively related to homeownership (Balakrishnan and Wu, 1992; Miron, 1988; Myers and Park, 1999; Steele, 1979). Table 1 confirms these findings and also reveals the racial gap between Aboriginals and whites at every income level. Aboriginals' lowest homeownership rate is among the *less than $25,000* income group, 23.1 percent. This is the lowest ownership rate for Aboriginals compared to all other social, economic, and demographic population sub-groups. Aboriginals' highest homeownership rate is among the *$75,000 or more* income group, 72.9 percent. This is also the highest ownership rate for Aboriginals compared to all other social, economic, and demographic population subgroups in Table 1. For whites, homeownership rates are higher than Aboriginals regardless of the income level. Whites have a higher ownership rate than Aboriginals at the lowest income group, 39.2 percent, and a higher ownership rate than Aboriginals at the highest income group, 89.6 percent. The gap between homeownership rates for the richest groups, *$75,000 or more*, is almost the same as the gap between the poorest groups,

less than $25,000, 16 percent. In other words, the racial gap is not dependent on the income level.

We have illustrated in Table 1 the differential benefits of qualifications for Aboriginals and whites in owning a house. Whites have a higher ownership rate than Aboriginals at every socioeconomic and demographic category. However, comparing Aboriginal and white homeownership rates at every social, economic, or demographic population sub-group does not provide an explanation for the racial inequality in Toronto CMA's housing market. It appears that the reasons for racial inequality lies beyond these social, economic, and demographic characteristics. Further, we also cannot argue, based on the percentages in Table 1, that all of the differences in aggregate homeownership rates between whites and Aboriginals are due to racial discrimination or a combination of socioeconomic and demographic characteristics Thus, in the next section we will control for the posited socioeconomic and demographic variables to examine the effect of race on chances of homeownership. Using logistic regression, the objective is to identify: 1) the significance of race compared to other socioeconomic characteristics on the chances of owning a home; 2) the difference that race makes on the odds of home ownership; and 3) the marginal effect of race in the housing market in Toronto CMA.

Analysis

A logistic regression analysis is used to assess whether race matters in the distribution of homeownership opportunities among Aboriginals and whites in Toronto CMA's housing market. The model predicts homeownership based on race, demographic, and socioeconomic predictor variables. Our hypothesis is that race is a significant predictor of the probability of homeownership. As stated above, housing status is the dependent variable and is regressed on the explanatory dichotomous dependent variables—race, age, martial status and family type, educational level, occupational level, and income level. The logit model yields the probability of home ownership. This probability is also transformed into odds to predict the probability that a head of household is an owner, giving his/er race, demographic, or socioeconomic status presented by the values of the explanatory variables (Greene, 1993, Gujarati, 1995; Knoke and Burke, 1980; Kennedy, 1998).

The logit coefficients are transformed by multiplying them by $p\,(\,l$-

p), where p is the home ownership for Toronto. Such transformation allows an easier interpretation. The transformed coefficients and odds-ratio of the logistic regression are presented in Table 2. The logit coefficients themselves are shown in Table C of the Appendix.

Race significantly matters when other socioeconomic characteristics known to have a bearing on the incidence of homeownership are held constant. The transformed coefficient for Aboriginals is -0.18. The negative coefficient for Aboriginals indicates that the probability of owning a home for an Aboriginal who is a head of a household, resident of Toronto for at least five years, with income above the low income level cut-off, and after controlling for socioeconomic and demographic differences, is still 18 percent *less* than the average for Toronto CMA. The coefficient for Aboriginals is statistically significant at $p < 0.01$ level.

Table 2 also reveals that differences in the probability of owning a home do not vary considerably by age. The probabilities of owning a home for the *25-34* and *35-44* age cohorts are equal 7 and 8 percent respectively more than the average CMA. The highest chance of owning a home by age is found among the *45-54* age cohort, i.e., 11 percent more than the average CMA. Martial status is also a significant predictor of homeownership at $p< 0.01$ level. *Husband/wife with children* have the highest probability of owning a home with 32 percent more likely probability than the average household in the Toronto CMA. *Divorced, separated, and widowed* head of households have the lowest probability of owning a home with only a 9 percent more likely probability than the average CMA household. Finally, households in *menial jobs* were the only ones among the socioeconomic predictors to be non-significant in predicting homeownership. The correlation among education, occupation, and income variables was expected and had its toll on the socioeconomic coefficients. No variables were dropped, however, because the primary goal of the analysis was to control for socioeconomic characteristics in order to measure the impact of race and not vice versa. Overall, all educational level and income levels were significant in predicting homeownership.

Table 2: Transformed Logit Coefficients for Homeownership of White and Aboriginals Non-movers in Toronto CMA, 1996 (n = 29,675).[1]

Socioeconomic Characteristics	Coefficient	Standard Error	t-ratio	Odds Ratio
Race				
Aboriginals	-0.18**	0.14	-7.29	0.36
Whites***	0.15	0.02	22.52	2.27
Age				
25-34	0.07**	0.04	10.39	1.47
35-44	0.08**	0.04	11.30	1.57
45-54	0.11**	0.04	14.10	1.86
55-64***	0.08	0.05	12.72	1.58
Martial Status				
Divorced/Separated/Widowed	0.09**	0.05	10.72	1.67
Husband/Wife with Children	0.32**	0.04	47.08	6.13
Husband/Wife without Children	0.24**	0.04	30.42	3.83
Single (Including Lone Parents)***	-0.18	0.03	-25.26	0.36
Educational Level				
High School or Lower	0.03**	0.04	4.16	1.20
Trade School/Non-university	0.05**	0.04	7.18	1.35
Some University or Higher***	0.01	0.04	4.15	1.05
Occupational Level				
Menial Jobs	-0.02	0.06	-0.16	0.69
Service Jobs	-0.04**	0.04	-5.01	0.98
Craft Jobs	0.05**	0.05	4.81	1.30
Professional and Managerial***	0.04	0.04	9.00	1.28
Income				
Less than $25,000	-0.34**	0.11	-17.81	0.15
$25,000 - $ 49,999	-0.26**	0.04	-36.13	0.23
$50,000 - $ 74,999	-0.13**	0.04	-18.56	0.49
$75,000 or more***	0.24	0.03	42.70	3.78
P	0.77			
Goodness-of-Fit				
Chi-square (df = 15)	11821.45			
-2 Log likelihood	24226.36			
Cox & Snell R Square	0.36			
Nagelkerke R Square	0.49			

Significance level	0.00

* Significant at the .05 level; ** Significant at the .01 level; *** Reference category
† The sample included only Aboriginal and white households above the low income cut-off, Canadian citizens, between 25 and 64 years old, and have been residents of Toronto CMA for at least five years.

The relative influence of race compared to the overall average of Toronto CMA was also examined through the odds ratios derived from the logistic regressions in Table 2. The odds ratio of 1.00 means that the probability of homeownership of a racial, socioeconomic, or demographic sub-group is equal to the overall average for Toronto CMA. The ratio for Aboriginals, 0.36, is less than the average for Toronto CMA. On the other hand, the ratio for whites, 2.3, is more than twice the odds for the average household of Toronto CMA.

The goodness-of-fit for the results suggested by the logit model in Table 2 was assessed using $\aleph^2$ (chi-square) distribution with 15 degrees of freedom. The $\aleph^2$ statistic in the model indicates that we can reject the null hypothesis that all coefficients are zero. Another goodness-of-fit measure utilized in Table 2 is -2 Log Likelihood to measure the deviance or how well the model fits the data. The change in -2 Log Likelihood tests the null hypothesis that the coefficients of the terms removed from the model are zero. We thus accept the hypothesis that race matters in predicting the probability of owning a home in Toronto CMA. It is unlikely that a different specification of the socioeconomic and the demographic factors in the model would have changed the overall conclusion that race matters and that the null hypothesis should be rejected. With other demographic and socioeconomic characteristics being equal to white household heads, an Aboriginal head of household has a lower chance of owning a home in Toronto CMA.

Finally, Cox & Snell R^2 and Nagelkerke R^2 were measured to determine the proportion of the variance in the dependent variable explained by the independent variables. The Cox & Snell R^2 is based on the log likelihood for the model compared to the log likelihood for the reference model. According to the Cox & Snell R^2 coefficient, the model in Table 2 was able to determine 36 percent of the variance of homeownership. The Nagelkerke's R^2 coefficient revealed that the model explained almost 50 percent of the variance in homeownership. Compared to Cox & Snell R^2, Nagelkerke's R^2 has an upper bound of 1, and therefore allows for a more

direct comparison with the common R^2 in linear regression models.

The coefficients in Table 2 measures the probability of owning a home for Aboriginals relative to the average household in Toronto CMA. Therefore, the marginal effect of race was calculated at the sample mean in Table 3 to examine the absolute effect of being Aboriginal or white on owning a home. The results suggest that race still matters when heads of the household in the sample have the same age, martial status and household type, educational level, occupational level, and income level. The *positive* marginal effect of race on the probability of homeownership for whites is 8 percent compared to a *negative* marginal effect of race on the probability of homeownership for Aboriginals, 14 percent. Given that the sample used to compute Table 3 has the same socioeconomic and demographic characteristics, one should expect that their race has no effect on their chances of owning a home, i.e., equal to zero. But whites have an advantage over Aboriginals in their chances of owning a home regardless of whether Aboriginals and whites have the same socioeconomic and demographic characteristics. Thus, Table 3 further confirms our findings that race matters as a factor in explaining the gap between Aboriginal and white homeownership rates.

Conclusions

Our hypothesis is accepted. Based on logistic regression analysis, race matters in the distribution of homeownership opportunities among Aboriginals and whites in Toronto CMA's housing market. The model clearly revealed that race is a significant predictor of the probability of homeownership after controlling for age, marital status, family type, educational level, occupational level, and income level.

Table 3: The Marginal Effects of Race on the Probability of Homeownership, Given Sample Mean in Toronto, 1996.†

Race	*Marginal Effect on Probability of Homeownership*
Whites	0.08
Aboriginals	-0.14

† The sample included only Aboriginal and white households above the low income cut-off, Canadian citizens, between 25 and 64 years old, and have been residents of Toronto CMA for at least five years.

Our findings present several avenues for future research. One area is to further examine whether the difference in homeownership is due to racial discrimination in housing and/or mortgage lending. While our analysis clearly documented that race matters, we did not test for racial discrimination directly. We also did not examine cultural differences that might contribute to differential homeownership rates (see Balakrishnan & Wu, 1992). However, since our study has presented quantitative evidence that race is a significant predictor of homeownership after controlling for other crucial socioeconomic and demographic variables, it should provide encouragement for more research to examine whether discrimination is a factor.

Should further research be conducted, we suggest that it use paired testing under the supervision of a coordinator who sends teams of trained volunteers to well-known real estate agencies to pose as home seekers. Each team should be matched according to income, family size, age, general appearance, etc.—every factor except skin color. Each member of the team should be sent to the same agency at closely spaced intervals, presenting similar housing desires. Each volunteer should then keep detailed accounts of his or her experience in the categories being tested, and avoid contact with his or her audit counterpart until his or her report is completed (Bish, Bullock, and Milgram, 1973).

Paired testing should also be conducted of lending institutions to insure that Aboriginals and white loan applicants receive equal treatment. Where paired testing has been done in the United States, widespread discrimination against minorities was detected (Galster, 1992). Similar testing should be done in Toronto if policy makers, government officials, and community groups are to effectively detect whether racial discrimination in housing is a factor and its effect on Aboriginals' lower homeownership rate.

Notes

1 See Saku (1999) for more historical details on changes in enumeration of Aboriginals in Canada since the 1871 census to deal with various problems such as population size and language.

2 Along with Toronto CMA, only Winnipeg and Vancouver contain Indian enclaves within the boundaries of urban centers of 1,000 or more (Krauter and Davis, 1978).

3 Statistics Canada determines the low income cut-offs based on a national

family expenditure data and are updated yearly by changes in the consumer price index (Statistics Canada, 1997b).

4 It is worth noting that without limiting the census data to Canadian citizens above the low income cut-off level, between 25 and 64 years old, and who have been residents of Toronto CMA for at least five years, the Aboriginals' homeownership rate drops to 37.4 percent instead of the 50.8 percent total homeownership rate reported in Table 1.

5 According to the definition provided by the Employment Equity Act and used by Statistics Canada, visible minorities are persons (other than Aboriginal persons), who are non-Caucasian in race or non-white in color (Statistics Canada, 1997b).

6 It is important to note that the 1996 Aboriginal data used here are not comparable with previous census years. In 1991 and previous censuses, the Aboriginal population was determined using only an ethnic origin question based primarily on the ancestry dimension. However, a new question was included on the 1996 Census and is used in this analysis. The new Aboriginal question allowed respondents to define how they see themselves (Statistics Canada, 1997b: 4-12; 4-13).

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Appendix

Table A: Underlying Census Education Levels Used in Three-Way Grouping

Constructed Title	Component Census Titles
Some University or Higher	With bachelor or first professional degree; with certificate or diploma above bachelor level; with master's degree(s); with earned doctorate; or with university or other non-university certificate or diploma
Trade School/Non University	Without university certificate, diploma, or degree; secondary (high) school certificate; trades certificate or diploma; without trades or other non-university certificate or diploma; with trades certificate or diploma; or with other non-university certificate or diploma.
High School or Lower	Grades 9 to 13; or less than grade 5 and Grades 5 to 8

Table B: Underlying Census Occupations Used in Four-Way Grouping

Constructed Title	Component Census Titles
Professionals and Managers	Professionals, senior managers, and middle and other managers
Craft	Semi-professionals and technicians and Supervisors: crafts and trades,Service Administrative and senior clerical personnel, Supervisors: clerical and sales services, Clerical personnel, Skilled sales, Intermediate sales, and Other sales and service personnel
Menial	Semi-skilled manual work and Other manual work.

Table C: Maximum Likelihood Logit Parameter Estimates of the Fitted Model of Homeownership for White and Aboriginal Non-movers in Toronto CMA, 1996 (n = 29,675).†

Socioeconomic Characteristics	Coefficient	Standard Error	t-ration	Odds Ratio
Race				
Aboriginals	-1.03**	0.14	-7.29	0.36
Whites***	0.82	0.02	22.52	2.27
Age				
Age 25-34	0.38**	0.04	10.39	1.47
Age 35-44	0.45**	0.04	11.30	1.57
Age 45-54	0.62**	0.04	14.10	1.86
Age 55-64***	0.46	0.05	12.72	1.58
Martial Status				
Divorced/Separated/Widowed	0.51**	0.05	10.72	1.67

Husband/Wife with Children	1.81**	0.04	47.08	6.13
Husband/Wife without Children	1.34**	0.04	30.42	3.83
Single (Including Lone Parents)***	-1.01	0.03	-25.26	0.36
Educational Level				
High School or Lower	0.18**	0.04	4.16	1.20
Trade School/Non-university	0.30**	0.04	7.18	1.35
Some University or Higher***	0.05	0.04	4.15	1.05
Occupational Level				
Menial Jobs	-0.10	0.06	-0.16	0.69
Service Jobs	-0.20**	0.04	-5.01	0.98
Craft Jobs	0.26**	0.05	4.81	1.30
Professional and Managerial***	0.25	0.04	9.00	1.28
Income				
Less than $25,000	-1.90**	0.11	-17.81	0.15
$25,000 - $ 49,999	-1.48**	0.04	-36.13	0.23
$50,000 - $ 74,999	-0.71**	0.04	-18.56	0.49
$75,000 or more***	1.33	0.03	42.70	3.78

* Significant at the .05 level; ** Significant at the .01 level; *** Reference category

† The sample included only Aboriginal and white households above the low income cut-off, Canadian citizens, between 25 and 64 years old, and have been residents of Toronto CMA for at least five years.