
A Context for Change Management in the Capital Regional District

Changing People in a Changing Region

*Future Population, Labour Force,
Employment and Housing in the
Capital Regional District*

Draft

JULY 2009

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Prepared for:

Planning and Protective Services
Department
The Capital Regional District

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A Context for Change Management in the Capital Regional District Executive Summary

This report reviews historical trends in regional population, employment and housing within the Capital Regional District (CRD) and provides a set of trend-based long-range projections of change for the region to 2038. Projections within this report are intended to serve as a basis for future discussions and the CRD's five year review of its Regional Growth Strategy.

The projections begin by considering historical and recent trends, at both the national and provincial levels. While change at the national and provincial levels will provide the context within which change will occur in the CRD, it will be the unique demographic, social, economic, and environmental characteristics of the region and its communities that shape the direction and magnitude of change in the CRD over the coming decades. To that end, this report first reviews national level trends and projections, then considers the British Columbian context, before moving on to specifically consider the Capital Regional District's particular outlook to 2038.

Population Change

The important components of change to consider in projecting demographic change for the region are its natality and mortality rates, mobility trends and the current age profile of the region. Combining the projected levels and compositions of migration to and from the CRD with natural increase and the aging of its current residents provides a baseline projection of population growth and, more importantly, its change. The demographic projections show a population that will grow larger over the coming three decades, albeit at a much slower annual rate than has been seen historically. Over the coming three decades the region's population is projected to increase from 364,000 residents today (2008) to 390,000 by 2016, and to 475,000 residents by 2038. Growth of 111,000 new residents over the projection period, or 31 percent, compares to the past three decades which saw the CRD grow by more than 125,000 residents or by 54 percent.

More notable for the region will be issues of change in its resident population, not growth of it. The aging of the bulk of the region's current population through the retirement stages of the lifecycle will have profound implications on everything from the demand for healthcare services to the font size on local menus and newspapers. By 2038, the population aged 65 and older is projected to increase by 75,600 people, relative to only 27,500 people being added to the working aged population (aged 15 to 64). For every person added to the working aged population over the next three decades, 2.8 seniors would be added to the regional population. This will have profound implications for future labour supply and, by extension, the ability of the region's economy and employment to grow to meet changing demands.

While the CRD is not alone in being presented with the challenges and opportunities of an aging population, by virtue of it already having an older population than the national average, the region will need to be an early innovator in its responses to managing the upcoming changes to its demographic and economic futures.

Labour Force Change

As the population of the CRD grows older, increasing labour force participation rates for both men and women are expected to, in part, offset some of the implications of aging. That said, the 15 to 64 year old prime working age group will see very slow growth over the next three decades, growing at an average annual growth rate of just 0.3 percent. In aggregate, the region's projected labour force is expected to grow from 205,224 participants today to 246,824 by 2038. While growing by more than 41,000 people over the next three decades, average annual growth would fall into the range of 0.6 percent per year. This falls well below the three to four percent growth seen provincially in the late 1970's as the Post World War II boom generation was entering the labour force.

Over the coming years the region will face a future where the number of workers in the region may come to constrain the ability of its economy and employment to grow. As the economy is the source of revenue to pay for the goods and services that the region's residents require – from both private and public sector producers – the role that labour supply plays in economic change will become much more significant in the future than it has in the past.

Employment Change

The historical relationship between real provincial GDP and employment in the CRD formed the basis of projections of employment change in the region to 2038. The projection shows economic growth in the province slowing from the Ministry of Finance's assessment of 2.6 percent annual growth in 2013 towards 1.5 percent by 2020 and to one percent by the end of the projection period. This trend would see real provincial GDP grow from an estimated \$164 billion today (2008) to \$248 billion by 2038, a 51 percent increase over the next three decades.

Following its historical relationship to these changes in provincial economic activity, total employment in the region would grow from its current 198,452 jobs to just over 217,000 in 2016, 222,000 by 2026 and to 238,000 jobs by the end of the projection period. Under this scenario regional employment would grow by 20 percent over the coming three decades, with just under 40,000 new jobs added to the regional economy over the course of the projection.

Employment & Labour Force Resolution

As a resolution between the region's changing demography and economy, projected employment was compared to the projected size of the available labour force to ensure that unemployment fell within a reasonable range. The two projections show that the unemployment rate is expected to remain in the range of structural unemployment (three to four percent) over the longer term of the projection period. Given the assessments of economic growth for the next couple of years (or decline for 2009) in British Columbia, the short term unemployment rate is expected to increase slightly, into the range of six percent, before falling back to the three to four percent range for the duration of the projection period.

Over the coming decades, employment growth in the region is expected to be tempered by a slowly growing labour force. Given the CRD's older population profile today, and the labour force implications of their aging into retirement over the coming three decades, it will be this aging population which will ultimately determine the speed limit at which the region's economy and employment can expand.

It is interesting to note other implications of this resolution. First, if long run economic growth is expected to be more robust than demonstrated by the long run trend line, a larger labour force (and by extension population) would need to be realized within the region in order to accommodate the additional number of jobs. Additional growth in economic activity could be achieved through increased productivity of the region's future labour force. However, this would imply increases in productivity that would be well in excess of what has been achieved historically. While certainly possible, future productivity gains may require much more resources than those achieved in the past, due again in large part to the implications of our aging workforce.

Housing Change

Changing demography in the Capital Regional District will also have a significant impact on housing growth and change in the region. Using an occupancy-based definition of housing demand – the total number of private dwelling units required to house the residents of the CRD – a projection of housing occupancy demand by structure type showed that while the region's housing stock will remain predominantly ground oriented over the coming years, continued population growth and change will support shifts towards other forms of housing.

Combining the age specific lifecycle pattern of maintaining a home with the projected 31 percent growth in the region's population, results in a 35 percent increase in total housing occupancy demand by 2038 – or 62,836 new units to accommodate the region's future population. The greatest relative growth would be seen in the apartment segment of the market, growing by 50 percent, as 25,545 new apartment units would need to be added to accommodate projected demand. Ground oriented accommodation on the other hand is expected to grow more slowly, increasing by 34 percent between 2008 and 2038. The additional number of ground oriented units would outweigh apartments, with 37,292 units added to accommodate projected occupancy demand. Even with this shift in maintain rates towards apartments, by 2038 the region would still be predominately characterized by ground oriented units. Of the total housing stock of 223,000 units projected for 2038 two thirds of units would be ground oriented (compared to 68 percent today), while apartments would account for 33 percent (relative to 32 percent today).

Sub-Area Projections

Within the context of the region's growing and changing population, of the 111,000 person growth projected for the CRD as a whole, the West Shore sub-area would see the most significant change over the course of the projection period. While the CRD would grow by 31 percent, the West Shore is projected to grow by 88 percent, as 57,000 new residents move into the area by 2038. The Core would add the second greatest number of new residents growing to just under 280,000 by 2038 (37,360 new residents, 15 percent growth). The Peninsula, by contrast, would see a faster growth rate than the core (25 percent), but would add the smallest number of new residents, growing by 10,380 people. This pattern of growth would see the West Shore increase its share of regional population from 18 percent in 2008 to 26 percent by 2038. The Core however would see its share decline from 67 to 59 percent, while the Peninsula is expected to just maintain its current eleven percent share.

Strategic Considerations

In considering the projections presented throughout this report, it is important that strategic discussions focus on the “why” rather than the “how many”. The CRD will experience much more *change* in the coming years than it will *growth*. The regional population projection shows total population growth of 31 percent over the projection period with growth in the 65 plus population of almost 120 percent. Thus, while it has become a convention of regional planning to equate plans with *growth management*, it is essential that such planning be conducted within a wider context of *change management*.

An example of such change is demonstrated in the region's older residential communities, with current age, housing and mobility data being a reflection of the changes that have occurred in these communities as they and their residents move through the various stages of the lifecycle. For example, the typical (modal) age group in the Peninsula sub-area is 55 to 59, while the typical residents of the West Shore are between 42 and 46. The West Shore has effectively become, for the recent generation of home owners, what the Peninsula was for a previous one – a place to put down roots and build the family tree.

With half of the population on the West Shore being under the age of 38 (the median age), and half of the population in the Peninsula being over the age of 48, it is appropriate to consider the West Shore as a place where families are taking kids to grade school while the Peninsula is one where they are sending them off to college. The different lifecycle points at which each of these communities are at today will have significant implications for housing occupancy in the coming years, as there will be more empty nests in the Peninsula and more new ones in the West Shore. This means that average household sizes in the Peninsula have begun a decline that will last for the next couple of decades, only to be reversed when the next generation of families move in and begin the next family cycle. This, in turn, will mean that population targets based on current occupancy will be lower than what actually occurs even with relatively low levels of development activity. While this demographic transformation of the Peninsula will be a new experience for its communities, it is not a new one for the region; it is what characterized the older communities of the Core a generation ago. It is also what will characterize the West Shore a generation or so from now.

Introduction

This report documents the process and outputs of a research project to produce demographic and economic projections for the Capital Regional District (hereafter referred to as the *CRD* or the *Region*) over the 2008 to 2038 period. This research was commissioned to provide inputs to the CRD's five year review of its Regional Growth Strategy; presenting information on historical and recent trends at the national, provincial and regional levels, and projections of the implications of these trends for demographic, economic and housing occupancy change in the region.

The CRD is a large and diverse region, encompassing communities from Sidney and North Saanich at the north end of the Peninsula to Victoria at the southern-most tip, to Oak Bay on the east and extending west to include Sooke and the Juan de Fuca electoral area to Port Renfrew. According to the most recent Census count, the Capital Regional District had a population of 345,164 residents in 2006, eight percent of the province of B.C.'s total population of 4.1 million. The District Municipality of Saanich, with a 2006 Census population of 108,265 was the most populous community in the region in 2006, followed by the City of Victoria with 78,075 residents. The next largest community, the City of Langford, was considerably smaller, with a 2006 population of 22,459 residents. With respect to population growth, over the last Census period (2001 to 2006), View Royal saw the greatest relative increase in its population, growing by 21 percent or almost 1,500 new residents. In terms of absolute growth, Saanich added the greatest number of new residents (4,611), followed by Victoria (3,932) and Langford (3,619), with these three areas collectively accounting for 63 percent of the region's growth.

The current (2008) population of the region, adjusted for the Census undercount and including change that has occurred since the 2006 Census, is 364,108 residents. Over the past decade the population of the Capital Regional District has grown by eight percent – from 335,844 residents in 1998 to the 364,108 of 2008 – compared to an increase of ten percent provincially. The growth and change that the region's population will experience in the future will be influenced by change at both the larger provincial and national levels, as well as by the unique characteristics of the region and its communities. The dominant demographic theme that will be expressed within the region, and within its larger context, will be that of an aging population; with every part of the region, and of Canada, experiencing relatively rapid growth in the number of older people and relative slow (and even declines) in the number of younger people.

This means a demographic future that will be significantly different from the past. As a context for change and change management, this demographic shift will have profound implications not only for housing and land use within the region, but for its economy and that of the country as a whole. The relationship between demographics and economics was recently highlighted in a speech by David Dodge, the recently retired Governor of the Bank of Canada, which the press encapsulated as a “cautioning that Canada needs a productivity miracle to avoid a demographic torpedo to the economy”. The concern is that the aging of Canada's population – with rapidly increasing numbers in the retirement stage of the lifecycle and a static younger population – will reduce the available supply of labour to the point that it will significantly constrain economic growth. The labour supply contribution to real national economic growth is projected to slow from about 1.4 percent recently to 1.0 percent by 2010, further to 0.6 percent by 2016 and even lower thereafter. With the demands of an aging population on the economy increasing, there will be the need for commensurate economic growth in order to pay for pension plans and social programs. The concern is that the constraint of a slowly growing labour supply will mean that the economy cannot achieve the real growth in the range of two to three percent per year that will be required.

Dodge stated that this concern could only be addressed by Canada moving away – by design or by default – from its historical patterns of population change, labour force participation and productivity. Canada must move “off trend” by consistently increasing the labour productivity input to economic

growth (along with increasing participation rates and immigration) enough, not only to offset the decline in the labour supply input that will inevitably result from our aging population, but to ensure that the economy can grow to meet the increasing needs of an aging population.

This “new economic paradigm” is reflected in the approach and projections of the Capital Regional District’s population, its labour force and employment that are presented in this research. The baseline projection of change in the CRD is a **trend-based projection**. The approach used to develop this baseline was to build on a foundation of empirically observed long run historical trends in the region, extending these trends into the future in a way that acknowledges both their long-run patterns and more recent evidence which may indicate future shifts in these long run trends. The result of the modification of long run trends in light of recent evidence is that the projections presented here represent trend-based scenarios rather than simply trend scenarios.

Some of the adjustments made to trends were dictated by mathematics – if long term trends in the postponement of births experienced in the region continue into the future, at some point there would be no births, so the historical long run trend in postponement must be changed for a reasonable projection of future population. Others were dictated by inference – the past three decades have been characterized by a decline in age-specific male labour force participation rates in the Capital Regional District. While a purely historical trend projection would see these declines continue, tightening labour markets are expected to lead to increasing participation for all male age groups. Thus the trend-based projection of labour supply considered here has male rates, most noticeably in the second half of the working lifecycle, increasing in spite of their long run historical decline.

The projections described in the following pages represent the results of this series of linked projections which begin with the national and regional demographic context and finish with the demographic and employment implications for three large sub-regions – the Core, the West Shore and the Peninsula – within the CRD. These projections provide a framework for the discussion of strategies to manage the change – nationally, provincially and regionally – that can be anticipated for the next three decades. In this context, it is important to emphasize that long term projections such as these are more concerned with time periods than with specific dates, with orders of magnitude rather than with specific values, and with strategic rather than with definitive plans.

Stage One: Dimensions of Demographic and Economic Change

1. The National and Provincial Context for the Region:

With an open metropolitan economy and a high degree of population mobility (increasingly from international origins), the future of the Capital Regional District will, in part, be shaped by its external context. On the demographic side, the pattern of projected population growth and change in Canada and its provincial regions will determine the degree to which the Capital Regional District (CRD) will have a pool of migrants (both domestic and international) to contribute to its future population. Therefore, as a preamble to the projections for the CRD, it is essential to define the demographic contexts anticipated for both Canada and the province of British Columbia.

a. Directions of Growth and Change in Canada

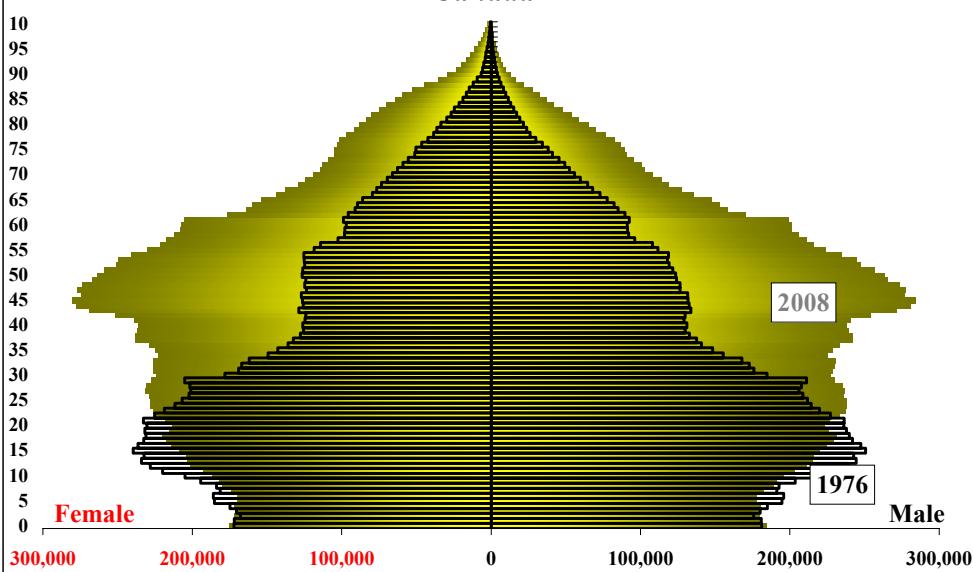
Over the past thirty five years Canada's population has grown from 23.4 million people in 1976 to 33.3 million today (2008). Over this period, additions to the population averaged just over 300,000 people per year, resulting in an average annual growth rate of 1.1 percent. While the population has always grown, the rate of growth was far from constant – above average growth was seen in the mid 1970s, early and late 1980s, and in the early 1990s. Below average growth characterized the late 1970s, mid 1980s, late 1990s and the past decade. Between 1998 and 2008 Canada's population grew at an average annual rate of 1.0 percent, compared to 1.1 percent over the 1988 to 1998 decade and to 1.2 percent over the 1978 to 1988 decade. This long run slowing continues a pattern that has been experienced since the rapid growth of the post World War II years; at that time, population growth averaged 2.6 percent in the 1948 to 1958 decade, and 1.9 percent per year between 1958 and 1968.

Underlying this slowing of overall growth over the period has been a dramatic change in the age profile of the Canadian population. The early 60's was characterized by the birth of the Post World War II Boom generation; high birth rates resulted in record numbers of annual births, creating the "big generation" of baby boomers – people born between 1946 and 1965. The baby boomers are currently 43 to 62 years old and account for 30 percent of Canada's current population. In turn, the past four and half decades has been characterized by the aging of this cohort through the major life milestones of completing school, entering the labour force, purchasing a home and settling down.

Figure 1

Population by Age and Sex, 1976 and 2008

Canada



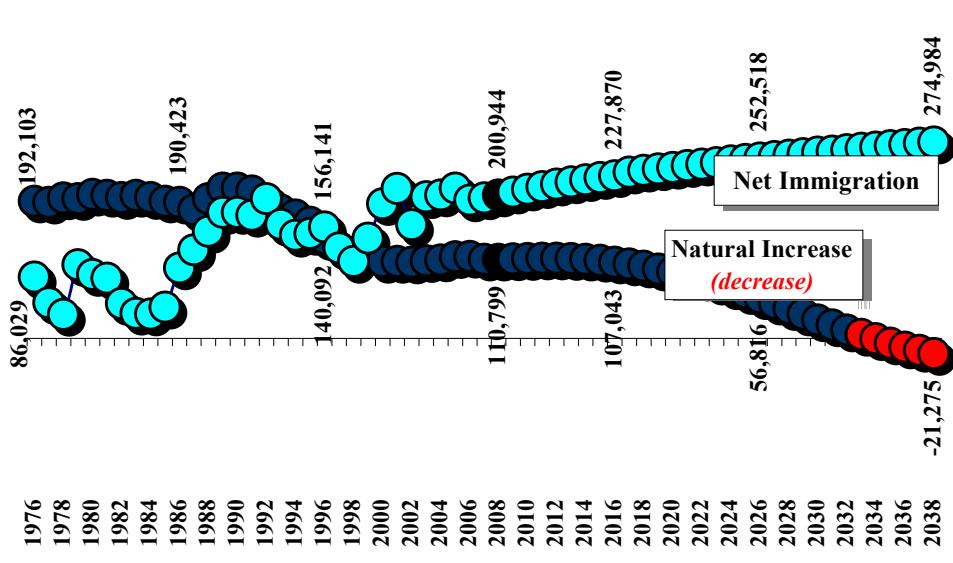
In 1976, the typical person in Canada was someone aged 13 to 17, born at the peak of the boom from 1959 to 1963 (Figure 1). Thirty two years later, in 2008, Canada's typical resident remains the typical baby boomer; now thirty two years older, and aged 45 to 49, they are looking toward the next major milestones – paying off the mortgage, the children finally moving out, and retirement.

The bottom of this profile illustrates the shrinking number of younger people in the generations that followed the boomers; there are

Figure 2

Components of Change, Canada, 1976 to 2038

1976-2008 Actual; 2009-2038 Trend Based Projection

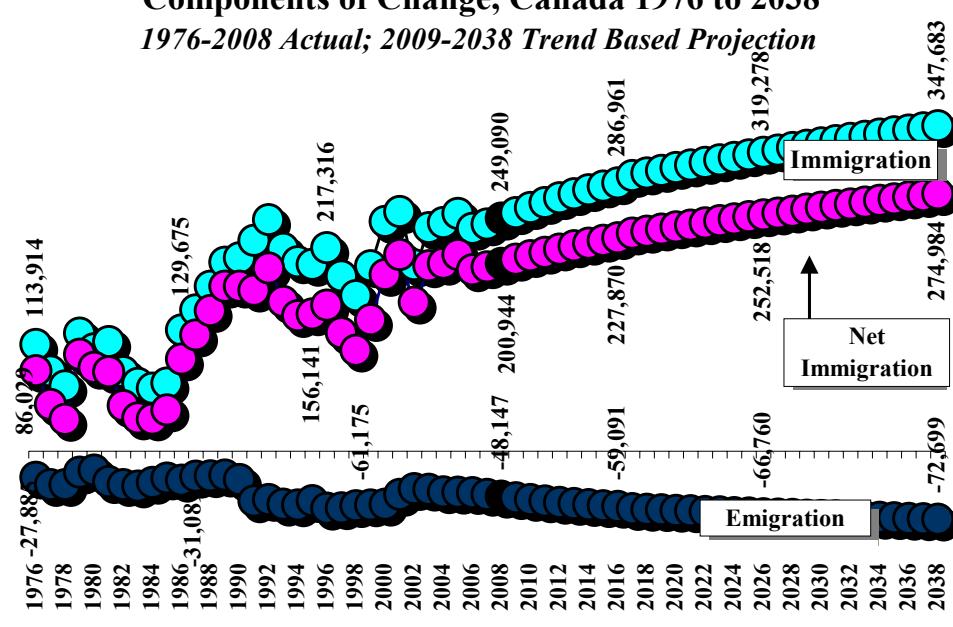


immigrants minus the number of emigrants, plus changes in the number of Canadian's living abroad). Historically, natural increase contributed more people to Canada's population than net immigration: between 1976 and 2008 net immigration added an average 135,000 new residents annually, while natural increase added an average of almost 170,000 (Figure 2). From 1991 onward however, the contribution of natural increase has declined, adding an average of only 134,000 people per year versus net immigration's average of over 172,000.

Figure 3

Components of Change, Canada 1976 to 2038

1976-2008 Actual; 2009-2038 Trend Based Projection



The slowing rate of growth in the Canadian population over the past 32 years also masks changes to the factors that contribute to that growth. While births were the driver of growth in the post war years, declining fertility rates and an aging population has meant that natality's relative contribution has declined. Immigration has played a much greater relative role in growth over recent years, a trend that will continue as Canada's population continues to age out of the childbearing stages of the lifecycle.

The factors that directly contribute to the change in the number of people in the population are usually grouped into two broad categories: *natural increase* (the number of births minus the number of deaths) and *net immigration* (the number of non-permanent residents and

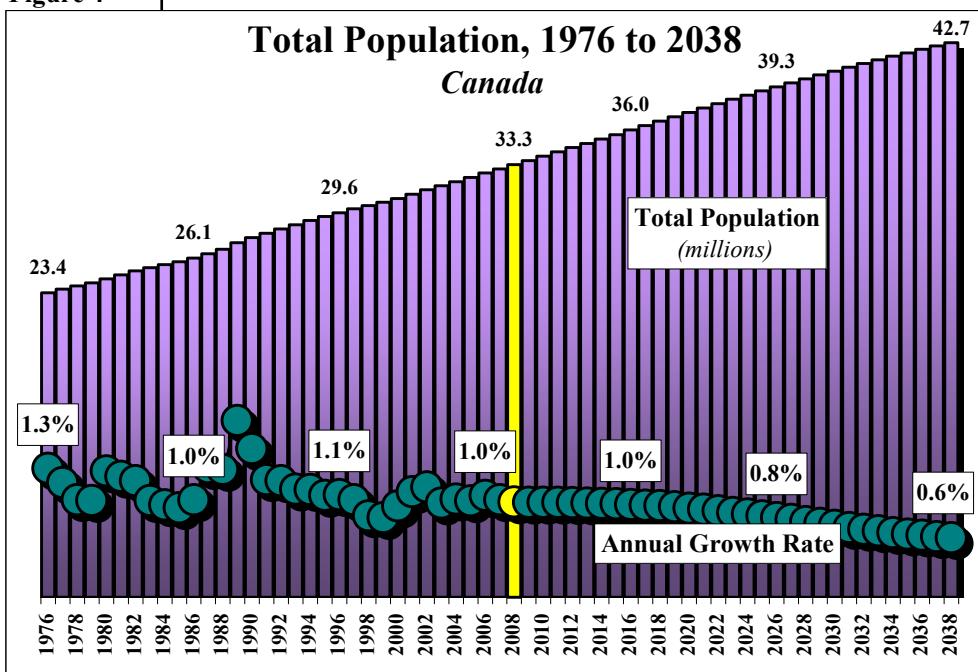
By 2008 net immigration added just over 200,000 people, while the contribution of natural increase had fallen to 110,000. The birth rate in Canada has been relatively stable for the past three decades – at a below replacement level birth rate (women in Canada today average 1.6 children with the replacement level being 2.1). Historical trends indicate that a relatively stable total fertility rate can be reasonably anticipated in the future. Similarly, life expectancies in Canada have been increasing, albeit slowly and at a declining rate, over the past decades; something that, again, can be reasonably anticipated to characterize our future.

Combined with a growing and aging population, these trends in vital rates will result in a relatively constant annual number of births and an increasing number of deaths, as more Canadians age into higher mortality stages of the lifecycle. Thus, the contribution of natural increase will continue to decline, becoming natural *decrease* by 2033 as the number of deaths come to exceed the number of births.

Meanwhile, immigration is projected to increase from 249,090 immigrants in 2008 to just under 320,000 annually by 2026, and further to just over 347,000 by 2038 (Figure 3). This projection involves immigration increasing from its current rate of 0.76 percent of the Canadian population to 0.82 percent over the next decade, stabilizing at this level for the remainder of the projection period. In discussions of population migration, it is essential to also consider emigration – people from Canada who take up permanent residence in other countries. For every 1000 immigrants who have come to Canada since 1976, roughly 24 people emigrated from Canada to other countries; emigration then has increased from the 30,000 persons per year range seen in the 1970s to its current level of 48,000 people per year. Following historical trends, this would see emigration increase to the 70,000 persons per year range by 2038. The net result would be a pattern of net immigration to Canada that is expected to increase from the 200,000 seen today to 252,000 by 2026, and further to 275,000 by the end of the projection period.

With the immigration flow concentrated in the under 35 age group (and hence younger than the baby boom cohort), immigration will help to slow the aging of Canada's population. That said, it will not stop it; the aging of the country's ten million baby boomers will easily overshadow the contributions of both net immigration and births over the coming decades.

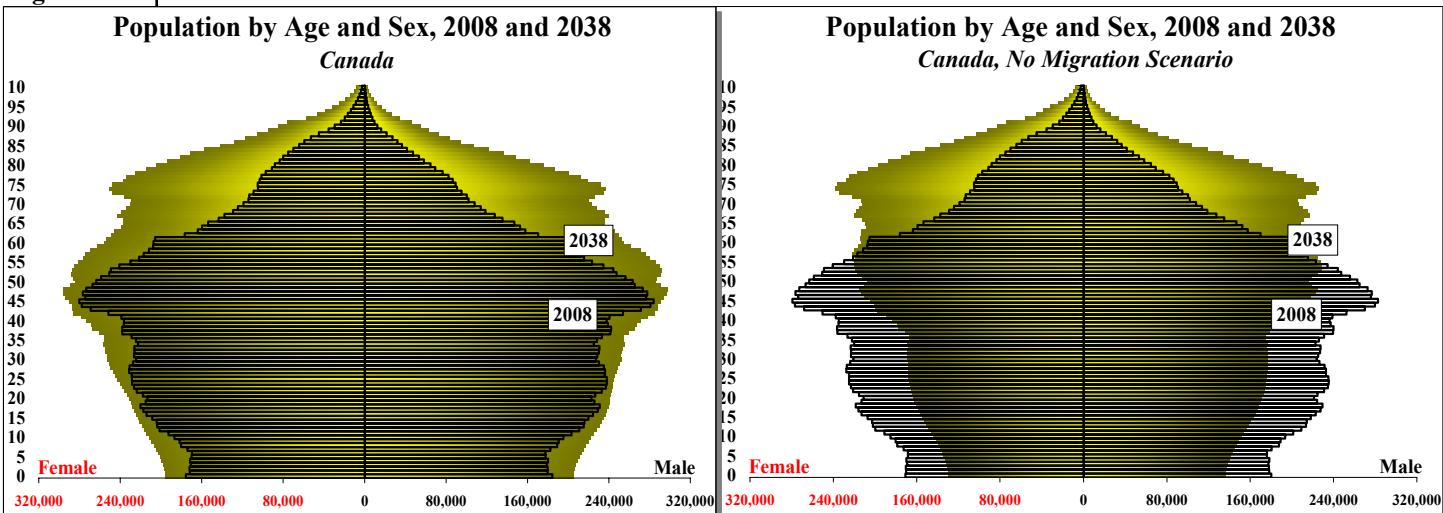
Figure 4



Trends in the components of natural increase and net immigration, when combined with the aging of Canada's current population, results in a projection of Canada's population growing from 33.3 million residents in 2008 to 36.0 by 2016, and further to 42.7 million people by 2038 (Figure 4). This represents an increase of 28 percent, or 9.4 million residents over the next thirty years. Given the declining contribution of natural increase, (even with increasing net immigration) the annual rate of population growth would continue to decline slowly, from its current 1.0 percent per year into the neighbourhood of 0.6 percent by the end of the projection period.

As has occurred over the past three decades, while growth in Canada's total population will continue to slow, we will experience significant changes in its age composition – again, as a result of the continued aging of the baby boom cohort (Figure 5). The total projected population growth of 28 percent over the next three decades would be the result of an 82 percent (6.9 million people) increase in the 55 plus population and only a ten percent (2.5 million people) increase in the number of people under age 55. Growth in the older population will overwhelmingly be the result of the aging of the Post War baby boomers – enhanced by increasing life expectancies – while the growth in the under 55 population will be the result of births and net immigration.

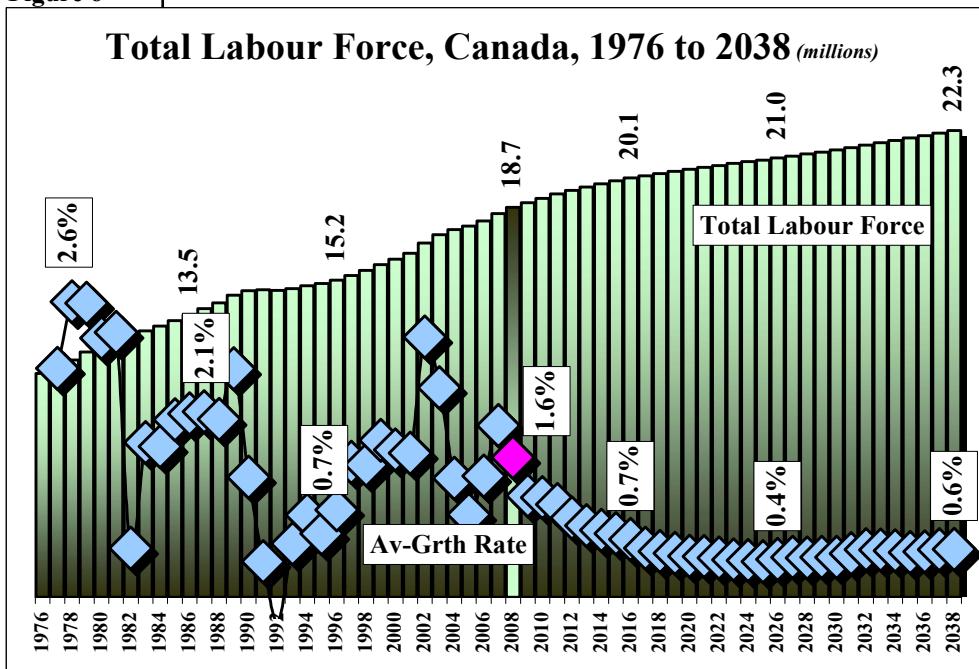
Figure 5



with a below the replacement level birth rate, the under 55 population would decline, falling by 23 percent (5.6 million people) over the next three decades. Thus, future growth in the under 55 population, and hence the working aged population, will result solely from net immigration over the next three decades. This illustrates the magnitude of demographic opportunities and challenges that will be evident in Canada in the coming years: an older population growing much faster than its younger population and the balancing act of growing demand for intergenerational transfers.

The aging of the current population will have major impacts upon various sectors as these compositional shifts in population begin to be felt. One main example would be changes felt in the labour force. The labour force projection to 2038 (Figure 6), accounts for increasing age specific labour force participation rates as well as a relatively robust assumption about international migration. However, the projection demonstrates that the labour force will grow much slower than the population as a whole; over the next three decades the total labour force is projected to grow by 20 percent, relative to a 28 percent growth in the population. This would see growth in Canada's labour force fall to 0.6 percent per annum by 2016 – the result of the aging of the Post World War II boom into retirement. Over the longer term, slow growth in the Canadian labour force could effectively put a speed limit on the ability of the nation's economy to grow; an issue that is imperative not only to future workers, but to future retirees as many of our current social systems – such as health care and the Canada Pension Plan – rely on a growing economy for funding.

Figure 6



b. British Columbia in the Canadian Context

The growth and change in the national population – increasingly influenced by the aging of current residents and of immigrants to support its workforce – establishes a context for projections of the future population of British Columbia. This will, in turn, also set the context for the Capital Regional District. At the provincial level, net inter-provincial migration is added to the net immigration and natural increase factors considered previously. Demographically, British Columbia is very similar to the Canadian average, with an age distribution that mirrors that of Canada as a whole. Furthermore, the province essentially has the same total fertility rate, an average of 1.6 children born per woman, and the same life expectancies that prevail at the national level. Where British Columbia differs from the national picture is with respect to migration, receiving 17 percent of Canada's immigrants (compared to its 13 percent share of the population), and generally attracting a positive net interprovincial migration flow of new residents.

As a result of these migratory factors, British Columbia's population growth rate generally exceeds that of Canada; for example, over the past thirty years, the province's population increased by 69 percent versus the nation's 40 percent increase.

While the province's population has increased in every year over the past three decades, it has not done so in a steady manner. Above average population growth was seen in the late 1970s and early to mid 1990s, with below average rates in the 1980s and post 1997 periods. While population growth has picked up over the past decades – from turn of the century lows of 0.7 percent per year to 1.7 percent in 2008 – provincial population growth remains below the 2.1 percent annual average of the past three decades.

Given the role that migration plays in demographic change in the province, it is not surprising that patterns of population growth move in tandem with provincial economic cycles. Annual growth rose significantly through the late 1970's as the provincial economy expanded and attracted significant net domestic migration (Figure 7). With the recession of the 1980s, net international migration declined sharply and net inter-provincial migration went negative, bringing population growth to below the one percent level. The strong recovery of the province in the late 1980s and early 1990s was in turn accompanied by strong increases in both international and inter-provincial migration and above average annual population growth rates. Given the cyclical nature of the provincial economy, the economic reversal of the post 1995 decade

resulted in sharply reduced immigration and record levels of net outward inter-provincial migration, and hence slow population growth. With the economy recovering in 2004, both net immigration and net inter-provincial migration essentially returned to the long run averages by 2008, bringing with them a return to essentially average annual population growth.

With Canada providing the demographic context for migration to the provinces, a trend-based projection would see net immigration to British Columbia increase from the current level of 33,800 towards the 45,000 range seen in the early 1990's by 2021 and

Figure 7

Components of Population Change, 1976 to 2038 *British Columbia*

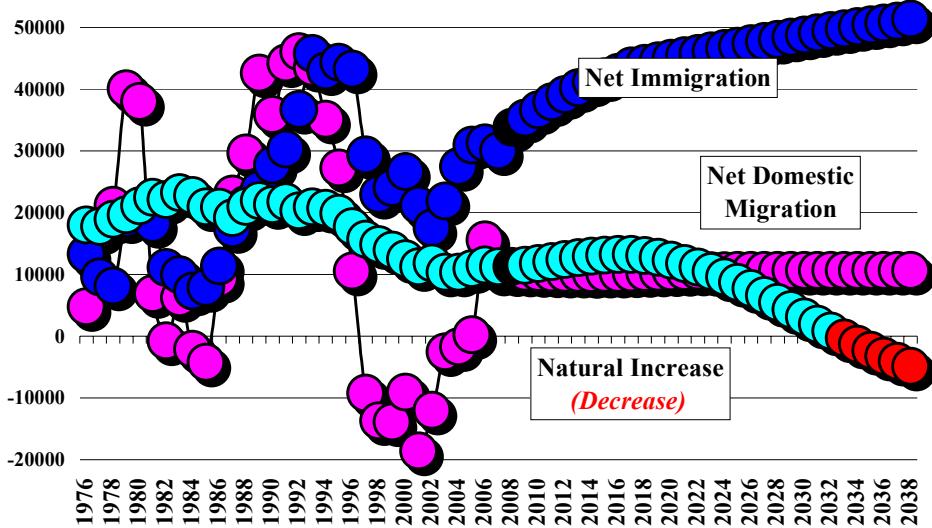
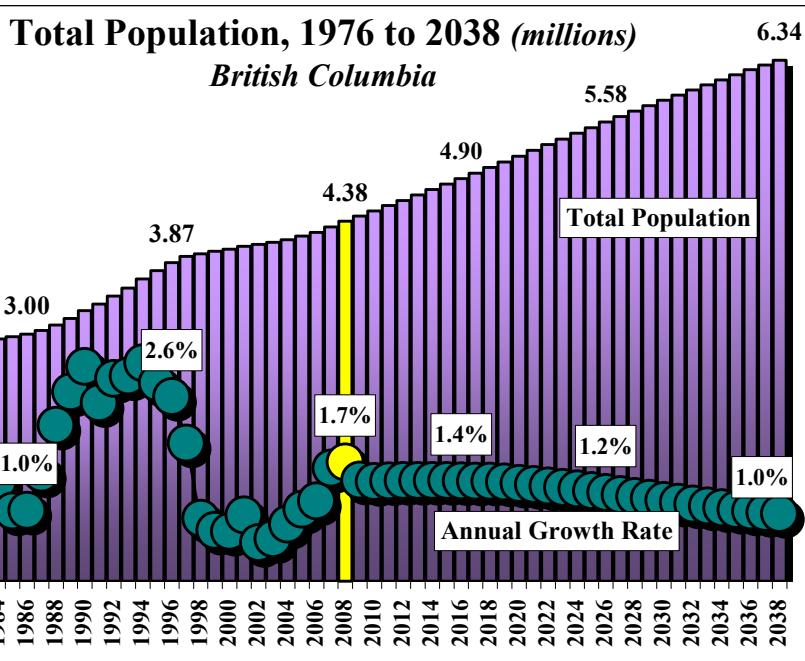


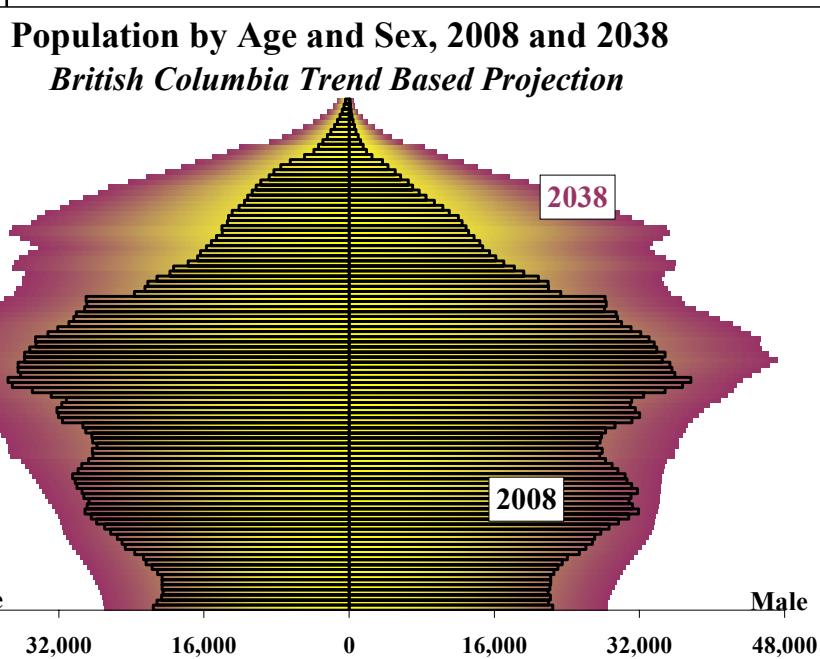
Figure 8



57,000 that was added annually over the past three decades. This results in overall provincial population growth of 45 percent over the next thirty years.

With an age profile similar to that of the national population – including almost a third of the population in the 43 to 62 age group – the province will certainly share the aging characteristics of the national population (Figure 9). The 85 plus population would grow by 215 percent over the coming three decades, adding 184,400 people. The 75 to 84 and 65 to 74 age groups would also experience significant growth, growing by 169 percent (366,600 people) and 112 percent (372,428 people) respectively.

Figure 9



As with the national level, trends indicate that the total fertility rate will remain relatively constant, with only slight shifts over the projection period; furthermore, life expectancies in British Columbia will increase, albeit at a declining rate. Combining these projected vital rates, the projected level of net inter-provincial and international migration, and the aging of the current residents, results in the province's population increasing from 4.38 million today (2008) to 4.90 million by 2016, 5.58 million by 2026 and to 6.34 million by 2038 (Figure 8). On average, an estimated 65,000 new residents would be added to the provincial population each year, 8,000 more than the

British Columbia's population is projected to grow more rapidly than the national average (45 percent compared to 28). The province's disproportionate share of net international migration and its positive share of net inter-provincial migration would, because of the young age profiles of these migratory groups, mean that its younger population will grow faster than those for the corresponding age groups at the national level – the under 55 population in the province would grow by 25 percent over the next thirty years, more than twice as fast as the national average of ten percent. While migration would

ensure that all age groups increase in number over the next three decades, the growth rates for the under 55 age groups would still all fall below the provincial average of 45 percent. In contrast, the 55 plus population in the province would grow by 97 percent (versus the national average of 82 percent), significantly faster than the province's younger population.

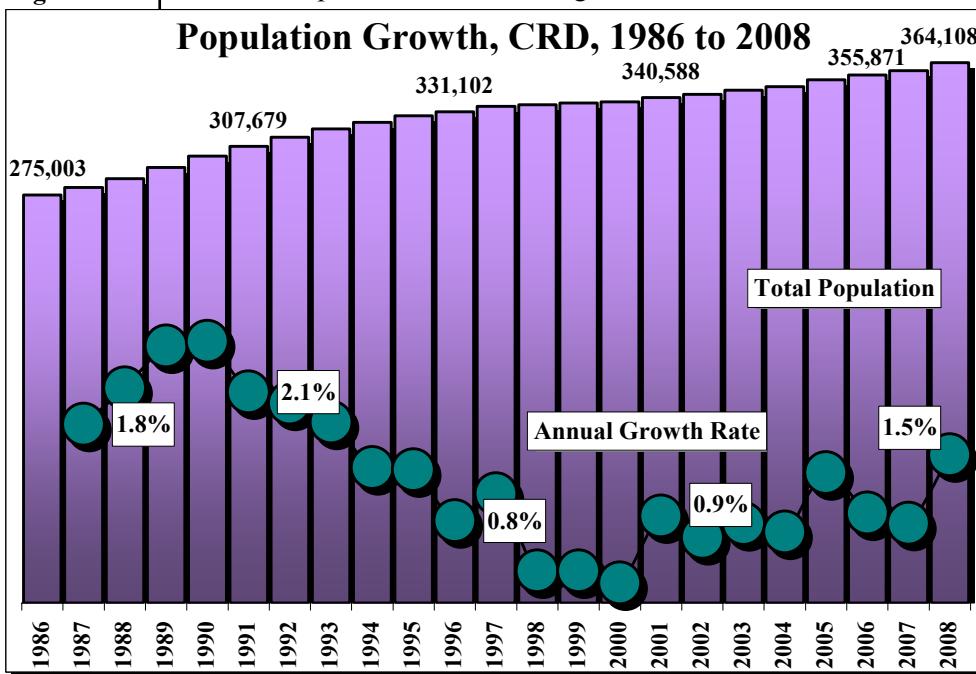
2. The Capital Regional District

While the national and provincial changes provide the context within which demographic change will occur in the CRD, the unique demographic, social, economic, and environmental characteristics of the region will mean that it will follow its own demographic path. To chart this path in preparing population projections for the CRD, it is therefore important to explore both what the region has in common with these larger aggregates and how it differs from them.

a. Demography - The People in the Region

The Capital Regional District's population grew from 1986's 275,003 residents to 307,000 in 1991, and to more than 350,000 by 2006, to reach today's population of 364,108 (2008, Figure 10)ⁱ. As at the provincial level, the population of the CRD has grown continually over the past two decades, but has experienced a great deal of variance in its annual rate of growth. From highs of 2.5 percent in the 1989 to 1990 period to lows of 0.2 percent in the 1998 to 2000 period, this variance is also demonstrated in absolute terms. In the 1989-1990 period annual additions to the region's population were in the 6,000 to 7,000 person range; over the 1998-2000 period however growth was only 600 to 700 persons per year. This reflects the changing economic conditions within the province, and their impact on net migration, both to the province and to the region.

Figure 10



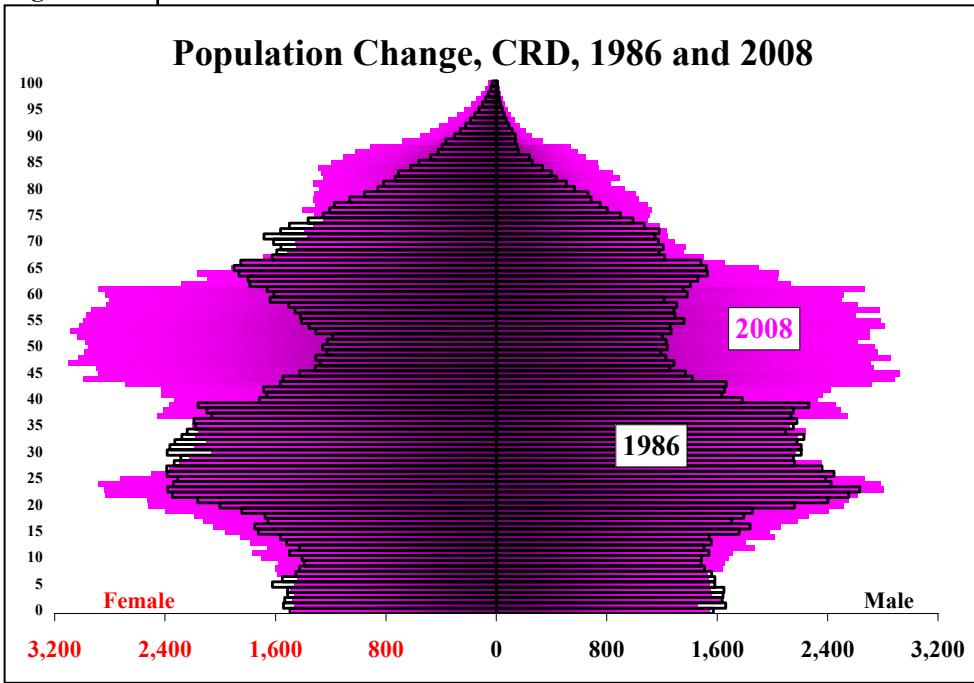
One of the unique demographic characteristics of the CRD is its age profile, which has a far greater proportion of its population in the 75 plus age group (9.5 percent compared to 6.9 percent at the provincial level) and a smaller proportion in the under 20 age group (19.3 percent in the CRD compared to 22.2 percent provincially).

Having noted this, the major demographic change that the CRD has experienced over the past two decades is the same one as has characterized demographic change throughout Canada – the growth of the working aged population as a result of the aging of the baby

boom generation (Figure 11). In 1986, one third of the region's population were between the ages of 21 and 40, with the most typical resident being in their mid 20's; these were people born between 1946 and 1965, members of the same birth cohort that dominated the national and provincial age profiles. Twenty two years later, in 2008, the bulge in the CRD age profile had moved up to the 43 to 62 age group, reflecting the 22 birthdays of the baby boom cohort over the period. Note that the bulge had not only

ⁱ Note that the 2006 population count for the CRD reported on the 2006 Census was 345,164 residents, 3.1 percent less than the estimated 355,871 total population for that year. The reason for the difference is that Statistics Canada estimates (based on post Census re-sampling), that roughly 3.1 percent of the total population is missed during the Census enumeration. This difference is referred to as the net Census undercount.

Figure 11



1986. In 2008, 19 percent of the CRD's population was in the mainly-at-school under 20 years old age group, less than the 23 percent seen in 1986. The 20 to 49 working age group accounted for 41 percent of the population in 2008, less than its 1986 share of 44 percent; and, perhaps surprisingly, the 65 plus retirement age group accounted for 17 percent of the 2008 population, (slightly) less than its 1986 share of 18 percent. Growth in share for the population occurred only in the pre-retirement 50 to 64 age group, which increased from 15 percent to 22 percent of the population over the twenty year period. Thus, essentially, in terms of share of the population, all of the growth has historically been in the working aged (20 to 64) age groups: the under 20 and 65 plus age groups' combined share of the population fell from 41 percent in 1986 to 36 percent in 2006, while the working age group's share increased from 59 percent to 63 percent.

The growth of the population of working age that has occurred in the CRD, the province and the country over the past decades as the baby boom generation aged out of school and into work has provided what is referred to as a demographic dividend; it has resulted in the labour force growing much more rapidly than the population as a whole, and than the population not in the labour force. The result is that there has been significant growth in the contribution base to intergenerational transfer programs such education, pensions and health care, relative to the population of those who are the primary beneficiaries of these programs.

The continuing upward shift of the CRD's age profile, as with those of the province and the nation, will bring about circumstances in the future that are much different, with the population not in the labour force growing much faster than the labour force itself – this will certainly be true for the CRD due to its older base population today. The relatively slow growth of the labour force will constrain the labour supply contribution to economic growth, thereby limiting the growth in resources available; at the very time that

shifted up with aging, but had also shifted out, reflecting the net migration to the CRD of baby boomers during this two decade period.

Parenthetically, it is interesting to note that the CRD age profile shows the consequences of not only the post war baby boom, but of other periods with unusual birth levels. For example, the “waist” in the 1986 age profile from age 45 to 54 and the relatively constant level of the 70 to 79 age group in 2008 reflect the very low levels of births recorded in Canada during the 1929 to 1938 Great Depression years. The recovery from the Depression and the harbinger of the baby boom was represented by the birth of the “war babies” in the 1940 to 1944 period; this is also shown in the age profiles as a widening in the 1986 age profile at 39 to 43, and in the 2008 age profile at the 64 to 68 age group.

The CRD age profile also demonstrates the consequences of migration; the waist in the 2008 profile from ages 26 to 36 is the result of the out migration of young people upon completion of post secondary education. Also note that there were fewer young children in the CRD in 2008 than there were in

the population who benefit from these intergenerational programs – specifically those focused on the older population – is growing relatively rapidly.

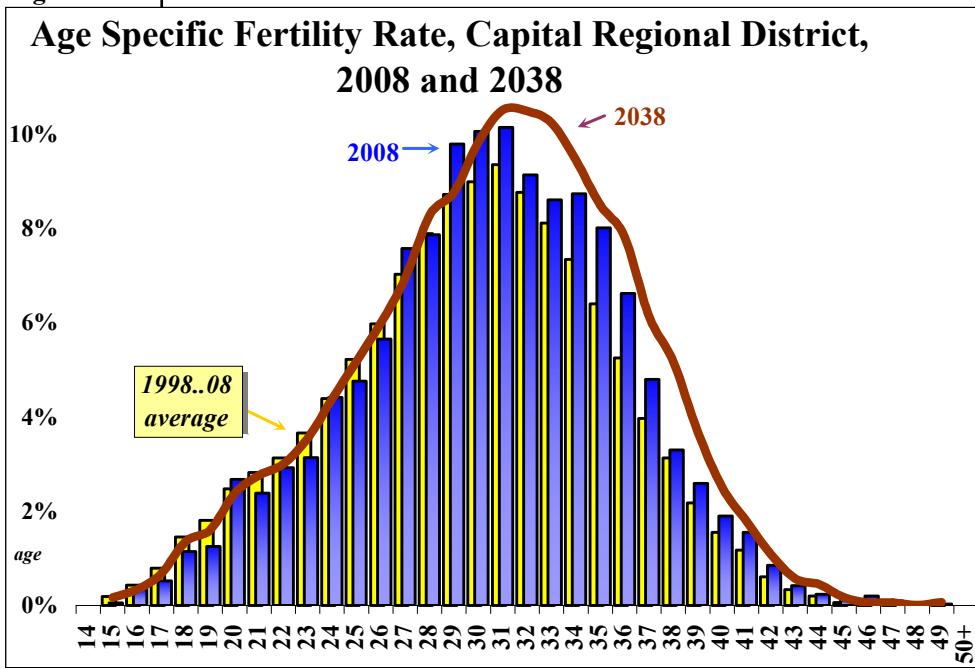
With this as a prologue, the next step in the projection of population for the CRD is to consider the demographic factors, both biological (natality and mortality) and migratory (international, inter-provincial and intra-provincial), that will shape its future population.

b. Biological Factors Shaping the CRD's Future Population.

As indicated previously, the biological occurrences of births and deaths are combined to describe what is referred to as the natural increase component of population growth. When the number of births exceeds the number of deaths, natural increase is positive; when there are fewer births than deaths, natural increase becomes natural decrease. This statement is important for the CRD, as, with a relatively low birth rate and an older population profile, the CRD has had fewer births than deaths since 1994; biology alone would have resulted in a shrinking (and aging) regional population since 1994. Examination of trends in these two biological variables for the CRD indicates that natural decrease will continue to occur in the region,

and hence, migration will play an increasingly important role in the maintenance of the labour force.

Figure 12



i. Natality. There is a strong age specific (lifecycle) pattern to the probability that a woman will give birth to a child in a year. In 2008, the age specific birth rate (the percentage of women in an age group who gave birth during a year) in the Capital Regional District increased from 0.35 percent of women 15 years of age giving birth to a peak of 10.6 percent of women aged 30 doing so (Figure 12). From this peak, the age specific rate drops back down to under two percent of the women over the age of 40 giving birth during the year, about the same level as for women under 20.

The sum of the individual age groups' propensities to give birth to a child during a year is the average number of children that would be born to a woman as she ages through the childbearing stage of the lifecycle at prevailing fertility rates (commonly referred to as the total fertility rate or TFR). Currently, the TFR for the CRD is 1.3 children, meaning that on average, at today's age specific rates, each woman in the region would give birth to 1.3 children in her lifetime.

Over the long term, with stable mortality rates, a population will only grow in number and become younger (without migration) if the TFR is greater than 2.1 children per woman. In this case, more babies will be added to the population in a year than mortality takes away. If however, the TFR is below 2.1, under the same conditions the same population would over time both decline in number (as deaths would exceed births) and grow older as the number of babies added to the population would be less than the number of older parents. The TFR in the CRD has been below the replacement level since the early 1970s

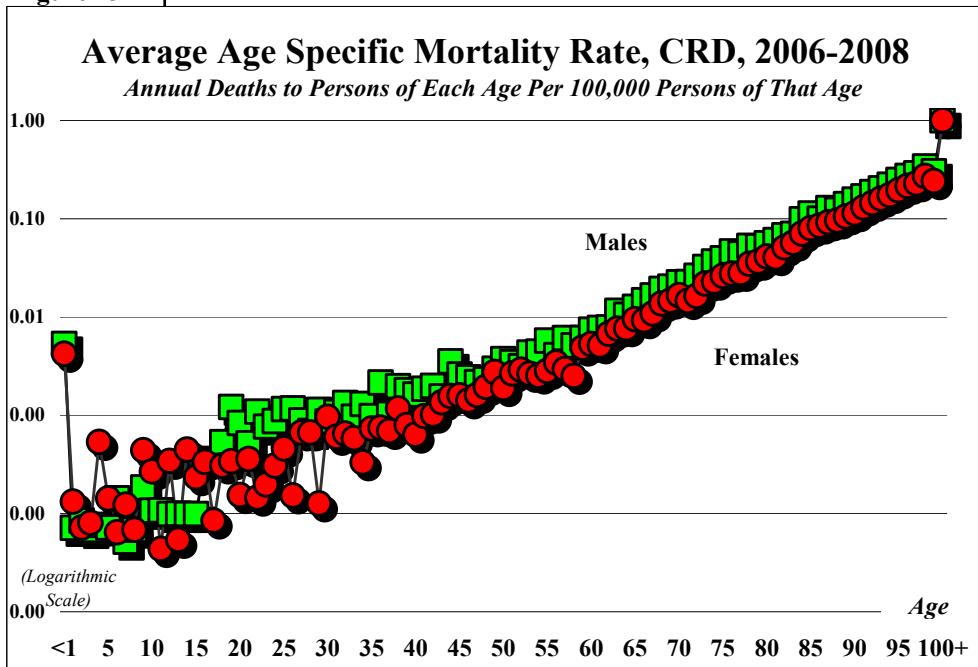
and has not exceeded 1.5 in the past two decades; thus, the region is dependent on migration to maintain not only the size of its population and labour force but the number of children.

There are two other dimensions relating to age specific natality that will have long run population consequences for the Capital Regional District (and the rest of Canada). The first is the shift in the timing of births into later years in the childbearing period, characterized by a decline in the age specific birth rates in the younger age groups and an increase in the older ones. In the 1988 to 1998 decade, the highest age specific birth rates in the CRD were in the 25 to 27 age group; by 2008 the highest rates were found in the 29 to 31 age group. Given historical trends in age specific rates, this “postponement” is expected to continue to move out, with the highest rates being found in the 31 to 33 age groups.

The pattern of postponement has meant that over the past decade, the total fertility rate has remained relatively constant; as the decline in rates in the younger age groups has been offset by increase in the older ones – the most recent period has even seen a slight increase in the TFR. Based on these trends, the total fertility rate is not expected to change dramatically in the coming years, with changes in birth rates mainly involving the continued shifting of timing to later stages in the childbearing lifecycle. This would mean that by 2020 the total fertility rate would stabilize in the range of 1.4 children per woman – up only marginally from the 1.3 of today – and remain at this level until the end of the projection period.

The effect of a below the replacement level birth rate on population change will be compounded by the continued aging of the region’s population, as a large share of the region’s population has already aged out of the child bearing stage of the lifecycle, with the last of the baby boom now in their early forties. The relative share and absolute number of the region’s younger population, and of its future labour force, will therefore increasingly rely on net positive migration to the region.

Figure 13



mortality rates are higher at every stage of the lifecycle than those for females of the same age. While, to some extent, this is offset by there being slightly more males than females born each year, the result is an older population where women slightly outnumber men.

ii. Mortality. There is also a strong lifecycle pattern to mortality (Figure 13), with relatively high mortality rates observed in the first year of life (just under a 1 in 200 or 0.4 percent, death rate), and relatively low rates in the teenage years, followed by relatively constant rates in the twenties to forties. This is then followed by an inexorable increase to a 1 in 100 chance of dying by 65, a 1 in ten by 85, and, sometime after the 100th birthday, the end of probability. It is this age specific pattern that will cause the number of deaths in the region to increase significantly in the future; maintaining the trend in natural decrease observed in the region over the past decade and a half. Note that male age specific

As with birth rates, death rates have also shifted to later in the lifecycle over the past decades, something difficult to show on an age specific mortality rate chart. The best way to describe this shifting is through consideration of life expectancy. Currently, the average male born in the CRD (at today's age specific mortality rates) can anticipate living to the age of 78.3, and the average female baby to an age of 82.5; almost 20 years longer than what their peers in 1921 could expect. The significant increases in life expectancy that occurred in the pre-World War Two period were mainly a result of a reduction in infant and childbirth mortality and in mortality due to communicable and infectious diseases. In the post war period, life expectancy continued to increase, with falling mortality rates during this period accounting for 12 years of the 20 year increase that has occurred since 1921. Most of these declines have been related to reduction in mortality due to external causes such as accidents and behavioural factors, and through extensive application of medical and pharmaceutical technology. These have resulted in significant increases in life expectancy not only at birth, but at every age; for example, at the provincial level, the life expectancy of a 65-year-old male has increased by 4.2 years, from 1950's expectation of living to age 78.7 years to the current 82.9 years (a 5.3 percent increase).

Historical trends indicate that life expectancy will continue to increase as technology and behavioural change continue to reduce age specific mortality rates. These increases, however, will be subject to the laws of diminishing returns as the high impact, easy and cheap breakthroughs have already occurred. Relative to history, future advancements will have a smaller impact and require significantly more resources to achieve them. Over the next thirty years, trends indicate that falling mortality rates will lead to life expectancy at birth gains of roughly 4.8 years for males and 3.2 years for females, or 1.6 and 1.06 additional years per decade; bringing life expectancy to 85.7 years for women, and 83.1 for men by 2038.

At current life expectancies, the population in the 43 to 62 age group, the big bulge in the CRD's age profile, can anticipate being around, on average, until between 2030 (for the oldest of them) and 2050 (for the youngest). This could be considered by many as useful information for retirement planning, but it is also fundamentally important information for strategic planning of population, labour force and economic change. The aging and the many birthdays yet to come for this cohort – that makes up one third of the region's current population – will profoundly shape the Capital Regional District's future.

c. Migration to the Region

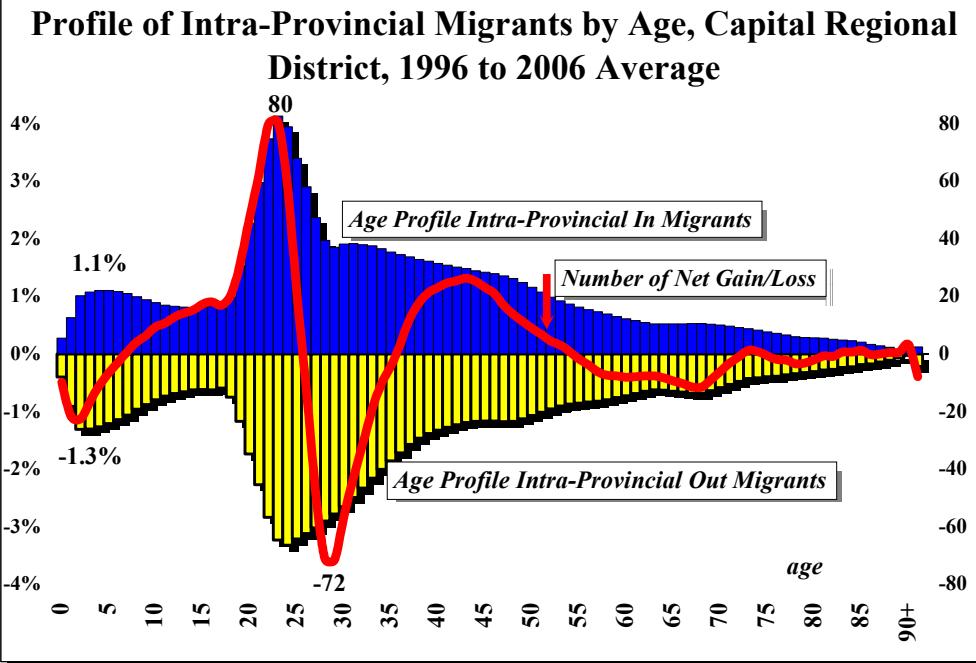
While discussions generally focus on the absolute level of migration, the demographic importance of these flows is their age composition – specifically the fact that they are overwhelming comprised of young adults and young families. In every case, the age profiles of migration flows are distinctly younger than that of the region's current resident population. Establishing families, pursuing employment, expanding careers and changing lifestyles are pursuits for the young; it is generally in our youth that we leave the parental home – not only for another home, but also for another region. In the context of regions with aging populations, therefore, net in migration can be a positive factor; it would help slow the aging of the region's population, while net out migration would accelerate it. Thus, before discussing the levels of migration to and from the Capital Regional District, it is appropriate to briefly consider the age composition of migration flows – who they bring, and who they take, from the region's population.

i. Migration and Age The most local of the migratory flows to the CRD is **intra-provincial migration**; comprised of people moving into the CRD from other parts of British Columbia and people leaving the region to become permanent residents of other regions in the province. Intra-provincial in-migration is strongly concentrated in the young adult stage of the lifecycle; a quarter of all people moving to the region from the rest of the province over the 1996 to 2006 decade were between the ages of 20 and 27 (Figure 14). A further 20 percent were under the age of 20, and another 35 percent were aged 28 to 49. Thus a full 80 percent of the intra-provincial in-migrants to the CRD were under the age of 50 (compared to only 60 percent of the region's 2008 residents). This is a significant share, given that the popular image of the

The age profile of the migrant population being younger than that of the resident population emphasizes the reality that changing regions of residence, is a challenging and difficult process.

Figure 14

region is as a retirement destination for British Columbia's residents – only eight percent of the intra-provincial in-migrants were 65 or older compared to 17 percent of the region's resident population. The intra-provincial out-migration flow also is greatly concentrated in the younger adult age groups, although it is more widely dispersed. Eighty percent of these out-migrants are under the age of 50, with 30 percent aged 20 to 29, and 19 percent under the age of 20.

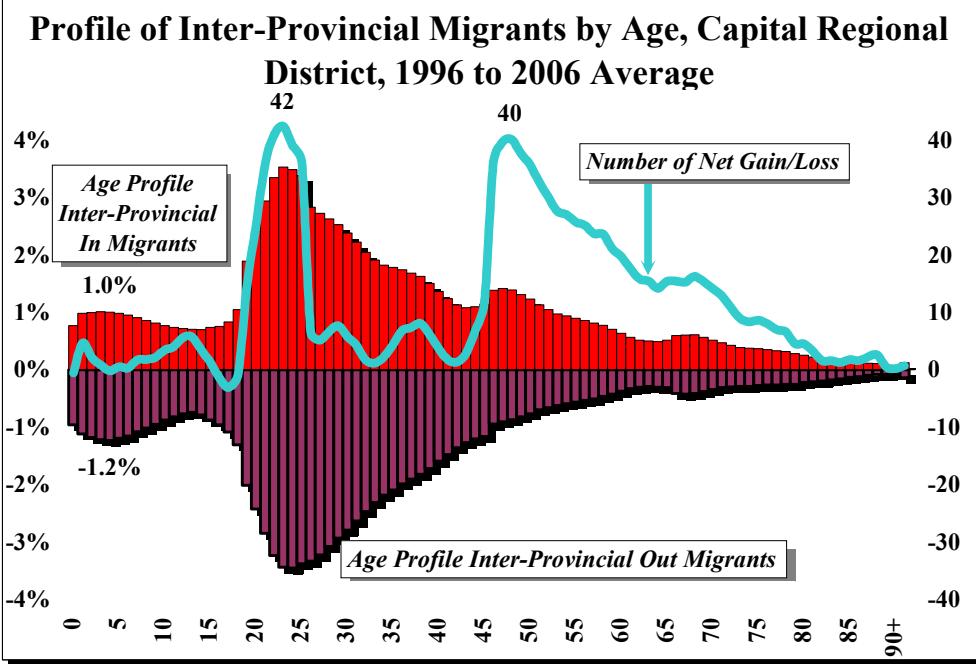


As this most local of migration flows involves people moving across relatively short distances – from up island or metro Vancouver – intra-provincial migration is characterized by the largest of both in- and out-flows. Over the 1996 to 2006 decade, an annual average of 8,286 people moved to the CRD from other parts of the province while 8,074 left the region for elsewhere in BC; a net annual immigration average of 212 people. Within this overall average, the region gained more people than it

lost in the 6 to 25 age group and in the 35 to 53 age groups, and lost more than it gained in the under 6, 25 to 35, and 54 and older age groups. Thus on a net basis, intra-provincial migration slowed the aging of the CRD's population, as it took more older people away than it brought in.

There are three factors that drive this pattern. The first is young adults coming to the CRD for opportunities offered by the concentration of post secondary educational institutions, the scale and diversity of its labour market, and its metropolitan social and cultural life. The second factor is consistent with young families leaving the CRD (parents in the 27 to 40 age group and their children) to pursue career, housing market, and lifestyle opportunities in other parts of the province; while the third dimension is of early and pre-retirees moving as “equity refugees” to other parts of the province to benefit from capital appreciation of their primary residences.

Figure 15



A much greater distance is involved in **inter-provincial migration**, as people move here from other provinces, or leave here to take up residence in them. Similar to the intra-provincial profile, much of inter-provincial migration is made

up of young labour force migrants (Figure 15). The inter-provincial in-migration flow to the Capital Regional District has an age profile that is virtually identical to that of the intra-provincial flow; with a quarter of the migrants in the 20 to 28 age group, a fifth in the under 20 age group, and only eight percent 65 and older. The inter-provincial out-migration flow is somewhat different from its intra-provincial counterpart however, with 32 percent in the 20 to 29 age group, and 24 percent under the age of 20. Inter-provincial out-migration, then, is decidedly younger, with 87 percent of the out-ward flow to other provinces under the age of 50 compared to only 50 percent of the inward flow.

Note however that the volume of the inward flow is significantly greater than that of the outward flow; an annual average of 5,881 inter-provincial in-migrants per year over the 1996 to 2006 decade, as compared to an average of 4,812 out-migrants. This equates to a net positive inter-provincial migration of 1,069 persons per year. As a result, net inter-provincial migration contributed people to almost every age group (the only exceptions being insignificant losses in the 17 to 19 ages), with the contributions strongly concentrated in the 18 to 24 age groups (bringing in an average of 235 people per year, 22 percent of the net inflow), the 45 to 64 age group (an average of 525 per year, half of the net inflow), and the 65 to 74 age group (125 people per year, 12 percent of the flow).

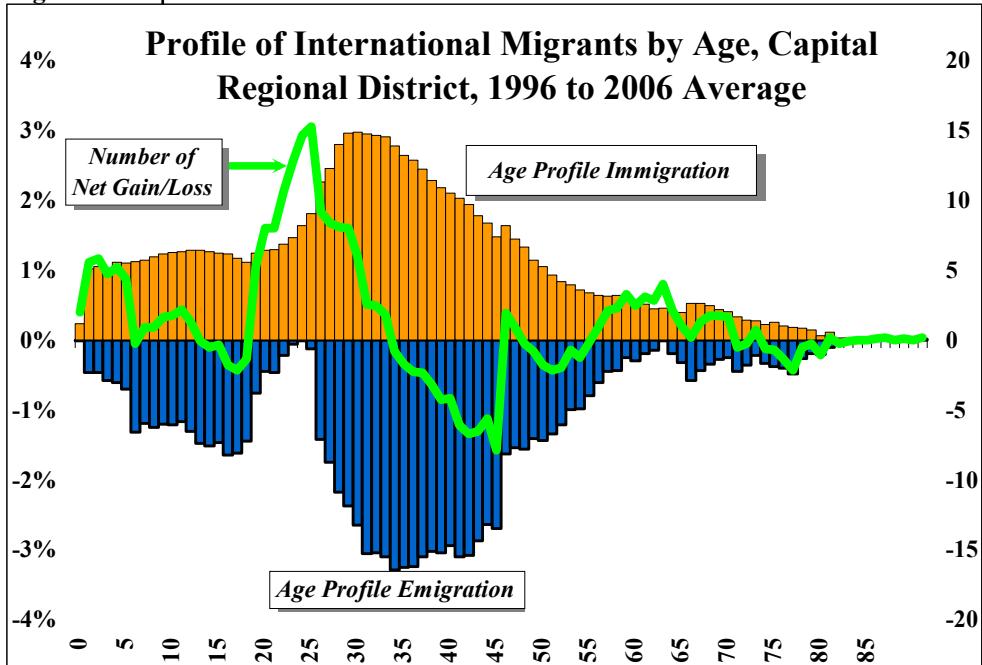
Inter-provincial migration flows, therefore, convey two additional messages about migration to the region. The first is the allure for young adults from the rest of Canada, responding to the strong post-secondary educational opportunities and the attractive lifestyle it affords. The second is to reinforce the image of the CRD as a retirement destination for residents of other provinces, with significant net inflows in the 45 to 54 pre-retirement, and 55 and older retirement stages of the lifecycle.

The longest distances, and the most costly journeys, are found in **international migration**, something that is reflected in its relatively small levels of both in and out migration. While international migration also has a younger age profile than the CRD's resident population, it is older than those of the other flows, again a reflection of the cost and preparedness that international migration requires. While 86 percent of the immigrants to the region were under the age of 50, a greater share than the 80 percent of intra- and inter-provincial flows, only 21 percent are aged 20 to 29 (compared to 30 percent for the two other flows), reflecting the 28 percent concentration of immigration in the 26 to 35 age group (Figure 16). Note that immigration has the smallest share in the 65 plus age group, with only five percent of immigrants 65 and older, compared to eight percent of the inter- and intra-provincial in flows, and 17 percent of the resident population.

While emigration maintains the younger than resident population profile of migration flows, with 86 percent of emigrants under the age of 50, it is the oldest of the region's population flows, with 31 percent of the emigrants aged 32 to 41.

Annual immigration to the region over the 1996 to 2006 decade was 901 people, while emigration averaged 785 people leaving each year. Net immigration therefore made a positive annual contribution of 116 persons per year to the region. This contribution was

Figure 16



focused in the youngster (0 to 4) and young adult (18 to 28) stage of the lifecycle, with net losses occurring in the older family (32 to 44) age group.

ii. Future Migration Levels Both jointly and individually, migration makes the CRD younger, as, in every case, net in-migration is concentrated in the younger age groups; making all of these migration flows important to the region. Having said this, while intra-provincial migration involves the greatest directional flows, its net contribution averaged a modest 212 people per year over the past decade, twice the 116 net contribution of immigration, but only a fifth of the 1,069 contribution of inter-provincial migration. It is also important to note that while all of these flows were net positive to the region over the 1996 to 2006 period used to identify their average age profiles, they are not always positive.

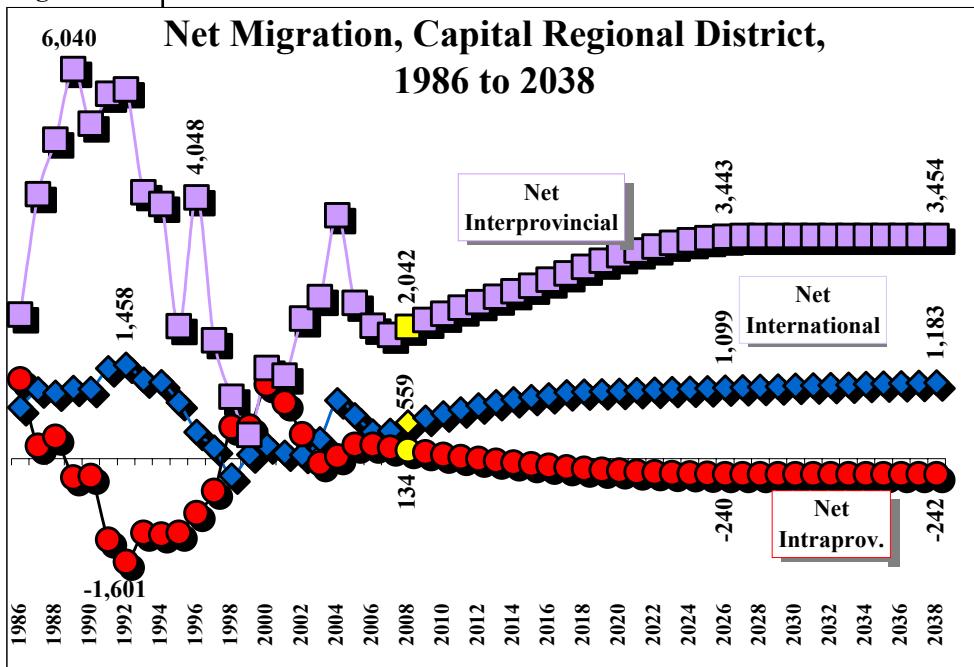
For example, over the 1989 to 1997 period, net **intra-provincial migration** to the region was significantly negative, with the CRD losing a record 1,600 people to other parts of the province in 1992 (Figure 17). Since 1998, the region has generally been a gainer from intra-provincial migration. However, the trend over the past few years has been a gradual decline, coming to a net gain of a mere 134 people in 2008.

Given the significant net loss of people in the 55 and older population from the region, and the growth of the number of people in this age group that aging in both the CRD and the rest of the province will bring, a trend-based projection of intra-provincial in- and out-migration results in a projection of a gradual shift back to net loss from intra-provincial migration by 2012, reaching an annual net loss of 240 people per year by 2026.

While net **inter-provincial migration** to the region has always been positive, in bad times for the provincial economy it has been barely so (in the period around 1999-2000 for example). Net inter-provincial migration dropped from highs of 6,000 net additional residents in the late 1980s and early 1990s

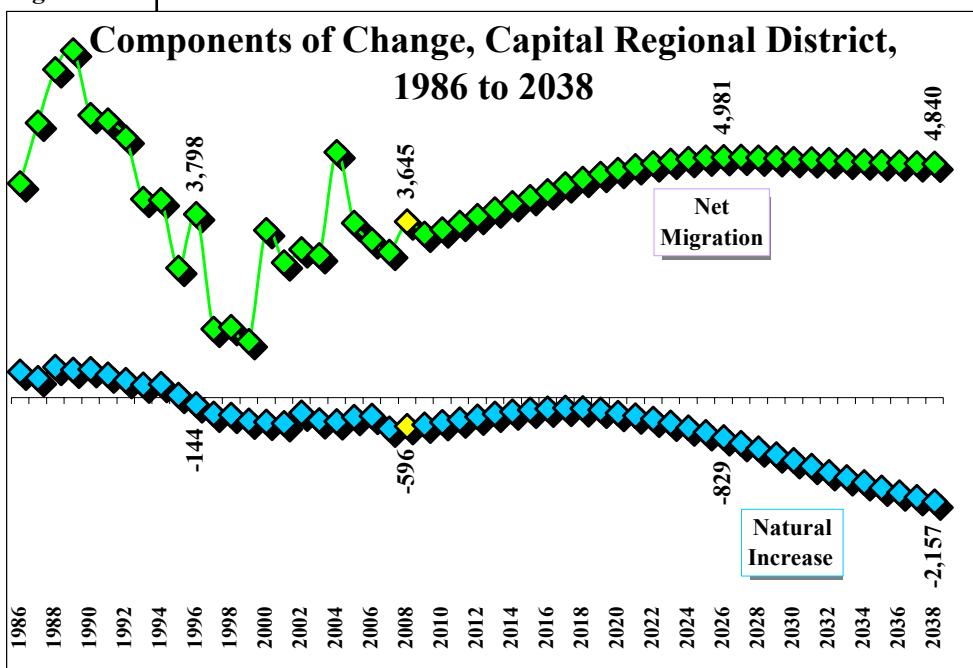
to a net of only 368 in 1999. With the recovery of the provincial economy in the past decade, net inter-provincial migration increased to the 2,000 persons per year range by 2008. The role that relative economic conditions plays in determining the levels of inter-provincial in- and out-migration means that it is necessary to acknowledge broader provincial and national factors; including the relative stabilization of population change and levels of economic activity in the provinces of Alberta, Saskatchewan, Manitoba and Ontario. While short-term economic conditions in the United States will continue to weigh heavily on the economies of these provinces, over the longer term –

Figure 17



given their own demographic outlooks – they will not be a source of significant increases in the number of young in-migrants to the Capital Regional District; their economies will recover and they will begin to deal with the challenges of their own aging labour force. In this regard, however, given the age profile of inter-provincial in-migration to the CRD, these provinces will provide the potential for a growing number of pre-retirees and retirees.

Figure 18



from just under 1,200 immigrants in 2008 to 1,700 per year by 2016 and just under 2,100 by the end of 2038. Somewhat offsetting this international inflow will be emigration, which – assuming it maintains its historical relationship with the stock of residents in the region – will result in projected emigration from the CRD to other countries increasing from 2008's 600 people to the 900 per year range by 2038. The result is a projection for net immigration in the range of 500 to 600 people per year over the next decade, that increases to the 1,100 level over the following two decades of the projection period.

Combined, these migratory flows would result in an increase in the net contribution of migration to the CRD's (younger) population from its current 3,600 person per year level to almost 5,000 persons per year by 2038 (Figure 18). If this level of migration occurs, the addition of younger people to the region's population will reverse the pattern of generally increasing natural decrease (deaths exceeding births) that has occurred in the region since 1996; bringing it back to almost a balance by 2018. Having noted this, given the current age structure of the region's population, the consequences of the migration of young people can only slow the process of natural decrease; by 2021 (the first baby boomer's seventy fifth birthday) the gap between deaths and births will again start to grow, with the natural decline in 2038 being almost four times as large as it is today.

In this vein, the CRD is projected to maintain its historical share of 12 to 14 percent of British Columbia's future inter-provincial migration. This results in a projected increase in net inter-provincial migration to the CRD from its current 2,000 net migrants per year to 2,700 by 2016 and further to 3,400 by 2026, remaining at this level over the rest of the projection period. This long term projected average of just over 3,000 annual net inter-provincial migrants compares to an average of 3,100 annually over the past two decades.

The temporal pattern of net **international migration** to the region has followed a similar theme, albeit on a muted scale when compared to net inter-provincial migration. International migration saw strong positive net contributions in the late 1980s and early 1990s, dropping to very low levels (including a net loss in 1998) around the turn of the century, and then recovering over the past few years to reach a net contribution of 550 persons per year by 2008.

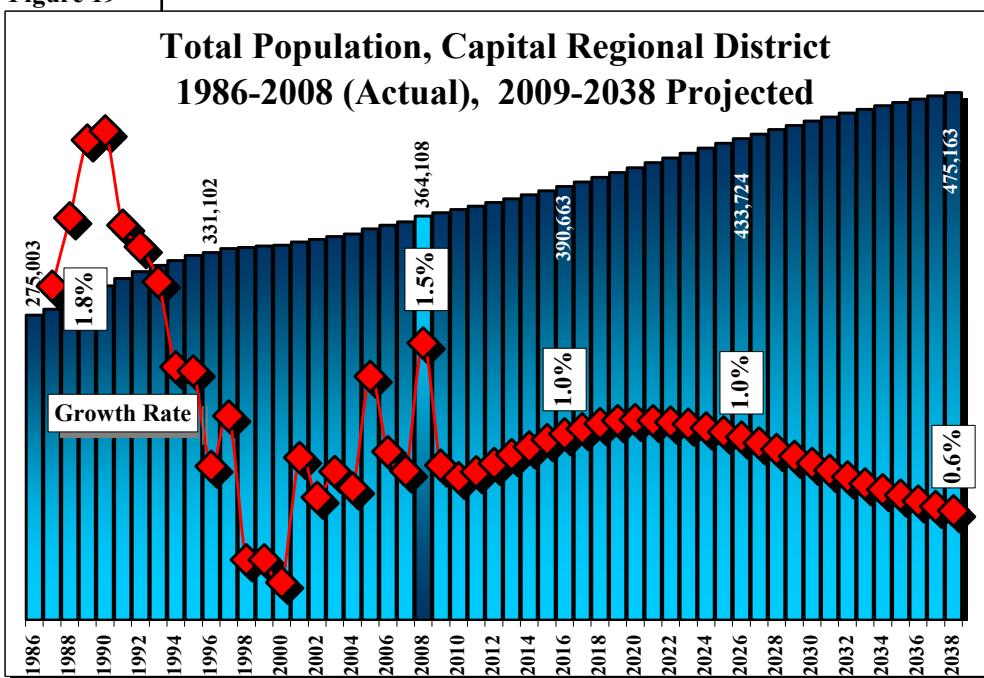
In looking to the future prospects for net immigration, it is essential to consider the immigration trends at the national and provincial levels. With an increase projected in the national immigration rate – and hence an increase in immigration to Canada – and considering British Columbia's and the CRD's attractiveness as immigration destinations, net international migration to the region is projected to increase. This would see projected immigration to the CRD climb

Figure 19

d. The Capital Regional District's Projected Future Population

Combining the projected levels and compositions of migration to and from the Capital Regional District with natural increase and the aging of current residents provides the baseline projection of population growth and change in the region for the next three decades. It shows a population that grows larger, albeit at a slowing average annual rate.

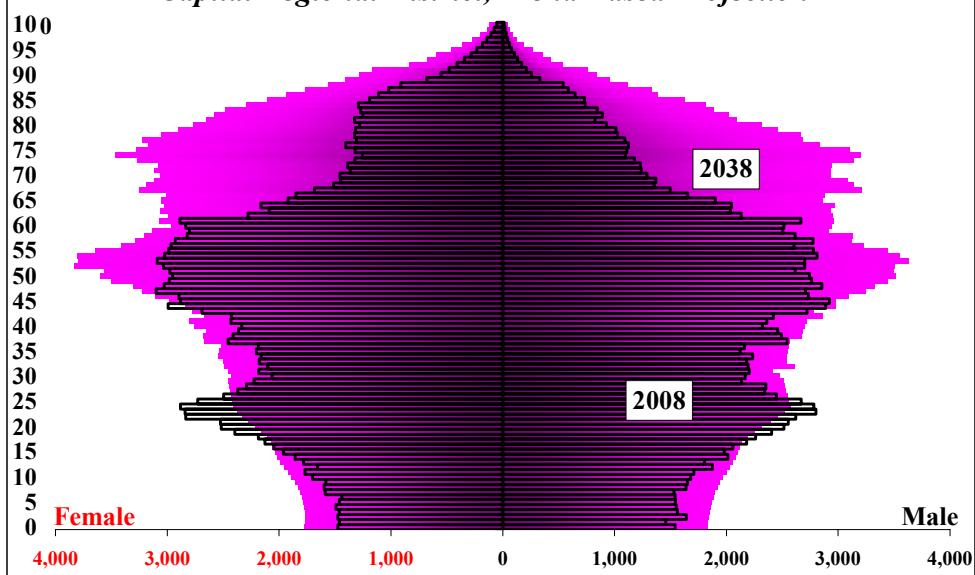
The baseline projection is for the region's population to increase from a 2008 population of 364,000 residents to 390,000 by 2016, surpassing the 400,000 mark in 2019, to reach 475,000 people by 2038 (Figure 19). Over the next three decades the region would therefore add an average of 3,700 new residents each year, as it grows by an average 0.9 percent per annum.



indicates an average one percent per year growth rate. After 2028, in spite of relatively high but constant net migration, growth in the region would decline to 0.6 percent per year by 2038 as natural decrease offsets some of the contribution of migration to population increase.

Figure 20

Population by Age and Sex, 2008 and 2038 Capital Regional District, Trend Based Projection

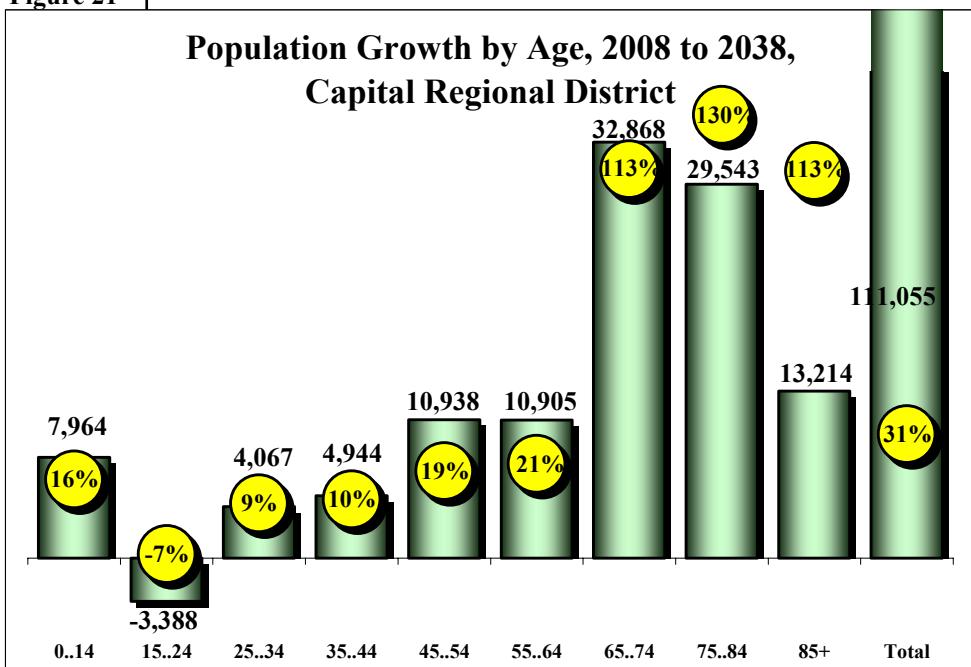


The source of the growth in annual mortality in the region is demonstrated in the projected age profile for the region in 2038 (Figure 20). In 2038, 16 percent of the CRD's population would be under 20 years of age, less than the 19 percent in 2008; the 20 to 49 prime working stage age group would account for 34 percent, less than its 2008 share of 41 percent; and the pre-retirement 50 to 64 age group would account for 21 percent, slightly less than its 22 percent share in 2008. The only age group that would see its share of the population increase would be the 65 plus population, who in 2038 would account for 29 percent of the population, compared to only 17 percent today. In contrast to the

1986 to 2008 period where all of the increase in share (from 59 to 63 percent) was in the working aged, over the next three decades, the working aged population's share will decline to 54 percent of the total population. As in the rest of the province, and in the rest of Canada, the issues this reversal will raise in terms of funding for inter-generational transfers will be profound and difficult to resolve.

While the number of people of almost every age group will increase in the CRD over the coming three decades, the older age group's share of the population in the region will see the greatest absolute and relative growth (Figures 20& 21). In terms of relative growth, as result of the aging of the region's current residents, a 113 percent increase in the number of people aged 85 plus is anticipated, in addition to a 130 percent increase in the number of people aged 75 to 84, and a 113 percent increase in those between 65 and 74 years of age.

Figure 21



On an absolute basis, the greatest increase will be the 32,868 person growth in the 65 to 74 age group. Following this, the second greatest absolute increase would be the 29,543 person increase in the 75 to 84 age group and then the 13,214 person increase in the 85 plus group. It is the aging of today's population that will frame much of tomorrow's demographic change. Given long and increasing life expectancies, of today's population in the CRD, 81 percent would be alive in 2026 (and 20 years older) and by 2038, 67 percent of today's residents would still be alive (and 30 years older).

With the projected growth of 75,600 people aged 65 and older

over the next thirty years (all of whom are under the age of 65 today) and an increase of 27,500 people aged 15 to 64, the growth of the retiring population will far exceed that of the working aged population in the CRD. For every additional person of working age in the region there would be approximately 2.8 additional seniors. This will have profound implications for labour supply and economic change in the region, as will be discussed in more detail in the following sections.

Stage Two: The Implications of Demographic Change

The Capital Regional District's demography is deeply interconnected with its economy. The region's population, as consumers, provide much of the demand side of the economy – their purchases support private firms and the taxes they pay on incomes and expenditures support public sector suppliers of goods and services (the region-serving component of the economy). In addition to resident demand, the public and private sector in the region are supported by residents of other regions, who purchase goods and services produced within the region (the region's economic base or export sector) as well as net tax transfers, pension payments and other financial flows. In turn, these regional providers of public and private sector goods and services (employers) form the demand side of human resources (labour) that the region's residents provide. The region's firms and residents are not the only suppliers of goods and services to the region however, as residents, firms and governments of other regions also sell goods and services to the CRD's residents (the region's import sector).

This interconnectedness means that there is no clear starting point in the examination of the relationship between the demography and the economy of a region; there have to be people if there are to be jobs and there have to be jobs if there are to be people. In the presentation of the analysis described in this report, demographic (labour force) and economic (employment) factors are considered separately, with labour force coming first (to maintain continuity with the preceding section's emphasis on demographics), merely because it is necessary to start somewhere. The approach used in the preparation of the research, however, was interactive, with a preliminary demographically based labour force supply projection and a preliminary gross domestic product based employment (labour demand) projection brought together and resolved (by way of ensuring that unemployment remained in a historically reasonable range) before production of the final labour force and employment projections.

1. Labour Force - Workers in the Region

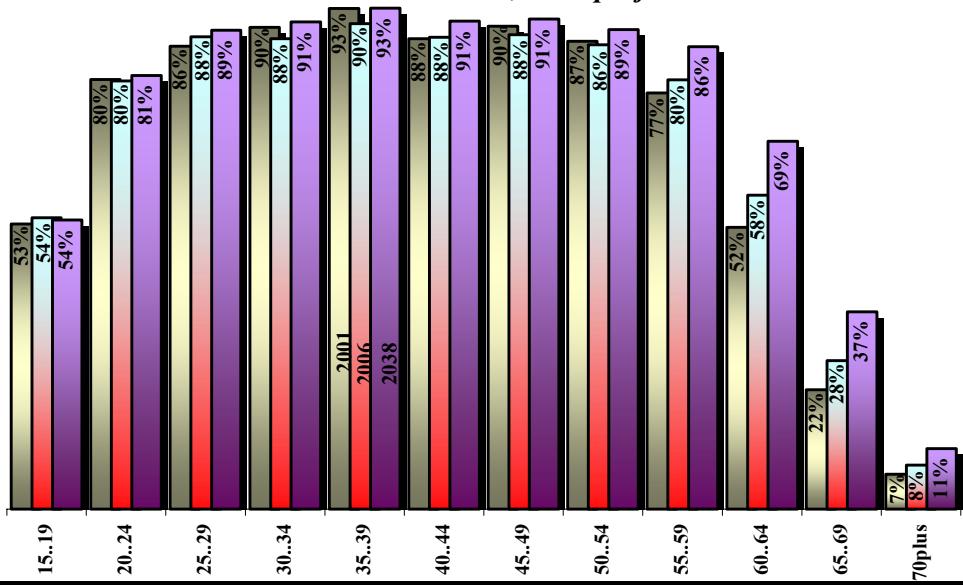
The CRD's population is projected to grow by 31 percent or 111,000 people over the next three decades; the result of the aging of the large bulge of population currently in the 44 to 63 age group into the 65 and older age group. The local and migratory contributions to the 15 to 64 age group will make up for the number of people lost from this group due to aging – migration will add an addition 27,500 people to it over the projection period. The working aged population will therefore increase by 11 percent overall, an annual average of 0.3 percent growth. However, this compares to a 75 percent increase in the population under 15 and over 65 (a 83,600 person increase or an annual rate of growth of 1.9 percent per year). Thus, the age group that is the primary source of human resources in the region will grow at a rate that is less than one-seventh that of the population not in the work force.

The general correspondence between the 15 to 64 age group and the labour force in a region is the result of the age specific pattern of **labour force participation**. Age specific labour force participation rates – the percentage of people in an age group who are active in the labour force (either employed or unemployed and actively seeking work) – shows a strong lifecycle pattern for both males and females (Figures 22 & 23). In both cases, labour force participation rates are highest in the 15 to 64 age groups, with core years of labour force participation in the 20 to 54 age range, while the 15 to 19 and 55 to 64 age groups represent transition stages of entry and retirement.

Labour force participation for males increases from a low of 54 percent in the labour force entry age group of 15 to 19 years old, to reach the relatively uniform rate of 88 to 90 percent that characterizes the 25 to 54 prime working years of the lifecycle. From this prime working stage, participation rates decline, first to 58 percent in the 60 to 64 age group (early retirement), further to 28 percent in the 65 to 69 age group, and to eight percent in the 70 plus age group. Female participation follows the same general pattern, matching

Figure 22

Male Labour Force Participation, Capital Regional District 2001 and 2006 actual, 2038 projected

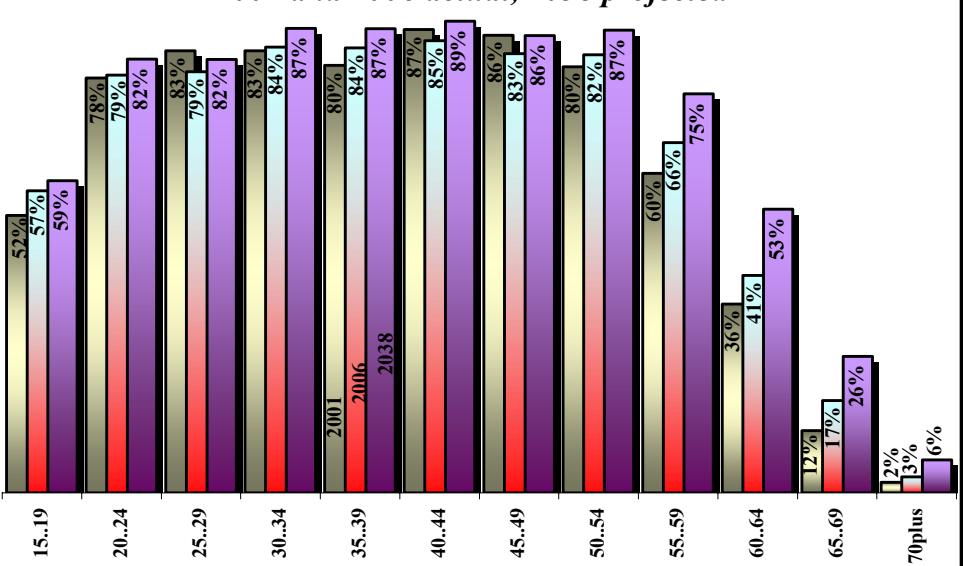


rates for women under the age of 55 had generally stabilized, while rates for women 55 and older continued to increase.

While the overwhelming historical trend in long-term male age specific labour force participation rates would suggest a slower decline in the rate of participation, demographic constraints may alter this trend. The constraints of a very slowly growing population of working age, and the need and opportunity for a reasonably robust economy (and hence demand for labour) points to relatively low unemployment environment that would support increasing male labour force participation rates, particularly in the 55 and older age groups.

Figure 23

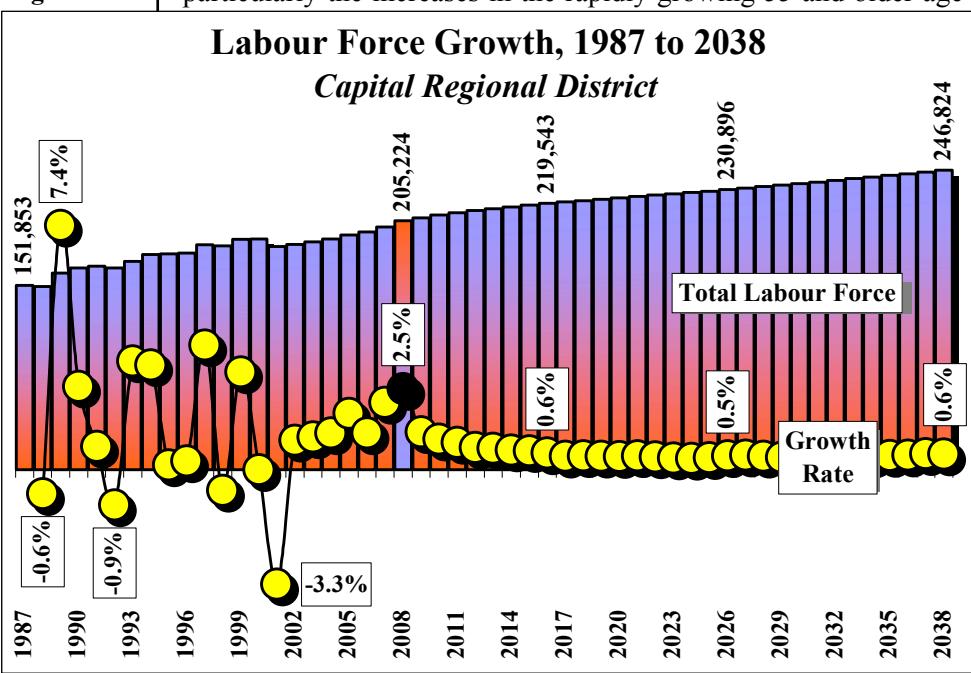
Female Labour Force Participation, Capital Regional District 2001 and 2006 actual, 2038 projected



The history of male labour force participation over the past three decades has generally been one of declining participation in every age group under the age of 70. Over the 2001 to 2006 period, there was a reversal of this declining trend in the 55 and older age groups, and a general stabilization in the under 55 age groups. In direct contrast to the pattern for males, female age specific labour force participation rates in all age groups increased dramatically over the past three decades. Having noted this, it is important to also note that by 2001

the male values in the entry stage, but peaking at a lower 79 to 85 percent range between the 25 to 54 age cohorts. The rate spread of ten to 15 percent between males and females roughly corresponds to the ten to 12 percent of women in their late twenties and early thirties who have a child each year. The gap between male and female participation rates widens during the retirement stage of the lifecycle, to a 14 percent spread in the 55 to 59 age group (66 percent of women versus 80 percent of the men) and to 17 percent in the 60 to 64 age group.

Figure 24



mobility the region is facing a future where labour supply may come to constrain the ability of its economy to grow. As the economy is the source of revenue to pay for the goods and services that the region's residents require – from both private and public sector producers – the role of labour supply in economic change will become much more significant in the future than it has been in the past.

2. The Economy – Work in the Region

The methodological approach used in the projection of employment for the CRD was to extend the historical relationship demonstrated between annual estimated employment in the CRD and real Gross Domestic Product for the province of British Columbia. Employment projections based on this historical relationship will generally indicate the direction of employment change in the region, while capturing the historical structural changes related to issues of both changing productivity and participation in the workforce. In adopting this methodological approach, the projection is developed on two fundamental assumptions. First, that changes in the historical relationship between employment and real GDP will be representative of shifts in the future and, second, that the input projection of real GDP will generally represent the employment generating capacity of economic growth over the coming decades. While this methodology is neither causal nor visionary, it has one overwhelming strength: there are enough historical data available to permit a strong assessment of the relationships between GDP and employment.

In the case of females, historical trends in participation (compounded by trends towards later timing of births), would point towards increasing participation rates – slight in the younger age groups and more substantial in the older ones. This would result in female participation rates in the 86 to 89 percent range through the 40 to 54 age groups, and of 75 percent in the 55 to 59 age group by 2038. While representing significant increases, female labour force participation is still expected to remain lower than male participation in all but the youngest age groups.

Combining these projections of increased age and sex specific labour force participation rates with the population projection for the CRD produces a **labour force projection** based on both demographic and behavioural change (Figure 24). In the labour supply context, the relatively slow growth of the working aged population (averaging 0.3 percent per year) will in part offset the increasing participation rates, particularly the increases in the rapidly growing 55 and older age groups. The projected labour supply in the region will grow, from its current 205,224 people working or seeking work to 246,824 in 2038, representing a 41,600 person increase (20 percent) in labour supply in the region. However, the annual growth in the labour force under these provisions would be relatively modest over the projection period, averaging 0.6 percent per year.

This pattern of labour force growth driven by changing demography and participation will have significant implications for employment growth in the Capital Regional District. As there will always be some level of unemployment due to structural adjustments and labour force

In terms of the most recent count of employment, the 2006 Census (not adjusted for the Census undercount) showed there were 182,585 people employed in the Capital Regional District. Included in this total were 17,665 people who lived in the region and worked at home and the 142,660 who had a usual place of work in the region outside of their home. It also included 21,300 people who lived in the Capital Regional District but had no fixed workplace (such as construction workers and home care workers). Although it is not possible to say definitively that these people worked in the region, it is likely that the overwhelming majority of them do work somewhere within the region. Finally, there were also 960 residents of the CRD who lived in the region, but worked outside of Canada.

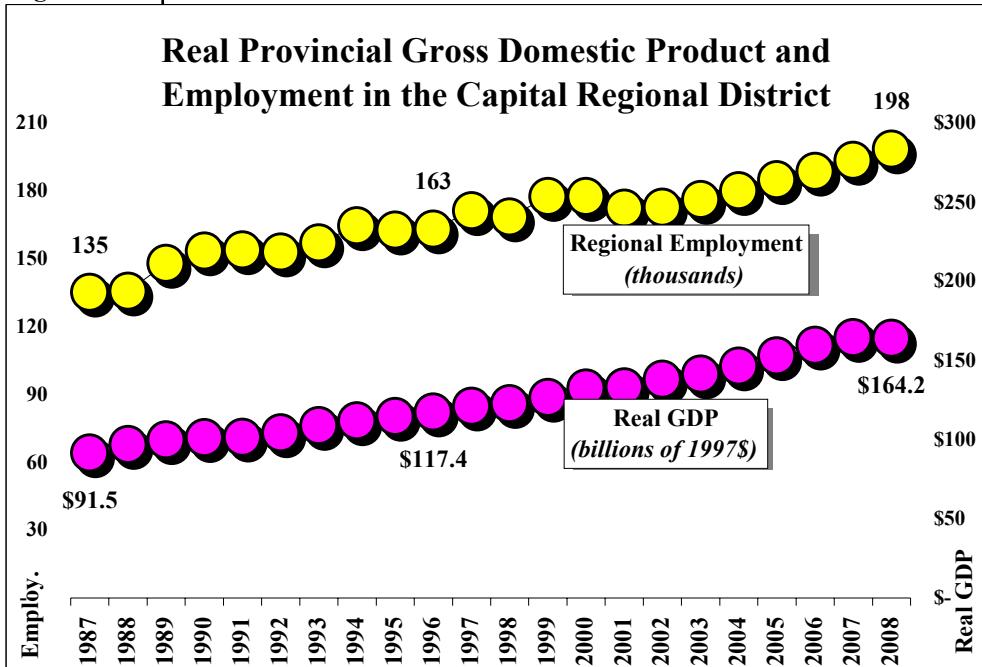
Once the total number of places of work were determined for the Capital Regional District from the 2006 Census, Statistics Canada's Labour Force Survey was used to extend the 2006 employment base for the region forward to 2008 and, along with previous Census tabulations, back to 1987. The Labour Force Survey provides annual estimates of employment by industry and occupation sectors as well as other labour force characteristics for Census Metropolitan Areas (CMA's) throughout Canada.

Combining the two data sources provides the history of employment change in the region, as it grew from 135,000 jobs in 1987 to 198,000 by 2008 (Figure 25). Relative to the Census Count of 182,585 jobs, the

2006 employment estimate for the CRD of 188,705 jobs was 3.4 percent greater than the Census, similar to the net Census undercount for the population. Therefore, over the past two decades employment in the region has grown by 47 percent. Over the same period, British Columbia's real GDP grew by 79 percent, from \$91.5 billion (constant 1997 dollars) in 1987 to \$164.2 billion by 2008 (Figure 25).

As an aside, when real GDP is compared to a provincial population that grew by 44 percent (from 3.05 million in 1987 to 4.38 million in 2008), a significant increase in real per capita GDP is seen. Similarly, when compared to employment growth of 66 percent,

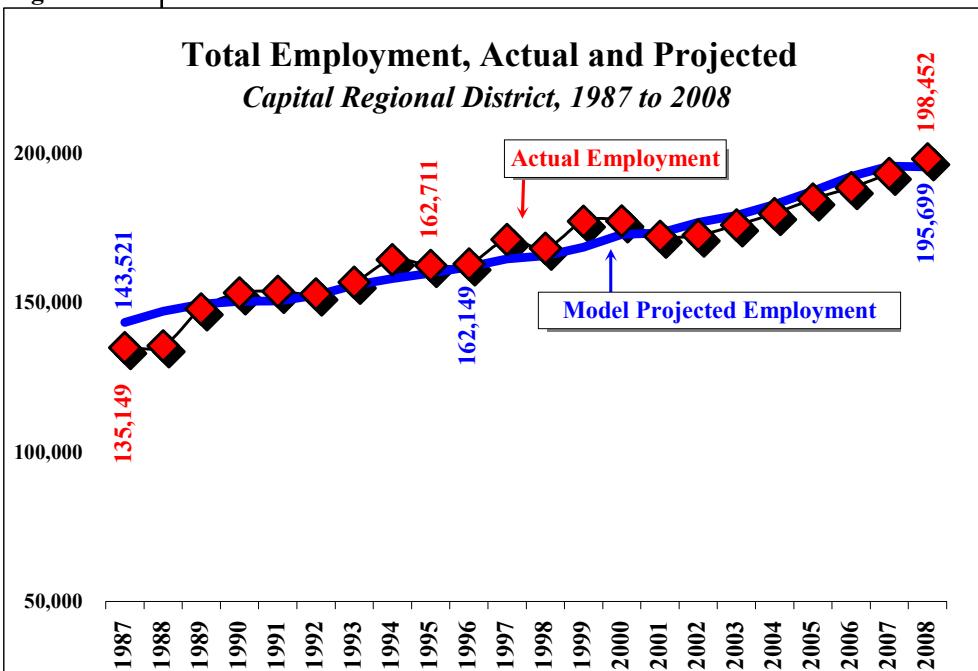
Figure 25



increases in total output per worker are seen as well. While differing from common assessments of productivity – which is typically calculated by considering individual contributions of each sector to total economic activity, referred to as “multifactor productivity” – changes in real per capita GDP and output per worker also demonstrate increasing efficiencies in the relationship between people and jobs.

As indicated above, projected employment relies on the historical relationship between employment and real provincial Gross Domestic Product. Actual employment counts at any point in time will show – in addition to a long run relationship to economic activity (GDP) – short run fluctuations due to structural changes in employment. This means that at any one point in time the model projected values of employment will not necessarily match an actual count of employment. This is clearly illustrated by “backcasting” the relationship – projecting employment back to 1987 and comparing the model projected

Figure 26



would pull the modeled results to lower than average employment levels than during normal periods. However, recovery would move actual employment back towards the model predicted line over time. This can be seen in the post 2001 period on Figure 26, with the gap between the model predicted and actual employment lines narrowing to 2008.

Second, the fundamental relationship between real GDP and employment in a particular sector of the economy may fundamentally change: to the extent that this occurs, the long run historical time series will not fully describe the emerging relationship over the short term. However, to the degree that this fundamental change is seen in future years, the model predicted employment would move to accommodate the new relationship as the new data points are incorporated into the analysis. In this context, while shorter term data might better represent the direction and magnitude of emerging trends, until there is a long enough period covered by “emerging trend” data, it is not possible to identify whether these data merely represent pot holes along the economic road or fundamental paradigm shifts in the relationship between employment and economic activity.

As future real GDP forms the dependant variable in the mathematics of this methodology, it is necessary to establish or obtain projections for real GDP for British Columbia. The ministry of finance, through its economic update and outlook, provides short term estimates of economic activity in the province. Current assessments anticipate BC’s economy to contract slightly in 2009 (a 0.9 percent decline) and then grow in the range of 2.4 percent for 2010 and 2.6 percent for the 2011 to 2013 period. However, beyond these short term assessments, few projections of economic activity exist.

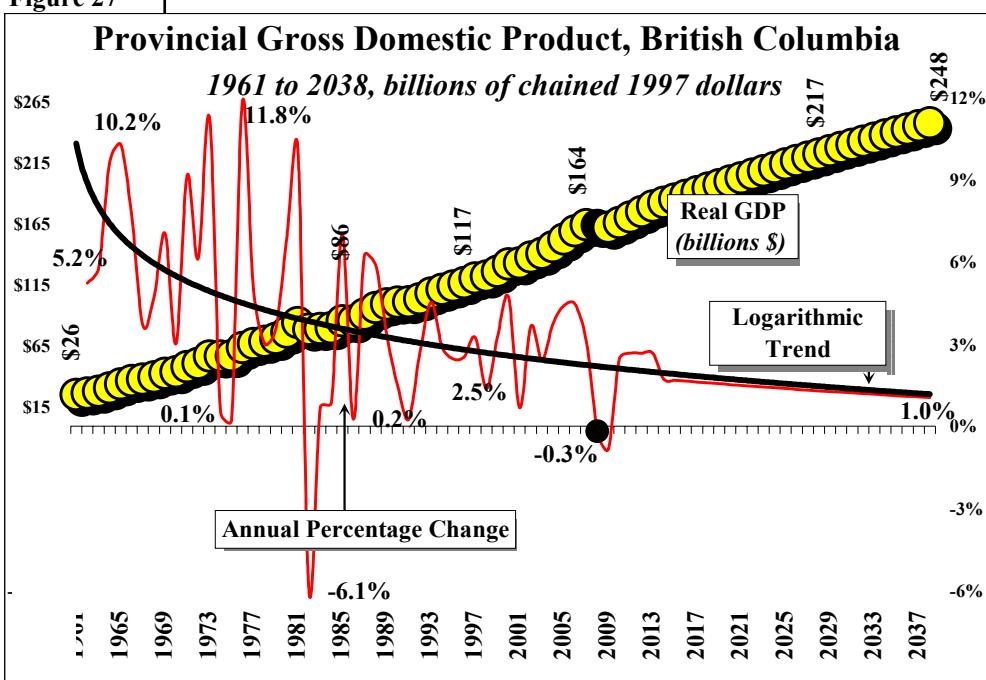
While the province has enjoyed a historical trend to increasing real GDP, the rate at which provincial GDP has grown shows a trend to slowing rates of growth. Much of GDP is comprised of factors that are

Historical divergences between the model projected and actual employment can be attributed to two factors. First, the model projected employment does not account for short term high or low points in employment for certain sectors of the economy. In future years, these sectors could see subsequent declines/increases as employment moves back towards the long run projected values.

For example, if a drop in employment during a period was severe enough to pull employment beyond the range exhibited in normal economic conditions, then including this period within the historical data series (upon which the projected employment is based)

population dependant (such as personal consumption, government spending or imports of goods and services); thus, the slower population growth anticipated for the coming years is expected to see this trend continue. In addition to slower overall population growth, there is also increasing concern over the impact of an aging population on economic output in Canada. The Conference Board of Canada published a report entitled "*Slowing Down with Age: the Ominous Implications of Workforce Aging for Canadian Living Standards*", which argues, amongst other things, that an aging workforce has the potential to slow the rate of National economic growth. After 2010, due to lower productivity associated with older workers, the Board postulates that the rate of national economic growth may slow. This suggests that long term growth in real GDP may not be able to continue at its current level and that the fundamental relationship between GDP and employment observed in the past may (or will have to) change significantly – towards fewer jobs per unit increase in GDP. Other factors that would contribute to a slowing rate of growth in real GDP include British Columbia's dependency upon resources, and its exposure not only to fluctuations in resource prices, but increasingly to competition from other countries.

Figure 27



Considering the historical trend and this broad range of forward looking factors, a logarithmic trend line was fitted to the past 47 years of economic activity within the province. Following the trend line would see economic growth in the province slow from the Ministry's assessment of 2.6 percent annual growth in 2013 towards 1.5 percent by 2020 and to one percent by the end of the projection period – mirroring the annual direction of change expected in both provincial and regional population and labour force (Figure 27). This trend would see real provincial GDP grow from an estimated \$164 billion today (2008) to \$248 billion by 2038, a 51 percent increase over the next three decades.

Following its historical relationship to these changes in provincial economic activity, total employment in the region would grow from its current 198,452 jobs to just over 217,000 in 2016, 222,000 by 2026 and 238,000 by the end of the projection period. Under this scenario regional employment would grow by 20 percent over the coming three decades as just under 40,000 new jobs would be added to the regional economy over the course of the projection.

The final step in this projection process is to compare this assessment of total employment in the Capital Regional District to the capacity of the labour force to fill those potential positions.

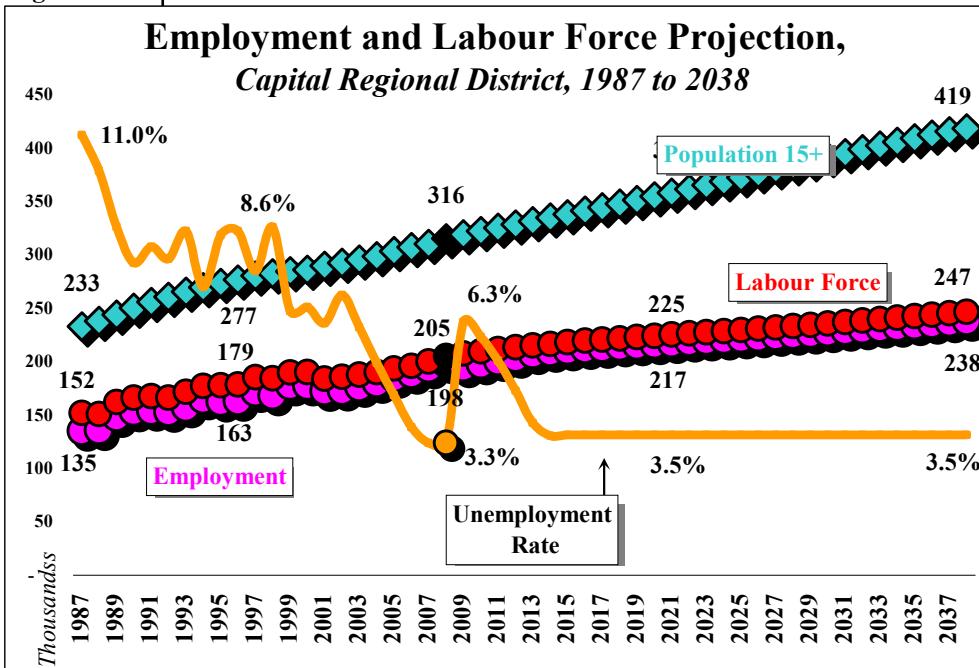
3. Resolving the Region's Employment and Labour Force

To close the circle of employment, labour force and population, projected employment was compared to the projected size of the available labour force in order to determine consistency between each projection. Looking back, the population aged 15 plus in the CRD was projected to increase from 316,000 people

today to 419,000 by 2038, averaging 0.9 percent growth per year over the coming three decades. The aging of the post war baby boom generation will ensure that a much greater change will occur to the age profile of the population than to its total size as the number of people aged 65 plus would increase from 2008's 63,430 to 139,054 (119 percent growth), while a mere 11 percent increase was projected for the region's working aged population. Given these demographic changes, the region's labour force was projected to increase by 20 percent or by 41,600 people over the projection period (from 205,224 in 2008 to 246,824 by 2038). Employment in the region, on the other hand, was projected to increase by 20 percent, or 39,734 jobs, growing to a total of 238,186 jobs by 2038.

Projected average annual employment growth of 0.7 percent is considerably lower than the 2.0 percent average increase the Capital Regional District experienced over the past two decades. Over the coming decades, employment growth in the region is expected to be tempered by a slowly growing labour force. Given the CRD's older population age profile today, and the labour force implications of their aging into retirement over the coming three decades, it will be the CRD's aging population which will ultimately determine the speed limit at which the region's economy and employment can expand.

Figure 28



that the unemployment rate is expected to remain in the range of structural unemployment (three to four percent) over the longer term of the projection period. Given the assessments of economic growth for the next couple of years (or decline for 2009) in British Columbia, the short term unemployment rate is expected to increase slightly, into the range of six percent, before falling back to the three to four percent range for the duration of the projection period.

An unemployment rate which falls within the bounds of experience (if not historical, at least current) illustrates consistency between the projections of demographic and economic change for the region. It also illustrates the influence that slower labour force growth could have on the regional economy over the coming decades. The implications of this resolution are threefold. First, if long run economic growth is expected to be more robust than demonstrated by the long run trend line, a larger labour force (and by extension population) would need to be realized within the region in order to accommodate the additional number of jobs that would be necessary.

Secondly, taking the regional population projection as a given would imply that more rapid economic growth could potentially be accommodated through increased participation of the population in the workforce. However, as the labour force projection already considers relatively robust increases in age specific participation rates, gains beyond those already projected are not expected.

Third, additional growth in economic activity could be achieved through increased productivity of the region's future labour force. Given the correlative approach used to generate the employment projections, this would imply increases in productivity that would be well in excess of what has been achieved historically. While certainly possible, future productivity gains may require much more resources than those achieved in the past due in large part to the implications of our aging workforce.

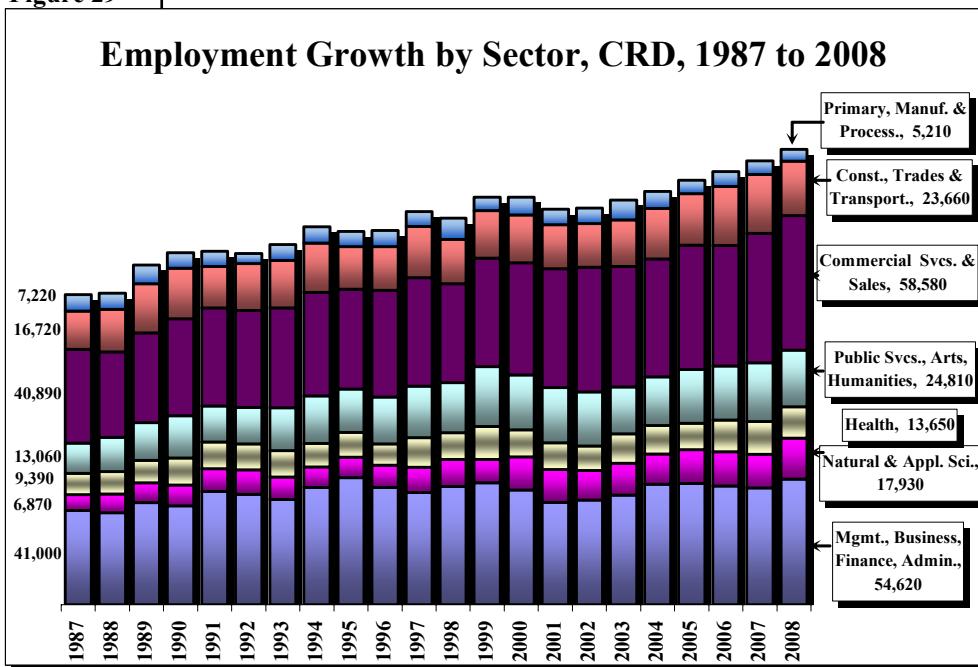
4. Employment by Occupation

Projection of employment in occupational groups followed the same correlative approach used to generate the total employment projection outlined above. This involved measuring the pattern of change in annual employment by occupation in the CRD that accompanied change in Real Provincial GDP over the 1986 to 2008 period. This approach captures not only the absolute level of employment in each occupation, but changes in the relative composition of the region's economy – in terms of both long term structural economic change and shorter term trends that are evident in the most recent data.

Over the past two decades employment growth in the Capital Regional District was focused largely on

Figure 29

Employment Growth by Sector, CRD, 1987 to 2008



service sector occupations. The most rapidly growing sector were occupations in Natural and Applied Sciences, which grew by 161 percent (more than 11,000 jobs, Figure 29) compared to the overall growth in employment of 47 percent. The Public Services, Arts & Humanities sector also saw significant growth, increasing by 90 percent between 1987 and 2008 (adding 11,750 jobs). These two sectors accounted for 36 percent of employment growth in the region. Only one sector saw decline over the period, with the number of occupations unique to Primary, Manufacturing and Processing falling by 28 percent or just over 2,000 jobs.

In terms of absolute growth, Commercial Services and Sales occupations added the largest number of jobs; growing by almost 17,700 positions, this sector accounted for 28 percent of all jobs added in the region over the past two decades. This 44 percent growth, just below the overall average, allowed this occupation group to essentially maintain its 30 percent share of regional employment. Occupations in Management, Business, Finance and Administration recorded the second largest increase in number of jobs (13,620); followed by occupations in Public Services, Arts and Humanities (11,750). Combined, these three major service occupations accounted for just under 60 percent of all job growth in the region.

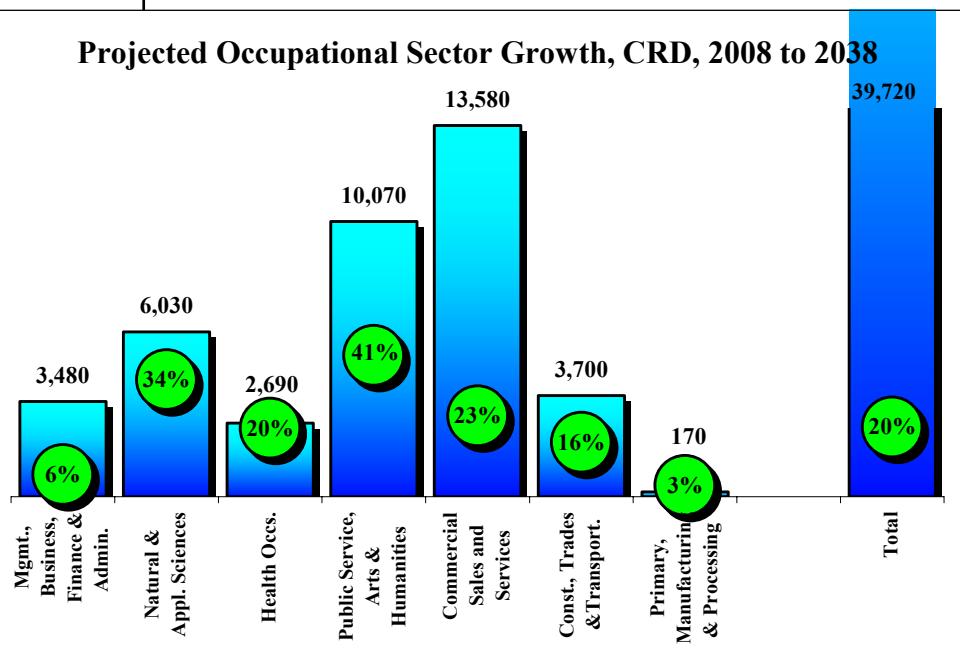
These occupational differences in growth over the two decade period reflect the long term structural changes in the region's economy; the path of employment growth within the period reflects the impact of short term and cyclical economic trends on specific sectors, as well as on the economy as a whole. Consider, for example, occupations Unique to Primary, Manufacturing and Processing, which form the

smallest occupational category, accounting for only 2.6 percent of regional employment in 2008. The sensitivity to economic fluctuations of the industries in which the majority of the people with such skills are employed means that significant year to year variance in employment in this occupational class occurred over the past two decades. Thus, while there was a net decline in employment of 2,010 workers between 1987 and 2008, in 1998 employment in these occupations grew by 2,640 jobs, in 1999 employment declined by 3,300, and in 2000 it increased by 1,830 jobs. In a small sector such as this one, such variance is very noticeable; however, to a greater or lesser degree it occurs in all of the occupational classifications.

The correlation approach used here for a future projection reflects both the year to year change in occupational employment that results from cyclical change (by keying it to real provincial GDP) and the long run structural change in the region's economy. On the basis of the structural changes seen in the region and their correlation to changes in provincial economic activity, the future levels of occupational employment were projected using the trend based projection of Real GDP as presented in the preceding section.

Figure 30

Projected Occupational Sector Growth, CRD, 2008 to 2038



The projection results indicate that over the coming three decades the Public Service, Arts and Humanities occupational group would see the greatest growth, increasing by 41 percent and adding just over 10,000 jobs (Figure 30), compared to the overall employment growth of 20 percent in the region. Occupations in the Natural and Applied Sciences would also grow faster than the average, increasing by 34 percent (6,000 jobs) by 2038.

The coming three decades would again see service based sectors add the greatest number of jobs, with the Commercial Services and Sales sector adding the

greatest absolute number of jobs (13,580 additional jobs, a 23 percent increase), followed by Public Service, Arts and Humanities (10,700). Combined, these two sectors would account for 60 percent of new jobs added to the Capital Regional District in the coming 30 years.

Note that the approach used here (considering employment change annually, rather than just comparing end points) and in the context of change in the provincial economy, results in a projection of modest growth of three percent (170 jobs) in occupations Unique to Primary, Manufacturing and Processing by 2038. This indicates that the point-to-point decline between 1987 and 2008 was more cyclical than structural.

The projected future patterns of change seen in the region's occupational structure reflect, in part, its role as a regional service centre for Vancouver Island; a provincial, national and international travel destination; the center of provincial government; and as a military and maritime base. Growth and

change in these external economic factors will play a significant role in changing the region's internal economy.

The projected patterns of occupational change also reflect the increasing importance of the population of the region itself as a driver of the region's economy, as a growing and changing population will permit the region to both surpass demand thresholds to provide locally made goods and services that have had to be acquired from other regions and to export some of these services to its external markets.

Paramount among the impacts of internal change will be that of the aging of the region's population. In its simplest form, this will be expressed in increased demand for employment of persons in the health and medical services occupations and in changing demand in every sector, with life cycle consumer spending changes being met with changes in employment. In a more complex form, the slow growth of the labour force that will accompany this aging will direct economic activity away from labour intensive activities, favouring occupations and technologies that can maintain and enhance levels of service and/or output with a declining number of workers.

5. Housing Occupancy Demand

With the relationship between the region's future population, labour force and employment resolved in the previous section, this portion of the research turns to the impact that demographic growth and change will have on housing occupancy demand within the region. As such, it uses an occupancy-based definition of housing demand, defined as the total number of private dwelling units (excluding institutional and collective dwellings and vacancy) required to house the residents of the Capital Regional District.

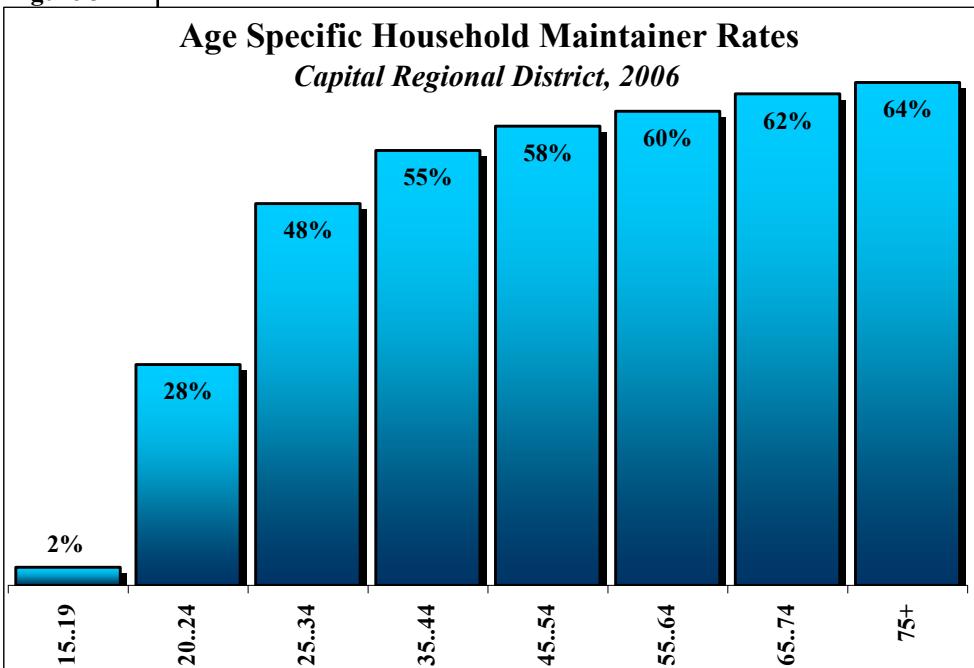
A change in housing demand over a period of time is therefore the change in the number of dwelling units occupied by the CRD's residents. This is calculated by subtracting the number of occupied residences at one point in time from the number of occupied residences at an earlier point. While a seemingly intuitive statement, changes in occupancy demand over a period of time may not necessarily be the same as the number of dwelling units constructed during that period.

For example, while growth in occupancy demand can be met by new construction, it can also be accommodated by households occupying units that existed at the beginning of the period but were vacant. To the extent that an inventory of vacant units is reduced over the time period, occupancy demand can grow faster than new construction; to the extent that vacant inventory grows over a time period, construction can exceed occupancy demand. Further, conversion of units to and from non-residential uses can alter the supply of residential accommodation without being reflected in construction or demolition data. In this vein, construction statistics can include replacement demand (new units constructed to replace units demolished or converted to other uses) that do not represent net additions to the housing stock. Similarly, construction of secondary residences that are occupied only part time during the year would be counted as new construction but would not be part of resident occupancy demand. Finally, secondary suites added to the dwelling stock may not show up as new construction but would certainly represent a dwelling unit that would fulfill occupancy demand.

i. The Age Specific Pattern of Housing Demand

The link between housing occupancy demand and the age composition of the population is derived through the percentage of people of each age who are "**household maintainers**". In the Census questionnaire used to gather data on housing, each group of people living together in a private dwelling unit (a household) is asked to indicate the age (and other attributes) of the household member they consider to be primarily responsible for the financial support of the household. This person is referred to as the (primary)

Figure 31



24 age group being household maintainers. This increase continues as people age into subsequent age groups, with another significant increase from 28 to 48 percent for the 25 to 34 age group, driven by entry into the family formation and working career stages of the lifecycle. In all of the 35 plus age groups more than half of the people are household maintainers, increasing to 64 percent in the 75 plus age groupⁱⁱ.

This pattern of maintainer rates increasing with age has significant implications on future housing demand. Consider the example of 1,000 people in the 15 to 19 age group: in 2006 there would be only 20 households maintained by these 1,000 people. Only five years later, when these 1,000 people had aged into the 20 to 24 age group, they would maintain 280 households; and five years after that they would maintain 480 units as they aged into the 25 to 34 age group. Over a ten-year period the occupancy demand from the same 1,000 people would increase by over 20 times, from 20 units to 480. This characterized housing markets throughout Canada in the late 1960s and 1970s as the post-World War Two baby boom generation moved out of their parents' homes and into their own housing. It will also characterize the coming years as the boom ages into the stage of the lifecycle where maintainer rates peak.

*The strong
lifecycle pattern
of maintaining a
household has
significant
implications on
future housing
demand.*

ii. Age and Structure Type Specific Maintainer Rates

The great diversity of housing types people live in can be classified into two broad structural types, ground-oriented and apartment. The term 'ground-oriented' accounts for a wide range of housing accommodations, from the traditional single detached house with side yards separating it from other

(moved or did not move). Considering changes in the maintainer rate between various age groups illustrates the lifecycle pattern to maintaining a home.

The 2006 Census data provide a snapshot of this lifecycle pattern for the Capital Regional District. The Census data shows that only two percent of people between the ages of 15 and 19 are household maintainers; most people in this age group (and all of those under the age of 15) are living in households maintained by someone else, usually their parents (Figure 31). As people begin to leave the parental home to establish households of their own, the maintainer rates begin to rise, increasing to 28 percent of the 20 to

ⁱⁱ note that maintainer rates decline if the older age groups are considered in more detail as individuals shift from maintaining their own private household to either living in a household maintained by someone else, or to some form of seniors' accommodation (such as an institutional or collective care facility) which is not considered a private accommodation.

dwellings, and only one household living within it, to a side by side duplex where dwelling units are on the ground but attached to another unit. This category would also include row houses where the dwelling units are attached to each other on both sides, and moveable and mobile homes. The defining feature of ground oriented units are that they open directly to a yard and do not share a common corridor entrance.

Distinct from these ground oriented housing types are apartments, dwelling units that are not only attached on each side, but also stacked one on top of the other. As a result of being stacked, individual dwelling units do not generally have direct access to the street or to a yard, but rather have entrances that open onto a corridor, sharing a common access to the yard and street with other dwelling units. The typical examples of apartment dwellings are in multi-unit apartment buildings of five or more storeys (high-rise buildings) and in buildings of less than five storeys (low-rise buildings). In both cases, the defining features are many units in one building, attached to other units on all sides and unit entrances by way of shared corridors with no direct access to yards.

There are two additional structure types that, depending upon design, may be considered to be either ground-oriented or apartment units. The first is the up/down duplex; a two-unit structure with units stacked one on top of the other but each with direct access to the yard or street. The second is a detached house with a secondary suite. Both cases – as the units are stacked – have the characteristics of apartments, but usually also have direct access to the yard and street. For the purposes of this research these units have been included in the ground oriented category.

Changes in both the enumeration process and definitions for these two types of dwellings were seen between 2001 and 2006. For homes with suites (currently defined by Statistics Canada as “Apartment Duplex”), Census enumerators were trained to specifically look for additional suite numbers, side or rear entrances, multiple doorbells and other visual signs that there may be a suite present. In 2006 20,405 units were classified as Apartment Duplex in the region, representing 13 percent of the total dwelling stock. As this count would include both the primary portion of the home as well as the secondary suite, an estimate of the number of secondary suites in the region is provided by dividing the total number of Apartment Duplex units in half: 10,200 units. Municipal counts for the total number of Apartment Duplex have been included in Appendix II. (*note that dwellings with multiple suites would typically fall into the “Apartment in a building that has fewer than five storeys” category in the 2006 Census*). As improvements to the enumeration process resulted in better identification of hard to find dwellings, it is not possible to provide a comparison of these structure types between 2001 and 2006.

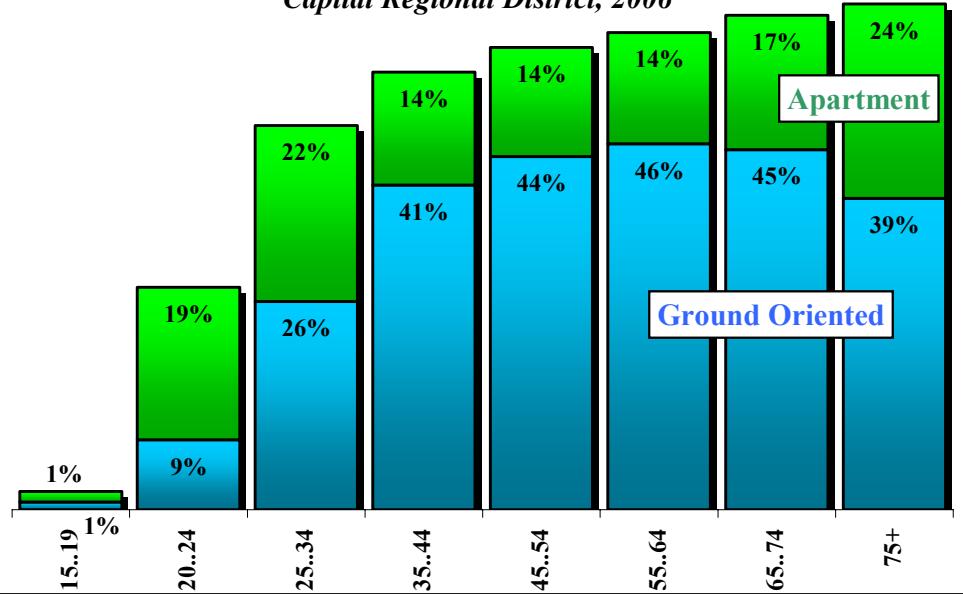
It is important to recognize that while we have adopted two general groupings for structural and definitional reasons, there is a continuum of consumer preference which connects them at the margin. For example, a household realistically seeking a traditional single detached home may, because of budgetary or locational factors, consider alternatives to this most preferred form of dwelling. The closest acceptable alternative form in terms of living experience would likely be a side by side duplex or row house, but not an apartment in a high rise building. Similarly, given price or availability, a household seeking accommodation in a side by side duplex may, on the margin, find itself residing in a low rise apartment building. Recent trends in housing design have further blurred the boundaries, but not the core characteristics, between these major structure types.

Figure 32

There is also a distinct lifecycle pattern to household maintainer rates for each of these structure types (Figure 32). As with many other regions in Canada, from the ages of 25 onwards, a greater share of individuals in the CRD maintain ground oriented dwellings – a pattern that generally coincides with the family rearing and empty nester stages of the lifecycle. Conversely, a person is more likely to be the maintainer of a household living in an apartment in the under 25 age groups (where maintainer rates for apartments are double those of ground oriented). While apartment maintainer rates peak in the 75 plus age group (where almost one quarter of people maintain apartment units), even for this age group ground oriented accommodation still predominates, with 39 percent of people maintaining ground oriented units.

Age Specific Maintainer Rates by Structure Type

Capital Regional District, 2006



The pattern of age and structure type specific maintainer rates represents what might be called the behavioural component of the housing market; it describes the way in which households, given their resources and the constraints of prices and availability, accommodate themselves in the housing stock. As with the other

behavioural variables, age specific household maintainer rates have changed over time and are expected to continue to do so. These changes will be driven by factors such as the continued urbanization of the Capital Regional District, changing social behaviour with respect to family formation, labour force participation, retirement, education and growing environmental concerns. Some of these factors are considered below in presenting how maintainer rates may change in the coming years.

iii. Projected Household Maintainer Rates

From a housing perspective, growth and change generally occur in two directions – **out** and **up**. The **out** is the most commonly perceived dimension, with the boundaries of urbanized areas expanding as additional housing is added to the edges of regions to accommodate new residents.

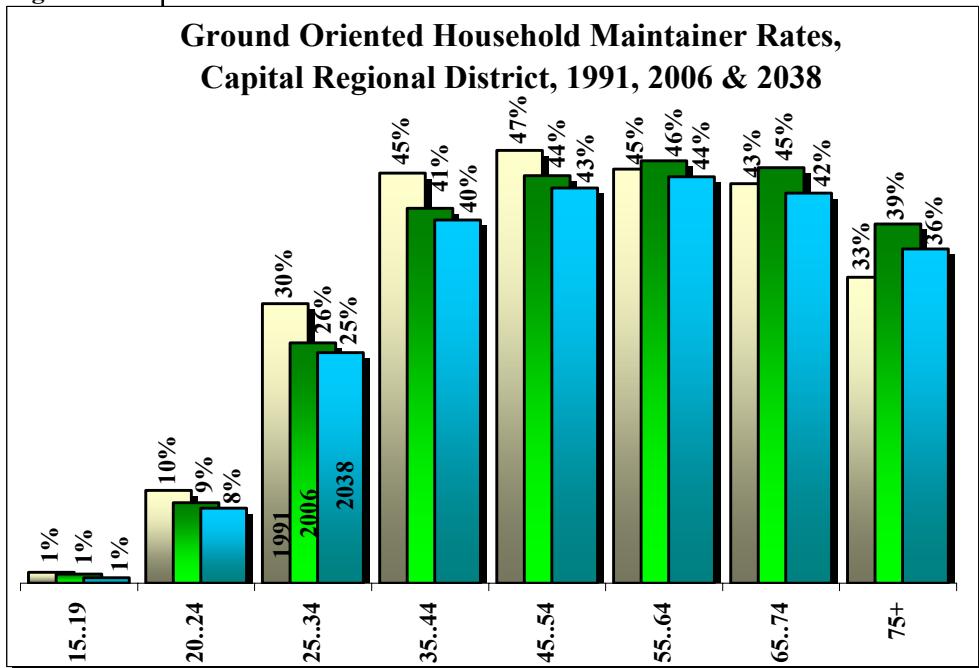
Two forces ensure that along with the **out** comes **up**. The first is a by-product of the outward growth; as the expanse of the urbanized area increases, there is an increasing premium attached to locations that are readily accessible to major employment concentrations, which are typically found in the central part of the urban area. Over time, the accessibility advantage of these sites will be capitalized into higher land values. In urban land economics this is typically referred to as a declining land value gradient from the highest to the lowest accessibility sites.

Efficiency of resource utilization means that as the value of a site increases due to its accessibility, it will also become more intensively used, so that the higher costs of the site can be spread over more users. Therefore, accompanying the declining land value gradient is a declining density gradient from the most accessible sites to the least accessible. Thus, as urban regions have grown, a residential development pattern has emerged whereby emphasis is placed on apartments being located on highly accessible sites (typically the core of the region); whereas compact forms of ground oriented housing are located in areas

Figure 33

of moderate accessibility, and single detached in areas most distant from the highly accessible sites. This general pattern has led to apartments and attached ground oriented housing accounting for an increasing share of the housing stock in most urbanizing regions; reflecting the increasing cost of accessibility in growing urban regions.

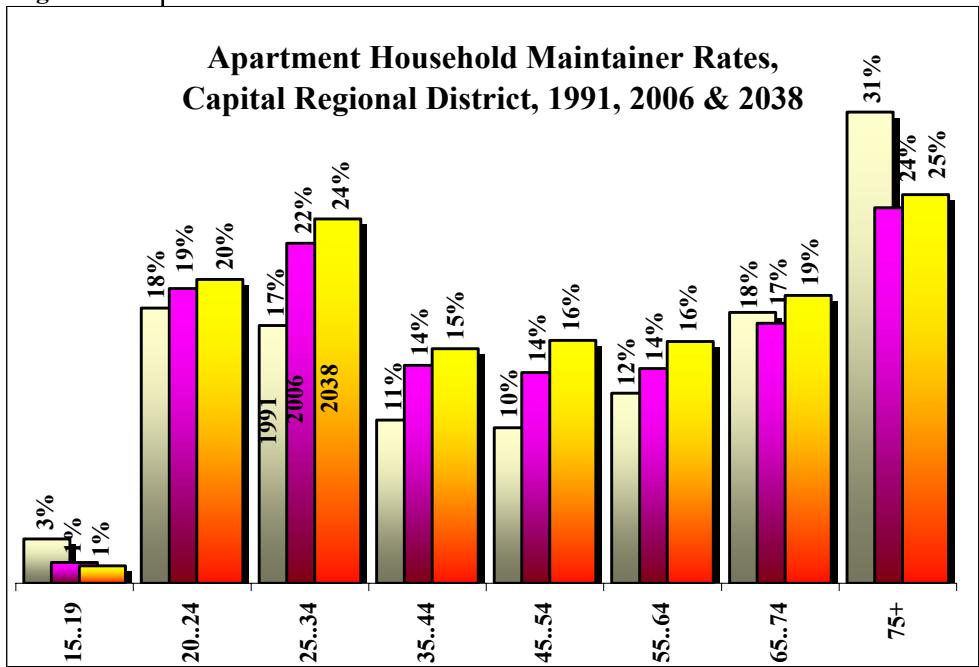
Ground Oriented Household Maintainer Rates, Capital Regional District, 1991, 2006 & 2038



This, in turn, brings a greater diversity to the region's population; specifically with respect to emphasis on what might be called urban lifestyles. This ultimately leads to a greater diversity, and density, of housing types.

Figure 34

Apartment Household Maintainer Rates, Capital Regional District, 1991, 2006 & 2038



support shifts at the margin towards other forms of housing as a result of accessibility, land values and increased diversification of consumers. Additionally, high real energy prices may further contribute to increasing transportation costs and, along with a growing awareness of environmental impacts, reinforce

The second factor that changes housing mix in an urban region as it grows also stems from economics, but in this case it is the actual economic structure of the region that affects occupancy demand. As the population in a region grows, economic activity (in terms of the distribution of employment across occupational sectors) becomes more diverse. In this instance, the population serving components of employment grow, both absolutely and in share of total employment. This diversification of economic activity brings with it the requirement for a wider range of skills and talents, and hence for a greater diversity in the workforce. Thus, urban growth also contributes to the land value and density gradients through a more diverse consumer population and more diverse demand for housing. Land use policies, transportation infrastructure and geographic constraints have combined with this general pattern to determine the specific character for urban regions throughout Canada.

In analyzing how these factors may influence the behavioral aspects of housing demand in the future, it is important to recognize the large stock of ground oriented housing that currently exists in the CRD. While the region will remain predominantly ground oriented over the coming years, continued population growth and change will

Figure 35

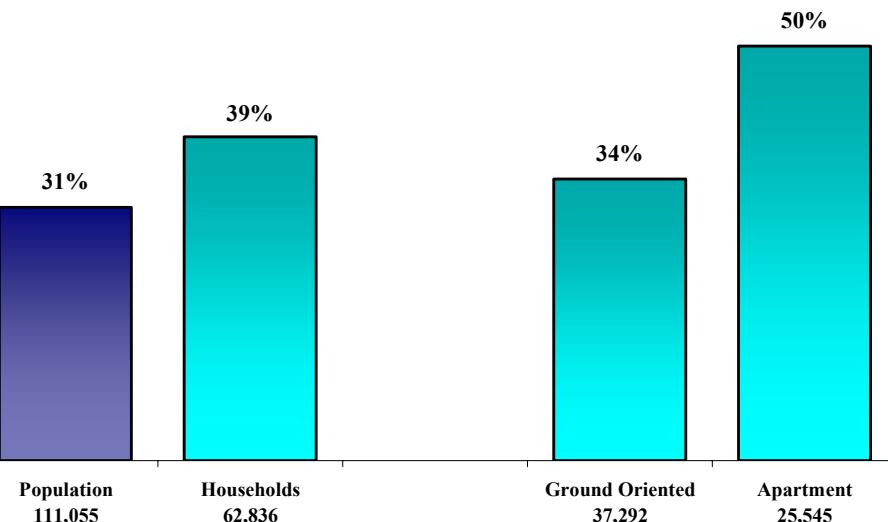
(again at the margin) the role that accessibility cost and land value play in shifting housing occupancy patterns. The extent to which this is expressed in land use change will depend in part on these economic factors; it will also depend on the degree to which regional and local land use policy provides for flexibility.

Considering the historical changes in age specific maintainer rates for the CRD, along with the patterns seen in other metropolitan regions provides some indication to the extent to which maintainer rates may change in the coming years. Increasing accessibility costs and increasingly urban lifestyles will result in a shift in housing patterns in the CRD, gradually but inevitably, towards the patterns observed in larger metropolitan regions as it passes through the same population thresholds. In particular, age specific maintainer rates for ground oriented accommodation are expected to continue their pattern of decline for the under 54 age groups and move back towards historical values for those over the age of 55. Overall, this trend would see rates for ground oriented fall into the 40 to 44 percent range through family rearing and to

between 36 and 42 percent through retirement (Figure 33).

The most significant relative reductions would be in the younger, market entrant age groups; ground oriented maintainer rates would fall, for example, by almost 13 percent (from nine to eight percent) for the 20 to 24 age group. The reductions are not expected to be as significant for the older age groups, who typically have more resources available to pursue a greater range of housing options. For example, the decline in the ground oriented maintainer rate for the 55 to 64 age group would be under five percent (from 46 percent of the age group maintaining this type of accommodation in 2006 to 44

Change in Housing Occupancy Demand, Capital Regional District, 2008 to 2038



percent by 2038).

The decline in ground oriented age specific maintainer rates is projected to be offset by increases in the propensity to maintain apartment units. The increase in apartment rates would be driven both by the push of affordability and the pull of lifestyle choices as discussed above.

In the 20 to 24 age group, for example, the propensity to maintain a household in an apartment is expected to increase by five percent (from 19 to 20 percent) over the next thirty years. Through the family rearing stage of the lifecycle apartment maintainer rates are expected to increase by 14 percent (from 14 to 16 percent for the 45 to 54 age group, Figure 34). Note that in aggregate, total age specific maintainer rates in the Capital Regional District are projected to remain relatively constant over the projection period, with shifts being seen between the structure types.

Combining this lifecycle pattern of household maintainership with the 31 percent growth in population (111,055 more people) would result in a 39 percent increase in total household occupancy demand, or a total of 62,836 new units (Figure 35). The greatest relative growth would be seen in the apartment

segment of the market, growing by 50 percent over the coming three decades as 25,545 new apartment units would need to be added to accommodate projected demand.

Alternatively, ground oriented accommodation is expected to grow more slowly, increasing by 34 percent between 2008 and 2038. That said, the additional number of ground oriented units will outweigh apartments, with 37,292 units added to the region to accommodate projected occupancy demand.

While the relative growth in apartment demand would be significant in the region (50 percent versus the 34 percent for ground oriented), the change in the housing stock brought about by these additions would be gradual. Over the short term, ground oriented additions would continue to account for their current 60 percent plus share of growth in occupancy demand, declining towards 50 percent by 2031, and further to below 46 percent by 2038. Even with this shift in maintainer rates towards apartments the region would still be predominately characterized by ground oriented units. Of the total housing stock of 223,000 units projected for 2038 two thirds of units would be ground oriented (compared to 68 percent today), while apartments would account for 33 percent (relative to 32 percent today).

This shows a picture of gradual change for the region as the reality of the inertia of the large stock of housing that currently exists in the region becomes evident. Recognizing these issues, it will be scale, market and environment that will gradually but inevitably shift the Capital Regional District towards more compact forms of housing.

6. Regional Land Demand

The final component of the regional projections is an estimate of potential additional land required to accommodate the projected growth in housing and employment. As significantly different parameters shape the land requirements for residential and non-residential uses, land absorption for these two use categories were considered separately.

i. Residential Land.

The location and format of land development to accommodate residential growth in metropolitan regions is significantly influenced by land use policies. One major dimension of policy influence is the extent to which policy, explicitly or implicitly, directs changes in the housing stock towards land currently in residential use (existing residential areas) or to land currently not in residential use (here referred to as greenfields, but would also include land in other non-residential uses, including land formerly used for industrial or institutional uses).

Table 1

Residential Land Policy Inputs		
Percent Greenfield		
	2008	2038
Ground Oriented	75%	75%
Apartment	20%	20%
New Land Development Density		
<i>Units/acre</i>	2008	2038
Ground Oriented	12.0	12.0
Apartment	25.0	25.0

In this research, projected future increases in housing occupancy demand were allocated to land not in residential development in 2008 (new development on greenfield sites) or to land that was already in residential use in 2008 (redevelopment/infill on existing residential land). Net increases in occupancy demand that are allocated to 2008's land already in residential use will effectively increase the net density (number of units per acre) of housing occupancy in existing communities, while net increases in occupancy demand allocated to greenfield sites will increase the extent of land in residential use in the CRD. The mechanism used to model this

split is the percentage of annual net occupancy demand that is allocated to greenfield sites: based on anecdotal discussions with land developers, a baseline estimate of 75 percent of the increase in ground oriented net occupancy demand (development) and 20 percent of apartment development allocated to greenfield sites was used (Table 1). As these shares will largely be policy driven variables, higher or lower shares may be realized and they may change significantly over time. While, for this baseline projection, the shares are held constant at these initial levels in order to establish the degree to which residential land use change would be driven by growth and change in housing demand, the required data to calculate different policy parameters has been included in the following tables.

The density (units per acre) at which net occupancy demand is accommodated on new residential sites is the second policy variable which will influence how much land is needed to accommodate future residential demand. The densities used in the baseline projection are based on industry standards where ground oriented units would be developed at 14 units per acre and apartment at 25 units per acre. Both of these would be gross densities, including allocations for internal roads, but not for commercial and institutional uses. As with the allocation ratios, actual densities realized may be different than those assumed under the baseline projection and may also change over time to reflect changes in policy direction. Baseline development densities were also held constant in order to illustrate the impact that growth and change in housing demand at constant densities would have in the coming years. Additional residential unit data has been included in the following tables so that readers can consider the potential implications of different levels of greenfield development or different development densities.

Combining these residential land use policy variables with the projections of net occupancy demand by structure type produces a projection of additional land (post 2008) required for residential development.

Table 2

	2009 to 2013	2014 to 2018	2019 to 2023	2024 to 2028	2029 to 2033	2034 to 2038	2009 to 2038
Additional Residential Units on Existing Developed Residential Lands							
<i>CRD</i>							
Ground Oriented	1,891	1,835	1,786	1,534	1,267	1,009	9,323
Apartment	3,359	3,192	3,208	3,527	3,606	3,544	20,436
Total	5,250	5,026	4,995	5,061	4,873	4,554	29,759
Additional Residential Units on Existing Greenfield Sites							
<i>CRD</i>							
Ground Oriented	5,673	5,504	5,359	4,602	3,802	3,028	27,969
Apartment	840	798	802	882	901	886	5,109
Total	6,513	6,302	6,162	5,484	4,703	3,914	33,078
Additional Greenfield Residential Land Demand							
<i>Acres</i>							
Ground Oriented	405	393	383	329	272	216	1,998
Apartment	111	105	106	116	119	117	674
Total	516	498	489	445	391	333	2,672

ii. Employment lands

Four specific employment land use categories were considered: office, industrial, commercial and institutional. The first step in determining the amount of land required to accommodate economic change was to match employment by occupational group with the type of land use that those occupational activities would require. As an example of how this allocation was carried out, consider the land use requirements of occupations in the health sector. Many of the activities of this occupational group occur on institutional land uses, specifically in hospitals; while some occur in offices (doctors and dentists) or in commercial locations (research and test labs). In each case it is necessary to determine the share of people in each occupation who would be accommodated within each of the employment land use categories. Empirically, this matching was carried out using a detailed Census cross tabulation of occupation by industry, with the distribution applied only to those jobs where the worker had a usual place of work outside the home in the CRD (therefore excluding people who worked at home, had no fixed workplace or who worked outside of the region).

Distributing the growth in employment in health (and all other) occupations across the four land use categories provided the base for the projection of demand for employment lands. As outlined in the employment projections, employment for the Capital Regional District was projected to increase by 39,720 jobs (20 percent). With the allocation of these occupations to the four uses, the largest relative growth would be the 25 percent growth in workers using institutional land, followed by the 20 percent growth in workers using both office and commercial uses and the 16 percent growth in occupations on industrial settings. In absolute terms, the greatest increase would be in employment using commercial land (13,482 jobs), followed by institutional (9,170), office (6,579) and then industrial (6,351).

As with residential uses, not all of this employment would locate on greenfield sites, as redevelopment and intensification will also accommodate employment growth on existing employment lands; the degree to which this occurs will, as with residential use, be largely influenced by policy. Again, based on

Table 3

Non-Residential Land Policy Inputs			
Employee Space Ratios		2006	2038
<i>sq.ft. per empl.</i>			
Office		210	210
Industrial		650	650
Commercial		275	275
Institutional		510	510
Percent Greenfield share on greenfield		2006	2038
Office		10%	10%
Industrial		90%	90%
Commercial		20%	20%
Institutional		20%	20%
Greenfield Site Coverage Ratios		2006	2038
<i>site coverage</i>			
Office		1.00	1.00
Industrial		0.23	0.23
Commercial		0.35	0.35
Institutional		0.50	0.50

anecdotal information from land developers, for the baseline projection 90 percent of employment growth for activities using industrial land are located on greenfield sites, a level that is at the opposite end of the spectrum to the ten percent of employment using office land that is located on greenfield sites (Table 3).

As with the residential projection, policy influences may result in shares realized in the future being different than those contained in Table 3. As such, net additional employment for each land use category has been included below so that the implications of other policy assumptions can be tested. As Table 4 shows, the result of this allocation of employment growth by land using category is a projected increase of 10,904 jobs on greenfield sites, accounting for 30 percent of the total employment growth.

The next step in the analysis of employment lands was to account for the amount of floor space required by each new employee in these four uses. As in Table 3, surveys of current industry data show that floor space ratios in square feet per employee range between the 210 square feet used in office types of uses through to the 275 square feet per commercial employee, to 510 per employee in institutional type settings and further to 650 for those on industrial uses (19.5 square meters for office, 25.5 for commercial, and

47.4 and 60.4 square metres for institutional and industrial uses respectively). When applied to the growth in employment on greenfield sites by land use type, these per employee ratios result in a projection of construction of 5.33 million more square feet (or 495,000 square meters) of space on greenfield sites over the next 30 years (two thirds of which would be industrial space).

Table 4

	2009 to 2013	2014 to 2018	2019 to 2023	2024 to 2028	2029 to 2033	2034 to 2038	2009 to 2038
Additional Employment on Existing Developed Employment Lands							
<i>CRD</i>							
Office	849	1,097	894	948	1,051	1,082	5,921
Industrial	151	123	86	78	95	103	635
Commercial	2,223	1,891	1,491	1,577	1,768	1,835	10,786
Institutional	1,888	1,215	958	1,015	1,113	1,147	7,336
Total	5,112	4,326	3,429	3,618	4,027	4,167	24,677
Additional Employment on Greenfield Sites							
<i>CRD</i>							
Office	94	122	99	105	117	120	658
Industrial	1,357	1,111	773	698	853	924	5,716
Commercial	556	473	373	394	442	459	2,696
Institutional	472	304	239	254	278	287	1,834
Total	2,479	2,009	1,485	1,451	1,690	1,790	10,904
Additional Floorspace on Greenfield Sites							
<i>CRD, square feet</i>							
Office	19,819	25,586	20,859	22,128	24,519	25,236	138,147
Industrial	526,364	721,941	502,718	453,611	554,252	600,809	3,359,693
Commercial	187,511	129,992	102,515	108,385	121,574	126,184	776,162
Institutional	361,638	154,892	122,086	129,470	141,886	146,249	1,056,222
Total	1,095,333	1,032,411	748,178	713,593	842,231	898,477	5,330,223
Additional Greenfield Employment Land Demand							
<i>CRD, Acres</i>							
Office	0.3	0.3	0.2	0.2	0.2	0.2	1.5
Industrial	53.7	73.7	51.3	46.3	56.6	61.3	343
Commercial	12.3	8.5	6.7	7.1	8.0	8.3	51
Institutional	16.6	7.1	5.6	5.9	6.5	6.7	48
Total	82.9	89.6	63.9	59.5	71.2	76.5	444

land for industrial employment on such sites. Again these ratios, while based on a survey of current industry standards have been presented as a policy variable, in order to reflect the density of built forms that might be permitted or encouraged as part of planning policy.

The baseline values for these site coverage ratios and the projections of additional floor space requirements results in a projection of an additional 444 acres of land for employment use in the CRD over the next three decades (180 hectares, Table 4). The single largest increase in land requirement under this scenario would be the 343 acres (139 hectares) of additional industrial land required over the period, 77 percent of the total increase in land required. While employment in this sector is projected to grow much more slowly than other sectors, its larger additional land requirement is driven by both the higher square footage per employee and the low site coverage ratios typical of industrial uses.

Of the remaining uses, both commercial and institutional sites would need to increase by roughly the same amount, both requiring in the range of 50 additional acres (or 20 additional hectares) to accommodate projected employment demand, while office uses would see the smallest requirement, adding roughly one and a half acres (0.6 of a hectare) of green field sites.

7. Comparison to Other Projections

As a point of comparison, it is instructive to compare the output and, where possible, the inputs of other projections series. Two organizations, BC Stats and Urban Futures, currently maintain demographically-based forecasting models to project the future size and composition of population in the province of BC, its regions, and its communities.

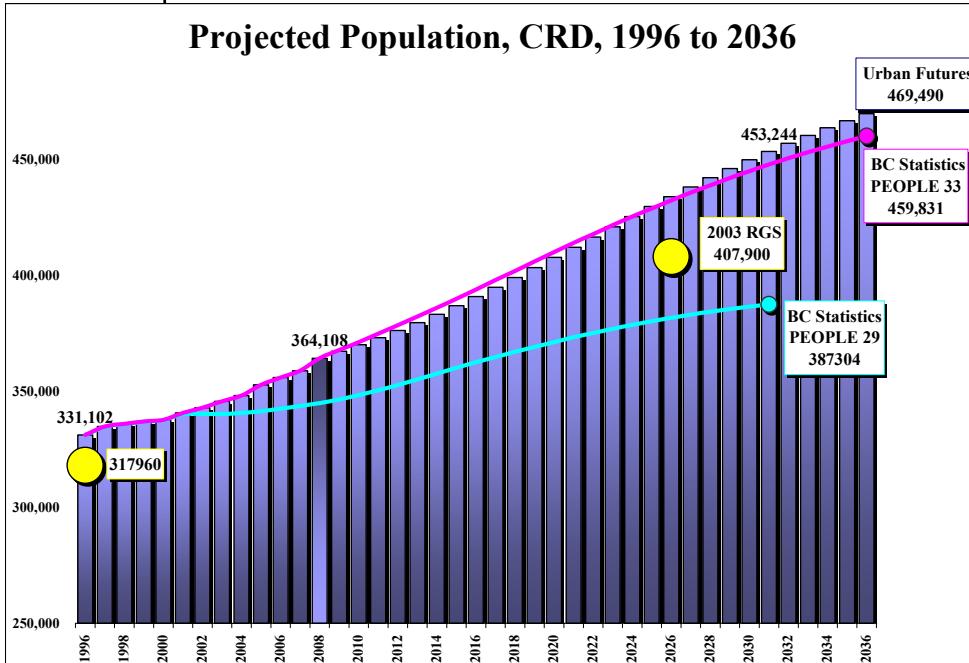
The projection approach used by both organizations is generally similar, based on a cohort survival methodology which accounts for each of the demographic components (births, deaths and migration) by age and sex on an annual basis. As the approaches are generally similar, differences in output from each organization are more driven by the underlying assumptions about how each of these components will change in the coming years.

In its most recent series of population projections (PEOPLE 33) BC Stats projects that the Capital Regional District will grow by 95,723 residents between 2008 and 2036, or by 26 percent. Adding just under 100,000 more people to the population would involve a much slower pace of growth than has been experienced historically in the CRD; BC Stats anticipates that the rate of population growth in the CRD will remain in the range of 1.0 percent per annum to 2020, before declining into the 0.5 percent per annum range by 2036.

The projection prepared for this project by Urban Futures indicates a slightly higher level of growth to characterize the region over the coming three decades. Between 2008 and 2036 Urban Futures' projection shows the CRD's population growing by 105,382 residents, or almost 30 percent by 2036. Again, this change is expected to occur at a much slower pace than has been experienced historically, with annual growth remaining in the range of 1.1 percent in the medium term, falling to 0.6 percent by 2036.

BC Stats' current projection of 459,831 residents and Urban Futures' of 469,490 represents a difference of just under 10,000 residents (or two percent) by the end of the projection period (Figure 36). The difference between PEOPLE 33 and Urban Futures' projections represents about three years of growth, with BC Stats' 2036 population achieved around 2033 in the Urban Futures projection.

Figure 36



However, if previous projection series are considered (PEOPLE 32 and earlier), the difference between the projections becomes more pronounced. BC Stats' previous series (published in 2007) projected much lower growth, adding only 66,679 residents to the CRD between 2008 and 2036. In considering the components of this projection, the difference is in part explained through future levels of net migration to the region. The PEOPLE 32 projection anticipated an addition of 118,000 people due to net migration, this increased to 134,000 under PEOPLE 33, while Urban Futures' projection is for just

above 140,000 net migrants between 2008 and 2036. This increase in net migration between the BC Stats' projection series is also reflected in changes made to their provincial projections, where total net migration between 2008 and 2036 for the province increased from 1.48 million (P32) to 1.64 million people (P33).

The difference between the PEOPLE 32 and 33 series represents almost ten years of growth; PEOPLE 33 reaches the 433,000 mark around 2026, while this level would not have been reached until 2036 under the PEOPLE 32 projection. Given this difference, it is interesting to briefly consider the history of the annual projections from BC Stats. Since 2004, projections for the CRD have steadily increased; from a projected 2031 population of 387,304 residents under the PEOPLE 29 projection (produced in 2004), to the most recent projection of 447,591 residents – a change of 60,000 residents by 2031. In looking back prior to 2004, we see that 2004 represented a low point with respect to the projection series for the CRD: PEOPLE 27 – published in 2002 – projected 428,591 residents in the CRD in 2031, quite similar to the estimate from PEOPLE 32, but still 19,000 people lower than BC Stats' most recent projections.

There are certain factors which would potentially contribute to both changes in BC Stats' projections over time, as well as to differences between the two organizations projections. First, if it were the case that the most recent migration count data showed significant increases in the number of people moving to the province, incorporating the most recent data into the historical trend line would result in an increase in the population projection for a region. This has certainly been the case for the Capital Regional District in the post 2001 period: net migration increased from lows of 1,200 to 1,400 people leading up to 2000, to above 2,500 net migrants annually between 2002 and 2005.

Second, BC Stats has historically linked their projection of immigration to Statistics Canada's assumption of a constant number of immigrants to Canada (250,000 per year) in future years. As indicated throughout the Canada section of this report, Urban Futures adopts a different approach, projecting that immigration as a share of the Canadian population will increase from its recent 0.76 percent of the population to 0.82 percent by 2036. Urban Futures adopted this approach in order to recognize issues of an aging Canadian population and the implications that a slowly growing labour force could have on many of our social services. In large part it is this different approach to dealing with immigration that has historically differentiated Urban Futures' projections from those produced by BC Stats. To the degree that BC Stats may have revised their approach to projecting future immigration levels would have implications for all BC level projections.

Other forward looking population numbers to consider are the previous projections completed for the Capital Regional District as part of its 2003 Regional Growth Strategy. As the 1996 base population differs between the projections it is necessary to shift our focus to compare net additions over the projection period rather than the final projected population. From a 1996 base of 317,960 people, the 2003 RGS added a total of 89,940 residents by 2026. Starting from an updated 1996 population of 331,102 residents, the BC Stats PEOPLE 33 projection adds just under 90,000 residents by 2023, three years earlier than expected in the RGS. With respect to the Urban Futures projection, cumulating growth from 1996 would see 90,000 net additions achieved only slightly ahead of the PEOPLE 33 projections. In terms of timing, a variance of up to three years exists between the 2003 RGS and current projections.

The strategic advantage of considering a range of projections is twofold. First it illustrates a certain degree of consistency between each projection series. For a similar date (2026) the variation between the PEOPLE 33, 2003 RGS and Urban Futures projections would be roughly three percent. Secondly, from a long range planning perspective, it reinforces that any strategic plan should be concerned not with the magnitude of the projections per se, but with the timing of achieving certain population milestones. In addition to a difference of only three percent in the magnitude of the population projections, the temporal variation for adding 90,000 residents was only about three years, falling somewhere between 2023 and 2026.

Stage Three: Sub-Area Projections

1. General Approach

The region-wide population projections presented in stages one and two considered the age specific components of population change, commencing with the biological factors of aging, births and deaths followed by domestic and international migration. This resulted in a projection of changes in the region's population over the next three decades, given the composition of its current population and trends in natality, mortality and migration. On this demographic base, a regional housing occupancy demand projection was generated by linking projected change in the size and composition of the region's population to a projection of household maintainer rates by age of household maintainer and structure type of dwelling. Thus, regionally, population change is the given, with housing markets responding to accommodate it.

In contrast, within the region, availability of housing will, in large part, determine where population is accommodated. As a result, the current distribution of housing, and its modification by future housing construction, provides the functional link between the regional and sub-area population projections. The methodology used to model this functional linkage starts with the current housing stock and current residents in each of the region's sub-areas (Core, Peninsula and West Shore). The first step is to model the annual demographic change of each of the three sub-area's existing population and their future housing requirements by structure type (ground oriented and apartment) as they age through the lifecycle of housing maintainership demonstrated in their areaⁱⁱⁱ. As well, the degree to which current residents will move is considered in order to measure turnover within each sub-area's housing stock.

The next step is to allocate annual growth in regional housing occupancy demand by structure type to each sub-area and add this new housing to the existing housing stock. This allocation is based on the historical patterns of housing development in the region, as reflected in the annual patterns of housing starts over the past two decades, and the patterns of regional growth implied by local government Official Community Plans and policies.

Once dwellings were located to each sub-area, they are essentially "filled up" with people by age and sex based on structure type specific occupancy patterns from the most recent Census. This approach therefore accounts for the housing occupancy of each sub-area's base population as it grows and changes (including the turnover of the dwelling stock as this population ages) and new residential development (and hence residents) that will be added to each area each year over the coming three decades.

Once the future distribution of population is established, the next step was to distribute employment by occupation sector to each of the sub-areas. Two components of employment were considered in this allocation: the portion of employment that would go to serving local population (the population serving component) and the portion that serves non-local activities (typically referred to as the region wide and economic base component). The portion of annual growth in sectoral employment that was deemed to serve the local population was allocated to each sub-area on the basis of each area's share of annual population growth over the projection period. The non-population serving element was allocated on the basis of each sub-area's share of sectoral employment in the prior year. In this context, this approach accounts for where employment growth may be realized due to population growth within the region, while recognizing existing nodes of sector specific employment that have been established in the region.

ⁱⁱⁱ Note that while formal projections were made for three sub-regions (Peninsula, West Shore and Core), part of the Gulf Islands were also carried forward within the projection process to ensure constancy between the regional and sub-regional projections, as they form part of the Capital Regional District, but not part of the RGS process.

Once these sub-area projections were completed, the final step was to allocate total population, housing and employment to member municipalities in each sub-area.

2. Housing Existing Residents

As a sub-area's current resident population and their occupancy demand for housing will represent the majority of future housing demand, the natural starting point for modeling the spatial distribution of people within the region are the sub-area's existing residents and their occupancy of its housing stock. The spatial allocation process, therefore, commences with consideration of the current stock of housing in each sub-area and the change in housing occupancy demand generated by the existing resident population as they age through the lifecycle of housing occupancy.

This first step is completed through an occupancy demand projection based on the aging of each sub-areas' resident population each year, to estimate the next year's population based on aging and mortality. The lifecycle pattern of housing occupancy that prevails in the sub-area is then applied to this surviving population to determine the housing stock that would be required to accommodate existing residents next year if none of them moved. Age and structure type mobility rates are then applied to this population to determine how many people will move away during a year. The result of this process is a) the size and characteristics of the remaining population, b) the number of dwelling units they will occupy, and c) the number of existing dwelling units that will be vacant and available (either as a result of mortality or mobility of existing residents) for new residents to move into during the year.

Occupancy demand for housing can grow significantly solely from the aging of the resident population through the lifecycle of housing occupancy (i.e. without adding any new members to a community); therefore, over the short term, new capacity may be needed to accommodate the existing population as it ages into the high household maintainer stage of the lifecycle. Over the longer term, however, a certain portion of this stock will be "freed up" as today's residents' age into the eldest age cohorts where maintainer rates for private housing begin to decline as people move towards alternate forms of dwelling (such as collective or institutional accommodation), move away to other sub-areas or regions, or pass away.

3. Additions to Sub-Area Housing Stock

The next step is to allocate net new dwelling units by structure type (ground oriented and apartment) to each sub-area. Three factors were used to determine how much net new housing would be allocated to each sub-area. The first was the projected growth in annual housing occupancy demand by structure type for the region as a whole, as presented above. This recognizes that, while at the sub-area level land use and transportation policies will guide the pace and composition of new housing development, at the regional level, economics and demographics determine both the population and future demand for housing.

The second factor was the extension of historical patterns of each sub-area's share of total regional housing starts by structure type. The resultant future shares were then modified on the basis of the capacity thresholds, development constraints and planning policies reflected in the aggregate of Official Community Plans and policies within each sub-area. Having noted this, the sum of sub-area shares has to equal the regional total, and hence, allocations to a sub-area may differ from planning capacity alone. Figures 37 and 38 show the sub-area shares of housing starts by structure type from 1989 to 2008, and the results of a trend-based projection of these shares to 2038. In terms of the ground oriented stock, the West Shore sub-area experienced a significant increase in its share of regional starts over the past two

decades, accounting for over half of all ground oriented starts by 2008. Although not projected to maintain the same increases over the next thirty years, the West Shore area – which includes communities such as Sooke, Langford and the Juan de Fuca Electoral District – is still anticipated to see the greatest proportion of ground oriented housing starts, with a 57 percent share by 2038.

Figure 37

Average Annual Share of Ground Oriented Housing Starts CRD Sub-Area, 1989 to 2038 (3-yr average)

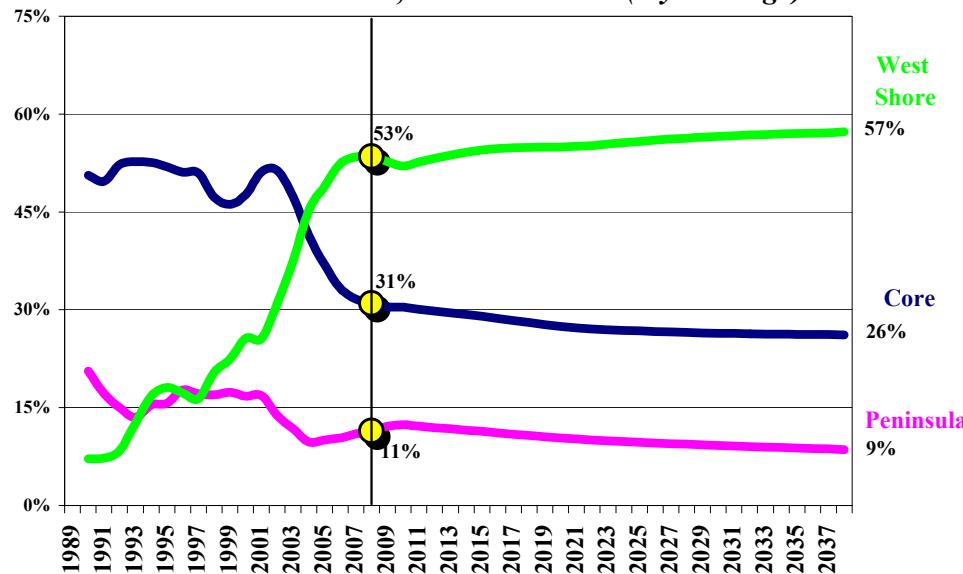
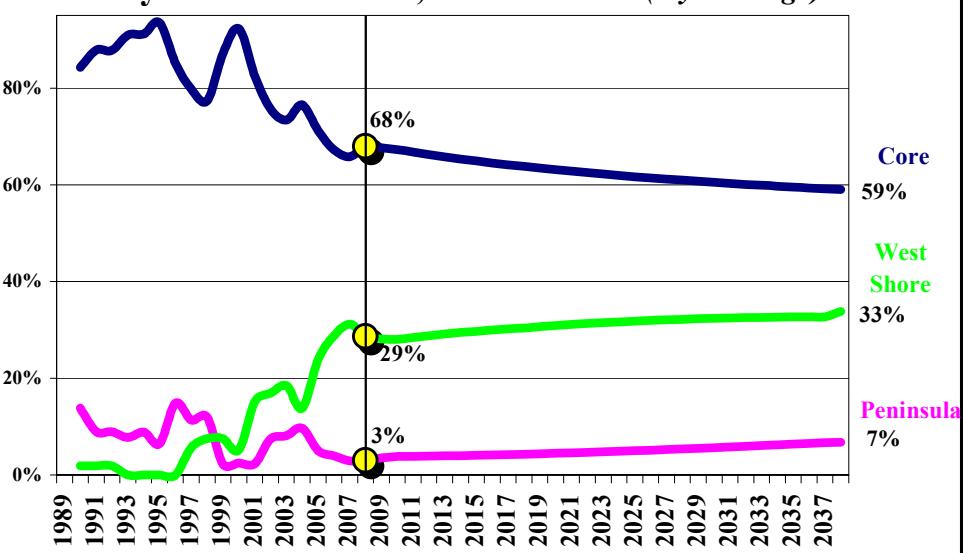


Figure 38

Average Annual Share of Apartment Housing Starts by CRD Sub-Area, 1989 to 2038 (3-yr average)



In contrast, the Core sub-area has seen its share of ground oriented building activity decline; dropping to 31 percent today down from a historical high of 51 percent in the early 1990s. This trend is projected to continue, albeit at a much slower pace, dropping to a 26 percent share by 2038. The communities in the Core, including the City of Victoria, Oak Bay and Saanich, are more capacity constrained than other areas when it comes to ground oriented development, with most additional capacity limited to attached ground oriented dwellings and infill. This has, and will continue to, contribute to their decline in share of ground oriented starts as an increasing share of ground oriented development will need to occur as redevelopment, a situation that will also prevail in the Peninsula sub-area.

In terms of the share of apartment starts however, the Core is expected to continue to be the location of the majority of apartment starts (59 percent by 2038). That said, the Core's share will continue its historical decline, from the 90 percent range seen in the early 1990s through to the 68 percent in 2008 to 59 percent by 2038, as other sub-areas increase apartment development capacity. Specifically, the West Shore is projected to continue to increase its share of apartment additions from 29 percent in 2008 to 33 percent by 2038. Apartment starts for the Peninsula are also projected to increase over the

projection period, moving into the range of 7 percent of regional starts by 2038. Table 5 outlines the total projected dwelling stock in each sub-area, given the regional housing projection and the projected shares for each sub-area.

Table 5

Housing CRD Core	2008	2013	2018	2023	2028	2033	2038
Ground Oriented	64,920	67,216	69,342	71,309	72,952	74,292	75,351
Apartment	46,436	49,256	51,847	54,378	57,097	59,823	62,460
Total	111,356	116,472	121,189	125,687	130,049	134,115	137,811
<i>CRD Peninsula</i>							
Ground Oriented	14,869	15,778	16,611	17,352	17,948	18,415	18,771
Apartment	2,475	2,627	2,790	2,970	3,192	3,447	3,729
Total	17,344	18,405	19,401	20,323	21,140	21,862	22,500
<i>CRD West Shore</i>							
Ground Oriented	23,010	27,005	30,997	34,926	38,350	41,216	43,518
Apartment	2,200	3,392	4,577	5,815	7,217	8,676	10,123
Total	25,210	30,398	35,573	40,742	45,567	49,892	53,641

period. Data from the 2006 Census on the mobility status of the population by sub-area was cross-tabulated by age, structure type and period of construction of their dwelling to determine the demographic composition of residents moving into (and out of) existing dwellings and into newly constructed dwellings. The use of sub-area data reflects differences in how (and how many) people live in and move into the various forms of dwellings and the physical character of the sub-areas' dwelling stock.

Table 6

Population CRD Core	2008	2013	2018	2023	2028	2033	2038
0 - 14	30,855	31,508	34,063	35,467	35,313	33,798	32,663
15 - 24	32,772	25,890	23,327	23,399	25,125	26,624	26,969
25 - 34	34,553	39,411	36,625	30,710	29,044	29,048	30,320
35 - 44	32,170	30,559	34,589	40,593	38,190	32,589	31,659
45 - 54	37,087	36,085	33,838	32,943	37,575	44,165	41,196
55 - 64	32,749	36,880	38,543	37,823	35,705	35,050	40,190
65+	42,171	45,973	53,042	60,992	68,785	74,014	76,720
Total	242,356	246,306	254,027	261,927	269,737	275,288	279,717
<i>CRD Peninsula</i>							
0 - 14	5,136	4,223	4,231	4,969	5,689	5,993	5,851
15 - 24	5,129	4,932	4,153	3,696	3,753	4,550	5,458
25 - 34	2,616	3,336	4,655	4,313	3,328	2,689	2,549
35 - 44	4,408	3,158	2,453	3,575	5,373	5,392	4,483
45 - 54	6,734	6,303	5,176	4,103	3,508	4,898	7,220
55 - 64	7,086	7,839	8,282	7,966	6,913	5,879	5,271
65+	10,291	12,567	14,861	17,117	19,196	20,534	20,948
Total	41,401	42,358	43,812	45,739	47,761	49,934	51,781
<i>CRD West Shore</i>							
0 - 14	10,850	10,418	10,988	12,882	14,448	15,307	15,596
15 - 24	9,120	10,259	9,295	8,557	8,434	9,588	10,938
25 - 34	7,557	9,791	13,756	15,545	15,101	14,987	15,355
35 - 44	10,862	10,724	9,917	11,446	15,156	16,563	15,408
45 - 54	11,257	13,427	13,791	13,401	12,261	13,077	16,818
55 - 64	8,206	10,297	13,048	15,320	15,937	15,586	14,106
65+	7,036	9,842	13,410	17,697	23,353	28,881	33,731
Total	64,887	74,758	84,205	94,848	104,690	113,988	121,952

4. From Dwelling Units to People

The final step in the spatial allocation of people and housing is to populate vacant existing and newly constructed dwelling units by structure type in a sub-area; essentially "filling up" the new housing stock in each area with people for each year of the projection

Each year, the number of vacated dwellings were populated using the composition of households who moved into existing dwellings (dwellings built before 2001), and the number of net new additions to the housing stock were populated using the corresponding in-mover profile for new construction (dwellings built between 2001 and 2006). These two populations were then added to the sub-area's remaining population from the prior year to determine the subsequent year's population by age group.

Table 6 presents the projected population for each 5 year increment of the projection period for each sub-area within the CRD by age (note that this is net of the Gulf Islands). The projection shows that of the

111,055 person growth (31 percent) in the CRD as a whole, the West Shore sub-area is projected to show the most rapid growth, both in terms of rate and absolute number; the region would grow by 88 percent (or 57,065 people) by 2038. The Core region would add 37,361 residents; due to its large existing population base this amounts to 15 percent growth over the three decade period. The Peninsula, by contrast, would see the second largest growth rate (25 percent) but would add the least number of residents, growing by 10,380 people.

5. From People to Employment

The projection of sub-area employment is based on the characterization of employment activities by their primary location criteria. For example, employment activities whose locations are strongly oriented towards serving a local population are considered to be population serving forms of employment. Employment activities whose locational criteria relate to other factors (ranging from transportation facilities, manufacturing centres for export markets or government activities which serve the province as a whole) are grouped together as non-population serving employment.

In order to estimate how much employment is population-serving in each occupational group, the number of jobs for each occupation per 1000 residents by location of place of work in each sub-area was calculated using data from the 2006 Census. Within this calculation, if employment in an occupation group was largely population serving, there would be a relatively high correlation between the distribution of population and employment, and hence a relatively uniform number of employees per 1000 residents across the region. Conversely, if employment was not strongly tied to local population, there would be a significant variance in the ratio of employment to resident population.

To more fully explain this approach, consider as an example occupations in the Natural and Applied Sciences. In 2006 there was an average of 37 people with this occupation per 1000 people resident in the CRD as a whole; within the region, the highest ratio of these types of workers to population was the 54 per 1000 residents in the Core sub-area and the lowest was the 14 per 1000 for the West Shore sub-area. This is a range of 103 percent around the regional average, indicating that employment in this occupation is not strongly correlated with the distribution of population, and hence not highly population serving. In contrast, there was a much smaller variation (only 43 percent) in the ratio of workers in Commercial Services and Sales occupations across the CRD, with a range from 157 workers per 1000 residents in the Core to 97 per 1000 in the West Shore, compared to a regional average of 140 per 1000 residents. This smaller variance means that Commercial Service and Sales occupations are significantly more oriented towards serving the resident population than occupations in Natural and Applied Sciences.

Within each occupation category, the degree to which employment in that occupation is population serving must range from 100 percent (all employment is population serving) to zero percent (no employment is population serving). In order to estimate the share of employment in each occupational group that is population serving, a variation index was calculated for each sector by dividing the standard deviation of each sub-areas' occupational employment per 1000 residents about their average value. The magnitude of the resultant values of the index was used to place employment in each occupation along a percentage range of population serving versus non-population serving. Considering the example above, 58 percent of the employment in the Commercial Services and Sales occupations was determined to be population serving compared to 44 percent of the employment in Natural and Applied Science occupations.

These population serving percentages were then applied to the projected growth in employment in each occupation in the region as a whole to determine the total additional number of jobs in each occupational

group that would be generated from local population change. These population serving jobs were then allocated to each sub-area on the basis of that sub-area's share of annual population growth to 2038.

The remaining additional jobs in each occupation that were not population serving were allocated spatially to sub-areas on the basis of the sub-area's shares of total employment in each occupational group in the previous year (beginning with the 2006 Census). This approach to allocating non-population serving employment relies on using the existing distribution of employment as a proxy for the variety of other factors (particularly zoning and transportation) that influence employment location decisions; it reflects how these factors have historically shaped the region's employment structure. Note that the distribution of employment by sector will change from year to year as population serving employment is added to each sub-area, thereby changing the composition of employment and impacting the next iteration of non-population serving employment to be allocated to each sub-area.

In order to determine total employment by occupation sector, the annual growth in both population and non-population serving employment was added to the prior year's employment in each sector. While this may seem like an obvious statement, it has two implications that are noteworthy. The first is that as the starting point is the 2006 data, the initial distribution in employment will continue to shape the future distribution until such a point is reached where population growth has significantly changed the regional distribution of residents. This inertia means that sub-areas with rapid population growth, while moving towards the regional average, will take a long time to achieve it. The second is that unless the population in a sub-area declines or total sectoral employment declines, sectoral employment in a sub-area will never decline, as there is no other mechanism to calibrate such declines.

Table 7

Employment <i>CRD Core</i>	2008	2013	2018	2023	2028	2033	2038
Mgmt., Bus., Finance & Admin.	43,099	43,519	43,832	44,020	44,326	44,763	45,264
Natural & Appl. Sciences	13,275	13,356	14,104	14,745	15,383	15,997	16,586
Health Occs.	11,461	11,928	12,232	12,457	12,710	12,988	13,275
Public Svcs., Arts & Humanities	19,474	21,023	21,855	22,490	23,140	23,767	24,387
Commercial Sales and Services	42,422	43,588	44,808	45,768	46,789	47,804	48,813
Const., Trades & Transport.	17,050	17,432	17,658	17,817	17,997	18,173	18,354
Primary, Manuf. & Processing	3,129	3,337	3,473	3,494	3,380	3,289	3,220
Total	149,909	154,182	157,961	160,792	163,724	166,781	169,900
<i>CRD Peninsula</i>							
Mgmt., Bus., Finance & Admin.	5,450	5,487	5,531	5,560	5,609	5,691	5,787
Natural & Appl. Sciences	2,580	2,585	2,723	2,849	2,975	3,115	3,253
Health Occs.	1,065	1,115	1,149	1,176	1,206	1,245	1,285
Public Svcs., Arts & Humanities	1,845	2,073	2,191	2,294	2,404	2,538	2,678
Commercial Sales and Services	5,362	5,533	5,733	5,913	6,111	6,361	6,622
Const., Trades & Transport.	3,468	3,528	3,564	3,596	3,636	3,696	3,761
Primary, Manuf. & Processing	1,271	1,349	1,399	1,408	1,365	1,329	1,302
Total	21,041	21,670	22,290	22,794	23,307	23,975	24,688
<i>CRD West Shore</i>							
Mgmt., Bus., Finance & Admin.	4,699	4,764	4,902	4,981	5,104	5,305	5,545
Natural & Appl. Sciences	1,730	1,712	2,096	2,439	2,773	3,148	3,535
Health Occs.	866	1,023	1,113	1,180	1,253	1,343	1,441
Public Svcs., Arts & Humanities	2,841	4,287	4,852	5,292	5,726	6,218	6,740
Commercial Sales and Services	8,750	9,766	10,692	11,433	12,185	13,076	14,023
Const., Trades & Transport.	2,168	2,761	3,035	3,228	3,444	3,740	4,069
Primary, Manuf. & Processing	600	688	742	751	708	672	644
Total	21,654	25,001	27,431	29,304	31,193	33,502	35,997

Applying this methodology to the projected growth in population in each sub-area over the 2006 to 2038 period results in a projection of a slight shift in the distribution of employment within the CRD (Table 7). The Core sub-area, while adding the largest absolute increment in employment (19,991 jobs), would see the smallest relative growth (a 13 percent increase).

This would result in its share of total employment falling from 78 percent in 2008 to 74 percent by the end of the projection period.

Conversely, while employment in the West Shore sub-area would grow by considerably fewer jobs than are added in the Core sub-area (14,343 versus

19,991), the 66 percent growth in West Shore employment would result in its share of regional employment increasing from 11 percent in 2008 to 16 percent by 2038. The Peninsula region is projected to see its employment base grow by 17 percent over the period, adding roughly 3700 new jobs. This growth would see the Peninsula essentially maintain its current 11 percent share of regional employment over the coming decades.

6. Sub-Area Strategic Considerations

In considering the projections of housing, population and jobs presented above, it is of fundamental importance that strategic discussion focus on the “why” rather than the “how many”, as the region will experience much more change than it will growth in the coming years. This is certainly shown in the regional population projection, which shows total population growth of 30 percent over the projection period and growth in the 65 plus population of almost 120 percent; such a pattern will also be demonstrated in the population in each of the region’s sub-areas. Thus, while it has become a convention of regional planning to equate plans with growth management, it is essential that such planning be conducted within a wider context of change management. In some contexts, change will be driven by policy, by the intent to move towards more sustainable lifestyles through changes in the nature of land use and development. In many other contexts, however, change is the reality of broader changes in social, technological or, in the case of this report, economic and demographic patterns.

An example of such functional change is demonstrated in the region’s older residential communities, a reflection of the changes that have occurred in these communities as they and their residents have moved through stages of the lifecycle. Considering data from the 2006 Census, the population of the Peninsula sub-area is about half a generation older than that of the West Shore. The typical (modal) age group in the Peninsula is 55 to 59 (accounting for nine percent of the sub-area’s population), while the typical residents of the West Shore are between the ages of 42 to 46 (ten percent of its population). Half of the population on the West Shore is under the age of 38 (the median age), while half of the population in the Peninsula is over the age of 48.

This difference is largely explained by the period of time in which the housing stock in each of these two areas was developed. The two sub-areas are quite similar in terms of the composition of the housing stock (with 62 percent of the Peninsula sub-area and 60 percent of the West Shore housing being comprised of single detached, and 83 and 90 percent, respectively, in all ground oriented formats). In spite of this similarity, the housing stock in the Peninsula is older than that on the West Shore: 55 percent of the Peninsula’s housing was built between 1971 and 1990, compared to only 44 percent of the West Shore’s stock. In contrast, 23 percent of the Peninsula’s stock was built in the 1991 to 2005 period versus 33 percent of the units in the West Shore. Most strikingly, only six percent of the dwellings in the Peninsula sub-area were built in the 2001 to 2006 period while 14 percent of the West Shore’s were built during this time.

The West Shore has effectively become, for the recent generation of home owners, what the Peninsula was for a previous one – a place to put down roots and build on the family tree. This is also shown in the mobility data from the 2006 Census, which indicated that almost half (45 percent) of the 2006 residents on the West Shore had moved to their current residence during the past five years, compared to only 19 percent of the Peninsula’s. Over 80 percent of the Peninsula’s 2006 residents were people who lived in there in 2001.

It is an appropriate image to say that the West Shore is a place where families are taking kids to grade school while the Peninsula is one where they are sending them off to college. The different points at which each of these communities are at in the community lifecycle will have significant implications for housing occupancy in the coming years, as there will be more empty nests in the Peninsula and more new ones in the West Shore. This means that average household sizes in the Peninsula have begun a decline that will last for the next couple of decades, only to be reversed when the next generation of families move in and begin the next family cycle.

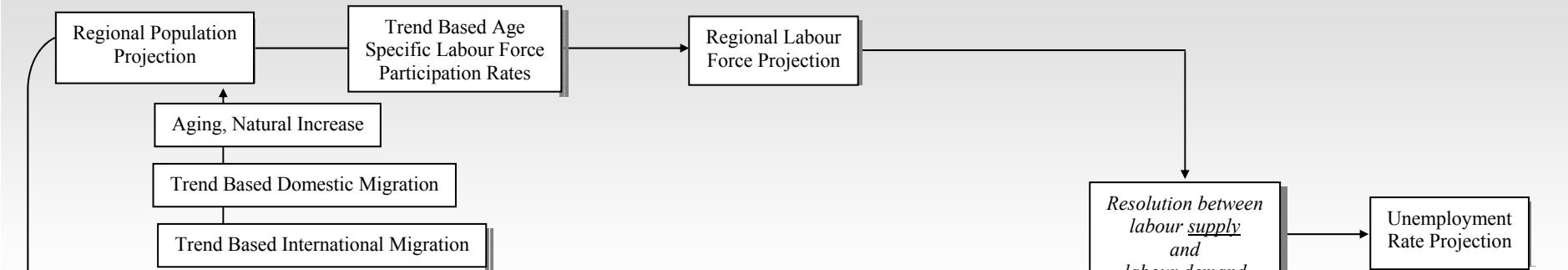
This process of change is also reflected in the housing starts data used in the sub-area projections. Housing starts data indicate that there were 907 dwelling units started in the Peninsula over the 2001 to 2005 period. Over the same period, the Census indicated that the number of occupied dwellings increased by only 645; thus 30 percent of the housing construction activity in the community was for replacement demand, a ratio that is much larger than that observed in the other two sub-areas. The net increase of 645 occupied units was accompanied by an increase of 1,385 persons, indicating an average of 2.1 persons per dwelling. This should not be interpreted as indicating that the new houses were occupied by relatively few people, as the data on the occupants of newly constructed dwellings (and new residents who moved into existing dwellings) shows these mover households averaged 2.5 persons per dwelling. What these data do indicate is that the additions of new families to the community as a result of new construction and turnover of the existing dwelling stock was not equal to the loss of residents from existing households as a result of people leaving the community; the two most prominent sources of outward migration are the children moving out and the mortality of one spouse in a couple.

Over the coming years, as the stock of current households in the Peninsula are replaced by new, larger and younger families, the shrinking of the average household size in the community will reverse. This will be expressed in population growing faster than construction, as turnover will replace households of one or two people with households of three or four. This in turn will mean that population targets based on current occupancy will be lower than what actually occurs even with relatively low levels of development activity. While this demographic transformation of the Peninsula will be a new experience for its communities, it is not a new one for the region; it is what characterized the older communities of the Core sub-area a generation ago. It is also what will characterize the West Shore sub-area a generation in the future.

Modeling Approach

Step 1: The Regional Context

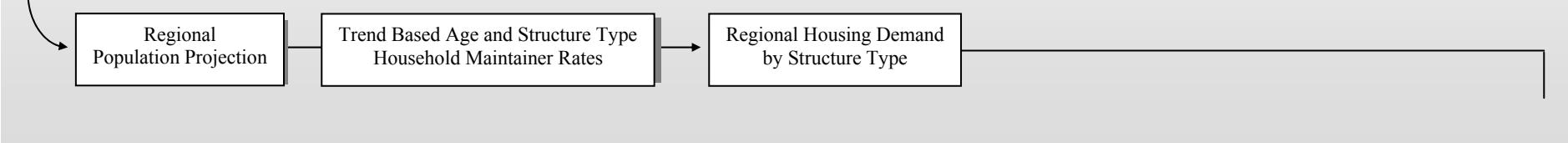
Independent Demographic Projection



Independent Employment Projection

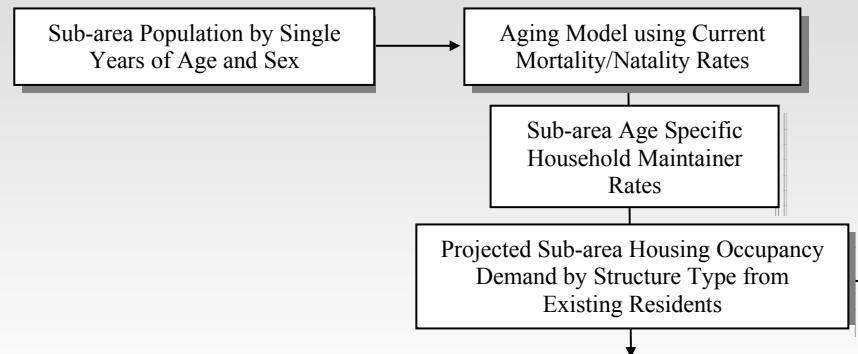


Housing Projection

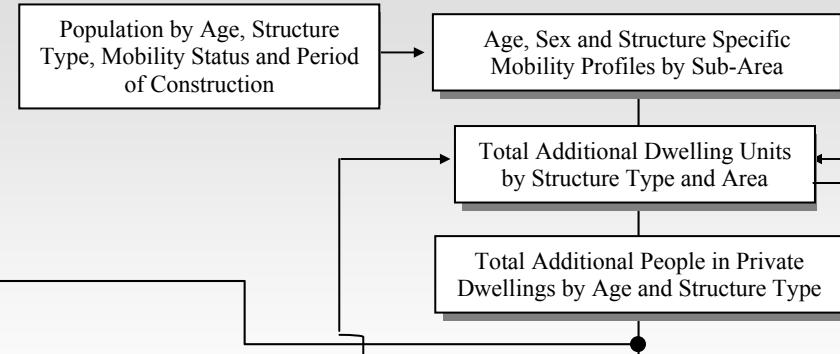


Step 2: Sub Area Growth and Change

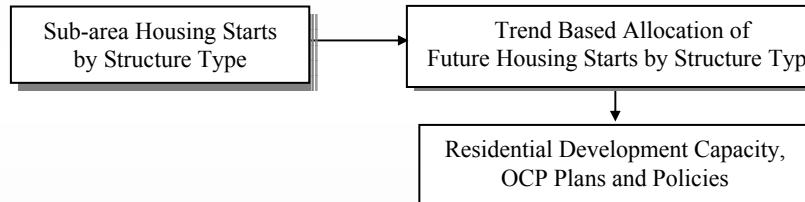
Housing Existing Residents



From Housing to People



New Residents

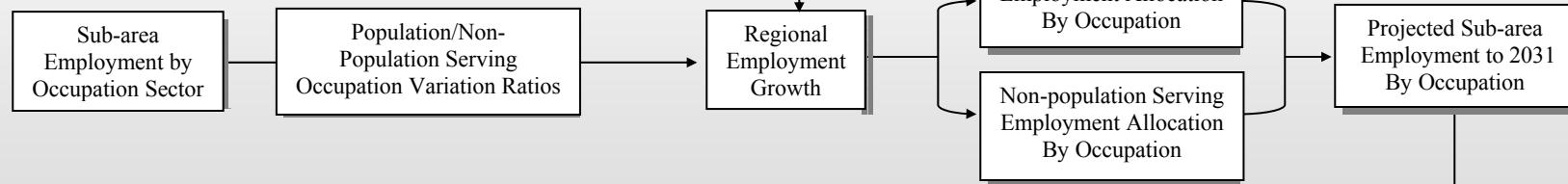


Projected Sub-area Population by Age and Structure Type

Reconcile With Regional Population Projection by Age

Projected Sub-area Population by Age

Employment



Step 3: Land Requirements

Residential Lands

Annual net Additional Sub-area Housing by Structure Type

Share to be Accommodated On Existing Residential Lands

Gross Residential Density by Structure Type

Net Additional Residential Lands By Type

Share to be Accommodated On New Residential Lands

Gross Residential Density by Structure Type

Employment Lands

Annual Net Additional Sub-area Employment By Occupation

Occupation to Land Use Classification

Net Additional Employment Floor Space By Land Use Type

Employee Space Ratios By Land Use Type

Shares to be Accommodated On Existing/New Employment Lands

Floor to Space Ratios By Land Use Type

Net Additional Employment Lands by Type

Data Sources

The following data sources were consulted in preparing the projections for the CRD.

Census of Canada, 1976 to 2006; Statistics Canada:

- labour force, employment, place of work, occupation, population by age and sex, housing occupancy, household maintainer rates, census undercount

Annual Demographic Statistics, Statistics Canada, various years:

- population by age and sex, births by age of mother, deaths by age and sex; intra-provincial, inter-provincial, and international migration.

Labour Force Survey; Statistics Canada, various years:

- labour force, employment, unemployment, occupation

CANSIM, Statistics Canada:

- British Columbia gross domestic product

Vital Statistics, Department of Government Services, Province of BC, various years:

- births by age of mother, deaths by age and sex

Official Community Plans and Policy documents, various years

All projections were compiled with using Urban Futures demographic and employment models.