

**SOCIO-DEMOGRAPHIC FACTORS AND CIVIC VOTING  
BEHAVIOUR: THE CASE OF VANCOUVER**

by

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## **ABSTRACT**

*Socio-Demographic Factors and Civic Voting Behaviour: The Case of Vancouver* considers the relationship between voting behaviour in the 2008 Vancouver municipal election and socio-demographic characteristics of people living in Vancouver's voting divisions. It includes a focus on voting behaviour and the socio-demographic variable of housing tenure. While related studies on election behaviour have taken place at the federal and provincial levels, little has taken place at the municipal level. Using quantitative data from Statistics Canada 2006 Census and City of Vancouver 2008 election, the hypotheses of these relationships are tested using regression analysis. The explanatory variables found to have a statistically significant influence on the vote for Vision Vancouver, the centre-left civic party, are university education, Chinese immigrants, rented dwellings, voter participation, youth, and persons 55 years and over. The socio-demographic data is further analyzed with thematic maps to provide additional context about the location of these voters in Vancouver.

### **Keywords:**

Subject Terms: election; voters; Vancouver politics; municipal election; socio-demographic variables; voting behaviour

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# 1 INTRODUCTION

*At the dawn of the survey age, two schools of American scholars pioneered the field of electoral behaviour and found that many voting decisions were made long before the actual campaign. The Columbia school found that citizen's vote intentions could be readily predicted from their level of education, income and their class membership (Lazarsfeld, et al. 1948, Berelson, et al. 1954) (cited in Farney 2007, 2).*

There has been little research done on municipal voting behaviour generally or in Vancouver, more specifically. This research project attempts to add to the limited research and understanding of local elections, including Vancouver, by studying the most recent municipal election, which was held on November 15, 2008. In this election, a new centre-left political party named Vision Vancouver (hereafter Vision) took control of city council, with a Vision mayor and seven of the ten councillor positions. This project explores the relationship between voting behaviour in the 2008 municipal election and socio-demographic characteristics of people living in Vancouver's voting divisions.

The socio-demographic variable of housing tenure is examined in more detail for several reasons. One of these reasons is that housing tenure is a point of interest for municipal government since property taxes make up a large portion of the municipal budget. In addition, Vancouver's municipal government is involved in the creation of policy related to affordable rental housing and land use decisions. Furthermore, the city of Vancouver has an almost even split between owned homes and rented dwellings, so political leanings in one or the other direction may have an impact on voting outcomes as studies in other jurisdictions suggest.

This research paper is made up of four chapters. In the first chapter, the Introduction, a background of the research topic, a review of the related literature, and

an explanation of the significance of the study, are provided. In the second chapter, the Methodology, the election and socio-demographic data used for the study, the research design, and the techniques that are used to analyze the data, are described. In the third chapter, Results and Analysis, information about the analysis of the socio-demographic data and its relationship with voting behaviour is provided through regression analysis and thematic mapping. In the final chapter, Discussion and Conclusion, there is a discussion about the findings and knowledge gained in this project and information about some of the limitations and the findings of the study. Then, possible directions for future research related to this topic are identified and a final summary is provided.

The Introduction that follows provides an overview and understanding of the subject related to this study. The background information gives context to Vancouver municipal politics, the research question(s) and hypotheses, and socio-demographic factors in Vancouver. The literature review demonstrates that this project is relatively unique, but that previous studies, including those at other levels of governing, provide a basis for the use of particular socio-demographic variables and research techniques. The significance of this research project is then described, as there is a need for a better understanding of voting behaviour, particularly at the local municipal level.

## **1.1 Background**

### **1.1.1 Vancouver Municipal Politics**

A new political party, Vision Vancouver, took power in the 2008 Vancouver municipal election. This was the third consecutive election since 2002 that involved a change in the political party controlling Vancouver city council. Prior to 2002, the Non-Partisan Association (hereafter NPA) had dominated Vancouver municipal politics. First

elected in 1937, the NPA had controlled Vancouver city council for all but 17 years up to 2008.

Although the NPA won the election of 2005<sup>1</sup>, the losses in both 2002 and 2008 by the NPA and the creation of a new party (Vision Vancouver) during this time period suggest that this could be a critical period of political change in Vancouver. In *Citizens and Their Municipal Governments: Increasing Accountability*, a 1995 local election study, Kennedy Stewart stated, “Like a champion prize fighter, the NPA has powerful backers in its corner, and while it occasionally wobbles, it will not fall down...No rival party has ever presented a successful opposition to the NPA on a continuous basis” (Stewart 1995, 50). The next municipal election in 2011 will be interesting, as it could confirm Kennedy’s statement if the NPA reclaims Vancouver city council or instead could demonstrate a possible change in Vancouver politics if Vision repeats its electoral success of 2008. The outcomes of future Vancouver municipal elections could be better understood with an increased knowledge about the voting behaviours of Vancouver residents.

The city of Vancouver is the subject of this research project. Vancouver is one of only a few Canadian cities that have civic elections with political parties that run candidates for mayor and city council. The presence of political parties and the ability to categorize these parties as left-of-centre or right-of-centre allows for links to be made with other election research at a municipal or higher level of government. Although the terms left and right have evolved over time, “at the core of the distinction are opposing beliefs about the free enterprise system and about the appropriate balance between government and the market. This is the so-called ‘old’ left-right cleavage.” (Blais et al. 2002, *Do Party Supporters Differ?* 185). James Lightbody further describes the left to

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<sup>1</sup> British Columbia has municipal elections every three years, in November. All municipal elections in British Columbia are held under an at large system.

right spectrum by explaining, "the right' is taken to characterize the most status quo associations and 'the left' the challenge to established ways of doing business" (Lightbody 2006, 104).

Since its creation in 1936, the Non-Partisan Association (NPA) has been the political party that has dominated the Vancouver political scene and city council (Punter 2003, 13; Gutstein 1975, 139; Higgins 1986, 327). The NPA was created by a group of "business interests" as a reaction to the rising popularity of the Cooperative Commonwealth Federation (CCF), a party that had candidates run in 1934, but then disappeared from the municipal electoral scene by 1940 (Stewart and Smith 2006, 2; Stewart 1995, 37, 46; Higgins 1977, 233). There have only been a few breaks to this NPA control of Vancouver city council over the years, with the NPA in power in Vancouver for 35 years from 1937 to 1972, from 1986 to 2002, and from 2005 to 2008. The other party that broke this dominance in the 1970s and early 1980s, was a centrist party, The Electors Action Movement (hereafter TEAM) (Smith and Stewart 2009, 300). "By 1986, a Non-Partisan council was returned to office and the city returned to being virtually a one party council throughout the 1990s" (Punter 2003, 14). In 2002, the Coalition of Progressive Electors (hereafter COPE) replaced the NPA as the party in power in Vancouver, but was defeated by the NPA in 2005 after one term, in most part due to a split of the left vote which created Vision, in addition to COPE. The current city council, controlled by Vision Vancouver, took power from the NPA in 2008 because it agreed to a coalition with COPE that would not split the left-of-centre-vote for the 2008 election.

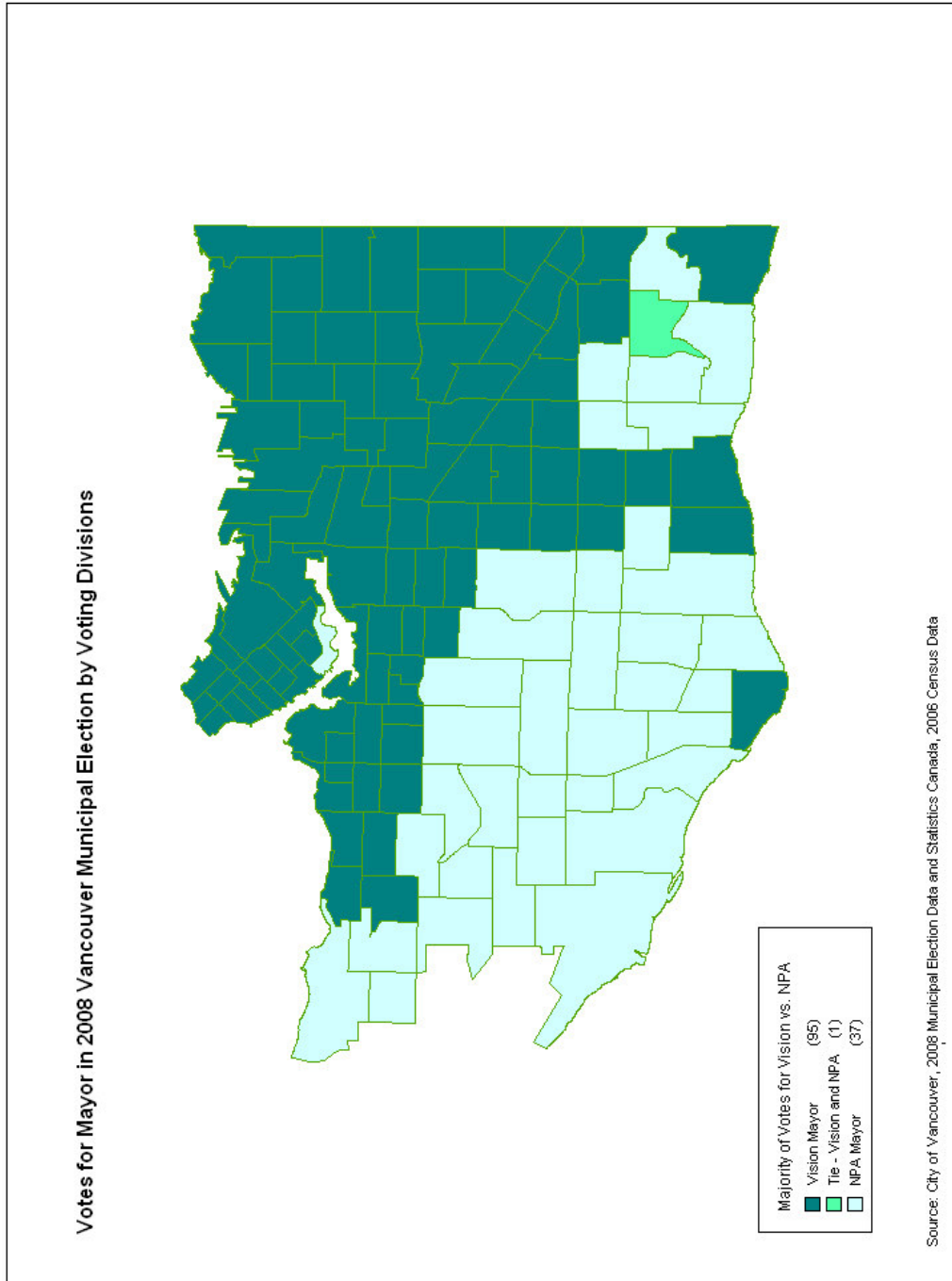
In an effort to defeat the ruling NPA and prevent a split of the left-of-centre vote, Vision Vancouver and COPE agreed to refrain from running candidates against each other in both 2005 and 2008 (CBC 2008). COPE councillor, David Cadman, indicated

that they were trying to prevent the split of the left-wing vote, stating, "What we are hoping to do is to have a slate that everyone can vote for, so that there isn't a case where people have to make a determination as to where to cast their votes" (CBC 2008). Vision Vancouver was a newly formed party for the 2005 election, after a division between COPE council members took place and some of the centrist/moderate members left the party to form Vision. Although they only ran one mayoral candidate for the two parties in the 2005 election, the right-of-centre NPA did win the election with an NPA mayor and a majority council. In the following 2008 election, Vision had the only centre-left mayoral candidate and eight councillor candidates run in the election, while COPE did not run a mayoral candidate and only had two candidates run for council in the election. The parties also agreed to each run less than a full slate for School Board, with four Vision candidates and five COPE candidates, and for Park Board, with four Vision candidates, two COPE candidates, and one Green Party candidate running for election.

In Vancouver, the mayor has historically been a member of the political party that held a majority on city council. This continued when the 2008 civic election resulted in a Vision Vancouver majority council, with a Vision mayor, seven Vision councillors, one NPA councillor and two COPE councillors. Therefore, for the purpose of this research project, the vote for mayor will be analyzed as it represents the election results for a party that received the majority of votes in an election. The 2008 election results for the Vision and NPA mayoral candidates are shown by voting division in the map (Figure 1) on the following page.

The NPA is a centre-right party that has traditionally been dominated by the local business community (Gutstein 1975, 139; Higgins 1977, 235). "The NPA always

Figure 1. Map of Vision Vancouver and NPA Vote in 2008 Municipal Election



supported real estate promoters and big business interests, believing that what was good for the real estate industry was good for Vancouver” (Gutstein 1975, 139). The NPA identifies four party principles, two of which demonstrate a right leaning ideology. These principles are that “individuals have the right to enjoy the fruits of their labour, and to own private property, and individual enterprise is generally preferable to government intervention”, and “civic progress and stability can only be achieved by upholding the law, accepting social responsibilities, and accomplishing change by intelligent planning” (NPA 2009).

Formed before the 2005 election as a result of a split in the COPE party, Vision Vancouver is a centre-left party that has been more centrist than the more traditionally left COPE. With the 2005 election, Larry Campbell, the leader of Vision Vancouver who had previously been brought into power as the COPE mayor in 2005, was replaced by Jim Green, the new Vision leader. “Green moved Vision Vancouver even closer to the middle by taking a pro-developer stance on a number of key issues and calling for increased police staffing” (Stewart and Smith 2006, 7). In *A Vision for Vancouver*, their 2008 Action Plan for Vancouver, Vision identifies their priorities to: end homelessness and building affordable housing; improve quality of life by building safe and inclusive communities; make Vancouver an international leader among environmentally sustainable cities; and, help “our city embrace a culture of creativity, entrepreneurship, and innovation, and help our artistic and small-business sectors thrive in a competitive economy” (Vision Vancouver 2008).

The other party represented in Vancouver city council after 2008 is COPE. However, their vote is not analyzed in this study, as they did not run a candidate for mayor. There is a strong likelihood that supporters of COPE candidates would have voted for the Vision mayor as ideologically COPE is more closely aligned to Vision than

the NPA and COPE officially supported the 2008 Vision mayoral candidate, Gregor Robertson (Coalition of Progressive Electors 2009). Created in 1968, COPE is a more traditional leftist party, with its original support coming from the Vancouver and District Labour Council, the left wing of the New Democratic Party (hereafter NDP), and the Communist Party (Gutstein 1975, 141). COPE is a party that is guided by social-democratic principles. As COPE describes on its website, “COPE is committed to social justice, democracy, open and accessible government, environmental sustainability and economic security for all Vancouver residents” (Coalition of Progressive Electors 2009).

This research project was conducted in a way that is as objective as possible and not biased in favour of one political party over another. However, it must be acknowledged that the possibility of unintentional bias exists because this study concentrates on voter preference for established political parties that had a mayoral candidate for City Council and does not include other political parties (i.e. COPE/Green) or independents.

### **1.1.2 Research Question**

This Master of Urban Studies research project examines the relationship between socio-demographic factors and voting behaviour in Vancouver’s 2008 municipal election. This project takes a variety of socio-demographic factors into consideration, including a focus on the relationship between voting behaviour and housing tenure.

The research question is as follows:

Why, in the 2008 elections, did some voting divisions in Vancouver vote for a Vision Vancouver mayor more than other voting divisions?

In addition, sub-questions emerge as a part of the analysis of this question.

These include: Do socio-demographic factors have an effect on voting behaviour? What



socio-demographic factors have a relationship with voting behaviour? Moreover, is there a relationship between housing tenure and voting behaviour in Vancouver's 2008 municipal election?

The hypotheses that are made with the research questions in this project are that in Vancouver's 2008 municipal election there is a relationship between socio-demographic factors in voting divisions and the vote for a Vision Vancouver mayor.<sup>2</sup> This project considers the relationship between voting behaviour and eight socio-demographic variables, including housing tenure.

Although socio-demographic variables are not the only category of variables that explain voting behaviour, they are an important component to understanding voting behaviour as previous research indicates they influence political attitudes.

The electoral field has been described in terms of a competition between sociological explanations based on social or economic characteristics of the voters and psychological explanations based on their attitudes or opinions. In contemporary research, social or economic characteristics are usually included as explanatory variables. Even though such characteristics are technically exogenous to political or electoral preference, they have an indirect impact through their influence on a variety of political attitudes which, in turn, determine the vote. Each of these variables represents a highly stable characteristic in the sense that voters' current "positions" on the variable were established long before the election, although the political effects of that characteristic may not have arisen until the current campaign (Miller and Shanks 1996, 7-8).

This view that socio-demographic variables influence voting behaviour has existed since some of the first studies of voting behaviour were conducted by researchers - Paul Lazarsfeld, Bernard Berelson, Hazel Gaudet, and William McPhee - at Columbia University's Bureau of Applied Social Research, now commonly referred to as the Columbia School (Kanji and Archer 2002, 161). Mebs Kanji and Keith Archer explain that this group of scholars proposed that "voters are driven largely by their *social*

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<sup>2</sup> Note that the vote for the Vision Vancouver mayoral candidate is referred to as vote for Vision throughout this paper.

*group affiliations*” and that “electoral decisions...are simply responses to various sociological ‘pressures’ and ‘cross-pressures’ resulting from differences in factors such as social class, religious affiliation, ethnicity, and/or urban versus rural residence, just to name a few” (2002, 161). According to the sociological model, “the most attentive members within various social groups try to influence other less mobilized members (who form the majority) to vote in a manner that is consistent with the group’s overall interests” (Kanji and Archer 2002, 161). However, when they are faced with divergent political loyalties, “they must first sort through the opposing cross-pressures and decide which of their particular group affiliations are the most important” (Kanji and Archer 2002, 161-162). It would be anticipated then, that voters with similar socio-demographic characteristics would have similar voting behaviour, although this would be influenced by those socio-demographic characteristics that they most strongly relate to. This socio-demographic characteristic that influences their vote most strongly often supersedes other socio-demographic characteristics that they possess.

Andrea Perrella also describes the impact that demographics have on voting behaviour. In *Election*, Perrella states, “Demographics – key statistical categories that place people into social groups (for example, ethnicity, sex, income, region of residence) – may identify some general voter tendencies, but the fact that general tendencies do not always explain voting behaviour suggest that a more complex process is at play” (Perrella 2009, 221-222). Perrella first describes the Columbia School model, and explains, “People who belong to certain demographic groups tend to associate with others in the same group, forming a social network that can be easily mobilized by community leaders. These social networks make it difficult to convert voters” (Perrella 2009, 223). She then argues that later research “adds a psychological dimension of voting behaviour” and that people become socialized and acquire the values of their

parents, as well as their political preferences, which results in loyalty to particular political parties (Perrella 2009, 223).

In *Ties that Bind: Parties and Voters in Canada*, authors James Bickerton, Alain-G. Gagnon, and Patrick Smith, also argue that voters with shared values or ideological orientation and similar socio-demographic or economic characteristics develop bonds with political parties and vote as communities.

...political parties in Canada have established enduring bonds with core groups of voters within the electorate. These 'ties' between parties and voters have been constituted on the basis of shared ideological orientation as well as party 'iconologies'...These are in turn related to key policies and programs, voter loyalty to particular party leaders..., and to historic patterns of 'communal partisanship' that generate and perpetuate a community preference for particular *kinds* of parties. These communities of voters may be constituency-based, regional, or ethnocultural. Their existence reflects the spatial predominance of religious, linguistic, class, ethnic, rural, or other sociodemographic and economic characteristics that can and do shape community values and partisanship over time (Bickerton et al. 1999, 199).

In these voting communities described in *Ties that Bind: Parties and Voters in Canada*, the socio-demographic characteristics of the voters as a group, are inter-related with, and influence the other factors that influence voting behaviour.

Voting behaviour is not only influenced by socio-demographic factors, but is also influenced by many other factors, including economic conditions that affect a government's chances of re-election, evaluations of performance, feelings voters have towards party leaders, values and beliefs, party loyalties, and attitudes towards particular issues (Gidengil et al. 2006, 2001; Blais 2005; Blais et al. 2002, *Anatomy of a Liberal Victory*; Cutler and Matthews 2003; Perrella 2009; Lewis-Beck et al. 2008; Miller and Shanks 1996; Inglehart 1997). Although it is recognized that these identified factors and other factors have an impact on voting behaviour, they are beyond the scope of this research project.

This study focuses only on the impact of socio-demographic characteristics on voting behaviour. “While some researchers have disagreed (Leduc, Dalton et. al., Clarke et al.), most studies have found that socio-economic characteristics are an important predictor of vote choice in Canadian federal elections (Bickerton et al. 1999)” (cited in McGrane 2007, 2-3). Kenneth Carty and Munroe Eagles indicate that “in Canada, three social cleavages have attracted considerable scholarly attention: religion, language and class, because they have provided a strong and enduring foundation for party support (Carty and Eagles 2005; Irvine 1974; Lijphart 1979), and class, because it has been comparatively weak (Alford 1967)” (cited in Carty and Eagles 2005, 9).

The hypotheses for this project, regarding relationships between the socio-demographic variables and voting for a Vision mayor (dependent variable) in Vancouver’s 2008 municipal election, are explained in the following section.

## **Hypotheses**

The eight independent variables that will be used to test if they have an effect on change in the dependent variable are: low household income (\$0 to \$39,999), age (20 to 29 years and 55 years and over), living in rented dwellings, university education, immigrants from China and Hong Kong, immigrants from Europe, and voter participation. With the exception of voter participation, these variables have been chosen because previous election studies have found relationships between these variables and voting behaviour or attitudes that affect voting behaviour (Cutler and Matthews 2005; Gidengil et al. 2006, 2001; Skelton 2008; Miller and Shanks 1996; Inglehart 1997; Perrella 2009; McGrane 2007; Walks 2004, 2005; Verberg 2000; Pratt 1987; Blais 2005; Blais et al. 2002, *Anatomy of a Liberal Victory*). Although testing of the relationship between voting for a particular political party and voter participation was not found in the literature, it was included as a variable based on local research done by Kennedy Stewart. In his findings,

Stewart argued that those with higher socio-economic status voted in larger numbers and were more likely to vote for the NPA (Stewart 1995, 59). This has led to election victories and a domination of civic politics in Vancouver by the NPA and less opportunity for the party that attracted and represented those with a lower socio-economic status (COPE at that time) to win elections (Stewart 1995, 59).

Based on earlier (largely non-civic) voting studies, this study hypothesizes that there will be a positive relationship between voting for Vision Vancouver and these socio-demographic variables: households with a low income, people who are ages 20 to 29 years, living in rented dwellings, immigrants from Europe, and voter participation. Therefore, if there is an increase in the proportion of one or more of these variables in a voting division, it is hypothesized that there will be an increase in the vote for Vision's mayoral candidate<sup>3</sup>. This study also hypothesizes that there will be a negative relationship between voting for Vision and the following variables: university education, immigrants from China and Hong Kong, and people who are ages 55 years and over. Therefore, if there is an increase in the proportion of one or more of these variables in a voting division, there will be a decrease in the vote for the Vision mayoral candidate. With a negative relationship between voting for Vision and a socio-demographic variable, the votes are instead expected to primarily benefit the NPA.

### ***Housing Tenure***

Housing tenure, reflected in this project as rented dwellings, is included as a variable that affects the vote for Vision because previous election studies have found a relationship between housing tenure and voting behaviour. In this literature, several

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<sup>3</sup> In the 2008 election, the only mayoral candidate representing a left-of-centre viewpoint was a Vision candidate, as Vision and COPE agreed to a common approach so that they would not split the left-of-centre vote and cause an election loss as a result of this split (CBC 2008).

studies have found that there is relationship between homeownership and voting for a right-of-centre political party or having views or opinions that are considered right-wing and / or that there is a relationship between renting and voting for a left-of-centre political party or having view points that are considered left-wing (Skelton 2008; Gidengil et al. 2006; Verberg 2000; Pratt 1987; Walks 2004, 2005).

The studies with findings that have shown that housing tenure influences voting behaviour include Vancouver municipal election polls and federal election studies. The results of the 2008 Vancouver municipal election exit poll, conducted by Kennedy Stewart, showed that the proportion of renters that voted for the Vision mayoral candidate greatly outnumbered those who voted for the NPA candidate, while the votes of homeowners were more evenly split (Skelton 2008). The percentage of the vote total here adds up to 114% rather than 100%. The author is currently checking this miscalculation, but the early indication is that the corrected numbers will not significantly alter the point made above. Canadian federal election studies have also consistently found that there is a statistically significant relationship between renting and voting for the NDP or having left-wing views and attitudes and a relationship between homeownership and voting for the Reform or Conservative parties or having more right-wing views and attitudes (Gidengil et al. 2006; Verberg 2000; Pratt 1987; Walks 2004, 2005). As these studies find a positive relationship between renting and voting for Vision, or the NDP (a federal party of the left), or having leftist views, these studies support the hypothesis that there is a relationship between voting for Vision and renting a dwelling.

### ***Household Income***

It is theorized that a relationship exists between voting for a centre-left civic party like Vision and low income households. Studies that have included the income variable to determine its influence on voting behaviour have had mixed findings. The results for

the 2008 Vancouver election exit poll support the theory, as of the 11% of respondents with family incomes that were \$0 to \$19,999, 69% voted for the Vision mayoral candidate and 20% for the NPA candidate, and of the 15% with family incomes of \$20,000 to \$39,999, 60% voted for Vision and 36% for the NPA (Skelton 2008). Although they did not consider the influence of income on voting behaviour, but instead the influence of income on voter participation and voter knowledge, the Vancouver municipal election studies done by Kennedy Stewart and Stewart Young also showed that there was a relationship (Stewart 1995; Young 2005). Another study of the 2004 federal election found that “people with low household incomes were more likely to vote NDP than those with high incomes, but these effects were offsetting and the net impact on the NDP vote was minimal (Gidengil et al. 2006, 9). An American study found that high family income did have an impact on the vote for the Republican presidential candidate in the 1992 election (Miller and Shanks 1996). Other studies that have found that income has no effect on voting behaviour, included one about the 2002 Vancouver municipal election that was completed in 2005 by Fred Cutler and J. Scott Matthews and one done by David McGrane on provincial voting patterns (as discussed later in this chapter, in the Literature Review section). As many of the research studies that were reviewed have found that a relationship exists between income and voting behaviour, including low income and voting for left-of centre parties, there is support for the hypothesis of this research project that low income households are more likely to support Vision.

### **Age**

It is theorized that there is a relationship between age and voting behaviour, with youth ages 20 to 29 years, more likely to vote for Vision Vancouver and persons ages 55 years and over less likely to vote for Vision. This age group of 55 years and over would therefore, be more likely to vote for the NPA. Other research studies that were reviewed

consider different age groups, with some including persons 55 years and over (Gidengil et al. 2006; Gidengil et al. 2001; Blais et al. 2002, *Anatomy of a Liberal Victory*), one including persons 61 years and over (Erickson 2010), and others including persons 65 years and over (Skelton 2008; Stewart 1995), the more traditional age group identified as seniors. In this research project, persons ages 20 to 29 years were included to represent a youth population, while persons ages 55 years and over were included to represent an older population (not particularly seniors).

Many studies show that voting behaviour and / or political beliefs are affected by age (Cutler and Matthews 2005; Walks 2004, 2005; Gidengil et al. 2006; Miller and Shanks 1996; Inglehart 1997; Blais et al. 2002, *Anatomy of a Liberal Victory*). The findings of Cutler and Matthews show that Larry Campbell (the COPE, left-of-centre, Vancouver mayoral candidate in 2002) “may have been the beneficiary of a ‘youth rally’ of sorts” (2005, 37). The 2008 Vancouver election exit poll supports this theory, as it clearly shows that young voters supported the Vision mayoral candidate by a greater margin and older voters supported the NPA candidate by a greater margin. Of the 14% of the population who were surveyed and ages 18 to 29 years, 59% voted for Vision and 35% voted for the NPA, while of the 13% of the population who were surveyed and ages 65 years and above, 42% voted for Vision and 50% voted for the NPA (Skelton 2008). A federal election study also supports this theory, with findings that voters under the age of 35 were more likely to vote NDP and voters ages 55 years and over were more likely to vote Liberal and Conservative (Gidengil et al. 2006, 9). The literature regarding age and voting demonstrates that there is a relationship between youth voting for left-of-centre parties and older people voting for parties that are more right-of-centre. This literature therefore supports the hypothesis that there is a relationship between voting behaviour



and age, with youth voters ages 20 to 29 years more likely to vote for the centre-left Vision and older voters ages 55 years and over less likely to vote for Vision.

### ***Education***

It is theorized that there is a negative relationship between voters that have completed a university education and voting for Vision, meaning that voters with a university education are less likely to vote for Vision. Instead, these voters would more likely vote for the NPA. A 2004 federal election study that demonstrates this lack of support for left-of-centre political parties in Canada found that education had more of an effect on NDP voting than income did, with the NDP doing particularly well among voters with less than a high school education (Gidengil et al. 2006, 9). Another Canadian study of the 2000 federal election found that the NDP did slightly better and the Conservatives did slightly worse among less educated voters (Blais et al. 2002, *Anatomy of a Liberal Victory*). An American election study of the 1980 to 1992 elections found that voting for the Republican presidential candidate was related to having a college education (Miller and Shanks 1996). With the NDP and Vision both receiving the left-of-centre vote, it could be anticipated that this project would find similar results. The literature demonstrates that voters with less education are more likely to vote for a left-of-centre party, while those with higher education levels are more likely to vote for a right-of-centre party. The literature therefore supports the hypothesis that there is a relationship between education and voting behaviour, and that those with a university education are less likely to vote for Vision.

### ***Immigrant – European or Chinese***

In this study, the variable of European immigrants is used as it represents the place of origin of a large proportion of earlier immigrants and Chinese immigrants is used

as it represents the place of origin of a large proportion of more recent immigrants to Vancouver. A variety of terms have been used to describe this variable (immigrants, ancestry, visible minorities, ethnicity) in other research studies, but the intent behind the terms used for this categorization is similar. The best and most suitable census data available for this project was for immigrants, so it is the variable being used in this case. The 2006 Census data for ethnicity (the term ancestry is used by some other researchers) is difficult to use in this study because it totals more than 100% in many cases as persons that respond to the census can respond with more than one ethnicity. The variable of visible minority was not chosen as a variable for this study as it does not necessarily provide information about a person's birthplace or ethnicity.

The theory that there is a relationship between being an immigrant and voting behaviour is supported by other previous studies (Cutler and Matthews 2005; Gidengil et al. 2006; Gidengil et al. 2001; Blais 2005; Blais et al. 2002, *Anatomy of a Liberal Victory*; Walks 2004, 2005). The results of the Vancouver municipal election study by Cutler and Matthews found that Vancouver's non-European voters, which are largely made up of the Asian community, had a negative relationship with voting for the left-of-centre COPE mayoral candidate in the 2002 election (Cutler and Matthews 2005). The theory is also supported by the 2008 election exit poll variable of *Ancestry*, as of the 63% of the respondents who were white, 57% voted for the Vision mayoral candidate and 35% for the NPA candidate, while of the 18% of respondents who were Chinese, 31% voted for Vision and 65% voted for the NPA (Skelton 2008). Federal election studies have found that the Liberal party has received strong support from visible minorities and non-European immigrants, but the reason for this has not been explained (Gidengil et al. 2006; Blais 2005; Blais et al. 2002, *Anatomy of a Liberal Victory*). One challenge to understanding the immigrant vote is that the Canadian Election Survey only has a total

sample size of 2,000 to 3,000, with a small proportion of these respondents being immigrants, making it difficult to study immigrant voters closely and establish clear generalizations (Perrella 2009, 229). This lack of understanding at the federal level does not provide a great deal of understanding about this variable at the local government level. It is also possible that immigrants would not vote in a similar way in municipal and federal elections because each level of government plays a different role in relationship to immigrants. While municipal governments may have programs related to immigrants, the federal government is responsible for actual immigration policy in Canada, and this may have an impact on voting behaviour at the federal level. However, the hypotheses that European immigrants are more likely to vote for Vision and Chinese immigrants are less likely to vote for Vision are supported by the municipal research studies as they demonstrate that these relationships exist.

### ***Voter Participation***

*“A low voter turnout is an indication of fewer people going to the polls.”*

Dan Quayle

It is theorized that an increase in voter participation will result in an increase in the vote for Vision. This theory is supported by Kennedy Stewart’s argument that higher voter turnout was associated with higher socio-economic status and that those with higher socio-economic status were more likely to vote for the right-of-centre NPA (Stewart 1995). If the voter turnout for those with lower socio-economic status who are more likely to vote for the centre-left Vision is increased, there would likely be an increase in the vote for Vision. In addition, the theory is supported by the 2008 election exit poll, which showed that the Vision mayoral candidate received the majority of the vote in voting divisions where there was the greatest increase (up 0.5% to 3%) in voter

participation (Skelton 2008). Although voter turnout decreased from 32% in 2005, to 31% in 2008, the 2008 election exit poll supports this theory because voter participation decreased in traditional NPA strongholds while it increased in Vision strongholds. For example, the results of the poll show that voter turnout increased slightly in areas of the city that the Vision mayoral candidate, Gregor Robertson, had previously represented as the NDP member of the provincial legislature (Skelton 2008). Although this variable has not been considered in other research studies, the findings of the 2008 election exit poll support the hypothesis that increased voter participation will result in an increase in the vote for Vision.

### **1.1.3 Context of Socio-Demographic Factors in Vancouver**

This research project takes into consideration the relationship between socio-demographic factors and voting behaviour in Vancouver. With consideration for the limitations that exist related to the length of this project, there are eight socio-demographic variables used in this project, including housing tenure. As the socio-demographic variables are derived from secondary data, the particular variables that are considered can only be those that are already available. There are however, both socio-demographic and other variables that this research project does not and cannot consider due to limitations of available data. Although the literature may find strong cases for some socio-demographic variables, there may be limitations to using these variables, as the data is simply not available from a secondary source, such as Statistics Canada, or cannot be analyzed, as it is aggregate data rather than individual data. In the literature, there are some socio-demographic variables that have often been found to have a

significant relationship to voting behaviour, such as gender and religion, which were not used in this research project.<sup>4</sup>

In addition, the literature finds that relationships exist between voting behaviour and other variables that are not socio-demographic, such as party leadership, party loyalties, evaluation of government performance, values and beliefs, and attitudes to particular issues (Gidengil et al. 2006; Gidengil et al. 2001; Blais 2005; Cutler and Matthews 2003). Intergovernmental issues could also influence a Vancouver municipal election, with voters in the Vancouver municipal election sending a message to the provincial government. As explained by Kennedy Stewart in reference to the 2002 election, “The fact that the main issue during the civic campaign was providing better and more services to less fortunate members of the community flies in the face of the provincial Liberal policy of service cuts and tax breaks” (Simon Fraser University 2002).

### ***Housing Tenure***

There is more detail included on housing tenure in this study because it is a socio-demographic variable that is directly related to the mandate of Vancouver’s municipal government. The municipal government of Vancouver has as one of its core mandates, the ability to regulate land use, including issues related to housing tenure. For example, Section 565.2(2) (a) specifically gives Vancouver, through zoning by-law, the power to regulate the form of tenure of the housing units (Province of British Columbia 2009). Furthermore, homeowners are directly affected by municipal budgets and the taxes that contribute to a large portion of these budgets because, as a municipal government, the City of Vancouver collects property taxes from property owners in

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<sup>4</sup> The variable of gender is not used in this project because the aggregate 2006 Census data for gender does not provide the variation required among voting divisions, with no considerable differences in gender distribution across the city. The variable of religion is not used because the 2006 Census did not collect this data, which is only collected once every ten years.

Vancouver. “Voting turnout tends to be higher with those more highly educated and with homeowners (who are much more directly aware than tenants of the cost of municipal decisions)” (Tindal and Tindal 2009, 319). In fact, the homeowners’ perceptions about property taxes could affect their voting behaviour. As Tindal and Tindal have noted, “The enduring and pervasive nature of the property tax has certainly done nothing to alter the negative feelings toward it that were recorded from the days of the earliest settlers” (2009, 220). In addition, the city of Vancouver has a high proportion of renters, with an almost even split between owned homes and rented dwellings (Statistics Canada, 2006 Census Data), so political leanings in one or the other direction will have an impact on voting behaviour.

Housing tenure is also included in this study because the literature strongly supports that a relationship between housing tenure and voting behaviour exists. Housing tenure is included or is the focus of many studies related to voting behaviour. These studies take into consideration how housing tenure affects the political party that a homeowner or renter will vote for and how housing tenure influences opinions and views. When posing this research, one of the challenges is to find out the extent to which this perspective has any validity in Vancouver.

Researchers such as Kennedy Stewart (Skelton 2008), Stuart Young (2005), Norine Verberg (2000), Geraldine Pratt (1987), and Alan Walks (1994, 1995) have found that a correlation exists between homeownership and voter turnout, voter knowledge or voting behaviour. Different reasons for investigating this correlation have been identified, including: homeowners pay property tax and are therefore more connected to municipal government (Young 2005, 29); homeowners have a greater financial interest in who is elected (Young 2005, 29); and homeowners are more socially integrated and more supportive of the status quo than renters (Verberg 2000, 188). The 2008 Vancouver

election exit poll conducted by Kennedy Stewart found that fewer homeowners voted for the Vision mayoral candidate than for the NPA candidate (Skelton 2008). While he did not consider the relationship between homeownership and voting for a political party, Stewart Young found that homeowners were more informed about the 2005 Vancouver civic election than renters (Young 2005). In her study of the 1984 federal election, Norine Verberg found that homeownership affected political attitudes, with homeowners having more conservative views (Verberg 2000). In her 1987 study, Geraldine Pratt found that renters were less conservative than homeowners (Pratt 1987). In a study of federal elections from 1945 to 1997, Alan Walks found that housing had a weak positive effect on voting for the Liberal Party or Reform Party, but not on any of the other parties (Walks 2005, 403).

In *Place of Residence, Party Preferences, and Political Attitude*, another study of the 1965, 1984, and 2000 Canadian national election surveys, Alan Walks touched on the role of homeownership and explains that homeowners have a stake in their investment that tenants do not have. With reference to other studies by Dobriner, Murphy, Rehfuss, and Saunders, Walks states, “This is believed to convert new homeowners to an exclusionary form of political conservatism based on controlling shifts in property values and property taxes” (Walks 2004, 273). The findings of this study however, concentrate on the relationship between place of residence (either inner city or suburbs) and voting behaviour.

In their American study, *The Social Benefits and Costs of Homeownership: A Critical Assessment of Research*, William Rohe, Shannon Van Zandt, and George McCarthy assert that there are marked differences between homeowners and renters. Their view of renters is that their attachment to their units (and their communities) is not as strong since they will not “reap the economic benefits of improvements upon leaving

their units and since they are less attached to their units” (Rohe et al. 2001, 3). They view homeownership as “enabling people to have greater control and exercise more responsibility over their living environment” (Rohe et al. 2001, 1).

In their article, *The Social Benefits of Homeownership: Empirical Evidence from National Surveys*, Peter Rossi and Eleanor Weber also argue that there are marked differences in the profile of homeowners and renters, and that there are important differences in their political behaviour. This 1996 American study examines evidence from the General Social Survey and the National Survey of Families and Households, supplemented by data from the American National Election Studies and other research, to determine differences between homeowners and renters. “There are several good reasons to believe that owners and renters differ in political behaviour, especially with respect to local community politics” (Rossi and Weber 1996, 22). The main reason given is that the value of the house is affected by local legislation that has an effect on building and zoning codes and public amenities affect the quality of life of local residents” (Rossi and Weber 1996, 22). While renters can move away more easily, homeowners are less mobile and therefore more motivated to protect the neighbourhood status quo.

The following table (Table 1) shows the change in Vancouver’s population numbers, percent of owned dwellings, and percent of rented dwellings from 1951 to 2006. In 2006, the disparity between the proportion of homeowners and renters was not large, with 48.1% of private households owning and 51.9% of households renting in Vancouver (Statistics Canada, 2006 Census Data). Although the percentages shown in the table are true for the city as a whole, there are particular neighbourhoods where there are concentrations of homeowners and renters and housing tenure is not distributed as evenly. As shown in Table 1, between 1951 and 1991, there was a decline in the proportion of Vancouver’s homeowners and a corresponding increase in the



proportion of Vancouver’s renters. Between 1991 and 2006, this trend reversed and there was about a seven percent increase in Vancouver’s homeowners and a corresponding decrease in renters.

**Table 1. Proportion of Owners and Renters in Vancouver, 1951 to 2006**

<b>Year</b>	<b>Vancouver Population</b>	<b>Percent of Owners</b>	<b>Percent of Renters</b>
1951	344,833	63.0%	37.0%
1956	365,844	61.9%	38.1%
1961	384,522	60.8%	39.2%
1966	410,375	52.2%	47.8%
1971	426,260	46.9%	53.1%
1976	409,734	46.5%	53.5%
1981	414,280	44.9%	55.1%
1986	432,385	42.3%	57.7%
1991	471,844	40.8%	59.2%
1996	514,008	41.9%	58.1%
2001	545,671	43.8%	56.2%
2006	578,041	48.1%	51.9%

Source: Statistics Canada, Census Data

The decline in rental housing that started in 1996 occurred as a result of large increases in owner-occupied stock, particularly condominiums. There has been little development of purpose built rental housing stock of multiple dwellings in the city of Vancouver or region since the 1970s. This was a consequence of the withdrawal of federal tax incentives in the 1970s and the competition that took place with condominium development (City of Vancouver 2007, 4). In the late 1980s, an increasing numbers of market rental buildings were being demolished for condominium redevelopment (City of Vancouver 2007, 6). The redevelopment of existing rental housing stock dropped in the 1990s, due to the market correction that took place, zoning amendments, and the establishment of new residential development areas (City

of Vancouver 2007, 7). In the 2000s, many areas in the city have older apartment stock that has been under the threat of redevelopment. Of this conventional rental stock, 50% was built before 1966 (City of Vancouver 2007, 9). “New market rental housing stock is almost solely through the rental of individual condominium units” (City of Vancouver 2007, 12). While almost 28% of apartment condominium units are rented, a CMHC survey found that rent for these units is much higher than rent for older purpose-built apartments, with a two-bedroom condominium apartment renting for 22% more than the older apartment (City of Vancouver 2007, 11).

Housing tenure is a socio-demographic variable that is interesting to study at this time due to changes in the housing market as a result of large increases to housing costs and increased densification. As stated earlier, the proportion of renters (about 52%) and owners (about 48%) is very similar in Vancouver (Statistics Canada, 2006 Census Data). By comparison, the Vancouver Census Metropolitan Area (CMA) (which includes 21 municipalities, an electoral area, and a First Nation) had very different proportions, with 65.1% owned and 34.9% rented in 2006 (Statistics Canada, 2006 Census Data). This was closer to the provincial level in British Columbia (hereafter BC), with renters making up 30% of households and homeowners making up 70% of households, and to the national level in Canada, with renters making up 31.3% of households and homeowners making up 68.7% of households in 2006 (Statistics Canada, 2006 Census Data). In addition, 40% of all of Canada’s renters lived in the high-cost housing markets of Toronto, Montreal and Vancouver in 2001 (Hulchanski 2001, 3).

The availability of affordable rental stock is important because it meets the needs of a particular socio-demographic group. Although some people rent by choice, income data indicates that most do so through necessity, until their earnings and savings are

large enough for them to purchase a home (or condominium) (City of Vancouver 2007, 7). The proportion of renters is highest in households made up of the younger age groups and declines as households become older. Of households in the age group of 15 to 24, 90% are renting, and of those in the age group of 25 to 34, 80% are renting (City of Vancouver, Policy Report 2007, 8). In addition, renters tend to have lower incomes, with 41% of renters having incomes less than \$30,000 in 2001, compared to 18% of owners (City of Vancouver 2007, 8).

## **1.2 Review of Literature**

The literature review provides a conceptual framework for this research project. Moreover, it provides an understanding of past findings and existing gaps and contradictions in the research area. The hypotheses of the research project are based on the research found in the literature review section. The related election research highlighted in this section includes a Vancouver municipal election study for 2002 that tests the relationship between voting behaviour and both socio-demographic and other variables. Other local research includes two exit polls that were conducted for the Vancouver municipal elections in 2005 and 2008 that demonstrate a relationship between voting behaviour and particular socio-demographic variables. Then, the Canadian and American national election studies and Canadian and British Columbia provincial election studies that find an influence on voting behaviour by specific socio-demographic variables are described. In addition, research studies that have findings that support the influence of housing tenure on voting behaviour are outlined. Finally, this section touches upon literature related to electoral processes.

To gain a better understanding of the research topic, the literature review has been iterative and ongoing throughout the research design and data analysis stages of the project. An initial literature review of existing electoral studies related to voting

behaviour and socio-demographic factors took place to assist with the research design and identification of the socio-demographic variables that would be included in the research project.

This research project will supplement the existing body of research on voting behaviour and help to fill in knowledge gaps for Vancouver elections at the local government level. The review of the literature found that there is existing material that could be used to inform this research project and assist with the development of a conceptual framework. There are other studies that have taken place that have some similarities to the planned research project, but this research project does not duplicate another study. No study has been uncovered that considers the range of socio-demographic factors and voting behaviour in Vancouver in the same way as this study.

In the study that may be most relevant to this research project, *Guesswork? Municipal Electoral Behaviour in a Federal Context: Vancouver 2003*, Fred Cutler and J. Scott Matthews attempted to determine why Vancouver residents voted the way that they did in the 2002 civic election. To do this, they reported on the Vancouver Election Study, which was the first academic municipal election study in Canada (Cutler and Matthews 2003, 2). The election study was conducted by the Institute for Social Research at York University immediately following the Vancouver municipal election in November 2002, resulting in 342 valid responses from voters (Cutler and Matthews 2003, 2).

In their study, Cutler and Matthews take both long-term and short-term determinants of voting behaviour into consideration. They describe *The American Voter*, a 1960 research study by Angus Campbell and his colleagues that emphasized a distinction between long-term and short-term determinants of voting behaviour (Cutler 2003, 2). Cutler and Matthews considered the relationship between voting behaviour and

long-term determinants of voting behaviour, which were particular socio-demographic characteristics of voters. They also considered short-term determinants of voting behaviour, such as partisanship, ideological location, economic judgments, and issues, to explain why Vancouver residents voted the way that they did in the 2002 municipal election. Through ordinary least squares (OLS) regression analysis, they tested the impact on voting behaviour of the socio-demographic variables - gender, age, education, ethnicity, religious affiliation and income. Age was found to have an impact on voting behaviour, with the mayoral candidate for the left-of-centre COPE receiving a greater proportion of the youth votes in 2002 (Cutler and Matthews 2003, 5). The non-European vote also had an impact on voting behaviour, with the right-of-centre NPA receiving a greater proportion of their vote (Cutler and Matthews 2003, 5). "With regard to non-European ethnicity, the estimated effect here seems to comport with popular images of Vancouver's Asian community – by far the majority of the non-Europeans in our sample – as a broadly individualistic and conservative voting bloc" (Cutler and Matthews 2003, 5). The study also found that there was a relationship between voting behaviour and party identification, ideology and performance evaluations (Cutler and Matthews 2003, 8).

The findings of the 2003 Cutler and Matthews study are worth consideration because it is one of few studies related to a municipal election in Vancouver. Furthermore, this study used socio-demographic variables and found that only two variables (age and non-European ethnicity) were statistically significant. These two variables will be considered for this research project. There is the possibility however, that these study results may be limited in their usefulness and may not lead to a greater understanding of Vancouver election results, since 2002 was a year with unusual election results, with a COPE victory for the first time, rather than a NPA victory. When

COPE won the election in 2002, the left was united, with COPE campaigning on a moderate platform and the NPA unable to move closer to the median since there was a 'split' over the harm reduction stance in the party that left "bitterness in party and voter terms" (Stewart and Smith 2006, 6). By 2005, the left had split, and although COPE and Vision did not run candidates against each other "to give the other side a chance, this was not the same as running under the same brand and, despite warnings, the Non-Partisan Association returned to power..." (Stewart and Smith 2006, 7).

Kennedy Stewart also completed a research study at the Vancouver municipal government level that relates to this project's hypotheses. In his research conducted in 1995, Stewart identified correlations between socio-economic status and voter turnout for municipal elections in Vancouver, rather than voting behaviour. In his findings, Stewart argues that the tendency of those with higher socio-economic status to vote in larger numbers, combined with a greater likelihood to vote for the NPA, has led to its election victories and domination of civic politics by the NPA since it was formed in 1937 (Stewart 1995, 59).

Although Kennedy Stewart's research does not consider the relationship between the party a person votes for and socio-demographic variables, it is relevant because it studies election behaviour at the local municipal level in Vancouver. Stewart's assertion that higher socio-economic status has a positive influence on the NPA vote is worth consideration for further analysis. This research project includes the hypothesis that income affects voting behaviour and instead of considering the impact on the NPA vote, it considers the other side of this argument and asserts that low income has a positive influence on the vote for Vision.

Two municipal election exit polls that have been conducted in Vancouver increase the understanding of Vancouver elections. Kennedy Stewart conducted the

most recent municipal election exit poll for the November 2008 election in Vancouver. The questions that respondents were asked about included the mayoral candidate that they voted for, their ancestry, age, family income, housing tenure, gender, sexual orientation, the federal party they supported, issues that they considered important, and when they had made their electoral decisions. The exit poll of 843 voters took place at 18 of the 133 polls in the city (Skelton 2008). The findings of the 2008 Vancouver election exit poll that are related to socio-demographics and this research project are located in the following table (Table 2). These findings show that voters who are white, in younger age groups (from 18 to 64), have lower incomes (from \$0 to \$99,999), and are renters supported the Vision mayoral candidate in greater numbers than the NPA candidate (Skelton 2008). Those who are of Chinese ancestry, 65 years and over, have family incomes of \$100,000 and over, and are homeowners voted for the NPA mayoral candidate in greater numbers than the Vision candidate (Skelton 2008).

The knowledge gained from this 2008 election exit poll can be applied in making decisions about the variables included in this research project. It is very relevant to this research project as it covers the 2008 election, the same time period as this project, and demonstrates that relationships exist between particular socio-demographic variables and voting behaviour. These variables will be considered for this research project as their impact on voting behaviour could be confirmed and support the use of aggregate data by voting division, rather than the traditional use of survey data collected individually.

**Table 2. 2008 Vancouver Election Exit Poll Data Conducted by Kennedy Stewart**

<b>Variable (% of Respondents)</b>	<b>% Vote for Vision Mayor (Robertson)</b>	<b>% Vote for NPA Mayor (Ladner)</b>	<b>% Vote for Other</b>	<b>% Did Not Vote</b>
<b><i>Ancestry</i></b>				
White (63%)	57%	35%	6%	1%
Chinese (18%)	31%	65%	4%	0%
Other (19%)	67%	29%	2%	2%
<b><i>Age</i></b>				
18-29 (14%)	59%	35%	5%	2%
30-44 (30%)	63%	31%	5%	0%
45-64 (43%)	53%	42%	4%	1%
65+ (13%)	42%	50%	6%	1%
<b><i>Family Income</i></b>				
\$0-\$19,999 (11%)	69%	20%	11%	0%
\$20,000-\$39,999 (15%)	60%	36%	3%	2%
\$40,000-\$99,999 (44%)	59%	33%	6%	1%
\$100,000+ (30%)	45%	51%	3%	1%
<b><i>Renter/Homeowner</i></b>				
Homeowner (60%)	46%	49%	4%	1%
Renter (32%)	70%	35%	8%	1%
Other (8%)	55%	35%	6%	3%

Source: 2008 Vancouver Election Study (Skelton 2008)

As part of a study on voter knowledge, Stewart Young conducted another Vancouver municipal election exit poll in 2005. This study considered the effects of the voters' demographic variables (including age, education, household income, residence on the east side or west side of Vancouver, homeownership, and English spoken at



home) and how informed voters were. Regression analysis was the method used to test his hypotheses. He found that Vancouver's more informed voters in 2005 were more likely to be homeowners rather than renters, have annual household incomes of less than \$100,00 annually rather than have incomes of more than \$100,000, be Caucasian rather than Chinese, and be knowledgeable of their municipal services (Young 2005, 34). The other demographic variables of university education, gender, years residing in Vancouver, ages 18 to 24, language used in the home, and area of residence failed to have statistically significant impacts on how informed voters were (Young 2005, 32).

Although it does not investigate the party a person will vote for, Stewart Young's research is useful to this research project because it uses socio-demographic variables and is one of few research studies that investigates an aspect of voting behaviour at the local level in Vancouver. Young's findings, which show that the variables of housing tenure, income, and ancestry do have an influence on voter knowledge, support the consideration of their inclusion as variables in this project.

In Canada, the subject for most of the electoral studies that are related to voting behaviour and socio-demographic factors has been federal elections. Most of these studies do not limit themselves to the relationship between voting behaviour and socio-demographic data, but also consider how other variables affect voting behaviour. Other variables that have been found to have an impact on voting behaviour include values (that reflect the classic left/right dimension) and beliefs, partisan loyalties, the economy, attitudes or views on particular issues, and party leaders (Gidengil et al. 2006; Blais 2005; Blais 2002, *Anatomy of a Liberal Victory*; Perrella 2009). These other variables have also been taken into consideration in American and international election studies (Lewis-Black 2008; Miller and Shanks 1996; Inglehart 1997). An example of how values and beliefs affect voting behaviour can be found in the 2004 election study by Gidengil

and her colleagues. In 2004, the campaign focus by the Liberal Party on Canada's relationship with the United States affected voting behaviour and may have reduced Liberals votes, with the probability of voting for the Conservative Party almost 30 points higher for someone who viewed Canada's relationship with the US positively (Gidengil et al. 2006, 10). Voting behaviour was also affected by the Liberal Party's focus on the social conservatism of the Conservative Party, with a reduced number of votes for the Conservatives, however, the NDP benefited from this more than the Liberals did (Gidengil et al. 2006, 10). Andrea Perrella also describes how these other variables have an impact on elections. She explains that elections take place in a context and election campaigns "become a fight over what issues the parties wish to see salient, and what issues they wish to see dormant", although, she says, "there are some issues that remain consistently salient" (Perrella 2009, 238). One issue that is consistently salient is the economy, with economic conditions and the state of the economy having a large impact on voting behaviour (Perrella 2009, 239).

The majority of the federal election studies and one of the provincial election studies that have been reviewed use data from the Canadian Election Study (CES) (Gidengil et al. 2006; Gidengil et al. 2001; Blais 2005; Blais 2002, *Anatomy of a Liberal Victory*; Walks 2004; McGrane 2007). The Canada election surveys are made up of a pre- and post-election survey that has taken place at the time of each federal election campaign since 1965 (except once, in 1972). The survey has collected information from voters regarding the party they voted for, their political attitudes, concerns over various issues, and feelings towards political parties and leaders (Walks 2004, 277-278).

As they come from the same election data, many of the same socio-demographic variables are tested for their relationship with voting behaviour in these election studies. Regression analysis is used to test the relationship between voting behaviour and the

independent variables in the federal election studies that are reviewed (Gidengil et al. 2006; Gidengil et al. 2001; Blais 2005; Walks 2004, 2005; McGrane 2007). The findings of the study of the 2004 federal election by Elisabeth Gidengil and her colleagues show a statistically significant relationship between voting behaviour and age, income, renting or having a mortgage, education, visible minorities, ancestry, religion, gender, rural or urban voters, and married voters (Gidengil et al. 2006). The findings of the 2000 federal election study by André Blais and his colleagues show that voting behaviour was affected by the social background characteristics of non-European, gender, rural or urban residence, religion, and marital status in all Canadian provinces except Quebec (Blais 2002, *Anatomy of a Liberal Victory*). In Quebec, only the social background characteristics of age and language influenced voting behaviour (Blais 2002, *Anatomy of a Liberal Victory*). In another federal election study that covers a forty year time period from 1965 and includes 12 elections, André Blais finds that ethnicity, religion, and region of Canada have a statistically significant effect on voting behaviour (Blais 2005).

Alan Walks uses different data sets for his 2004 and 2005 studies, with Canadian Election Survey data used in 2004 and aggregate census data used in 2005. In these studies, Walks finds that city and suburban differences in voting behaviour only became significant in the 1980s, when residents of Canada's inner-cities became more likely to vote for parties on the left and hold views that would be considered to the left of the political spectrum, while suburban residents were increasingly likely to vote for parties on the right and hold views on the right of the political spectrum (Walks 2004, 2005). In his 2005 study of Canadian federal elections from 1945 to 1997, Walks also finds that age, language, gender, ethnicity and occupation influenced levels of support for each of the political parties to a statistically significant degree and that "tenure of housing has a

weak positive effect for both the Liberals and the Reform party, but has little effect on support for the other parties” (Walks 2005, 403).

David McGrane uses Canadian Election Survey data for his elections study on provincial voting behaviour from 1988 to 2006. McGrane finds that socio-economic characteristics seem to be more effective determinants of voting in provincial elections in Western Canada than the Atlantic provinces, with religion being statistically significant throughout Canada, and gender, income, and union membership only statistically significant in particular provinces (McGrane 2007).

In 2005, Fred Cutler and his colleagues conducted a pre-election survey for the provincial election held in British Columbia, that included questions related to the personal characteristics of the respondents.<sup>5</sup> In the findings, the Liberals<sup>6</sup> were more attractive to high-income households, compared to the NDP, which were more attractive to low income households (Erickson 2010, 142). In addition, the NDP had higher support with the youngest age group of persons ages 18 to 30, however, the Liberals had greater support with every other age group, and their support became higher with each age group (Erickson 2010, 142). They also found that respondents from Chinese backgrounds showed a three-to-one preference for the Liberal party, while those with South Asian and other non-European backgrounds showed a preference for the NDP, and respondents from European backgrounds did not show a substantial difference (Erickson 2010, 144). They found that more union households, the unemployed, students, and women preferred the NDP, while more non-union households, self-employed, people working for pay, and men preferred the Liberals (Erickson 2010, 141-

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<sup>5</sup> For a more complete account of this study, see also: Fred Cutler, Richard Johnson, R.K. Carty, Patrick Fournier, André Blais, and Mark Warren, *The BC Electoral Reform Referendum Study (2005)*.

<sup>6</sup> “The provincial Liberal Party emerged as the main party of the right in BC during the late 1990s, eclipsing both the Social Credit and provincial Reform parties” (Ruff 2010, 326).

142). In addition, the party preference was equally split between the NDP and Liberals for those with no religious affiliation, while those with a religious affiliation were more likely to prefer the Liberals (Erickson 2010, 144).

Donald Blake's study considers how class influenced voting behaviour in the 1966, 1972, and 1975 provincial elections in British Columbia. This study uses data for subjective class and socio-economic measures that were obtained from the 1979 British Columbia Election Study and 1968 Canadian Election Study. The term class was difficult to use in this study because respondents displayed a low level of class-consciousness and were reluctant to select a class label to describe themselves (Blake 1985, 78). There was however, a relationship between voting behaviour and social class for those who selected a class label, with a majority of the self-identified working class voting for the NDP (the left-of-centre party) and majorities of the upper middle and middle classes voting for the Social Credit (the right-of-centre party) (Blake 1985, 78).<sup>7</sup> Blake also considered the three measures of socio-economic status of annual family income, educational level, and occupational status. Family income had the greatest contrast in voters, with "Social Credit and New Democratic support patterns by income level being almost mirror images of each other" (Blake 1985, 81). Blake did not find that there was as great a difference in provincial party support by occupation and found that there was very little difference between differing levels of education (Blake 1985, 81). Blake also tested the relative importance of religion, ethnic origin, social class, and attitudes regarding individualistic or collective policy options in accounting for the choice between Social Credit and the NDP (Blake 1985, 87). When these characteristics were combined statistically, occupation, income, ideology, age, and union membership did affect the

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<sup>7</sup> The Social Credit was a right-wing provincial party in British Columbia that held power from 1952 to 1972 and 1975 to 1991, then plummeted in the polls in 1991, and did not gain ground again.

choice between Social Credit and the NDP, while religious and ethnic differences did not (Blake 1985, 87). He found that the probability of voting Social Credit increased with income, was higher among the middle-aged, and was lower among union members (Blake 1985, 89). He also found that there was a combined effect of occupation and ideology, with the white-collar group most likely to vote Social Credit, followed by the managerial/professional group, and then blue-collar workers (Blake 1985, 89).

The findings of these studies are useful as they show that there is a relationship between voting behaviour and votes for a political party or attitudes that are categorized as left-wing or right-wing. Some of the socio-demographic factors such as age, income, housing tenure, education, and ancestry or ethnicity, can be applied at the municipal election level and have available data. These findings that show that a relationship exists with voting behaviour support this project's hypothesis. Other socio-demographic factors, such as rural, suburban, and urban voters, and Canadian regions are less appropriate as they do not relate to a municipal election in an urban environment. There are limitations to how the findings of these federal and provincial election studies can be applied to this municipal election study. For example, the federal political parties at the national level and local parties are not exactly the same, as there are five significant parties running for election at the national level and only two parties with mayoral candidates at the municipal government level in Vancouver. In addition, the issues that are dealt with at the two levels are not the same as different levels of government are responsible for different mandates and issue areas.

The American election studies that were reviewed also have findings that indicate that voting behaviour is influenced by certain socio-demographic factors. The United States also has voting surveys, known as the National Election Studies, which have been held since 1948. Both of the following research studies use these National Election

Studies to explain voting behaviour. In their study of the 1980 to 1992 American national elections, Miller and Shanks found that there was a relationship between voting for the president and homeownership, income, college graduates, racial groups (Hispanics and Blacks), religion, gender, and union vote, while age and region (the South) did not have a significant impact (1996). In their study, Lewis-Beck and his colleagues consider the relationship between voting for the President in 2000 and 2004 and class and found that there was a relationship, although it was not very strong (2008, 341). They also tested the relationship between occupation (considered to be another measure of class) and voting for the president for elections between 1960 and 2004, and found that those in working class occupations were more likely to favour the Democratic candidate, and those in middle class occupations were more likely to favour the Republican candidate (Lewis-Beck 2008, 343). In the Miller and Shanks study, the relationships found between voting for President and the socio-demographic variables of homeownership, income, college graduates, and racial groups support the hypothesis of this project. The findings of Lewis-Beck are less relevant to the hypotheses of this research project, but class and occupation are related to income and homeownership, so this study provides some additional information about their relationships with voting behaviour.

Several other research studies have also focused on the relationship between housing tenure and electoral behaviour and attitudes. In 2000, Norine Verberg researched the correlation between homeownership and political participation and conservative attitudes in Canada. Verberg's study tested "political incorporation" predictions concerning homeownership and politics, which hypothesize that homeowners will be more involved in politics and hold more conservative attitudes than will tenants (Verberg 2000, 170). In her study, conservative attitudes were measured by level of agreement with twelve policy statements. Verberg employed data from the 1984

Canadian Election Study, the only Canadian election survey to include questions on homeownership (Verberg 2000, 175). The results of the study found that homeownership has an effect on political attitudes, with homeowners having more conservative views on a variety of moral, economic and labour issues. Her research indicated that homeownership is nearly or equally influential compared with social background facts, such as education, income, and marital status, in views that were used as measures of conservatism.

Unlike this research project, Verberg looked at voter turnout and attitudes at the federal election level, rather than the party that homeowners vote for at the municipal level. However, the results of her study are useful to this project because she found that homeownership does have an effect on voter turnout and political attitudes, with homeowners having views that are more conservative. This provides support for the influence of housing tenure on voting behaviour. With findings that homeowners have more conservative views, the opposite would also be true, and renters would have less conservative views and be more likely to vote for less conservative parties, like Vision, the centre-left party. These findings support the hypothesis that there is a relationship between voting for Vision and the socio-demographic variable rented dwellings.

Another study, by Geraldine Pratt, explores the influence of housing tenure on political values of urban Canadians. Pratt employed two data sets, one set being from the Social Change in Canada Study conducted by the Institute for Behavioural Research in 1979 and the other set being from 100 in-depth interviews that were conducted in 1983 in Surrey, British Columbia. With data from the Social Change in Canada Study, the relationship between housing tenure and political orientation was assessed by cross-tabulating the housing tenure variable with individual attitudinal measures and control variables. The individual questions related to various political activities, political party



membership, opinions about strikes and protests, attitudes toward income disparities and social welfare measures, and the controls used included occupational class, household income, education and life-cycle. Statistically significant findings of this study included, “renters tend to be less conservative in their voting practices, to be more supportive of strikes, protests, and social welfare provisions, and to express agreement concerning unsatisfactory income differentials in Canada” (Pratt 1987, 45). Pratt also found that housing tenure is associated with political attitudes, although this association is mediated by occupational class, household income and life-cycle (single, married, family, elderly) characteristics. Furthermore, she found that housing tenure tends to be related to a wide range of attitudes for white-collar workers, but unrelated to political attitudes for blue-collar workers (Pratt 1987, 46-47).

By using the in-depth interviews of fifty renters and fifty homeowners that were completed in 1983, in Surrey, Pratt further explored whether and how people in different occupational classes conceptualize and articulate the separate influences of home and work on their political attitudes. After taking the result of the analysis of the urban national sample into consideration, the sample from Surrey was created to represent skilled blue-collar and white-collar homeowners and renters living in single-family residences in a lower-priced Canadian suburb. The findings of this part of the study complemented the patterns of the first analysis, with housing issues separately influencing the politics of white-collar homeowners who claimed they were prepared to vote with housing programs in mind and largely ignore other aspects of the party platform (Pratt 1987, 51). The blue-collar homeowners and both groups of renters were more job or class-based with high interest rates seen as capitalist exploitation and housing programs viewed as secondary to programs aimed at reviving a depressed economy (Pratt 1987, 51).

Although Pratt does not focus on votes for particular political parties, her study is helpful to this research project as its findings support the theory that homeowners have more conservative views, while renters have less conservative views. Furthermore, she also finds that income has an impact on how conservative a person's views are.

There are also studies that have not focused on housing tenure, but have found it to be one of the socio-demographic variables that has an impact on voting behaviour. Stewart Young hypothesized that homeowners would likely be more informed than renters because they generally earn higher incomes than renters and pay property taxes every year, while renters do not pay these taxes directly. In his research results, homeowners were found to be 120 percent more likely than renters to be more informed when all variables were considered (Young 2005, 29). He argued that this finding confirmed his hypothesis that homeowners would have a greater financial interest in who is elected to local government and therefore make a greater effort to inform themselves about the candidates (Young 2005, 29). This study is helpful because it supports this project's inclusion of the housing tenure variable as it demonstrates its significance in a study that was done locally, for the 2005 Vancouver municipal election.

The socio-demographic variable, housing tenure, has also been found to be statistically significant in relationship to voting behaviour in federal election studies. In the study of the 2004 Canadian federal election by Gidengil and her colleagues, the "most consequential aspect of socio-economic status was whether a voter rented or had a mortgage" (2006, 9). This study found that the NDP did almost as well as the Liberals and Conservatives among renters, but for the impact of renting or having a mortgage, the NDP vote share would have been four points lower, and the Liberal vote would have been almost five points higher (Gidengil et al. 2006, 9).

The literature also reveals possible structural biases that exist in the electoral system at the city level, in regards to housing tenure. The writings of Richard Tindal and Susan Tindal, and Donald Higgins provide insight on governance and electoral structures and issues at the local government level. When describing the municipal electoral system, Tindal and Tindal state, “Canadian municipal governments were never intended to be instruments of mass democracy. The bias in favour of the propertied class and the lack of participation by the masses is evident from the restricted franchise given to early municipal governments” (2009, 9). Donald Higgins also argues that there is a historical bias for homeowners in civic elections in Canada. Higgins states, “Even as recently as 1952, in most provinces, the statutes regarding local elections required a property qualification for some class of voters – a property or tax-paying qualification was required of all classes of civic voters in seven of the ten provinces” (Higgins 1986, 319). British Columbia was one of the seven provinces with this requirement. Furthermore, there is a possible structural bias for homeownership within the City of Vancouver’s electoral system. The *Vancouver Charter* has a bias for homeownership in Section 22 and Section 24, allowing owners of property in Vancouver, who reside outside of Vancouver, to vote in municipal elections (Province of British Columbia 2009).

### **1.3 Significance of the Study**

Studying the relationship between socio-demographic factors and voter preference is important to better understand voting behaviour and political participation at the local government level. Better knowledge about the different variables that affect voting behaviour provides for a better understanding of the outcomes of elections. While acknowledging that voting behaviour is influenced by many factors, this research project studies socio-demographic factors and focuses on housing tenure, in particular.

While it is recognized that voter participation in civic elections is only one component of civic engagement, it is a significant one that needs to be understood. “In our present system, elections are arguably the most important mechanism of accountability in Canada, thereby becoming one concern of any serious study of democracy” (Stewart 1995, 19). Furthermore, citizen engagement is a necessary part of a democratic system of government and is necessary to inform government policy.

This study can also contribute to the small amount of literature on municipal voting behaviour that currently exists. Research regarding voting behaviour has been done primarily at the federal level in Canada, while few studies on voting behaviour have been done at the local government level, including in Vancouver. With few studies done at the municipal level, “the result is that very little is known about the character or quality of municipal electoral behaviour” (Cutler and Matthews 2003, 1). The understanding of elections at the federal level is much greater in Canada and the United States as many more studies have been done in relation to these elections. How relevant these federal election studies are to municipal elections will be better understood by using them to guide further research at the municipal level.

Civic government has a significant impact on the day-to-day lives of its citizens. “City government is the one most directly relevant to a person’s pursuits of a satisfactory life. Cities can prevent annoyance, or be annoying, but they can deliver the local public goods” (Lightbody 1995, 24). Understanding voting behaviour at the municipal level becomes increasingly important as cities take on increased roles and responsibilities within more complex environments and higher levels of government further download responsibilities. Furthermore, the role of municipal governments has become more significant with the demographic shift that has made Canada become one of the most

urbanized countries in the world, with 80% of the population living in urban areas with a population of over 10,000 residents in 2006 (Statistics Canada 2009).

The results of the study will be of interest to those who study or are involved with partisan politics, either at an academic or practical level. This research project will appeal to the academic community because it will supplement the body of work in political science that exists on voting behaviour and, in particular, will assist with filling in existing knowledge gaps at the local government level in Vancouver. On a practical level, as this study investigates voting behaviour, it will be of interest to those who wish to further understand and influence voting behaviour, such as electoral campaign managers, political advisors, politicians, and those who analyze elections. The findings of the study will be of interest to the political parties that have seats in Vancouver's city council or those who might challenge them, as it allows them to better understand their constituents and by doing so, possibly further their electoral fortunes. Furthermore, an understanding of the relationship between housing tenure and other socio-demographic factors and voting behaviour could influence the way that election campaigns are run, as well as political decision making.

This study could also be of benefit to municipal election research because it makes use of existing data, rather than exit poll data. This project involves the analysis of existing City of Vancouver election results data by voting division and Statistics Canada census data. The successful use of this data may provide an alternative or complimentary approach to municipal election analysis through exit poll surveying. As the census data is already available every five years (Statistics Canada 2009), its use in election analysis could be far less costly and less complicated than the collection of data in election exit polls which require a great deal of resources to collect data from a

sufficient sample size. Exit polls are also expensive to conduct because of the frequency of municipal elections, which are held every three years in British Columbia.

## **2 METHODOLOGY**

The Methodology chapter of the report provides information about the data used for this study, the research design and the techniques used to analyze the data. First, the data from Statistics Canada and the City of Vancouver will be outlined, followed by a description of the statistical techniques applied. Additional socio-demographic analysis by using thematic maps provides a visual representation based on electoral geographic boundaries.

### **2.1 Data**

This research project combines multiple sources of secondary quantitative data. The source of the socio-demographic data is the 2006 Statistics Canada Census (the most current Canadian census) and the source of the voting data is the November 15, 2008 Vancouver municipal election results (the most recent municipal election). The 2006 Census was the last time that a census was completed in Canada, and is therefore, the most appropriate socio-demographic data to use as it relates to the 2008 election data. The socio-demographic data is obtained through P-Census, from Statistics Canada Census data for 2006. P-Census is a mapping software that allows for census data to be aggregated within geographical boundaries.<sup>8</sup> The election data is obtained from the City of Vancouver website (City of Vancouver 2009, General Local Elections).

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<sup>8</sup> For this project, P-Census is used to aggregate the data, as the geographic boundaries are not the same for aggregate census data produced by Statistics Canada and the voting divisions that are determined by the City of Vancouver. P-Census is used to calculate the population numbers for the socio-demographic variables within a voting division area by correlating Dissemination Blocks to voting divisions.

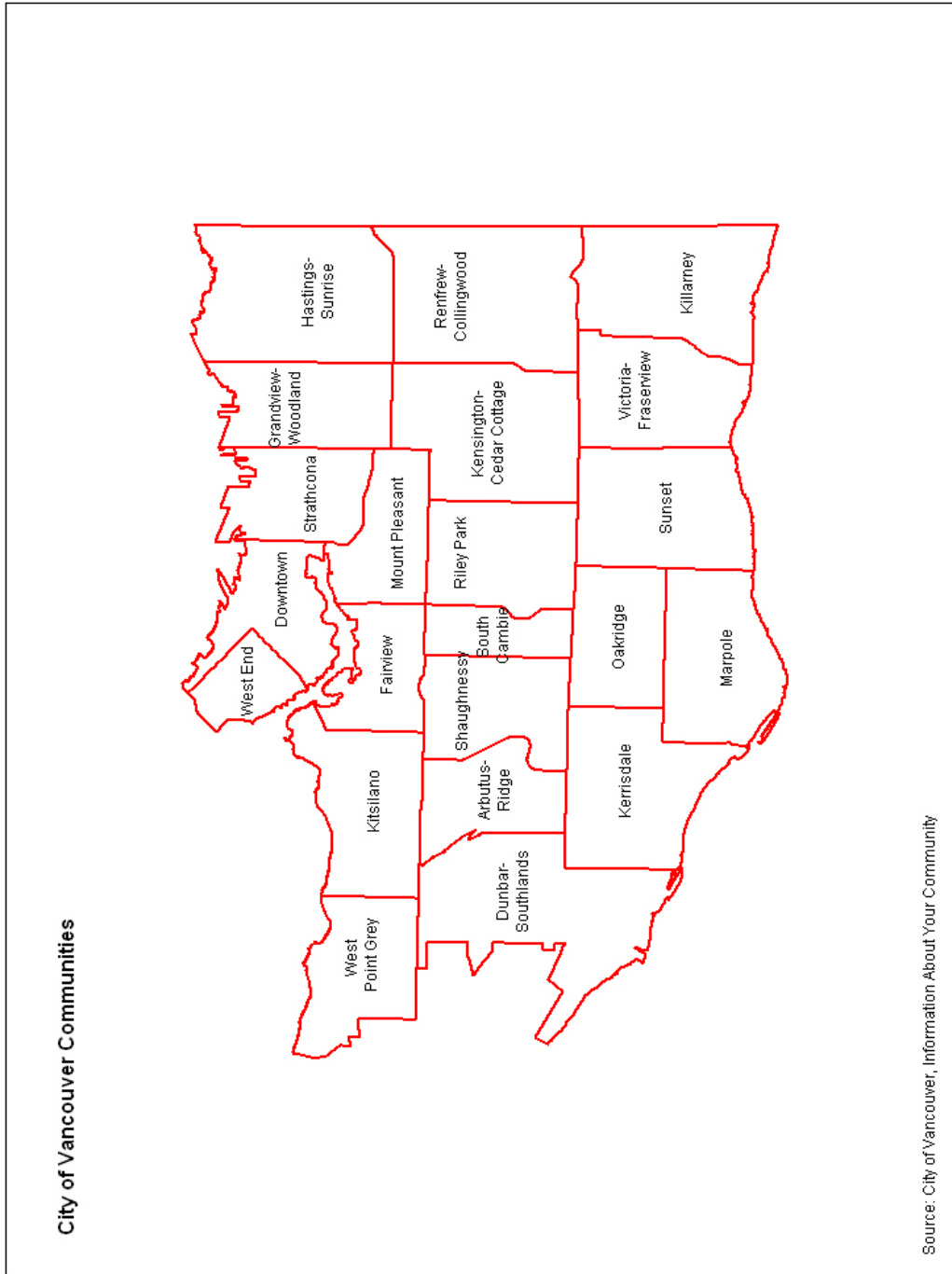
The socio-demographic census data used for this research project is aggregated by Dissemination Block (DB), a geographical area determined by Statistics Canada. The DB data is the smallest geographic area for which population and dwelling count data are disseminated (Statistics Canada, 2006 Census Data).

When the socio-demographic data is aggregated into voting divisions, the number of Dissemination Blocks within a voting division varies widely, from six to 86. The population of the voting divisions also varies, with a population of 1,988 in the smallest voting division and 9,694 in the largest. "Each division has its own voting place. Every elector who lives in a particular voting division is required to vote in the designated voting place for that division. Voting division boundaries are reviewed before each election to ensure that the number of registered voters is roughly balanced in each voting division" (City of Vancouver 2009, General Local Elections). Of course, the number of residents in each voting division is not the same as the number of voters in each voting division because a significant proportion of the population that was eligible to vote did not vote in the 2008 Vancouver municipal election and part of the population is not eligible to vote. In Vancouver, there were 124,285 voters for the 2008 municipal election, making up a voter participation rate of 30.8% (City of Vancouver 2009, General Local Elections). There were 403,663 people who were eligible to vote in Vancouver in 2008 (City of Vancouver 2009, General Local Elections). To be eligible to vote, a person is required to: live in Vancouver or live elsewhere in British Columbia, but own property in Vancouver; be 18 years of age or older; be a Canadian citizen; be a resident of British Columbia for at least six months, and, not be disqualified by law from voting (City of Vancouver 2009, General Local Elections).

There were 133 voting divisions for the 2008 Vancouver civic election, however, only 123 voting divisions were included in the sample. Ten of the voting divisions are not



Figure 2. Map of City of Vancouver Communities



included in the sample because Statistics Canada suppressed data for some Dissemination Blocks due to poor response in those areas. Of the ten voting divisions that were removed from the sample, four were located Downtown, two were in Kitsilano and the remainder were more distributed throughout the city, with one each in Grandview Woodlands, Mount Pleasant, Renfrew-Collingwood and South Cambie. The election data used for analysis in this project also does not include results from Advance and Special Opportunity voting, as they are not tied to a specific voting division. Of the 16,352 votes that occurred through the Advance, Mail or Special Opportunity voting opportunities, 9,003 were for the Vision Vancouver mayoral candidate and 6,405 were for the NPA mayoral candidate (City of Vancouver 2009, General Local Elections).

As there are a large number of voting divisions and the numbers used to identify the voting divisions do not provide information about their location within Vancouver, 'communities' are used to identify spatial patterns and trends for the data in Vancouver. As seen in Figure 2, the Map of City of Vancouver Communities, the City of Vancouver breaks the city down into 23 'communities', or neighbourhoods, for planning purposes (City of Vancouver, Information About Your Community 2009).

## **2.2 Methods**

The socio-demographic and voting data is analyzed in two ways: through regression analysis to investigate the relationship between socio-demographic factors and voting behaviour in Vancouver; and, through presentation of the data with thematic maps of Vancouver.

Linear regression<sup>9</sup> is used to test the hypotheses. With this statistical technique, the impact of one independent variable can be isolated, while all others are held constant. It is not possible to do this through simple cross-tabulations. Linear regression also describes the overall explanatory power of the chosen independent variables as they relate to the movement of the dependent variable. Finally, statistical testing can provide greater confidence in the conclusions of the study.

Thematic maps provide an easy visual representation that can reveal neighbourhood or 'community' trends and geographical clusters of the socio-demographic data and election results. The maps provide information about where there are concentrations of Vancouver residents with different socio-demographic characteristics. In *Politics is Local*, R. Kenneth Carty and Munroe Eagles explain, "So closely associated are social characteristics and urban space that most city dwellers develop complex cognitive maps that are amalgams of both social and geographic features (see Duncan, 1987). Even familiar metaphors such as the idea that someone comes from 'the wrong side of the tracks' draw on this blending of society and space" (2005, 8). Thematic maps have been used to illustrate the relationship of geographic areas to electoral outcomes. Thematic maps have also been commonly used for planning purposes at city planning offices, with the mapping of socio-demographic data to understand the make up of particular neighbourhoods. Although thematic maps are used to show socio-demographic data and / or voting behaviour patterns, they are also used to further understand the findings of regression analysis in this study.

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<sup>9</sup> Regression provides information about the individualized impact of multiple independent variables on the dependent variable. Regression analysis also allows for testing of hypotheses of relationships between variables by running a series of statistical tests.

## **2.3 Data Analysis**

The analysis includes regression analysis and mapping of the same socio-demographic data by voting division. The regression analysis allows for insights on the magnitude and direction of the relationship between the socio-demographic variables and voting behaviour in the 2008 Vancouver mayoral municipal election. The maps provide context for the distribution of the socio-demographic factors by voting division in Vancouver.

### **2.3.1 Regression Analysis**

Regression analysis provides statistical evidence that supports or rejects the hypothesis of a relationship between the socio-demographic variables and voting behaviour in the 2008 Vancouver civic election.

#### **Basic Model**

As described earlier in this paper, a relationship between voting behaviour and age and income has been found in previous research. These two variables are often included as a socio-demographic variable for studies related to electoral behaviour. The variable of age has been tested and found to have a positive relationship with political beliefs and voting behaviour (Cutler and Matthews 2005; Walks 2004, 2005; Gidengil et al. 2006; Gidengil et al. 2001; Miller and Shanks 1996; Inglehart 1997). Furthermore, a positive relationship has been found between voting for a left-of-centre party and an age group that represents young people, persons 20 to 29 years old in this case (Cutler and Matthews 2005, 37; Skelton 2008; Gidengil et al. 2006, 9). Income is also regularly included as a variable, however, its results are more mixed, with some studies showing a relationship between low income and voting behaviour or political beliefs and others that do not show this relationship (Stewart 1995; Young 2005; Gidengil et al. 2006; Gidengil

et al. 2001; Cutler and Matthews 2005; McGrane 2007). As both of these variables, persons 20 to 29 years old and low income, are found to have a strong relationship with voting behaviour in the 2008 Vancouver election exit poll, they have been included here to confirm this relationship.

#### BASIC MODEL – Vote for Vision=f(income,age,Z)

The socio-demographic variables that are included in the basic model are income and age, as they are commonly included in electoral behaviour studies and Vancouver exit poll surveys (Cutler and Matthews 2003; Skelton 2008; Young 2005; Gidengil et al. 2006; Gidengil et al. 2001; Walks 2004, 2005; Miller and Shanks 1996; Inglehart 1997). Additional variables (Z) included in subsequent models are factors found in the literature, but have exhibited mixed statistical significance. Variables are added to the model according to the hypothesized strength of impact on the dependent variable (vote for Vision) based on previous research. Voter participation in the context of electoral behaviour has not been tested in the literature, but is tested in this study because a relationship between the variable and voting for the Vision mayoral candidate was demonstrated in the 2008 municipal election poll conducted by Kennedy Stewart (Skelton 2008). Since most of the socio-demographic variables in the literature are based on exit polling, voter participation is often an untested variable because those who are completing exit polls, by definition, have voted.

In this research project, the linear functional form is used rather than log functional form for several reasons.<sup>10</sup> First, because there is no evidence, in the literature or by conventional wisdom, that the movement of the variables in relation to each other would be non-linear in progression (e.g. not exponential relationships between voting

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<sup>10</sup> Linear functional form means that the variables are regressed using the raw values with the assumption that the slopes are constant. Log functional form involves transforming the raw values of the variables to logarithms.

and rented dwellings). Second, the unit measures for the variables are in percent and as such do not have significant variation in values to justify the use of the log functional form.<sup>11</sup> Finally, the linear functional form is the default approach unless there are compelling reasons to do otherwise (Studenmund 2006). As such, the study uses the linear functional form for all estimations.

### ***Dependent and Independent Variables***

The dependent variable is percent of voters that voted for the Vision Vancouver mayoral candidate by voting division in the November 2008 municipal election. As previously stated, this is of interest because there is a new political party in power in Vancouver, which may indicate a changing political landscape in Vancouver. Percent of the vote for Vision mayoral candidate is used for analysis of the variable, because in Vancouver, it is essentially a two party system, with most of the remaining vote being for the NPA. The distribution of the dependent variable values ranges from 21.2% to 79.8%, providing for sufficient variation to complete the regression. Percent also allows for the regression results to be simply interpreted since all independent variables are in percent form as well. A 1% increase in the independent variables will result in a X% change in the vote for Vision.

There are eight independent variables used to explain this voting behaviour. Seven variables consist of socio-demographic data from the 2006 Census and one variable, the voter participation data, is from the 2008 Vancouver municipal election results. The socio-demographic data included in this study has been shown to have a relationship with voting behaviour in previous studies. As explained earlier in this paper,

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<sup>11</sup> Large differences in the values among variables can be a justification for using the log functional form, since taking the log of values effectively minimizes the 'real' difference between the values while keeping the relative distance intact. Large differences in values can contribute to heteroskedasticity.

the specific socio-demographic variables chosen for this project have had an influence on votes received by a party with similar left-of-centre ideologies to that of Vision Vancouver, such as COPE in previous municipal elections, and the NDP on a federal election level.

The socio-demographic independent variables are:

- income
- persons 20 to 29 years of age
- persons 55 years and over
- rented dwellings
- university education
- Chinese immigrants
- European immigrants
- voter participation

**Income Measure:** The \$0-\$39,999 income bracket is used because it is consistent with other studies on voting behaviour and is a good measure of low income. The low income cut off (LICO) used by Statistics Canada in 2006, is very close to this amount, at \$39,399 before tax income for a four person family in a city with a population over 500,000 (Statistics Canada 2007, 23). “LICO is an income threshold below which a family will likely devote a larger share of its income to the necessities of food, shelter and clothing than an average family would” (Statistics Canada 2007, 7). The 2006 Census data for income is household income that was received in 2005. Household income is used because individual income does not always reflect the financial benefits experienced from a larger household income. The hypothesized relationship between low income and vote for Vision is expected to be positive, given the established research findings that suggest low income persons tend to vote for left-wing parties or have left-wing ideological leanings.

**Age:** The age bracket of 20 to 29 years of age is used to isolate the young adult voter, which is an age bracket that is expected to vote in a certain direction and have a

lower participation rate. Although 18 and 19 year old youth are also eligible to vote, they are excluded because the data was only available in 5 year age brackets at the DB level. Similarly, the age bracket of 55 years and over is used to capture the older population that is expected to vote in the inverse to the youth voters.

**Rented Dwellings:** Percent of rented dwellings provides information about the breakdown in voting divisions, as there are only two categories for housing tenure, rented dwelling or owned home (with the exception of homeless persons). The use of a raw number for rented dwellings would not be as meaningful of a measure because although the numbers can be quite diverse in voting divisions, the proportion of rented dwellings is of interest. In part, the hypothesized relationship between proportion of those in rented dwellings and vote for Vision is positive because a large proportion of renters are younger and have lower incomes than NPA supporters (City of Vancouver, Policy Report 2007, 8). It is also hypothesized in this project, that the variables of youth and low income have a positive relationship with voting for Vision. This positive relationship is also anticipated due to the Vision platform to increase affordable rental housing (Vision Vancouver 2009) and that anticipated increases to municipal taxes to pay for promised social services are generally hidden from renters (and thus less of an influence on renters than NPA voters, who are hypothesized to be disproportionately owners of homes). This hypothesis is simply the inverse of the empirical evidence that suggests that homeowners tend to vote for right-wing candidates for reasons of property taxes, vested and longer-term interests in the neighbourhood and maintaining property values.

**University Education:** Percentage of persons who completed any type of university education (certificate, diploma, or degree) and are aged 15 years and over is used. The hypothesized relationship between university education and vote for Vision is



negative, since there is an expectation that university graduates occupy higher income brackets and are homeowners more often and so, would more likely vote for the NPA.

**Immigrants - Chinese and European:** These variables have been transformed into the respective proportions of the total population within each voting division. This is important because other measures, like the proportion of Chinese immigrants to all immigrants, do not provide any information about the presence of these populations in the specific voting division. In this case, Chinese immigrants includes immigrants from both China and Hong Kong. The hypothesized relationship between Chinese immigrants and European immigrants to vote for Vision is expected to be negative and positive, respectively, given exit polling and survey data. There is, however, little basis for this observed phenomenon. Federal election studies have found relationships between voting behaviour and ethnicity or visible minorities, but their conclusions are difficult to apply in this municipal context as they do not use the actual variables of European immigrants and Chinese immigrants and do not identify why this relationship exists (Gidengil et al. 2006; Blais 2005).

**Voter Participation:** This variable is measured as a percentage of people who voted to those who are eligible to vote. The hypothesized relationship between voter participation and vote for Vision is positive because the NPA vote has been consistent in many west side areas of the city, while the Vision voters may not participate as voters as consistently. In his research, Kennedy Stewart demonstrates that the east side (where Vision and COPE receive a great deal of their support) can only gain substantial representation on council when turnout in low socio-economic communities is increased disproportionately in comparison with communities with high socio-economic status (Stewart 1995, 57). In his 2008 election exit poll, Stewart also shows that the Vision mayoral candidate received the majority of the vote in voting divisions where there was

the greatest increase in voter participation (Skelton 2008). In addition, Lewis-Black and his colleagues found a relationship between a greater vote turnout for the 2000 United States presidential election and college education and people who are 55 years of age and older and the inverse, a smaller voter turnout with a lower level of education and younger age groups (Lewis-Black et al. 2008). These two variables align with the hypotheses of this project, with an expected decrease in the vote for Vision when the rate of university education and persons ages 55 years and over increases, and an expected increase in the vote for Vision when persons ages 20 to 29 years increases and the rate of university education decreases.

**Independent Variables Not Used:** Gender and Religion. These variables are commonly used in the literature as explanatory variables to voting behaviour. Gender is not included as a variable in this study however, because the gender variable does not provide the variation required among voting divisions, with no considerable differences in gender distribution across the city. Religion was not surveyed in the latest 2006 Census, as it is only collected once every ten years and was last collected in 2001, and thus cannot be applied in this study (Statistics Canada 2009).

Table 3 provides a summary of the hypotheses with respect to the effect of an increase in the independent variables on voting for Vision in the 2008 civic election.

**Table 3. Hypotheses for Independent Variables**

INDEPENDENT VARIABLE	HYPOTHESIS (EFFECT ON VOTE)	LITERATURE SOURCES
Household Income - \$0-\$39,999 (Inc \$0 - \$39,999)	+	Cutler and Matthews 2005; Gidengil et al. 2006; McGrane 2007; Miller and Shanks 1996; Skelton 2008; Erickson 2010; Blake 1985
Age - 20 – 29 years (20-29 yrs)	+	Cutler and Matthews 2005; Walks 2004, 2005; Gidengil et al. 2006; Inglehart 1997; Skelton 2008; Erickson 2010; Blake 1985
Rented Dwellings (Rented)	+	Gidengil et al. 2006; Verberg 2000; Pratt 1987; Walks 2004, 2005; Miller and Shanks 1996; Skelton 2008
University Certificate, Diploma or Degree (University)	-	Gidengil et al. 2006; Miller and Shanks 1996
Immigrants from China and Hong Kong - % of Total Population (Imm – Chinese)	-	Blais 2005; Cutler and Matthews 2005; Gidengil et al. 2006; Walks 2004, 2005; Skelton 2008; Erickson 2010
Immigrants from Europe - % of Total Population (Imm – Europe)	+	Blais 2005; Cutler and Matthews 2005; Gidengil et al. 2006; Walks 2004, 2005
Voter Participation (Vote Part)	+	Skelton 2008; Lewis-Black et al. 2008
Age - 55 years and over (55 yrs +)	-	Cutler and Matthews 2005; Inglehart 1997; Skelton 2008; Erickson 2010; Blake 1985

### 2.3.2 Mapping

By mapping the data, relationships that exist between socio-demographic factors and voting behaviour are represented visually through thematic maps. Regression will give us results for the average voting division. Mapping will complement the regression by providing additional context for the voting behaviour and socio-demographic data in each voting division. The socio-demographic variables that are statistically significant and support the hypotheses will be mapped.

Voting behaviour in relationship to the geographical space has been the subject of much study. As Munroe Eagles explains:

The perspective of political ecology seeks to explain patterns in political life by relating them to aspects of the geographic setting such as the social

characteristics of an area's resident, its local economy, and the stability of its social structure (see Berglund and Thompsen 1990; Eagles 1990; Ersson et al. 1990). Basic to this approach, then, is an assumption that political behaviour is a product of *both* of the characteristics, attitudes, orientations, and beliefs of individuals and of extra-individual forces that are features of, or structured by, the geographic context (Eagles 2002, 204).

Vancouver has geographic concentrations of the population that relate to specific variables, such as a concentration of renters, young people, or persons with a university education, in a specific area. Therefore, the ability to produce maps where these variables are analyzed contributes tremendously to understanding the voting behaviour of municipal elections. These maps summarize and provide graphic expressions of information and help the reader to better understand the message from a clearer visual perspective.

The thematic maps show the data within the boundaries of all of the 133 voting divisions of Vancouver. A map of these voting divisions is provided in Appendix A. Due to the suppression of some of the socio-demographic data by Statistics Canada, the maps with socio-demographic data from the 2006 Census only include 123 voting divisions and the voting divisions with no data are presented as white. For each socio-demographic variable with data, the data is presented in four equal percentage ranges, according to the maximum and minimum data point values. For example, with the rented dwellings variable, the percentage values in voting divisions vary from a maximum of 88.8% rented dwellings in a voting division to a minimum of 7.5% rented dwellings in a voting division. The four equal percentage ranges are presented as those voting divisions with between 7.5%-27.9% renters, 27.9%-48.2%, 48.2%-68.5% and finally 68.5%-88.8%. This method is used for all socio-demographic variables and thus allows for comparison between the maps to show the data for the voting divisions, from the bottom quarter to the top quarter. The voting divisions with the darkest shade are

those with the greatest proportion of the socio-demographic variable and the shade gets lighter as the proportion decreases.

The thematic maps for the socio-demographic variables also have white circles located in the middle of each voting division. These circles represent the proportion of the vote for the Vision mayoral candidate in that voting division and vary in size, with the smallest circles representing the smallest proportion of the vote for Vision and the largest circles representing the largest proportion of the vote for Vision. Of course, the reverse is also true, with the smallest circles representing the largest proportion of the vote for the NPA and the largest circles representing the smallest proportion of the vote for the NPA. This overlap of circles located on top of the shaded voting divisions allows for a visual understanding about the locations of the voting divisions where there is a strong relationship between the socio-demographic variables and voting for Vision. Of course, the reverse is also true, with the maps allowing a greater understanding of the NPA vote as well.

### **3 RESULTS AND ANALYSIS**

The secondary data is analyzed through regression analysis and presented using thematic maps. This study uses a linear regression model to gain statistical insights into the relationship between voting preference in the 2008 Vancouver civic election and the socio-demographic characteristics of residents living in Vancouver's municipal voting divisions. The maps provide a visual presentation of voting behaviour and socio-demographic data.

#### **3.1 Results – Regression Analysis**

A total of seven empirical estimations using OLS<sup>12</sup> linear regression are used to test relationships between voting for Vision Vancouver's mayoral candidate and socio-demographic factors of the people living in those voting divisions. By adding independent variables through a succession of data models, the socio-demographic variables with the strongest relationships with voting for the Vision mayoral candidate become evident and the robustness of the estimations are confirmed.

There are three data models, with an additional three estimations for the second and third data models.<sup>13</sup> A summary of the data models follows, with all testing the relationship between voting for Vision and the identified socio-demographic variables:

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<sup>12</sup> Ordinary least squares (OLS) is the most basic type of regression. OLS is a regression estimation technique that effectively minimizes the difference between the real data points and the line that purports to explain the magnitude and direction of the relationship when all independent variables are incorporated into a single formula.

<sup>13</sup> Within each model there may be several 'estimations'. The 'models' are distinct theoretical concepts of the possible relationships among the variables, while the estimations within each model can be thought of as minor modifications to both test the robustness of the model and find the best fit.

- **Model 1:** Income of \$0 to \$39,999 and ages 20 to 29 years were included for the basic model.
- **Model 2 (building on Model 1) - Estimation 1:** Income of \$0 to \$39,999 and ages 20 to 29 years were kept and rented dwellings and university education were added.
- **Model 2 - Estimation 2:** Ages 20 to 29 years, rented dwellings and university education were kept and income of \$0 to \$39,999 was replaced with median income (alternative measure of income to confront statistical problems of multi-collinearity).
- **Model 2 – Estimation 3:** Ages 20 to 29 years, rented dwellings and university education were kept and median income was removed (statistical problems were unable to be resolved, therefore the income measure was removed).
- **Model 3 (building on Models 1 and 2) – Estimation 1:** Ages 20 to 29 years, rented dwellings and university education were kept and Chinese immigrants, European immigrants, voter participation, and ages 55 years and over were added.
- **Model 3 – Estimation 2:** Ages 20 to 29 years, rented dwellings, university education, Chinese immigrants, and European immigrants were kept, and voter participation and ages 55 years and over were removed because of interaction effects.
- **Model 3 – Estimation 3:** Ages 20 to 29 years, rented dwellings, university education, Chinese immigrants, and European immigrants were kept, and voter participation was again added to confirm robustness of model.

Model 1 includes two variables of persons ages 20 to 29 years and income (low income of \$0 to \$39,999 and median income) that have been found to be influential in voting behaviour in related election studies. Model 2 adds the rented dwellings and university education variables, as these variables have also been found to have a relationship with voting behaviour in previous studies. Model 3 adds a further four variables, percentage of Chinese immigrants, European immigrants, voter participation and persons ages 55 years and over.

The results of the regression analysis for all of the models are presented in the following table (Table 4).

**Table 4: Results for Models 1 to 3**

VARIABLE	MODEL						
	1	2 Est. 1	2 Est. 2	2 Est. 3	3 Est. 1	3 Est. 2	3 Est. 3
Income \$0-\$39,999	.492*** (6.922)	-.457*** (-3.528)	-	-	-	-	-
Median Income	-		.084 (.520)	-	-	-	-
20 – 29 yrs	.332*** (4.666)	.153** (2.002)	.223*** (2.848)	.218*** (2.816)	.080 (.995)	.163*** (2.561)	.311*** (5.057)
Rented Dwelling	-	.933*** (7.243)	.612*** (4.555)	.554*** (7.453)	.478*** (7.771)	.307*** (4.442)	.434*** (6.716)
University Education	-	-.564*** (-6.844)	-.413*** (-3.679)	-.365*** (-5.808)	-.710*** (-11.867)	-.718*** (-10.264)	-.765*** (-12.298)
Immigrant - Chinese	-	-	-	-	-.267*** (-3.620)	-.541*** (-7.104)	-.308*** (-3.940)
Immigrant - Europe	-	-	-	-	.127** (2.224)	.075 (1.122)	.069 (1.177)
Voter Participation	-	-	-	-	.312*** (5.375)	-	.357*** (5.871)
55 yrs +	-	-	-	-	-.250*** (-4.132)	-	-
Adjusted R <sup>2</sup> <sup>14</sup>	.414	.621	.582	.584	0.811	.723	.785
N	123	123	123	123	123	123	123
Degrees of Freedom	120	118	118	119	115	117	116

t-values<sup>15</sup> are given in parentheses. One-sided test for significance. \*\*\* 1% significance level, \*\* 5% significance level.

<sup>14</sup> A normal R square is the percent variance in the dependent variable explained jointly by the independents. An adjusted R square is an adjustment for the fact that a larger number of independent variables could result in an artificially high number because some independent variables' chance variations explain small parts of the variance of the dependent variable.

<sup>15</sup> A t-statistic is the ratio of the coefficient to its standard error. It is tested against a t-distribution (based on the number of variables and observations used) to determine the level of significance that can be associated with each variable in the models. A large t-statistic implies that the coefficient was estimated with a fair amount of accuracy.



Tests for multi-collinearity<sup>16</sup> and heteroskedasticity<sup>17</sup> have been performed in order to ensure that the empirical estimations are statistically valid. There is reason to suspect strong multi-collinearity among three of the independent variables, as the simple correlation coefficient between these variables approaches 0.80<sup>18</sup> (see Appendix B for the complete correlation table for all models). The issue of strong multi-collinearity first arises in Model 2 - Estimation 1, between household income of \$0 - \$39,999 and rented dwellings, and in Model 2 – Estimation 2, between median household income and rented dwellings. The VIF (variation inflation factor) of the variables in these models confirms the presence of strong multi-collinearity. This is not unexpected, as one assumes that those with higher incomes tend to be homeowners. The income variables were eliminated from Model 2 - Estimation 3 and subsequent estimations to address this issue. Given the evidence of multi-collinearity ( $r = 0.758$  for low income measure,  $r = -0.742$  for median income measure), the rented dwellings variable can serve as a proxy measure for income. In addition, inspecting the residuals graphically confirmed that none of the models show any evidence of heteroskedasticity.

### ***Model 1***

Model 1 tests the relationship between voting for Vision and the two independent variables that comprise the basic model: household income from \$0 to \$39,999 and people who are ages 20 to 29 years. These variables are present in the basic model because they are commonly measured in the literature and have been found to be

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<sup>16</sup> Multi-collinearity exists when there is a strong correlation between two or more predictor variables in a regression model.

<sup>17</sup> Heteroskedasticity occurs when there are different levels of variance for different observations of the error term. OLS theory requires that the error term be 'homoskedastic' (constant variance for difference observations of the error term). The researcher can anticipate this being a problem when observations are vastly different. If it is a problem, it will result in the t-statistic being artificially high or low and may cause the researcher to accept or reject statistical significance for a variable when it is not the case (same for multi-collinearity and serial correlation).

<sup>18</sup> Although it is not a hard and fast rule, this is the generally accepted threshold of correlation to indicate multi-collinearity (Studenmund 2006).

statistically significant. The results in the estimation confirm a statistically significant relationship at the 1% level for both of these two independent variables for income and age and voting for Vision. If percent of households in the income bracket of \$0 to \$39,999 is increased by 1%, an increase of 0.49% in the vote for Vision would be expected. This is consistent with the hypothesis that suggests that lower income households tend to vote Vision. In addition, if there is an increase by 1% in the persons ages 20 to 29 years, the vote for Vision would increase by 0.33%. The adjusted R<sup>2</sup> value for Model 1 is 0.414, meaning that the model explains 41% of the variation of the dependent variable.

### ***Model 2 – Estimation 1***

Model 2 – Estimation 1 includes the two independent variables from Model 1 and two additional independent variables: rented dwellings and university certificate, diploma or degree. These are added at this point because they are found in the literature, but not as common as the income and age variables. In Model 2 – Estimation 1, evidence of strong-multi-collinearity was discovered through the Variation Inflation Factor (VIF) value exceeding 5.00<sup>19</sup> between the two variables of household income of \$0 to \$39,999 and living in a rented dwelling. While the statistical significance is at 1% for household income of \$0 to \$39,999, rented dwellings and university variables, it has decreased to 5% for the population ages 20 to 29 years. The coefficients for the variables that were added suggest that with a 1% increase in rented dwellings in the average voting division, the vote for Vision would increase by .93%, and with a 1% increase in persons with a university education, the vote for Vision would decrease by .56%. These results must be

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<sup>19</sup> The Variation Inflation Factor is a measure of how much the variance of the estimated regression coefficient is 'inflated' by the existence of correlation among the predictor variables in the model. It is a generally accepted rule that a VIF that is greater than 5 is an indicator of strong multi-collinearity (Studenmund 2006, 271).

viewed tentatively due to evidence of strong multi-collinearity. An attempt to resolve this issue is made in the following estimation.

### ***Model 2 - Estimation 2***

Model 2 – Estimation 2 replaces the low household income data used in the previous model with median household income data and continues to use the three other variables used in Model 2 – Estimation 1. This model attempts to address the issue of strong multi-collinearity between low income of \$0 to \$39,999 and rented dwellings by removing the low income data and adding median household income data as an alternative measure. The findings of the test show that median household income is not statistically significant and the test again shows evidence of multi-collinearity between median household income and rented dwellings. The results continue to show a statistically significant relationship at the 1% level of significance for voting for Vision and the variables of rented dwellings and university certificate, diploma or degree. Given the simple correlation tests and the existence of interaction effects, it can be reasonably concluded that the rented dwellings variable is a proxy measure for income. As such, in subsequent models, the income variable must be dropped, as multi-collinear variables hamper the interpretive power of the regression.

### ***Model 2 - Estimation 3***

In Model 2 – Estimation 3, the median household income variable has been removed because all of the measures for income appear to be co-linear to the rented dwelling variable. This is not unexpected, as one assumes those with higher incomes tend to be homeowners. Given the evidence of multi-collinearity, the rented dwellings variable can serve as a proxy measure for income. The rented dwellings variable has remained, as it is a focus of the study. The remaining three variables are the same as those used in Model 2 – Estimation 2. The statistical significance at the 1% level for the

variables has not changed since the last model. The regression values shifted slightly from .612 to .554 for the rented dwellings variable and from -.413 to -.365 for the university education variable, but are certainly within the range of acceptable movement for a new estimation. The adjusted  $R^2$  of 0.584 remains consistent with the last model.

### ***Model 3 – Estimation 1***

Model 3 – Estimation 1 builds further on the previous model with the addition of four variables, all in percentage terms: Chinese immigrants, European immigrants, voter participation, and persons ages 55 years and over. These variables are added at this stage because there is some evidence in the voting behaviour literature that they may have an impact on the dependent variable. In this model, the variable, population ages 20 to 29 years, is no longer statistically significant and the statistical significance of immigrants from Europe exists, at a level of 5% significance.<sup>20</sup> The level of statistical significance for all of the remaining variables is 1%. The regression value is highest for university education at -.710, meaning an increase of 1% in people with university completion would result in an expected decrease of 0.71% in Vision votes. The next highest regression value is for rented dwellings at .478, meaning an increase of 1% in people who rented dwellings would cause an expected increase of 0.48% in Vision votes. Similarly, a 1% increase in voter participation would cause an expected increase of 0.31% in Vision votes. The regression value of Chinese immigrants is -.267 in this model, meaning an increase of 1% in the proportion of residents who are immigrants from China and Hong Kong would result in an expected decrease of 0.27% in Vision votes. The regression value of the persons ages 55 years and over variable is -.250, meaning an increase of 1% in people ages 55 years and over would cause an expected

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<sup>20</sup> Percent level of significance is the probability that the result occurred by chance, and therefore does not represent a true description of the behaviour of the variables in relation to each other.

decrease of 0.25% in Vision votes. The adjusted  $R^2$  value is 0.811, meaning that the model explains 81% of the variation of the dependent variable.

### ***Model 3 – Estimation 2***

It is clear that Model 3 – Estimation 1 thus far has the highest explanatory power of the models. Therefore, additional work to modify this model by sensitivity analysis is required to confirm the robustness of the empirical estimation. Sensitivity analysis involves removing variables in the model to confirm that the regression values and significance levels of the remaining variables do not shift greatly, thereby confronting the argument of possible interaction effects among the independent variables. If the coefficients or significance levels shift is considerable, the estimation is likely subject to error from redundant and/or omitted variables. Model 3 – Estimation 2 thus removes the voter participation and ages 55 years and over variables to inspect for changes in the remaining variables and their regression coefficients. The variable, immigrants from Europe, which was once statistically significant at 5%, is no longer statistically significant. This is likely is to do with a correlation to the persons ages 55 years and over variable that was removed, given the historical patterns of European immigration. The interaction effects between those two variables resulted in the suppression of the effect of the immigrants from Europe variable. The remaining variables are all statistically significant at a level of 1% and the regression coefficients do not shift greatly between the estimations.

### ***Model 3 – Estimation 3***

In Model 3 – Estimation 3, the voter participation variable is reinserted into the model to confirm the significance of its effect, without the inclusion of the persons ages 55 and over variable. It was treated separately from the age variable to ensure that it in fact was not the variable that was producing the interaction effects with the other

variables. Of these variables, the tests show that the immigrants from Europe variable remains not statistically significant and that voter participation is statistically significant at 1%. All other variables remain at their previous level of significance and approximate regression values. The adjusted  $R^2$  value is 0.723, meaning that the model explains 72% of the vote for Vision in the average voting division in Vancouver.

### **3.1.1 Analysis of Significant Variables**

In this section, examination of the variables that are statistically significant in the regression is provided and conclusions are made as they relate to the hypotheses described in Chapter 1.

For a variable to be statistically significant, it must have a sufficiently high t-score given the degrees of freedom and must have a relationship to the dependent variable that is consistent with the earlier hypotheses. Model 3 – Estimation 1 is the estimation that has the highest explanatory value (81%) for the change in the dependent variable. Therefore, the socio-demographic factors of persons ages 20 to 29 years, rented dwellings, university education completion, Chinese and European immigrants, voter participation, and persons ages 55 years and over, explain 81% of the vote for Vision in the 2008 Vancouver civic election.

As shown in Table 5 that follows, the three estimations of Model 3 show that the variables of rented dwellings, university education completion, Chinese immigrants, voter participation, and age consistently have a statistically significant relationship to the vote for Vision. In the Model 3 estimations, the range is a 0.31% to 0.48% increase in the vote for Vision, with an increase in the percentage of rented dwellings by 1% in a voting division. A 0.71% to 0.77% decrease in the vote for Vision occurs with an increase by 1% of individuals with a university education in a voting division. A decrease of 0.27% to

0.54% takes place in the vote for Vision with an increase in the proportion of Chinese immigrants to the total population by 1% in a voting division. An increase of 0.31% to 0.36% in the vote for Vision occurs with a 1% increase in voter participation.

In Model 3, introducing the persons ages 55 years and over variable resulted in the youth variable losing statistical significance. Persons 55 years and over is statistically significant at 1% in Model 3 – Estimation 1, while the youth variable is no longer statistically significant. Since there is evidence of multi-collinearity between the two age variables ( $r = -0.694$ ), the persons ages 55 years and over variable was removed in Model 3 – Estimation 2 and once again the youth variable is statistically significant at 1%. This indicates that the variables are interacting with each other, and as a result, affecting the t-statistics and regression scores. When independently measured in the model, however, both age variables demonstrate a statistically significant relationship to the vote for Vision.

**Table 5. Summary of Model 3 Findings**

<b>Increase of 1% in Variable of</b>	<b>Range of Votes for Vision</b>
Rented Dwellings	0.31% to 0.48%
University Education Completion	-0.71% to -0.77%
Chinese Immigrants	-0.27% to -0.54%
Voter Participation	0.31% to 0.36%
Ages 20 to 29 Years	0.153% to 0.332%
Ages 55 Years and Over	-0.250%

The results of Model 3 show that the independent variables have both a positive and negative effect on the dependent variable. Rented dwellings has the highest positive effect on Vision votes, followed by voter participation and youth. University education completion has the largest (negative) effect on Vision votes, followed by Chinese immigrants and persons ages 55 and over.

### **3.1.2 Summary of the Significant Factors**

Statistically significant variables must meet both the statistical measure at the 95% confidence level or better, and exhibit the hypothesized sign based on the literature review. The following explanatory variables are found to influence whether or not the voting division is likely to vote for Vision, in order of strength:

- University education completion – increase in this reduces the Vision vote
- Chinese immigrants – increase in this reduces the Vision vote
- Rented dwellings – increase in this increases the Vision vote
- Voter participation – increase in this increases the Vision vote
- Youth ages 20 to 29 years – increase in this increases the Vision vote
- Persons ages 55 years and over – increase in this reduces the Vision vote

The following explanatory variable is not found to be statistically significant at 95% or better or exhibited a sign opposite to what was hypothesized:

- European immigrants

### **3.1.3 Limitations**

There are several statistical limitations in this research study that must be acknowledged. One limitation that exists is that each data point cannot be connected to a voter in the way that a survey would. In addition, it is clear that socio-demographics do not explain all voting behaviour, since socio-demographics of the population have not changed a great deal between the various administrations (COPE from 2002 to 2005, NPA from 2005 to 2008, and Vision from 2008 to 2011). Furthermore, there is a limitation with the fact that voter participation is not known for each of the socio-demographic groups that are being measured. So, for example, although there may be more youth in a voting division, it does not mean that they are the ones that are voting and increasing the vote for Vision. Due to its suppression by Statistics Canada, there is also missing socio-demographic data in some high-growth, high population areas, which



were not included in the regression. Another limitation is that it was not possible to include gender and religion, two otherwise important factors, for analysis in this study. As explained earlier, the data for gender cannot be applied as the distribution between females and males within voting divisions is relatively equal and the data for religion was not collected in the 2006 Census.

### **3.2 Results – Map Findings**

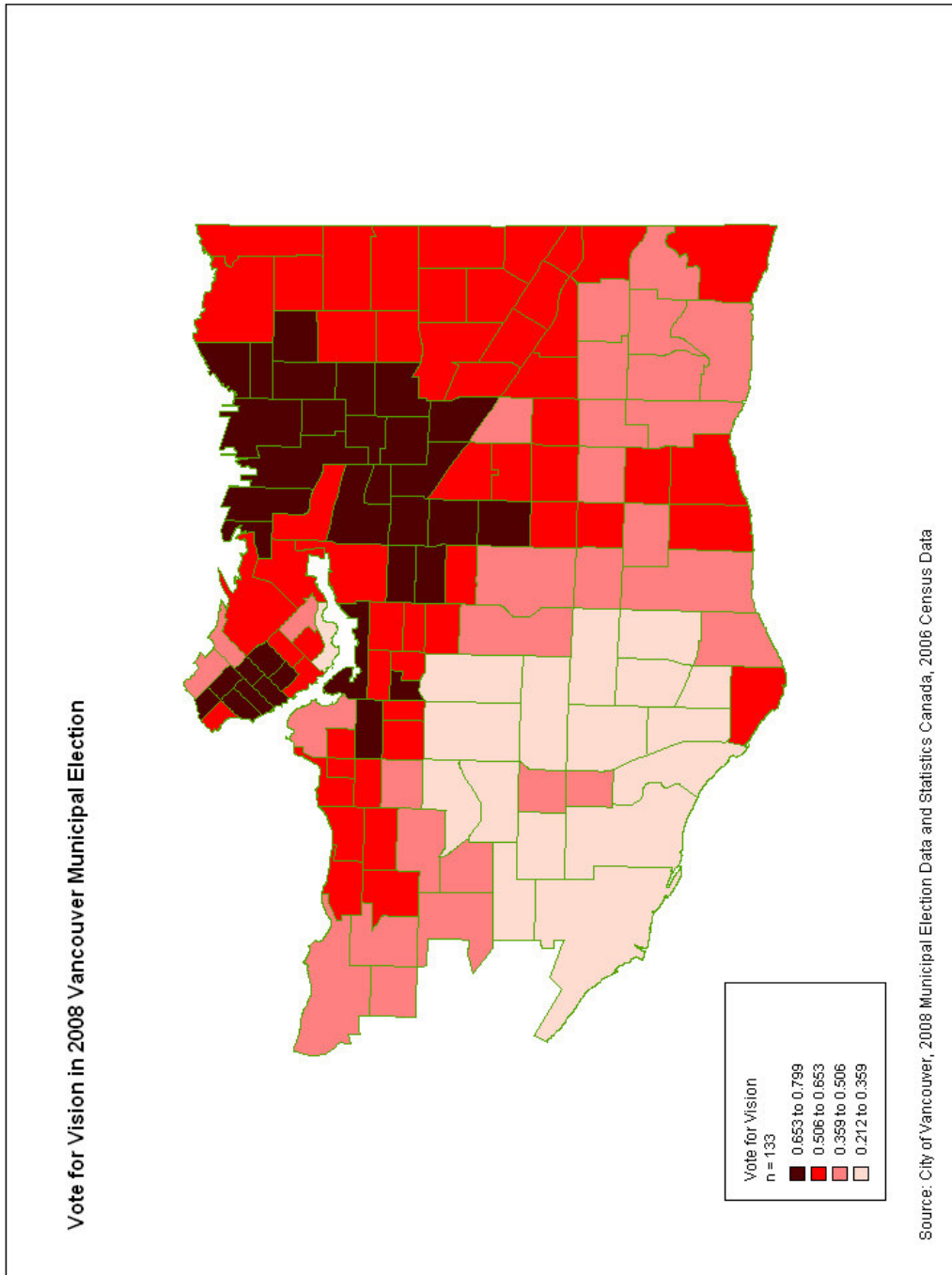
A total of seven thematic maps are provided to visually present the voting behaviour (voting for Vision) and socio-demographic data that has been found to be statistically significant through regression analysis. The socio-demographic data presented in these maps include those with a positive effect on the vote for Vision (rented dwellings, voter participation, and youth ages 20 to 29 years) and those with a negative effect on the vote for Vision (university education, Chinese immigrants, and persons ages 55 years and over).

Figure 3 shows the vote for Vision in the 2008 Vancouver municipal election. The vote for Vision ranges from 21.2% in the voting division with the smallest proportion of votes for Vision to 79.8% in the voting division with the greatest proportion of votes for Vision. Citywide in Vancouver, 54.4% of the voting population voted for Vision. As the map demonstrates, votes for Vision are concentrated in the north of the city, including much of the downtown peninsula, the voting divisions in the northern portion of the west side of Vancouver (Kitsilano, Fairview), and a large portion of the northeast of Vancouver.<sup>21</sup> The fewest votes for Vision are mostly in the southern voting divisions of the west side and some parts of southeast Vancouver. There are a few additional

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<sup>21</sup> Figure 2, provided earlier in this paper, shows a Vancouver map with the breakdown and location of the neighbourhoods/communities referred to in this section that describes the map findings.

Figure 3. Map of Vote for Vision in 2008 Vancouver Municipal Election



pockets of votes for Vision in the local areas of Marpole, Victoria-Fraserview and Killarney.

Figure 4 presents votes for Vision in 2008 and the rented dwellings in Vancouver in 2006, which range from 7.5% to 88.7% rented dwellings in a voting division. In Vancouver, 51.9% of dwellings were rented in 2006. The voting divisions with a high concentration of rented dwellings are for the most part concentrated in the downtown peninsula and surrounding areas. There are a few other voting divisions that are dispersed throughout the city with a high proportion of rented dwellings, but Marpole is the only area outside of those that neighbour downtown, that has more than 68.5% of rented dwellings. For the most part, the voting divisions in the southwest of Vancouver have the fewest rented dwellings. The map shows that most of the voting divisions near the downtown core that have a large proportion of rented dwellings, also have a high proportion of Vision votes. Furthermore, areas in the southwest and southeast of the city that have a smaller proportion of rented dwellings also have fewer votes for Vision.

Votes for Vision and voter participation in the 2008 Vancouver municipal election are shown in Figure 5. The smallest participation rate is 13.6% in a voting division, and the largest participation rate is 39.1% in a voting division. The participation rate for the entire city is 30.8% for the 2008 election. The map of Vancouver shows that the voting divisions with the highest participation rates are concentrated in several areas, including the west side, the centre of the city in and around the areas of Mount Pleasant, South Cambie, Riley Park, Killarney, and in areas of Hastings Sunrise and Grandview Woodlands. There are lower voter participation rates downtown, in large pockets of the east side of Vancouver, and in the areas of Oakridge and Marpole. It is evident from this map, that most of the west side areas, which have the highest concentration of voting divisions with high voter participation, are not the areas that have the highest proportions

Figure 4. Map of Rented Dwellings in 2006 / Vote for Vision in 2008

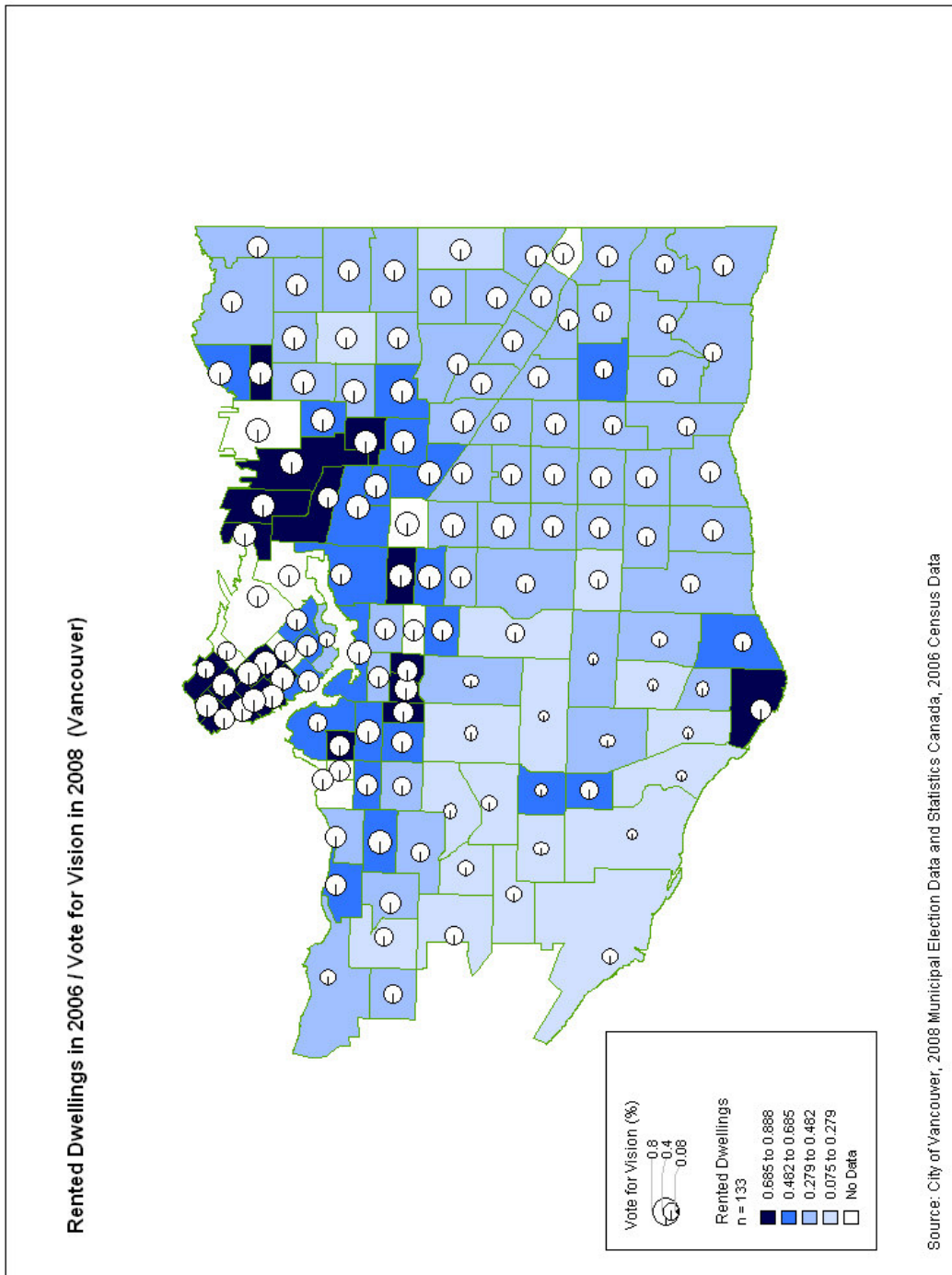
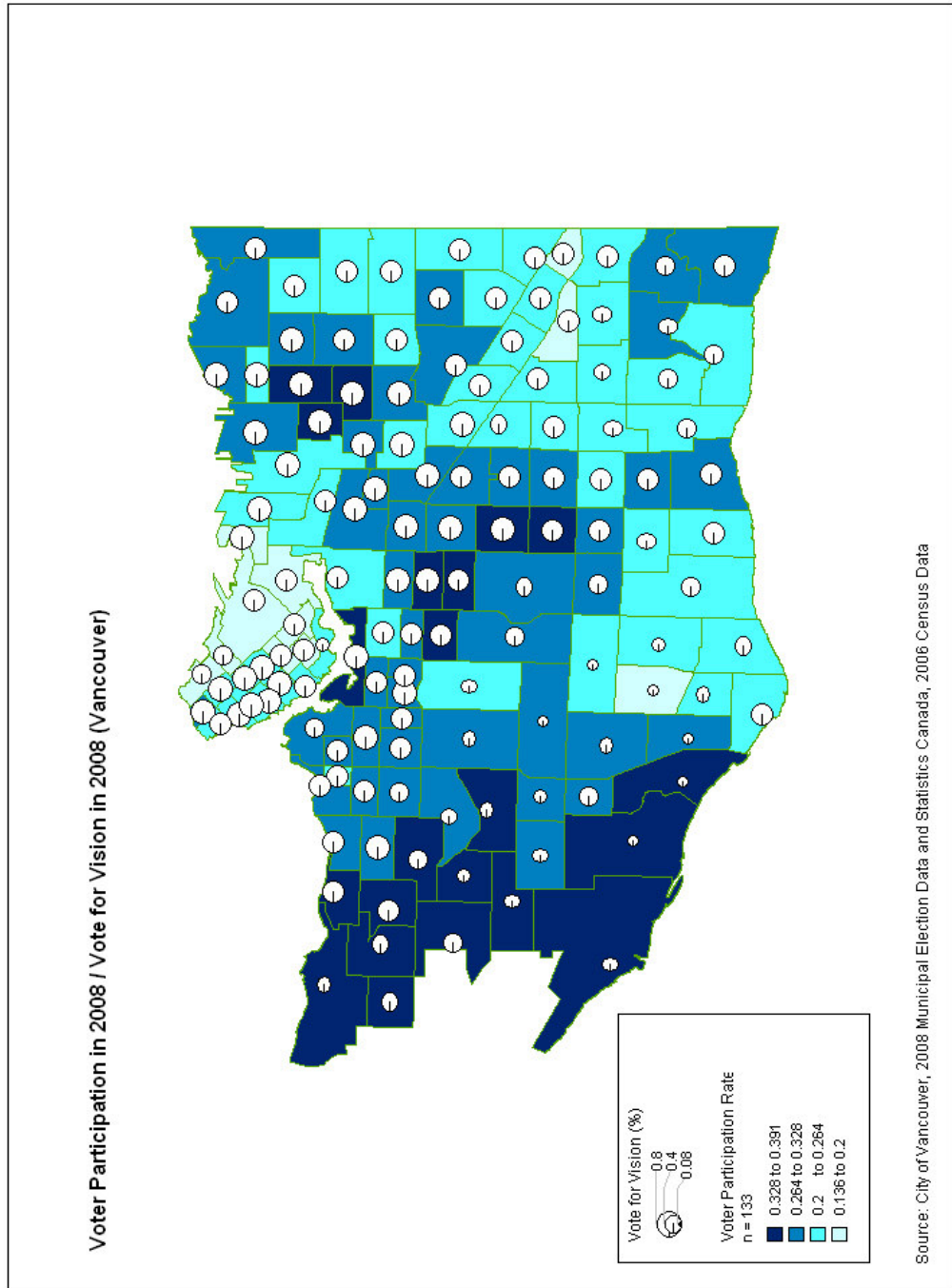


Figure 5. Map of Voter Participation in 2008 / Vote for Vision in 2008



of votes for Vision. There are however, areas with voting divisions that have a high voter participation rate and high rates of voting for Vision, such as Kitsilano and Fairview, and parts of Riley Park, Sunset, Killarney, Hastings Sunrise and Grandview Woodlands.

The votes for Vision in 2008 and percent of the population who are ages 20 to 29 years in 2006 are presented in Figure 6. The range of the percent of persons who are 20 to 29 years old is 9.7% to 33.5% in the voting divisions. Citywide, this age group makes up 16.8% of the population in Vancouver in 2006. This age group is mostly concentrated in the areas of downtown and neighbourhoods that are in the north of the city, near the downtown core. There are also smaller pockets of this age group in areas of Marpole, Sunset, Renfrew-Collingwood and Kensington-Cedar Cottage. In most of the areas where there is a large concentration of persons ages 20 to 29 years, there is also a high rate of voting for Vision.

Figure 7 presents data for votes for Vision in 2008 and voting divisions with proportion of persons with completion of a university certificate, diploma, or degree in 2006. Voting divisions with persons who have completed a university education range from the smallest with 10.7% to the largest with 62.6%. Citywide, persons with a university certificate, diploma, or degree, make up 38.8% of the population in 2006. The map shows that the voting divisions with the highest concentration of persons that have completed university are on Vancouver's west side and downtown. This map clearly shows an east and west side division. The only areas that have a high level of university completion and high level of votes for Vision are downtown and the northwest sectors of the city. Otherwise, the areas that have a high level of university completion are the same areas where there is a smaller proportion of votes for Vision.

Figure 6. Map of Youth Ages 20 to 29 Years in 2008 / Vote for Vision in 2006

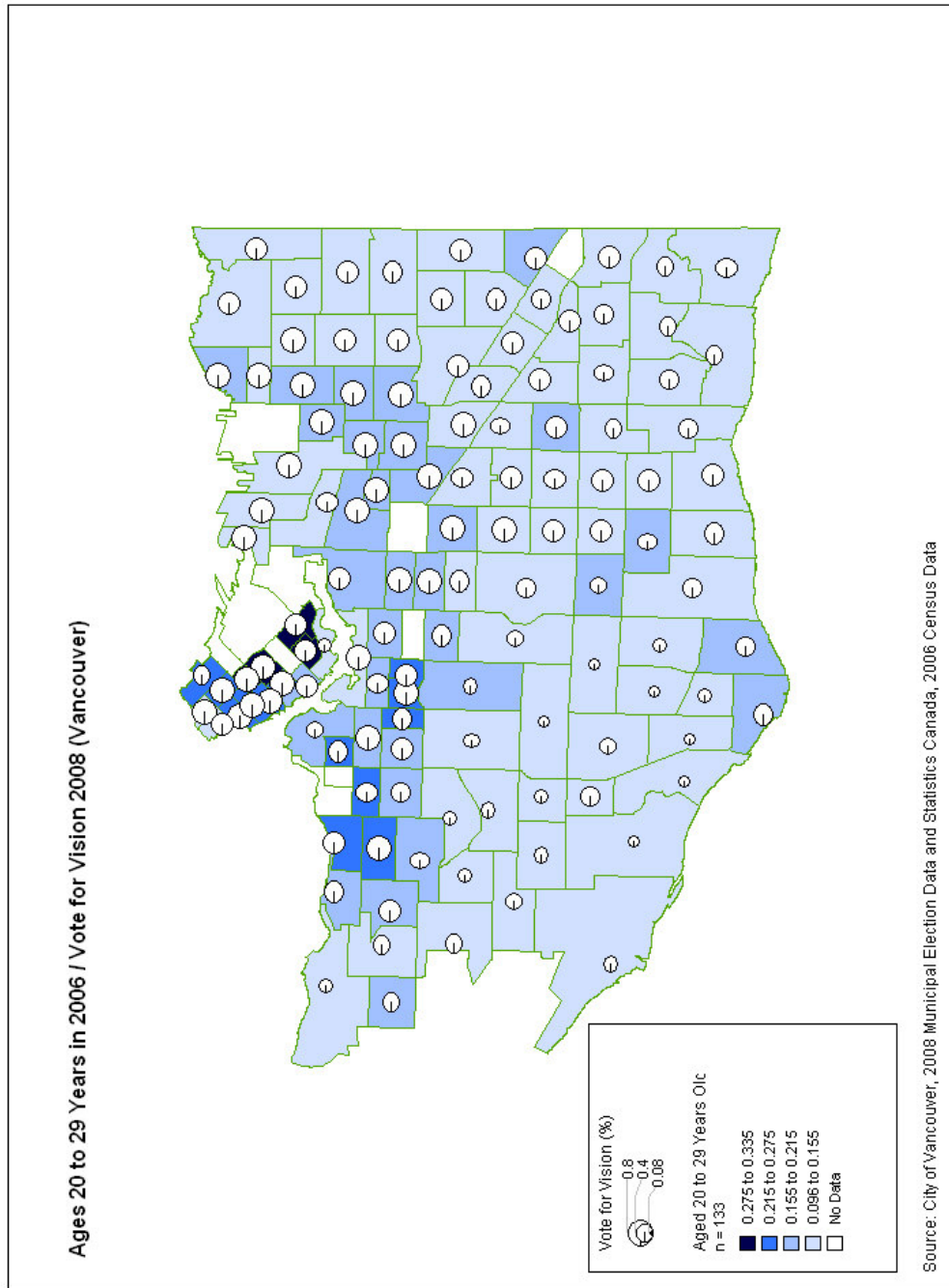
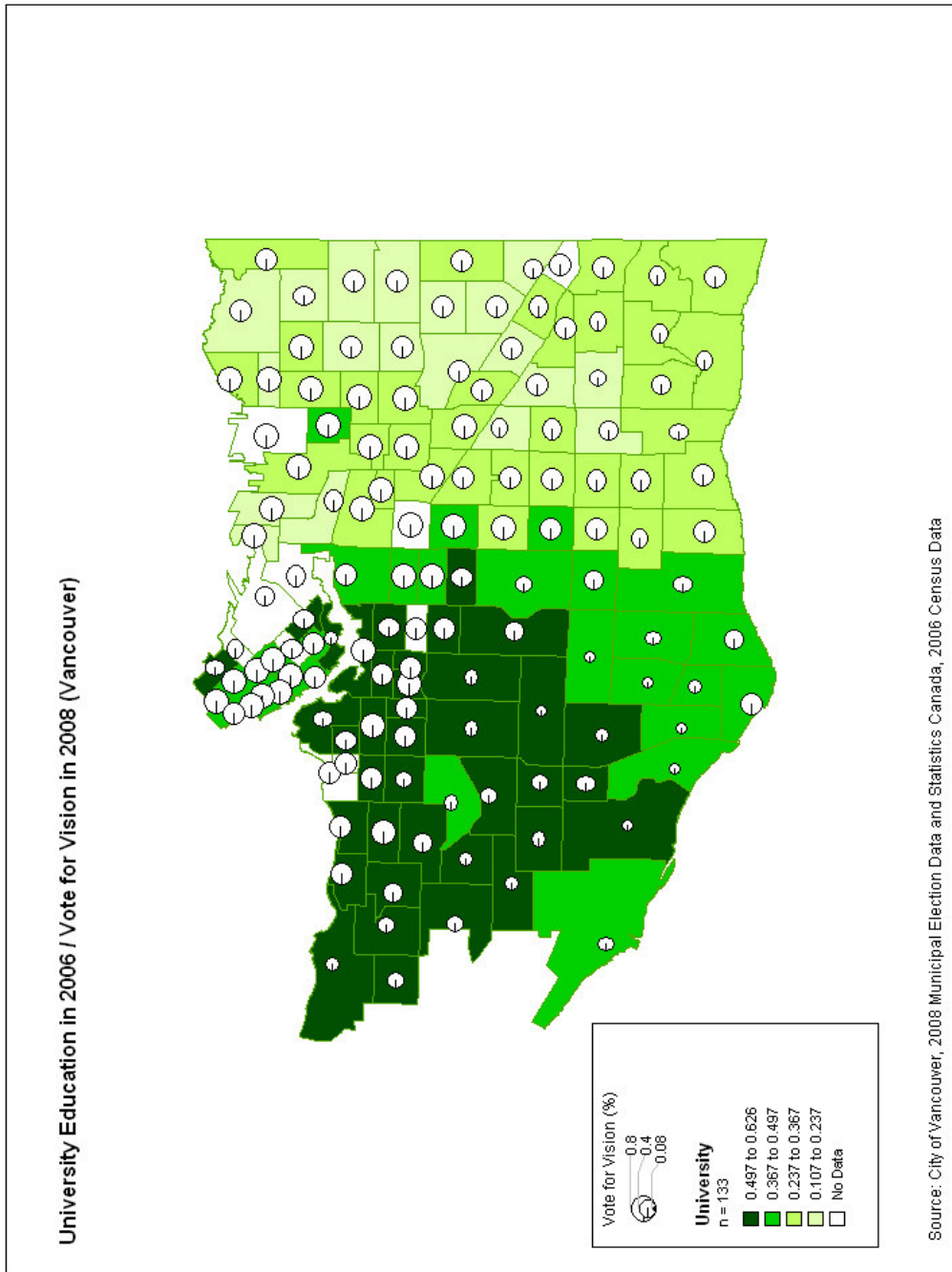


Figure 7. Map of University Education in 2006 / Vote for Vision in 2008

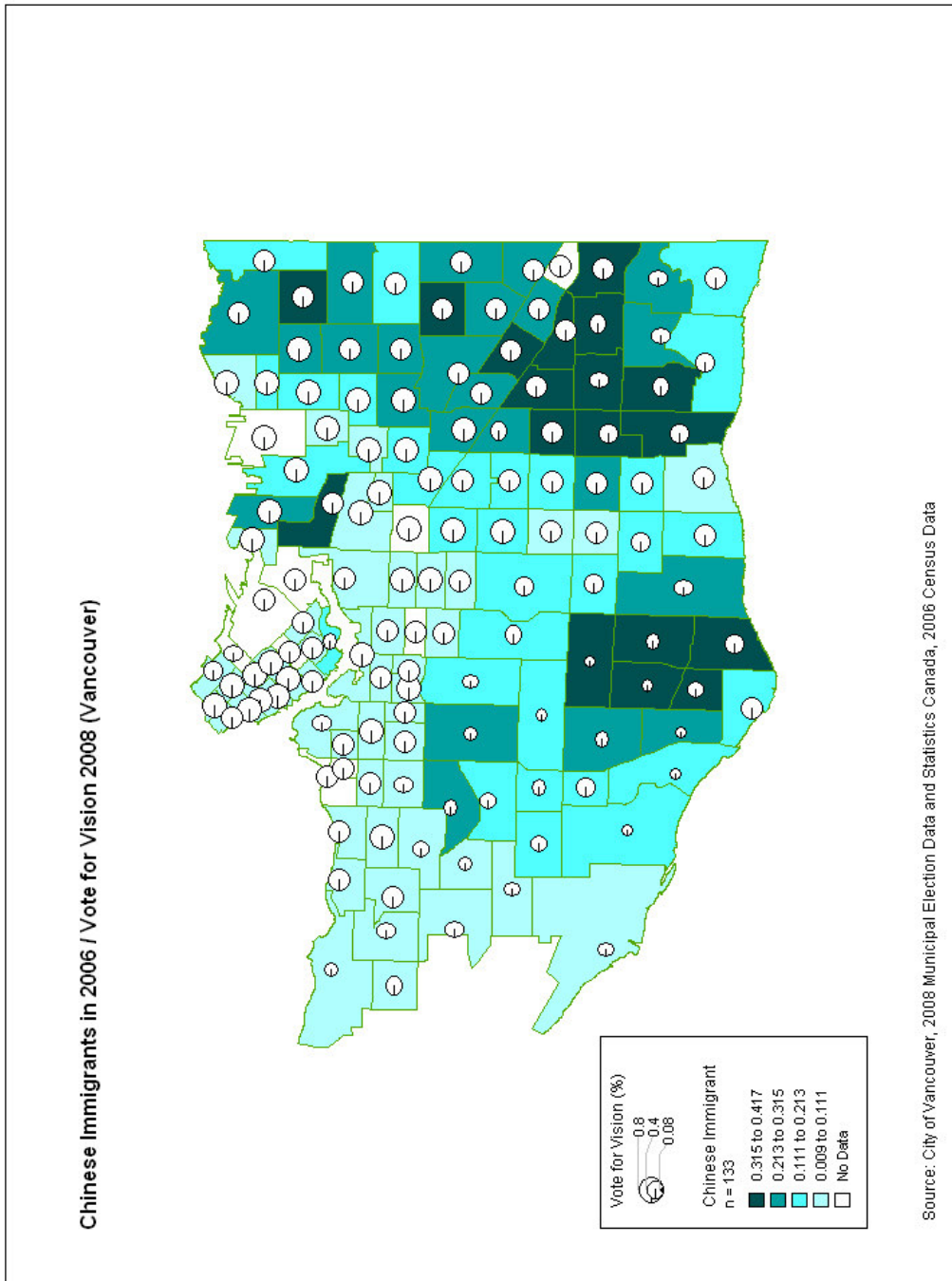




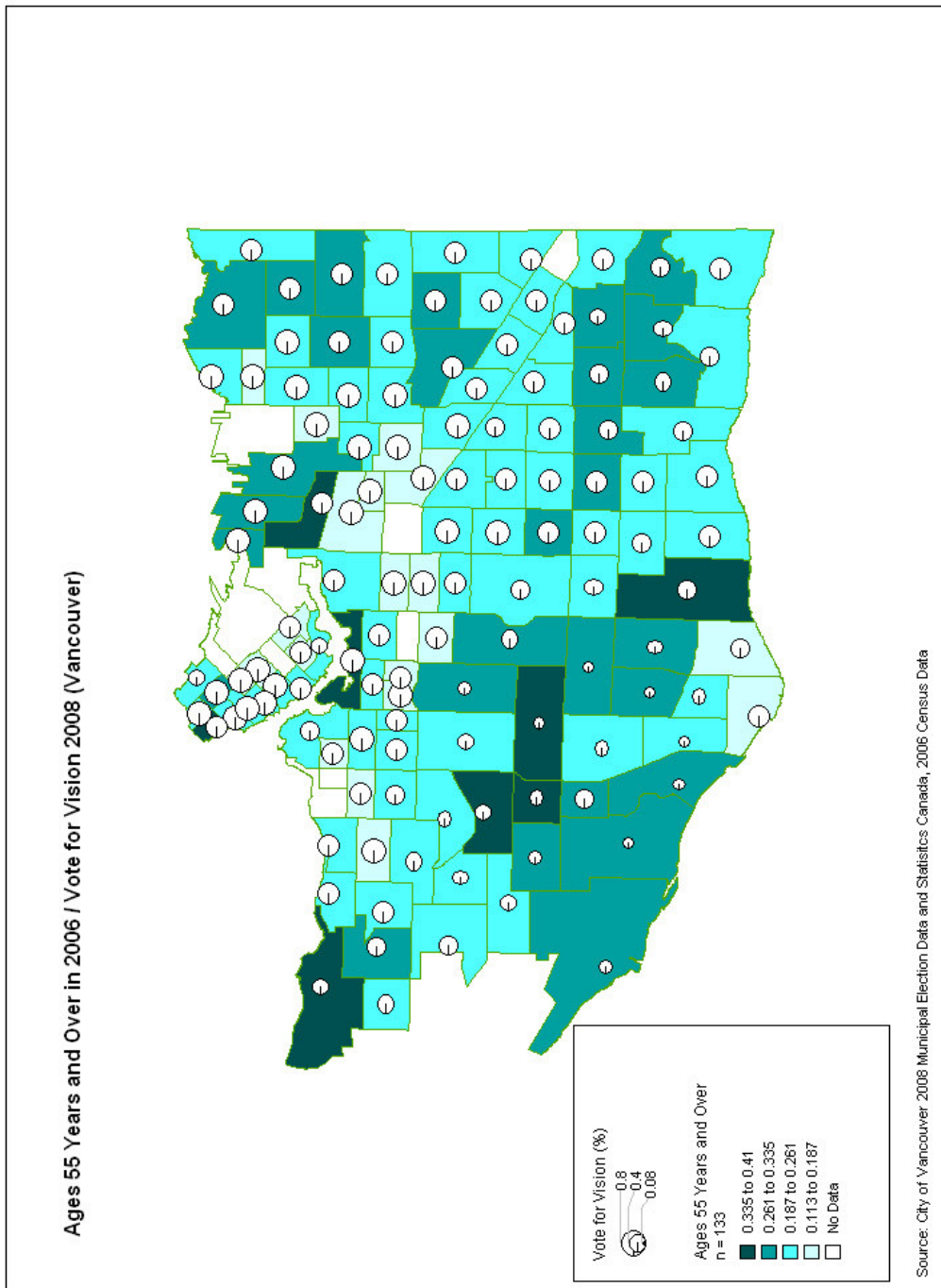
The votes for Vision in 2008 and proportion of the population by voting division that is made up of Chinese immigrants in Vancouver in 2006 is shown in Figure 8. The percent of the population that is made up of Chinese immigrants from China and Hong Kong ranges from 1.1% to 41.7% in voting divisions. Chinese immigrants make up 17% of Vancouver's population in the city as a whole in 2006. Concentrations of Chinese immigrants reside in areas in the centre of south Vancouver, including Oakridge, Kerrisdale, and Marpole, and in the southeast of Vancouver in Victoria-Fraserview and Killarney, and east Vancouver in Kensington-Cedar Cottage, Renfrew-Collingwood and Hastings Sunrise. There are also smaller concentrations in other parts of Vancouver, such as Strathcona and Arbutus Ridge. The voting divisions with the highest concentration of Chinese immigrants in the centre and east of south Vancouver, for the most part, are not voting divisions with strong support for Vision. There is more overlap between Chinese immigrants and voting for Vision in Renfrew-Collingwood and Hastings-Sunrise.

Figure 9 presents the vote for Vision in 2008 and the proportion of the population that is ages 55 years and over in Vancouver. The range of the voting divisions for 55 years and over is 11.3% to 41%. Citywide the proportion of persons ages 55 years and over is 23.9% in 2006. The concentrations of this age group are distributed through different parts of the city. There are concentrations in southwest Vancouver, the centre of south Vancouver and southeast Vancouver. There are also some smaller concentrations in the Downtown Eastside, Strathcona, Hastings Sunrise, and Renfrew-Collingwood. For these concentrations of persons ages 55 years and over, the proportion of the votes for Vision are greatest in the northern parts of the city.

Figure 8. Map of Chinese Immigrants in 2006 / Vote for Vision in 2008



**Figure 9. Map of Persons Ages 55 Years and Over in 2006 / Vote for Vision in 2008**



### **3.3 Summary of the Results**

The thematic maps provide context for the voting data and socio-demographic data. The maps provide a visual representation of the data and where there are concentrations, allowing for a spatial understanding of the data. The maps also further support relationships that exist between the voting behaviour and socio-demographic data. They offer a more nuanced examination of the variability within the voting divisions and thus can diverge from the predicted results from the regression analysis, since it forms conclusions on the average voting division. The maps show the effect of socio-demographics on the vote for Vision in various geographical communities of Vancouver, an observation that the regression (by using average voting division as the unit of analysis) cannot provide. For example, the regression predicts that with an increase in the percentage of rented dwellings in a voting division, the vote for Vision will increase. The maps confirm this predicted result powerfully, especially with respect to rented dwellings. There are, of course, voting divisions that diverge from the trend, but generally speaking, the predicted relationship derived from the regression and the strength of the impact of the variables are confirmed in the maps.

## **4 DISCUSSION AND CONCLUSION**

This chapter includes a discussion of the findings and knowledge gained from this research project and its value to the study of municipal elections in Vancouver. In addition, the limitations that exist with this project and some future possible studies are identified and described.

While there are some limitations with the results of this research project, the research does add to the knowledge about voting behaviour in the context of a municipal election case in Vancouver. Although it has been acknowledged that there are other variables that influence voting, in addition to socio-demographic variables, the findings of this study show that there is a base vote for each party, with particular demographic groups that each party tends to attract. Through regression analysis, the findings demonstrate that there is a statistically significant relationship between voting in the 2008 Vancouver municipal election and most of the socio-demographic variables (rented dwellings, ages 20 to 29 years, ages 55 years and over, university education completion, Chinese immigrants, and voter participation) that were identified in the hypotheses. Furthermore, the presentation of the votes for Vision in the 2008 municipal election and the socio-demographic data through thematic maps helps confirm these findings with a visual representation that adds to further understanding of voting behaviour at the level of the voting division.

Another important point of learning from this research project is that pre-existing census data can be used as an alternative or supplement to exit polling, to understand relationships between voting behaviour and socio-demographic variables. Although the use of census data limits this research to only socio-demographic variables and does not

allow for the study of other variables that influence voting behaviour, statistically significant relationships with voting behaviour are found. The use of existing socio-demographic data is more accessible to researchers than conducting resource intensive exit polls. In addition, the use of pre-existing data provides information about the entire potential voting population by voting division, and is not limited to responses of the exit poll, with only voters that participated in the election and generally only in a selection of voting divisions.

The findings of this research project are supported by several of the studies that are described in the Review of Literature in Chapter 1 of this paper. These studies identified in the literature review demonstrated that there were relationships between voting behaviour and the socio-demographic variables of rented dwellings, ages 20 to 29 years, ages 55 years and over, university education completion, Chinese immigrants, and voter participation.

Several of the research studies support the finding that a relationship exists between the variable of rented dwellings and voting for Vision. In the 2008 election exit poll, renters supported the Vision mayoral candidate in greater numbers, while homeowners supported the NPA candidate in greater numbers (Skelton 2008). Federal election studies in the literature also found that there was a relationship between voting behaviour or political attitudes and housing tenure (Gidengil et al. 2006; Walks 2005; Verberg 2000; Pratt 1987).

This project also finds that the variables of persons ages 20 to 29 years and voting for Vision have a positive relationship, while the variables of persons ages 55 years and over and voting for Vision have a negative relationship. This supports the finding of the 2002 municipal election study by Cutler and Matthews that the left-of-centre COPE received a greater proportion of the youth votes in 2002 (Cutler and

Matthews 2003, 5). The 2008 election poll also found that persons in the younger age groups (from 18 to 64) voted for Vision more often and persons 65 years and over supported the NPA more than Vision (Skelton 2008). A 2005 BC provincial election study found that the NDP had greater support with ages 18 to 30, while the Liberals had their highest support with persons who were 61 years and over (Erickson 2010, 142). There were also federal election studies and another BC provincial election study that demonstrated a relationship between age and voting behaviour (Gidengil et al. 2006; Walks 2005; Blake 1985, 87).

The findings of this project show that there is a negative relationship between voting for Vision and a university education, meaning these voters are less likely to vote for Vision and more likely to vote for the NPA. This supports the findings of Canadian and American federal election research studies that found there is a relationship between voting behaviour and education (Gidengil et al. 2006; Miller and Shanks 1996).

The findings of this research project demonstrate that there is a negative relationship between voting for Vision and Chinese immigrants, with Chinese immigrants less likely to vote for Vision and more likely to vote for the NPA. In their 2002 election study, Cutler and Matthews found that the non-European (assumed to be Vancouver's Asian community which made up the majority of non-Europeans in their sample) vote had an impact on voting behaviour, with the right-of-centre NPA receiving a greater proportion of their vote (Cutler and Matthews 2003, 5). In addition, the 2008 Vancouver municipal election poll found that those who are of Chinese ancestry voted for the NPA mayoral candidate in greater numbers than the Vision candidate (Skelton 2008). A 2005 BC provincial election study found that respondents from Chinese backgrounds were more likely to support the Liberal party (Erickson 2010, 144). There were also federal election studies identified in the literature that found that there is a relationship between

ethnicity, ancestry, or visible minorities and voting behaviour (Gidengil et al. 2006; Blais 2005; Walks 2005).

The finding of this research project that voting behaviour is affected by voter participation and that there is a relationship between voting for Vision and voter participation is supported by Kennedy Stewart's 1995 study. In this study, Stewart argues that those with higher socio-economic status tend to vote in larger numbers and are more likely to vote for the NPA (Stewart 1995, 59). In the voting divisions where the voter participation increased in 2008, there was increased support for Vision (Skelton 2008).

In addition to providing a better understanding of voting behaviour at an academic level, the findings of this research project can be used by political parties in Vancouver to better understand the demographic groups that they are attracting as voters and increase their participation. By understanding these demographic groups, the political parties can also develop policies and address issues that relate to them, to increase and solidify their vote.

#### **4.1 Limitations**

There are some limitations to this election research that must be identified. These limitations are related to several areas, including the research findings and their applicability beyond the 2008 Vancouver election, issues with the aggregate data used for the study, and issues with the electoral system itself.

One limitation for this research project is that it may not be applicable to other municipal elections. It would be difficult to do this type of research study in municipalities that do not have a party system or candidates that are obviously left-of-centre or right-of-centre. At the local level in Vancouver, while this particular study could be replicated for



the 2008 election, the results may not be the same for another Vancouver municipal election. When the next Vancouver municipal election is held in 2011, although the socio-demographic variables may be similar, the other variables that influence voting behaviour, such as evaluations of performance, the feelings voters have towards party leaders, attitudes toward particular issues, or economic conditions, may have a different impact on the outcome of the election. In addition, there may be a change in the parties that run mayoral candidates in the election, with the possibility that Vision and COPE will not agree to cooperate with each other and run only one mayoral candidate between them.

There are also limitations to available data that may not allow for similar studies in other municipalities or even in Vancouver. The socio-demographic data for previous elections may also not be available at the same aggregate level as the data used for this project. In addition, limitations exist with the data, as it is aggregate for a voting division as opposed to linked to a specific individual in an exit poll.

There are several possible limitations related to the use of this study when using it as a model for a similar study in another municipality. As mentioned, the socio-demographic data may not be available at the same aggregate level in other municipalities. In addition, it would be difficult to do this research without political parties or the ability to categorize the candidates as left-of-centre or right-of-centre. Furthermore, there would also be some comparability issues for municipalities that have ward-based elections, as Vancouver's municipal elections are held under an at large system.

In addition, the possibility of a structural bias within the City of Vancouver's electoral system must be considered. The *Vancouver Charter* allows owners of property in Vancouver to vote in municipal elections, even when they reside outside of

Vancouver. This however, does not seem to be an issue as of the 403,663 registered electors in 2008, only 210 were non-residents and of this 210, only 26 voted (City of Vancouver 2009, City Clerk's Department). There are also voters who voted through Advance, Mail, and Special Opportunity voting, that were not included in the analysis, but made up 16,352 of the total number of voters (City of Vancouver 2009, General Local Elections). However, when compared to the total vote, they voted for Vision and the NPA in almost the same proportions as those who voted at the polls within their voting divisions. In the 2008 Vancouver municipal election, of the total number of voters, 54.4% voted for the Vision mayoral candidate and 39.3% voted for the NPA candidate, while of those who voted in Advance, Mail and Special Opportunity polls, 55.1%% voted for the Vision mayoral candidate and 39.2% voted for the NPA candidate (City of Vancouver 2009, General Local Elections). In addition, since the identity and contact information for homeowners is available to municipal government as they pay property tax and is not available for renters, there may be a corresponding bias regarding information that is sent out. Apartment dwellers, both owners and renters, may not receive some informational materials about electoral candidates or the electoral process due to limited access to mailboxes.

## **4.2 Directions for Future Study**

Although this research project has had some very interesting findings, there is a great deal of potential to learn more about municipal voting behaviour in future studies. With the limitations that exist due to the length of this project, choices had to be made regarding the scope of the study, leaving potential opportunities for further study.

This study could be enhanced by considering additional socio-demographic variables and their relationship with voting behaviour. These variables could include additional available census data, such as mobility, which is related to how long a person

has lived in their residence, family composition, language spoken at home, recent immigrant, or a number of other interesting variables. The variable of religion also could be included in the year (once in every ten) that it is collected by Statistics Canada.

Another study could take place to increase the understanding of low participation rates in municipal elections. The relationship between socio-demographic data and voter participation could be tested to find out which variables impact voter participation.

In addition, a greater knowledge of voting behaviour in Vancouver could be gained, if a longitudinal study was done, with the socio-demographic variables used in this study. However, there would be major challenges with data availability and comparability over time. With the level at which the 2006 Census data is available, one is able to aggregate the data into voting divisions, but with previous data, the smallest available areas of Census data result in overlaps with the boundaries of the voting divisions. In addition, Statistics Canada data definitions change over time.

The study of electoral behaviour in other municipalities, with elections that involve party politics or a defined division between left-of-centre and right-of-centre politicians, could also take place. It would be interesting to learn if the same socio-demographic variables have an impact on voting behaviour in municipalities beyond Vancouver.

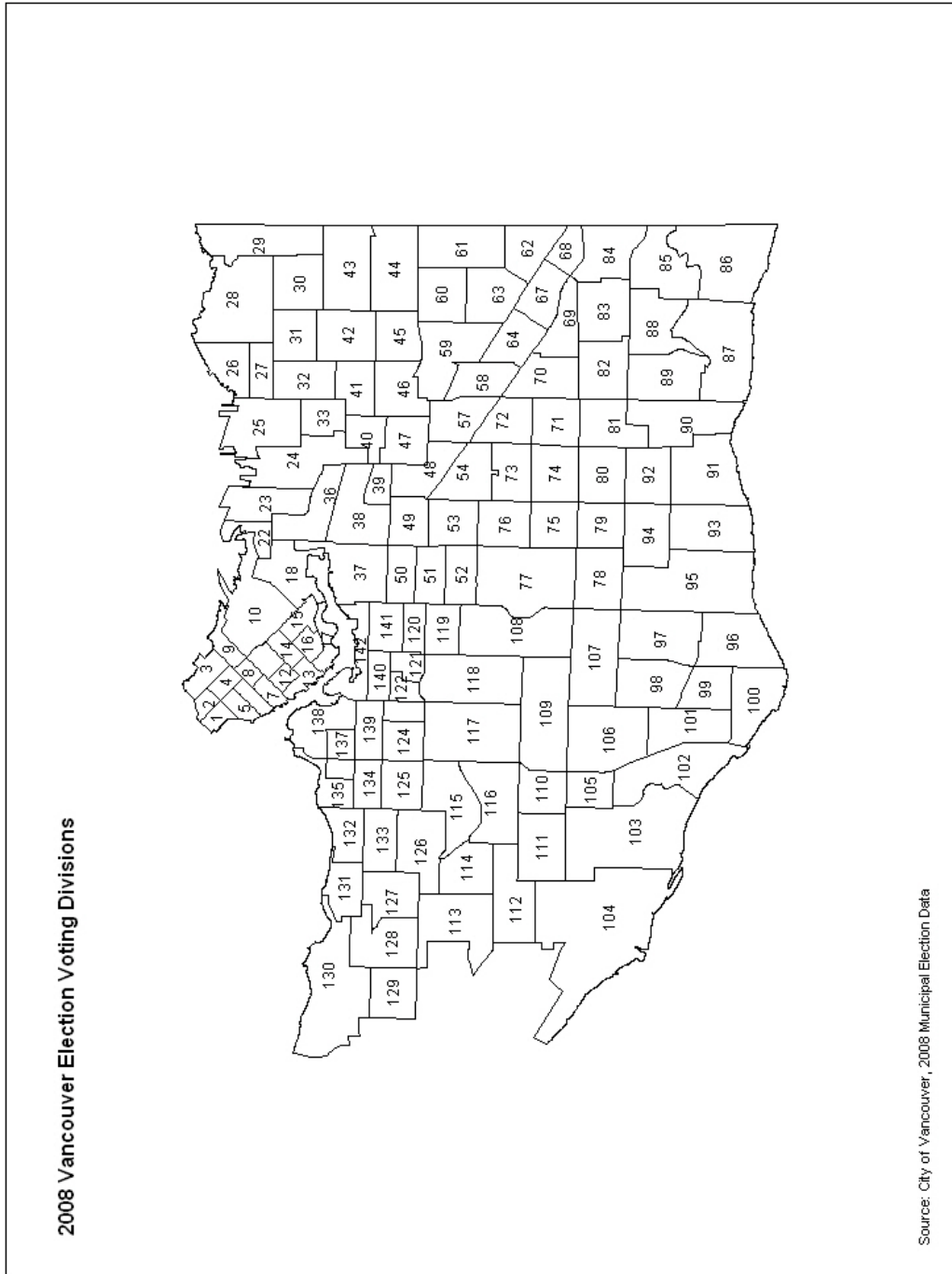
The findings of this research project also leave some interesting questions that could still be investigated. For example, one finding shows that there is a negative relationship between voting for Vision and immigrants from China and Hong Kong. This leaves the question: Why do Chinese immigrants not vote for Vision, a centre-left party, when immigrants have traditionally supported the Liberal Party, a party of the centre, in federal elections?

In conclusion, the findings of this research project provide new information that adds to the knowledge of municipal election behaviour, particularly in Vancouver. This research study did confirm that some of the findings of previous election studies that are related to the relationship between socio-demographic variables and voting behaviour are helpful to the understanding of this project. In addition, most of the hypotheses of relationships between socio-demographic variables and voting behaviour were confirmed by the findings of the regression analysis used for this research project. The findings of this study are that in the Vancouver 2008 municipal election, the socio-demographic variables of rented dwellings, youth ages 20 to 29 years, and voter participation had a positive effect on voting for vision, with Vision receiving more votes from these socio-demographic groups than the NPA. The socio-demographic variables of university education completion, Chinese immigrants, and persons ages 55 years and over, had a negative effect on voting for Vision, with Vision receiving fewer votes from these groups, compared to the NPA. Thematic maps of Vancouver that present both the votes for Vision and socio-demographic data of the 2006 Census further support the findings of the regression analysis by showing the concentrations of the socio-demographic data and votes for Vision. Finally, this research project demonstrates that aggregate census data can be used to study election behaviour and can be used in addition to exit poll surveys.

## **APPENDICES**

# Appendix A

## Map of 2008 Vancouver Municipal Election Voting Divisions



## Appendix B

### Data Analysis

**Correlation Table for Model 1**

	Vote for Vision	Inc \$0- \$39,999	20 - 29 yrs
Vote for Vision	1.000	.565	.440
Inc \$0-\$39,999	.565	1.000	.220
20 – 29 yrs	.440	.220	1.000

**Correlation Table for Model 2 – Estimation 1**

	Vote for Vision	Inc \$0- \$39,999	20 - 29 yrs	Rented	University
Vote for Vision	1.000	.565	.440	.691	-.318
Inc - \$0-\$39,999	.565	1.000	.220	.758	-.499
20 – 29 yrs	.440	.220	1.000	.586	.282
Rented	.691	.758	.586	1.000	-.027
University	-.318	-.499	.282	-.027	1.000

**Correlation Table for Model 2 – Estimation 2**

	Vote for Vision	Median Inc	20 - 29 yrs	Rented	University
Vote for Vision	1.000	-.677	.440	.691	-.318
Median Inc	-.677	1.000	-.298	-.742	.581
20 – 29 yrs	.440	-.298	1.000	.586	.282
Rented	.691	-.742	.586	1.000	-.027
University	-.318	.581	.282	-.027	1.000

**Correlation Table for Model 2 - Estimation 3**

	Vote for Vision	20 - 29 years	Rented	University
Vote for Vision	1.000	.440	.691	-.318
20 - 29 yrs	.440	1.000	.586	.282
Rented	.691	.586	1.000	-.027
University	-.318	.282	-.027	1.000

**Correlation Table for Model 3 - Estimation 1**

	Vote for Vision	20 - 29 yrs	Rented	University	Imm - Chinese	Imm - Europe	Vote Part	55 yrs+
Vote for Vision	1.000	.440	.691	-.318	-.380	.230	-.048	-.461
20 - 29 yrs	.440	1.000	.586	.282	-.494	.430	-.257	-.694
Rented	.691	.586	1.000	-.027	-.446	.383	-.306	-.301
University	-.318	.282	-.027	1.000	-.595	.534	.422	-.094
Imm - Chinese	-.380	-.494	-.446	-.595	1.000	-.648	-.379	.328
Imm - Europe	.230	.430	.383	.534	-.648	1.000	.195	-.123
Vote Part	-.048	-.257	-.306	.422	-.379	.195	1.000	.081
55 yrs+	-.461	-.694	-.301	-.094	.328	-.123	.081	1.000



**Correlation Table for Model 3 - Estimation 2**

	Vote for Vision	20 - 29 yrs	Rented	University	Imm - Chinese	Imm - Europe
Vote for Vision	1.000	.440	.691	-.318	-.380	.230
20 - 29 yrs	.440	1.000	.586	.282	-.494	.430
Rented	.691	.586	1.000	-.027	-.446	.383
University	-.318	.282	-.027	1.000	-.595	.534
Imm - Chinese	-.380	-.494	-.446	-.595	1.000	-.648
Imm - Europe	.230	.430	.383	.534	-.648	1.000

**Correlation Table for Model 3 - Estimation 3**

	Vote for Vision	20 - 29 yrs	Rented	University	Imm - Chinese	Imm - Europe	Vote Part
Vote for Vision	1.000	.440	.691	-.318	-.380	.230	-.048
20 - 29 yrs	.440	1.000	.586	.282	-.494	.430	-.257
Rented	.691	.586	1.000	-.027	-.446	.383	-.306
University	-.318	.282	-.027	1.000	-.595	.534	.422
Imm - Chinese	-.380	-.494	-.446	-.595	1.000	-.648	-.379
Imm - Europe	.230	.430	.383	.534	-.648	1.000	.195
Vote Part	-.048	-.257	-.306	.422	-.379	.195	1.000

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